Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Environmental Screening Report November 21, 2011



Municipality of Bluewater

Project No. 10-3169

Submitted by

Dillon Consulting Limited



#### HIGHWAY 21 CORRIDOR SANITARY SEWAGE COLLECTION SYSTEM CLASS ENVIRONMENTAL ASSESSMENT (EA) & PRELIMINARY DESIGN

#### Notice of Completion

On November 3, 2011, the Municipality of Bluewater Council adopted the Environmental Screening Report prepared for the proposed Highway 21 Corridor Sanitary Sewage Collection System. The Service Area for the collection system is shown on the map. The collection system consists of the following components:

- a forcemain located in an easement along the east side of Highway 21
- a low pressure sewage collection system servicing all of the subdivisions in the lakeshore Service Area. The system will be constructed in four phases from the south to the north.



Since the preliminary municipal and per lot cost estimates prepared for the proposed collection system are high, the Environmental Screening Report recommends that the system not be constructed until Provincial Government funding is available. The Municipality intends to use the report as the basis for seeking funding.

The Class EA completed for this project followed the requirements of the Municipal Class EA (2000, as amended) for a Schedule "B" project, as documented in the Environmental Screening Report. A copy of the report is available for a 30-day review period from **November 23 to December 23, 2011** at:

Municipality of Bluewater 14 Mill Avenue, P.O. Box 250 Zurich, Ontario. NOM 2T0 519-236-4351 Hours: Monday to Friday, 8:30 a.m. to 4:30 p.m.

The report is also available on the Municipality's website at <u>www.town.bluewater.on.ca</u>.

The Municipal Class EA entitles any person who has significant concerns about the project to request the Minister of the Environment to issue a Part II Order to change the status of the project from a Class EA to an individual environmental assessment. The procedure for requesting a Part II Order is:

- first, the person with concerns discusses them with the Municipality of Bluewater
- if the concerns cannot be resolved, the person may submit a written request for a Part II Order to the Minister of the Environment at 135 St. Clair Avenue West, 12<sup>th</sup> Floor, Toronto, Ontario, M4V 1P5 by **December 23, 2011**, copied to Brent Kittmer, Utilities Superintendent, Municipality of Bluewater, 14 Mill Avenue, P.O. Box 250, Zurich, Ontario, N0M 2T0.

The *Freedom of Information and Protection of Privacy Act* applies to information gathered for this project. With the exception of personal information, all comments will become part of the public record.

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- Appendix D Preliminary Design Drawings
- Appendix E Property Requirements and Easements

# 1. INTRODUCTION

#### 1.1 Background

In 2006, Dillon Consulting Limited completed the *Grand Bend and Area Sanitary Sewage Master Plan* for the Municipalities of Lambton Shores, South Huron and Bluewater. The Master Plan recommended a long-term, environmentally and economically sustainable servicing scheme to meet sanitary sewage servicing needs for the next 20 years. The Study Area for the Master Plan is shown on **Figure 1**. The Master Plan recommended that the Bluewater lakeshore, from Huron Road 83 to St. Joseph ("Zone 1"), be serviced by a municipal sanitary sewage collection system, with treatment provided by an expansion and upgrading of the Grand Bend Sewage Treatment Facility (STF).

The expansion and upgrading of the Grand Bend STF to service portions of Lambton Shores, South Huron and Bluewater was approved under the *EA Act* in 2009. Construction of the project is expected to begin in 2012. The Municipalities of Lambton Shores and South Huron are currently preparing Class EAs of sanitary sewage collection system projects, as recommended by the 2006 Master Plan.

All development along the Bluewater lakeshore and in Dashwood is currently serviced with septic tank and tile bed systems. As explained in the Master Plan, replacing the existing septic systems in Bluewater with municipal services has significant benefits, including:

- Improvements in ground and surface water quality, including Lake Huron, Bluewater's most important natural and recreational asset
- Elimination of the potential public nuisance and health problems caused by malfunctioning systems
- Elimination of the need for property owners to repair/replace existing septic systems. In some cases, replacement may be impossible due to small lot sizes, making many lots unusable. In addition, replacing a septic system may cost as much per residence as the cost of a new municipal sewage collection system.

Recognizing these benefits, the Municipality of Bluewater initiated a Class Environmental Assessment (EA) and Preliminary Design of the Zone 1 sanitary sewage collection system in 2010. This Environmental Screening Report documents the decision-making process leading to the selection of the preferred sanitary sewage collection system.

#### 1.2 Study Area

As shown on **Figure 2**, the Study Area for Bluewater's Highway 21 Corridor Sanitary Sewage System Class EA and Preliminary Design consisted of all lands potentially affected by the project, including:

- "Zone 1" (as identified in the 2006 Master Plan), including lands along the Bluewater lakeshore from Huron Road 83 to Huron Road 84. The hamlet of St. Joseph and other uses north of the hamlet were also included
- Lands along Huron Road 83, including the north part of the hamlet of Dashwood. The south half of the hamlet is located in the Municipality of South Huron.

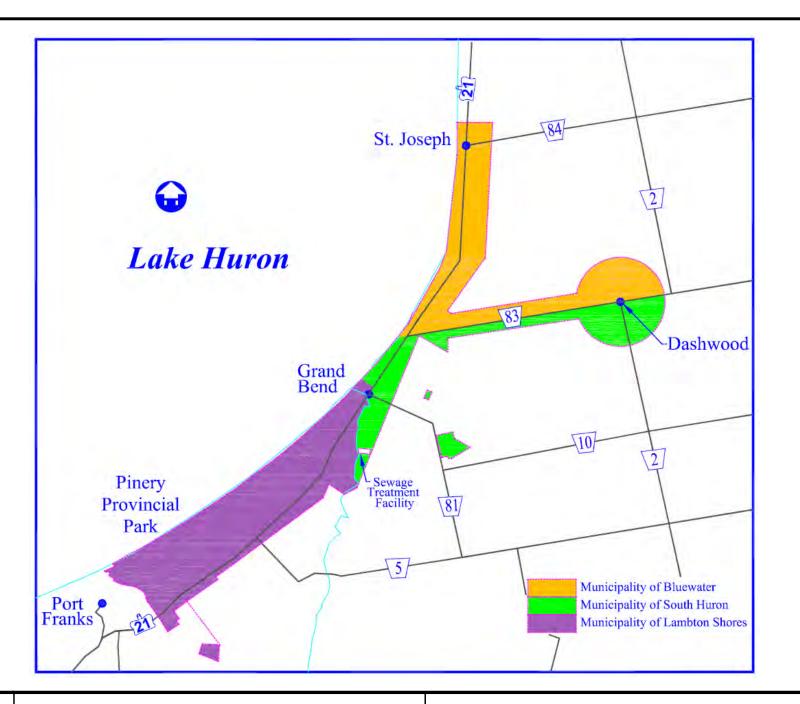
# **1.3** Proposed Sanitary Sewage Collection System, Service Area, Phasing and Timing of Construction

As shown on **Figure 3**, the recommended Service Area includes lands along the Bluewater lakeshore from Huron Road 83 to Huron Road 84, including the hamlet of St. Joseph and some uses north of the hamlet, including Hessenland Inn and Driftwood Trailer Park. The hamlet of Dashwood is not recommended for servicing at this time.

The proposed sanitary sewage collection system is described in detail in Section 6 of this report and consists of the following works:

- A forcemain located in an easement along the east side of Highway 21
- A low pressure sewage collection system servicing all of the subdivisions in the lakeshore Service Area. The system will be constructed in four phases from the south to the north.

The Bluewater collection system requires a shared sewer in the Municipality of South Huron to connect the collection system to the Grand Bend Area Sewage Treatment Facility (STF). A Class EA of the shared sewer, *Grand Bend Area Sewage Collection System*, is currently being prepared by Gamsby and Mannerow Consulting Engineers on behalf of the Municipality of South Huron. As required by the Municipal Class EA for a Schedule 'B' project, South Huron's Class EA will include an impact assessment of the shared sewer on "fronting" lands in South Huron and Grand Bend in Lambton Shores. Measures to avoid/mitigate any adverse impacts will also be covered by the Class EA.



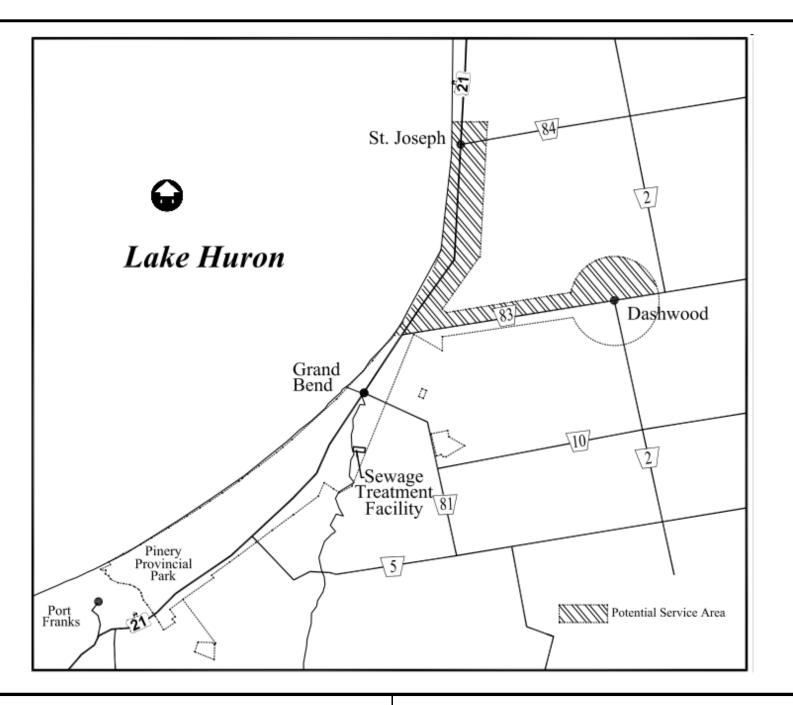


Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Grand Bend and Area Sanitary Sewage Servicing Master Plan (2006) Study Area

Figure 1

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Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

<b>Bluewater</b>	Class E	A Study Area
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Figure 2

# 10-3169





Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Service Area	3169
Figure 3	10-3

As part of the Class EA process, South Huron has selected a preferred design and route for the shared sewer. Presented at a Public Information Centre held by South Huron on May 25, 2011, it consists of a gravity sewer in the Highway 21 right-of-way (ROW) on the west side of the highway, from County Road 83 to existing Pump Station 2, with a forcemain along Mollard Line to the Grand Bend Area STF.

Since the preliminary municipal and per lot cost estimates are high, the Environmental Screening Report recommends that the system not be constructed until upper government funding is available. The Municipality intends to use the report as the basis for seeking funding.

#### 1.4 Class Environmental Assessment Process

Municipal sanitary sewage projects must meet the requirements of the Ontario *Environmental Assessment (EA) Act*. The Municipal Class EA (October 2000, as amended in 2007) applies to a group or "class" of municipal water, wastewater and roads projects which occur frequently and have relatively minor and predictable impacts. These projects are approved under the *EA Act*, as long as they are planned, designed and constructed according to the requirements of the Class EA document.

The specific requirements of the Class EA for a particular project depend on the type of project, its complexity and the significance of environmental impacts. Three categories of projects are identified in the document, including Schedule "A", "B" and "C" projects. Bluewater's proposed sanitary sewage collection system is classified as the following type of Schedule "B" project:

"Establish, extend or enlarge a sewage collection system and all works necessary to connect the system to an existing sewage outlet where such facilities are not in an existing road allowance or existing sewage outlet where such facilities are not in an existing road allowance or existing utility corridor" (No. 2, Page I-14, Municipal Class EA). Also, projects "which take place partly outside the proponent's municipal boundary shall be planned at least under Schedule "B"" (Page I-9, Municipal Class EA).

As shown on **Figure 4**, a Schedule "B" project follows Phases 1 and 2 of the Class EA process and is subject to an "environmental screening":

• <u>Phase 1, "Problem/Opportunity Identification"</u>, and <u>Phase 2, "Alternative Solutions"</u>, of the Class EA process for this project were covered by the 2006 Master Plan. Phase 1 provided the justification for future infrastructure upgrades, while Phase 2 recommended

future sewage treatment and collection system improvements in Bluewater. Both phases were reviewed and updated as part of Bluewater's Class EA:

- Section 2 of this report is a review/update of Phase 1, "Problem/Opportunity Identification"
- as part of the Phase 2 review/update, Dillon refined the sanitary sewage servicing solutions recommended by the 2006 Master Plan. Documented in Section 3, alternative solutions and design options were identified and evaluated for sanitary sewage treatment, the Service Area for the Bluewater collection system and the type, location and sizing of the collection system. Options for phasing of construction were also evaluated.
- Based on the objective of avoiding or minimizing adverse environmental impacts, the <u>environmental screening process</u> involved:
  - the preparation of an inventory of the environment potentially affected by the Bluewater collection system, as outlined in Section 4 of this report
  - public and agency consultation undertaken for the project, as summarized in Section 5
  - development of the recommended Preliminary Design, as included in Section 6
  - an impact assessment of the recommended design, including measures to avoid/mitigate any adverse impacts, as included in Section 6.

## 2. PHASE 1, "PROBLEM/OPPORTUNITY IDENTIFICATION", REVIEW/UPDATE

## 2.1 Introduction

Phase 1 of the 2006 *Grand Bend and Area Sanitary Sewage Servicing Master Plan* included the following "Problem Statement" outlining problems and opportunities for sanitary sewage servicing in the Bluewater portion of the Master Plan Study Area:

"Committed, currently proposed and future growth in the Study Area must be serviced by municipal sanitary sewage services to comply with Provincial policies and legislation requiring environmental protection. More than 70% of the (Master Plan) Study Area's total population of 7,110 is serviced by septic systems. Malfunctioning systems, as well as discharges from the Grand Bend STF, are adversely affecting surface and groundwater... Septic system failure rates are expected to be high over the next 20 years. Based on these considerations, existing and future development in the Study Area require short and long-term municipal sanitary sewage servicing improvements."

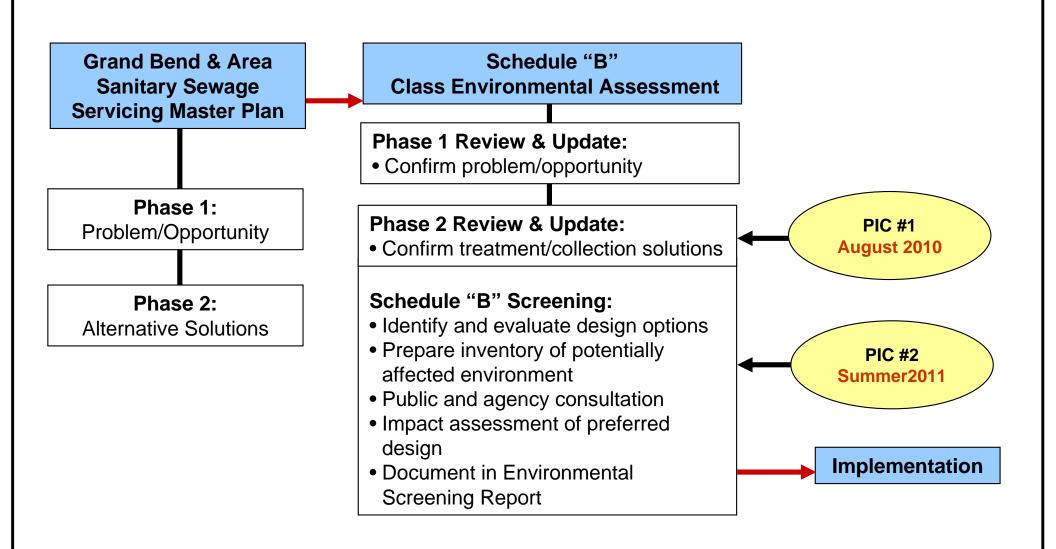
This section of the Environmental Screening Report documents the Phase 1 review and update completed for the Bluewater Class EA. The review and update built on the findings of the 2006 Master Plan and confirmed the need for sanitary sewage servicing improvements in Bluewater. The Phase 1 review and update also involved public and agency consultation, as summarized in Section 5.

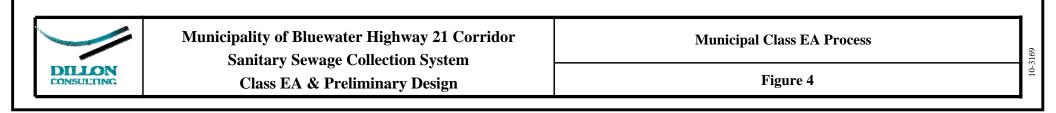
As part of this phase, Dillon concluded that there are five key reasons why sewers are required for the Bluewater lakeshore, including:

- Future growth and increasing year round use
- Soils/geomorphology
- Engineering and drainage considerations
- Environmental/health concerns
- Changing Provincial policies.

# 2.2 Future Growth and Increasing Year Round Use

Future growth and increasing year round use are causing more pressure on existing septic systems. As discussed in Section 4 of this report:





- The Bluewater Official Plan designates the Bluewater lakeshore as "Lakeshore Residential". Approximately 155 hectares of land are designated for development in this area
- 1% per year population growth is projected over the next 20 years due to the attractiveness of the lakeshore for retiring "baby boomers"
- Year round residents are expected to increase from the current 30% of Bluewater lakeshore residents to around 40%. Conversion to year round use will increase pressure on the existing septic systems
- Lifestyles have changed significantly. The size of residences and the number of water using appliances (dishwashers, laundry machines) has increased over the last 20 years.

#### 2.3 Soils/Geomorphology

As outlined in Section 4.5, Golder Associates Ltd. prepared a preliminary geotechnical assessment of the Study Area. The report concluded that:

- The clay soils in the Study Area are the least accepting soil type for sewage effluent and generally not suitable for conventional in ground tile beds. Raised beds or specially designed proprietary systems are required
- For soils of this type, a minimum lot size of 0.6 hectare approximately (6000 m<sup>2</sup> or 1.48 acres) is required to avoid cumulative surface and groundwater impacts. Too many septic systems in one area may result in adverse impacts on surface and groundwater
- As shown on **Table 14** in Section 4.5, almost all of the lots along the Bluewater lakeshore are smaller than 0.6 hectare. The only subdivisions with adequate lot sizes include the Pavilion Subdivision at the end of Sararas Road (north of Hendrick Road) and Josephine Street in St. Joseph.

Section 4.5 of this report also discusses transmissive geomorphology along the lakeshore. As shown on **Figure 10**, effluent from individual septic leaching beds combines to flow with the water table into Lake Huron, potentially adversely affecting water quality in the lake.

#### 2.4 Engineering and Drainage Considerations

Several factors influence the operation of septic systems along the lakeshore, including rainwater, surface drainage, small lot sizes and high lot coverage, poor septic system operation and aging septic systems.

#### Rainwater Surface Drainage

The lack of engineered roads, storm sewers and lot grading contributes to the overall poor performance of septic systems along the lakeshore:

- Most of the roads in existing subdivisions along the lakeshore, especially in the southern portion, are un-engineered rights-of-way and not drained properly.
- Most of the public and private sewers and drains along the lakeshore are also unengineered systems that do not provide adequate drainage. Since most of the systems are shallow and overlap with leaching bed areas, rainwater is entering the leaching beds and competing with sewage for treatment in the septic system.
- Most of the lots in existing subdivisions are not properly graded, also contributing to drainage problems.

#### Small Lot Sizes, High Lot Coverage and Year Round Use

Most of the lots along the lakeshore, especially in the southern portion, are too small to accommodate a properly sized septic system, including the 100% reserve area required by the Building Code in the event of system failure. Expansions or upgrades to existing systems to meet current standards are difficult or may be impossible due to the high coverage of most lots with accessory buildings and structures and paved areas. According to Golder's preliminary geotechnical assessment, a minimum lot size of approximately 0.6 hectare is required in clay soils to avoid cumulative surface and groundwater impacts.

In addition, some of the recently constructed service trenches (e.g. for watermains) have created barriers for leaching bed flow paths, contributing to the poor performance of some septic systems. Other problems include the lot patterns in many subdivisions which did not consider drainage flow paths from east to west toward Lake Huron. The north-south orientation of many of the subdivisions interferes with the east-west flow paths, causing ponding of water. This water competes with sewage for treatment in the septic system. In addition, older systems are not sized for year round use. Year round use of cottages is expected to increase over the next 20 years, as explained in Section 4.2.2 of this report.

#### Poor Septic System Operation

As indicated by many previous studies (summarized in the next section, Section 2.5), many septic systems are not operating properly, with many breakdowns and "jerry rigging". Some homeowners have illegally connected septic systems to agricultural and surface drains causing water quality impacts on Lake Huron and strata, cliff and bank erosion on the lake and ravines. Leachate springs are also apparent in some septic bed areas and down gradient from the beds.

Dysfunctional septic systems may also cause more severe impacts, such as organic nitrogen, ammonia and general organic loading. Previous studies show *E.coli* contamination of the beach caused by multiple sources, including agriculture and domestic sewage. Conventional septic tank/leaching bed systems "nitrify" nitrogen in wastewater to nitrate. However, nitrates are not readily biodegraded in the environment and are carried along the groundwater flowpath eventually discharging to surface water, including Lake Huron.

#### Aging Septic Systems

The first signs of aging septic systems usually occur within 20 years. Most of the septic systems in the Study Area are more than 25 years old, with many more than 40 years old. According to Dillon's septic system survey (summarized in Section 2.5) completed in 2010, the average system age south of Hendrick Road is 34 years, far exceeding the 20 year service life. The first sign of problems usually occurs in the natural soils below the tile bed, resulting in fouling around the distribution trench stone.

The rate of expected septic system failure is expected to be high over the next 20 years, due to the age of the existing systems.

#### 2.5 Environmental and Health Concerns

#### 2.5.1 Previous Studies

There is a long history of documented environmental and health concerns related to the concentration of development serviced by septic systems along the Lake Huron shoreline. This section of the report summarizes initiatives on this issue since the late 1980's:

#### Ministry of the Environment (MOE), Late 1980's

In the late 1980's, MOE expressed the opinion that development on septic systems in Huron County should be curtailed. The Ministry recommended a study to identify potential problems and determine if a need exists to replace the existing septic systems with communal sanitary sewage systems. In response, the Huron County Planning completed the *Rural Servicing Study* in 1992 to examine development in rural areas and make recommendations for servicing future development.

