

Section 5.10

Wastewater Management Districts - An Alternative for Sewage Disposal in Small Communities

1 Introduction

Service Nova Scotia and Municipal Relations takes pleasure in issuing this revised document entitled “Wastewater Management Districts - An Alternative For Sewage Disposal in Small Communities”.

This document is intended primarily for those involved in municipal governments in Nova Scotia. This includes both staff and elected officials, as well as consultants and individuals interested in wastewater management matters. It is our hope that this material both generates a wider interest in seeking creative, cost-effective, and reliable sewage disposal solutions for small communities in the province and provides sufficient overall guidance to make such projects a reality.

2 Background

2.1 Wastewater Management - the Issue

The disposal of human waste in an environmentally acceptable and cost effective manner has been a problem throughout history. In Nova Scotia, in many communities where on-site sewage disposal systems have created pollution problems and health hazards, the automatic response has been a demand for central sewage collection and treatment system - “we need sewers!” In many instances these demands have been met, despite a recognition that the pollution problem could be traced to a relatively small number of domestic sewage sources within the community (usually malfunctioning private septic tank/disposal field systems).

2.2 Why Consider Alternatives to Centralized Systems?.....money, money, technology

It has become increasingly evident that the installation of the traditional central sewage collection and treatment systems to rectify pollution problems in small communities needs some re-thinking. Traditional central sewage systems are well beyond the financial capability of municipalities and the residents of those communities. Besides this, often the on-site septic-system technology is not the reason for system failure.

Firstly, the costs associated with the installation and maintenance of central sewerage systems have escalated at a very rapid rate. Over the past 30 plus years, the average cost per connection of installing central sewerage systems in Nova Scotia has risen dramatically, from \$1,500 per

connection in 1969 to approximately \$20,000 in 2002. Operating and maintenance costs have escalated at a similar pace. This is partially due to high electrical input requirements.

Secondly, the funding which senior levels of government are capable of providing for wastewater projects falls far short of that required to adequately address all the pollution problems of the province. Although in the past, high-ratio cost sharing, such as that available from the Federal Government in the 1960s, made it possible for smaller communities to undertake central sewer projects, this is no longer a reality.

Thirdly, extensive research on septic tank / soil absorption systems has shown that in a large percentage of instances where these systems have failed to provide satisfactory service, improper installation and/or maintenance is the reason. Had these systems been installed and maintained properly, for example, with regular pump-out, inspection and upgrading, failure could have been avoided.

3 Wastewater Management Districts - Key Facts

3.1 What are Wastewater Management Districts?

Wastewater management districts (WMD) are areas established by a municipality (similar to a sewer district, but) within which it has the power to manage all wastewater disposal systems both public and private (ie individual, on-site sewage disposal systems). This means that in a WMD a municipality has the power to enter onto private property for purposes of inspecting, repairing, upgrading or replacing wastewater systems (usually septic tanks &/or soil absorption systems). It also has the power to establish charges, in a manner similar to those in a sewer district, to carry out the above noted duties.

In Nova Scotia the WMD concept was developed to aid in addressing existing on-site sewage disposal problems. However, this approach can also be used in “greenfield” sites, that is for new developments in rural areas.

Ours is the only province in Canada that enables such powers. Some U.S. states, primarily in the mid-west and California, also enable them.

3.2 What enables the creation of a WMD?

The Municipal Government Act (MGA) gives municipalities the power to create wastewater management districts by way of authority found in Part 14 - Sewers. Specifically, it is Section 342 (see Appendix “A”) which empowers a municipality to create a WMD through the establishment of a WMD by-law. Under the MGA, in contrast to the earlier legislation, there is no requirement for a plebiscite/vote. Still, municipalities as a matter of course would likely solicit the views of the residents of an area where a WMD is being considered to ensure that they have their support.

3.3 What kind of wastewater solutions are possible in a WMD?

A municipality has a great degree of flexibility in choosing the most suitable wastewater system or combination of systems for a WMD. This is because the legislation enables a municipality to operate and maintain all wastewater disposal systems (both public and private) within that area. Unlike a conventional piped central sewer system approach, within a WMD a variety of wastewater disposal systems are possible at the same time.

The four main wastewater solutions possible within a WMD are:

- maintain existing properly functioning on-site sewage disposal systems,
- upgrade / replace existing malfunctioning on-site sewage disposal systems,
- establish cluster sewage disposal system(s), and/or
- establish conventional piped sewer collection and treatment system.

The cost associated with these various solutions range from the least expensive - maintain existing systems, to the most expensive - conventional piped systems.

3.4 What type of wastewater systems can be used in a WMD?

Within a WMD the types of wastewater systems which can be employed is very broad. Any systems being considered though, like their conventional on-site and piped central sewer system counterparts, must be able to meet the applicable environmental standards. Since wastewater handling systems can be separated into two main components: collection and treatment, here is a simplified view of some of the technology currently available, under those headings.

Collection

The sewage collection system typically represents over two-thirds of overall total system costs. Hence, there is considerable incentive to choose less expensive alternatives to conventional collection systems. Generally, the following are some alternatives:

- pressure sewers;
- small diameter sewers;
- vacuum sewers.

These systems attempt to overcome some of the inherent disadvantage of conventional gravity sewers. These include, for example, the need for constant slopes in the collection pipe and consequent deep excavation, especially in hilly terrain, or the need for large scale pumping stations, both of which are costly.

