Mackenzie Valley Land and Water Board
7th Floor - 4910 50th Avenue • P.O. Box 2130
YELLOWKNIFE, NT X1A 2P6
Phone (867) 669-0506 • FAX (867) 873-6610

September 1, 2011 File: MV2009L3-0007

Ms. Wendy Alexander
Municipal Works Engineer
City of Yellowknife
Public Works and Engineering
P.O. Box 580
YELLOWKNIFE NT X1A 2N4 Email: walexander@yellowknife.ca

Dear Ms. Alexander:

Surveillance Network Program (SNP) Request Approval

The Mackenzie Valley Land and Water Board (the Board) met on September 1, 2011 to review the request to re-locate SNP station 0032-F1. The Board has approved the request as submitted.

If you have any questions or concerns, please contact Angela Plautz at (867) 766-7468 or email aplautz@mvlwb.com.

Yours sincerely,

Willard Hagen
MVLWB Chair

Copied to: Distribution List
Angela Plautz, Regulatory Policy Advisor, MVLWB

MACKENZIE VALLEY LAND AND WATER BOARD
SURVEILLANCE NETWORK PROGRAM

Licensee:	City of Yellowknife
License Number:	MV2009L3-0007
Effective Date of Licence:	May 31, 2010
Effective Date of Surveillance Network Program (SNP):	May 31, 2010 (Amended September 1, 2011)

A. Location and Description of Surveillance Network Stations

Station Number	Description	Sampling Frequency
0032-1	Raw Water valve on Yellowknife River Water supply line in City Pumphouse #1. Sampling required. Rationale: To determine the quantity of Yellowknife River Water for use as a municipal potable Water supply source.	No Water quality sampling required. Daily quantity of Water use to be monitored.
0032-2	Wet well Water intake in City Pumphouse #1 on Yellowknife Bay. Sampling required. Rationale: To determine the quantity of the Yellowknife Bay Water for use as an emergency municipal potable Water supply source.	No Water quality sampling required.
0032-FI	Marker downstream of Lake FI along the Fiddler's Lake Sewage Disposal System, approximately 1.5 kilometers upstream of Great Slave Lake (62°24'49" N. and 114° 44' 11.9" W). Rationale: To monitor Water quality of Lake F1 and effectiveness of the Fiddler's Lake sewage disposal system.	Monthly Water quality sampling except during decant period. During decant sampled weekly and for four weeks following decant.

0032-F3	Marker upstream of the outflow from Lake F3 of the Fiddler's Lake Sewage Disposal System (62°25' 24.8" N. and 114°39' 10" W). Sampling required. Rationale: Site of compliance. To monitor Water quality of lake F3 and to determine the effectiveness of the Fiddler's Lake Sewage Disposal System.	Monthly Water quality sampling except during decant period. During decant sampled weekly and for four weeks following decant. Sampled at spring break up and before freeze-up in fall for bioassay tests.
0032-10	Sewage effluent at the control structure located at lake F6. Rationale: To determine Sewage effluent quality prior to discharge to Fiddler's Lake sewage disposal system.	Monitoring Site. No Water quality sampling required for this Water Licence.
0032-12	Raw Water valve in City Pumphouse #2 on the Yellowknife River. Rationale: To determine the Water quality of the Yellowknife River prior to being pumped into the submarine line to Pumphouse #1.	Monitoring Site. No Water quality sampling required for this Water Licence.
0032-13	A point approximately 400 metres northwest of the Solid Waste Disposal Facilities above the confluence of an unnamed feeder creek. Rationale: To monitor Water quality associated with runoff and seepage from the Solid Waste Disposal Facility.	Active until replaced with 0032-13A. Water quality sampling twice each year during the months of June and September.
0032-13A	A point approximately 400 metres northwest of the Solid Waste Disposal Facilities that captures the drainage from the facility and drainage from the snow disposal area. SNP 0032-13A replaces SNP 0032-13. Rationale: To monitor Water quality associated with runoff and seepage from the Solid Waste Disposal Facility and snow disposal area.	Water quality sampling twice each year during the months of June and September.