#### County of Huron Planning and Development Department, Rural Servicing Study, 1992

The County's *Rural Servicing Study* noted that development of the Hay Township lakeshore (now Bluewater) is occurring at a constant rate and the percentage of year round residences is

increasing at a high rate. The study recommended that development on septic systems be more tightly controlled.

#### Ausable Bayfield Conservation Authority (ABCA), Clean Up Rural Beaches Program

ABCA's *Clean Up Rural Beaches* (CURB) *Plan*, 1989, examined the relative contribution of contaminant sources to Lake Huron and concluded that faulty septic systems were the greatest contributors of phosphorus and bacteria to the Lower Parkhill, Lower Ausable and Gullies subwatersheds. The study highlighted the potential impacts of the release of septic waste on aquatic habitats.

Based on the findings of the study, ABCA administered the CURB program on behalf of MOE during the 1990's. The purpose of the program was to improve the water quality of the Lake Huron shoreline by reducing the quantity of farm run-off and residential septage that reaches the lake. The program provided 50% subsidies for manure containment, stream fencing and replacement of septic systems. By 1995, 87 projects were completed in former Hay Township. Projects included 24 septic system improvement projects and 63 surface drainage improvement projects in Elmwood and Lakewood Gardens Subdivisions to allow septic systems to work properly.

# Burns Ross Limited, Consulting Engineers, Township of Hay, Review of Lakeshore Septic Systems, 1995

Completed for the former Township of Hay, the purpose of this study was to determine if the problems caused by the concentration of septic systems along the lakeshore justify an application for provincial funding to replace the existing septic systems with communal sanitary sewage systems. The study concluded that significant development is occurring along the lakeshore and many residences are being converted to year round use. According to the report, growth along the lakeshore occurred at approximately 1% per year from 1980 to 1995, adding almost 200 septic systems to the Hay lakeshore.

As part of the study, staff of the Huron County Health Unit and ABCA provided Burns Ross with the following comments on septic systems in Hay Township:

#### Huron County Health Unit

- Many systems are undersized considering:
  - $_{\circ}$   $\,$  the modern day use of water and water using appliances
  - the size of the residence and length of time that "seasonal" residences are used (up to nine months a year)

- Soils are primarily clay. As a result, new and, in many cases, replacement systems require raised beds with imported soils
- Poor surface drainage is a major contributor to failure of septic systems
- In cases where new or replacement systems cannot be installed because the lots are undersized, owners have had to install holding tanks instead of septic systems. Pumping out the tanks is an additional cost to the owner
- The rate of septic system failure is expected to be "unusually high given the number of systems"

#### <u>ABCA</u>

- Many systems were constructed 40 or more years ago to inadequate standards. Many are too small, in poor soils, installed too deep or constructed of inadequate materials
- Poor soils and drainage conditions hinder tile bed operations
- Increased usage and pressure on systems has resulted from lifestyle changes (more water using devices) and the conversion of many residences from seasonal to year round use
- Lack of regular maintenance and abuse of systems have caused many failures. Examples of "abuse" included construction of new and larger houses, paving, tree planting, parking and vehicle travel over leaching beds.

The study also summarized the *Lakeshore Cottage Septic Survey* completed by ABCA for the Bayview Subdivision (85 lots) in 1991. Of the 54 systems surveyed, only one was found to be faulty. However, as noted in Burns Ross' 1995 report, 46% stated that their systems had never been inspected, 76% were 10 years old or older, 20% were older than 20 years, 50% of the tanks had been pumped out within the last four years and 37% had never had their systems pumped out. ABCA's survey concluded that system failure rates are likely to increase due to a lack of maintenance and the increasing age of cottage development.

The 1995 report concluded that there were insufficient problems with septic systems along the lakeshore for Hay Township to consider a communal sewage system at that time. However, the report pointed out that:

"... development in this area is continuing at a reasonably constant rate and the percentage of permanent residences is increasing at a higher rate. The Rural Servicing Study points out that this trend is expected to continue, especially as cottages are converted to permanent residences. Given the small size of some of the older lots and the clay soil types, it is impossible to determine the cumulative impact that this could have on the operation of septic systems... If problems become apparent and/or large scale development proposals are presented, then the Township should consider the development of a Master Plan for sewage disposal, possibly in co-operation with adjacent municipalities along the lakeshore, so that an affordable planned system can be phased in as necessary."

#### ABCA, Watershed Report Card, 2007

The ABCA produces *Watershed Report Cards* for each subwatershed, including the South Gullies Watershed. The 2007 report card (copy in **Appendix B**) included the following grades for water quality:

- **Grade B** for Total Phosphorus. This element enhances plant growth and contributes to excess algae and low oxygen in streams and lakes. The ABCA watershed has a concentration of 0.08 mg/L, higher than MOE's environmental health objective concentration of 0.03 mg/L. The South Gullies has a concentration of 0.07 mg/L, 0.01 mg/L less than the entire watershed
- **Grade C** for *E.coli* (*Escherichia coli*) found in human and animal waste. The presence of this bacteria indicates the potential for other disease-causing organisms in water. The Ministry of Health has established a guideline of 100 cfu (colony forming units)/100 mL in recreational waters. Concentrations in the ABCA watershed and South Gullies exceed the guideline at 233 cfu and 236 cfu, respectively
- **Grade C** for Benthic Invertebrates (small animals without backbones) that live in streams and sediments. An indicator of stream health, the Family Biotic Index (FBI) reflects the number and types of these animals in a sediment sample. FBI values range from 1 (healthy) to 10 (degraded). In 2007, the ABCA watershed had an FBI of 5.6 and the South Gullies watershed had an FBI of 5.2

The report card also includes suggestions for improving water quality. These include:

- Protect all wetlands
- Develop upstream storm water retention measures for the Lake Huron gullies with the most severe erosion issues
- Implement windbreaks and conservation tillage on erosion prone soils
- Fix faulty septic systems and establish a septic maintenance plan
- Decommission abandoned wells, upgrade existing wells and upgrade the Zurich sewage lagoons
- Manage manure.

#### Huron County Groundwater Study (2003)

This study recommended a mandatory on-site sewage system maintenance program to ensure that existing systems are properly maintained and operated by property owners. As suggested by the Groundwater Study, and required by the *Clean Water Act*, the Huron County Health Unit is implementing a Mandatory Septic Inspection program.

#### GAP Enviro/Microbial Services, DNA Study

As noted, tile beds on clay soils are more prone to premature failure and breakout of septic effluent. This "breakout" has led some homeowners along the lakeshore to illegally connect their leaching bed area to a surface water drain. A 2005 DNA study conducted for the Bluewater Shoreline Residents Association by GAP Enviro/Microbial Services concluded that *E.coli* bacteria from samples collected in the St. Joseph's Drain are closely related to the *E.coli* strains from samples taken at St. Joseph beach. Multiple sources, including agriculture and domestic sewage, are contributing to the problem.

#### 2.5.2 County of Huron On-Site Sewage System Re-inspection Program 2008

As suggested by the lakeshore community to address pollution caused by faulty septic systems, the Huron County Health Unit undertook a voluntary on-site septic system re-inspection pilot program from 2005 to 2007. Forty-one inspections were completed in Bluewater (mostly in St. Joseph Shores), including 23 in the Bluewater Class EA Study Area. As shown on **Table 1**, of the 23 systems surveyed:

- Up to one-third of the systems required immediate repair/replacement. In one case, the septic tank was made of bricks
- Two of the properties were not suitable for septics. One had too many bathrooms and fixtures and one was located on a lot with underground water flow
- Three systems were failing
- Three systems were not properly maintained. One system had never been pumped out, one house had structures located on the tile bed and the third house's gray water was connected to a stormwater drainage ditch.

According to the 2008 report, in 2007, when the Health Unit started to inspect the interior of septic tanks, the percentage of septic systems with maintenance issues had increased from 25% to 38%. The program's other findings included:

- The number of septic tanks requiring pumping has increased
- There was a small increase in permits for septic system replacement
- Many lakeshore properties have been converted from seasonal to year-round use without increasing sewage system capacity. Also, many properties have been renovated with additional bedrooms and bathrooms without increasing capacity
- Most of the water conservation initiatives undertaken by homeowners were intended to reduce stress on their fragile septic systems.

#### 2.5.3 Dillon's 2010 Septic System Survey

As part of this Class EA, Dillon completed a septic system survey in the summer of 2010 of 19 residences along the Bluewater lakeshore, including six residences north of Hendrick Road and 13 residences south of Hendrick Road. The results of the survey are shown on **Table 2**.

#### North of Hendrick Road

- One-third of the systems surveyed showed signs of stress although the average age of the systems is only 7.5 years
- The percentage of lot disturbance (structures, trees, paving, etc. on tile beds) is low (only 26%) and rainwater systems are engineered
- One-third of the residents complained about odours.

#### South of Hendrick Road

In this part of the lakeshore, where the lots are smaller, more problems were apparent, including the following:

- The average system age was 34 years, far exceeding the 20 year service life
- 42% of the lots have structures, trees, etc. over the tile beds
- Rainwater systems are not engineered
- More than half of the lots (54%) had damp/wet areas, grass striping and leachate springs
- Almost half of the systems (46%) show signs of stress
- Three residents (18%) reported odours from adjoining properties.

#### 2.6 Changing Provincial Policies and County of Huron Initiatives

The fifth key reason why sewers are recommended along the Bluewater lakeshore is that Provincial policies are changing and becoming more restrictive with respect to municipal servicing and the protection of surface and groundwater. This section summarizes changing Provincial policies and local initiatives to implement these policies.

#### Ontario Clean Water Act, 2006

The *Clean Water Act* (CWA) was passed by the Ontario legislature in 2006. The CWA introduces a new level of protection for Ontario's drinking water resources to ensure a safe and plentiful supply of drinking water for generations to come. Although the Act focuses primarily on drinking water, its implementation will also benefit the ecological and recreational value of water.

Area	Establishment	Occupancy (Persons)			Average Class		Type of		Size of Bed			
(no.)	Туре	Avg.	Max.	No. of Bedrooms	Sleeping Capacity	Age of System	of System	System/Leaching Bed	Mantle?	Distribution Trench	Square Meters	Problems
North of Hendrick Road (20)	- I / vear round	2	11	4	8	21	- all Class 4 systems	- 14 inground - 4 raised beds - 2 tertiary	- 6 have mantles indicating newer system	approx. 76ft	approx 176 sq. m.	- 2 failing systems
South of Hendrick Road (3)	<ul><li> 2 seasonal cottages</li><li> 1 year round</li></ul>	2	8	3	7	33	- all Class 4 systems	- all in ground systems	- no mantles	unknown	unknown	- 1 system has a brick septic tank

#### Table 1: County of Huron On-Site Sewage System Re-inspection Program Bluewater 2008

Source: County of Huron, On-Site Sewage System, Re-Inspection Program, 2005 to 2007, 2008.

		Occupancy (Persons)			Average	Type of	Structures,	Soils		
Area	Establishment Type	Average	Maximum	No. of Bedrooms	Age of System (Years)	System	Trees or Vegetation Over Bed	Soil Losses	Grass Striping, Damp/Wet Areas, Leachate Springs	
North of Hendrick Road (6 lots)	- 3 year round - 3 seasonal cottages	2	6	3	7.5	- 3 tertiary - 2 inground - 1 raised	- 2 of 6	- 1 of 6	- 2 of 6 (33%)	
South of Hendrick Road (13 lots)	- mostly cottages	2.5	6	3	34	<ul> <li>9 inground</li> <li>4 raised or tertiary</li> </ul>	- 8 of 13	- only on ravine lots	- 7 of 13 (54%)	

#### Table 2: Dillon's 2010 Septic System Survey

	% Lot Area		Rainwater Drainage					Odours	Other Information
Area (No)	76 Lot Area Disturbance	Overall Lot Grading	Swales	Drains Away from Bed	Ponding	Subsurface Drainage Infrastructure	in East/West Row		
North of Hendrick Road (6 lots)	26%	- Engineered	- 4 of 6	- 4 of 6	- 1 of 6	- 2 of 6	- 1 of 6 in cluster of beds	- 2 of 6	- 2 of 6 showing signs of stress (33%)
South of Hendrick Road (13 lots)	42%	- Not engineered	- 3 of 13	- 4 of 13	- 1 of 13	- 5 of 13	- generally operate in clusters	- 2 of 13	- 6 of 13 (46%) show signs of stress, 3 reported odours from neighbouring properties

Source: Dillon Consulting Limited, 2010

The CWA requires communities to protect municipal drinking water supplies by creating multistakeholder committees to develop collaborative, locally driven, science-based Source Water Protection Plans. Based on the goal of ensuring the protection of clean and plentiful municipal drinking water sources, the plans will include policies to manage activities that could pose significant threats to municipal water supplies and groundwater, help achieve targets for the Great Lakes and monitor threats to drinking water sources.

The CWA also introduced provisions that directly affect the regulation of septic systems under the *Building Code Act* and Building Code. The CWA amended the Building Code to provide septic system "regulators" with the authority to establish maintenance re-inspection programs for septic systems. In Bluewater, the Huron County Health Unit is the "regulator". Under the Act, all septic system regulators must have a program in place for areas identified as "vulnerable" in Source Water Protection Plans. Once the protection plan is in place, regulators will have the power to order that a faulty or failing septic system be replaced.

#### Ausable Bayfield Maitland Valley Source Protection Area, Source Water Protection Plan

A Source Protection Committee has been formed for the Ausable Bayfield Maitland Valley Source Protection Area, which includes the Municipality of Bluewater. The committee is in the process of preparing a Source Water Protection Plan to be completed in 2012. The plan will be based on Assessment Reports prepared by the committee that identified vulnerable areas where a list of 21 land use activities which can, if not properly managed, pose a threat to municipal drinking water sources. Examples of these activities include septic systems, fuel storage (such as home heating oil) and handling and storage of substances containing bacteria or chemicals.

The Lake Huron Primary Water Supply System (LHPWSS) Port Blake/Grand Bend Water Treatment Plan is located at Highway 21 and Huron Road 83 in South Huron, bordering the Study Area for Bluewater's Class EA. The plant serves a population of 350,000 people in three counties. **Figure 5**, from the Assessment Reports prepared by the Source Protection Committee, shows the Intake Protection Zones (IPZ) established around the plant. These include IPZ1 around the intake in Lake Huron and IPZ2, extending along the Bluewater lakeshore to Hendrick Road. IPZ2 also includes lands along the tributaries flowing into Lake Huron, including Keller Drain, Kading Drain, Adams Drain, Datars Miller Drain and other unnamed tributaries. According to the Assessment Report, only low and moderate threats have been identified in IPZ1 and IPZ2. No significant threats have been identified.

The Source Water Protection Plan will reduce risk to drinking water supplies through tools such as education and outreach, financial incentives, land use planning changes, monitoring and Provincial prescribed instruments. Stronger actions will be used when needed and only in the most vulnerable areas of the region. According to the committee's website, landowners may receive grants to cover the majority of the cost of voluntary improvements through the Ontario Drinking Water Stewardship Program (ODWSP). Eligible projects may include well decommissioning and upgrades, septic system upgrades, runoff and erosion protection, best management practices and fuel storage containment.

#### County of Huron, Mandatory Septic Inspection Program

In Bluewater, the Huron County Health Unit is the "regulator" of septic systems. As required by the CWA, the Health Unit is implementing a Mandatory Septic Inspection Program. The inspections will be invasive and the County can order that a faulty/failing system be replaced. However, many lots are currently too small and may not be able to accommodate a properly sized system. In these cases, a holding tank may be required with regular "pump-outs".

#### Provincial Land Use and Servicing Policies

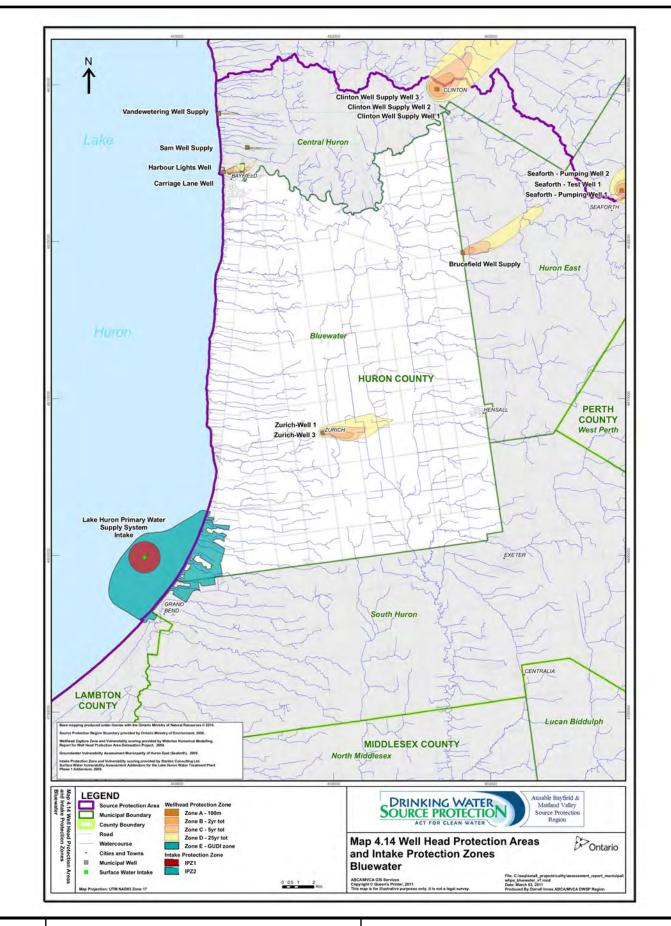
Since the *Grand Bend and Area Sanitary Sewage Master Plan* was prepared in 2006, the land use and servicing policies of the *Provincial Policy Statement* (PPS) issued under the *Planning Act* have not changed. In summary, the PPS requires full services for multi-lot developments and discourages partial services (municipal water and septics). Septic systems are permitted provided they can "be sustained by the water resources upon which such services rely" and soil conditions are suitable over the long term. The PPS also requires that municipalities protect, improve or restore groundwater and surface water quality and other significant natural heritage, built heritage and cultural landscapes and archaeological resources.

More details on Provincial, Huron County and Bluewater land use planning and servicing policies are included in Section 4 of this report.

#### 2.7 Problem Statement

In summary, municipal sanitary sewage system improvements are required in Bluewater for the following five key reasons:

- Future growth and increasing year round use is putting more pressure on the existing septic systems, many of which are showing signs of stress.
- Soils/geomorphology are generally unsuitable for the high concentration of septic systems.
- Engineering and drainage considerations, including un-engineered roads, drains and lot grading. The resulting poor drainage contributes to the malfunctioning of septic systems.
- Environmental and health concerns, as documented in studies dating back to the 1980s





Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Source Water Protection Plan, LHPWSS Water Treatment Plant Intake Protection Zones

Figure 5

• Changing Provincial policies that are becoming more restrictive with respect to municipal servicing and surface and groundwater protection.

# 3. PHASE 2, "ALTERNATIVE SOLUTIONS" REVIEW/UPDATE AND DESIGN OPTIONS

#### 3.1 Introduction

During the Phase 2 review and update, Dillon refined the sanitary sewage servicing solutions recommended by the 2006 Grand Bend and Area Master Plan and developed and evaluated design options for the Bluewater Sanitary Sewage Collection System. Design options were developed for sanitary sewage treatment, the Bluewater Service Area and the type, location and sizing of the collection system. Options for the phasing of construction were also evaluated. Existing environmental conditions pertaining to the identification of alternative solutions and design options are described in Section 4 of this report.

#### **3.2** Sanitary Sewage Treatment

#### 3.2.1 Master Plan Recommended Treatment Solution

The 2006 Master Plan recommended that municipal sanitary sewage services be provided in the entire Master Plan Study Area shown on **Figure 1**. An expansion and upgrade of the Grand Bend Area STF from a lagoon system to a mechanical treatment plant was identified as the preferred treatment solution for meeting the immediate and future sewage treatment needs of the Study Area, including the Bluewater lakeshore and hamlet of Dashwood.

The preferred solution is being implemented. The Municipalities of Lambton Shores, South Huron and Bluewater have completed the Detailed Design of the expansion and upgrade of the STF. A \$24 million project, the preferred design includes a mechanical treatment plant, using the Biological Nutrient Removal Oxidation Ditch system, an aerated sludge lagoon and a sludge containment wetland. The plant incorporates sustainable design concepts, such as an effluent heat recovery system. Scheduled for construction starting in 2012, the expanded plant is expected to be operational by 2014. The expansion and upgrade is being funded by *Building Canada* and the *Green Municipal Fund*.

## **3.2.2** Evaluation of Alternative Treatment Solutions

To reconfirm that the Bluewater lakeshore should be serviced by an expansion and upgrade of the Grand Bend Area STF, Dillon evaluated the following alternative treatment solutions:

- Alternative 1, "Do Nothing"
- Alternative 2, On-Site Tertiary Treatment
- Alternative 3, Discharge to the Zurich STF
- Alternative 4, New Stand-Alone Municipal Sewage Treatment Plant.

These alternatives were evaluated based on broad considerations, such as the ability to service the Study Area, practicality, acceptability to approval agencies, conformity to Provincial, County and local land use planning and servicing policies and order of magnitude costs. **Table 3** is a summary of the major advantages/disadvantages of each alternative.

