

Memo



To: City of Iqaluit, CO Alan Rustom, Colliers Project Leaders

From: Keith Barnes, P.Eng.

cc: Scott Kyle, P.Eng., Kyle MacIntyre, P.Eng., Matt Balcombe, P.Eng., Christopher Shortall, P.Eng., Helen Langille, P.Eng.

Date: December 15, 2020

Subject: November 2020 Regulator (ECCC/CIRNAC) Comments Iqaluit Landfill and Waste Transfer Station Project 3AM-IQA1626 - Responses

Our File: File 19-9543

Dillon Consulting (Dillon) is currently engaged to provide detailed design services to the City of Iqaluit (the City) for a new landfill facility as well as a waste transfer station and leachate treatment system. This memo is a response to comments received November 26, 2020 from Environment and Climate Change Canada (ECCC) and from Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) regarding Nunavut Water Board (NWB) water license application #3AM-IQA1626 design package as submitted in January 2020. The regulator comments are attached in Addendum A – November Regulator Comments.

The regulator comments and questions from Environment and Climate Change Canada are summarized in the attached **Table 1**, with comments and questions from Crown Indigenous Relations and Northern Affairs Canada in **Table 2**. There are several questions which required response in greater detail than could reasonably be included in the table; and are included in the supplemental documents as indicated in **Table 1** and **Table 2**.

Responses to comments and commitments considered resolved have been addressed in previous submissions and are therefore not included detail in this package.

Table 1: Regulator Comments and Commitments - Environment and Climate Change Canada

Commitment Number	Topic	Recommendation	Response	Status
1	Baseline Monitoring	The Proponent's response is acceptable. ECCC has no further comments on this topic.	The Proponent's response is acceptable. ECCC has no further comments on this topic.	Resolved
2	Unbaled waste	The Proponent's response is acceptable. ECCC has no further comments on this topic.	The Proponent's response is acceptable. ECCC has no further comments on this topic.	Resolved
3	Acid Rock Drainage/Metal Leaching (ARD/ML)	The Proponent's response is acceptable. ECCC has no further comments on this topic.	The Proponent's response is acceptable. ECCC has no further comments on this topic.	Resolved
4	Leachate treatment – Landfill	ECCC recommends that the proponent identify treatment options beyond the existing system, and determine the lead-time needed to install and commission the treatment system. ECCC suggests this recommendation could be resolved by inclusion of a licence condition that requires the City of Iqaluit to (1) characterize the leachate and (2) submit a treatment plan for Board approval.	ECCC recommends that the Proponent clarify whether a licence condition will be requested by the City of Iqaluit to resolve Commitment 4	License condition to be requested by the Proponent.
5	Leachate treatment – Landfill	The Proponent's response is acceptable. ECCC has no further comments on this topic.	The Proponent's response is acceptable. ECCC has no further comments on this topic.	Resolved
6	Groundwater	ECCC recommends that the EPP - Operations, Closure and Post-Closure Phases document also describe the contingency mitigations that will be available, should monitoring results indicate the migration (or possible migration) of contaminant(s) into groundwater.	The EPP Operations, Closure, and Post-Closure Phases document has been updated to include Section 6.3 – Suspected Groundwater Contamination Response Measures	Updated Environmental Protection Plan – Operations, Closure, and Post-Closure Phases document included in submission package.
7	Environmental Protection Plans, Section 4.0	The Proponent's response is acceptable. ECCC has no further comments on this topic.	The Proponent's response is acceptable. ECCC has no further comments on this topic.	Resolved
8	Environmental Protection Plans, Section 5.0 (Monitoring and Inspection)	ECCC provides the following recommendations for Section 5.0 of the EPP - Construction Phase document, with respect to the monitoring and inspection activities to be included in the site-specific Construction Monitoring Plan: <ul style="list-style-type: none">• Incorporate the sediment and TSS/turbidity monitoring requirements from Section 4.3 (Surface Water Mitigation Measures and Best Management Practices) of the updated Erosion and Sediment Control Plan.• Revise the final bullet of the Construction Monitoring Plan requirements as follows:<ul style="list-style-type: none">○ Replace the phrase “inspect the water for any signs of contaminants”	Section 5.0 of the Environmental Protection Plan – Construction Phase document has been updated as recommended	Updated Environmental Protection Plan – Construction Phase document included in submission