0032-14	Upstream of culvert located on Hwy #4, upstream of fault and downstream of confluence of unnamed feeder creek. Rationale: To monitor Water quality associated with runoff and seepage from the Solid Waste Disposal Facility.	Water quality sampling twice each year during the months of June and September.
0032-15	Upstream of culvert on Ski Club access road, opposite the biathlon shooting range. Rationale: To monitor Water quality associated with runoff and seepage from the Solid Waste Disposal Facility.	Active until replaced with 0032-15A. Water quality sampling twice each year during the months of June and September.
0032-15A	West side of Hwy #4, across from SNP 0032-15. SNP0032-15A replaces SNP 0032-15. Rationale: To monitor Water quality associated with runoff and seepage from the Solid Waste Disposal Facility.	Water quality sampling twice each year during the months of June and September.
0032-16	Upstream of culvert on Hwy #3, opposite Jackfish Lake. Rationale: To monitor Water quality associated with runoff and seepage from the Solid Waste Disposal Facility.	Water quality sampling twice each year during the months of June and September.
0032-17	Effluent or drainage Water discharged from the Biotreatment Pad. Rationale: To monitor final effluent quality before discharge.	Water quality sampling required during discharge.
0032-18	Effluent/drainage Water collected from the compost facility. Rationale: To monitor final effluent quality before discharge.	Upon discharge of Water from the compost facility.

B. Sampling and Analysis Requirements

1. Station Numbers 0032-F1 and 0032-F3 shall be sampled once monthly except during a decant. Water at Station Numbers 0032-F1 and 0032-F3 shall be sampled weekly during each decant and for a period of four weeks following each decant. All samples collected at Station Numbers 0032-F1 and 0032-F3 shall be analyzed for the following parameters:

[3]Nutrients	[4]Major ions
Faecal Coliform	Faecal Streptococci
Suspended Solids	Oil and Grease
[2]Field parameters	BOD_5
CBOD	

2. Station Number 0032-F3 shall be sampled two times yearly at spring break-up and before freeze-up in the fall. The samples will be provided to an accredited laboratory for the purpose of performing a static pass/fail bioassay for both rainbow trout and *Daphnia magna* (per Environment Canada's Environmental Protection Series Biological Test Methods). If greater than 30 percent mortality occurs, the samples should be collected for LC_{50} bioassay testing.

3. Water related to the Solid Waste Disposal Facility drainage basin at Station Numbers 0032-13A, 0032-14, 0032-15A, and 0032-16 shall be sampled twice each year during the months of June and September and analyzed for the following parameters:

Total Ammonia	Nitrate and Nitrite
Faecal Coliform	BOD_5
Total Phenols	Oil and Grease
Total Mercury	[1]ICP-MS Metal Scan (Total)
[2]Field parameters	[4]Major Ions
methyl *tert*-butyl ether	Benzene
Toluene	Ethylbenzene
Xylene	
Total Petroleum Hydrocarbons - Fraction 1 (C6-C10) + Fraction 2 (>C10-C16) + Fraction 3 (>C16-C34) + Fraction 4 (>34)	

4. Station Number 0032-17 shall be sampled during discharge and analyzed for the following parameters:

[1]ICP-MS Metal Scan (Total)
[2]Field parameters
Benzene
Tolune
Ethylbenzene
Xylene
Total Petroleum Hydrocarbons - Fraction 1 (C6-C10) + Fraction 2 (>C10-C16) + Fraction 3 (>C16-C34) + Fraction 4 (>34)

5. Water related to the compost facility at Station Numbers 0032-18 shall be sampled upon discharge from the facility and analyzed for the following parameters:

Total Ammonia	Nitrate and Nitrite
Faecal Coliform	BOD_5
Total Phenols	Oil and Grease
Total Mercury	[1]ICP-MS Metal Scan (Total)
[2]Field parameters	[4]Major Ions
methyl *tert*-butyl ether	Benzene
Toluene	Ethylbenzene
Xylene	
Total Petroleum Hydrocarbons - Fraction 1 (C6-C10) + Fraction 2 (>C10-C16) + Fraction 3 (>C16-C34) + Fraction 4 (>34)	

6. 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 the Analyst.