Here are some details about these three collection systems:

Pressure sewers - An alternative collection method receiving substantial attention is sewage pumping by the use of low pressure sewer systems. The two major types of pressure sewers are

the grinder pump and the septic tank effluent pumping system. The former system employs individual grinder pumps to convey raw wastewater to the pressure sewer. In the latter system, only septic tank effluent (liquid portion of sewage) from individual households is pumped to the pressure main.

Small diameter sewers - The small diameter sewer system handles only the liquid portion of the waste, with the solids being accumulated and digested in a septic tank. This may result in lower costs of materials (i.e. smaller pipes), but the need for deep excavations and pumping stations is similar to conventional systems unless the effluent is disposed of close to the source.

Vacuum sewers - These depend on a central vacuum pump to create a differential pressure between the main and the sewage entering the main at atmospheric pressure. Both the vacuum and pressure systems may achieve significant reductions in material costs, pipe size, excavation costs, and in some cases, treatment costs. However, some increase in operating costs will also be experienced.

Regardless of the type of system used, the need for extensive collection systems and hence the cost, can be reduced if the sewage is disposed of close to the source. This principle is well illustrated by the lower costs of individual septic tanks and disposal fields where the field or soil treatment area is only a short distance from the septic tank or the building itself.

Treatment

Currently, there is a fairly wide range of options available for wastewater treatment. These can be broadly categorized into two types:

- centralized treatment; and
- decentralized treatment.

Centralized treatment - refers to treatment in which wastewater is collected and transported to a central location where it is treated and/or discharged to surface waters. Typical centralized treatment systems include mechanical and biological facilities of various designs, for example packaged treatment plants (e.g. aerated lagoon, activated sludge), solar aquatics and wetlands. Some of these latter approaches are still in the experimental stages, at least in this province.

Decentralized treatment - generally refers to systems which handle smaller amounts of wastewater at dispersed locations within a locale. Typically, effluent disposal occurs in close proximity to the sewage source. This eliminates the need for costly transmission of sewage to distant disposal sites. Disposal of effluent is usually to the soil, although in some cases to surface water. A number of technologies are available which can provide decentralized treatment either on-site or at sites near the point of sewage generation.

The primary method of on-site treatment is the septic tank and soil absorption field. The septic tank and soil absorption field has wide application in Nova Scotia in its traditional form, but some variations are possible to assist in overcoming site constraints and improving efficiency in certain situations. These include:

- mound systems;
- sloping sand filter systems; and
- dual alternating soil absorption systems.

Some of these above noted systems can also be employed in off-site treatment and disposal through clustering. Clustering is the sharing of common treatment and disposal systems by a number of properties which are in close proximity to one another. Cluster systems can employ alternative systems, such as pressure and vacuum sewers and sewage treatment lagoons. Some basic options include, cluster systems with:

- common septic tank and soil disposal systems or sand filter systems;
- individual septic tanks and common soil disposal systems or sand filter systems;
- common small scale lagoon with seasonal discharge of treated effluent to surface waters; or
- package treatment plants with effluent discharge to surface waters.

A key advantage of clustering is that it reduces the need for lengthy common collection pipes and hence its associated costs as well.

Although a range of technologies are available both off-site and on-site, no one system represents the optimum solution in all situations and the optimum solution may be represented by various combinations of these systems.

3.5 What is included in a WMD By-law?

A wastewater management district by-law, as required by the legislation, must address the following:

- boundaries - identify the boundaries of the WMD;
- wastewater system(s) - identify the wastewater system(s) [e.g. type, location, extent] to be used in the district;
- municipal responsibilities - specify the extent of municipal responsibilities for the repair, upgrading or replacement of private and public sewer systems; &
- method of charging - specify the method of charging persons in the district.

A WMD is typically limited to a small area of a municipality where the pollution problems are severe. The boundary of a WMD does not have to follow any existing jurisdictional boundary, although this can simplify administration. A municipality may establish more than one WMD within its jurisdiction.

