Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

P. O. Box 1500
Yellowknife, NT X1A 2R3

COPY
BOARD. 6
G.W. 1
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W. RES. ORIG
File - 1762
Your file Votre référence

Our file Notre référence
License # N7L1-1762

May 2, 2001

NORTHWEST TERRITORIES WATER BOARD
MAY - 3 2001
YELLOWKNIFE, NWT

Ms. Cynthia Pyc
Environmental Biologist
Inuvialuit Environmental & Geotechnical Inc.
1338 - 36th Avenue N.E. - Bay R
Calgary, AB T2E 6T6

Dear Ms. Pyc:

Re: Shell Canada - Camp Farewell
Quality Assurance and Quality Control Plan
for Collecting Representative Water Samples
Submitted: March 28, 2001

Thank-you for the submittal of your revised Quality Assurance and Quality Control Plan. Upon review, it has been found that the plan requires some revisions. However, since the changes involve information from the Taiga Environmental Laboratory, I am able to address the changes directly in this letter. Approval of the plan is hereby granted. Please make note of the following for future revisions to the plan:

1. Under Section 4.3, Table 2 Methods of Analysis and Detection Limits, please note that the detection limit for BOD5 is listed incorrectly. The correct value is 2 mg/L.
2. Ammonia and Oil & Grease are not listed in the current scope of testing for Taiga Environmental Laboratory. However, the laboratory intends to add these tests to their scope in their next laboratory assessment, scheduled to take place in September, 2001.

Should you require further information, please do not hesitate to contact me at (867) 669-2781.

Sincerely,

Kathleen Puznicki
Analyst Under the Northwest Territories Waters Act

cc: Northwest Territories Water Board
North Mackenzie District
Water Resources

Canada

QUALITY ASSURANCE AND QUALITY CONTROL PLAN

FOR

COLLECTING REPRESENTATIVE WATER SAMPLES

Prepared for

Shell Canada Ltd.
150 – 6th Avenue SW
Calgary, AB
T2P 3E3

Prepared by

Inuvialuit Environmental & Geotechnical Inc.
1338R – 36 Avenue NE
Calgary, Alberta
T2E 6T6

January 2001

Table of Contents

Tables

Appendix

1.0 INTRODUCTION

This proposal identifies: the types of sampling required; the location of sample collection; the frequency of sampling; proper sample handling methods and documentation; and the analytical parameters for laboratory analysis, to fulfill the requirements of Indian and Northern Affairs Canada Water Resources Division and the Northwest Territories Water Board Class B License N7L1-1762. This License is for Camp Farewell in the Mackenzie River Delta, located at Latitude 69° 12'30" N and Longitude 135° 06'04" W in the Northwest Territories.

Included in the Appendix are basic definitions for terms used for sampling in this proposal.

2.0 SAMPLE COLLECTION

2.1 Location

Water sample collection for laboratory analysis will occur at sampling station 1762-1 (Treated effluent discharge prior to entering the receiving environment). Sign posting will be used to identify the sampling location. Refer to Table 1.

2.2 Sampling Equipment

The collection of effluent at Station 1762-1 will require personal protective gear that should include: disposable latex or Nitrile gloves, rubber boots (waterproof), Tyvek or other protective clothing, and eye protection. For the protection and preservation of the collected water samples, equipment would include: labels for sample identification, laboratory cleaned sample containers (see Table 1), coolers, ice packs, bubble wrap for packing, chain of custody forms, and completed field notes (see section 3.1). Additional equipment that may be required includes a pH meter, electrical conductivity meter, and temperature probe.

