

City of Fredericton

Environmental Impact Assessment Registration

Type of Document:

Preliminary

Project Name:

Lincoln Lagoon Decommissioning

Project Number:

FRE-00235978-A0

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Date Submitted:

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Chapter 1 – The Proponent

1 **The Proponent**

1.1 **Proponent Name**

City of Fredericton

1.2 **Address of the Proponent**

The City of Fredericton
397 Queen Street
Fredericton, NB E3B 1B5

1.3 **Manager – Engineering & Operations**

Sean Lee, City of Fredericton

1.4 **Principal Contact for Purposes of EIA Assessment**

Cyril Hawkins, P.Eng., Senior Engineer – Design

1.5 **Property Ownership**

Property owned by The City of Fredericton

Chapter 2 – The Undertaking

2 The Undertaking

2.1 Name of the Undertaking

The City of Fredericton, Lincoln Lagoon Decommissioning Project

2.2 Project Overview

The City of Fredericton currently uses the Lincoln Lagoon to treat municipal wastewater generated in the Lincoln Heights area and some light commercial/industrial wastewater from the Vanier Industrial Park. At the present time, the facility is discharging the treated wastewater to the Saint John River. However, the Lincoln Lagoon has been experiencing higher loadings in recent years due to continued growth in the area and can, at times, struggle to meet discharge limits.

As a result, the City decided to reduce the loading on the Lincoln Lagoon by diverting some flow to the Barkers Point Wastewater Treatment Facility. This will be accomplished through a separate construction project to build a new forcemain to divert a majority of the flow to the existing collection system that ultimately feeds the central treatment plant. This option will enhance the quality of the treated wastewater since the Barkers Point Facility was built to handle these additional flows. The diversion would also significantly reduce loading to the Lincoln Lagoon should it remain in operation.

As a secondary benefit, this flow diversion project has opened up the opportunity to completely decommission the Lincoln Lagoon in a subsequent project and reinstate the property to natural conditions. The existing property driveway would also be removed to prevent future access to the vacant lot once the Lagoon is decommissioned.

The objective of this registration document is to present the project in sufficient details to facilitate approval by the Department of Environment. The City of Fredericton understands that the primary objective of this project is to ensure proper decommissioning of the lagoon and that the remaining system meets the Environmental Protection Guidelines for Effluent Discharge.

2.3 Purpose/Rationale/Need for the Undertaking

The Lincoln Lagoon has occasionally struggled to meet discharge limits due to increasing population resulting in higher system loading. The system, in its current design, would also struggle to meet the requirements of the new Wastewater Systems Effluent Regulations (WSER) under the Federal Fisheries Act. Previous work through other projects in the area has opened up the possibility to treat the wastewater at the Barkers Point Wastewater Treatment Facility, and as a result, the Lincoln Lagoon will be decommissioned. This will present an opportunity for improving the wastewater treatment and help the City meet the discharge guidelines since the Barkers Point Wastewater Treatment Facility is designed to handle this additional flow and meet the WSER requirements. Also, this project will further centralize the treatment of wastewater in Fredericton and promote an overall higher quality of material discharged to the receiving body of water and an overall reduced impact on the environment.

2.4 Project Location

The Lincoln Lagoon is located off the Vanier Industrial Drive in Lincoln, NB. The Lagoon is situated on two large parcels of land (PID 60000791 and 60000650) located near Lincoln Heights. The decommissioning work will mostly take part on PID 60000791 as this is where the Lagoon is physically located, however some work will take place on the second parcel to close up the driveway and prevent access to the vacant lot in the future. **Figure 1** on the following page presents a property map from GeoNB showing the current location of the Lincoln Lagoon.

2.5 Siting Considerations

The current location of the Lincoln Lagoon is not within sensitive land areas. Furthermore, the Lagoon is not within existing or proposed *Wellfield Protected Areas* and *Watershed Protected Areas*. Lastly, from GeoNB, the Lagoon was not observed to be located within a 1:20 year floodplain. Please refer to **Figure 2** in the following pages depicting the floodplains.



