

ENVIRONMENTAL ASSESSMENT REGISTRATION
GLENWOOD / APPLETON TREATMENT FACILITY

Submitted to:

Department of Environment
Environmental Assessment Division

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CECON LTD
Central Engineering Consultants of Newfoundland Limited

Gander

Newfoundland

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1.0 NAME OF THE UNDERTAKING

Glenwood / Appleton Sewage Treatment Facility

2.0 PROPONENT

2.1 Name of Corporate Body

Town of Appleton

Town of Glenwood

2.2 Address

Town of Appleton
Site 4, RR #1
Appleton, NL
A0G 2K0

Town of Glenwood
P.O. Box 190
Glenwood, NL
A0G 2K0

2.3 Contact

Town of Appleton
Town Clerk - Mavis Simms

Town of Glenwood
Town Clerk - Susan Gillingham

2.4 Principle Contact Person for Purposes of Environmental Registration

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3.0 THE UNDERTAKING

3.1 Description of the Undertaking

It is proposed to construct a sewage treatment facility for the towns of Glenwood and Appleton, Newfoundland and Labrador. This facility will consist of an engineered wetland using Kickuth Bioreactor technology as supplied by Abydoz Limited. Additional facilities for grit removal, storm flow handling and UV disinfection will also be required on site. Access to the site will require a new road and a bridge to be constructed across Salmon Brook in Glenwood. General location and layout of the proposed facility is provided in Appendix A.

3.2 Need for the Undertaking

Currently in Appleton and Glenwood sewage is discharged via separate outfalls. The first outfall serves Appleton and discharges effluent directly into the Gander River. The second outfall discharges sewage effluent from Glenwood into the Gander River. While both towns each have a sewage treatment plant, both are currently overloaded and thus cannot perform satisfactorily.

A study performed in 2002 by CECON limited identified levels of coliform, Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) in excess of environmental government guidelines. The following results were identified in the study:

Parameter	Appleton	Glenwood
BOD	41 mg/L	36 mg/L
TSS	109 mg/L	62 mg/L

4.0 DESCRIPTION OF THE UNDERTAKING

4.1 Geographic Location

The proposed development will be located in Glenwood, on the North side of Salmon river. This location was chosen due to the available land and its nearness to the two towns. However as noted previously an access bridge will have to be constructed for access to the site. The treated waste from the treatment process will be discharged into the Gander River to the East of the facility as shown in Figure 2.

Potential sites were investigated on both sides of the river. On the Glenwood side a large alder bed exists between the river bank and the developed area in the centre of town. Unfortunately this alder bed is inside the flood zone for the Gander River and it is not recommended to locate a sewage treatment facility inside a flood zone. The only other sites are north of the Trans Canada Highway with the closest preferred site being on the north side of Salmon Brook.

On the Appleton side of the river there is no land available along the river between the highway and the existing sewage treatment plant. North of the highway there is sufficient undeveloped land but from the information that we have been able to obtain it appears to be all granted land close to the river and there may be some problems in acquiring it. The only other potential site is above the existing pumphouse near an old skating rink. It has the disadvantage of being in close proximity to the water supply intake which is not environmentally desirable.

4.2 Site Characteristics

The site is currently undeveloped and heavily treed. The majority of the site consists of 1.0 meter of overburden overlying a loose layer of bedrock which extends down approximately 0.6 to 1.0 meter in depth. Below that solid bedrock is encountered. Miscellaneous rock outcrops appear throughout the entire site.

The North-West corner of the site has a large section of bog and marsh.

4.3 Existing Infrastructure / Modifications

Currently each town has a separate treatment plant and outfall into the Gander River.

A single centralized plant to serve both Glenwood and Appleton would be located on the Glenwood side of the Gander River just north of Salmon Brook. To bring the sewage to this site, a sewage pumping station would be required on the Glenwood side of the river, near the existing site. It is proposed to use a triplex station with VFD pumps pumping through a 250 mm force main across the TCH and along River Drive to the new bridge crossing Salmon Brook. The force main would be suspended on the new bridge crossing Salmon Brook and continued to the new Sewage Treatment Facility site.