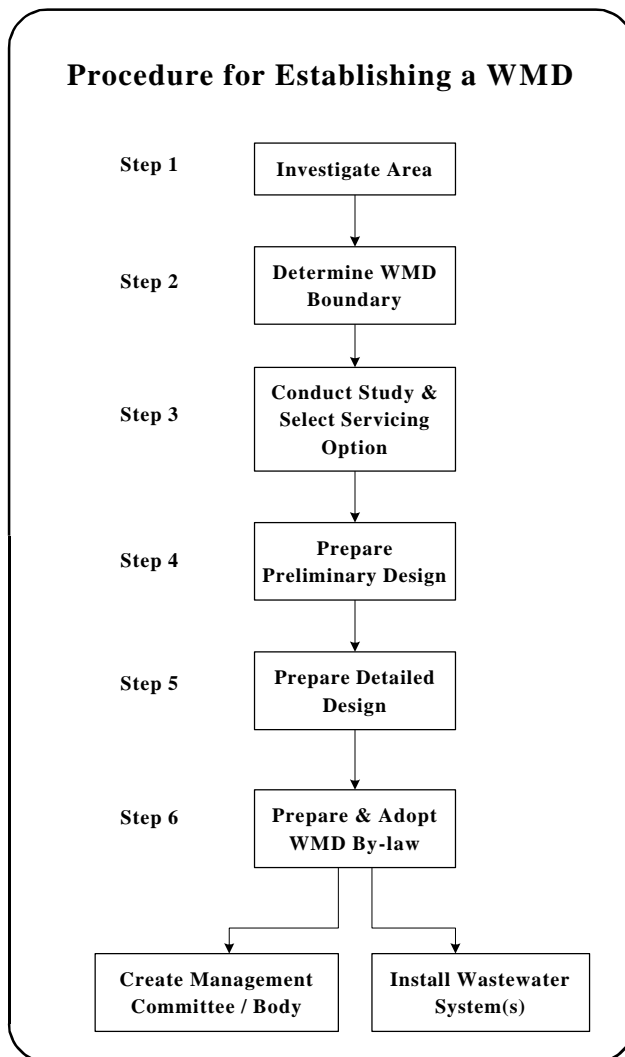
4 Establishing a WMD

4.1 The Process

The process of establishing a Wastewater Management District involves a number of steps. Some of these are a standard part of any process in which a municipality is addressing a sewage disposal problem, while others are exclusive to a Wastewater Management District. This process can be generally broken down into six basic steps. These steps are as follows:

Step 1 - Investigate Area The process of establishing a Wastewater Management District begins with a thorough investigation of the area in question. This entails analysis of a wide range of factors, including, among other things:

- performance of existing disposal systems;
- soil type, texture and depth to bedrock;
- depth to seasonal high water table; and
- projected wastewater flows.



A municipality may be able to carry out some of this work itself, although often expertise beyond that of the municipality is required. Based on this initial information a municipality decides whether a Wastewater Management District is a technically feasible solution or if another approach, such as a conventional central sewage collection and treatment system, is required

Step 2 - Determine WMD Boundary If a Wastewater Management District is determined to be feasible, the next step involves the delineation of the boundary of the geographic area for the Wastewater Management District. It is not imperative that the boundary of a WMD coincide with an existing jurisdictional boundary, although this may be desirable for purposes of

administrative simplicity. In practice, WMD's are typically limited to small portions of municipalities where pollution problems are most extreme.

Step 3 - Conduct Study & Select Servicing Option Once the geographic area and hence the properties to be included in the WMD are known, a Servicing Options study is carried out. This study identifies various options in terms of the sewage collection and treatment systems that might be employed and recommends the most appropriate. It might recommend, for example, that on-site sewage disposal systems in one area be upgraded or replaced and that the remainder of the proposed WMD be served by a number of cluster systems.

Step 4 - Prepare Preliminary Design Based on the findings of the Servicing Options study, a preliminary design is then carried out. This design should be detailed enough to permit an accurate estimation of the costs associated with the proposed undertaking. With the preliminary design and cost estimate in hand a municipality would then typically take these findings to property owners within the proposed WMD to determine the extent of support from the community. Community support is usually key to the success of such a project.

Step 5 - Prepare Detailed Design Once the municipality is firmly committed to proceeding with the WMD concept, based on the preliminary design and costs of the wastewater collection & treatment components, a detailed engineering design for the system is required. Depending on a municipality's in-house resources it may be necessary to seek outside expertise, such as engineering consultants, to carry this out.

Step 6 - Prepare & Adopt WMD By-law The municipality then prepares a WMD By-law for the community. As noted above, the WMD By-law must address the following:

- delineate the boundary of the WMD;
- state the type of wastewater management system or systems to be used in the WMD;
- state the extent to which the municipality assumes responsibility for the repair, upgrading, or replacement of private and public sewer systems; and
- provide a method for charging the owners of real property within the WMD for expenditures made for any wastewater management system in the WMD.

A "sample" Wastewater Management District By-law is provided and forms Appendix "B" of this document. The "sample" is the *Little Dover Wastewater Management By-law* from the Municipality of the District of Guysborough. Some components of this "sample" by-law may not be necessary or appropriate in all situations. For example, it deals with individual on-site sewage disposal systems and these are not necessarily part of every wastewater management district. As well, Part 6 of the "sample" by-law address, use of sewage disposal systems within the WMD. Some municipalities may decide that the statutory prohibition provisions of Section 333 of the MGA adequately address their needs or they may currently have a Sewer Use By-law which deals with this matter.

The WMD By-law must be adopted by the municipal council and in force prior to system utilization.

4.2 Management of a WMD

The responsibility for overall management of all wastewater disposal systems within a WMD rests with the municipality. This means, for example, not only the management of any cluster systems, but also individual on-site sewage disposal systems. As with a conventional piped sewer system, a municipality would typically appoint a committee of council, such as a sewer committee, or a public works committee to have oversight for the WMD. Where the municipality already has a conventional sewer system, the committee responsible for that system would likely be responsible for this as well. In terms of ongoing day to day responsibilities, staff of the Municipal Clerk's or CAO's office and the Municipal Public Works Department would in most cases play a role, as they would with a conventional system.

Here are some of the key functions which typically fall within the scope of management of a WMD:

- plan, design and construct wastewater disposal systems located within a WMD;
- operate, inspect and maintain all wastewater disposal systems located within a WMD (this includes regular pump-out services for privately owned septic tanks);
- enter into contracts and undertake debt obligations;
- own, purchase, lease and rent both real and personal property;
- fix and collect charges for sewerage usage;
- plan and control how and at what time service will be extended; and
- make rules and regulations regarding proper sanitation and the use of on-site disposal systems, to issue orders against violations, be empowered to repair or replace malfunctioning systems.

5 WMDs in Nova Scotia - Status

Although the legislation enabling WMDs has been around for twenty years, there are currently only four WMDs in Nova Scotia. One of the reasons for this low number has been the reluctance of residents to embrace this relatively new concept. However, with the ever increasing cost of traditional systems, there is renewed interest in the WMD concept.