Figure 1 - Project Location



Figure 2 – Flood Risk Areas

2.6 Physical Components and Description of the Project

2.6.1 Project Overview

The City of Fredericton has decided to decommission the Lincoln Lagoon since an adjacent project has made this to be a viable option. The wastewater is being diverted to Barkers Point Wastewater Treatment Facility, which is a conventional Activated Sludge treatment facility. Further information and details on this project are presented in subsequent sections of this document. Please refer to Appendix A for the Site Plan Drawing.

2.6.2 Site Dimensions

The Lincoln Lagoon is irregularly shaped as can be seen in **Figure 3** below. The following dimensions were approximated with GeoNB. The Lagoon covers an area of approximately 5,650 m² (1.4 acres), and has a perimeter of 280 m. Note that the Lagoon itself has a volume of 21,900 m³. The total work area for the Lagoon Decommissioning would cover an approximate area of 19,000 m² (4.7 acres), with an approximate perimeter of 525 m. This work area includes space for removing the berm as well as the security fencing.



Figure 3 - Site Layout

2.6.3 Off-site Facilities Affected

Any waste sludge removed from the Lagoon during the decommissioning process would be disposed of at a Provincially approved facility. Composting is the preferred method of disposal and efforts will be made to utilize a local facility to minimize hauling distances as much as possible. Any solid waste would be disposed of at a Provincially approved solid waste disposal facility.

2.7 Construction Details

2.7.1 Details and Duration of Construction

It is estimated that the total demolition period for this project (Lincoln Lagoon Decommissioning) would be in the range of 1 to 2 months. It is anticipated that this project would begin in late summer/early fall of 2017.

The general steps required for full decommissioning would include the following:

1. Tie-in gravity line from the Vanier Park to the Lincoln Lagoon's effluent outfall.
2. If required to better facilitate dewatering operations, the lagoon can be partially drained using the existing effluent line. Through a separate project, this line will be tied into the Aquarius Lift Station and ultimately conveyed to the Barker's Point treatment facility.
3. Centrifuge Dewatering of waste sludge (or other appropriate mechanical dewatering method) using a qualified subcontractor with portable dewatering equipment.
4. Sludge disposed of at an approved compost or landfill facility such as Envirem (the City currently disposes of dewatered waste sludge material from other plants at this facility).
5. Waste liquid in lagoon to be drained through the lagoon outfall and pumped via Aquarius Lift Station as much as possible.
6. Remaining liquid to be vacuum trucked out and treated at the Barker's Point Facility.
7. Break up clay liner, drill some holes to prevent future pooling of storm water.
8. Backfill lagoon with soil from berms. A site grading plan will be developed as part of the detailed design that will include a drainage plan for surface water.
9. The site will be left in a natural state and allowed to naturally revegetate. Some hydro-seeding may be required on slopes to avoid siltation.

2.7.2 Estimated Hours of Construction

The estimated hours of construction are from 7 am to 7 pm, Monday to Friday.

2.7.3 Construction Equipment and Procedures Required

The following is a list of potential equipment that could be used during the construction phase of the project.

- Excavator – pipe trenching, general excavation;
- Bulldozer – site grading, backfilling, landscaping;
- Dump trucks – hauling of dewatered sludge material off-site;
- Portable mechanical dewatering unit (truck);
- Various trucks (single axle, tandem axle, semi-trailer) – deliveries as required;
- Small equipment (plate tampers, generators, power tools) as required.

2.7.4 Start-date for Construction

No official start-date for construction has been identified by The City of Fredericton. However, current plans would see construction begin as early as late summer/early fall 2017.

2.7.5 Identify Pollutants During Construction Period

“Pollutants” during the construction period will include noise (from construction equipment – there should be no need for blasting), dust, stormwater runoff, waste sludge, and solid waste material from demolition debris. There should be little to no hazardous waste generated during construction.

