Subject: S18L3-001 - Annual Water Licence Report Template
Date: Wednesday, August 5, 2020 at 3:16:57 PM Mountain Daylight Time
From: Ash Varghese
To: Kirk Dolphus, Valene Kenny
Attachments: S18L3-001 - Annual Report Template - Municipal Water Licence - Deline - Aug 5_20.pdf

Hi Kirk and Valene,

A template for the S18L3-001 Annual Water Licence Report has been prepared (attached) to help Deline Gotine Government (Local Services) comply with the reporting requirements for the annual report. The licensee is advised to follow the instructions for each reporting requirement given in the template to comply with the reporting requirements. The licensee may also use blue colour fonts for the responses (to conditions/instructions) to help the readers/reviewers quickly separate the template content from the actual report.

Please let me know if you have any questions or need additional clarification or help.

Best regards,
Ash

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Municipal Water Licence Annual Report
Deline Gotine Government – Local Services
Licence Number: S18L3-001
(Renewal of S12L3-006)

Reporting year: _____
Expires: May 4, 2023

Licence Part B, Condition 16
Beginning March 31, 2019 and no later than every March 31 thereafter, the Licensee shall submit an Annual Water Licence Report to the Board. The Report shall be in accordance with Schedule 1.

1. Water Usage (Licensed Water Volume Withdrawal: 30,000 m^3)

(*Licence, Schedule 1, Condition 1:** *The monthly and annual quantities in cubic meters of fresh water obtained from all sources**)

Total volume withdrawn for reporting year: _____ m^3

Table 1 – Monthly withdrawal volumes

Month	Volume from main source (m^3)	Volume from any other source (m^3)	TOTAL Volume (m^3)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
TOTAL			
% Increase from previous year			

Reasons for increase / decrease:

Reasons for exceeding licensed withdrawal volumes (if applicable):

2. Solid Waste Disposal

(*Licence, Schedule 1, Condition 2:** *The monthly and annual quantities in cubic meters of each and all waste discharged**)

Approximate total yearly volume of solid waste deposited: _____ m^3

Table 2 – Monthly solid waste disposal volumes

Month	**Volume of solid waste deposited (m^3)**
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	
TOTAL	
% Increase from previous year	

GNWT – MACA has provided a standard formula for estimating the amount of solid waste deposited into a Solid Waste Facility in the absence of a metered Garbage Truck. The following can be used: ***Volume per person per day X number of days X population***

e.g. ***0.015 m^3*** *X 30 days X 860 people = 387 m^3 of domestic trash deposited into Solid Waste Facility in a 30 day month*

Reasons for increase / decrease: (e.g. an industrial project close to Deline, or a large influx of people into town)

General information:
Information regarding any agreements with outside organizations to be a waste receiving facility should be outlined here along with an estimate of the amount and type of waste to be received.

3. Solid Waste Removal

(Licence, Schedule 1, Condition 4): ***The monthly and annual quantities in cubic meters of solid waste removed from the waste disposal facilities***

Table 3 – Monthly solid waste and sludge removal volumes

Month	Volume of solid waste removed (m^3)	Volume of sludge removed (m^3)
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		
TOTAL		

Has any sludge been removed from the sewage lagoon during this reporting year? If so, what volume of sludge was removed? What testing was completed on the sludge and where it was disposed of? Please provide documentation for testing and GNWT Water License Inspector approval of placement.

Has any waste been removed from the soilid waste disposal facility during this reporting year? If so, what volume of waste was removed? What testing was completed on the waste and where it was disposed of? Please provide documentation for testing and GNWT Water License Inspector approval of placement.

4. Sewage and Solid Waste Deposited from Outside

(Licence, Schedule 1, Condition 5): ***The monthly and annual quantities in cubic meters of all sewage and solid waste deposited into the waste disposal facilities by commercial, industrial and institutional operators working outside the municipal boundaries of Deline)***

Table 4 – Monthly solid waste and sludge removal volumes

Month	Sewage Deposited from Outside (m^3)	Solid Waste Deposited from Outside (m^3)
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		
TOTAL		

5. Sewage Deposited to Primary Sewage Cells

(Licence, Schedule 1, Condition 3: *The annual quantities in cubic metres of sludge in sewage lagoon*).

Table 5 – Monthly sewage waste volumes deposited

Month	Volume of sewage waste deposited (m^3)		
	Pumper Truck	Utilidor	TOTAL
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
TOTAL			
% Increase from previous year			

To calculate monthly sewage waste deposited to the sewage lagoon, please provide the above information if metered information is available. If metered information is not available, please fill in the table using the corresponding TOTAL water volumes from Table 1. This provides estimation only and equals water in/sewage out.