7. All analyses shall be performed in a laboratory approved by the Analyst.

Notes:

[1]ICP-MS Metal Scan (Total) shall include at a minimum, the following parameters:

Aluminium	Arsenic
Beryllium	Boron
Cadmium	Chromium
Cobalt	Copper
Iron	Lead
Manganese	Mercury
Molybdenum	Nickel
Selenium	Silver
Strontium	Vanadium
Zinc	

[2]Field parameters include the following measurements:

pH	Temperature
Conductivity	Dissolved Oxygen

[3]Nutrients include the following parameters:

Total Ammonia	Total Phosphorus
Nitrate-Nitrogen	Ortho Phosphorus
Total Dissolved Phosphorus	Total Organic Carbon
Total Kjeldahl Nitrogen	

[4]Major ions include the following parameters:

Calcium	Magnesium
Chloride	Sodium
Alkalinity	Fluoride
Total Dissolved Solids	Potassium
Sulphate	Total Hardness

C. Flow and Volume Measurement Requirements

1. The Licensee shall measure and record the following:
   a) The daily quantity of Water pumped from the Yellowknife River at Station Number 0032-1;
   b) The daily quantity of Water pumped from Yellowknife Bay at Station Number 0032-2 in cubic metres;
   c) The weekly flow of Sewage effluent discharged from the control structure at Station Number 32-10;
   d) The monthly quantity of Waste discharged from Lift Station Numbers 5 and 6; and
   e) The lagoon elevations and design elevation for dams.

D. Dam and Dyke Monitoring

1. The dams and dykes of the Sewage Disposal Facilities shall be inspected once every two years during the summer season by an Engineer to determine the stability of the structures.

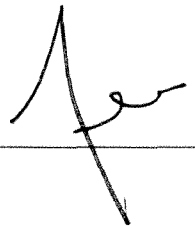
2. The dykes constructed to divert the drainage flow from Lake F9 and Unnamed Lake into the Grace Lake system shall be inspected every four years by an Engineer, at a time of high water level, to determine the stability of the structures.

3. Within 60 days of completion of the geotechnical inspection, the Licensee shall submit a cover letter outlining an implementation schedule for the Engineer's recommendations.

E. Reports

1. The Licensee shall submit quarterly reports for January through March, April through June, July through September, and October through December. These quarterly reports shall contain all of the information generated by Parts A, B, C, and D of the Surveillance Network Program and shall be submitted within 30 days of the end of the quarter being reported.

Mackenzie Valley Land and Water Board



Chair

Witness

Annex A Schedule

Supplemental information to be submitted by Licensee as required through Licence Conditions

Licence Condition	Report Title/Require Action	Timeline for Submission
B.3 (Schedule 1, item 1)	Annual Report	March 31 each year
B.8	Identify SNP Station(s) with signage	At all times
B.9	Re-locate SNP 0032-13 and 0032-15 and provide coordinates to the Board	By September 1, 2010
B.10	Identify Water Supply and Waste Disposal Facilities with signage	At all times
B.11	Copies of Water Licence in City of Yellowknife office(s), the Solid Waste Disposal Facilities, and the Water Supply Facility	At all times
D.3	Advise Inspector and notify the Board prior to decant of Sewage Disposal Facility	At least 10 days before decant begins
D.9	Inspection of constructed berms, dykes, and dams within the Waste Disposal Facilities and Water Supply Facilities	Once every 2 years with a report to be submitted to the Board within 60 days of the inspection
D.10 (Schedule 2, Item 1)	Stormwater Management Plan	Within 15 months of issuance of this Water Licence

D.11	Design Report	90 days prior to the construction of a new cell at the Solid Waste Disposal Facility
D.12	Operations and Maintenance Manual	60 days prior to operation of a new landfill cell
D.13	As built plans and Record Drawings	90 days of completion of construction
D.14 (Schedule 2, Item 2)	Solid Waste Disposal Facility Drainage Study	Within 18 months of issuance of Water Licence
D.15 (Schedule 2, Item 3)	Revised Fiddlers Lake Treatment System Plan	March 31, 2012
D.16	Sewage Disposal Facility Design Report	60 days prior to any upgrading
D.17	As built plans and Record Drawings for Sewage Disposal Facilities	Within 90 days of completion of any upgrades
D.18	Current Record Drawings of the Sewage Disposal Facilities	Within 6 months of issuance of this Water Licence
D.19	Sewage Disposal Facility reporting	Within 18 months of issuance of Water Licence
D.20	Year long study of sewage effluent and Report	March 31, 2012
D.21	BOD and CBOD Study	August 31, 2014