A case in point is the recently established WMD for the community of Little Dover, in the Municipality of the District of Guysborough. The WMD was an essential part of solving this community's long standing and serious pollution problem. The creation of the WMD, along with new-to-Nova Scotia technology, meant a cost saving to the municipality in the vicinity of \$1,000,000.

This project also resulted in the Municipality of the District of Guysborough becoming the first recipient of the Municipal InNOVAward. The Municipal InNOVAward was established by Service Nova Scotia and Municipal Relations in 2002 to recognize municipalities who use innovative approaches to address municipal issues.

Interest in the WMD concept is also being demonstrated by the Municipality of the District of Lunenburg which is currently in the process of establishing a WMD for the community of Conquerall Bank.

To date in Nova Scotia the WMD concept has not been used for new developments. Elsewhere though this concept is becoming more popular on “greenfield” sites with the use of cluster type disposal systems. One reason is cost savings. This is both because lot sizes can be smaller and less wastewater infrastructure is required. These savings can also mean more land for green space and recreational opportunities. In light of this it is anticipated that the WMD approach will become more popular in this province for new developments in rural communities.

Information Resources

For clarification or additional information about Wastewater Management Districts, contact:

Service Nova Scotia & Municipal Relations
Municipal Services Division
P.O. Box, 216, Halifax, N.S. 424-3872

Here are some sources of additional information on wastewater management for smaller communities:

- Department of Environment & Labour
Environmental & Natural Areas Management Division
P.O. Box 2107, Halifax, N.S. 424-2555
- Websites:
 - USEPA - Office of Wastewater Management www.epa.gov.owm/
 - National Small Flows Clearinghouse (NSFC) www.nesc.wvu.edu

APPENDIX “A”

Municipal Government Act

(Excerpt only)

By-law for wastewater management districts

- 342 (1)** A council may, by by-law, establish wastewater management districts.
- (2)** A by-law establishing a wastewater management district shall include
- (a) the boundaries of the wastewater management district;
 - (b) the system of wastewater management to be used in the district; and
 - (c) the extent to which the municipality is responsible for the repair, upgrading or replacement of private and municipal sewer systems.
- (3)** Where the council has established a wastewater management district, the municipality, its servants and agents may enter on any property within the wastewater management district to repair, upgrade or replace a public or private wastewater system and may, in accordance with the by-law, charge any or all of the costs to the owners of the property served by the system.

APPENDIX “B”

Sample - Wastewater Management District By-law

Little Dover Wastewater Management District By-law

BEING A BY-LAW regulating the use and maintenance of a Wastewater Management System, and the discharge of waters and wastes into a community sewer system, as well as the installation of septic tanks and sewer laterals on private lands in the Wastewater Management District, and providing penalties for violation thereof.

PART 1 – DEFINITIONS

1. Unless the context specifically states otherwise, the meaning of terms used in this By-Law shall be as follows:
 - a) **BUILDING SEWER** – shall mean any sewer, tanks, pumps pipes or piping system which is located on private property and which connects the building sewer or drainage system or the building sanitary conveniences to the sanitary sewer, storm sewer or combined sewer or other places of disposal;
 - b) **COMMITTEE** – shall mean the Public Services Committee of the Municipality of the District of Guysborough, or such other Committee of Council as shall be given responsibility for sewer services by the Municipality of the District of Guysborough from time to time;
 - c) **INDIVIDUAL ON-SITE SEWAGE DISPOSAL SYSTEM** – shall include the septic tank with disposal field and all other private sewage disposal systems which are within a Wastewater Management District;
 - d) **INDUSTRIAL WASTE** – shall mean any slimes, tailings, effluent, sewage or other waste products of any kind whatsoever which is the result of an industrial undertaking, and which is intended to be discharged from the industrial undertaking to a building sewer;
 - e) **INSPECTOR** – shall mean Director of Public Works or any other Municipal employee or employees of any Consultant Firm authorized by the Municipality of the District of Guysborough to carry out inspections or investigations on behalf of the Municipality of the District of Guysborough as may be required under this By-Law;
 - f) **MUNICIPAL COUNCIL** – shall mean the Council of the Municipality of the District of Guysborough;

- g) **MUNICIPALITY** – shall mean the Municipality of the District of Guysborough;
- h) **OWNER** – shall mean an owner, a part owner, joint owner tenant in common or joint tenant of the whole or any part of any land or building, and includes a trustee, an executor, a guardian, an agent, a mortgagee in possession or other person having the care or control of any land or building in case of the absence or disability of the person having title thereto;
- i) **PUBLIC SEWER** – shall mean a sewer which is located on public or private property within the Wastewater Management District which is owned and maintained by the Municipality of the District of Guysborough;
- j) **SANITARY SEWAGE** – shall mean water-carried wastes from the sanitary conveniences of residences, commercial buildings or premises, institutions, and industrial establishments, but excluding storm sewage as hereinafter defined;
- k) **SANITARY SEWER** – shall mean the sewer pipe system which carries sanitary sewage, as defined hereinbefore, and to which storm, surface and ground water are not intentionally admitted;
- l) **SEWER LATERAL** – shall mean any piping systems which runs from the private property line to the public sewer, and is not within the portion of the system owned or operated by the Municipality;
- m) **SLUDGE** – shall mean any discharge of sewage which in concentration of any given constituent or in quantity of flow exceeds more than five times the average twenty-four hour concentration or flow for a period in excess of fifteen minutes;
- n) **STORM SEWAGE** – shall mean ground, surface, and storm waters which are unpolluted other than by their contact with the natural environment, and industrial cooling water, and unpolluted process water;
- o) **STORM SEWER** – shall mean a pipe system which carries storm and surface waters, industrial cooling water, or unpolluted process water but excludes sanitary sewage;
- p) **STREET** – shall mean any public road in the Municipality of the District of Guysborough;