Reasons for increase / decrease: (Example: a large influx of people into town for a festival)

Was there any decanting at sewage lagoon this reporting year? Please provide dates. What was the decant duration and the approximate volume decanted?

6. Modifications and Maintenance Work

(**Licence, Schedule 1, Condition 9:**
A description of Construction, Modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures, and an outline of any work anticipated for the next year).

Include any work done to infrastructure for all facilities completed during the year in this section. This includes any changes, repairs and modifications. If any problems occurred during the year, please note them here. If there are no changes, make note of that. If required please attach any as-built drawings or reports as an attachments to this report.

I. Water Treatment, Storage and Distribution Facilities
II. Solid Waste Disposal Facilities
III. Sewage Lagoon

Information regarding any modifications to the water withdrawal procedure or facilities should be included here. If necessary please attach any relevant reports to the end of this document.

7. Surveillance Network Program Data

Surveillance Network Program (SNP) information (**Schedule 1, Condition 6 and Annex A, Part A, Condition 2**) is to be submitted in a tabular format and shall indicate date of testing, parameters tested for and any other information requested by the GNWT Water Licence Inspector or the SLWB. [Laboratory results should be summarized. Results tables 6 to 15 have been provided below for your convenience. Note: it is possible to copy/paste from Excel into Word provided the same number of cells are selected in each table].

PLEASE ATTACH SNP SAMPLE LOCATIONS MAP as ATTACHMENT A (according to Licence Annex A, Part C, and Annex A, Part A, 2(f))

Table 6 - Sampling Station Locations (Licence Annex A, Part C)

SNP Station	Location	Sampling Frequency	Rationale
0555-1	Location _____°N, - _____°W Raw water supply from Great Bear Lake at the Water Treatment Plant	Daily	To determine the quantity of water used for potable purposes.
0555-1 (inactive)	Inactive - site abandoned but not decommissioned - effluent at point of discharge from the secondary sewage lagoon - decant n/a	n/a	
0555-2 (inactive)	Inactive - site abandoned but not decommissioned - effluent at point of entry of seepage from the sewage lagoon at Airplane Lake	n/a	
0555-3	Location _____°N, - _____°W Runoff from the Temporary solid waste disposal site	Monthly from June to October	To monitor runoff quality from the current use (Temporary) Solid Waste Facilities
0555-4	Location _____°N, - _____°W	Monthly from June to October	To monitor effluent quality from the Sewage Disposal Facilities prior to discharge to the wetland

SNP Station	Location	Sampling Frequency	Rationale
	Continuous discharge lagoon - effluent at point of discharge to wetland		
0555-5	Location _____°N, - _____°W Continuous discharge lagoon - Effluent at "point where the treated wastewater leaves the treatment system and enters the environment"	Monthly from June to October	To monitor effluent quality following wetland treatment at the final discharge point of receiving environment (Great Bear Lake)
0555-6	Location _____°N, - _____°W West drainage from new solid waste disposal site	Monthly from June to October	To monitor runoff quality from the new Solid Waste Facilities
0555-7	Location _____°N, - _____°W East drainage from new solid waste disposal site	Monthly from June to October	To monitor runoff quality from the new Solid Waste Facilities
2018-1a (new)	Location _____°N, - _____°W MWII0- up-gradient (NW) of Northern Former Landfill area (APEC 7), monitors background groundwater conditions.	Three times per year at the beginning, middle and end of the open water season (i.e., one week following freshet, the last week of July and before freeze up).	To measure groundwater levels and general hydrogeological conditions and assess baseline groundwater chemistry in the vicinity of the Temporary SWF.
2018-1b (new)	Location _____°N, - _____°W MW123 - up-gradient (NW) of abandoned		To measure groundwater levels and general hydrogeological conditions and assess baseline groundwater chemistry in the vicinity of the abandoned sewage lagoon.

SNP Station	Location	Sampling Frequency	Rationale
	sewage lagoon area (APEC 1, primary lagoon), monitors levels and general background groundwater conditions.		
2018-2a (new)	Location _____°N, -_____°W MW102- East of APEC 7, SWF		To measure the extent and magnitude of groundwater leachates contamination (if any) underneath and/or migrating offsite of the Temporary SWF.
2018-2b (new)	Location _____°N, -_____°W MW122 - Within APEC 3 (Honey Bag Disposal Pit), east central SWF		
2018-2c (new)	Location _____°N, -_____°W MW114 - Within APEC 8 (Southern Former Landfill Area), southeast SWF		
2018-2d (new)	Location _____°N, -_____°W MW118 - Within APEC 8, south		
2018-3a (new)	Location _____°N, -_____°W MW120 - Between APEC 1 (secondary sewage lagoon) and southwest wetland		To measure the extent and magnitude of groundwater leachates contamination (if any) underneath and/or migrating offsite of the abandoned sewage lagoon.