2.7.6 Ultimate Fate of Wastes

Wastewater currently treated in the Lincoln Lagoon will be permanently re-directed to the Barkers Point Wastewater Treatment Facility. Solid waste material that can't be recycled, resulting from the decommissioning project, will be landfilled at an approved facility. Waste sludge from the Lagoon will be disposed of at a Provincially approved compost facility or landfill.

2.7.7 Site Access During Construction

The Lincoln Lagoon site will be accessed through the only driveway access via Vanier Industrial Drive. Once the project is completed, site access will be permanently removed.

2.7.8 Clearing/Grubbing Details and Fate of Timber

Clearing/Grubbing is not applicable for this decommissioning project as it is an existing site. Natural revegetation will be allowed to take place at the site post decommissioning. Hydro-seed may be applied where applicable.

2.7.9 Origin of Any Required Fill

Fill (such as gravel and/or soil) is not expected to be required to re-grade the Lagoon as the material from the berms will be used and is expected to be sufficient. In the event that supplemental fill is required, it will be sourced locally.

2.7.10 Description of Activities Near Wetland, Watercourse, or Natural Habitat

No anticipated activities within the designated boundaries of any watercourse or wetland. As the project progresses, if any unforeseen work is identified that encroaches on an existing watercourse, a Wetland and Watercourse Alteration (WAWA) application will be filed with NB Department of Environment.

2.8 Operation and Maintenance Details

These details are not applicable to the decommissioning of the Lincoln Lagoon as the flow is diverted in totality to the Barkers Point Wastewater Treatment Facility. This treatment facility is well established and is operated under the City of Fredericton. The facility is capable of meeting the WSER requirements.

2.8.1 Capacity of Pumps/Pipelines Carrying Water

The Aquarius Lift Station will have a pumping capacity of 58 L/s and a new 300 mm Ø force main. This lift station will be designed to pump in totality the wastewater from the Vanier Industrial Park to the Barker Point Wastewater Treatment Plant.

2.8.2 Project Energy Requirements

The project energy requirements are expected to be 0 kWh after the decommissioning is completed as there are no electrical requirements involved.

2.8.3 Point of Discharge into Receiving Environment

The diverted flow from the Lincoln Lagoon will be pumped by the Aquarius Lift Station to the Barkers Point Wastewater Treatment Facility, which was designed to handle additional flow. The treated effluent leaves the Barkers Point facility via the existing effluent outfall and discharges into the Nashwaak River. Ultimately, the Nashwaak River dumps into the Saint John River.

2.8.4 Disinfection Facilities

The Barkers Point Wastewater Treatment Facility is a Conventional Activated Sludge (CAS) Facility with a UV Disinfection System.

2.8.5 Discharge Mode (Batch or Continuous)

The Barkers Point Wastewater Treatment Facility discharges treated effluent in a continuous discharge flow mode.

2.8.6 Pump/Lift Stations Required

The Aquarius Lift Station is already in place thus no additional pumping capacity will be required to convey the wastewater from the Vanier Industrial Park to Barkers Point Wastewater Treatment Facility.

2.8.7 Design Characteristics of Treated Effluent

The diverted wastewater will be treated at the Barkers Point facility and will be subject to the operating discharge limits which meet the WSER requirements. The treatment facility is designed to handle additional flow and the facility is expected to continue meeting its operating limits following this project. Furthermore, the diverted flow is mostly residential wastewater with small volumes of light commercial/industrial wastewater.

2.8.8 Design Characteristics of Raw Influent

The diverted wastewater, mostly residential wastewater with small volumes of light industrial wastewater, will be treated at the Barkers Point facility which was designed to handle additional flow. The treatment facility is expected to handle this additional flow without any issues.

2.8.9 Maintenance Responsibility

All wastewater infrastructure accepting the diverted wastewater flow from the Lincoln Lagoon, including the Aquarius Lift Station and Barkers Point Wastewater Treatment Facility, is operated and maintained under the responsibility of the City of Fredericton.