**PART 2 – ESTABLISHMENT OF WASTEWATER MANAGEMENT DISTRICT
AREA & COMMITTEE**

1. The establishment of a Wastewater Management District shall be pursuant to the provisions of Part 14, Section 342 of the Municipal Government Act, R.S.N.S. Chapter 295 or any amendments thereto.
2. The Municipality hereby establishes the Wastewater Management District for the Community of Little Dover, the boundaries of which are as described in Schedule “A” hereto attached, and shown on Schedule “B” hereto attached.
3. The Wastewater Management System may consist of a public sewer and individuals on-site sewage disposal systems as contained in the Wastewater Management District Area.
4. When the Municipal Council deems it necessary that a public sewer or individual on-site sewage disposal system be constructed in the Wastewater Management District Area, the Council may order, by resolution, and without the authorization of any petition of the owners, that such public sewer or individual on-site sewage disposal system be constructed and all the provisions of the By-Laws related to and regulating the use of such systems in force in the Municipality by and are hereby made applicable to any such systems constructed by virtue of such resolution.
5. The Municipal Council may, by resolution, order the repair and improvement of any public sewer or individual on-site sewage disposal system, whenever the same shall be considered necessary or desirable, and to lay out, excavate and complete such system within the Wastewater Management District Area and for any other work necessary to be done in connection therewith.
6. The management, operation and control of the Wastewater Management District as defined in Clause 2 is vested in the Municipal Council of the Municipality of the District of Guysborough. The Council shall annually appoint a Committee to be responsible for Wastewater Management Systems within the Municipality. It shall be the duty of this committee to make annual reports to Council concerning the operation, construction and installation of all public sewers and individual on-site sewage disposal systems within the Wastewater Management District Area. Council may refer to such Committee any questions relating to any proposed installation of a public sewer or individual on-site sewage disposal system in any part of the Wastewater Management District Area for study and report. This Committee shall be responsible for the supervision of the enforcement of the By-Laws relating to public sewers and all individual on-site sewage disposal systems within the Wastewater Management District Area.

This Committee shall oversee the construction and installation of public sewers and individual on-site sewage disposal systems in any Wastewater Management District Area established by the Municipality of the District of Guysborough.

PART 3 – THE REQUIRED USE OF THE WASTEWATER MANAGEMENT SYSTEM

1. The owner of any dwelling house, shop, store, office or other building, the nearest part of which is not more than Two-Hundred Feet (200') from any portion of the public sewer or individual on-site sewage disposal system within the Wastewater Management District Area, is hereby required, at his expense, to connect any facilities discharging sanitary sewage directly with the disposal system provided by the Municipality in accordance with the provisions of the By-Law, within Thirty (30) Days after the date of the official notice to connect. In circumstances where the Municipality provides a tank within private property, the property owner shall be responsible for the installation of the sewer lateral from the dwelling or building to the tank. Where the septic tank forms part of the treatment system the Municipality shall install the appropriate tank and all piping connections from the tank to the main line in the street. The tank installation shall include any necessary pumps, etc. with the power supply for any pumps within private property to be provided by the property owner.
2. Where a public sewer is not available within the Wastewater Management District Area, the building sewer system shall be connected to a private on-site sewage disposal system and will be up-graded to the Department of Environment requirements at the cost of the Municipality, excluding the cost of laying pipe from the foundation of the building to the individual on-site sewage disposal system as provided by the Municipality.

PART 4 – BUILDING SEWERS AND CONNECTIONS

1. a) No person, firm or corporation shall make any opening or openings to uncover any public sewer or individual on-site sewage disposal system or connect a building sewer, private drain or sewer within the public sewer or individual on-site disposal system within the Wastewater Management District Area, without first obtaining a permit therefore from the Municipality, which permit shall be in the form of Schedules “C” and “D” to this By-Law. Provided however, that notwithstanding the issuance of any such permit, the person to whom any such permit is issued shall be liable for any damage or injury to the public sewer or individual on-site sewage disposal system caused by him, his servants, agents or workmen in making any such connection.

b) It shall be the duty of any person, firm or corporation who connects any on-site sewage disposal system, or drain while excavating, to securely protect the excavation in such manner as may be directed by the Inspector, and to use a licensed installer for the purpose of such work.

c) There shall be two classes of building sewer permits:
 - (i) for residential and commercial service; and
 - (ii) for service to establishments producing industrial wastes.

In either case, the owner or his agent shall make application on a form furnished by the Inspector, which form shall have the context given in Schedules “C” and “D” of this By-Law, as is applicable. The permit application shall be supplemented by any plans, specifications, and other information as is deemed necessary by the Municipality, to determine whether the application meets the requirements of this By-Law.