Table 7 – SNP Station 0555-4 Effluent Monitoring Results
Monitoring of effluent discharged from sewage disposal facilities- Continuous discharge lagoon – effluent at point of discharge to wetland - sampled Monthly from **June to October**, and analyzed for the parameters listed.

(***According to Licence Annex A, Part C and Licence, Part D, Condition 14)***

Parameter (SNP Station 0555-4)	**Max. Average Concentration**	**June**	**July**	**August**	**September**	**October**
Sample Collection Date						
pH	6.0-9.0					
Fecal Coliforms (CFU/100ml)	<1x10 CFU/ 100ml					
Total Suspended Solids (mg/L)	100					
Oil and Grease (mg/L)	5 mg/L and no visible sheen					
CBOD (mg/L)	72					
BOD (mg/L)						
Temperature (°C)						
Conductivity (S/m)						
Ammonia Nitrogen (mg/L)						
Total Nitrogen (mg/L)						
Nitrite-Nitrogen (mg/L)						
Nitrate-Nitrogen (mg/L)						
Total Organic Carbon (mg/L)						
Total Phosphorous (mg/L)						
Total Petroleum Hydrocarbons (TPH) (mg/L)						
Total BTEX (mg/L)						

Parameter (SNP Station 0555-4)	Max. Average Concentration	June	July	August	September	October
Total Phenols (mg/L)						
Total Polycyclic Aromatic Hydrocarbons (PAHs) (mg/L)						
Volatile Organic Compounds (VOCs) (mg/L)						
Calcium (mg/L)						
Chloride (mg/L)						
Sodium (mg/L)						
Magnesium (mg/L)						
Pottasium (mg/L)						
Total Arsenic (µg/L)						
Total Copper (µg/L)						
Total Lead (µg/L)						
Total Zinc (µg/L)						
Total Nickel (µg/L)						
Total Mercury (µg/L)						
Total Chromium (µg/L)						
Total Cadmium (µg/L)						
Total Iron (µg/L)						

Parameter (SNP Station 0555-4)	Max. Average Concentration	June	July	August	September	October
Total Cobalt (µg/L)						
Total Manganese (µg/L)						

Please record the interpretation of the results here (Example statements: “The water quality standards are met.” Or “All the parameters are within the maximum allowable concentrations except __). Please indicate if there are any exceedences with respect to the water quality criteria/CCME guideline values.

According to Annex A, Condition 2 (a), provide a rationale if samples were not collected from this SNP station during any prescribed sample collection time.

Table 8– SNP Station 0555-3
To monitor runoff quality from the current use (Temporary) Solid Waste Facilities.

(***According to Licence Annex A, Part C)***

Parameter (SNP Station 0555-3)	**June**	**July**	**August**	**September**	**October**
Sample Collection Date					
pH					
Fecal Coliforms (CFU/100ml)					
Total Suspended Solids (mg/L)					
Oil and Grease (mg/L)					
CBOD (mg/L)					
BOD (mg/L)					
Temperature (°C)					
Conductivity (S/m)					
Ammonia Nitrogen (mg/L)					
Total Nitrogen (mg/L)					
Nitrite-Nitrogen (mg/L)					
Nitrate-Nitrogen (mg/L)					
Total Organic Carbon (mg/L)					
Total Phosphorous (mg/L)					
Total Petroleum Hydrocarbons (TPH) (mg/L)					
Total BTEX (mg/L)					
Total Phenols (mg/L)					

Parameter (SNP Station 0555-3)	June	July	August	September	October
Total Polycyclic Aromatic Hydrocarbons (PAHs) (mg/L)					
Volatile Organic Compounds (VOCs) (mg/L)					
Calcium (mg/L)					
Chloride (mg/L)					
Sodium (mg/L)					
Magnesium (mg/L)					
Pottasium (mg/L)					
Total Arsenic (µg/L)					
Total Copper (µg/L)					
Total Lead (µg/L)					
Total Zinc (µg/L)					
Total Nickel (µg/L)					
Total Mercury (µg/L)					
Total Chromium (µg/L)					
Total Cadmium (µg/L)					
Total Iron (µg/L)					
Total Cobalt (µg/L)					

Parameter (SNP Station 0555-3)	June	July	August	September	October
Total Manganese (µg/L)					

Please record the interpretation of the results here (Example statements: “The water quality standards are met.” Or “All the parameters are within the maximum allowable concentrations except __). Please indicate if there are any exceedences with respect to the water quality criteria/CCME guideline values.

According to Annex A, Condition 2 (a), provide a rationale if samples were not collected from this SNP station (0555-3) during any prescribed sample collection time.