2.9 Future Modifications, Extensions, or Abandonment

There are no specific plans for future development on the Lagoon site; Although The City of Fredericton does want to leave open the potential for future developments at this location.

Chapter 3 – The Existing Environment

3 Description of the Existing Environment

3.1 Physical and Natural Features

3.1.1 Site Topography

An aerial map of the property and surrounding area is presented in Figure 4.

The property generally slopes down towards the Saint John River. In fact, the surface elevation at the lagoon is approximately 50 ft above sea level and only approximately 20 ft above sea level on the river bank.



Figure 4 – Site Aerial Map

3.1.2 Site Drainage Regime

The property has a gradual downward slope towards the Saint John River promoting storm water run-off. Thus no storm water run-off collection structures are required

3.1.3 Existing Wells and Wellfields

There are no existing wells or wellfields in the vicinity.

3.1.4 Environmentally Significant Areas

From GeoNB, there are no Provincially Significant Wetlands and Regulated Wetlands located in the vicinity of the project. There are two Wetlands located in the area (refer to **Figure 5** below from GeoNB Online Map Viewer), however, both of these Wetlands are located more than 30 m from the Lincoln Lagoon. In fact, both wetlands are over 300 m from the lagoon.



Figure 5 –Wetlands in Proximity

3.1.5 Vegetation and Wildlife Species

The vegetation is, for the most part, a typical central New Brunswick Acadian Forest. Spruce, fir, maple, poplar, white and yellow birch are some of the most common trees in this forest makeup. The photo below was taken by the Lincoln Lagoon during Fall 2016. Wildlife within the area would be typical of rural New Brunswick, such as white-tailed deer.



Figure 6 - Lincoln Lagoon Vegetation

3.1.6 Receiving Stream

The diverted wastewater will be pumped by the Aquarius Lift station to the Barkers Point Wastewater Treatment Facility. The treated effluent will flow into the Nashwaak River which flows into the Saint John River.

There are various other treated effluent discharges upstream from the Barkers Point effluent discharge.

3.2 Existing and Historic Land Uses

The only known historic (and existing) land use for this property is as the Lincoln Lagoon since the 1970's. The property is virtually undeveloped except for the relatively small footprint of the current lagoon and associated equipment.

3.3 Owners of Adjacent Properties

The site is a large property located in an industrial park. There are no adjacent residential properties to the work site. The nearest property owners are at least 220 m from the lagoon. Please refer to Figure 5 above.

Chapter 4 – Environmental Impacts

4 **Summary of Environmental Impacts**

4.1 **Construction**

The proposed work to be conducted at the Lincoln Lagoon can be considered a smaller project as it only involves draining the lagoon, breaking the clay liner and backfilling the drained lagoon. With that said, minimal disruptions are expected to the natural surroundings in the vicinity of the existing lagoon. However, as with all projects of this nature, unavoidable impacts can arise. Potential impacts may include the following:

- General construction noise from equipment;
- Increased vehicular traffic in the area (noise, dust);
- Construction debris;
- Loss of vegetation/trees (expected to be minor and ultimately natural revegetation will occur once the site is decommissioned); and,
- Petroleum, oil and lubricant (POL) leaks.

4.2 **Operation and Maintenance**

This section is not applicable as the Lincoln Lagoon will no longer be in operation following the decommissioning.

Chapter 5 – Environmental Impact Mitigation

5 **Summary of Proposed Mitigation**

5.1 **Construction Phase**

The decommissioning of the Lincoln Lagoon will take place in the Vanier Industrial Park near a residential area. One of the primary concerns will be to minimize disruption to the local residents. More specifically, this will include noise mitigation. Noise during the construction is unavoidable but its impact on the nearby residents will be minimized by adhering to construction hours between 7 am and 7 pm, Monday through Friday. Except where special circumstances dictate otherwise, no work will take place on the weekends.