On the Appleton side of the river the sewage on River Road presently flows southward. This would have to be reversed. A new force main would have to run from the existing pumping station near the existing STP north along River Road approximately 750 m. New pumps would be put in this station. Sewer would then flow north through existing gravity lines to an existing pumping station located near the Trailways route. This station would be abandoned and the gravity line extended to the edge of the Trans Canada Highway right of way. A new triplex sewage pumping station would be constructed in this area and a new 250 mm force main suspended from the TCH bridge crossing the Gander River and continuing on parallel with the Glenwood force main would convey the sewage to the new sewage treatment facility site.

4.4 Overview of the Proposed Sewage Treatment Process

The primary treatment system will consist of an engineered wetland utilizing a subsurface flow type system. The wetland would be constructed of several beds of specialized plants underlain by an impermeable geomembrane layer. The effluent would be introduced at the center of each bed and would then flow by gravity to the sides under the surface. Due to biological action of the microorganisms living at the plant root layer and the introduction of oxygen from the plants, the sewage is broken down by an aerobic process.

Additionally a second set of beds will be provided for the processing of storm surge water during heavy flows. A flow separator will be employed at the head of the system to divert the storm water to this process.

All effluent leaving the facility will be disinfected using UV disinfection to ensure that all discharge standards are met.

The overall treatment process will include the following operations:

- 1) Screening to remove large debris and trash
- 2) Sedimentation chamber
- 3) Lined lagoon
- 4) UV disinfection
- 5) Outfall to Gander River

4.5 Major Physical Features

The proposed development will consist of an access road and bridge, an engineered wetland treatment process, primary sedimentation, Storm water treatment, UV disinfection and a diffused outfall.

A) Access

Access to the site will require the construction of a new access road in Glenwood and a new bridge.

B) Utilities

Electrical: Three phase power will be required to run various parts of the treatment process.

Water: Drinking water as well as water for the operation of the facility and washrooms will be supplied from the Glenwood water distribution system.

C) Engineered Wetland

The wetland would be constricted of several beds of specialized plants underlain by an impermeable geomembrane layer. This separation of the

wetland from the natural ground layer will prevent any transference of the effluent into the ground or water.

D) Outfall

An outfall pipe will be required to discharge the treated waste into the Gander river for dispersion. This will consist of 20 meters of HDPE pipe and several diffusers. The diffused outfall will be run parallel to the river bank near the low water line and buried about 600mm below the river bank embedded in clean stone.

5.0 CONSTRUCTION PHASE

It is expected that the actual physical construction of the facility will take in the order of 18 months. Due to the nature of the natural process of the wetland, additional time will be required for the plants to mature and thus function at full efficiency.

5.1 Construction Activities

Construction of the Sewage treatment system for the towns of Appleton and Glenwood will involve, clearing, grubbing, and excavation of the site for the facilities. An access bridge will also be required over Salmon River and an outfall will have to be placed in the Gander river.

During the construction and operation of the treatment system all efforts will be made to maintain the natural environment. Vegetation will be maintained to provide natural buffer zones and any exposed slopes will be stabilized. Additionally a 10 meter buffer of treed area will remain between the natural watercourses and this new system.

The diffused outfall will be laid in dry trench with the excavation surrounded with a sandbag retaining wall.

5.1.1 Clearing, Grubbing and Disposal

All grubbing and disposal of related debris near watercourses will follow all relevant regulatory requirements, including permits from the Department of

Environment and the Department of Fisheries and Oceans. Grubbing activities shall be minimized where possible and limits of stripping shall be placed on all drawings.

Grubbed materials will be stockpiled for use in other areas of the project. These stockpiles will be located in controlled areas, with a safe distance from all water bodies.