Table 9– SNP Station 0555-5
To monitor effluent quality following wetland treatment at the final discharge point of the Receiving Environment (Great Bear Lake)
(*According to Licence Annex A, Part C)*

Parameter (SNP Station 0555-5)	**June**	**July**	**August**	**September**	**October**
Sample Collection Date					
pH					
Fecal Coliforms (CFU/100ml)					
Total Suspended Solids (mg/L)					
Oil and Grease (mg/L)					
CBOD (mg/L)					
BOD (mg/L)					
Temperature (°C)					
Conductivity (S/m)					
Ammonia Nitrogen (mg/L)					
Total Nitrogen (mg/L)					
Nitrite-Nitrogen (mg/L)					
Nitrate-Nitrogen (mg/L)					
Total Organic Carbon (mg/L)					
Total Phosphorous (mg/L)					
Total Petroleum Hydrocarbons (TPH) (mg/L)					
Total BTEX (mg/L)					
Total Phenols (mg/L)					

Parameter (SNP Station 0555-5)	June	July	August	September	October
Total Polycyclic Aromatic Hydrocarbons (PAHs) (mg/L)					
Volatile Organic Compounds (VOCs) (mg/L)					
Calcium (mg/L)					
Chloride (mg/L)					
Sodium (mg/L)					
Magnesium (mg/L)					
Pottasium (mg/L)					
Total Arsenic (µg/L)					
Total Copper (µg/L)					
Total Lead (µg/L)					
Total Zinc (µg/L)					
Total Nickel (µg/L)					
Total Mercury (µg/L)					
Total Chromium (µg/L)					
Total Cadmium (µg/L)					
Total Iron (µg/L)					

Parameter (SNP Station 0555-5)	June	July	August	September	October
Total Cobalt (µg/L)					
Total Manganese (µg/L)					

Please record the interpretation of the results here (Example statements: “The water quality standards are met.” Or “All the parameters are within the maximum allowable concentrations except __). Please indicate if there are any exceedences with respect to the water quality criteria/CCME guideline values.

According to Annex A, Condition 2 (a), provide a rationale if samples were not collected from this SNP station (0555-5) during any prescribed sample collection time.

Table 10 – SNP Stations 0555-6 and 0555-7
0555-6: To monitor runoff quality from the new Solid Waste Facilities and
0555-7: To monitor runoff quality from the new Solid Waste Facilities
(*According to Licence Annex A, Part C)*

Parameter	West Drainage from new soild waste site					West Drainage from new soild waste site				
	SNP 0555-6					SNP 0555-7				
	June	*July*	*August*	*Sept*	*Oct*	*June*	*July*	*August*	*Sep*	*Oct*
Sample Collection Date										
pH										
Fecal Coliforms (CFU/100 ml)										
Total Suspended Solids (mg/L)										
Oil and Grease (mg/L)										
CBOD (mg/L)										
BOD (mg/L)										
Temperature (°C)										
Conductivity (S/m)										
Ammonia Nitrogen (mg/L)										
Total Nitrogen (mg/L)										
Nitrite-Nitrogen (mg/L)										
Nitrate-Nitrogen (mg/L)										
Total Organic Carbon (mg/L)										

Parameter	West Drainage from new soild waste site					West Drainage from new soild waste site				
	SNP 0555-6					SNP 0555-7				
	June	*July*	*August*	*Sept*	*Oct*	*June*	*July*	*August*	*Sep*	*Oct*
Total Phosphorous (mg/L)										
Total Petroleum Hydrocarbons (TPH) (mg/L)										
Total BTEX (mg/L)										
Total Phenols (mg/L)										
Total Polycyclic Aromatic Hydrocarbons (PAHs) (mg/L)										
Volatile Organic Compounds (VOCs) (mg/L)										
Calcium (mg/L)										
Chloride (mg/L)										
Sodium (mg/L)										
Magnesium (mg/L)										
Pottasium (mg/L)										
Total Arsenic (µg/L)										
Total Copper (µg/L)										
Total Lead										

Parameter	West Drainage from new soild waste site					West Drainage from new soild waste site				
	SNP 0555-6					SNP 0555-7				
	June	*July*	*August*	*Sept*	*Oct*	*June*	*July*	*August*	*Sep*	*Oct*
(µg/L)										
Total Zinc (µg/L)										
Total Nickel (µg/L)										
Total Mercury (µg/L)										
Total Chromium (µg/L)										
Total Cadmium (µg/L)										
Total Iron (µg/L)										
Total Cobalt (µg/L)										
Total Manganese (µg/L)										

Please record the interpretation of the results here. Please indicate if there are any exceedances with respect to the CCME guideline values.

According to Annex A, Condition 2 (a), provide a rationale if samples were not collected from this SNP stations (0555-6 and 0555-7) during any prescribed sample collection time.