TABLE 1

EFFLUENT WATER COLLECTION

PARAMETER	CONTAINER TYPE	SAMPLE SIZE (ml)	PRESERVATION	MAXIMUM STORAGE TIME	FREQUENCY AND LOCATION
BIWEEKLY SAMPLING					
BOD_5	Autoclaved (white tape) Polyethylene	500	Refrigerate 4 °C	24 Hours	Biweekly – Station # 1762-1
Total Suspended Solids	(green dot) Polyethylene	1000	Refrigerate 4 °C	24 Hours	Biweekly – Station # 1762-1
Faecal Coliforms	Autoclaved (white tape) Polyethylene	250	Refrigerate 4 °C	24 Hours	Biweekly – Station # 1762-1
Ammonia	(pink dot) Polyethylene	125	1 ml 10% H_2SO_4 – Refrigerate 4 ° C	28 Days	Biweekly – Station # 1762-1
Oil and Grease	(yellow dot) Wide mouth Brown Glass	1000	4 ml 1:1 H_2SO_4 – Refrigerate 4 °C	N/A	Biweekly – Station # 1762-1

Note: BOD_5 – Biological Oxygen Demand – 5 day incubation.

2.3 Sampling Methods

Two main categories of samples will be utilized for this program: Test Samples and Control Samples. The test sample method chosen to best characterize the site is Probability Sampling using the Simple Random Sampling method (see Appendix A). In addition to the test sampling, Quality Control (QC) sampling with field blanks, trip blanks, and duplicate samples should be performed periodically (monthly) to confirm the laboratory results.

All sampling, sample preservation, and analysis shall be conducted in accordance with method described in the current edition of "Standard Methods for the Examination of Water and Wastewater" (20th ed., 1998).

When sampling in lakes and ponds, the sample bottle is lowered to mid-depth and rinsed three times before collecting the sample on the forth submersion. Ensure the sample container contains adequate room for mixing, preservative addition and thermal expansion.

When sampling stream water, the sample bottle is plunged towards the current and rinsed three times before collecting the sample on the forth submersion. Ensure the sample container contains adequate room for mixing, preservative addition and thermal expansion.

Glass containers should be used when sampling for hydrocarbon (oil and grease) concentrations.

Deviating from the above sampling protocols, water collected for faecal coliforms and oil and grease analysis, the sample is collected during the first submersion and not rinsed three times first.

In general, the protocol for sampling is as follows:

- Acquire all necessary equipment, including; personal protective equipment, sample labels, writing tool (pencil should be used to avoid running), laboratory clean sample containers, sample documenting forms (field notes, field screening results (field pH, EC, and temp values, if required), chain of custody forms, weigh bill for transportation by commercial carrier), coolers and ice packs for sample refrigeration and transportation to the laboratory, bubble wrap for packing, clear packing tape to protect sample labels and seal cooler, camera to photo document sample collection, and any additional equipment required.
- Don personal protective equipment
- At sampling location, if required, perform field screening of pH, EC, Temperature, and observations of water quality of effluent and record values in field notes.
- Label sample containers with information described in Section 3.1.
- Place clear packing tape over label to protect information from "washing off".
- Open control sample bottles of laboratory deionised (DI) water, and pour into labelled sample containers, add analyte of known concentration (and preservative - if required) seal, and send with other samples for laboratory analysis. Note: Sample labels should not indicate that these are control samples. In addition, it is preferable to fill control sample container with DI water at the sample location.
- Rinse sample containers with water to be sampled if necessary, do not rinse sample containers for faecal coliforms and oil and grease analysis.
- Collect sample in laboratory cleaned sample container (note: it is imperative that the collected samples be representative of the whole population (i.e. the effluent stream)). Qualitative observations of the sample should also be noted in the field notes at this time (i.e. sample colour, odour, clear-opaque, presence of particulates, etc. Complete Chain of Custody form with required analysis listed for each collected sample.

- Carefully bubble wrap the sample containers and place in ice chilled cooler maintained at ~4 °C for transport directly to the laboratory for analysis. Note: this entire procedure, including the initial laboratory preparation must be completed within the allowable handling time (Table 1) from the time of sampling (e.g. 24 hours).
- Complete field notes and log samples. Retain paperwork for submission to the Board, if required.

Effluent water samples will be collected on a biweekly basis at Station 1762-1 and sent for laboratory analysis to determine the concentrations of Biological Oxygen Demand (BOD_5), Total Suspended Solids (TSS), Faecal Coliforms, Ammonia, and Oil and Grease. Refer to Table 1 for a summary of parameters to be analyzed, container size, preservation methods, and holding times.