Alternative Treatment Solution	Advantages	Disadvantages
1. "Do Nothing" (Continue with Existing Septic Systems)	No initial costs to homeowners. However, replacing a septic system may cost as much as municipal sewage system. Existing recently installed systems may be "grandfathered" in	Not a long-term environmentally sustainable solution. May be suitable for newer subdivisions with required minimum lot size, but very large lot sizes are required. Large lots are generally not consistent with the Provincial Policy Statement (PPS) since they are an inefficient use of land/infrastructure and potentially have more impacts on Provincially significant resources.
2. On-Site Tertiary Treatment Systems	Existing recently installed proprietary and "raised bed" systems may be "grandfathered" in.	Not a long-term environmentally sustainable solution. High capital cost (\$10,000-\$20,000), complex systems that fail from misuse/lack of maintenance, do not disinfect or remove phosphorous or man-made chemicals
3. Discharge to Zurich STF	None	Not enough capacity, has recently been upgraded to service Zurich only
4. New Stand-Alone Municipal Sewage Treatment Plant in Bluewater	None	Likely impossible to find a suitable receiving body of water/stream suitable for plant effluent. High capital, operating and maintenance costs. Provincial policies encourage the use of existing infrastructure

Table 3: Comparative Evaluation of Alternative Treatment Solutions

## Alternative 1 – "Do Nothing"

This alternative consists of doing nothing and continuing to service existing and limited infill future development with septic systems over the long term. This alternative is still <u>not</u> <u>considered feasible</u> for the Bluewater lakeshore based on the following reasons:

- It does not meet the Master Plan's goal of providing a long term environmentally sustainable servicing scheme.
- It does not address existing/potential impacts of failed septic systems in the Study Area. As noted by the ABCA *South Gullies Watershed Report Card*, faulty septic systems are contributing to water quality problems in the watershed.
- Since many septic systems in the Study Area are more than 20 years old, failure rates are expected to be high over the next 20 years.
- The impacts of doing nothing may become more significant following the implementation of the Mandatory Septic Inspection Program by the Huron County Health Unit. If an order to replace an existing septic system is issued, many lots in the subdivisions along the lakeshore will be too small to accommodate a new, properly sized system.
- New development would be limited to infill only, as restricted by Provincial, County and local municipal land use and servicing policies. Infill lots will have to be large enough, however, to accommodate a septic system.

#### Alternative 2 – On-Site Tertiary Treatment

Alternative 2 consists of continuing to use septic systems and installing on-site tertiary treatment units, such as EcoFlow, Waterloo Biofilter, FAST Canada systems, etc., as septic systems fail. This type of system can be phased in as systems fail, but only in cases where the system is technically feasible and the lot is large enough to accommodate an area bed and distribution piping.

As part of the Phase 2 review and update for Bluewater's Class EA, Dillon updated the information included in the 2006 Master Plan on these systems, as included in **Appendix A**. The reasons for continuing to <u>reject</u> this alternative include the following:

- High capital cost for homeowners (approximately \$10,000 to \$17,000) and on-going yearly maintenance costs (\$200 to \$400 per year).
- Operating attention and maintenance are required and many systems fail from misuse or lack of maintenance. Effluent quality is not controlled or monitored, so the homeowner may not be aware that the system is not functioning properly.

- Systems require recirculation of flows to achieve nitrification and denitrification for total nitrogen removal. This could result in high operating costs, compared to gravity or low pressure municipal collection systems.
- These systems are complex and include multiple components, such as pumps, tanks and media. This increases operating and maintenance requirements, as well as the probability of system failure.
- Systems may be neglected or misused when home ownership changes. If neglected or misused, the systems may not be able to produce reliable nitrification and the overall nitrogen load to groundwater may increase over time. As a result, future environmental policies in the Source Water Protection Plans to protect groundwater quality may not be met.
- The systems usually do not remove phosphorus or man-made chemicals or disinfect effluent.
- Overall, on-site tertiary treatment does not provide a long-term wastewater treatment solution.

## Alternative 3 – Discharge to the Zurich Sewage Treatment Facility

The Zurich Sewage Treatment Facility was recently upgraded by the Municipality of Bluewater, as outlined in a Class EA completed in 2002. The upgraded facility was designed to meet Zurich's needs only and does not provide sufficient capacity to handle sewage generated from the Bluewater lakeshore. Based on this, Alternative 3 was <u>rejected</u>.

#### Alternative 4 – New Municipal Sewage Treatment Plant

As part of the 2006 Master Plan, Dillon developed two alternatives for a new municipal sewage treatment plant, including Alternative 4, a Stand-Alone Treatment Plant in Bluewater to service the Bluewater lakeshore and Bluewater portion of Dashwood.

Alternative 4 would be capable of providing full municipal sanitary sewage services to Bluewater and could be phased in over time. However, as part of the Phase 2 review and update for Bluewater's Class EA, this alternative was reviewed and once again <u>rejected</u>.

The most significant disadvantage of Alternative 4 is the difficulty in siting a new treatment plant due to the lack of a suitable discharge point in Bluewater and South Huron. A new sewage treatment plant must provide effluent quality to meet MOE guidelines. Potential receiving waters for effluent discharge include Lake Huron or a receiving stream in Bluewater. These "receivers" are not suitable for the following reasons:

- The waters of Lake Huron can provide sufficient dilution for treated sewage. However, the outfall for a new sewage treatment facility would have to be located at least 2 km from the shore <u>and</u> outside the Protection Zone to be established for the LHPWSS Port Blake/Grand Bend Water Treatment Plant by the Source Water Protection Plan. As shown on **Figure 5**, the Protection Zone extends from up to 3 km from the shoreline, requiring a very lengthy outfall pipe of at least 3 km in some areas.
- Lake Huron is the Study Area's most important cultural, natural and socio-economic asset and is one of Southwestern Ontario's leading tourist attractions. Based on this, the public would have a very negative perception of discharging treated sewage to the lake. For these reasons, Lake Huron was rejected as a possible discharge point.
- It may be impossible to find another stream in Bluewater that is equally or less sensitive than the receiver for the Grand Bend STF and has sufficient flow.
- Lands along the drains and watercourses that drain to Lake Huron in South Huron and Bluewater are part of Protection Zones around the LHPWSS Water Treatment Plant, as shown on Figure 5. With this designation, MOE would not permit a new sewage treatment plant on any of these streams.

In summary, a discharge point for a new sewage treatment facility may be impossible to find. Other reasons for rejecting Alternative 4 are shown on **Table 3** and include:

- High capital, operating and maintenance costs.
- A new facility requires property acquisition and a buffer area, as required by MOE guidelines, potentially causing adverse impacts on cultural resources, natural features and the socio-economic environment.
- Provincial policies encourage the use of existing infrastructure, such as the Grand Bend Area STF, before new infrastructure is developed. MOE also encourages centralized plants, as opposed to multiple plants, since, from a regulatory standpoint, one point-source discharge is easier to manage, operate and monitor than multiple sewage treatment plants.
- A new sewage treatment facility in Bluewater is not contemplated by Bluewater's Official Plan over the next 20 years.

## **3.2.3** Preferred Treatment Solution

In summary, the Phase 2 review and update completed for the Bluewater Class EA confirmed the 2006 Master Plan's conclusion that the only feasible solution is to service the Study Area with an expansion and upgrade of the Grand Bend Area STF. In summary, this solution:

- Meets Bluewater's long-term servicing needs.
- Provides an immediate and long-term environmentally sustainable solution for existing and future land uses.
- Conforms to Provincial, County and local land use planning and servicing policies.

## **3.3** Service Area Options

As outlined in the 2006 Master Plan, the Service Area for the Bluewater sanitary sewage collection system potentially includes all of the lands in the Study Area along the lakeshore from Grand Bend to St. Joseph ("Zone 1"), lands along the north side of Huron Road 83 and the north half of the hamlet of Dashwood. As shown on **Table 4**, Dillon used the following criteria, mostly pertaining to the need for servicing, to identify a recommended Service Area:

- Existing and future land uses, as designated by the Bluewater Official Plan and intensification and development potential.
- Existing and potential septic system failure rates.
- Existing and potential adverse water quality impacts caused by malfunctioning septics.
- Ease of servicing, including constructability and the extent of required infrastructure.
- Costs and benefits of servicing.

## 3.3.1 Bluewater Lakeshore Service Area

As shown on **Table 4**, the Bluewater lakeshore was recommended as the first priority Service Area for the following reasons:

- Existing and projected future development help to justify the extension of sewers along the Bluewater lakeshore. The 10.5 km long lakeshore area currently includes about 920 houses, with an estimated population of 2,295. This population is expected to increase by 1% per year based on the significant development potential of the lakeshore for vacation and retirement homes. In addition, year round population is expected to increase from the current 30% to around 40% over the next 20 years as more retirees convert their cottages to year round residences.
- Septic system failure rates are expected to be high over the next 20 years along the lakeshore due to the unsuitability of the soils, aging systems, small lot sizes and poor road, rainwater and lot drainage.
- Malfunctioning septic systems will potentially adversely affect water quality in the South Gullies Watershed, part of the LHPWSS Water Treatment Plant Intake Protection Zone.

- Construction of a sewage collection system along the lakeshore presents some challenges. It will consist of a 10.5 km forcemain in an easement along Highway 21, servicing over 900 houses in 20 plus subdivisions, crossing 15 ravines and many non-standard private rights-of-way.
- The collection system will have significant municipal and homeowner capital costs. With upper government funding, these costs can be justified based on the need for the system.

## 3.3.2 Hamlet of Dashwood and Lands along Huron Road 83

The north side of Dashwood is located in Bluewater, while the south side is located in South Huron. Approximately 75 houses, with an estimated population of 165, are in the Bluewater portion of Dashwood. Dashwood appears to have little development potential and has slow or declining growth.

Bluewater decided not to service Dashwood at this time. However, the Grand Bend Area STF has been designed to accommodate flows from Dashwood in the future. Extending sewers to Dashwood can be justified by the fact that septic system failure rates are expected to be high over the next 20 years which could potentially affect water quality in two tributaries to Lake Huron, part of the Intake Protection Zone around the LHPWSS Water Treatment Plant. It also has no significant construction challenges since it is an 8.4 km forcemain along the relatively flat Huron Road 83 and it would service approximately 75 houses located on grid pattern streets in standard public rights-of-way. However, it is difficult to justify the significant capital costs to service a small hamlet with little growth potential. In addition, the Municipality of South Huron, as part of the *Grand Bend Area Sewage Collection System Class EA* (currently ongoing), has decided not to service Dashwood.

Since Dashwood will not be serviced, the lands along the north side of Huron Road 83 in Bluewater will also not be serviced. These lands are designated for long-term agricultural use in the Bluewater Official Plan.

#### **3.3.3 Recommended Service Area**

The recommended Service Area is shown on **Figure 3** and includes the following areas:

- Bluewater lakeshore from Huron Road 83 to St. Joseph from the lake to the west side of Highway 21.
- Farmhouses on the east side of Highway 21 may hook-up to the system, if they wish.

- The hamlet of St. Joseph at Highway 21 and Huron Road 84.
- Hessenland Inn and Driftwood Trailer Park located north of St. Joseph. Since these two uses are outside the hamlet area, the owners will be responsible for 100% of the cost of servicing. The Service Area cannot be extended any further beyond these uses since the upstream "dead end" of the sewershed is at this location. Extending sewers beyond Hessenland and the trailer park will require a new sanitary sewage collection zone due to distance and gradient.

Dashwood is <u>not</u> recommended for servicing at this time. However, the expansion and upgrade and expansion of the Grand Bend Area STF has been designed to accommodate flows from Dashwood in the future, if required. In addition, the lakeshore sewage collection system can be designed to be expanded to service Dashwood in the future.

## Table 4: Service Area Options

Evaluation Criteria	Bluewater Lakeshore	Dashwood
Existing Land Uses	Approximately 920 houses (2,295 people) and some commercial uses along 10.5km of lakeshore	Approximately 75 houses and some commercial and institutional uses in Bluewater portion of hamlet
Future Land Uses	Significant development potential for vacation and retirement homes. Year round population expected to increase from 30% to 40% over next 20 years	Little development potential, very slow/declining growth projected
Existing and Potential Septic System Failure Rates	Expected to be high over next 20 years due to unsuitability of soils, aging systems, small lot sizes, poor rainwater surface drainage	Expected to be high over next 20 years due to unsuitability of soils, aging systems and small lot sizes, poor rainwater surface drainage
Existing and Potential Adverse Water Quality Impacts	Malfunctioning septic systems potentially adversely affect water quality in: - South Gullies Watershed - LHPWSS Intake Protection Zone, including Lake Huron and several tributaries (Keller Drain, Kading Drain, Adams Drain, Datars Miller Drain and other unnamed tributaries)	Malfunctioning systems will adversely affect water quality in South Gullies Watershed. Not in Lake Huron WTP Intake Protection Zone, but will affect tributaries (Hough and Kiddings drains)
Ease of Servicing (Constructability and Required Infrastructure)	Challenging construction and extensive infrastructure – 10.5km forcemain along Highway 21, over 900 houses, 20+ subdivisions, 15 ravines and many non-standard, private rights-of-way	No significant challenges – 8.4km forcemain along Huron Road 83, 75 houses on grid pattern streets, standard public rights-of-way
Costs/Benefits	Significant capital costs justified by the number of existing and future residences	Difficult to justify significant capital costs for existing residents and very limited growth potential
Conclusions	Recommended as 1 <sup>st</sup> priority Service Area	Not recommended for servicing at this time but Grand Bend Area STF has been designed to accommodate future flows

## 3.4 Bluewater/South Huron Shared Sewer to Grand Bend Area STF

## 3.4.1 Alternative Sewer Routes

The 2006 *Grand Bend and Area Sanitary Sewage Servicing Master Plan* identified a gravity sewer along Highway 21 to serve existing and future development in South Huron and connect the Bluewater collection system to the Grand Bend Area STF. The sewer will be shared by Bluewater and South Huron. A separate Class EA on the shared sewer, *Grand Bend Area Sewage Collection System Class Environmental Assessment*, is currently being prepared by the Municipality of South Huron. South Huron presented the selected design and route for the shared sewer at a Public Information Centre held May 25, 2011. The selected design consists of a gravity sewer located in Highway 21 ROW on the west side of the highway, from Huron Road 83 to existing Pump Station 2, with a forcemain along Mollard Line to the Grand Bend Area STF.

As required by the Class EA for a Schedule 'B' project, South Huron's Class EA will include an impact assessment of the shared system on the "fronting" lands. Measures to avoid/mitigate any adverse impacts will also be covered by the Class EA.

As part of Bluewater's Class EA, Dillon reviewed the alternative routes and design options developed by South Huron for the shared sewer. Compared to other available routes for the sewer, the selected route minimizes the length of sewer required, thereby minimizing capital, operating and maintenance costs. Also, the selected route is entirely located in an existing disturbed corridor along Highway 21 in the Municipality of South Huron. As a result, the route avoids the farmland and woodlots located in the surrounding agricultural area. The location of the route also minimizes potential impacts on archaeological resources, fisheries and aquatic habitat, existing and future land uses and the socio-economic environment. As will be documented in South Huron's Class EA of the shared sewer, it potentially has some impacts on:

- Archaeological resources. Impacts can be avoided by the completion of an archaeological assessment.
- The Desjardine, Simmons, Ratz, Maple Grove (Webb) and Turnbull Drains, all permanent warmwater watercourses located in the South Gullies subwatershed in the ABCA watershed. The drain crossings on Highway 21 are a mixture of natural and channelized watercourses and, in general, provide similar fish habitat. All potential impacts can be mitigated by erosion and sedimentation control measures, watercourse and fisheries protection measures and timing construction to avoid high flows and sensitive aquatic life cycles.

- Impacts on wooded areas and specimen trees are expected to be minimal since the Highway 21 ROW has already been impacted by the construction of wide highway shoulders and the installation of various utilities.
- Short-term construction impacts (noise, air quality and access interruptions) on existing adjoining land uses can be mitigated by standard measures implemented during construction.
- Construction of the shared sewer in the Highway 21 ROW will require approval from MTO. South Huron will be asking for MTO approval as part of its Class EA process, currently underway.

## 3.4.2 Recommended Shared Gravity Sewer

The shared gravity sewer selected by the Municipality of South Huron was presented at a PIC held by South Huron on May 25, 2011. It was also presented as the recommended shared sewer at Bluewater's PIC 2 on August 20, 2011. PICs held for the Bluewater project are summarized in Section 5 of this Environmental Screening Report.

#### 3.5 Bluewater Lakeshore Forcemain

#### **3.5.1** Alternative Routes

Dillon identified two alternative lakeshore sewer forcemain routes for Bluewater along Highway 21, as shown on **Figure 6**. Consistent with MTO Highway Corridor Control policies, the following routes are not located within the Highway 21 ROW:

- Sewer Route A located in an easement along the east side of Highway 21.
- Sewer Route B located in an easement along the west side of the highway.

#### 3.5.2 Comparative Evaluation of Alternative Lakeshore Forcemain Routes

Existing environmental conditions potentially affected by the alternative forcemain routes are described in Section 4 of this report. **Table 5** is a comparative evaluation of Routes A and B. Avoidance/mitigation measures for the impacts shown on the table depend on the type of collection system and method of construction. As outlined in the next section, Section 3.6, alternatives for the type of collection system and method of construction include a gravity system, requiring extensive excavation, and a low pressure system which can be installed by High Pressure Directional Drilling (HDD), requiring minimum excavation.





Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Alternative Lakeshore Forcemain Routes

10-3169

Figure 6

#### Archaeological Resources

A Stage 1 Archaeological Assessment was prepared for the project, as summarized in Section 4.7. Almost all of the lands along the west side of the highway have high archaeological potential, as shown on **Figure 11**. The east side of the highway has significantly less land with high archaeological potential. As a result, Route A along the east side of the highway will have fewer impacts on lands with archaeological potential and require less extensive detailed archaeological investigations during the subsequent Detailed Design phase.

#### Natural Features and Species at Risk

As noted in Section 4.8, Fisheries and Aquatic Resources, most of the watercourses along Highway 21 contain large hydraulic headwater drops on the west side of the highway that act as barriers to fish movement and fish cannot migrate past the highway corridor. Based on this, Dillon recommends that the forcemain be located on the east side of the highway. Also as outlined in Section 4.8, there are no aquatic Species at Risk (SAR) potentially affected by the forcemain routes.

Routes A and B have similar impacts on the trees located along Highway 21. As noted in Section 4.9 of this report, both sides of the highway have a surprising number and variety of shrub and tree species, both as individual specimen trees and hedgerows along farm fields. On both sides of the highway, the forcemain could cause some damage to deep rooted trees, such as sugar maple, black walnut, butternut (a Species at Risk (SAR)) and Kentucky coffee tree (also a SAR). As explained in Section 4.9, the butternut tree is located on the west side of the highway, while the Kentucky coffee trees are located on the east side. Avoidance/mitigation measures depend on the type of collection system and method of construction chosen for the forcemain. In general, most impacts can be avoided by a low pressure system installed by directional drilling.

Most of the ravines are located on the west side of the highway and include more naturalized areas than the narrow vegetated strips along the Municipal Drains on the east side. In addition, a Snapping turtle (a species of Special Concern) was observed in the Unnamed Ravine (Hay H Drain) in the Turnbull Grove trailer park on the west side of the highway. Based on these considerations, Route A has fewer potential impacts on naturalized areas than Route B.

## Socio-Economic Impacts

Constructing the forcemain along the east side of the highway with Route A will have some impacts on the farms located along the ROW. Potential impacts on farmland depend on the type of collection system and method of construction and could include long-term crop loss (caused by the extensive excavation required for a gravity system), short-term crop losses during construction, other short-term construction impacts (noise, vibrations and air quality impacts and

access disruptions) and damage to agricultural infrastructure. Most of these impacts can be avoided/mitigated by a low pressure system installed by directional drilling.

## Economic/Financial Considerations

Route A is located in an agricultural area designated for long-term agricultural use, while Route B is located in the "Lakeshore Residential" area. The lakeshore cottage area on the west side includes a significant number of public and private road entrances to the subdivisions along the lakeshore. The west side also includes many more private entrances to the highway, with landscaping, light posts, etc., than the east side. Constructing the forcemain on the west side of the highway is expected to cost \$2.5 million more than constructing it on the east side due to the cost of repairing/restoring the entrances, landscaping, etc., affected by construction.

#### 3.5.3 Recommended Lakeshore Forcemain Route

Based on the comparative evaluation of Routes A and B shown on **Table 5**, Route A on the east side of the highway is preferred for the following reasons:

- Route A is preferred with respect to engineering considerations since it involves significantly less repairs/restoration to farm entrances affected by construction.
- Since it affects significantly less land with archaeological potential, Route A is preferred with respect to potential impacts on cultural resources.
- Route A is also preferred with respect to potential impacts on fish and aquatic habitat since the west side of the highway includes significant barriers to fish migration. No aquatic SAR species are affected by forcemain Routes A and B.
- Route A is also preferred with respect to potential impacts on terrestrial resources. It avoids impacts on the naturalized ravine areas and SAR species, including a butternut tree and Snapping turtle habitat, all located on the west side of the highway. Although Route A potentially affects two Kentucky coffee trees on the east side of the highway, impacts can be avoided by the type of collection system and method of construction.
- Route A has some impacts on the agricultural area on the east side of the highway, as shown on **Table 5**. Many of these impacts can be avoided depending on the type/method of construction chosen for the collection system.
- Since it affects significantly fewer public road, private residential entrances and residential landscaping, Route A has much lower property, construction and repair/restoration costs (approximately \$2.5 M less) than Route B.

In summary, Route A on the east side of Highway 21 was recommended as the preferred lakeshore forcemain route. Many of the sewer's potential impacts can be mitigated depending on the type of collection system and construction method chosen for the project.

## **3.6** Alternative Sewage Collection System Types

The Master Plan recommended that the Highway 21 corridor in Bluewater be serviced with a low pressure sanitary sewage collection system, located along the Highway 21 ROW. A pumping station was shown at Highway 21 and Huron Road 83. A conventional gravity system was recommended for Dashwood, with a forcemain along Huron Road 83 (if a decision is made to service the hamlet). To confirm the Master Plan's recommendations, Dillon prepared accepted engineering practice Preliminary Designs for two types of systems along the lakeshore, including Alternatives 1 and 2, as shown in **Appendix D**.



Construction of Conventional Gravity Collection System

Alternative 1 is a Conventional Gravity Collection System. With this type of system, sewage is collected and transported by gravity flow through buried piping. Sewers are installed at a specified grade and sized to handle peak flow. For this area of Bluewater, piping would be buried from 2.5 to metres deep, requiring extensive excavation, as shown on the photo.

Alternative 2 is a Low Pressure Collection System. With this type of system, sewage is collected and transported in a network of small diameter, shallow piping (only 1.5 metres deep) fed by individual grinder pump stations. The system consists of a grid network similar to a water system. As shown on the following photo, since the system can be installed by directional drilling, minimal excavation is required for construction. Submersible grinder pump stations are provided at each house. All pressures required to "drive" the sewage is provided by individual grinder pump stations. No communal pump stations or forcemains are required. Sewage is transferred through different network pressure zones of increasing pipe diameters until it reaches the Grand Bend Area STF.