Table 11 – SNP Stations 2018-1a and 2018-1b

(*According to Licence Annex A, Part C)*
2018-1a: MWll0- up-gradient (NW) of Northern Former Landfill area (APEC 7), monitors background groundwater conditions. - Three times per year at the beginning, middle and end of the open water season (i.e., one week following freshet, the last week of July and before freeze up) - To measure groundwater levels and general hydrogeological conditions and assess baseline groundwater chemistry in the vicinity of the Temporary SWF.

2018-1b: MW123 - up-gradient (NW) of abandoned sewage lagoon area (APEC 1, primary lagoon), monitors levels and general background groundwater conditions - To measure groundwater levels and general hydrogeological conditions and assess baseline groundwater chemistry in the vicinity of the abandoned sewage lagoon.

Parameter	Upgradient of Landfill Area			Upgradient of Abandoned Sewage Lagoon		
	2018-1a			2018-1b		
	Freshet	Summer	Before Freeze up	Freshet	Summer	Before Freeze up
Sample Collection Date						
pH						
Fecal Coliforms (CFU/100ml)						
Total Suspended Solids (mg/L)						
Oil and Grease (mg/L)						

Parameter	Upgradient of Landfill Area			Upgradient of Abandoned Sewage Lagoon		
	2018-1a			2018-1b		
	Freshet	Summer	Before Freeze up	Freshet	Summer	Before Freeze up
CBOD (mg/L)						
BOD (mg/L)						
Temperature (°C)						
Conductivity (S/m)						
Ammonia Nitrogen (mg/L)						
Total Nitrogen (mg/L)						
Nitrite-Nitrogen (mg/L)						
Nitrate-Nitrogen (mg/L)						
Total Organic Carbon (mg/L)						
Total Phosphorous (mg/L)						
Total Petroleum Hydrocarbons (TPH) (mg/L)						
Total BTEX (mg/L)						
Total Phenols (mg/L)						
Total Polycyclic Aromatic Hydrocarbons (PAHs) (mg/L)						

Parameter	Upgradient of Landfill Area			Upgradient of Abandoned Sewage Lagoon		
	2018-1a			2018-1b		
	Freshet	Summer	Before Freeze up	Freshet	Summer	Before Freeze up
Volatile Organic Compounds (VOCs) (mg/L)						
Calcium (mg/L)						
Chloride (mg/L)						
Sodium (mg/L)						
Magnesium (mg/L)						
Pottasium (mg/L)						
Total Arsenic (µg/L)						
Total Copper (µg/L)						
Total Lead (µg/L)						
Total Zinc (µg/L)						
Total Nickel (µg/L)						
Total Mercury (µg/L)						
Total Chromium (µg/L)						
Total Cadmium (µg/L)						
Total Iron						

Parameter	Upgradient of Landfill Area			Upgradient of Abandoned Sewage Lagoon		
	2018-1a			2018-1b		
	Freshet	Summer	Before Freeze up	Freshet	Summer	Before Freeze up
(µg/L)						
Total Cobalt (µg/L)						
Total Manganese (µg/L)						

Please record the interpretation of the results here. Please indicate if there are any exceedances with respect to the Federal Interim Groundwater Quality Guidelines.
According to Annex A, Condition 2 (a), provide a rationale if samples were not collected from this SNP stations (2018-1a and 2018-1b) during any prescribed sample collection time.

Table 12– SNP Stations 2018-2a and 2018-2b

(*According to Licence Annex A, Part C)*
To measure the extent and magnitude of groundwater leachates contamination (if any) underneath and/or migrating offsite of the Temporary SWF – Sampled three times per year at the beginning, middle and end of the open water season (i.e., one week following freshet, the last week of July and before freeze up)

2018-2a: MW102- East of APEC 7, SWF
2018-2b: MW122 - Within APEC 3 (Honey Bag Disposal Pit), east central SWF

Parameter	East of APEC 7, SWF			Within APEC 3, east central SWF		
	2018-2a			2018-2b		
	Freshet	Summer	Before Freeze up	Freshet	Summer	Before Freeze up
Sample Collection Date						
pH						
Fecal Coliforms (CFU/100ml)						
Total Suspended Solids (mg/L)						
Oil and Grease (mg/L)						
CBOD (mg/L)						
BOD (mg/L)						
Temperature (°C)						
Conductivity (S/m)						
Ammonia Nitrogen (mg/L)						
Total Nitrogen (mg/L)						
Nitrite-Nitrogen (mg/L)						
Nitrate-Nitrogen						