D.22	Study on the capabilities of the effluent discharge area	March 31, 2012
D.23	Metal concentrations in surface water for Solid Waste Disposal Facility Study	March 31, 2013
PART E	Modifications to Water Supply Facilities and Waste Disposal Facilities	Various – refer to Water Licence
F.1 (Schedule 3, Item 1)	Interim closure and reclamation plan for the Solid Waste Disposal Facility	6 months prior to closure of the current Solid Waste Facility Disposal cell
F.2 (Schedule 3, Item 1)	Closure and Reclamation Plan	At least six (6) months prior to abandoning any Waste Disposal Facilities
G.1	Construction of any dams, dykes or control structures	Prior to construction
G.3	As-built plans and Record Drawings	Within 90 days of completion
H.1 (Schedule 4)	Updated plans for the Operation and Maintenance of the Waste Disposal Facilities	Various – refer to Schedule 4
I.1	Spill Contingency Plan in accordance with "Indian and Northern Affairs Canada's 2007 Guidelines for Spill Contingency Planning"	Within 6 months of issuance of Water Licence
I.2	Review of Spill Contingency Plan and submission of updates/revision	Annually – Annual Reporting Requirement

AKAITCHO REGION DISTRIBUTION LIST

Organization	Contact Name	Contact Position/Title	Email/Fax
Akaitcho Screening Board	Stephanie Poole	Screening Officer	screeningofficer@eastarm.com
Akaitcho Screening Board	Stephen Ellis	IMA Implementation Officer	scellis@eastarm.com
City of Yellowknife	Gordon Van Tighem, c/o Judy Brennan	Mayor, c/o Executive Secretary	jbrennan@yellowknife.ca
City of Yellowknife	Robert Long	City Administrator	rlong@yellowknife.ca
Dene Nation	Lee Mandeville	Lands Program Coordinator	lmandeville@denenation.com
Deninoo Community Council	Carol Collins	Lands Officer	Carolc.lands@gmail.com
Deninu K'ue First Nation	Rosy Bjornson	IMA Coordinator	imadenegurl@hotmail.com
Deninu K'ue First Nation	DKFN Front Desk		dkfn@live.com
DFO	Rick Walbourne	Habitat Biologist	Rick.Walbourne@dfo-mpo.gc.ca
Enterprise Settlement Corporation	Allan Flamand	Mayor	Sao_enterprise@northwestel.net
Environment Canada	Not applicable	Central email	ec.ea.nwt@ec.gc.ca
Fort Resolution Métis Council	Gary Bailey	President	Frmc53@yahoo.ca
Hamlet of Fort Resolution	Carol Collins	Lands Officer	Carolc.lands@gmail.com
Fort Smith Métis Council	Ken Hudson	President	fortsmithmetiscouncil@northwestel.net
GNWT	Not applicable	Central email	Gnwt_ea@gov.nt.ca
GNWT – DOT	Rhonda Batchelor	Environmental Affairs Analyst	Rhonda_Batchelor@gov.nt.ca
GNWT – ENR	Patrick Clancy	Environmental Regulatory Analyst	Patrick_Clancy@gov.nt.ca
GNWT – HEALTH	Duane Fleming	Chief Environmental Health Officer	Duane_Fleming@gov.nt.ca
GNWT – ITI	Kris Johnson	Senior Analyst	K_Johnson@gov.nt.ca
GNWT – MACA	Mark Davy	Senior Environmental Planner	Mark_Davy@gov.nt.ca
GNWT – PWNHC	Glen Mackay	Assessment Archaeologist	Glen_Mackay@gov.nt.ca
Hay River Metis Council	Paul Harrington	President	hrmc@northwestel.net
AANDC – Intergovernmental Affairs	Not applicable	Central email	intergov@aandc.gc.ca
AANDC – Mineral & Petroleum Resources Directorate	Angela Norris	Acting Manager	norrisa@aandc.gc.ca
AANDC – Aboriginal and Territorial Relations	Not applicable	Central email	consultationsupportunit@aandc.gc.ca
AANDC – Aboriginal and Territorial Relations	James Lawrance	Director	james.lawrance@aandc.gc.ca
AANDC – Environment and Conservation	Francis Jackson	A/Head, Environmental Assessment and Agreement	Lorraine.Seale@aandc.gc.ca
AANDC – South Mackenzie	Michael Martin	Acting District Manager	Michael.Martin@aandc.gc.ca

Please contact our office to report any errors in this list.