The quality controlled blank and duplicate sample will be statistically compared to laboratory QA/QC samples. The "Quality" of the samples and sampling procedures are evaluated from the results of this comparison. If control samples fall out of the allowable statistical standard deviation, then the sample results are invalid, and the effluent must be sampled again. If upon re-sampling and re-submission to the laboratory, QC samples continue to be "out of range", then a complete review of the storage of containers prior to sampling, sampling procedures, and the storage and transport of the samples to the laboratory is warranted.

3.0 SAMPLE HANDLING

As sample-handling procedures are imperative to the integrity of the sample, lag times from the time of sample collection to the time of laboratory analysis must be kept to a minimum. Samples for Faecal Coliforms analysis, for example, have a holding time of 24 hours from the time of sample collection to the time of laboratory analysis. Beyond that time the analysis becomes Quantitative and not Qualitative.

3.1 Documentation

Documentation is an important part of a Quality Assurance Program and includes information on the sample labels as well as in the Field Notebook. The minimum documentation requirements (CCME 1993) for samples include:

- Sampling date
- Sampling time
- Identification number or code
- Sampler's name
- Sampling site (including coordinate/depth where relevant)
- Sampling conditions
- Sample type
- Sampling equipment
- Storage and preservation methods
- Time of storage and of preservation
- Auxiliary information (topography, distance from source, field screening values of pH, EC, and temperature, etc.)
- Deviations from the sampling protocols, if any, and
- Completion of the Chain of Custody (COC) for transport directly to the laboratory.

Additional information on the sample containers to aid in efficient handling includes:

- Analysis required (not just listed on the COC), and
- Label the sample container lid with sample identification number.

A Field Notebook should be retained on-site for future reference and should contain;

- Samplers name, position
- Sampling date
- Weather conditions
- Sampling location conditions
- Time sampling began and ended
- Observations of water (or sample) quality
- Volume of water purged (if applicable)
- Field measurements of pH, EC, and Temperature
- Field Notebook should be photocopied regularly and archived

3.2 Preservation

This procedure is used to ensure the integrity of the collected sample until it is laboratory analyzed. Preservation methods include; refrigeration (refrigerated storage or ice packs), the addition of chemicals (acids, other preservatives, etc), and filtration.

Preservation methods can be parameter specific, such as the addition of Sulphuric Acid (H_2SO_4) for Ammonia analysis, or can be a universal method, such as, refrigeration. Refer to Table 1 for the specific preservation method used for each parameter to be analyzed.

3.3 Transportation

The collected samples with complete documentation (sample identification and chain of custody form, as described in Section 3.1) are to be packed in bubble wrap and placed in coolers with ice packs or refrigerated. The packed samples are to be sent directly to the laboratory for analysis (Taiga Environmental Laboratory in Yellowknife, NWT) as soon as possible. Therefore, due to the remoteness of the site, sample collection times must be logistically organized with transportation schedules to the laboratory. This will ensure the samples arrive at the laboratory and are analyzed within the allowable holding time.

4.0 LAB ANALYSIS

4.1 Lab Accreditation

See Appendix B for Canadian Association for Environmental Analytical Laboratories (CAEAL) accreditation of Taiga Environmental Laboratory in Yellowknife.

4.2 Detection Limits

Refer to Table 2 in Section 4.3 for detection limits for each parameter.

4.3 Methodology

Refer to Table 2 in this section for laboratory methods for each parameter.

TABLE 2

METHODS OF ANALYSIS AND DETECTION LIMITS

PARAMETER	CODE	TEST METHOD[1]	DETECTION LIMIT
BIWEEKLY SAMPLING			
BOD_5	BOD-CL	APHA 5210-B 5 Day incubation - O_2 electrode.	7
Total Suspended Solids	Solids-TOTSUS	APHA 2540-D Gravimetric	3 mg/L
Faecal Coliforms	FCC-MF	APHA 9221-E Faecal Coliforms Membrane Filter Procedure	1 colony/100 ml
Ammonia	NH4-CL	APHA 4500-NH3/H Colorimetric	0.005 mg/L
Oil and Grease	OGG-ED	APHA 5520-C Hexane METB Extraction/Gravimetric	0.2 mg/L

[1]Standard Methods for the Examination of Water and Wastewater, 20th ed., 1998

4.4 Reporting Requirements

As indicated in the "Surveillance Network Program" appended to Shell Canada's Class B Water License N7L1-1762;

"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."