Evaluation Factors	Sewer Route A East Side Highway 21 <i>Recommended</i>	Sewer Route B West Side Highway 21	Preferred Alternative
1. Engineering Considerations	Compared to Route B, involves significantly less repairs/restoration to entrances	Involves more extensive repairs/restoration to public/private entrances, landscaping, etc. in lakeshore cottage area	А
2. Impacts on Cultural Resources (archaeology)	Affects less land with high archaeological potential	Affects significantly more land with high archaeological potential	А
3. Impacts on Natural Features (aquatic, terrestrial, SAR Species)	Route A is preferred since west side contains barriers to fish migration. No aquatic SAR species potentially affected. Avoids naturalized ravine areas on west side of highway. Potentially impacts one SAR species (Kentucky coffee trees) on east side of highway. Impacts can be avoided depending on type of collection system and method of construction	West side is less preferred since it contains barriers to fish migration. No aquatic SAR Species affected. Has more impacts on naturalized ravine areas on west side of highway. Potentially impacts two terrestrial SAR species (Snapping turtle, butternut tree). Impacts can be avoided depending on collection system type and method of construction	Α
4. Socio-Economic Impacts (land uses, County/local and Provincial planning policies)	Potential impacts on agricultural lands on east side of highway include short and long-term crop losses during construction, other short-term construction impacts and damage to agricultural infrastructure. Impacts can be avoided depending on type of collection system and method of construction. Avoids lakeshore cottage area on west side of highway, thereby reducing impacts on public/private entrances, landscaping, etc. Conforms to local, County and Provincial planning policies since it minimizes impacts on natural features	Avoids impacts on agricultural lands located along east side of highway. Requires extensive repairs/restoration, however, to public/private entrances, landscaping, etc. in lakeshore cottage area west of highway. Also conforms to local, County and Provincial planning policies, but has more impacts on natural features than Route A	Α
5. Economic/Financial Considerations (municipal, homeowner capital costs)	Costs approximately \$2.5 million <u>less</u> to construct than Route B	Costs approximately \$2.5 million <u>more</u> than Route A due to costs of repairing/restoring entrances, landscaping, etc.	A

## Table 5: Comparative Evaluation of Alternative Lakeshore Forcemain Routes A and B



**Construction of Low Pressure Collection System** 

With a low pressure system, each house is provided with a submersible grinder pump housed in a high grade engineered wet well with valving and an electrical control panel. The pump is installed in the rear or side yard of the house, as shown on the photo. The sewage level in the wet well is monitored by two differential pressure monitors. When the level in the wet well reaches the high level, the pumps are activated by the controller. Solids are ground into fine particles to easily pass through fittings and small diameter piping.



Submersible Grinder Pump Installation

#### **3.6.1** Evaluation of Alternative Sewage Collection Systems

Existing environmental conditions potentially affected by the alternative collection systems are described in Section 4. **Table 6** is a comparative evaluation of the advantages and disadvantages of Alternative Collection Systems 1 and 2 based on engineering considerations, potential environmental impacts and capital and operating and maintenance costs. The advantages of each system are shown in blue.

#### Alternative 1, Gravity System

• The major advantage of Alternative 1, Gravity System, is that it is a well established technology. However, it is not suitable for the Bluewater lakeshore because of the

lakeshore's topography with its many ravines and the long distances between the subdivisions along the lakeshore.

- An advantage of the gravity system is that it still functions in power outages. The low pressure system is sensitive to power outages but sewage can be stored for up to four hours in the wet well.
- Another advantage of the gravity system is that less homeowner awareness is required. With a low pressure system, more homeowner awareness is required for operating and maintaining the grinder pump.
- A significant disadvantage of a gravity system is that the sewers would be up to 10 metres deep due to the lakeshore's topography and distance between subdivisions. This requires extensive excavation, potentially resulting in significantly more impacts on natural features, existing development and roads than the low pressure system. Significant disruption, including noise, vibrations, dust and access impacts, is also caused during construction of the gravity system.
- Another disadvantage of gravity sewers is that more extensive infrastructure is required, including pumping stations, since sewage from upstream areas has to be pumped multiple times (up to eight times).
- The pipes used for gravity systems are also very susceptible to inflows (up to 20%) as the system ages.
- A gravity system would be significantly more expensive than a low pressure system. The high capital construction cost is due to the depth of sewers and the number of pumping stations. It also has high restoration costs since complete roadway reconstruction is required.

## Alternative 2, Low Pressure System – Advantages and Disadvantages

Although not as established a technology as gravity sewers, low pressure systems are a well established technology, with many successful systems in the region (Bayfield, Grand Bend and Pinery Provincial Park). This alternative has several <u>advantages</u>:

- All sewage is only pumped once, requiring significantly fewer pumping stations than the gravity system. The system is less susceptible to inflows than the gravity system.
- All pipe is small diameter and installed only 1.5 metres deep. Since it is installed by directional drilling, it requires almost no excavation. As a result, almost all impacts on existing infrastructure, cultural resources, natural features and the socio-economic environment are avoided since the pipe can be drilled around and under significant features, such as watercourses, trees, etc.
- Since it requires little excavation, the low pressure system minimizes noise, dust and access impacts during construction.

- The low pressure system conforms to local and Provincial planning policies since it minimizes impacts on significant resources.
- A major advantage of this system is that it has significantly lower capital construction and surface restoration costs.

The low pressure system has a couple of disadvantages, including that it is sensitive to power outages. According to lakeshore residents, power outages occur often in this area. However, according to Ontario Hydro, outages typically last only three hours. The wet well provided for the grinder pumps provide four hours of storage. Another disadvantage is that more homeowner awareness is required to maintain the grinder pump.

## 3.6.2 Capital, Operating and Maintenance Costs of Alternative Collection System Types

Dillon prepared Preliminary Design drawings for Alternative 1, Conventional Gravity Collection System, and Alternative 2, Low Pressure Collection System, to service the lakeshore area, as included in **Appendix D**. Preliminary estimates of capital, operating and maintenance costs for the communal collection system and per lot costs were also prepared to compare the costs of the two types of systems.

#### Off-Site or Communal Collection System Capital Cost Estimate (2010)

These costs are shown on **Table 7** and include costs for the following:

- Bluewater's share of the expansion and upgrade of the Grand Bend Area STF (\$2.1 million to service the lakeshore for both Alternatives 1 and 2). The additional cost to service Dashwood is also shown on the table.
- The collection system. As shown, a gravity collection system costs significantly more (\$49.3 million) than the low pressure system (\$20.2 million).
- Bluewater/South Huron shared gravity sewer to the Grand Bend Area STF (\$2.5 million to service the lakeshore).
- Property purchases and easements. This estimate is based on a *Market Study of Estimated Benchmark Land Values* prepared for this project by Metrix Realty Group in April 2011. Since the gravity system requires a substantial amount of property for pumping stations, it costs more (\$430,000) than the low pressure system (\$276,000).
- Per lot costs for the communal system. This is based on the existing 920 houses, approximately, along the lakeshore and projected growth of 200 houses over the next 20 years, for a total of 1,120 houses. Per lot costs for the gravity system (\$48,900) are also substantially more than per lot costs for a pressure system (\$22,800).

## Table 6: Comparative Evaluation of Gravity and Low Pressure Sewage Collection Systems

Evaluation Factors	Alternative 1 Gravity System	Alternative 2 Low Pressure System
1. Engineering Considerations	Well established technology, but not suitable for most of Bluewater, due to distance and topography.	Proven technology - many successful systems in the region
	Sewage from upstream areas pumped multiple times	All sewage only pumped once
	- up to eight times	All pipe only 1.5 metres deep installed by
	Sewers up to 10m deep, requiring extensive excavation	directional drilling, small pipe diameters requiring almost no excavation
	Still functions during power outages	Sensitive to power outages, but homeowner can opt
	Susceptible to inflows (up to 20%) as pipes age	to include additional storage or standby power
		Less susceptible to inflows
2. Impacts on Cultural Resources (archaeology)	Significant impacts caused by extensive excavation.	Trenchless technology minimizes excavation and
	Can be mitigated by further archaeological	impacts. Can be drilled around and under
	assessments	significant features
3. Impacts on Natural Features (aquatic,	Significant impacts caused by extensive excavation.	Trenchless technology minimizes excavation and
terrestrial species, SAR)	Potentially more impacts on terrestrial SAR species	impacts, including potential impacts on terrestrial
	caused by excavation	SAR species. Can be drilled around and under
		significant features
4. Socio-Economic Impacts (land-uses,	Extensive excavation causes significant impacts on	Trenchless technology:
County/local and Provincial planning policies)	farmland, existing land uses and significant	-minimizes impacts on agriculture, existing land
	disruption (noise, vibrations, air quality, access)	uses
	during construction	-minimizes disruption during construction
	Not as consistent with planning policies due to	-conforms to planning policies since it minimizes
	potential impacts on significant resources.	impacts on significant resources
5. Economic/Financial Considerations	High capital construction cost due to depth of	Lower capital construction and surface restoration
(municipal, homeowner capital and operating	sewers, number of pumping stations	costs
costs)	High restoration costs, including complete roadway	More homeowner awareness required
	reconstruction	Significantly less expensive than gravity system
	Less homeowners awareness required	
	Significantly more expensive than low pressure	
	system	

Note: Advantages shown in green

Component <sup>1,6</sup>	Alternative 1 Gravity System	Alternative 2 Pressure System
1. Bluewater (Zone 1) Share of Sewage Treatment	\$ 2.3 Million (Dash	wood and Lakeshore)
Facilities <sup>2</sup>	Facilities <sup>2</sup> \$ 2.1 Million (Lakeshore only)	
2. Collection System	\$49.3 Million	\$ 20.2 Million <sup>5</sup>
(includes 10% for engineering)		
3. Bluewater and South Huron Shared System	\$ 2.8 Million (Dashwood and Lakeshore) <sup>3</sup>	
(South Limit Zone 1 to STF Site)	\$ 2.5 Million (Lakeshore only) <sup>4</sup>	
(includes 10% for engineering)		
4. Property Costs (easements and parcels)	\$ 430,000	\$ 276,000
5. Per Lot Cost (Lakeshore only) <sup><math>4</math></sup>	\$ 48,900	\$ 22,800

## Table 7: Off-Site Communal System Capital Cost Estimate (2010 Dollars)

Notes:

1 All costs will be further reviewed/updated during Detailed Design (by Engineer), Tender Award (by Contractor) and End of Construction (by Contractor)

2 These costs include Federal and Provincial funding. Costs for items 2, 3 and 4 do not.

3 This cost will be \$ 5.5 Million (excluding engineering) if Bluewater does not have a shared system with South Huron

4 Based on an estimate of 920 existing houses and projected growth (1% per year population growth at 2.5 persons per household) of 200 new houses for a total of 1,120 houses along the lakeshore over 20 years

5 Costs will increase by \$2.5 million if pressure sewer is constructed on west side of Highway 21

6 Costs do not include HST, contingency or life cycle costs

#### **On-Site Private System Capital Cost Estimate (2010)**

On-site costs for the gravity and low pressure systems include the homeowners' costs from the street/property line to the house, as shown on **Table 8**. Typical lot sizes used to calculate on-site costs, including small, medium and large lots, are illustrated on **Figures 7**, **8** and **9**.

As shown on **Table 8**, the on-site lot costs are more for the low pressure system compared to the gravity system, since the low pressure system requires that the homeowner purchase a pumping unit costing approximately \$5,500. For a typical small lot, the on-site costs of a gravity system are \$2,000 to \$6,000, while the on-site costs of a low pressure system are \$8,800 to \$12,200.

## Table 8: On-Site Private System (Street/Property Line to Building) Capital Cost Estimate (2010 Dollars)

Example Lot Sizes	Alternative 1 Gravity System <sup>6</sup>	Alternative 2 Pressure System <sup>7</sup>
1. "Small" Lot Area (see $A + B$ )	\$ 2,000 to \$ 6,000	\$ 8,800 to \$ 12,200
<sup>2, 3, 8</sup> 2. "Medium" Lot Area (see A + B)	\$ 5,000 to \$ 6,500	\$ 9,500 to \$ 10,000
4, 5, 3, 8 3. "Large" Lot Area (see A + B)	\$ 7,500 to \$ 17,000	\$ 10,000 to \$ 17,000

Notes:

1. For "Small" B, a new 100 amp hydro service was included to replace existing potentially obsolete 60 amp service

2. For "Medium" B, assumed existing electric panel on opposite side of house to pump unit

- 3. No "expensive" restoration included (i.e., asphalt driveways, large diameter tree tunnelling, decks, brick/concrete sidewalks/planters)
- 4. For "Large" A, electrical costs increased for access inside building due to interlock brick and large masonry flower beds
- 5. For "Large" A, gravity option is not available due to excessive front yard depth (200m)
- 6. Costs are for first floor service only (i.e., no basement service on gravity). On-lot gravity cost will increase significantly to service basement floors
- 7. Costs include pumping unit (\$5,500, approximately) to supply and install (no connections or electrical)
- 8. Special options, such as balancing tanks and standby generators, are not included

Although the on-site costs are higher for the low pressure system, the total cost per lot will be much lower with this system, compared to the gravity system. As shown on **Table 9**, the homeowner's total cost for a gravity system on a small lot will be approximately \$48,900 per lot with on-site costs ranging from \$2,000 to \$6,000, resulting in a total cost of \$50,900 to \$54,900 per lot. In comparison, the homeowner's total cost for the low pressure system on a small lot are much less and will be \$22,800 per lot with on-site costs ranging from \$8,800 to \$12,200, resulting in a total cost of \$31,600 to \$35,000 per lot.

Component	Alternative 1 Gravity System	Alternative 2 Pressure System
A Off-Site (Communal) Cost	\$ 48,900/lot	\$ 22,800/lot
B On-Site (Private) Cost	Choose from B (one of six example lot costs)	
Total	A + B = Individual co	st per lot





Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Typical "Small" Lot Size

Figure 7A





Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Typical "Small" Lot Size

Figure 7B

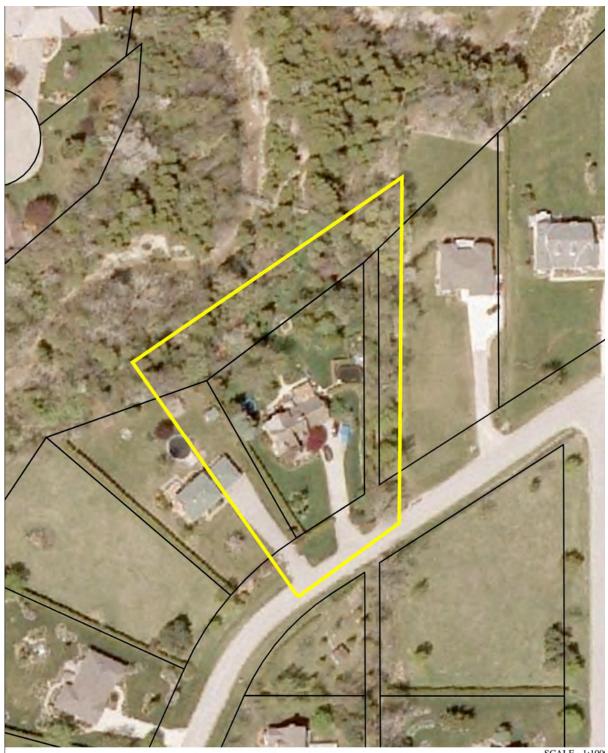




Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Typical "Medium" Lot Size

Figure 8A





**Municipality of Bluewater** Highway 21 Corridor Sanitary Sewage Collection System **Class EA & Preliminary Design** 

Typical "Medium" Lot Size

Figure 8B



DILLON

Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Typical "Large" Lot Size

Figure 9A



SCALE - 1:750



Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Typical "Large" Lot Size

Figure 9B

*Off-Site (Communal) and On-Site (Private) Operating and Maintenance Cost Estimate (2010)* **Table 10** shows off-site and on-site operating and maintenance costs. Operating and maintenance costs for Bluewater's share of the Grand Bend Area STF facilities are the same for both the gravity system and the low pressure system (\$325,000 year to service the lakeshore area only). Other costs shown on the table are:

- Off-site operating and maintenance costs will be significantly more for the gravity system (\$306,000), compared to only \$70,000 for the low pressure system.
- Homeowners' operating and maintenance costs for the low pressure system (\$182 per year) will be more than for the gravity system (\$50 per year).
- The per lot operating and maintenance costs for the gravity system (\$613) will be higher than for the low pressure system (\$535).

	Component	Alternative 1 Gravity System	Alternative 2 Pressure System
1.	Bluewater (Zone 1) Share of Sewage		
	Treatment Facilities (as included in 2011	\$ 354,000/year (Dash	wood and Lakeshore)
	signed agreement with South Huron and	\$ 325,000/year	(Lakeshore only)
	Lambton Shores) <sup>1</sup>		
2.	"Off-site" or Communal Collection System	\$ 306,000/year	\$ 70,000/year
	(Municipal Costs)		
3.	"On-site" or Private System (street/property	\$ 50/lot/year	\$ 182/lot/year <sup>3</sup>
	line to house) (Homeowner Costs)		
4.	Per Lot Cost <sup>2</sup> (Homeowner)	\$ 613/lot/year	\$ 535/lot/year

## Table 10: Operating and Maintenance Cost Estimate (2010 Dollars)

Notes:

1 Based on data from Bluewater's agreement with Lambton Shores and South Huron

2 Based on an estimate of 920 existing houses and projected growth over 20 years (1% per year population growth at 2.5 persons per household) of 200 new houses for a total of 1,120 houses along the lakeshore

3 Includes life cycle costs analysis

#### 3.6.3 Recommended Bluewater Lakeshore Sanitary Sewage Collection System

In summary, the recommended sanitary sewage collection system consists of a forcemain located in an easement along the east side of Highway 21 and a low pressure sewage collection system servicing all of the subdivisions in the Lakeshore Service Area (**Figure 3**). More details regarding the Service Area, system components and costs are included in Section 6 of this report.

# 4. ENVIRONMENTAL INVENTORY

#### 4.1 Introduction

This section of the Environmental Screening Report summarizes the environmental inventory prepared as part of the Schedule "B" environmental screening process. It covers all environmental conditions potentially affected by the proposed collection system.

# 4.2 **Population Projections**

Dillon prepared population projections to the year 2031 for the Bluewater lakeshore and the north half of the hamlet of Dashwood. The projections are based on projections included in the 2006 Master Plan and *Grand Bend Sewage Treatment Facility (STF) Expansion & Upgrade, Environmental Study Report (ESR)*, March 2009, prepared for the Municipalities of Lambton Shores, South Huron and Bluewater.

## 4.2.1 Statistics Canada Census Data Trends, 2001 to 2006

**Table 11** shows census population trends from 2001 to 2006 (the last census year) for Ontario, Lambton and Huron Counties and the Municipalities of Lambton Shores, South Huron and Bluewater. As shown on the table, Bluewater's population increased by 201 people (0.6% per year) from 6,919 in 2001 to 7,120 in 2006. Growth was slower from 1996 to 2001, when the Municipality's population only increased by 45 people (0.13% per year) from 6,874 in 1996 to 6,919 in 2001. Since the Bluewater lakeshore is part of the popular Lake Huron summer resort area, most of the increases between 1996 and 2006 likely occurred along the lakeshore.

Place	2001 Population	2006 Population	Annual % Increase/Decrease
Ontario	11,410,046	12,160,282	1.28%
Huron County	59,701	59,325	-0.13%
Bluewater	6,919	7,120	0.6%

#### Table 11: Census Population, 2001 and 2006

Source: Statistics Canada Census Data

In comparison to Bluewater's 2001 to 2006 population growth, as shown on **Table 11**, Ontario's population increased by a moderate rate of 1.28% per year and Huron County's population decreased very slightly by 0.13% per year. Population in Huron County, as a whole, is affected by declining farm populations.

# 4.2.2 2031 Population Projections

# Bluewater Lakeshore

The Bluewater lakeshore from Grand Bend to St. Joseph includes over 20 seasonal and yearround cottage, trailer and subdivision developments, all serviced by septic tank and tile bed systems. Larger developments include Turnbull's Grove Trailer Park, Highlands I, II and III, Poplar Beach I and II, Lakewood Gardens, Bayview North and South, Bayview Farms and Norman Heights.

Using 2006 aerial photography provided by Huron County, Dillon estimated that there are 900 residential units along the Bluewater Lakeshore, as shown on **Table 12**. These units consist of single detached houses and trailer units. Assuming 2.5 persons per household (Bluewater average household size, 2006 Census)<sup>1</sup>, these residences would accommodate 2,250 people. According to the Municipality's Chief Building Official (May 11, 2010), 17 new houses were built along the lakeshore during 2008, 2009 and from January to March 2010, resulting in a total of 920 houses in 2010, approximately, along the lakeshore. Assuming 2.5 persons per household (2006 Census average household size in Bluewater), the 17 new houses would accommodate 43 people.

Adding this new development (17 new houses) to the estimated 2006 population of 2,250, results in a 2010 population estimate of 2,293, <u>say</u> 2,295. This estimate includes year round and seasonal population.

<sup>&</sup>lt;sup>1</sup> As noted by the Huron County Planning and Development Department (Craig Metzger, Senior Planner, August 20, 2010, e-mail), the number of persons per household in the cottages/residences in the summer months along the lakeshore is likely higher than the 2006 census figure of 2.5 persons per household.

Subdivision	No. of Residences
Highlands 1	42
Highlands 2	51
Highlands 3	40
Elmwood	27
Turnbull's Grove	160
Windy Hill	21
Norman Heights	50
Ridgeway	30
Schadeview	25
Cedar Banks	35
Poplar Beach 1&2	48
Sunnyridge	12
Lakewood Gardens	42
Cliffside	24
Pavilion	30
Bayview	75
Moore	16
Gendron & Bluewater Properties	50
Antoinette's Lane	40
Josephine Street	15
Vista Beach	65
TOTAL	898, <u>say</u> <b>900</b>

## Table 12: Subdivisions and Residences along Bluewater Lakeshore, 2006

Source: Dillon estimate from 2006 Aerial Photography

As indicated by the Municipality and Huron County Planning and Development Department, the percentage of year round residents appears to be increasing. Based on an analysis of mailing addresses, the 2006 Master Plan estimated that 30% of the residences along the lakeshore are year round, while the remaining 70% are seasonal. An analysis of the mailing addresses included in the Contact List for Bluewater's Class EA found that 40% of the addresses are local and, therefore, year round residences, while 60% are out-of-town addresses and, therefore, seasonal residences. Approximately 10% of the seasonal population is from the USA. The increase in the year round population may be attributable to "baby boomers" who are selling their homes in the "city" and retiring to places like the Bluewater lakeshore.

