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July 25, 2023
File: 2019-4231

Robert Boswick, P. Eng.
Senior Environmental Engineer
Environmental Approvals Branch
Environment and Climate
Box 35 - 14 Fultz Blvd
Winnipeg, MB R3Y 0L6

Re: R.M. OF GREY - L.U.D. OF ST. CLAUDE - EAP REVIEW
TAC COMMENTS AND REQUESTS FOR ADDITIONAL INFORMATION - FILE NO. 241.50

Dear Mr. Boswick:

Please find enclosed our responses to the TAC review questions provided. Do not hesitate to ask if more information or details are required. AE responses are provided following the questions noted.

WATER QUALITY SECTION

"The Proponent proposes to remove clauses 15 and 16 from license 1666 S3 with respect to sodium chloride - salinity. To help further assess the proponent's salinity reduction program with current water quality guidelines, can the proponent please provide the laboratory results (certificate of analysis) of the effluent samples collected for the most recent discharge as per clause 12, for sodium, sodium adsorption ratio and chloride?"

Please find attached most recent lagoon sampling that has included Sodium and Chloride testing. (Previous sampling has not included these parameters). The RM will also conduct further sampling to collect SAR results as that was also never collected in samples (but and old 2014 sample shows SAR at 5.11). The recent sampling shows that Sodium and Chloride levels are elevated and higher than what is in the drinking water supply that goes to sewer. As part of the next round of sampling, the RM will collect sodium, chloride and SAR at manholes with Residential wastewater and same from a manhole with the Dairy Industry contribution. This should confirm if the elevated Sodium and Chlorine levels are from the Dairy waste stream. The question that will arise is if it should be on the Industry to manage their effluent parameters levels and not the RM on behalf of the Industry with no recompense.

We will supply the updated lab sampling once completed. This will be done as soon as RM staff are back from holidays at the beginning of August.

"The Water Quality Management Section recommends maintaining 3 mg/L of dissolved oxygen at all times in the top 2.5m of the liquid in the aerated cells."

Understood. The design will be modified to provide an aeration system then maintains 3 mg/L of dissolved oxygen at all times in the top 2.5m of liquid. This parameter can be carried through into the EAL requirements.

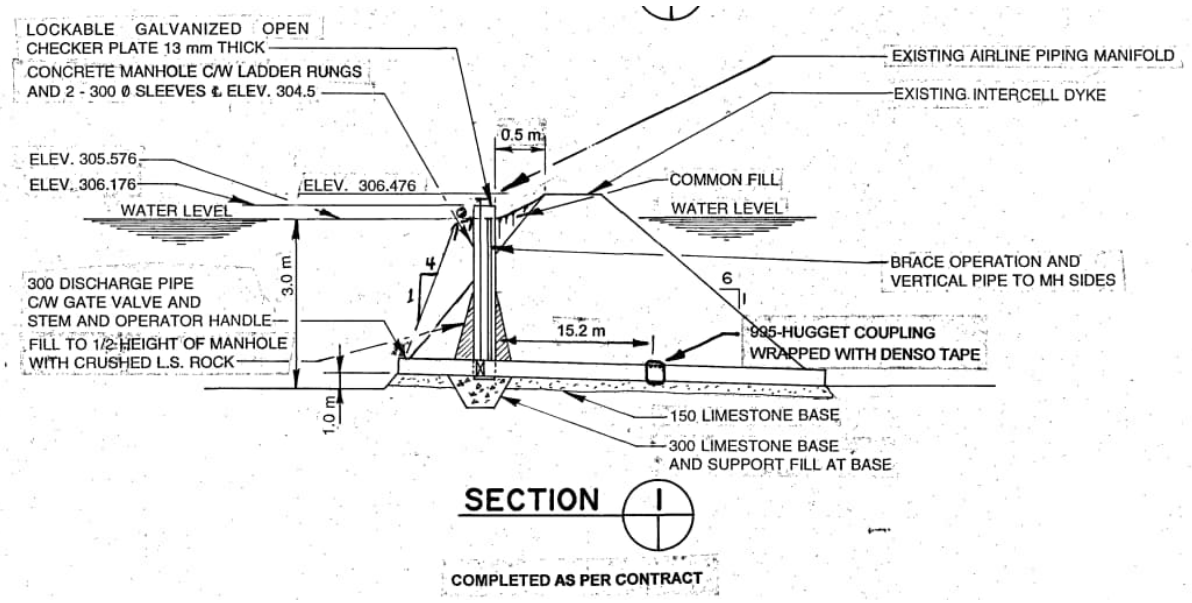
"The Water Quality Management Section is concerned with any discharges that have the potential to impact the aquatic environment and/or restrict present and future uses of the water. Therefore it is recommended that the license require the proponent to actively participate in any future watershed based management study, plan/or nutrient reduction program, approved by the Director.