In addition to the monthly reporting of effluent quality, Shell Canada shall file an Annual Report with the Board not later than March 31 of the year following the calendar year reported. This report shall contain:

- The total quantities in cubic metres of fresh water obtained from all sources,
- The total quantities in cubic metres of each and all waste discharged,
- The results of sampling carried out under the Surveillance Network Program,
- The frequency of field blanks, field replicate sample collection and reporting,
- A summary of any modifications carried out on the Water Supply and Waste Disposal Facilities, including all associated structures,
- A list of any spills and unauthorized discharges, and
- Any other details on water use or waste disposal requested by the Board within forty-five (45) days before the annual report is due.

APPENDIX A

Definition of Terms

Quality Assurance: is the system of activities designed to better ensure that quality control is done effectively.

Quality Control: is the use of established procedures to achieve standards of measurement for the three principal components of quality; precision; accuracy; and reliability.

There are two main categories of samples; Test Samples and Control Samples.

Test samples are basic samples used to characterize a site. The number of test samples depends on the degree of confidence required to characterize the site and on the number of samples needed for each analytical method. There are various approaches to collecting test samples:

- *Accessibility Sampling* - The sample is restricted to a part of a population that is readily accessible. It may be justified when resources of time, money or physical access, prevent any other type of sampling being taken, but there is little other justification.
- *Haphazard Sampling* - Taken when, although other samples may be accessible, there is no plan to control the probability of choosing a sample. It is really of value only if a very homogenous population over time and space is being sampled, which is generally unknown at the time of sampling (if it was known, samples would probably not be required). This is very difficult to justify and this method is not recommended.
- *Judgment (or Purposive) Sampling* - Taken when specific samples are selected for their unique value of interest, not for making inferences about the population. Judgment Samples may also be taken when the target population is well defined and homogenous, but the same concerns described for Hap-Hazard Sampling apply. Since you are generally sampling because you do not know the population, this is not recommended.
- *Probability or Representative Sampling (suggested for this project).* Probability or representative sampling is the most important type of sampling and is aimed at ensuring that valid conclusions can be drawn about a population from a sample. Various approaches to this include;
- *Random Sampling* – the sample is selected by chance mechanism with known probability of selection. This method of sampling is also divided into Simple Random Sampling and Stratified Random Sampling.
- *Simple Random Sampling* – When a population is large and homogeneous and every possible sample has an equal probability of being selected.
- *Stratified Random Sampling* – When a population is large and heterogeneous, it can be subdivided, the subdivisions sampled and, if necessary, the results combined.
- *Grid Sampling* – When systematic samples are taken in a specified pattern, usually a grid, with the samples collected at the grid nodes.
- *Stratified Sampling* – When a specified number of random samples are taken in a specified pattern or within a cell, usually a grid.

Control samples / Quality Control (QC) samples, which may be simulated samples, are used to control the analytical process. They are often regarded as synonymous with QC check samples. The term is also used to describe samples taken outside the target area, in order to provide a "background" reading.

Preservation is control methods used to ensure the integrity of the collected sample until it is laboratory analyzed. Preservation methods include; refrigeration (refrigerated storage or ice packs), the addition of chemicals (acid, base, preservatives, etc), and filtration.

Detection Limit refers to the minimum concentration of analyte that can be measured above the background noise of an instrument.

Analyte is a solution containing a parameter of interest in a known concentration.