The 2006 *Grand Bend and Area Sanitary Sewage Servicing Master Plan* used a moderate growth rate of 0.5% per year to project the population of the Bluewater lakeshore over a 20 year period, mostly based on growth that occurred from 2001 to 2006. The 2009 ESR for the Grand Bend STF used a higher rate of 1% per year based on the potential availability of sanitary sewers (the major impediment to development), the development potential of the Bluewater lakeshore and the attractiveness of this area for vacation and retirement homes. Bluewater's Huron County Planner agreed with the 1% growth rate (Craig Metzger, Senior Planner, August 20, 2010,

e-mail). Based on these considerations, a 1% per year growth rate was used for the population projections prepared for this project.

The estimated year round and seasonal 2010 population of 2,295 was used as a starting point for the 2031 population projections, as shown on **Table 13**. Based on a 1% per year growth rate, the population of the Bluewater lakeshore is expected to increase by about 535 people from 2,295 in 2010 to 2,830 in 2031. This population includes both year round and seasonal residents. At 2.5 persons per household, this increase is equivalent to over 200 new housing units over the 20 year projection period or about 10 new units a year.

## Dashwood

The north half of the hamlet of Dashwood is located in Bluewater, while the south half is in South Huron. Using 2006 aerial photography provided by Huron County, Dillon estimated that:

- Approximately 75 houses are located in the north half of Dashwood. Assuming 2.5 persons per household, the population of this area is around 185 people.
- Approximately 100 houses are located in the south half in South Huron. Assuming 2.4 persons per household (2006 average household size in South Huron), the population of this part of Dashwood is about 240 people.
- Based on these assumptions, the current estimated population of the hamlet of Dashwood is 425 people.

The 2006 Master Plan and 2009 ESR for the Grand Bend STF both assumed that Dashwood's population would increase at the same rate as the Bluewater lakeshore (0.5% and 0.1%, respectively). However, Dashwood appears to have little development potential due to its lack of commercial services, a lack of amenities and its location in the agricultural area. According to Bluewater's Chief Building Official, only two new houses were built in Dashwood from the beginning of 2007 to March 2010. Based on these considerations, growth in Dashwood is expected to be much slower than the Bluewater lakeshore.

Ministry of Finance, *Ontario Population Projections*, 2008 – 2036 for Ontario and its 49 Census Divisions (Fall 2009), projects that Huron County's population will remain relatively stable from 2008 to 2031. Based on this assumption, Huron County's population is expected to increase by only 600 people (.035% per year) over a 28 year period from 60,700 in 2008 to 61,300 in 2036. Based on the assumption that growth in Dashwood will reflect Huron County's very slow growth, the Ministry of Finance growth rate of .035% was used to project Dashwood's population to 2031. Using this growth rate, the population of Dashwood is expected to change very little from 425 in 2010 to 429, <u>say</u> 430 in 2031, as shown on **Table 13**. Bluewater's Huron

County Planner agreed with this growth rate (Craig Metzger, Senior Planner, August 20, 2010, e-mail).

## Summary

In summary, the population of the Bluewater lakeshore is expected to increase by 1% per year from an estimated existing (2010) population of 2,295 to 2,830 by the year 2031. The population of Dashwood (located in Bluewater and South Huron) is expected to grow very slowly from 425 (2010) to 430 by 2031. A 1% per year growth rate is also consistent with the 1995 *Review of Lakeshore Septic Systems* completed for the former Hay Township.

Year	Bluewater Lakeshore <sup>[1]</sup>	Dashwood (in Bluewater and South Huron) <sup>[2]</sup>	Total
2010	2,295 (existing)	425	2,720
2011	2,318	425	2,743
2016	2,436	426	2,862
2021	2,560	427	2,987
2026	2,691	428	3,119
2031	2,827, <u>say</u> 2,830	429 <u>say</u> 430	3,256, <u>say</u> 3,255

 Table 13: Population Projections to 2031

[1] Based on 1% per year growth rate to 2031, includes year round and seasonal population [2] Based on .035% per year growth rate to 2031

# 4.2.3 "Ultimate" Population

Dillon also estimated the "ultimate" population of the lakeshore area, when all lands are developed. A total of 155 hectares of land, approximately, is designated for "Lakeshore Residential" development in the Bluewater Official Plan. Assuming that these lands develop at a low density of 12 units per hectare (5 units per acre), with 2.5 persons per household (2006 Statistics Canada census figure), these lands can accommodate 1,860 units with a population of 4,650 people. The estimated existing (2010) population of the lakeshore area, as outlined in Section 4.2.2 is 2,295 people, resulting in a potential increase of 2,355 people along the Bluewater lakeshore when all lands are developed.

The population projections included in Section 4.2.2 for the lakeshore area (1% per year growth) are equivalent to an increase of around 25 people per year or 10 new housing units per year, assuming 2.5 persons per household. At 25 people per year, it will take over <u>90 years</u> for the existing population of 2,295 people to increase to the ultimate population of 4,650 people.

# 4.3 Sewage Flow Projections

Sewage flows were calculated in accordance with MOE *Design Guidelines for Sewage Works* (2008). For existing development (low density, single family homes and infill lots), sanitary effluent flow per household for existing development was calculated based on 3 people/household multiplied by 363 litres/capita/day. Most of the Study Area, west of Highway 21, is designated for future residential development in the Municipality's Official Plan. For these lands, design sanitary effluent flows were calculated based on 30 units/hectare multiplied by 3 people/unit times 363 litres/capita/day, based on MOE guidelines.

#### 4.4 Infrastructure

All development along the lakeshore is serviced by septic systems. The age and condition of these systems is described in Section 2 of this report. The Study Area is serviced by the municipal water supply system with water supplied by the LHPWSS. Water service for most areas was installed between 1988 and 1992.

A significant challenge for the project is MTO discouragement of municipal infrastructure in the Highway 21 ROW. No other major roads are available along the lakeshore to use as alternative routes for a forcemain.

# 4.5 Soils/Geomorpholgy

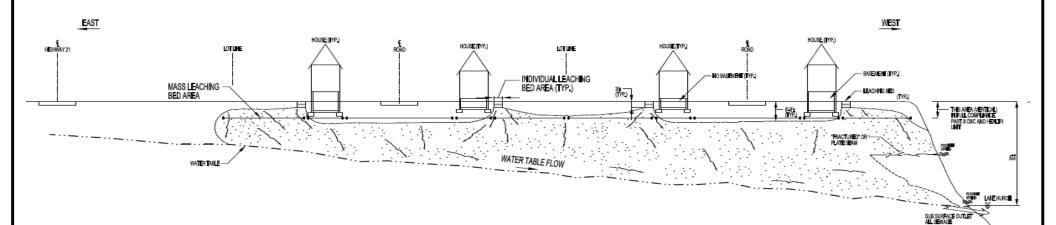
As part of the Class EA and Preliminary Design, Golder Associates Ltd. prepared a preliminary geotechnical assessment (June 8, 2010) of the Bluewater portion of the Study Area. The assessment was based on topographical mapping, aerial photography, soils and bedrock mapping, geological data and site-specific geotechnical data from previous site investigations carried out by Golder.

The Study Area lies within the Huron Slope physiographic region (Chapman and Putnam, 1984). The Huron Slope is composed of a clay plain modified by a narrow strip of sand. The till is formed from brown calcareous clay, generally containing a minimum of gravel and boulders. According to MNR mapping, the surficial soils at the site are clayey silt to silty clay till, consisting of St. Joseph Till, with very localized surficial deposits of granular soils. The area is underlain by middle Devonian-age limestone of the Dundee Formation of the Hamilton Group. The upper member consists of microcrystalline limestone and the lower member consists of crinoidal limestone containing quartz sand grains and chert. The bedrock surface varies between elevations 140 and 165 metres.

Subsurface conditions likely consist of topsoil or fill overlying stiff to hard silty clay till underlain by limestone bedrock. Localized surficial deposits of granular soils were encountered in two of the boreholes. All but one of the boreholes from Golder's previous investigations terminated in layers of silty clay till. The boreholes were terminated at depths ranging from 2 to 17 metres below ground surface. In situ vane shear testing indicated shear strengths ranging from 90 to greater than 120 kilopascals, indicating a stiff to very stiff consistency. The silty clay till had N values, as determined by standard penetration testing, of 8 to 59 blows per 0.3 metres and natural water contents ranging from 10 to 25%, with an average water content of about 17%. The results of Atterberg limits testing indicated plastic and liquid limits ranging from 13 to 21% and 28 to 37%, respectively.

The Building Code MOE criteria for septic system tile beds states that conventional in ground tile beds must be constructed in soils with a "t" time between 1 and 50 minutes per centimetre. The clayey soils in the Bluewater portion of the Study Area have a "t" time greater than 50. Tile beds on clay soils are more prone to premature failure and "breakout" of septic effluent. As a result, raised beds or specially designed proprietary beds are required. To provide sufficient area for individual raised beds and the required contingency area, the estimated minimum required lot size is about <u>0.6 hectares (1.48 acres)</u>. As shown on **Table 14**, almost all of the lots along the Bluewater lakeshore are smaller than 0.6 hectare (6,000 m<sup>2</sup>).

**Figure 10** illustrates transmissivity geomorphology along the lakeshore. The figure shows that effluent from individual septic leaching beds is not confined to individual lots. All of the effluent eventually reaches the groundwater and combines to flow with the water table into Lake Huron.





2 DIMENSIONAL GEOMORPHOLOGY TYPICAL SECTION



Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Two Dimensional Geomorphology Typical Section

Figure 10

10-3169

Subdivision	Typical Smaller Lot Size (m <sup>2</sup> )	Typical Larger Lot Size (m <sup>2</sup> )
Highlands 1, 2 and 3	550	2,000
Elmwood	700	1,100
Turnbull's Grove		
-residential lots	1,150	2,800
-trailer sites	200	500
Windy Hill	450	1,100
Norman Heights	750	1,500
Ridgeway	700	1,500
Schadeview	700	4,000
Cedar Bank	900	2,250
Poplar Beach 1 and 2	700	2,850
Sunnyridge	1,400	4,200
Lakewood Gardens	1,200	4,350
Cliffside	1,350	2,100
Pavillion	3,300	7,050
Bayview	800	4,200
St. Joseph's Phase 1 and 2	2,000	4,300
Gendron and Bluewater	1,050	3,800
Properties		
Antoinette's Lane	850	2,400
Driftwood Trailer Park	400	500
-trailer sites		
Vista Beach	1,500	2,800
Josephine Street	2,300	6,450

# Table 14: Typical Lot Sizes

#### 4.6 Built Heritage and Cultural Landscapes

Extant (meaning still existing) built heritage and cultural landscapes include the Roman Catholic church in St. Joseph (formerly named Lakeview) and the historical site commemorating the founding of St. Joseph. As outlined in the Stage 1 Archaeological Assessment prepared by Fisher Archaeological Consulting (FAC) for the project, the 1879 *Historical Atlas of Huron County* and a 1920 map of Huron County show historic schools and churches located in this part of Bluewater (formerly Hay Township). No longer standing, these included:

- A church located in the small community of Johnson's Mills, approximately half a concession south of present day St. Joseph, on Lot 14, Lake Road East Concession. The church is shown on the 1879 and 1920 maps.
- School No. 11 located on Lot 18, Lake Road West Concession, shown on the 1920 map.
- Another structure, possibly a school, is shown on Lot 12, Lake Road West Concession, on the 1920 County map.

## 4.7 Archaeological Assessment

FAC prepared a Stage 1 Archaeological Assessment of the proposed collection system. A Stage 1 assessment consists of background research and a "windshield" survey to determine existing registered archaeological sites and lands with moderate and high archaeological potential requiring further, more detailed archaeological assessments prior to construction. The assessment was prepared according to the Ministry of Culture and Tourism's (MTC) *Standards and Guidelines* (2010) consisting of "best practices for consulting archaeologists. FAC completed the windshield survey on October 3, 2011.

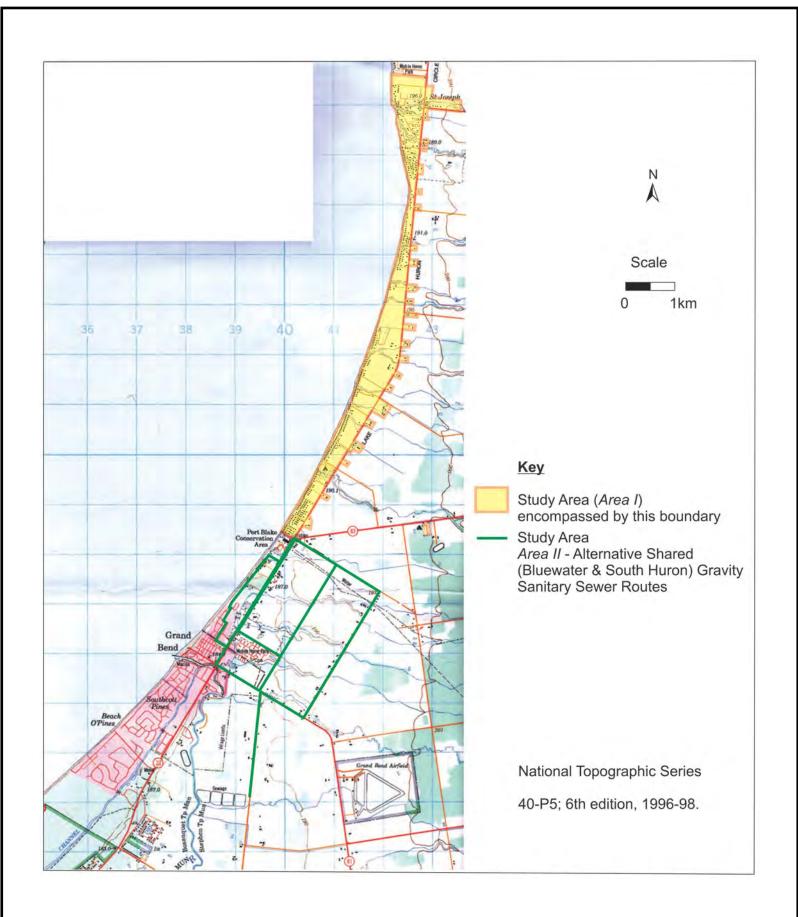
As shown on **Figure 11**, most of the Study Area has high archaeological potential, based on a number of factors, including proximity to water supplies, physiography and soils and previous archaeological work in the Study Area. All of these factors indicate a strong "pre-contact" (with Europeans) Aboriginal presence.

The Study Area is located in the Lake Huron Drainage Basin and is extremely well supplied with water. In addition to Lake Huron, many major and minor watercourses cross the Study Area. The most prominent physiographic feature in the Study Area is Lake Huron, one of the Great Lakes. The Bluewater lakeshore is located in the Huron Slope, a clay plain running along the eastern side of Lake Huron, between the Lake Warren beach strand and glacial Lake Algonquin shoreline.

The Study Area is situated primarily on Brookston Clay, a dark grey clay loam and/or silty clay, with highly mottled and fine textured till from the Dark Grey Podzolic Great Group. Brookston Clay is poorly drained and slightly stony in nature and with level to gently undulating topography. Generally, Aboriginals preferred settlement sites on well-drained soils, rather than poor ones, such as the clay or muck soils in the Study Area.

Sources of siliceous stone, specifically chert, for making tools were often focal areas for precontact Aboriginal peoples. Kettle Point, located south of the Pinery Provincial Park on Lake Huron, is the nearest source of chert to the Study Area. Kettle Point chert occurs as submerged outcrops off Cape Ipperwash, south of Grand Bend.

Previous archaeological work indicates a strong pre-contact Aboriginal presence. Aboriginal peoples have inhabited Southern Ontario for over 11,000 years, and the Study Area has high potential for finding evidence of the earliest groups (Paleo-Indian from 9,300 B.C.) to the post-European contact period. Seven sites have been registered within a 2 km radius of the Study Area.



DILLON CONSULTING Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

**Archaeological Potential** 

Figure 11

Registered sites include five lithic scatters, one campsite, and a possible village. All of the sites are Aboriginal and pre-contact in origin, although one of the sites has minor Euro-Canadian component. Other research by FAC south of the Study Area indicates an abundance of sites from the Paleo-Indian period onwards. There is no record of previous archaeological work in the Bluewater Study Area.

Although a few hardy immigrants may have made inroads into the forests and swamps of Huron County, the history of Euro-Canadian settlement in the Study Area begins with the Canada Company. In 1828, the Canada Company purchased one million acres in Huronia referred to as the "Huron Tract".

Hay Township (now part of the Municipality of Bluewater) was named after R.W. Hay, secretary for the colonies with Lord Stanley, whose name was also given to the neighbouring township. For the most part, the land was considered to be of good quality, but a large portion consisted of swamps. No major rivers are present, but there were numerous springs to providing potable water. Hay Township was settled later than most of the other townships in this area. Before 1845, there were only 113 inhabitants. Prior to 1845, most of the few settlers were of Scottish and Irish origin.

According to the *Settlement of Huron County*, 1966, the first settler in Hay Township was probably William Wilson who arrived in 1839, although Robert Bisset, who settled on the Usborne side of the London Road, registered a property deed in Hay as early as 1833. German settlement began in 1846 when John Orsh and his family settled on Lot 28, Concession 12. Although the Canada Company began opening up the Huron Tract in 1828, it was not until the 1840s that Euro-Canadian settlement in Hay Township began in earnest. Most of the villages in Hay Township developed in the second half of the 19<sup>th</sup> century.

The Lake Road, or Highway 21, is among the earliest roads constructed in this region. Although the 1846 *Map of the Huron District* shows most of the north/south roads and east/west concession roads, it is likely that few of these roads were open at that time. Regardless, the period from 1843 to 1850, was one of rapid road development. The Lake Road (modern Highway 21) is depicted on *deRottenburg's Map of Canada West*, 1850.

As part of the Stage 1 Archaeological Assessment, FAC also reviewed historic maps to determine the Study Area's historic potential. The review is summarized on **Table 15**.

Document, Date, Author/Source	Historic Structures and Roads
<i>New Map of Huron</i> <i>County, Canada West.</i> W.C. Chewett & Co.; Toronto, 1862	- Lakeview (present-day St. Joseph) with four structures
Historic Atlas of Huron County (Huron County) Figure 6	<ul> <li>Highway 21 is called the "Lake Road"</li> <li>St. Joseph is named "Lakeview"</li> <li>Johnson's Mill is a major centre south of Lakeview on Lot 14, Lake Road East Concession. Another structure, possibly a school, is shown on Lot 12, Lake Road East Concession</li> <li>the community of Brewster is shown on the northeast corner of present-day Highway 21 and Dashwood Road</li> <li>Grand Bend is shown on the west side of present-day Highway 21 and Main Street</li> </ul>
Historic Atlas of Huron County, Hay Township, 1879	<ul> <li>Highway 21 is called "Lake Road"</li> <li>Lakeview (present-day St. Joseph) is not shown but Johnson's Mills is shown with a Post Office</li> <li>two structures are shown at Johnson's Mills including a church on Lot 14, Lake Road West Concession (property of H. Boller), and another structure, possibly a school, on Lot 12, Lake Road West Concession</li> <li>small structures, possibly farmsteads, are depicted on most of the lots on both sides of Lake Road from present-day St. Joseph to Brewster</li> <li>Port Blake is shown with a wharf at the Hay/Stephen Township line and Lake Huron</li> </ul>
<i>Map of Huron County.</i> The Map Company; Toronto, 1920	<ul> <li>Lakeview is now shown as St. Joseph and Johnson's Mills is no longer depicted</li> <li>Hay Township School #11 is shown on Lot 18, Lake Road West Concession</li> </ul>
Huron County Historic Atlas, Township of Hay, 1948	- St. Joseph Shores is shown at the former site of Johnson's Mills

# Table 15: Summary of Historic Maps, NTS Maps and Aerial Imagery

Document, Date, Author/Source	Historic Structures and Roads
NTS Map Sheet 40 P/5 East Half, 1951	<ul> <li>St. Joseph appears where Lakeview was on the 1879 Historic Atlas</li> <li>Lake Road is now Highway 21</li> <li>fewer structures (farmsteads, etc.) appear along Highway 21 than in 1879</li> <li>St. Joseph has an aerodrome outside the Study Area</li> <li>none of the three churches or significant structures/schools noted on the 1879 Historic atlas are shown on the 1951 map</li> <li>the historic dock at Port Blake is no longer noted</li> </ul>
NTS Map Sheet 40, 1971	<ul> <li>a trailer park is shown on west side of Highway 21</li> <li>water treatment plant shown at Highway 21 and Dashwood Road</li> <li>many new cottages along Highway 21 from St. Joseph to Grand Bend</li> </ul>
NTS Map Sheet 40, 1979	<ul> <li>beachfront subdivisions continue to grow as even more structures appear between Highway 21 and Lake Huron from St. Joseph to Grand Bend</li> <li>Grand Bend sewage lagoons shown</li> <li>Grand Cove Trailer Park shown northeast of Grand Bend in Stephen Township</li> </ul>

Based on all of these considerations, FAC determined that most of the Study Area has high potential for the discovery of both Aboriginal and Euro-Canadian archaeological sites, as shown on **Figure 11**. FAC recommended that a Stage 2 Archaeological Assessment, followed by more detailed archaeological assessments be completed during the Detailed Design phase of the Bluewater collection system. Archaeological clearance is required prior to construction.

#### 4.8 Fisheries and Aquatic Resources

# 4.8.1 Introduction

Section 4.8 summarizes background information gathered on the aquatic environment potentially affected by the sewage collection system servicing the subdivisions along the Bluewater lakeshore. Consultation with relevant agencies, the site reconnaissance survey of watercourse crossings and potential constraint areas are also summarized.

Sources of information for the background review included Fisheries and Oceans Canada (DFO), MNR and ABCA. Field reconnaissance was conducted for 28 stations on May 18, 2011, as

shown on **Table 17** at the end of this section. Characteristic watercourse and riparian features were identified at each station.

## 4.8.2 Background Fisheries Information

The Bluewater lakeshore is located in the South Gullies subwatershed, within the larger ABCA watershed. Most of the watercourses in the Study Area flow in a westerly and/or northwesterly direction, and drain into Lake Huron. Overall, the South Gullies sub-watershed is dominated by a warmwater baitfish community (Veliz et al., 2006). As shown on **Figure 12**, many of the watercourses have been identified by ABCA, MNR and DFO as permanent, warmwater watercourses dominated by baitfish (i.e., no top predators). Since, in some instances, the drain classification differed between agencies, the drain classification that affords the most protection was used by Dillon for this assessment and should be considered relevant until more comprehensive studies are undertaken to confirm the classification. **Figure 12** shows drain classifications according to ABCA.