Parameter	East of APEC 7, SWF			Within APEC 3, east central SWF		
	2018-2a			2018-2b		
	Freshet	Summer	Before Freeze up	Freshet	Summer	Before Freeze up
(mg/L)						
Total Organic Carbon (mg/L)						
Total Phosphorous (mg/L)						
Total Petroleum Hydrocarbons (TPH) (mg/L)						
Total BTEX (mg/L)						
Total Phenols (mg/L)						
Total Polycyclic Aromatic Hydrocarbons (PAHs) (mg/L)						
Volatile Organic Compounds (VOCs) (mg/L)						
Calcium (mg/L)						
Chloride (mg/L)						
Sodium (mg/L)						
Magnesium (mg/L)						
Pottasium (mg/L)						
Total Arsenic (µg/L)						
Total						

Parameter	East of APEC 7, SWF			Within APEC 3, east central SWF		
	2018-2a			2018-2b		
	Freshet	Summer	Before Freeze up	Freshet	Summer	Before Freeze up
Copper (µg/L)						
Total Lead (µg/L)						
Total Zinc (µg/L)						
Total Nickel (µg/L)						
Total Mercury (µg/L)						
Total Chromium (µg/L)						
Total Cadmium (µg/L)						
Total Iron (µg/L)						
Total Cobalt (µg/L)						
Total Manganese (µg/L)						

Please record the interpretation of the results here. Indicate if there are any exceedances with respect to the Federal Interim Groundwater Quality Guidelines.
According to Annex A, Condition 2 (a), provide a rationale if samples were not collected from this SNP stations (2018-2a and 2018-2b) during any prescribed sample collection time.

Table 13– SNP Stations 2018-2c and 2018-2d
(*According to Licence Annex A, Part C)*
To measure the extent and magnitude of groundwater leachates contamination (if any) underneath and/or migrating offsite of the Temporary SWF.
2018-2c: MW114 - Within APEC 8 (Southern Former Landfill Area), southeast SWF
2018-2d: MW118 - Within APEC 8, south

Parameter	Within APEC 8, southeast SWF			Within APEC 8, south		
	2018-2c			2018-2d		
	Freshet	Summer	Before Freeze up	Freshet	Summer	Before Freeze up
Sample Collection Date						
pH						
Fecal Coliforms (CFU/100ml)						
Total Suspended Solids (mg/L)						
Oil and Grease						

Parameter	Within APEC 8, southeast SWF			Within APEC 8, south		
	2018-2c			2018-2d		
	Freshet	Summer	Before Freeze up	Freshet	Summer	Before Freeze up
(mg/L)						
CBOD (mg/L)						
BOD (mg/L)						
Temperature (°C)						
Conductivity (S/m)						
Ammonia Nitrogen (mg/L)						
Total Nitrogen (mg/L)						
Nitrite-Nitrogen (mg/L)						
Nitrate-Nitrogen (mg/L)						
Total Organic Carbon (mg/L)						
Total Phosphorous (mg/L)						
Total Petroleum Hydrocarbons (TPH) (mg/L)						
Total BTEX (mg/L)						
Total Phenols (mg/L)						
Total Polycyclic Aromatic Hydrocarbons (PAHs)						

Parameter	Within APEC 8, southeast SWF			Within APEC 8, south		
	2018-2c			2018-2d		
	Freshet	Summer	Before Freeze up	Freshet	Summer	Before Freeze up
(mg/L)						
Volatile Organic Compounds (VOCs) (mg/L)						
Calcium (mg/L)						
Chloride (mg/L)						
Sodium (mg/L)						
Magnesium (mg/L)						
Pottasium (mg/L)						
Total Arsenic (µg/L)						
Total Copper (µg/L)						
Total Lead (µg/L)						
Total Zinc (µg/L)						
Total Nickel (µg/L)						
Total Mercury (µg/L)						
Total Chromium (µg/L)						
Total Cadmium (µg/L)						
Total Iron (µg/L)						

Parameter	Within APEC 8, southeast SWF			Within APEC 8, south		
	2018-2c			2018-2d		
	Freshet	Summer	Before Freeze up	Freshet	Summer	Before Freeze up
Total Cobalt (µg/L)						
Total Manganese (µg/L)						

Please record the interpretation of the results here. Indicate if there are any exceedances with respect to the Federal Interim Groundwater Quality Guidelines.

According to Annex A, Condition 2 (a), provide a rationale if samples were not collected from this SNP stations (2018-2c and 2018-2d) during any prescribed sample collection time.