The RM will be notified to actively participate in any future program as approved by the Director.

ENVIRONMENTAL COMPLIANCE AND ENFORCEMENT

"Environmental Compliance and Enforcement requests further details of the components and operations of the equipment described as "intercell manhole C/W 300 mm ø discharge piping and gate valve". The intake of this equipment appears to have a fixed intake elevation. At what elevation is the intake relative to the crest of the primary cell? When the intercell gate is closed, is there sufficient design freeboard in the primary cells to allow a period of isolated digestion in the secondary cell prior to discharge?"

Per the following detail from the 1998 Record drawings of the facility, the intake of the pipe invert from the primary cell is shown to be 2.891m below the crest of the berm top. Assuming the cell is at the full 3.0m depth, the full freeboard could provide up to ~40 days of isolation before the primary cells are to top of berms. However, only allowing only 0.5m of water level rise in the freeboard, could provide upwards of 20 days of storage in primary cells once isolated.



MTI ENVIRONMENTAL SERVICES

"Under section 3.2.3 Surface Water of the Notice of Alteration, it indicates surface run off may be redirected and accumulated water may be pumped into adjacent ditches. We would like to see clarification on how the surface run-off will be redirected, and how this surface run-off can be managed within the property to prevent sediment flow into the adjacent ditches from the redirection and pumping of water, in addition to maximum flow rates. Also, MTI won't allow drainage/release of any contaminated fluids or solids into highway ditches."

The statement was more related to unforeseen events like a storm and the potential need to manage site water accumulation. The general project is not significantly changing the existing site drainage, but there will be some temporary stockpiles and berm construction that could temporarily change surface run off patterns. A heavy storm even could also create some localized standing water on site and prevent access for the construction. In these events some pumping may be required to dry the areas in need of access. To mitigate the impacts to MTI drainage ditches, we can re-direct these flows to other parts of the lagoon site areas owned by the RM and not directly to ditches. We would also require the contractors to install silt fencing and erosion protection in areas where it could impact the local ditches.

"With regards to the Environmental Act Proposal, any temporary piping placed in or across MTI jurisdiction will require approval from MTI prior to placement within MTI lands"

Approval will be submitted for this crossing. The RM has been discussing the crossing with MTI for the last few years as well.

Yours truly

[redacted]

Manager, Water

KEA

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1477300-1 ST CLAUDE LAGOON - DISCHARGE CELL							
Sampled By: CLIENT on 25-JUN-14 @ 12:00							
Matrix: Sewage/Waste Water							
Miscellaneous Parameters							
Biochemical Oxygen Demand	<6.0		6.0	mg/L		26-JUN-14	R2876594
BOD Carbonaceous	<6.0		6.0	mg/L		26-JUN-14	R2876594
Conductivity	1390		20	umhos/cm		27-JUN-14	R2874726
Phosphorus (P)-Total	13.2	DLA	0.050	mg/L		27-JUN-14	R2874568
Total Suspended Solids	6.0		5.0	mg/L		27-JUN-14	R2875948
pH	8.15		0.10	pH units		27-JUN-14	R2874726
Nitrogen Total							
Nitrate as N by Ion Chromatography							
Nitrate-N	<0.050		0.050	mg/L		26-JUN-14	R2875775
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		30-JUN-14	
Nitrite as N by Ion Chromatography							
Nitrite-N	<0.050		0.050	mg/L		26-JUN-14	R2875775
Total Kjeldahl Nitrogen							
Total Kjeldahl Nitrogen	25.6	DLA	2.0	mg/L	30-JUN-14	02-JUL-14	R2876996
Total Nitrogen Calculated							
Total Nitrogen	25.6		2.0	mg/L		02-JUL-14	
Un-ionized Ammonia at 15C WSER							
Ammonia by colour							
monia, Total (as N)	19.9	DLA	1.0	mg/L		03-JUL-14	R2878454
Un-ionized Ammonia at 15C, WSER							
Ammonia, Un-ionized (as N), 15C, WSER	0.565		0.028	mg/L		04-JUL-14	
pH in Water (at 15C)							
pH at 15C, WSER	8.03		0.10	pH		28-JUN-14	R2875334
Sodium Adsorption Ratio							
Sodium Adsorption Ratio							
Sodium Adsorption Ratio	5.11		0.030			05-JUL-14	
Total Metals by ICP-MS							
Calcium (Ca)-Total	65.5		0.20	mg/L	04-JUL-14	04-JUL-14	R2879113
Magnesium (Mg)-Total	28.0		0.050	mg/L	04-JUL-14	04-JUL-14	R2879113
Sodium (Na)-Total	196		0.050	mg/L	04-JUL-14	04-JUL-14	R2879113
L1477300-2 ST CLAUDE LAGOON - NE CORNER OF DISCHARGE CELL							
Sampled By: CLIENT on 25-JUN-14 @ 12:00							
Matrix: Sewage/Waste Water							
Miscellaneous Parameters							
Fecal Coliforms	<30		30	MPN/100mL		03-JUL-14	R2878564
Total Coliforms	40		30	MPN/100mL		03-JUL-14	R2878564
L1477300-3 ST CLAUDE LAGOON - NW CORNER OF DISCHARGE CELL							
Sampled By: CLIENT on 25-JUN-14 @ 12:00							
Matrix: Sewage/Waste Water							
Miscellaneous Parameters							
Fecal Coliforms	<30		30	MPN/100mL		03-JUL-14	R2878564
Total Coliforms	2400		30	MPN/100mL		03-JUL-14	R2878564
L1477300-4 ST CLAUDE LAGOON - SE CORNER OF DISCHARGE CELL							
Sampled By: CLIENT on 25-JUN-14 @ 12:00							
Matrix: Sewage/Waste Water							
Miscellaneous Parameters							
Fecal Coliforms	<30		30	MPN/100mL		03-JUL-14	R2878564
Total Coliforms	4600		30	MPN/100mL		03-JUL-14	R2878564