Pergel Gully is a cold/cool water stream that crosses Highway 21 between Stanley Boulevard and Moore Court, south of Huron Road 84. It is a Class D watercourse, indicating that is a cold/cool water tributary with Trout or Salmon present (ABCA 2010). In addition, MNR and ABCA have identified Schroeder Drain, which crosses Huron Road 83, as a cold/cool water Class A watercourse with no Trout or Salmon present. This watercourse is located upstream of the lakeshore and flows into an unnamed tributary (Hay H Drain), a Class C watercourse just upstream of the Study Area.

Fish community records were requested from ABCA/DFO and MNR. Although ABCA does not have fish records for the Study Area, dead Rainbow Trout (*Oncorhynchus mykiss*) have been found within the general area of the Zurich Drain. A list of MNR records of fish species present in each watercourse in the Study Area is shown in **Table 17**. None of the identified species are listed under Ontario's *Endangered Species Act, 2007*, or the Federal *Species at Risk Act* (Tara Lessard, Area Biologist, MNR Guelph District, Personal Communication, September 23, 2010).

In addition to fish community information, ABCA has one long-term benthic sampling site located in the Study Area in the Zurich Drain at Pergel Gully and Highway 21. Sampled six times since 2000, the results show that it has a benthic invertebrate community largely dominated by pollution-tolerant species. Pollution-tolerant species have been increasing in recent years at this sampling site and seem to indicate poor stream health (Tracey Boitson, GIS/CAD Information system Specialist with ABCA, Personal Communication, May 27, 2010).



Sanitary Sewage Collection System Class EA & Preliminary Design

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Figure 12

# 4.8.3 Aquatic Species at Risk

According to MNR's Natural Heritage Information Centre (NHIC) and DFO/CA Species at Risk (SAR) Distribution Mapping (2011), there are *no known occurrences* of aquatic SAR located in the Study Area. However, aquatic SAR are known to occur within other parts of the watershed. MNR has noted that, since the province has not been surveyed comprehensively for the presence of SAR, the absence of a SAR record does not indicate the absence of the species. (Tara Lessard, Area Biologist, MNR Guelph District, Personal Communication, July 6, 2010). MNR indicated that the following aquatic SAR exist in Huron County, but, these species have not been identified as present in the Study Area:

- Wavy-rayed Lampmussel
- Redside Dace
- Black Redhorse
- Northern Brook Lamprey.

Of the SAR listed as potentially occurring in Huron County, limited habitat may exist for Wavy-rayed Lampmussel, Redside Dace and Northern Brook Lamprey. However, it is unlikely that they occur in the Study Area, as outlined in **Table 16**.

# 4.8.4 Field Reconnaissance

As shown on **Table 17**, Dillon examined a total of 28 stations, representing 22 watercourses on May 18, 2011. Channel and riparian features were noted at each station. Photographs are included in **Appendix B**.

In general, most of the watercourses are classified as either intermittent or warm water and surrounded by agricultural land. Most of the watercourses in the Study Area affected by the lakeshore forcemain, are natural watercourses with narrow riparian corridors. Routes A and B for the lakeshore forcemain all intersect with the same watercourses.

The most notable feature of the watercourses in the Study Area is the large hydraulic headwater drops that occur on the west side of Highway 21. Since the watercourses flow in a westerly direction under Highway 21 through box culverts, the concrete bottom of the culverts slope towards the west to compensate for the change in elevation on the west side of Highway 21 compared to the east. This results in concrete headwater drops that act as barriers to upstream fish migration from Lake Huron. Thus, any aquatic species migrating from Lake Huron are not able to access stream reaches east of Highway 21.

Common Name	Scientific Name	Status under the Endangered Species Act, 2007	Status under the Species at Risk Act	General Habitat Requirements	Potential Habitat for Species in Study Area	Potential for Species to Occur in Study Area
Wavy-rayed Lampmussel	Lampsilis fasciola	Threatened	Endangered	Gravel or sand substrates, stabilized by cobble or boulders, in and around riffle areas up to 1 m in depth	Potential habitat in streams with habitat requirements	Unlikely to occur due to presence of Zebra Mussels throughout much of lower Great Lakes. Also, range maps do not include Study Area
Redside Dace	Clinosomus elongatus	Endangered	Special Concern	Prefers pools in small coldwater streams with little sedimentation	One cold water stream (Pergel Gully) contains potential habitat	Potential to occur in Pergel Gully, but there is a permanent migratory obstruction at Hwy. 21
Black Redhorse	Moxostoma duquesnei	Threatened	No Status	Prefers cool bottoms of large streams with moderate flows	No large streams with moderate flow exist in Study Area	Unlikely for species to occur in Study Area
Northern Brook Lamprey	Ichthyomyz on fossor	Special Concern	Special Concern	Inhabit coldwater streams and small rivers. Live most of life buried in soft bottoms of silt and sand	One cold water stream (Pergel Gully) contains potential habitat	Potential to occur in Pergel Gully, but there is a permanent migratory obstruction at Highway 21

Table 16: Aquatic Species at Risk in Huron County

Source: Tara Lessard, Area Biologist, MNR Guelph District, Personal Communication, July 6, 2010

## 4.9 Terrestrial Resources

Dillon's Terrestrial Biologist completed field investigations of the Bluewater Sanitary Sewage Collection System on June 1 and August 18, 2011, including lands affected by the collection system servicing the Bluewater lakeshore.

## **4.9.1** Background Information and Field Investigations

The terrestrial assessment assumed that the Bluewater collection system will be constructed by directional drilling. This method minimizes impacts on the rooting systems of trees since excavation around the roots is minimal, and severing of roots is limited to the diameter of pipe. Impacts to herbaceous communities (i.e., old fields) is not expected due to the depth of directional drilling which is typically 1.5 metres below the soil surface.

The Study Area is within the South Gullies subwatershed which is dominated by agricultural land use (approximately 85%), consisting of row crops (corn and soybean), cereal grains and hay or pasture. Forest cover is approximately 10%, with most woodlots located between concession roads. The woodlots provide good connectivity for wildlife to migrate throughout the area. According to Forest Resource Inventory mapping (MNR, 1978), the forests are dominated by deciduous species, including red ash (*Fraxinus pennsylvanica*), sugar maple (*Acer saccharum*), beech (*Fagus grandifolia*), ironwood (*Carpinus caroliniana*), white elm (*Ulmus americana*) and shagbark hickory (*Carya ovata*). Most have been logged at least once in the last fifty years.

Station #	Waterbody Name	Location of Crossing	Draft Drain Classification at Crossing	General Features	Plate #	Fish Records
1	Pergel Drain (Pergel Drain #13)	Hwy. 21	F(ABCA)	<ul> <li>natural watercourse with a wetted width of ~1-2m upstream and 3-5m downstream; the mean water depth is ~10cm</li> <li>primarily run habitat with riffle/run sequence upstream; substrates include silt, sand, gravel, cobble and clay</li> <li>75% of banks are vulnerable to erosion; left upstream bank is protected</li> <li>in-stream cover includes undercut banks, boulders, cobble, woody debris and vascular macrophytes</li> <li>culvert presents a barrier to fish movement</li> <li>cultivated and scrubland features dominate the riparian zone</li> </ul>	1	No Fish Recorded
2	Fourcier Drain (Fourcier Drain #14)	Hwy. 21	F(MNR,ABCA)	<ul> <li>natural watercourse with a wetted width of ~1-1.5m; water depth of ~10-25cm</li> <li>run and flat habitat; substrates include gravel, sand, silt, and clay</li> <li>some erosion occurring on banks, left upstream bank is protected</li> <li>in-stream cover includes vascular macrophytes throughout along with undercut banks and organic debris downstream</li> <li>majority of riparian zone is cultivated</li> </ul>	2	No Fish Recorded
3	Pergel Gully (Pergel Gully #12)	Hwy. 21	C(MNR) D(ABCA)	<ul> <li>natural watercourse with a wetted width of ~2-2.5m; water depth of ~0.5m</li> <li>riffle-run habitat with pools upstream; substrates include boulder, cobble, gravel, silt and clay</li> <li>upstream banks are protected while downstream are eroding</li> <li>in-stream cover in the form of undercut banks, boulders, cobble, woody debris and in-stream vascular macrophytes</li> </ul>	3	brook stickleback, rainbow darter, creek chub, blacknose dace, other cyprinidae

## Table 17: Summary of Aquatic Reconnaissance

Station #	Waterbody Name	Location of Crossing	Draft Drain Classification at Crossing	General Features	Plate #	Fish Records
				<ul> <li>scrubland and forest dominate 10m riparian area</li> <li>permanent migratory obstruction from downstream culvert</li> </ul>		
4	Charette Drain (Charette Drain #11)	Hwy. 21	F(MNR, ABCA)	<ul> <li>natural watercourse with a wetted width of ~1-3m; mean depth of ~20-50cm</li> <li>run/flat upstream and riffle/run downstream; substrates include cobble, silt, clay and gravel</li> <li>upstream banks are slightly vulnerable to erosion but mostly protected while downstream banks contain bare soil</li> <li>in-stream cover in the form of undercut banks, cobble, overhanging woody debris vascular macrophytes</li> <li>upstream riparian zone consists mainly of agriculture; downstream there is scrubland and then no riparian community</li> <li>permanent migratory obstruction 5 vertical drops from the downstream headwall</li> <li>pipe parallel to road goes over watercourse and culvert headwall</li> </ul>	4	No Fish Recorded
5	Unnamed Ravine #10	Hwy. 21	C(ABCA)	<ul> <li>natural watercourse with a wetted width of ~1-2m; mean depth of ~20cm</li> <li>run/flat habitat; substrates include sand, cobble, silt, clay and gravel</li> <li>75% of banks are vulnerable to erosion with the remainder eroding</li> <li>in-stream cover in the form vascular macrophytes; downstream also contains in-stream and overhanging woody debris and cobble</li> <li>riparian zone is mainly cultivated</li> <li>watercress present both upstream and downstream</li> <li>downstream culvert acts as a seasonal migratory obstruction</li> </ul>	5	No information

Station #	Waterbody Name	Location of Crossing	Draft Drain Classification at Crossing	General Features	Plate #	Fish Records
6	Pepper Drain (Pepper Drain #9)	Hwy. 21	F(MNR, ABCA)	<ul> <li>natural watercourse with a wetted width of ~1m; mean depth of ~10-20cm</li> <li>run/flat habitat upstream and riffle/run downstream; substrates include silt, clay, cobble and boulder</li> <li>upstream banks vulnerable; downstream are eroding and contain bare soil</li> <li>wide variety of in-stream cover</li> <li>riparian zone is mainly cultivated with some scrubland</li> <li>large drop at downstream headwall creates migratory obstruction</li> <li>horses have access to culvert</li> </ul>	6	No Fish Recorded
7	Unnamed Ravine #8	Hwy. 21	F(ABCA)	<ul> <li>natural watercourse with a wetted width of ~1-2m; mean depth of ~10-20cm</li> <li>run/flat habitat with silt, clay and detritus substrates</li> <li>banks are vulnerable to erosion with the upstream riparian area cultivated and the downstream mostly scrubland</li> <li>in-stream cover includes some organic debris and vascular macrophytes with overhanging woody debris upstream</li> </ul>	7	No information
8	Datars Miller Drain (Datars Miller Drain #8)	Hwy. 21	C(MNR, ABCA)	<ul> <li>natural watercourse with a wetted width of ~1-3m; mean depth of ~10-50cm</li> <li>run/flat habitat with gravel, sand, clay and silt substrates</li> <li>banks are mostly vulnerable; the left downstream bank has significant erosion</li> <li>riparian area consists mostly of cultivated land</li> <li>variety of in-stream cover exists</li> <li>permanent migratory obstructions upstream and downstream</li> </ul>	8	Baitfish
9	Unnamed Ravine #7	Hwy. 21	C(ABCA)	<ul> <li>natural watercourse with a mean wetted width of ~2m (larger near culverts); mean depth of ~10-30cm</li> <li>run/flat habitat upstream and run/pool/riffle habitat downstream with boulder, cobble, gravel, silt, sand and clay substrates</li> </ul>	9	No information

Station #	Waterbody Name	Location of Crossing	Draft Drain Classification at Crossing	General Features	Plate #	Fish Records
10	Adams Drain (Adams Drain #6)	Hwy. 21	F(MNR, ABCA)	<ul> <li>banks are eroding; the majority of the riparian area is cultivated</li> <li>riparian area consists mostly of cultivated land</li> <li>variety of in-stream cover exists</li> <li>permanent migratory obstructions at downstream culvert</li> <li>channelized watercourse with a wetted width of ~1m; mean depth of ~10-30cm</li> <li>run/flat habitat with gravel, sand, silt and detritus substrates</li> <li>banks are mostly vulnerable; the left downstream bank has erosion scarring</li> </ul>	10	No Fish Recorded
				<ul> <li>riparian area consists cultivated land and manicured lawn</li> <li>in-stream cover exists in the form of undercut banks, overhanging woody debris, organic debris and vascular macophytes</li> <li>potential seasonal migratory obstructions from upstream culvert</li> </ul>		
11	Kading Drain (Kading Drain #5)	Hwy. 21	C(MNR, ABCA)	<ul> <li>natural watercourse with a mean wetted width of ~0.5- 1m; mean depth of ~10-50cm</li> <li>run/ habitat upstream and run/riffle habitat downstream with boulder, cobble, gravel, sand and clay substrates</li> <li>banks are vulnerable and eroding; the majority of the riparian area contains residential, cultivated and scrubland areas</li> <li>variety of in-stream cover present</li> <li>culvert-headwater drop exists as a migratory obstruction</li> </ul>	11	brook stickleback, rainbow darter, creek chub, blacknose dace, northern redbelly dace, common shiner, other cyprinidae

Station #	Waterbody Name	Location of Crossing	Draft Drain Classification at Crossing	General Features	Plate #	Fish Records
12	Unnamed Drain #4	Hwy. 21	F(ABCA)	<ul> <li>channelized watercourse with a mean wetted width of ~0.5-1m (larger near culverts); mean depth of ~10cm</li> <li>run and/or flat habitat; sand, silt, clay, gravel and detritus substrate</li> <li>banks are vulnerable to erosion; the majority of the riparian area is cultivated or contains grass</li> <li>variety of in-stream cover exists</li> <li>potential season migratory obstructions at downstream culvert</li> </ul>	12	No Information
13	Unnamed Ravine #3 (Schroeder Drain)	Hwy. 21	C(MNR, ABCA) A(DFO)	<ul> <li>natural watercourse with an upstream mean wetted width of ~1-2m and depth ~ 20-50cm; downstream ~8-10m mean wetted width and ~0.5-1m depth</li> <li>upstream contains run/riffle/pool sequences while downstream contains only pool</li> <li>banks are unstable and mostly eroding; scrubland present directly adjacent with surrounding agriculture</li> <li>upstream contains a variety of in-stream cover; downstream contains only undercut banks and woody debris</li> <li>potential season migratory obstructions at upstream culvert; downstream the culvert presents a permanent obstruction and a beaver dam is a current obstruction</li> <li>snapping turtle was observed</li> </ul>	13 & 14	No Fish Recorded
14	Lake Huron Tributary G (Lake Huron Tributary #2)	Hwy. 21	F(MNR) U(ABCA)	• piped/tiled, with open intercepts at Hwy. 21	15	No Information
15	Fahner Drain #1	Hwy. 21	C (MNR) F(DFO, ABCA)	<ul> <li>channelized watercourse with a mean wetted width of ~1.5-2m; mean depth of ~10-50cm</li> <li>flat habitat upstream and run/riffle/flat habitat downstream with silt, clay and detritus substrates</li> <li>banks are unstable and eroding; upstream agriculture is within 1m of the top of bank; downstream is manicured</li> </ul>	16	No Fish Recorded

Station #	Waterbody Name	Location of Crossing	Draft Drain Classification at Crossing	General Features	Plate #	Fish Records
				<ul> <li>nearly to top of bank</li> <li>variety of in-stream cover present</li> <li>seasonal migratory obstruction is present at the downstream culvert</li> </ul>		
16	Turnbull Drain	Hwy. 21	F (MNR) C (DFO)	<ul> <li>natural watercourse with a wetted width of ~1m; water depth of ~50 cm</li> <li>primarily run morphology with riffle/run sequence downstream of Hwy. 21</li> <li>substrates include silt, clay, gravel and detritus</li> <li>75% of banks were vulnerable; left upstream bank was protected</li> <li>various forms of in-stream cover; the riparian zone contains mostly agriculture upstream and forest/scrubland downstream</li> <li>culvert presents a barrier to fish movement</li> </ul>	17	stickleback, chub, dace
17	Turnbull Drain	Gore Rd.	F (MNR) C (DFO)	<ul> <li>channelized watercourse, with a wetted width of ~1-2m; water depth of ~10-30cm</li> <li>run and flat habitat present both upstream and downstream</li> <li>substrates include silt, clay, gravel cobble and detritus</li> <li>surrounding land is agricultural</li> </ul>	18	stickleback, chub, dace
18	Maple Grove Branch (potentially affected by South Huron shared sewer)	Hwy. 21	F (MNR) C (DFO, ABCA)	<ul> <li>channelized watercourse upstream and natural downstream with a wetted width of ~2-4m; water depth of ~0.5-1m</li> <li>run-flat habitat with silty-clay substrate</li> <li>in-stream cover present</li> <li>riparian area contains a mixture of forest, agriculture, meadow and wetland</li> </ul>	19	No Fish Recorded

Station #	Waterbody Name	Location of Crossing	Draft Drain Classification at Crossing	General Features	Plate #	Fish Records
19	Adams Drain (potentially affected by South Huron shared sewer)	B Line	F(MNR)	<ul> <li>channelized watercourse with a wetted width of ~2-3m and mean depth of ~30-50cm</li> <li>run-flat habitat with silty-clay substrate</li> <li>no in-stream cover or shade present</li> <li>surrounded by agricultural land-use</li> <li>natural gas sign</li> </ul>	20	No Fish Recorded
20	Webb Drain (potentially affected by South Huron shared sewer)	B Line	F(MNR) C(DFO, ABCA)	<ul> <li>natural but maintained watercourse with a wetted width of ~1-2m and a mean depth of ~50cm</li> <li>run-flat habitat with silty-clay, cobble and gravel substrate</li> <li>little in-stream cover or shade present</li> <li>surrounded by predominantly by agricultural land-use</li> </ul>	21	No Fish Recorded
21	Ratz (potentially affected by South Huron shared sewer)	Hwy. 21	F (MNR) C (DFO)	<ul> <li>channelized watercourse with a wetted width of ~2m and a mean depth of ~20-40cm</li> <li>run-flat habitat with silty-clay, and gravel substrate</li> <li>little in-stream cover or shade present</li> <li>Surrounded by a golf course and manicured lawn</li> </ul>	22	brook stickleback, creek chub, blacknose dace, white sucker, northern redbelly dace, common shiner, rock bass
22	Ratz (potentially affected by South Huron shared sewer)	Hwy. 21	F (MNR) C (DFO)	<ul> <li>channelized watercourse with a wetted width of ~3m and a mean depth of ~20-30cm</li> <li>run-flat habitat with silty-clay, cobble and gravel substrate</li> <li>some in-stream cover and shade present</li> <li>riparian area contains a mixture of residential, scrubland, and manmade structures such as gabion baskets</li> </ul>	23	brook stickleback, creek chub, blacknose dace, white sucker, northern redbelly dace, common shiner, rock bass

Station #	Waterbody Name	Location of Crossing	Draft Drain Classification at Crossing	General Features	Plate #	Fish Records
23	Ratz (potentially affected by South Huron shared sewer)	B Line	F (MNR) C (DFO)	<ul> <li>natural watercourse with a wetted width of ~1.5-2m and a mean depth of ~10-30cm</li> <li>run-flat habitat with silty-clay and gravel substrate</li> <li>some in-stream cover and shade present</li> <li>riparian area contains agricultural land use with scrubland, forest and meadow</li> <li>muskrat observed</li> </ul>	24	brook stickleback, creek chub, blacknose dace, white sucker, northern redbelly dace, common shiner, rock bass
24	Simmons Drain (potentially affected by South Huron shared sewer)	Main St.	F(MNR)	<ul> <li>natural watercourse with a wetted width of ~3-5m upstream and 6-7m downstream and a mean depth of ~30-50cm</li> <li>riffle-run habitat with silty-clay and gravel substrate</li> <li>some in-stream cover and shade present</li> <li>riparian area contains cultivated land with residential homes</li> <li>stream banks have lots of concrete rubble</li> </ul>	25	Baitfish
25	Simmons Drain (potentially affected by South Huron shared sewer)	B Line	F(MNR)	<ul> <li>no access to downstream as it was tiled to ~30m from road</li> <li>channelized watercourse upstream with a wetted width of ~1m and depth of ~10cm</li> <li>run habitat with cobble, gravel, silt and clay substrate</li> <li>some in-stream cover and shade present</li> <li>riparian area contains agricultural lands</li> </ul>	26&27	Baitfish
26	Desjardine Drain (potentially affected by South Huron shared sewer)	Mollard Line	C(MNR)	<ul> <li>natural watercourse with a wetted width of ~2-3m and a mean depth of ~20-50cm</li> <li>riffle-run habitat with boulders, cobble, silt and clay substrate</li> <li>variety of in-stream cover and good shade present</li> <li>riparian area contains agricultural land with signs of erosion on banks</li> </ul>	28	Baitfish

Station #	Waterbody Name	Location of Crossing	Draft Drain Classification at Crossing	General Features	Plate #	Fish Records
27	Desjardine Drain (potentially affected by South Huron shared sewer)	Grand Bend Line	C(MNR)	<ul> <li>natural however maintained watercourse with a wetted width of ~2m and a mean depth of ~20-30cm</li> <li>primarily run with some riffle habitat with cobble, gravel silt and clay substrate</li> <li>some in-stream cover and shade present</li> <li>riparian area contains meadow/pasture upstream and cultivated/agricultural land downstream</li> <li>evidence of high water on banks</li> <li>garter snake observed</li> </ul>	29	Baitfish
28	Desjardine Drain (potentially affected by South Huron shared sewer)	B Line	C(MNR)	<ul> <li>channelized watercourse with a wetted width of ~2-3m and a mean depth of ~20-30cm</li> <li>run habitat with gravel silt and clay substrate</li> <li>little in-stream cover or shade present</li> <li>riparian area contains cultural/agricultural land upstream and scrubland, forest and meadow lands downstream</li> </ul>	30&31	Baitfish

Along most of the west side of Highway 21, agricultural use has been replaced by cottage/residential development. Agricultural fields have naturalized or been planted with a variety of plantation species, including red pine (*Pinus resinosa*), white pine (*P. strobus*), red cedar (*Juniperus virginiana*) and Scots pine (*P. sylvestris*).