APPENDIX B

CERTIFICATE OF ACCREDITATION

CERTIFICAT D'ACCRÉDITATION

Indian & Northern Affairs Canada
TAIGA ENVIRONMENTAL LABORATORY
4601 - 52nd Avenue, Yellowknife, Northwest Territories

having been assessed by the Canadian Association for Environmental Analytical Laboratories (CAEAL) Inc., under the authority of the Standards Council of Canada (SCC), and found to comply with the requirements of the ISO/IEC Guide 25, the conditions established by the SCC and the CAEAL proficiency testing program, is hereby recognized as an

ACCREDITED ENVIRONMENTAL LABORATORY

for specific tests or types of tests listed in the scope of accreditation approved by the Standards Council of Canada.

ayant été soumis à une évaluation par l'Association canadienne des laboratoires d'analyse environnementale (ACLAE) Inc., sous l'autorité du Conseil canadien des normes (CCN), et ayant été trouvé conforme aux prescriptions du Guide ISO/CEI 25, aux conditions établies par le CCN et au programme d'essais d'aptitude de l'ACLAE, est de fait reconnu comme

LABORATOIRE DE L'ENVIRONNEMENT ACCRÉDITÉ

pour des essais ou types d'essais déterminés inscrits dans la portée d'accréditation approuvée par le Conseil canadien des normes.

Accredited Laboratory No.
No de laboratoire accrédité : 187

Date d'accréditation
Accreditation date: 1995-03-06

Émis ce
Issued on: 1998-06-09

Date d'expiration
Expiry date: 2002-03-06

Chair (SCC) / Présidente (CCN)

Assessment performed according to the *General Requirements for the Accreditation of Calibration and Testing Laboratories*, CAN-P-4 (ISO/IEC Guide 25), *Requirements for the Competence of Environmental Analytical Laboratories*, CAN/CSA-Z753 and the *Conditions for the Accreditation of Calibration and Testing Laboratories*, CAN-P-1515.
The scope of accreditation is available from the accredited laboratory or SCC.

Évaluation effectuée conformément aux *Prescriptions générales concernant la compétence des laboratoires d'étalonnage et d'essais*, CAN-P-4 (Guide ISO/CEI 25), *Exigences relatives aux compétences des laboratoires de l'environnement*, CAN/CSA-Z753 et les *Conditions d'accréditation des laboratoires d'étalonnage et d'essais*, CAN-P-1515.
La portée d'accréditation est disponible auprès du laboratoire accrédité ou du CCN.

SCC/CAEAL LABORATORY ACCREDITATION PROGRAM
SCOPE OF TESTING

LABORATORY NAME: Taiga Environmental Laboratory

MATRIX

14 - CN (SAD) - Water

METHOD	METHOD REF.	LAB METHOD I.D.
COLOR - DISTILLATION	APHA 4500-CN/E, NAGASHIMA ET AL (1981) ANAL. CHEM. VOL.10 pp99-106	TEL022

Parameters:
CN (SAD) *

15 - PH - Water

METHOD	METHOD REF.	LAB METHOD I.D.
pH METER	APHA 4500-H, EPA 335.4 (1993)	TEL001

Parameters:
pH *

16 - Major Ions - Water

METHOD	METHOD REF.	LAB METHOD I.D.
AA FLAME	EPA 200.7/APHA 3111B	TEL026/027/029/030

Parameters:
Dissolved Calcium *
Dissolved Magnesium *
Potassium *
Sodium *

Water (Microbiology)

APPENDIX NO. /NAME

12 - Coliforms - Water

METHOD	METHOD REF.	LAB METHOD I.D.
MEMBRANE FILTRATION	APHA 9221-E/9222-C	TEL017

Parameters:
Fecal Coliforms *
Total Coliforms *

* CAEAL Performance Evaluation Program parameter

The list of tests and measurement capabilities for which a laboratory is accredited can change at any time due to circumstances such as scope extensions, voluntary withdrawal of tests by the laboratory and suspension by the SCC. It is recommended that a user of testing services inquire from the laboratory or the SCC for the up to date scope of accreditation. Scopes are published by the SCC via the Internet at http://www.scc.ca and are also available from SCC Information Services: (613) 238-3222.