Chapter 6 – Public Involvement

6 Public Involvement

The public will be consulted as per the requirements of the EIA process. The steps that will be taken are as follows:

6.1 Public Communication

Communication with elected officials, key stakeholders, and the general public in the Lincoln area will be done through a written notification. This notification will be in the form of a letter that will contain all pertinent details as per Appendix C of the NB EIA registration guideline (Steps 1 and 2).

6.2 Registration Document

Copies of this registration document will be made available to any interested parties requesting such information.

6.3 Department of Environment Website Notice

Notice of this registration shall be placed on the appropriate government website (to be done by the Department of Environment Project Assessment and Approvals Branch).

6.4 Newspaper Announcement

A public notice will be placed in the Fredericton Daily Gleaner.

6.5 Report

A report containing the details of the public involvement will be submitted to the Department of Environment within 60 days of project registration. This report will contain all pertinent details as per Appendix C of the EIA registration guideline (Step 8).

Chapter 7 – Approvals

7 **Approval of the Undertaking**

The main permits, approvals, and other authorization for the undertaking are as follows:

7.1 **Watercourse and Wetland Alteration Permit**

Should work for this project fall within the 30 m buffer of a watercourse or wetland, a Watercourse and Wetland Alteration (WAWA) Permit would be requested prior to the commencement of work.

7.2 **Funding**

Federal funding has been provided for this project under the Clean Water Fund.

7.3 **Approvals**

Approval from the Waste Sludge Disposal Facility will be required prior to sending waste to the facility.

Testing of the waste sludge to be performed as needed to satisfy the requirements of the Disposal Facility.

Chapter 8 – Signatures

8

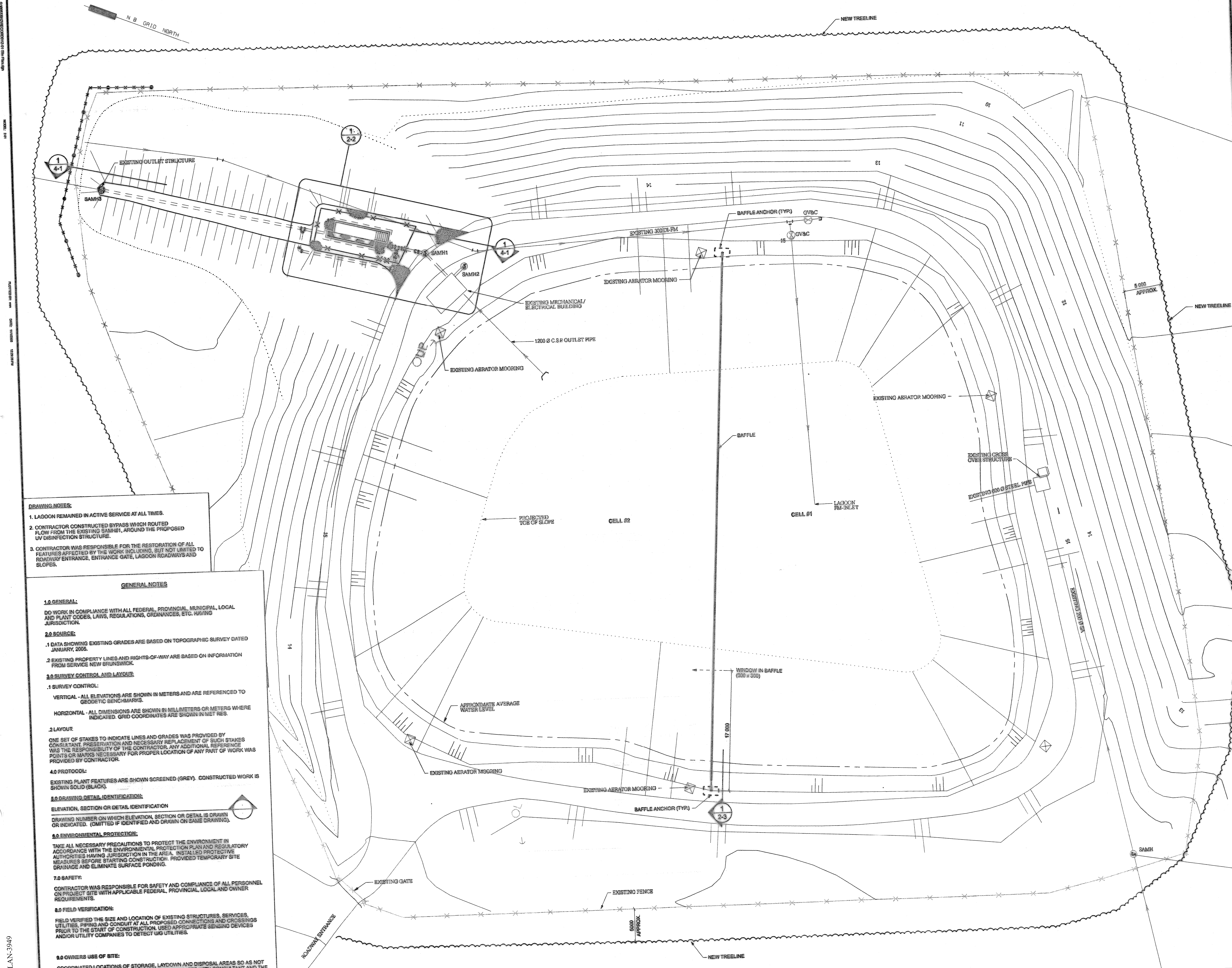
Signature Manager - Engineering & Operations