ABCA's report card for the South Gullies subwatershed (ABCA, 2007), shows many watercourses crossing the Study Area. For the most part, their function is to collect agricultural drainage from surrounding fields and convey it to Lake Huron. An inspection of the vegetation characteristics of these drains found that most were dominated by gramnoid species (i.e. reed canary grass, fowl manna grass), as well cattails, sedges and rushes. Where tree or shrub cover does exist, typical species include Manitoba maple (*A. negundo*), black walnut (*Juglans nigra*), silver maple (*Acer saccharinum*), hawthorn (*Crataegus sp.*), red ash, prickly ash (*Zanthoxylum americanum*), apple (*Malus sp*) and elderberry (*Sambucus canadensis*).

According to wetland mapping compiled by ABCA, no wetland communities have been identified along Highway 21 from Huron Road 83 to Huron Road 84.

The landscape along Highway 21 is very typical of a rural highway. However, both sides of the highway have a surprising number and variety of shrub and tree species, both as individual specimen trees, as well as hedgerows along agricultural fields. Species found along the ROW included red ash, honey locust, basswood, littleleaf linden, sugar maple, silver maple, European rowan, black walnut, Norway maple (*A. platanoides*), white elm, Scots pine, red pine, white spruce (*Picea glauca*), lilac (*Syringa vulgaris*) and black cherry (*Prunus serotina*).

# 4.9.2 Terrestrial Species at Risk

# Natural Heritage Information Centre (NHIC) Database Search

According to a search of the NHIC database, the species shown on **Table 18** have known occurrences in the Study Area. As shown, the Study Area does not provide suitable habitat for almost all of the species.

### Site Investigations

Although not identified by the NHIC database, three Species at Risk (SAR) were found during the site investigations. These included:

• Butternut (*Juglans cinerea*) and Kentucky coffee tree (*Gymnocladus dioicus*) found on the alternative lakeshore forcemain routes, Routes A and B. While their exact location is

confidential, one large specimen of Butternut was found on the west side of Highway 21, while two small specimens of Kentucky coffee tree were found on the east side. Since these species are protected under Species at Risk legislation, care must be taken to avoid them during construction.

• A Snapping Turtle (*Chelydra serpentine*) was observed in the Unnamed Ravine #3 (Hay H Drain). The Hay H Drain receives water from the Schroeder Drain (a cold/cool water watercourse) with a significant headwater drop created by the box culvert at Highway 21. The Snapping Turtle was observed at the shore of a large pool formed immediately downstream of the culvert. This species is listed as *Special Concern* under the *Endangered Species Act*, 2007, and is considered to be a Species of Conservation Concern. Based on this, its habitat would be protected as wildlife habitat under the Provincial Policy Statement, 2005.

## 4.10 Existing and Future Land Uses

### 4.10.1 Existing Land Uses

Significant cottage development along the Bluewater lakeshore began to occur in the 1920's. The approximately 10 km stretch from Huron Road 83, at Bluewater's southern boundary with South Huron to the hamlet of St. Joseph, includes more than 20 subdivisions with seasonal and year round cottages, residences and trailers. Existing subdivisions and the number of residences are shown on **Table 12** in Section 4.2.2. Approximately 920 residences are located along the lakeshore, west of Highway 21.

Lands on the east side of Highway 21 consist of prime agricultural land producing a variety of row crops (corn and soybean), cereal grains and hay or pasture. More than ten large farms, with some non-farm residential development, are located along the east side of Highway 21.

The hamlet of Dashwood is located approximately 8 km east of Highway 21 on Huron Road 83. The north part of the hamlet is in Bluewater and the south part is in South Huron. It has an estimated population of 425 and includes a "downtown" area with older commercial buildings (many of which are vacant), single detached residences and some institutional uses.

Common Name	Scientific Name	Status under Endangered Species Act, 2007	Status under Species at Risk Act	General Habitat Requirements	Potential Habitat for Species in Study Area	Potential for Species to Occur in Study Area
American Badger	Taxidea taxus	Endangered	Endangered	Sandy soils and open habitat, such as meadows, prairies, and the edges of fields and forests	Sandy soils are present in Study Area especially along the bluffs and beaches of Lake Huron shoreline but the lack of forest cover and presence of active agricultural activity limits habitat potential for this animal	Potential is low due to lack of suitable habitat
Cerulean Warbler	Dendroica cerulea	Special Concern	Endangered	Interior of large, relatively undisturbed tracts of mature, semi- open deciduous forest	Potential for habitat is low due to cottage development and presence of younger mixed and coniferous forest	Potential is low due to lack of suitable habitat
Blue Racer	Coluber constrictor foxii	Endangered	Endangered	Long grass prairie, savanna, alvar, open woodlands, rough pasture, regenerating farm fields	Potential for habitat is low as the dominant, existing land use is active agricultural (i.e. common field crops), thereby eliminating general habitat requirements (long grass savannahs, regenerating farm fields, and rough pasture, etc.)	Potential is low due to lack of suitable habitat. The presence of relatively short grasslands within the ROW would increase predation by raptors on snake species
Milksnake	Lampropeltis triangulum	Special Concern	Special Concern	Wide range of habitats, especially old fields and farm buildings with rodents present	The potential for habitat is moderate as farm buildings (i.e. barns, silos) on east side of the Highway 21 ROW attract vermin, including mice and rats	Hunting opportunities for rats and mice include ROW areas along Highway 21. However, this species would have greater numbers within farm infrastructure where better habitat and protection are found

Common Name	Scientific Name	Status under Endangered Species Act, 2007	Status under Species at Risk Act	General Habitat Requirements	Potential Habitat for Species in Study Area	Potential for Species to Occur in Study Area
Eastern Ribbonsnake	Thamnophis sauritus	Special Concern	Special Concern	Close proximity to water bodies, especially marshes with opportunities to hunt amphibians and fish	The potential for habitat is high as this snake would have good success hunting for herpetofauna in long grasses along stream corridors. However, the presence of relatively short grasslands in the ROW would increase predation by raptors on snake species	Potential is high near stream corridors, but lower along ROW areas
Karner Blue	Lycaeides melissa samuelis	Extirpated	Extirpated	Oak savannah; presence of Wild Lupine	The potential for habitat is extremely low to none as this butterfly requires wild lupine as a food source for its larvae. During field work, no wild lupine were found within the ROW	The potential for this species to occur within the right-of-way is minimal to none
Green Dragon	Arisaema dracontium	Special Concern	Special Concern, Schedule 3	Wet forests along streams, particularly Maple or and Red Ash/White Elm dominated forests	The potential for habitat for this plant is low as it requires specialized moisture regimes in undisturbed habitats along stream corridors	The potential for this species to occur within the right-of-way is minimal to none
False Rue- anemone	Enemion biternatum	Threatened	Threatened	Rich soils and old floodplains of Maple forests	The potential for habitat is extremely low to none as this plant is found in the under storey of maple forests. Agricultural activity and the presence of invasive plants are two key factors that threaten its survival	The potential for this species to occur within the right-of-way is minimal to none

# 4.10.2 County of Huron Official Plan

County of Huron Official Plan, Amendment No. 3, was passed by County Council on June 2, 2010, and consists of extensive amendments to the existing Official Plan to implement the Provincial Policy Statement and environmentally sustainable planning policies.

The County Plan directs growth and development, in order, to Primary Settlement Areas (urban centres), Secondary Settlement Areas (villages and hamlets with partial water and sewage services) and Tertiary Settlement Areas (villages and hamlets with no water and sewage services). Over 90% of the County's future growth over the next 20 years is allocated to these settlement areas.

The Bluewater Lakeshore is designated "Lakeshore Residential Area" in the County Plan. According to the plan, this designation permits a mix of seasonal and permanent residential development. Limited growth is permitted, "however, unlike other settlement areas, lakeshore areas are not intended to contain a full range of uses". The plan states that "development will be limited to residential uses and will occur based on the availability of appropriate services." Only 8% of the County's future growth is allocated to the "Lakeshore Residential Area". Other relevant policies for this area include:

- Development of this area must "respect" their proximity to Lake Huron, the quality of existing development and the "quality recreational experience".
- New development is limited to five or fewer lots where private on-site sewage systems are used.
- The County, in collaboration with the Province, Conservation Authorities and local municipalities will protect, improve or restore the quality of surface and groundwater and minimize adverse environmental impacts.
- Surface water areas, drinking water supplies and the health of watercourses will be protected and improved as critical resources for the long-term wellbeing of residents and the environment.

# 4.10.3 Municipality of Bluewater Official Plan

Bluewater's Official Plan was approved in 2005. The "purpose of the Official Plan is to identify the resources, capabilities and constraints of the land and the community to enhance the stewardship of the Municipality's environment". The following Official Plan goals are relevant to this project:

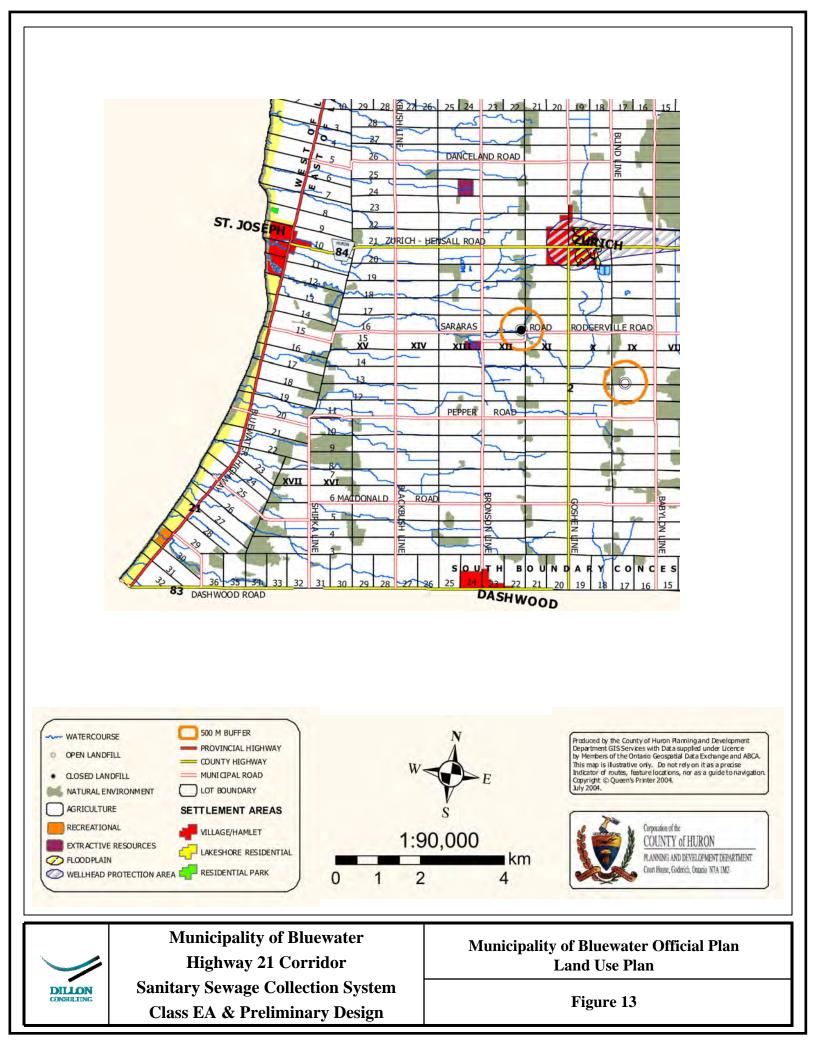
- "To improve the quality of water in groundwater, rivers, streams, gullies and Lake Huron" (Natural Environment Goal).
- "To ensure clean drinking water and ravine and lake water for residents through the appropriate management of services and land use" (Lakeshore and Recreation Goal). As explained in the Official Plan, significant development pressure exists along the lakeshore and ravines.

The Official Plan's "Land Use Plan" (Schedule "B") is shown on **Figure 13**. A large area (approximately 155 hectares) stretching for about 10 km, from Huron Road 83 to past St. Joseph, between the lakeshore and Highway 21, is designated "Lakeshore Residential". This designation permits residential development used on a seasonal or year-round basis. According to the Official Plan, the Zoning By-law may distinguish between seasonal and year-round use. Policies include:

- Most development will proceed by plan of subdivision but infilling and small scale development may occur by consent for land severance.
- Density of development will not exceed 1 dwelling per 0.4 hectare (1 dwelling per acre). This density is based on the assumption that these lands are not serviced by a municipal sanitary sewage system.
- Lot sizes will be sufficient to accommodate the proposed method of servicing over the long term. "Where septic systems are proposed, developments will comply with the provincial groundwater protection criteria for nitrates and lots will contain a contingency tile bed area".
- New developments, including the "opening up" of new areas, will be required to connect to the existing municipal water supply. The Municipality may require a study on the need for a sewage collection system and treatment facility.

Other land use designations in the Study Area include the following:

- Turnbull's Grove Trailer Park is designated "<u>Recreational</u>". According to the Official Plan, trailer parks and campgrounds will be limited to seasonal and recreational occupancy and will not be used as year round dwellings. Density will not exceed 15 sites per hectare. The Official Plan requires that sewage disposal be provided by a "communal sewage system or communal washroom facility" to the satisfaction of MOE or the Huron County Health Unit.
- St. Joseph and Dashwood are designated as "<u>Hamlets</u>". According to the Official Plan, these areas provide "limited residential and social uses". "Minimal development pressure



exists for these rural communities" and development "should occur primarily by infilling on lots large enough to accommodate septic systems".

- Lands along the lakeshore and significant woodlands and wildlife habitat, east of Highway 21, are designated "<u>Natural Environment</u>". As explained in the Official Plan, these natural features "are part of a larger system and should be protected with a view to enhancing the entire ecosystem". Conservation, forestry, wildlife areas and passive recreation are permitted in "Natural Environment" areas. "Septic system maintenance" is mentioned as an important initiative for a healthy ecosystem. Several cold/cool water streams with trout/salmon cross the Study Area, as shown on the "Watershed Boundaries and Aquatic Habitat Features" map included in Appendix 6 to the Official Plan.
- The rest of the Study Area, including lands along the east side of Highway 21 and the north side of Huron Road 83, are designated "<u>Agriculture</u>". According to the plan, almost 90% of the Municipality consists of prime agricultural land. To "promote and protect the long-term future of agriculture", the plan requires that all non-farm development be located in settlement areas. The plan also encourages "sustainable" agricultural practices that protect water quality, improve the health of the environment and reduce conflict and negative impacts on neighbouring land uses.

# 4.10.4 Current Development Applications

According to the Municipality of Bluewater Planning Co-ordinator (May 2010), there are no current applications in the hamlet of Dashwood. Although the Municipality has not received formal application, an enquiry has been made regarding the potential development of "several hundred" single detached or condominium units along the lakeshore on 78 acres at Highway 21 and Hendrick Road.

In the past, the Municipality has also received enquiries from the owners of Hessenland Inn for the development of approximately 100 residential units on 25 acres on its property.

# 4.11 Provincial Policy Statement

The Provincial Policy Statement (PPS) issued under the *Planning Act* requires that any municipal decisions be "consistent" with the PPS. The PPS includes the following policies for development on septic systems:

• Full municipal services are required for multi-lot (more than five lots) developments. The large lot sizes required for septic systems are generally not consistent with the PPS since they are an inefficient use of land/infrastructure and potentially have more impacts on Provincially significant resources.

- Partial services (municipal water and septics) are discouraged
  - septic systems may service development of five lots or less, if:
    - full or communal services are not available
    - the system complies with all regulations and protects human health and the environment
    - $\circ$  site conditions are suitable over the long term
    - servicing is based on integrated servicing/land use considerations.
- Provincial policies also require that municipalities protect, improve or restore the quality of groundwater and surface water.

As required by the PPS, municipalities shall ensure that sewage services are provided in a manner that:

- Can be sustained by the water resources upon which such services rely
- Is financially viable and complies with all regulatory requirements
- Protects human health and the environment
- Promotes water conservation and water use efficiency
- Integrates servicing and land use considerations in all stages of the planning process.

Infrastructure, such as a sewage collection system, shall be provided in a coordinated, efficient and cost-effective manner to accommodate projected needs. The PPS also requires that planning for these facilities shall be integrated with planning for growth to meet current and projected needs. When planning infrastructure, the PPS requires that municipalities consider the significant resources protected by Section 2, "Wise Use and Management of Resources". Significant resources potentially affected by the proposed sewage collection system include:

- Wildlife habitat such as snapping turtle habitat, as described in Section 4.9 of this report
- Cold/coolwater watercourses, as described in Section 4.8 of this report
- Species at Risk vegetation, as described in Section 4.9
- The quality of ground and surface water quality
- Built heritage resources, cultural landscape and archaeological resources. Significant archaeological resources must be conserved by removal and documentation or preservation on site.

# 5. PUBLIC AND AGENCY CONSULTATION

This section of the ESR summarizes the public and agency consultation undertaken during the Class EA process. Consultation was undertaken in accordance with the requirements of the Municipal Class EA. All consultation materials are included in **Appendix C**. The names of private individuals are not included, to comply with the *Freedom of Information and Protection of Privacy Act*.

From the beginning of the project until the Municipal election in the Fall of 2010, a Steering Committee of Bluewater Council oversaw the completion of the project. Following the election, Council oversaw the remainder of the Class EA process. Throughout the project, the Municipality's web-site included Frequently Asked Questions (FAQs) and other information, including project notices, Steering Committee/Council agendas and minutes, presentations from Public Information Centres (PIC) 1 and 2 and materials handed out for discussion by the Steering Committee/Council.

# 5.1 Contact List

The Contact List for the project is included in **Appendix C**. It includes approximately 40 agencies, nine First Nations, utilities, 30 cottagers/subdivision associations, more than 800 property owners along the lakeshore and 90 property owners in Dashwood, for a total of about 960 contacts. The names and addresses of property owners were provided by the Municipality of Bluewater in 2010 from the assessment roll.

The Contact List was updated throughout the project to include additional agency contacts and residents who attended the PICs.

# 5.2 First Nations Consultation

At the beginning of the project, the Department of Indian and Northern Affairs Canada (now Aboriginal Affairs and Northern Development Canada (AANDC)) provided a list of First Nations potentially interested in the project. As provided by AANDC, the Contact List includes the Oneida Nation of the Thames, Kettle and Stony Point First Nation, Southern First Nations Secretariat, Walpole Island Heritage Centre, Caldwell First Nation, Chippewas of the Thames First Nation, Delaware Nation, Chippewas of Sarnia, Munsee-Delaware First Nation and Metis Nation of Ontario. AANDC also advised Dillon that Kettle and Stony Point and Walpole Island are involved in active litigation in the vicinity of the Bluewater Study Area.

All project notices and the displays from PICs 1 and 2 were mailed to the First Nations on the Contact List. In reply to the Project Initiation Notice, the Chief of the Kettle and Stony Point First Nation stated that the First Nation is very interested in the water quality of Lake Huron. In reply to the PIC 2 Notice, the Chippewas of the Thames First Nation stated that their consultation staff will review the project and follow up with a letter. A letter was not subsequently received. Following PIC 2, the following input was received:

- Southern First Nations Secretariat provided the names of chiefs who should be contacted for comments. All of the names provided have been on Dillon's Contact List since the beginning of the project.
- Chippewas of the Thames First Nation thanked Dillon for the invitation to PIC 2 and stated that its consultation staff will review the project and follow up with a letter. A letter was not received.
- Indian and Northern Affairs Canada provided information on determining which First Nations should be consulted and determining land claims in the area. This information was obtained by Dillon at the beginning of the project.

# **5.3 Project Initiation Notice**

The Project Initiation Notice, along with a comment form requesting comments by May 28, 2010, were mailed to the Contact List on April 27 and 28, 2010. The comment form also asked residents if they would be willing to participate in a septic system survey. The Municipality of Bluewater placed a copy of the notice in the May 5 and 12, 2010, editions of the Lakeshore Advance and Exeter Times Advocate.

Almost 200 responses were received to the Project Initiation Notice, including seven agencies, 170 lakeshore residents, 15 Dashwood residents and four cottager/subdivision associations:

### Agency Input

- Transport Canada stated that the *Navigable Waters Protection Act* (NWPA) applies to any construction affecting a navigable waterway. Although no impacts are expected on navigable waters since the collection system will be installed using the Horizontal Direction Drilling (HDD) method of construction, the applicability of the NWPA will be confirmed during Detailed Design.
- MTO's Contracts and Operations Office, West Region, stated that permits are required from MTO for the construction of the collection system along the Highway 21 ROW.
- The Lake Huron Primary Water Supply System (LHPWSS) stated that it is interested in servicing the Water Treatment Plant by the proposed collection system.

- Ministry of Agriculture and Food and Rural Affairs, County of Huron Public Works Department and ABCA requested to be kept informed.
- Ontario Hydro confirmed that there are no Hydro One Transmission Facilities in the Study Area.

### Lakeshore Residents

Most residents (approximately 125) indicated that they wished to be kept informed. Forty-eight provided comments, including the following:

## Negative Comments (approximately 22)

- Two people stated that the collection system is very expensive and the Municipality should "leave septics alone, sewers are too expensive".
- Three people stated that the existing lake pollution problems are caused by manure, not septics. Other comments included all systems should be inspected, we are "just paying for Grand Bend's subdivision" and "support is not unanimous among all residents despite what BSRA says."
- 15 people stated that sewers are not needed because their systems were either recently installed or work well, their system is checked annually or they only live in their residence from May to October. One resident stated that their septic system in Turnbull's Grove works well and it is 50 years old.
- One person in Bayview subdivision stated that existing problems are caused by the Zurich lagoons. They are also concerned about grinder pumps.
- One person stated they are very concerned about financial impacts.
- One person asked "what is the use of Dillon's survey if you are pushing sewers"?