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Analytical Results

Sub-Matrix: **Wastewater**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: ST CLAUDE LAGOON - MIDDLE	----	----	----	----
					Client sampling date / time: 11-Oct-2022 11:00	----	----	----	----
					WP2204226-001	--------	--------	--------	--------
					Result	----	----	----	----
Physical Tests									
solids, total suspended [TSS]	----	E160	3.0	mg/L	12.2	----	----	----	----
pH @ 15°C (WSER)	----	E108A	0.10	pH units	8.52	----	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E303	0.010	mg/L	10.3	----	----	----	----
ammonia, un-ionized (as N), 15C (WSER)	7664-41-7	EC298	0.0010	mg/L	0.853	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L	109	----	----	----	----
phosphorus, total	7723-14-0	E372	0.020	mg/L	3.31	----	----	----	----
Aggregate Organics									
biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	11.5	----	----	----	----
carbonaceous biochemical oxygen demand [CBOD]	----	E555	2.0	mg/L	11.5 BODP	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Wastewater**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	ST. CLAUDE LAGOON CELL 1	ST. CLAUDE LAGOON CELL 2	ST. CLAUDE LAGOON CELL 3 STORAGE	----	----
					Client sampling date / time	01-Jun-2023 09:45	01-Jun-2023 10:00	01-Jun-2023 10:15	----	----
						WP2310412-001	WP2310412-002	WP2310412-003	--------	--------
						Result	Result	Result	----	----
Physical Tests										
Solids, total suspended [TSS]	----	E160/WP	3.0	mg/L		----	----	78.3	----	----
pH @ 15°C (WSER)	----	E108A/WP	0.10	pH units		7.61	7.87	8.16	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E303/WP	0.010	mg/L		39.1	33.1	40.2	----	----
Ammonia, un-ionized (as N), 15°C (WSER)	7664-41-7	EC298/WP	0.0010	mg/L		0.430	0.656	1.52	----	----
Chloride	16887-00-6	E235.Cl/WP	0.50	mg/L		109	100	105	----	----
Kjeldahl nitrogen, total [TKN]	----	E319/WP	0.15	mg/L		52.8	49.6	39.1	----	----
Nitrate (as N)	14797-55-8	E235.NO3/WP	0.020	mg/L		<0.100 DLM	<0.100 DLM	<0.100 DLM	----	----
Nitrate + Nitrite (as N)	----	EC235.N+N/WP	0.0050	mg/L		<0.112	<0.112	<0.112	----	----
Nitrite (as N)	14797-65-0	E235.NO2/WP	0.010	mg/L		<0.050 DLM	<0.050 DLM	<0.050 DLM	----	----
Nitrogen, total	7727-37-9	EC368/WP	0.050	mg/L		52.8	49.6	39.1	----	----
Phosphorus, total	7723-14-0	E372/WP	0.020	mg/L		9.42	9.03	8.52	----	----
Phosphorus, total dissolved	7723-14-0	E375-H/WP	0.020	mg/L		8.31	7.34	6.93	----	----
Phosphorus, total reactive	----	E383/WP	0.0030	mg/L		8.40	7.02	7.38	----	----
Total Metals										
Sodium, total	7440-23-5	E420/WP	0.050	mg/L		146	138	164	----	----
Aggregate Organics										
Biochemical oxygen demand [BOD]	----	E550/WP	2.0	mg/L		339	258	----	----	----
Chemical oxygen demand [COD]	----	E559-L/WP	10	mg/L		438	333	548	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.