SCC/CAEAL LABORATORY ACCREDITATION PROGRAM
SCOPE OF TESTING

LABORATORY NAME: Taiga Environmental Laboratory

MATRIX

NEW 04 - BOD (5 Day) - Water

METHOD	METHOD REF.	LAB METHOD I.D.
D.O. METER	APHA STD METHODS (1995) 5210 B	TEL 019

Parameters:
BOD (5 day) *

05 - Fluoride - Water

METHOD	METHOD REF.	LAB METHOD I.D.
SELECTIVE ION ELECTRODE	APHA 4500-Cl/E	TEL004

Parameters:
Fluoride *

06 - Nitrate plus Nitrite - Water

METHOD	METHOD REF.	LAB METHOD I.D.
AUTOCOLOR	APHA 4500-NO3/F	TEL014

Parameters:
Nitrate plus Nitrite *

07 - Silica - Reactive - Water

METHOD	METHOD REF.	LAB METHOD I.D.
AUTOCOLOR	APHA 4500-Si/F	TEL012

Parameters:
Reactive Silica *

08 - Sulfate - Water

METHOD	METHOD REF.	LAB METHOD I.D.
AUTOCOLOR	US EPA 375.2; APHA 4500.F	TEL011

Parameters:
Sulfate *

09 - Phosphorus - Total - Water

METHOD	METHOD REF.	LAB METHOD I.D.
AUTO COLOR - DIGESTION	US EPA 365.1	TEL015

Parameters:
Total Phosphorus *

10 - Iron - Water

METHOD	METHOD REF.	LAB METHOD I.D.
AA FLAME	ENVIRODAT 26004	TEL031

Parameters:
Dissolved Iron *

11 - Total Suspended Solids - Water

METHOD	METHOD REF.	LAB METHOD I.D.
GRAVIMETRIC	EPA 160.1/APHA 2540D	TEL008

Parameters:
Total Suspended Solids *

13 - Metals - Water/ICP

METHOD	METHOD REF.	LAB METHOD I.D.
ICP/MS	EPA 200.8	TEL035

Parameters:
Dissolved Cadmium *
Dissolved Chromium *
Dissolved Cobalt *
Dissolved Copper *
Dissolved Iron *
Dissolved Lead *
Dissolved Nickel *
Dissolved Vanadium *
Dissolved Zinc *

SCC/CAEAL LABORATORY ACCREDITATION PROGRAM
SCOPE OF TESTING

LABORATORY NAME: Taiga Environmental Laboratory

MATRIX

Air Filter

APPENDIX NO. /NAME	METHOD	METHOD REF.	LAB METHOD I.D.
NEW 19 - Metals - Air	ICP/MS - DIGESTION	based on EPA 200.8, NIOSH 7082 (1995)	TEL 026
	Parameters: Cadmium *, Copper *, Lead *, Zinc *		

Soil/Sediment

APPENDIX NO. /NAME	METHOD	METHOD REF.	LAB METHOD I.D.
NEW 17 - Metals - Soil	ICP/MS - DIGESTION	based on EPA 200.8	TEL 036
	Parameters: Cadmium *, Copper *, Lead *, Zinc *		
NEW 20 - Arsenic - Soil	HYDRIDE AA - DIGESTION	based on EPA 3050 B	TEL 032
	Parameters: Arsenic *		
NEW 21 - Mercury - Soil	COLD VAPOUR AA - DIGESTION	based on #2 JONASSON ET AL (1973) GSC. #1 EPA 7471A	TEL 034 B
	Parameters: Mercury *		

Water (Inorganic)

APPENDIX NO. /NAME	METHOD	METHOD REF.	LAB METHOD I.D.
01 - Alkalinity (pH 4.5) - Water	TITRIMETRIC	APHA 2320B	TEL003
	Parameters: Alkalinity (pH 4.5) *		
02 - Chloride - Water	AUTOCOLOR	APHA 4500-Cl/E	TEL010
	Parameters: Chloride *		
03 - Conductivity (25°C) - Water	CONDUCTIVITY METER	APHA 2510-B	TEL002
	Parameters: Conductivity (25 °C) *		

APPENDIX C

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
(Licensee)

400-4th Avenue S.W.
PO BOX 100, STATION M
of Calgary, Alberta T2P 2H5
(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
Licence Type	"B"
Water Management Area	NORTHWEST TERRITORIES 07
Location	LATITUDE 69°12'30" N. AND LONGITUDE 135°06'04" W. NORTHWEST TERRITORIES
Purpose	WATER USE AND WASTE DISPOSAL FOR MUNICIPAL UNDERTAKINGS
Quantity of Water Not To Be Exceeded	150 CUBIC METRES DAILY
Effective Date of Licence	DECEMBER 1, 2000
Expiry Date of Licence	NOVEMBER 30, 2005

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

NORTHWEST TERRITORIES WATER BOARD

Witness

Chairman

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.