2. All costs and expenses incidental to the installation and connection of the building sewer shall be borne by the Owner. The Owner shall indemnify the Municipality from any loss or damage that may directly or indirectly be occasioned by the installation of the building sewer.
3. A separate and independent building sewer shall be provided for every building; except where one building stands at the rear of another on an internal lot and no private sewer is available or can be constructed to the rear building through an adjoining alley, courtyard or driveway. The building sewer from the front building may be extended to the rear building and the whole considered as one building sewer.
4. Old building sewers may be used in connection with new buildings only when they are found, on examination and testing by the Inspector, to meet all the requirements of this By-Law.
5. Size, slope, alignment, materials of construction of the building sewer, and the methods to be used in excavating, placing of the pipe, jointing, testing, backfilling the trench, and connection to the public sewer or individual on-site sewage disposal system shall all conform to the requirements of the Municipality as set out in Part 5 of this By-Law.
6. Whenever feasible, the building sewer shall be brought to the building at an elevation below the basement floor. In all buildings in which the sewer drain is too low to permit gravity flow to the public sewer system or individual on-site sewage disposal system, sanitary sewage carried by such sewer drain shall be lifted by an approved means and discharged to the public sewer or individual on-site sewage disposal system at the expense of the owner.
7. The person who originally made application for the building sewer permit shall notify the inspector when the building sewer is ready for inspection and connection to the public sewer. The entire works shall be performed under the supervision of an inspector. Backfilling of the building sewer shall not be undertaken until the inspections are completed and certificates of approval by the owner.

PART 5 – APPLICATION TO CONNECT

1. Before any person constructs a building sewer, he shall apply to the Municipality for directions as to the proper lines and grades applicable to his building sewer and the Inspector shall assign suitable lines and grades for any building sewer.
2. (1) The construction and installation of any building sewer shall be under the direct supervision of the Inspector and the specification for labour and materials under which

the public sewer was constructed are to be considered as part of the specification for any such building sewer modified, however, so as to be applicable to the building or buildings situated on the property to be served by such building sewer.

(2) The installation requirements necessary before connections of the public sewer or individual on-site sewage disposal system is permitted are as follows:

a)

- (i) Any building sewer shall, from a point three feet (3') outside of the foundation of the house or building to the street line or individual on-site sewage disposal system shall be of first quality materials, the pipe having a diameter of four to six inches (4" to 6");
- (ii) Sewer laterals must not be less than four inches (4") in diameter and be constructed of PVC DR28 with ring tight joints or approved equivalent;
- (iii) The building sewer may be laid in a common ditch with the water line but it must be buried at a lower elevation and at a minimum distance of twelve inches (12") away from the water line;
- (iv) The building sewer must be laid on a bed of tamped sand or approved fine gravel of not less than six inches (6") in depth and must not be backfilled until inspected and approved by the Inspector;
- (v) When backfilling is permitted a topping of not less than six inches (6") of sand or approved fine gravel must be laid over the sewer line before previously excavated backfill material is replaced into the ditch to bring it up to grade.

b)

- (i) An application for a permit to make connection to sewer main trunk lines or individual on-site sewage disposal systems must be made by the property owner to the Municipality or its appointed agents;
- (ii) When a permit is issued a property owner can proceed with installation of laterals under conditions of the above noted specifications and regulations;
- (iii) Backfilling of ditches must not be undertaken until the installations are inspected and the approval certificate received by the owner.

3. All sewers shall be constructed in accordance with the provisions of the Public Highways Act, R.S.N.S. 1989, Chapter 371, and amendments and regulations thereto and shall cause as little obstruction as possible for pedestrians and vehicular traffic during installations.

4. (1) Whenever any building sewer is abandoned, the owner shall effectively block up the connection at the property line so as to prevent sewage from backing up into the soil, or dirt

being washed into the sewer.

(2) Where the owner does not effectively block up the building sewer as required under the provisions of sub-section (1) within seven (7) days from receipt of notice from the Inspector, requiring him to do so, the Inspector may cause the same to be done and the cost of such work caused to be done may be recovered as a debt by the Municipality from the owner in an action in any court of competent jurisdiction.

5. (1) Where under any provision of this By-Law approval or permission of the Inspector appointed by the Committee is required before any work or thing may be done, an appeal shall lie to the Committee from the decision of the Inspector, refusing to grant approval or permission, and the Committee shall either direct the Inspector to grant the approval or permission or uphold the decision of the Inspector.

(2) The right of appeal provided in sub-section (1) shall expire thirty (30) days after the Inspector gives his decision in writing to the owner with respect to the approval or permission.

PART 6 – USE OF SEWAGE DISPOSAL SYSTEMS WITHIN THE WASTEWATER MANAGEMENT DISTRICT AREA

1. No person, firm or corporation shall discharge or cause to be discharged any storm water, surface water, ground water, roof run-off, sub-surface drainage, unpolluted cooling water, or unpolluted industrial process waters to any sanitary sewer.
2. No open gutter, cesspool, privy, vault, cellar, underground drain or exhaust pipe from any machine shall be connected with any public sewer or individual on-site disposal system.
3. No person, firm or corporation shall injure, break or remove any portion of the public sewer individual on-site sewage disposal system or building sewer.
4. No person, firm or corporation shall throw, or permit to be thrown or deposited in any sewer opening or receptacle connected with the public sewer system or individual on-site sewage disposal system, any garbage, offal, dead animals, bones, ashes, cinders, rags, or any other material or thing excepting feces, urine and necessary toilet paper, household liquids.
5. No person shall discharge or cause to be discharged any sanitary sewage to any storm sewer.
6. No person shall discharge or cause to be discharged into the public sewer or individual on-site sewage disposal system or building sewer the following described substances, materials, water or waste:
 - a) sewage at a temperature in excess of sixty degrees (60 degrees) Celsius;
 - b) Sewage containing any inflammable or explosive matter, and without limiting the

generality of the foregoing, gasoline, benzene, naphtha, fuel oil, acetone, or other solvents;