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		<p>with “inspect the water for any visible sheen or debris”; and</p> <ul style="list-style-type: none"> Identify appropriate thresholds for terrestrial discharges. 		
9	Total Suspended Solids	The Proponent's response is acceptable. ECCC has no further comments on this topic.	The Proponent's response is acceptable. ECCC has no further comments on this topic.	Resolved
10	Visual Monitoring	The Proponent's response is acceptable. ECCC has no further comments on this topic.	The Proponent's response is acceptable. ECCC has no further comments on this topic.	Resolved
11	Landfill surface monitoring	The Proponent's response is acceptable. ECCC has no further comments on this topic.	The Proponent's response is acceptable. ECCC has no further comments on this topic.	Resolved
12	Groundwater Monitoring	<p>ECCC recommends that the proponent:</p> <ul style="list-style-type: none"> Include the monitoring of dissolved metals, in addition to total metals, for groundwater samples; and Incorporate a description of how the groundwater monitoring results will be assessed 	ECCC recommends that the groundwater monitoring parameters listed in Section 3.6 (Active Layer Groundwater Monitoring) of the Facility Monitoring Plan be updated to include both total metals and dissolved metals, rather than simply ‘metals’.	Updated Facility Monitoring Plan document provided in submission package.
13	Effluent Discharge	It is unclear whether the option “Discharge to the level spreader under the approval and monitoring of the NWB” is the same or different as the contingency described as “controlled release of effluent to a gravel bed diffuser”. Both of these potential leachate management options are included in Section 12.2 (Landfill) of the revised Operations and Maintenance Manual.	ECCC recommends that the Proponent clarify the description of these two options. Section 12.2 (Landfill) of the revised Operations and Maintenance Manual (Version 4.0) includes a list of landfill leachate monitoring parameters, as does the updated Section 3.8 (Effluent Discharge Limits) of the Facility Monitoring Plan. ECCC notes that ‘total phenols’ is listed in the revised O&M manual list, but not in the FMP list. ECCC recommends that Section 3.8 (Effluent Discharge Limits) of the Facility Monitoring Plan be updated to include ‘total phenols’ in the list of landfill leachate monitoring parameters.	Updated Operations and Maintenance Manual and Facility Monitoring Plan provided in submission package
14	Leachate Management – Landfill	ECCC requests that the City provide the updated Section 12.2 of the Operations and Maintenance Manual for review.	ECCC’s comments and recommendations regarding the Proponent’s response to Commitment 13 also apply to the response to Commitment 14.	
15	Leachate Management – Waste Transfer Station (WTS)	It is unclear whether WTS leachate will necessarily be characterized to ensure compatibility with the WWTP treatment process, as the response indicates that WTS leachate should be characterized at the request of the WWTP operator.	Given the risk of upsetting the treatment plant, ECCC recommends that WTS leachate be characterized prior to transfer to the WWTP until compatibility is confirmed, and that the O&M manual include wording to this effect.	Updated Operations and Maintenance Manual document provided in the submission package
16	Liner installation and timing	The Proponent's response is acceptable. ECCC has no further comments on this topic.	The Proponent's response is acceptable. ECCC has no further comments on this topic.	Resolved
17	New Technology and Lessons Learned	ECCC requests that the City provide the outstanding information for review, and suggests that the Proponent contact the City of Yellowknife to see if there are common elements in the proposed system that may lead to problems.	It is unclear how the revised Operations and Maintenance Manual addresses Commitment 17. ECCC requests that the Proponent clarify which sections of the O&M manual pertain to the following aspects of	Updated Operations and Maintenance Manual document

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			<p>ECCC’s recommendation:</p> <ul style="list-style-type: none"> • Identify and describe measures to prevent/mitigate the challenges described (i.e., substantial volumes of poor quality leachate, and down time during mechanical breakdowns and for maintenance), and discuss their anticipated effectiveness; • Describe how the effectiveness of these prevention/mitigation measures will be monitored; and • Document lessons-learned to inform subsequent stages of construction and operation. ECCC also requests that the Proponent provide an update regarding the discussion referenced on page 251 of the Commitment Response document. 	<p>provided in the submission package.</p> <p>Additional clarifying information is provided in the Commitment 17 Supplemental Information document included in the submission package</p>