Table 14 – SNP Station 2018-3a

(According to Licence Annex A, Part C)

MW120 - Between APEC 1 (secondary sewage lagoon) and southwest wetland - To measure the extent and magnitude of groundwater leachates contamination (if any) underneath and/or migrating offsite of the abandoned sewage lagoon - Sampled three times per year at the beginning, middle and end of the open water season (i.e., one week following freshet, the last week of July and before freeze up)

Parameter (SNP Station 2018-3a)	Freshet	Summer	Before Freeze-up
Sample Collection Date			
pH			
Fecal Coliforms (CFU/100ml)			
Total Suspended Solids (mg/L)			
Oil and Grease (mg/L)			
CBOD (mg/L)			
BOD (mg/L)			
Temperature (°C)			
Conductivity (S/m)			
Ammonia Nitrogen (mg/L)			
Total Nitrogen (mg/L)			
Nitrite-Nitrogen (mg/L)			
Nitrate-Nitrogen (mg/L)			
Total Organic Carbon (mg/L)			
Total Phosphorous (mg/L)			
Total Petroleum Hydrocarbons			

Parameter (SNP Station 2018-3a)	Freshet	Summer	Before Freeze-up
(TPH) (mg/L)			
Total BTEX (mg/L)			
Total Phenols (mg/L)			
Total Polycyclic Aromatic Hydrocarbons (PAHs) (mg/L)			
Volatile Organic Compounds (VOCs) (mg/L)			
Calcium (mg/L)			
Chloride (mg/L)			
Sodium (mg/L)			
Magnesium (mg/L)			
Pottasium (mg/L)			
Total Arsenic (µg/L)			
Total Copper (µg/L)			
Total Lead (µg/L)			
Total Zinc (µg/L)			
Total Nickel (µg/L)			
Total Mercury (µg/L)			
Total Chromium (µg/L)			
Total Cadmium (µg/L)			

Parameter (SNP Station 2018-3a)	Freshet	Summer	Before Freeze-up
Total Iron (µg/L)			
Total Cobalt (µg/L)			
Total Manganese (µg/L)			

Please record the interpretation of the results here. Indicate if there are any exceedances with respect to the Federal Interim Groundwater Quality Guidelines.

According to Annex A, Condition 2 (a), provide a rationale if samples were not collected from this SNP station (2018-3a) during any prescribed sample collection time.

Table 15 – SNP Station 0555-1 – Recorded in Table 1

8. Tabular and Graphical Summary – All SNP Sampling data

According to Licence, Annex A, Part A, 2(b):
Graphical summaries and interpretation of the analytical results from the SNP samples collected at the points of compliance compared to the effluent quality criteria (EQC) identified in Part D (Condition 14) of this Licence.

Table 16- All SNP data compared to EQC

Parameter	EQC	SNP 0555-3	SNP 0555-4	SNP 0555-5	SNP 0555-6	SNP 0555-7	SNP 2018-1a	SNP 2018-1b	SNP 2018-2a	SNP 2018-2b	SNP 2018-2c	SNP 2018-2d	SNP 2018-3a
pH	6.0-9.0												
Fecal Coliforms (CFU/100ml)	< $1x10^4$												
TSS (mg/L)	100												
Oil & Grease (mg/L)	5 mg/L & no visible sheen												
CBOD (mg/L)	72												

`Key: TSS: Total Suspended Solids; CFU: Colony Forming Units; CBOD: Carbonaceous Biological Oxygen Demand

Please attach graphical summaries and interpretation as attachment(s):

Attachment (s) _____

9. Graphical Summary – SNP Groundwater Sampling data

According to Licence, Annex A, Part A, 2(b):
The Licensee shall submit graphical summaries and interpretation of the analytical results from the SNP groundwater samples compared to the Federal Contaminated Sites Action Plan - Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites.

Please attach graphical summaries and interpretation for SNP groundwater sampling data (2018 -1a, 1b, 2a, 2b, 2c, 2d, and 3a SNP stations) as attachment(s):

Attachment (s) _____

10. Details, such as the underlying cause or corrective measures, regarding any sample exceedances or monitoring concerns.

*(***Licence, Annex A, Part A, 2(d) and Licence, Annex A, Part B, Condition 3)**
The Licensee shall submit an explanation of any actions taken in response to any exceedances of the effluent quality criteria.
The Licensee shall regularly evaluate and interpret the results of the groundwater monitoring program. Depending upon the results of the evaluation, additional actions may be recommended.)

Any **sample exceedances, monitoring concerns and additional actions planned/executed** ?

☐ **Yes** ☐ **No**
If yes, provide details such as the underlying cause or corrective measures.

11. Copies of laboratory reports and QA/QC field sampling results (Licence, Annex A, Part A, 2 (a) and, Licence, Annex A, Part B, Condition 5).

(Licence, Annex A, Part A, 2 (a): *The licensee shall submit electronic and tabular summaries of all data and information generated under Part B of this Annex, including rationale for SNP stations where samples were not collected and results and interpretation of quality assurance/quality control procedures*).

(**Licence, Annex A, Part B, Condition 5: *Prior to the collection of SNP samples, the Licensee shall submit to the Board and an Analyst, a Quality Assurance and Quality Control Plan, which shall include both field and laboratory requirements. The Analyst shall provide a recommendation to the Board. The Licensee shall not initiate the SNP until the Analyst has approved the Plan***).