- c) Any quantity of matter capable of obstructing the flow in or interfering with the proper operation of any part of the sewage works, and without limiting the generality of the foregoing, any such quantity of ashes, cinders, garbage, sand, straw, mud, shavings, metal, glass, rags, feathers, plastics, wood or cellulose;
- d) Sewage that may cause a nuisance, and without limiting the generality of the foregoing, sewage containing hydrogen sulphide, carbon disulphide, ammonia, trichlorethylene, sulphur dioxide, formaldehyde, chlorine, bromine or pyridene, in such quantity that an offensive odor could emanate from the sewage works or could cause a nuisance;
- e) Sewage having a pH less than 5.5 or greater than 5.9 or which, due to its nature or content, becomes less than 5.5 or greater than 9.5 during transmission to a sewage treatment plant;
- f) sewage which exerts or causes:
 - (i) unusual concentrations of inert suspended solids (such as, but not limited to, Fuller's earth, lime slurries, and lime residues) or of dissolved solids (such as, but not limited to, sodium chloride and sodium sulphate);
 - (ii) excessive discoloration (such as, but not limited to dye wastes and vegetable tanning solutions);
 - (iii) unusual BOD, chemical oxygen demand, or chlorine requirements in such quantities as to constitute a significant load on the sewage treatment works;
 - (iv) unusual volume of flow or concentration of wastes constituting "sludge" as defined herein.
- g) The contents of septic tanks.
- h) Radioactive materials except as may be permitted under the Atomic Energy Control Act, R.S.C. 1952, Chapter II and amendments thereto and regulations thereunder.
- i) Storm run-off, sewage derived from the drainage of lands or roofs, water used for cooling purposes or any other unpolluted waste waters.
- j) Without limiting any of the foregoing, no person shall discharge or cause to be discharged any waters or wastes containing substances which are not amenable to treatment or reduction of the sewage treatment processes employed, or are amenable to treatment only to such degree that the sewage treatment plant effluent cannot meet the requirements of other agencies having jurisdiction over discharge to the receiving

waters.

7. If any water or wastes are discharged, or are proposed to be discharged to the public sewers or individual on-site sewage disposal systems which waters contain in substance or process the characteristics enumerated in Part 6, Section 6 of this By-Law, the Municipality may do any or all of the following:
 - a) Reject the wastes;
 - b) Require pretreatment to an acceptable condition for discharge to the public sewers or individual on-site disposal systems;
 - c) Require control over the quantities and rates of discharge;
 - d) Require payment to cover the added cost of handling and treating the wastes not covered by existing taxes or sewage charges;
8. If the Municipality requires the pretreatment or equalization of waste flows, the design and installation of the plants and equipment shall be subject to the review and approval of the Municipality and subject to the requirements of all relevant Federal and Provincial Statutes and Regulations.
9. Where preliminary treatment or flow equalization facilities are provided for any waters or wastes, they shall be maintained continuously and satisfactorily in effective operation by the Owner at his expense.
10. Whenever the Inspector considers it is necessary, he or they shall require any person who is the owner of land which is used for industrial or commercial purposes and which is connected to a public sewer or individual on-site sewage disposal system to provide grease, oil, and sand inceptors in order to provide for the proper handling of liquid wastes containing grease in excessive amounts, or any inflammable waste, sand, or other harmful ingredients. All owners of garages, service stations, car wash operations and similar business establishments shall provide approved types of inceptors for oil, grease, soap and similar products. All inceptors shall be of a type and capacity approved by the Inspectors, and shall be located so as to be readily and easily accessible for cleaning and inspection. Grease and oil inceptors shall be of substantial construction, watertight and equipped with easily removable covers which, when bolted in place, shall be gas-tight and watertight.
11. When required by the Municipality, the Owner of any property served by a building sewer carrying industrial waste shall install a suitable control manhole, together with such necessary meters and other appurtenances in the building sewer to facilitate observation, sampling and measurement of the wastes. Such manholes, when required, shall be accessible and safely located, and shall be constructed in accordance with plans approved by the Municipality. Manholes shall be installed by the Owner at his expense and shall be maintained by him so as to be safe and accessible at all times.

PART 7 – FINANCES

1. Every owner of land within the Wastewater Management District Area which is serviced by a public sewer or is fronting on any street or highway within the Municipality of the District of Guysborough, which street or highway has a public sewer installed (as determined by Council pursuant to this By-Law), or which is serviced by an individual on-site sewage disposal system, shall pay to the Municipality a capital charge per equivalent unit. The capital charge shall be the total cost of completing the project, less any amounts funded by Provincial and/or Federal Governments and/or any amount paid by the Municipality from municipal sources to be determined by Council pertaining to the Capital Project. The amount so determined shall be the cost of the project to the property serviced within the Wastewater Management District Area. This amount shall be divided by the total amount of equivalent units in the Wastewater Management District Area served by the system to determine the charge per equivalent unit. The charge for each serviced property shall be determined by multiplying the capital charge per equivalent unit by the number of equivalent units for the property determined in accordance with Section 3 herein. Council shall determine the capital charge for each area covered by this By-Law, which capital charge shall be reviewed from time to time by Council. In the event of development of a lot not previously serviced by a public sewer or individual on-site sewage disposal system the cost of connection shall be the capital charge determined hereunder and reviewed by Council from time to time.