Table 2: Regulator Comments - Crown-Indigenous Relations and Northern Affairs Canada

Comment Number	Topic	Recommendation/Comment	Resolution Status (November 26)	Response
1	Reclamation of West 40 Landfill	Resolved	Resolved	Resolved
2	Runoff from Baled Waste at Transfer Station	<ul style="list-style-type: none"> i. CIRNAC recommends that the City clarify whether the sump is shown in other drawings, and if so, direct CIRNAC to the relevant drawing(s). ii. CIRNAC recommends that the NWB include a condition in amended water licence to require that all water collected from the transfer station floor, produced by baling operations or by waste storage, be treated as leachate rather than being discharged to offsite drainage systems. iii. CIRNAC recommends that the City clarify whether there is a strategy for separating baled and unbaled waste, and if not, how the integrity of the bale wrap will be maintained. iv. CIRNAC recommends that the NWB include a condition in an amended water licence to require that the City review the O&M Manual on an annual basis, and make revisions to the O&M Manual based on any changes to operational practices that vary from the current iteration or version of the manual, derived from operational experience gained with the balefill. 	Partially Resolved	<ul style="list-style-type: none"> i. The sump is shown in plan on Sheet WTS-C02 and in the detail “Bale Storage Area Sump Detail” on Sheet WTS-C05 in the 100% drawings included in the submission package ii. This is addressed in Section 12.1 of the updated Operations and Maintenance Manual document included in the submission package iii. Additional clarifying information is provided in the CIRNAC Comment 2.iii. and Comment 10.1 Supplemental Information document included in the submission package iv. License condition to be requested
3	Landfill Leachate Treatment	<ul style="list-style-type: none"> i. CIRNAC recommends that that the NWB include a condition in an amended water licence to require the City conduct ongoing monitoring of quality and leachate levels, that discharge events are recorded if and when they occur 	Unresolved	<ul style="list-style-type: none"> i. License condition to be requested ii. Updated Operations and Maintenance Manual document included in the submission package

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		(volume, leachate quality), and that results be reported as part of the Annual Report. ii. CIRNAC recommends that the City provide a status update on whether current leachate management is expected to be adequate for the future based on leachate quality trends to date as part of each Annual Report.		
4.1	Landfill Leachate Collection	i. CIRNAC recommends that the City consider leachate collection system designs that focus on robustness and resiliency, so it can work during freshet when environmental risk is highest. ii. CIRNAC recommends that the O&M Manual provide guidance on how leachate may flow and which areas should not be obstructed.	Partially Resolved	i. Drawings presented on Sheets LF-C11, LF-C16, and LF-C21 include landfill leachate collection system details. ii. Updated Operations and Maintenance Manual document included in the submission package.
4.2	Landfill Leachate Collection	CIRNAC recommends that the City clarify the rationale for placing a manhole in Cell 1, and how the sump will be removed to ensure leachate flow to the sump in Cell 4.	Unresolved	The manhole serves as a dedicated location where the leachate pumps and floats can be located, please see the Section-Leachate Collection Sump detail on Sheet LF-C21 and the Manhole Detail on Sheet LF-C22 in the 100% drawings included in the submission package. Sheet LF-C16 in the 100% drawings included in the submission package with a note in Cell 1 describing how the sump is to be infilled with Granular B material when Cell 4 is constructed.
4.3	Landfill Leachate Collection	Resolved	Resolved	Resolved
4.4	Landfill Leachate Collection	CIRNAC recommends that the City clarify the significance of the elevations which are annotated in Drawing LF-C16, and clarify whether the low point in cell 10 to the north of the sump is still in place.	Partially Resolved	Section 7A on Sheet LF-C19 in the 100% drawings included in the submission package illustrates the regrading along the Separation Berm to intercept flow and direct the flow to the Cell 10 sump.
5.1	Landfill Leachate Collection	CIRNAC recommends that the City provided the entire drawing set as a single document.	Partially Resolved	Refer to the 100% Drawings document included in the submission package
5.2	Landfill Leachate Collection	Resolved	Resolved	Resolved
5.3	Landfill Leachate Collection	Resolved	Partially Resolved	An updated EPP Erosion and Sediment Control document is included in the submission package
6	Fencing	CIRNAC recommends that the City provide rationale for why erosion control features were not deemed necessary on both sides of the leachate lagoon access road, and clarify how the runoff north of the end of the west access road is captured and conveyed.	Partially Resolved	Refer to the 100% Drawings document included in the submission package Erosion control features are identified on Sheet LF-C03. For the Leachate Lagoons Access Road, erosion control features were located west of the access road to address potential runoff. East of the road (please refer to Sheet LF-C14) are sediment traps.