2017/Feb/17
Date

Sean Lee
Sean Lee
Manager – Engineering & Operations,
City of Fredericton



Appendix A – Site Plan Drawing



PROPOSED	EXISTING	LEGEND
---	---	TOP OF SLOPE
---	---	TOE OF SLOPE
300 Ø SA	300 Ø SA	SANITARY
300 Ø SAF	300 Ø SAF	FORCEMAIN
SAMH	SAMH	SANITARY MANHOLE
GV&C	GV&C	GATE VALVE AND CHAMBER
12.00	+12.50M	EXISTING GRADE
12.00	---	PROPOSED FINISH GRADE
---	---	CONTOUR (EXISTING)
---	---	GRAVEL SURFACE
---	---	PROPERTY BOUNDARY
---	---	SEDIMENT CONTROL STRUCTURE
---	---	TREES
---	---	TREELINE
---	---	FENCE
---	---	SILT FENCE
---	---	DITCH

1	RECORD DRAWING	RNS	05.NOV.01
No.	Revision	Ckd. By	Date

RECORD DRAWING

Const. North

Drawn By: DAM
 Dwg. Standard: PLM
 Ckd. By: RNS
 Designed By: RNS
 Dwg. Design: RNS
 Ckd. By: RNS

ADI ADI Limited
 Fredericton, NB, Canada
 Engineering, Consulting, Procurement
 and Project Management

Project Title
**LINCOLN LAGOON
 UPGRADE T05-15**

Dwg. Title
SITE PLAN

Project No.	83-391.2
Dwg. No.	2-1
Rev. No.	1
Scale	1:250 This drawing is not to be scaled

Offices located in:
 Charlottetown, Moncton, Saint John, Truro, Halifax, Sydney
 Port Hawkesbury, St. John's, Fredericton and Sackville, NB

DRAWING NOTES:

- LAGOON REMAINED IN ACTIVE SERVICE AT ALL TIMES.
- CONTRACTOR CONSTRUCTED BYPASS WHICH ROUTED FLOW FROM THE EXISTING SAMH#1, AROUND THE PROPOSED UV DISINFECTION STRUCTURE.
- CONTRACTOR WAS RESPONSIBLE FOR THE RESTORATION OF ALL FEATURES AFFECTED BY THE WORK INCLUDING, BUT NOT LIMITED TO ROADWAY ENTRANCE, ENTRANCE GATE, LAGOON ROADWAYS AND SLOPES.