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.

   The Surveillance Network Program annexed to the Licence can be modified at the discretion of the Board and does not require a public hearing. A request for any proposed change to the Surveillance Network Program should be forwarded to the Board in writing, including a rationale for the change.

.....2

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 1500
YELLOWKNIFE, NT X1A 2R3

Phone No: (867) 669-2772
Fax No: (867) 669-2719

ANALYST: Analyst
Water Laboratory
Northern Affairs Program
Department of Indian Affairs
and Northern Development
Box 1500
4601 - 52nd Avenue
YELLOWKNIFE, NT X1A 2R3

Bill Coedy
Taiga Labs.
Yellowknife

Phone No: (867) 669-2780
Fax No: (867) 669-2718

INSPECTOR: Inspector
Inuvik District Office
Northern Affairs Program
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

NORTHWEST TERRITORIES WATER BOARD

LICENSEE:	SHELL CANADA
LICENCE NUMBER:	N7L1-1762
EFFECTIVE DATE OF LICENCE:	DECEMBER 1, 2000
EFFECTIVE DATE OF SURVEILLANCE NETWORK PROGRAM:	DECEMBER 1, 2000

SURVEILLANCE NETWORK PROGRAM

A. Location of Sampling Stations

Station Number	Description
1762-1	Treated Effluent Discharge Prior to Entering the Mackenzie River

B. Sampling and Analysis Requirements

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

BOD_5	Total Suspended Solids
Oil and Grease	Faecal Cloiforms
Ammonia	

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 analysis shall be performed in a laboratory approved by an Analyst.

lab + sampling agency

5. The Licensee shall, by January 31, 2001, submit to an Analyst for approval a Quality Assurance/Quality Control Plan.

Guidelines to be faxed → Megan.

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

C. Reports

Monthly sampling at Station. eg: July results must be in by August 31

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

PART A: SCOPE AND DEFINITIONS

1. Scope

a) This Licence entitles Shell Canada to use water and dispose of waste for municipal undertakings in oil and gas exploration and associated uses at Camp Farewell in the MacKenzie River Delta, located at Latitude 69°12'30" N. and Longitude 135°06'04" W., 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*;

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

"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 moving average of any four (4) consecutive analytical results submitted to the Board in accordance with the sampling and analysis requirements specified in the "Surveillance Network Program";

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

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

"Waste" means waste as defined by Section 2 of the *Northwest Territories Waters Act*;

"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 31 of the year following the calendar year reported which shall contain the following:

   a) the total quantities 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 results of sampling carried out under the Surveillance Network Program;

   d) a summary of any modifications carried out on the Water Supply and Waste Disposal Facilities, including all associated structures;

   e) a list of any spills and unauthorised discharges; and

   f) 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. 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.

5. The Licensee shall, within thirty (30) days of the issuance of this Licence, post the necessary signs, to identify the stations of the "Surveillance Network Program". All postings shall be located and maintained to the satisfaction of an Inspector.

6. Prior to the use of water for municipal undertakings or the disposal of waste and 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 Hundred Fifty Thousand dollars ($250,000.00) in a form suitable to the Minister.

Cheque Payable. To the Receiver General of Canada.

7. The Licensee shall ensure a copy of this Licence is maintained at the site of operation at all times.

Promisary note from the Bank

PART C: CONDITIONS APPLYING TO WATER USE

1. The Licensee shall obtain water the Mackenzie River or the unnamed lake as described in the project description or as otherwise approved by an Inspector.

2. The daily quantity of water used for all purposes shall not exceed 150 cubic metres.

3. 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.

PART D: CONDITIONS APPLYING TO WASTE DISPOSAL

1. The Licensee shall within one (1) year of the issuance of this Licence, submit to the Board for approval an Operation and Management 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. The Licensee shall direct all piped and pumpout sewage to the Sewage Treatment Facilities or as otherwise approved by the Board.