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				<p>Also, the development of the lagoons and the area for a potential future leachate treatment area would not be conducive to the installation of erosion control features. So, the features were located on the south and east of the lagoons as presented on Sheet LF-C03.</p> <p>For the West Perimeter Road, please refer to Sheet LF-C05.</p> <p>Runoff north the end of the road will be captured in the Cell 1 Ditch, please refer to Sheet LF-C08 for the profile of the ditch.</p>
6.1	Fencing	CIRNAC recommends that the City implement a strategy to prevent wildlife from entering the leachate ponds.	Partially Resolved	Refer to the 100% Drawings document included in the submission package Sheet LF-C14 identifies a perimeter fence and a gate around the Leachate Lagoons, the Attendants Trailer and the Leachate Lagoons Road.
7.1	Permafrost Considerations	CIRNAC recommends that the City provide design reports, construction drawings, or construction specifications that demonstrate how the design and construction will minimize impacts on permafrost.	Unresolved	Pending – planned submission January 2021
7.2	Permafrost Considerations	CIRNAC recommends that the City clarify whether the leachate ponds have been designed on fill only pads with no cuts into the original ground within the footprint of the lagoons.	Partially Resolved	Refer to the 100% Drawings document included in the submission package Sheet LF-C16 identifies the cuts associated with the construction of the lagoons.
7.3	Permafrost Considerations	CIRNAC recommends that that the NWB include a condition in an amended water licence to require that the City provide its plan for long-term ground temperature monitoring for the facility, once the thermistor locations in the final design are decided. This plan should include the design locations of the thermistor string installations, the purpose of collecting round temperature data, and how the data will be used for operating the facility."	Partially Resolved	License condition will be requested.
7.4	Permafrost Considerations	CIRNAC recommends that the City provide a mitigation plan for an event in which heat is generated from decomposing municipal bale waste, as part of the long-term ground temperature monitoring plan recommended in comment 7.3	Unresolved	Pending – planned submission January 2021
8	Waste Transfer Station Geotechnical Report	CIRNAC was unable to locate the report titled “City of Iqaluit Geotechnical Investigation Proposed Waste Transfer Station Lots 3586 228/17/18/20 and 3480 220 1 Iqaluit, Nunavut, October 2018” referred to in the Method Statement of Construction Report, and recommended that the City identify where this report can be found. The City has yet to provide the Waste Transfer Station geotechnical report. This Commitment remains outstanding.	Unresolved	City of Iqaluit will provide geotechnical report dated October 2018
9	Landfill Design Drawings	CIRNAC recommends that the City commit to providing provide for review, at least 60 days prior to work being undertaken, the proposed cut methodology for	Partially Resolved	The proponent will commit to this.

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		mitigating permafrost degradation.		
10.1	Operations	CIRNAC has provided its recommendation under comment 2 for a review of the O&M Manual on an annual basis.	Partially Resolved	An updated Operations and Maintenance Manual document is included in the submission package. Additional clarifying information is provided in the CIRNAC Comment 2.iii. and Comment 10.1 Supplemental Information document included in the submission package
10.2	Operations	CIRNAC recommends that the City develop procedures for packaging, storage, and shipment of HHW, and include the procedures in the O&M Manual as part of its annual review.	Partially Resolved	License condition will be requested.
10.3	Operations	CIRNAC recommends that an amended water licence include leachate head monitoring frequency.	Partially Resolved	Refer to Section 4.2.5 and Section 12.2 of the Updated Operations and Maintenance Manual document included in the submission Refer to Sheet LF-C16 in the 100% Drawings document included in the submission package for details of the manhole and floats. License condition will be requested.
10.4	Operations	Resolved	Resolved	Resolved