GENERAL NOTES

1.0 GENERAL:
 DO WORK IN COMPLIANCE WITH ALL FEDERAL, PROVINCIAL, MUNICIPAL, LOCAL AND PLANT CODES, LAWS, REGULATIONS, ORDINANCES, ETC. HAVING JURISDICTION.

2.0 SOURCE:
 1. DATA SHOWING EXISTING GRADES ARE BASED ON TOPOGRAPHIC SURVEY DATED JANUARY, 2005.
 2. EXISTING PROPERTY LINES AND RIGHTS-OF-WAY ARE BASED ON INFORMATION FROM SERVICE NEW BRUNSWICK.

3.0 SURVEY CONTROL AND LAYOUT:
 1. SURVEY CONTROL:
 VERTICAL - ALL ELEVATIONS ARE SHOWN IN METERS AND ARE REFERENCED TO GEODETIC BENCHMARKS.
 HORIZONTAL - ALL DIMENSIONS ARE SHOWN IN MILLIMETERS OR METERS WHERE INDICATED. GRID COORDINATES ARE SHOWN IN MET RES.

2. LAYOUT:
 ONE SET OF STAKES TO INDICATE LINES AND GRADES WAS PROVIDED BY CONSULTANT. PRESERVATION AND NECESSARY REPLACEMENT OF SUCH STAKES WAS THE RESPONSIBILITY OF THE CONTRACTOR. ANY ADDITIONAL REFERENCE POINTS OR MARKS NECESSARY FOR PROPER LOCATION OF ANY PART OF WORK WAS PROVIDED BY CONTRACTOR.

4.0 PROTOCOL:
 EXISTING PLANT FEATURES ARE SHOWN SCREENED (GREY). CONSTRUCTED WORK IS SHOWN SOLID (BLACK).

5.0 DRAWING DETAIL IDENTIFICATION:
 ELEVATION, SECTION OR DETAIL IDENTIFICATION
 DRAWING NUMBER ON WHICH ELEVATION, SECTION OR DETAIL IS DRAWN OR INDICATED. (OMITTED IF IDENTIFIED AND DRAWN ON SAME DRAWING).

6.0 ENVIRONMENTAL PROTECTION:
 TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE ENVIRONMENT IN ACCORDANCE WITH THE ENVIRONMENTAL PROTECTION PLAN AND REGULATORY AUTHORITIES HAVING JURISDICTION IN THE AREA. INSTALLED PROTECTIVE MEASURES BEFORE STARTING CONSTRUCTION. PROVIDED TEMPORARY SITE DRAINAGE AND ELIMINATE SURFACE PONDING.

7.0 SAFETY:
 CONTRACTOR WAS RESPONSIBLE FOR SAFETY AND COMPLIANCE OF ALL PERSONNEL ON PROJECT SITE WITH APPLICABLE FEDERAL, PROVINCIAL, LOCAL AND OWNER REQUIREMENTS.

8.0 FIELD VERIFICATION:
 FIELD VERIFIED THE SIZE AND LOCATION OF EXISTING STRUCTURES, SERVICES, UTILITIES, PIPING AND CONDUIT AT ALL PROPOSED CONNECTIONS AND CROSSINGS PRIOR TO THE START OF CONSTRUCTION. USED APPROPRIATE SENSING DEVICES AND/OR UTILITY COMPANIES TO DETECT UG UTILITIES.

9.0 OWNERS USE OF SITE:
 COORDINATED LOCATIONS OF STORAGE, LAYDOWN AND DISPOSAL AREAS SO AS NOT TO IMPED OTHER WORK. SCHEDULED AND COOPERATED WITH CONSULTANT AND THE OWNER SO AS TO MAINTAIN UNIMPEDED OPERATION AND USE OF THE SITE. COORDINATED AND SCHEDULED INTERCONNECTIONS AND TEMPORARY DISRUPTIONS AT LEAST TWO WEEKS IN ADVANCE.

ENG-PLAN-3949