3. The Licensee shall provide at least five (5) days notice to an Inspector prior to commencement of any discharges to the Mackenzie River.

4. 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	
BOD_5	30.0	mg/L
Total Suspended Solids	35.0	mg/L
Faecal Coliforms	250	CFU/dL
Oil and Grease	5.0	mg/L

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

5. The Licensee shall maintain the Sewage Treatment Facilities to the satisfaction of and Inspector.

6. The Licensee shall dispose of all solid wastes in a manner acceptable to the Inspector.

PART E: CONDITIONS APPLYING TO MODIFICATIONS

1. The Licensee may, without written approval from the Board, carry out modifications to the Water Intake and Waste Treatment Facilities provided that such modifications are consistent with the terms of this Licence and the following requirements are met:

   a) the Licensee has notified the Board in writing of such proposed modifications at least forty-five (45) days prior to beginning the modifications;

   b) such modifications do not place the Licensee in contravention of either the Licence or the *Act*;

   c) the Board has not, during the forty-five (45) days following notification of the proposed modifications, informed the Licensee that review of the proposal will require more than forty-five (45) days; and

   d) the Board 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 the Board.

3. The Licensee shall provide to the Board as-built plans and drawings of the modifications referred to in this Licence within ninety (90) days of completion of the modifications.

PART F: CONDITIONS APPLYING TO CONTINGENCY PLANNING

1. The Licensee shall submit to the Board for approval within thirty (30) days of issuance of this Licence, a Contingency Plan in accordance with the Board's "Guidelines for Contingency Planning, January 1987," or subsequent edition.

2. If, during the period of this Licence, an unauthorised discharge of waste occurs, or if such a discharge is foreseeable, the Licensee shall:

   a) employ the appropriate contingency plan;

b) report the incident immediately via the 24 Hour Spill Report Line. The current telephone number is (867) 920-8130; and

c) 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 year of issuance of this Licence, an Interim Abandonment and Restoration Plan in accordance with the Board's "Guidelines for Mines in the Northwest Territories," September 1980, or subsequent edition.

2. The Licensee shall implement the Plan specified in Part G, Item 1 as and when approved by the Board.

3. The Licensee shall review the Abandonment and Restoration Plan every two years and shall modify the Plan as necessary to reflect changes in operations, technology. All proposed modifications to the Plan(s) shall be submitted to the Board for approval.

NORTHWEST TERRITORIES WATER BOARD

Witness

Chairman

Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

P. O. Box 1500
Yellowknife, NT X1A 2R3

Your file Votre référence

Our file Notre référence

March 1, 2001

License # N7L1-1762

Ms. Cynthia Pyc
Environmental Biologist
Inuvialuit Environmental & Geotechnical Inc.
1338 - 36th Avenue N.E. - Bay R
Calgary, AB T2E 6T6

Dear Ms. Pyc:

Re: Shell Canada - Camp Farewell
Quality Assurance and Quality Control Plan for Collecting Representative Water Samples
Submitted: January, 2001

Thank-you for the submittal of your Quality Assurance and Quality Control Plan. Upon review, it has been found that the plan requires some revisions. Approval of the plan will be granted subject to the following:

1. Under Section 2.3, Sampling Methods, it should be stated which samples containers are to be rinsed, or not. Sample bottles for fecal coliforms and oil & grease should not be rinsed. Also, the frequency of field blank and field replicate sample collection and reporting (for each SNP report) should be included.
2. Under Appendix B, a copy of the dated certificate of accreditation for Maxxam Analytics Inc. (Edmonton) should be included. Oil & Grease is not listed in the scope of testing. Information from the laboratory is required as to whether the test is in the scope of testing (ie. missing from the attached list), or whether there is an intention to add it to their scope in their next laboratory assessment. If not, then a more detailed description of the method and the associated quality control procedures should be submitted to the Analyst for review.

Please provide the necessary revisions to the undersigned at your earliest convenience. Should you require further information, please do not hesitate to contact me at (867) 669-2781.

Sincerely,

Kathleen Puznicki
Analyst Under the Northwest Territories Waters Act

cc: Northwest Territories Water Board
North Mackenzie District

Canada