5.1.2 Crossing Salmon River

As access is available from both sides of the river, no equipment or work will occur in the actual river bed. The abutments for the bridge will be constricted on the dry, giving adequate allowance for storm flows. The actual bridge will be shipped in as a unit and launched from one side. All piping and utilities will be attached to the bridge rather than crossing on the actual river bed.

5.1.3 Outfall and Related Work

As the majority of this work will involve the marine environment, special care will be taken to ensure that no damage occurs from the loss of fish or disruption of fish habitat from damage to the natural environment. All work in and around the marine environment will adhere to relevant regulatory requirements, including permits from the Department of Environment and the Department of Fisheries and Oceans. Erosion control measures will be initiated prior to any work being completed in the vicinity of Gander River.

5.2 Potential Source of Pollutants

The potential sources of pollutants are those associated with facility construction and land development. These include:

- A) Silt and sediment;
- B) Dust;
- C) Construction debris,

- D) Sewage;
- E) Risk of fuel, lubricant and hydraulic fluid release;
- F) Airborne emissions from construction equipment;
- G) Noise pollution from construction activities.

Silt laden runoff from construction areas will not be permitted to discharge directly into any body of water or water course. Silt screens will also be utilized to prevent silt from entering any body of water. Where necessary, runoff will be diverted to settling basins to ensure silt is settled out prior to the final release of the water.

The creation of dust will be minimized during the construction process through the use of water during activities that create excessive dust.

Solid waste disposal procedures will be as per the Environmental Protection Act and associated regulations. Construction debris will not be permitted to be disposed of on site.

Sewage generated during the construction phase will be collected using portable toilets, which will be cleaned out on a regular basis. Disposal and handling of this material will be as per all applicable regulations.

To minimize the risk of fuel, lubricant or hydrocarbon release, all fuel handling and storage will be in compliance with The Storage and Handling of Gasoline and Associated Products Regulations. Construction equipment will not be permitted to be re-fueled within 100 m of any water body.

Equipment exhaust systems will be maintained to provide emissions to the standard specified by the equipment manufacturer, and to ensure noise levels are within the design specifications of the machinery.

5.3 Potential Resource Conflicts

Fish and Fish Habitat

Understanding the delicate nature of fish and fish habitat, construction activities will be carried out such a manner to prevent the release of sediment or other harmful materials into water bodies. These measures are discussed in previous sections.

Wildlife

The location of the proposed sewage treatment facility is in a natural area and thus care and caution will be necessary to ensure a minimal impact on the natural wildlife of the area.

Forestry

The project area consists of a forested areas and thus some impact is anticipated. Care will be taken to reduce the cleared area to a minimum required and thus minimize the impact. In all cases the natural settings of the location will be preferred and all efforts will me made to preserve this. Buffer zones will be established between the treatment facility and the natural environment.

Construction Equipment

In order to prevent damaging non-work areas, construction equipment will not be permitted to operate outside the construction zone

6.0 OPERATION

The Glenwood / Appleton Sewage Treatment Facility will operate year round.

6.1 Potential Sources of Pollutants

- A) Solid Waste;
- B) Treated Effluent;
- C) Dewatered Solids;
- D) Odors;
- E) Sewage
- F) Noise Pollution

All solid waste generated at the site will be collected and disposed of regularly.

As the function of the faculty is to treat sewage, this treated effluent will be

released into the Gander River. However, the effluent parameters will adhere to the Department of Environment Guidelines for the Discharge of Municipal Wastewater.

It is expected that the sedimentation chamber will be cleaned out on a regular basis. Dewatered solids produced from this will be disposed as per the Environmental Protection Act and associated regulations and approvals.

Very few odors will be produced since the majority of the treatment occurs underground. All other processes will be contained to the treatment plant building. Therefore, odor production is not considered a concern. The nearest residential development is 250m from the site.

Sewage produced at the treatment plant will be introduced into the Treatment System.

6.2 Potential Causes of Resource Conflicts

Procedures will be established and monitored to minimize the following potential resource conflicts.