Any SNP station(s) where sample collection was not possible?

If so, please explain:

Please attach laboratory reports for SNP smpling as: **Attachment B**
Please attach and QA/QC field sampling: (provide attachment name): **Attachment ____**

12. A description of any Closure and Reclamation work completed during the year and an outline of any work anticipated for the next year (Licence, Schedule 1, Condition 10)

Any **Closure and Reclamation Work Completed** during year being reported **or** any **Closure and Reclamation Work anticipated for the next year**?

☐ **Yes** ☐ **No**

If yes, provide details as follows.

Include any abandonment and restoration details here including any work anticipated to be completed during the next year. If required, please attach any as-built drawings or reports as an Attachment to this report.

(if applicable) Attachment ____

13. A list of spills or unauthorized discharges

(Licence, Schedule 1, Condition 7: *A list and description of all Spills and Unauthorized Discharges that occurred during the previous calendar year, including the date, NWT spill number, volume, location, and summary of the circumstances and followup actions taken, and the status (i.e. open or closed), in accordance with the reporting requirements referred to in Part G of this Licence*)

List any unauthorized discharges here including any spills, how and when they were reported, and how they were cleaned up.

NT-NU Spill Reports? ☐ **Yes** ☐ **No**

If yes, please attach copies of spill reports, correspondence with the GNWT Water Licence Inspector or any other pertinent documentation as an Attachment to this report.

Attachment ____

List and summarize with relevant information (according to Schedule 1, Condition 7) on all spills and unauthorized discharges, and follow up action taken:

14. Training: Spill Training and Others
(Licence, Schedule 1, Condition 8: An outline of any spill training and/or other operator training carried out)

15. Updates or revisions to approved plans

Details on any changes to approved management plans such as the Operation and Maintenance Plan or any other that is specific to this Municipal Water Licence. Please attach documents as attachments to this report. **(Licence, Schedule 1, 1 Condition 13 (I, ii, iii, iv, v, vi))**

i) Updates or revisions to the approved Spill Contingency Plan referred to in Part G of the Licence:

☐ **Yes** ☐ **No**

If yes, provide details. Attachment _____

ii) Updates or revisions to the approved Temporary Solid Waste Disposal Operation and Maintenance Plan referred to in Part D of the Licence:

☐ **Yes** ☐ **No**

If yes, provide details. Attachment _____

iii) Updates or revisions to the approved Sewage Waste Disposal Facilities Operation and Maintenance Manual referred to in Part D of the Licence:

☐ **Yes** ☐ **No**

If yes, provide details. Attachment _____

iv) Updates or revisions to the approved Water Treatment Plant Operation and Maintenance Plan referred to in Part D of the Licence:

☐ **Yes** ☐ **No**

If yes, provide details. Attachment _____

v) Updates or revisions to the approved Solid Waste Disposal Facilities Operation and Maintenance Plan referred to in Part D of the Licence:

☐ **Yes** ☐ **No**

If yes, provide details. Attachment _____

vi) Updates or revisions to the approved Final Closure and Reclamation Plan referred to in Part H of the Licence:

☐ **Yes** ☐ **No**

If yes, provide details. Attachment _____

16. Reports Filed by Inspector

A description of actions taken to address concerns, non-conformances, or deficiencies in any reports filed by an Inspector **(Licence, Schedule 1, Condition 11).**

(If applicable) Attachment _____

17. Studies Requested by the Board

A description of any studies requested by the Board that relate to Waste Disposal, Water Use, or reclamation,and a brief description of any future studies planned **(Licence, Schedule 1, Condition 12)**

If the Board has requested that specific studies be completed, include details of the plan in this section with a summary of the outcome. Include any attachments/attachments with the submission of the Annual Report.

(If applicable) Attachment _____

18. Any other details on water use or waste disposal requested by the board by November 1 of the year being reported (Licence, Schedule 1, Condition 14).

Did the Board request additional details?

☐ **Yes** ☐ **No**

If yes, provide details

(If applicable) Attachment _____

19. Other Information

- Include any other information here that may be valuable to the SLWB or to GNWT.
- Include details on any upcoming studies that will be completed.
- If there are any contaminated soil piles currently in use (land farming), please list the details of containment, remediation and progress in this section.
- Please identify any on-going compliance issues for Deline. This can facilitate discussions to resolve the issues.

Attachments

Attachment name	Attachment	Needed every year?
A	SNP Sample Locations Map	Yes
B	Copies of laboratory reports on SNP sampling	Yes
	NT-NU Spill Reports	No
	Other attachments as required (clearly indicate the name of the Attachment in the body of the report).	As required