2. The Capital charges, including interest, are first liens on the real property and may be collected in the same manner as other taxes;

3. Annual Installments:

Annual installments for payment of Sewer Capital Charges may be made over a period not exceeding ten (10) years starting from the beginning date of October 1, 2001. The annual installment shall be determined by dividing the total capital charge of the serviced property by ten. Annual bills shall be mailed out yearly following the beginning date.

Interest is payable annually on the entire amount outstanding and unpaid, whether or not the owner has elected to pay by installments, as follows. Interest will be calculated monthly on the entire amount outstanding and unpaid at a rate of 9.25%. The monthly interest rate shall be one twelfth of 9.25%.

4. The owner of any property which is served by a public sewer system, clustered sewage disposal system or individual on-site sewage disposal system within the Wastewater Management District Area shall pay an annual maintenance charge. The basic annual maintenance charge shall be calculated based on an amount budgeted by Council to be the amount required to maintain and operate the system for the year plus an amount to be set aside as a reserve for future capital expenditures and/or major repairs to the system. Once the budget has been determined, the charge per equivalent unit shall be determined by dividing the estimated budget amount for maintenance and operation by the total number of equivalent units in the Area within the Wastewater Management District Area served by the

systems. The annual maintenance charge for each property shall then be determined by multiplying the basic annual charge by the number of units for the property determined in accordance with Section 3.

5. The Every owner of land which is serviced by the system shall be assigned cost based on equivalent units. The equivalent unit shall be based on the following:

Type of Use	Imperial Gallons	Units
1. Single Family Residence	200	1
2. Apartment (self-contained)	200	1
3. Office Building	10 (per employee)	See Note 1 below
4. Church or Hall	200	1
5. Senior Citizen's Complex	100 (per apartment)	See Note 1 below
6. Rest Home	100 (per bed)	See Note 1 below
7. Hospital	150 (per bed)	See Note 1 below
8. Campground	50 (per site)	See Note 1 below
9. Hotel/Motel with Bath	75 (per unit)	See Note 1 below
10. Hotel/Motel Housekeeping Unit	100 (per unit)	See Note 1 below
11. Hotel without Bath	50 (per unit)	See Note 1 below
12. Laundromat	85 (per washer)	See Note 1 below
13. Restaurant	30 (per seat)	

Note 1: Total flows for this use shall be calculated based on the flow given times the appropriate number of employees, apartments, beds, sites, units, washers or seats depending on the type of use. The number of equivalent units is calculated by dividing the above total flow by 200. When the number of units calculated is less than one (1) at any single location, the number of equivalent units assigned to that location shall be one (1).

6. Every charge or tax imposed under the provisions of this By-Law shall constitute a first lien upon the real property, and may be collected in the same manner as other taxes and, at the option of the Treasurer, be collectable at the same time, and by the same proceedings, as taxes, pursuant to Section 81 of the Municipal Government Act.
7. Each property or owner thereof is liable for the entire cost of the building sewer from his property to the street line or individual on-site sewage disposal system.
8. An official appointed by Municipal Council shall keep an account of the cost incurred in installing, laying and construction of any sewer and on its completion shall file in the office of the Municipal Clerk:
 - a. A certificate of the costs of the work;
 - b. A statement of the equivalent units for each property with the name of the Owner thereof.

9. The sewer capital charge shall be payable within thirty (30) days from the date of billing by the Municipality.
10. The Municipal Council shall notify the Owner of the basis of the sewer capital charge assessment to him and the account payable.
11. The annual maintenance charge shall be due and payable on the date for payment of general rates in each year or a date to be determined by Council.
12. Any and all charges made pursuant to the Wastewater Management District By-Law are in lieu of any charges made pursuant to the Sewer By-Law for the Municipality of the District of Guysborough and no one will be liable to pay a charge under both.

PART 8 – POWERS AND AUTHORITIES OF INSPECTORS

1. The Municipality, its servants and agents may enter on any property within the Wastewater Management District to repair, upgrade or replace a public or private wastewater system and may, as set out in this By-Law, charge any or all of the costs to the owners of the property served by the system.

PART 9 – PENALTIES

1. Any person found to be violating any provision of this By-Law shall be subject to prosecution, and upon conviction shall be subject to a penalty not exceeding One Thousand Dollars (\$1,000.00).

PART 10 – REPEALING

1. All former Wastewater Management District By-Laws, which include lands contained in Schedule A, passed by the Council are hereby repealed and this By-Law substituted therefore.

SCHEDULE "A"

LITTLE DOVER WASTEWATER MANAGEMENT DISTRICT AREA

Following is a description of the area covered by Phase II and Phase III of the Wastewater Management District;

BEGINNING at the Northern Boundary of lands now or formerly of Lloyd William Haines, described by Deed in Book 134 at Page 192 at the Registry of Deeds in Guysborough, Nova Scotia.

THENCE extending Easterly to the Shore of Dover Lake,

THENCE extending Southerly parallel with Dover Road to MacGuire Lake, following the Shores of MacGuire Lake to the Brook,

THENCE extending along the Southern Shore of Dover Harbour to lands now or formerly owned by Department of Natural Resources,

THENCE extending Northerly along the shoreline of Dover Harbour to Dover Basin until it reaches lands now or formerly of Department of Natural Resources,

THENCE extending across Dover Road to the Northern boundary of lands now or formerly of Lloyd William Haines, described by Deed in Book 134 at Page 192 at the Registry of Deeds in Guysborough, Nova Scotia.

As shown on the attached map.

SCHEDULE "B"

MAP

LITTLE DOVER WASTEWATER MANAGEMENT DISTRICT AREA

Map
of
District