Fish & Fish Habitat

Treated sewage effluent will be discharged into Gander River. This will not cause any direct resource conflicts as the treated effluent will meet or exceed the Department of Environment Guidelines for the Discharge of Municipal Wastewater. Additionally, no chemical treatment will be utilized, as the final treatment in this process is UV, this would eliminate the chance of an accidental release into the environment.

Wildlife

Operation of the sewage treatment plant are not expected to cause any direct wildlife conflict. Barriers will be in place to prevent wildlife from entering the sewage beds.

Forestry

Operation of the sewage treatment plant is not expected to cause resource conflicts with forest resources.

Adjacent Areas

The towns of Appleton and Glenwood are located adjacent to the proposed facility. Operation of the sewage treatment facility is not expected to cause resource conflicts with adjacent areas. Future municipal expansion will be away from this area.

Human Activities

Limited human activity will occur during operation of the sewage treatment facility as a result of the system being primarily a natural treatment process. Therefore, operation is not expected to cause conflicts with other human activities. Access will be restricted to authorized persons only.

7.0 OCCUPATIONS

7.1 Construction Phase

It is expected there will be approximately 26 people employed during the construction phase of the project.

Description	Number of Positions	National Occupational Classification
Construction Manager	1	0711
Laborers	5	7611
Land Surveyors	1	2154
Steamfitters, Pipefitters and Sprinkler System Installers	3	7252
Contractors and Supervisors, Heavy Equipment Construction Crews	1	7217
Inspector	1	2264

Electricians	2	7241
Heavy Equipment operators	3	7421
Carpenters	2	7271
Structural Metal and Platework Fabricators and Fitters	2	7263
Civil Engineers	1	2131
Drillers and Blasters	2	7372
Bricklayers	2	7281

7.2 Operations Phase

It is expected there will be approximately 1 person employed during the phase of the project.

Description	Number of Positions	National Occupational Classification
Utilities Manager	1	0912

8.0 APPROVAL REQUIRED FOR THE UNDERTAKING

The permits, approvals and authorizations which may be necessary for the undertaking include:

Approval for the Undertaking

Water Course Alterations, Certificate of Environmental Approval to Alter a Body of Water

Application for Water Use Authorization Water Course Crossings, Certificate of Environmental Approval

Construction (Site Drainage) Certificate of a Approval

Certificate of Approval – Sewage Treatment Plant

Certificate of Approval – Water and Sewer Distribution System.

Water Resources Division, Department of Environment and Labour

Approval under the National Building Code of Canada

Approval under the National Fire Code of Canada

Certificate of Approval for any Water Supply >4,500 L/day

Building Accessibility Design Registration

Fuel Storage and Handling-Temporary Storage

Approval to dispose solids in local landfill.

Crown Lands Applications/Licenses

Develop Land – Protected Road zoning and

Development Control Regulations – Preliminary Application to Develop Land

Electrical Permit

Authorization for Works or Undertakings Affecting Fish Habitat

Navigable Waters Protection Act Letter of Assessment

Letter of Advise Fisheries and Oceans Canada

9.0 PROJECT RELATED DOCUMENTS

Glenwood / Appleton - Sewage Treatment Project "Effluent Data Design Parameters", CECON Limited, 2002

Preliminary Feasibility Report - Sanitary Sewage Treatment Facility
CECON Limited, September 1995 (Revised October 1995)

Glenwood / Appleton - Sewage Treatment Project "Preliminary Design and Site Selection Report", CECON Limited, Decameter 2001

Proposal - Kickuth Bioreactor Engineered Wetland, Appleton Glenwood
Newfoundland, ABYDOZ, June 2003

10.0 PROJECT SCHEDULE

Construction of this project is scheduled to begin in July 2004 with an operations date of December 2005.

11.0 FUNDING

Financing of the project will be from the Canada-Newfoundland Infrastructure Program.

Nov 25. 2003

B.J. Thomson P. Eng

CECON Ltd

APPENDIX A