# Positive Comments (approximately 13)

- Three people said they are interested in the timing of the project because they would like to build on their properties soon. One is from Calgary, Alberta, and wants to build in four years, one wants to build in one to three years and one is moving to their cottage permanently in 2011.
- Five residents in the Ceddarbank, Bayview and Poplar Beach subdivisions stated that they look forward to having sewers. Problems mentioned included "neighbours punched holes in septic tanks" resulting in sewage and laundry bubbles on the beach. Also, residents have installed drainage pipes from the septic system into the cliff causing additional erosion.
- Hessenland Inn requested that it be serviced by the proposed collection system. The owner mentioned that they plan to development 25 acres of their property in the future.

- Two residents said that they "want to move forward now" since costs increase everyday.
- Two residents stated that they support a gravity system, with one pump for the entire subdivision, not individual grinder pumps.

### Other Questions and Comments

- Vacant house in St. Joseph's doesn't have a septic system.
- Many people asked when the system will be available, how much will it cost, is hook-up mandatory.
- "Will results of the survey be identifiable?"
- "Can the system be installed with minimum property disturbance? Will it affect trailer placement?"
- "Why is Stephen Township not included?"

### Dashwood Residents

Dillon received fifteen replies from Dashwood residents. Most just said they want to be kept informed:

- One person said they want sewers for their cottage on Elizabeth Street (they are from North Carolina). The house is serviced by a holding tank since the septic failed many years ago.
- Five replies included comments, mostly negative:
  - three said they don't need sewers since Dashwood is only included to help pay for Grand Bend's costs for future development, "ground is good for drainage" and septics work well if properly maintained.
  - one person asked why only the Bluewater side of Dashwood is in the Potential Service Area for the collection system.

### 5.4 Public Information Centre 1

PIC 1 was held on August 28, 2010, from 2:00 to 5:00 p.m., at the Dashwood Community Centre. The purpose of PIC 1 was to obtain public and agency input on the recommended Service Area and sanitary sewage collection system.

### Distribution of PIC 1 Notice

The Municipality of Bluewater arranged for the PIC 1 Notice to appear in the August 4 and 11, 2010, issues of the Lakeshore Advance and Exeter Times Advocate. Dillon mailed the notice to the Contact List on August 3, 2010.

## Displays, Handouts and Attendance

PIC 1 was an informal walk-in session with displays summarizing the work completed to date. The Mayor, Deputy Mayor, members of Council and the CAO were in attendance. Dillon staff was present to explain the displays, answer questions and record comments. Almost 100 residents signed the Record of Attendance.

The displays summarized:

- The Grand Bend and Area Sanitary Sewage Servicing Master Plan (2006).
- Municipal Class EA Process.
- Replies to Project Initiation Notice.
- Several boards summarizing Dillon's review/update of Phase 1, "Problem/Opportunity Identification" – Why do we need sewers? Five key reasons were provided, including Future Growth and Increasing Year Round Use, Soils/Geomorphology, Engineering and Drainage Considerations, Environmental/Health Concerns and Changing Provincial Policies.
- Dillon's review/update of Phase 2, "Alternative Solutions":
  - the lakeshore area was recommended as the first priority Service Area. Dashwood was recommended as a second priority Service Area.
  - the expansion and upgrade of the Grand Bend Area Sewage Treatment Facility (STF) was confirmed as the preferred treatment solution. No other alternatives provide a long-term environmentally sustainable solution
  - comparative evaluation of the advantages and disadvantages of Alternative 1, Gravity System, and Alternative 2, Low Pressure System
  - preliminary capital cost estimates and preliminary operating and maintenance cost estimates for Alternatives 1 and 2. According to the estimates, the capital cost of the Gravity System (\$44.8 Million) is significantly higher than the capital cost of the Low Pressure System (\$18.4 Million)
  - based on the comparative evaluation and cost estimates, Alternative 2, Low Pressure System, was recommended as the preferred sanitary sewage collection system.
- Four alternative forcemain routes for the shared sewer through South Huron and Lambton Shores to the Grand Bend STF were shown. No recommendations were made regarding a preferred route. The shared sewer is covered by the *Grand Bend Area Sewage Collection System Class EA* being prepared by the Municipality of South Huron.
- Funding and financing options.
- "What's Next?", including the refinement and detailed environmental screening of the recommended collection system, refinement of capital, operating and homeowner costs and PIC 2 to be held in 2011.

Drawings of the recommended collection system, at a scale of 1:2000, were also on display. A copy of the boards and a comment form requesting comments by September 17, 2010, were handed out to all in attendance. Other handouts available for attendees included:

- B.M. Ross and Associates Limited, Township of Hay, *Review of Lakeshore Area Septic Systems*, December 13, 1995.
- GAP EnviroMicrobial Services, DNA Fingerprinting Analysis of Escherichia Coli to Investigate Potential Fecal Pollution Sources Impacting St. Joseph Beach Water, January 2005.
- ABCA, South Gullies Watershed Report Card, 2007.
- Screening of On-Site Tertiary Treatment Systems, prepared by Dillon (in Appendix A).
- "Frequently Asked Questions" prepared by the Municipality.

The displays and all of the handouts were posted on the Municipality's website.

## Informal Discussions

Many of the residents in attendance stated that they are <u>opposed</u> to the proposed sanitary sewage collection system. Major reasons included existing septic systems work well and a sewage collection system is not needed, high municipal and per household costs and concerns about the reliability of grinder pumps that are needed for the recommended low pressure system. Many residents stated that they want a gravity system instead. Other concerns included:

- Total household costs, not just operating costs, should have been presented at PIC 1
- Dillon's septic system survey should have covered more residences
- A few residents stated that Dillon should have gone "door to door" to ask residents if they want a collection system.

Some residents stated they <u>support</u> sewers. A few people stated they plan to build a house over the next few years and sewers are required. One resident stated that he works in the food industry and is familiar with grinder pumps. A resident of Highlands 3 stated that her neighbours used her toilet all summer because their septic system does not work.

# Written Submissions

At and following PIC 1, Dillon received 18 written submissions, including three from agencies and 15 from residents. Considering the number of people who attended the PIC, very few residents submitted written comments.

### Agencies

- Indian and Northern Affairs Canada (INAC) provided a list of active litigation cases in the vicinity of the Study Area. All of the First Nations mentioned in the letter are currently on the project Contact List.
- The Office of the Federal Interlocuter for Metis and Non-Status Indians advised that the Metis Nation of Ontario has asserted a right to harvest in the Study Area.
- The LHPWSS asked Bluewater and South Huron if the Water Treatment Plant would be required to connect to the proposed sewage collection system. Since the plant is located in South Huron, Don Giberson, South Huron's Environmental Services Director, answered the letter stating that the Municipality is considering a trunk sewer along Highway 21. "If this route is selected, South Huron will consider a joint project with Bluewater as we have an interest in servicing properties along the Highway 21 corridor." The letter also states that the timing of construction will depend on Bluewater's timing and the expansion and upgrade of the Grand Bend Area STF, currently scheduled to be completed by 2014.

# Residents

The following general comments/questions were received:

- A resident asked about the costs presented at PIC 1 (do they include the cost of the grinder pumps), the timing of construction and the availability of Federal and Provincial funding.
- A resident of Cedarbank Subdivision asked if the project could be split into two parts and suggested that a gravity system be provided south of Hendrick Road (developed at a higher density) and north of Hendrick Road (developed at a lower density with longer distances between houses and deeper ravines). Dillon replied these issues will be considered.
- A cottager at Vista Beach asked if this area could be serviced. Dillon replied that the upstream "dead end" is at this location and extending sewers beyond Hessenland and the Trailer Park will require a new pressure zone.
- A resident of Cliffside Drive stated that he appreciates being kept informed of the Class EA process.
- A resident commented that the next PIC should consist of a presentation followed by a question and answer period. PIC 2 was in this format.
- Another resident stated that he wants to know the exact date of PIC 2 since he plans to be away for the winter months. He also commented that the cost figures provided at the PIC were confusing and requested more specific information on costs and timing.

• One resident requested regular updates on the project be posted to the Municipality's website. As mentioned, Bluewater's website includes a significant amount of information on the project.

The following comments were made <u>opposing</u> sewers:

- A resident of Highway 21 near St. Joseph stated that most of the lake pollution comes from agricultural sources and is in favour of mandatory septic system testing instead of the proposed collection system. He also commented that the new system is being proposed only to service new development in Lambton Shores.
- A resident of Zurich/Hensall Road, Huron Road 84, provided a copy of a soil assessment completed by Duncan & Rutherford Environmental in 2001 for his proposed residence and septic system. The assessment shows that the system is constructed in sandy soils and is likely working well. This house is just outside of the east limit of the Service Area on Zurich Hensall Road and will not be serviced, anyway.
- A resident of Schadeview Subdivision said that sewers are not needed and the PIC 1 displays showed an "obvious bias" for a low pressure system. The resident prepared a per household capital cost estimate, based on the information provided at PIC 1.
- A Dashwood resident opposes sewers for many reasons. He is concerned about costs and feels the system is being provided for Lambton Shores and "rich cottagers" along the lakeshore at the expense of "country people". He is in favour of septic system maintenance and stated that many of the houses in Dashwood and St. Joseph have adequate systems. He also has many concerns about the grinder pumps that are required as part of the recommended low pressure system. He stated that Bluewater and South Huron must co-ordinate the two on-going Class EA studies.
- A resident of the B Line is opposed to using the B Line as a route for the forcemain due to the impacts of the installation and recent breaking of the watermain to the LHPWSS Water Treatment Plant. He suggested that Highway 21 be used for the forcemain.

The following comments were made <u>in support</u> of sewers:

- A seasonal resident stated that he believes "the system should proceed and costs should not be cut in ways that would lead to an unsatisfactory system".
- A seasonal resident of Cedarbank Subdivision (his permanent address is in New Zealand) stated that he is strongly in favour of sewers, as soon as possible. He explained that, although he has tried to maintain his septic system for the last 30 years, he and his cottage neighbours have had problems over the years and the "unreliable functioning of the septic systems along our cottage road can play havoc with our lives here", including an

emergency call to Grand Bend Sanitation during a family Christmas party two years ago. His only concern is if the pressure system would function well during the winter months.

• A seasonal lakeshore resident expressed support for sewers and stated that he assumes that a "gravity system would not seriously be considered". He said residents would be more accepting of sewers if "pig manure inspection, training and monitoring was vastly improved" since pig manure is a major contributor to lake pollution.

# Letter to the Editor

A Letter to the Editor, included in **Appendix C**, "Pssst – ya wanna buy a sewer", opposing the proposed sewage collection system, appeared in the September 21, 2010, edition of the Lakeshore Advance.

# Further Consultation

Many of the residents' e-mails and written submissions were answered by Bluewater and Dillon. In addition, residents' concerns were addressed by the FAQs posted on the Municipality's website. Further consultation was undertaken with:

- The Municipality of South Huron to discuss the alternative forcemain routes through the municipality
- Lambton Shores regarding the forcemain route to the Grand Bend STF
- MTO regarding the required easement for the forcemain along the Highway 21 ROW.

# Comments Following PIC 1

Additional comments were received from residents between PIC 1 and PIC 2, as included in **Appendix C**. These were answered by Dillon email or addressed by the FAQs posted on Bluewater's website.

# 5.5 Public Information Centre 2

PIC 2 was held on Saturday, August 20, 2011, at 10:00 a.m. at the Bluewater Community Centre in Zurich. The purpose of PIC 2 was to present Dillon's recommendations regarding the proposed Bluewater sanitary sewage collection system.

# Distribution of PIC 2 Notice

Dillon mailed the notice for PIC 2 to the Contact List on July 13, 2011. The Municipality e-mailed the notice to the Municipality's internal contact list on July 12 and arranged for the notice to appear in two editions of the Lakeshore Advance and the Exeter Times Advocate

during the first two weeks of August. A copy of the notice was also posted on the Municipality's website.

## **Presentation and Attendance**

PIC 2 consisted of a formal presentation at 10:00 a.m., followed by a question and answer period. Mayor Dowson provided an overview of the purpose of PIC 2 and introduced members of Council, Municipal staff and Dillon staff. Over 110 people attended the PIC, mostly Bluewater residents from the project Study Area. Others in attendance included the Municipality of South Huron Environmental Services Director, representatives of the Grand Bend "Zone 3 Community Group" from Grand Bend in Lambton Shores, a few Bayfield residents and reporters from the Exeter Times Advocate and Clinton News Record. Although the Exeter paper reported that 250 people attended, this appears to be an over-estimation.

A PowerPoint presentation was given by Dillon's Project Manager. The presentation covered the following:

- Study Area.
- Summary of the Grand Bend and Area Sanitary Sewage Servicing Master Plan (2006).
- Municipal Class EA process for the project.
- Summary of comments received at PIC 1 on August 28, 2010.
- Summary of Dillon's review/update of Phase 1, "Problem/Opportunity Identification", of the Class EA process. Five key reasons were provided for *Why Do We Need Sewers?*, including future growth and increasing year round use, soils/geomorphology, engineering and drainage considerations, environmental/health concerns and increasingly restrictive Provincial Policies.
- Dillon's refinement of Phase 2, "Alternative Solutions", of the Class EA process, including:
  - Recommended Service Area. The lakeshore area was recommended for servicing and Dashwood was not recommended for servicing at this time.
  - Alternative sewer routes to the Grand Bend Area STF through the Municipality of South Huron. This is the shared sewer between South Huron and Bluewater and is subject to the Class EA currently being prepared by Gamsby and Mannerow on behalf of the Municipality of South Huron. The recommended route is Sewer Route B, a gravity sewer along the west side of Highway 21, from County Road 83 to existing Pump Station 2, with a forcemain along Mollard Line. By letter dated September 9, 2011, South Huron's engineering consultant stated that South Huron agrees with this recommendation.

- Alternative lakeshore forcemain routes in Bluewater. Sewer Route A in an easement along the east side of Highway 21, outside of the MTO Row, was shown as the recommended alternative.
- Alternative collection systems, including Alternative 1, Gravity System, and Alternative 2, Low Pressure System.
- Preliminary estimates of the off-site and on-site capital, operating and maintenance costs for Alternatives 1 and 2. The figures presented showed that the Gravity System (Alternative 1) costs substantially more than the Low Pressure System (Alternative 2).
- Based on the comparative evaluation and cost estimates, Alternative 2, Low Pressure System, was recommended as the preferred sanitary sewage collection system.
- Recommended phasing, consisting of Phase 1 South and North and Phase 2 North and South. Preliminary estimates of capital costs per phase were also provided.
- Funding and financing options. Dillon recommended that the collection system not proceed until funding is available since the preliminary per lot cost estimates are high.
- "What's Next?" covering the rest of the Class EA process, including the preparation of this Environmental Screening Report.

Drawings of the recommended collection system at a scale of 1:2000 were also available for review. A copy of the boards and a comment form requesting comments by September 9, 2011, were handed out to all in attendance.

The presentation was also posted on the Municipality's website.

# Question and Answer Period

Councillor Janisse Zimmerman was the moderator for the question and answer period. All speakers provided their names and addresses to Lori Wolfe, the Municipality's CAO/Clerk. More than 20 people spoke at the meeting and expressed the following comments, questions and concerns. Answers (available on Bluewater's website) were provided by Dillon staff:

- A resident noted that his cost per lot is \$23,000 and asked if funding is likely available.
- Another resident commented that his cost per lot could be up to \$50,000, plus on-going maintenance costs. The audience applauded when he said he wanted a public vote on the project.
- A Highlands 3 Subdivision resident stated that she has an eco-system which was turned off during the winter requiring expensive repairs in the spring.
- One person said that the power goes off frequently in this area and asked if the system is sensitive to power outages.

- A Lakewood Gardens South resident stated that he supports the proposed system based on the "compelling reasons" given in the presentation. He said that it is not feasible to have 920 houses on septic systems.
- A Highlands 1 resident asked if the cost per lot also included the cost of capacity in the Grand Bend Area STF (approximately \$2,400 per lot).
- A resident of Bayview stated that a system for his house would cost about \$31,000. Does this include HST, a generator and the cost of decommissioning the septic tank?
- An Elmwood resident stated that, since the system involves maintenance costs for the grinder pump in each house, it would be more efficient to have a common grinder pump and a common collection system for each subdivision.
- One resident asked for a clarification of the per lot cost estimates. He asked if many residents will sell their houses and leave the area as a result.
- A Highlands 3 resident, who said that he is a civil engineer, stated that the presence of the Lake Huron water supply system intake will affect development in the area.
- A resident of Norman Heights stated that a vote is required from the residents since per lot costs are so high. However, he also said that residents could vote against the system and "some government agency may come along and say you have to do it anyway".
- A farmer on the east side of Highway 21 stated that he is a member of the Ausable Bayfield Maitland Valley Source Water Protection Committee. He pointed out that the lands along the lakeshore are considered to pose a low threat to the Lake Huron water supply system intake. Based on this, Dillon's statements about the impact of the upcoming Source Water Protection Plan are "fear mongering".
- A resident of Norman Heights stated that lakeshore residents are "getting dinged" by changing Provincial policies. For example, they were paying less for water before Bluewater became a municipality.
- A St. Joseph resident stated that everyone has a right to put in a holding tank since they can be pumped out at any time. He asked, "How many times can you pump out a holding tank for \$31,000?"
- One resident commented that he is in favour of the system, but if many people do not hook up, it might not be feasible.
- A Norman Heights resident asked what would happen if Bluewater chose not to participate in the expansion and upgrade of the Grand Bend Area STF. Would the cost be much higher than \$2,400 per lot?
- A resident of Turnbulls Grove Trailer Park asked if residents should lobby the local MP and MPP and "ramp up the pressure for funding". Is there a particular Bluewater Council member that the public can work with to obtain funding? The audience applauded at this remark.

- Another person stated that Dillon's comments on the Province's Source Water Protection initiatives are a "fear tactic". He stated that Tiny Township has 10,000 septic tanks.
- One person commented that there probably is support for the system at the south end of the lakeshore but not the north end.
- Another resident asked what percentage funding the Municipality will try to get from the Federal or Provincial governments. The Mayor replied that the Municipality will start to lobby for funding after the Environmental Screening Report is prepared. He also pointed out that the EA is valid for ten years.
- A resident of Bayfield asked if life cycle costs had been prepared. He also asked if development charges for new subdivision development will include the costs of the new collection system, if constructed.

Councillor Zimmerman adjourned the meeting around noon. Everyone was reminded to take a comment form and submit comments by September 9, 2011.

## Distribution of PIC 2 Presentation to Agencies

By letter dated August 29, 2011, Dillon mailed a copy of the PowerPoint presentation to the agencies on the Project Contact List, along with a comment form requesting comments by September 16, 2011. The MP and MPPs and approximately 45 Federal, Provincial, county and local agencies, First Nations and utilities received a copy of the presentation.

### Written Submissions

Dillon received few written submissions on PIC 2, considering that approximately 200 copies of the presentation were distributed to residents and agencies. Only 17 submissions were received, consisting of the following comment forms, letters and e-mails.

### Agencies

- Dave Hicknell, P.Eng. of Gamesby and Mannerow, on behalf of the Municipality of South Huron, stated that South Huron concurs with the recommended shared gravity trunk sewer. He also stated that South Huron will be asking MTO for approval to install the sewer within the MTO row.
- Cathie Brown, the Source Protection Project Manager, Ausable Bayfield Maitland Valley Source Protection Region, stated that the Source Water Protection Plan currently being prepared will only focus on significant threats to the Lake Huron water supply system intake. Septic systems do not appear to pose a significant threat.

## Residents

Twelve submissions were received from residents, including six opposed to the collection system and five in favour. An engineering consultant, acting on behalf of a local landowner, also submitted comments.

The six submissions opposing the project and representing many residents included:

- Four people stated they oppose the project, mostly due to a perceived lack of need for sewers and concerns about the grinder pumps.
- A letter signed by nine property owners in St. Joseph said they oppose the project because their existing septics work well.
- Dillon received a letter from St. Joseph Shores 1 and 2 stating that 100% of the residents are opposed to the project.

Five comment forms were received supporting the collection system. Comments included "we need to proceed before we are forced to by the Ministry", "I think Council should focus on obtaining government funding... I agree with the engineer that the issues will not go away" and "this is in reality an investment improving the future". Other comments included "I am hopeful the project will proceed quickly" and "we believe the sewers should proceed provided that the cost is less than continuing with septic systems."

Dillon also received an e-mail from Higgins Engineering Limited acting on behalf of the owners of a large parcel of land at Hendricks Road who are proposing a large subdivision. He requested that the boundary between Phases 1 and 2 be extended so all of his client's lands could be located in Phase 1.

### Newspaper Articles

The articles included in **Appendix C** appeared in the August 24, 2011, edition of the Exeter Times Advocate and September 7 edition of the Clinton Record.

### **Comments Following PIC 2**

Additional comments were received from residents following PIC 2 (comments were requested by September 9, 2011). These are included in **Appendix C** and were answered by Dillon e-mail or addressed by the FAQs posted on Bluewater's website.

## 5.6 Consultation during Detailed Design Phase

As outlined in Section 6, further public and agency consultation is required during the Detailed Design phase with the following:

- Bluewater residents about their concerns regarding the grinder pumps required for the low pressure system and funding for the collection system.
- Transport Canada regarding the applicability of the NWPA to the project.
- MOE regarding the certificate of Approval required for the construction of Sanitary Sewage Works.
- Bluewater residents about the "grandfathering" of recently installed propriety systems ("Eco-Flow" and "Waterloo Biofilter") and conventional and "raised bed" septic systems.
- ABCA regarding approvals required under the *Conservation Authorities Act*.
- MTC for archaeological clearance of the project.
- MNR regarding the "up listing" of any species potentially present in the Study Area under relevant Species at Risk legislation.

# 6. **PROJECT DESCRIPTION**

## 6.1 Introduction

This section of the Environmental Screening Report describes the Preliminary Design of the lakeshore sanitary sewage collection system, as selected by the Municipality of Bluewater. It also summarizes its benefits and impacts and the environmental protection and mitigating measures which must be implemented during construction of the sewage collection system.

## 6.2 Service Area

As shown on **Figure 3**, in Section 1, and the Preliminary Design drawings in **Appendix D**, the Service Area for the Bluewater collection system includes the following areas:

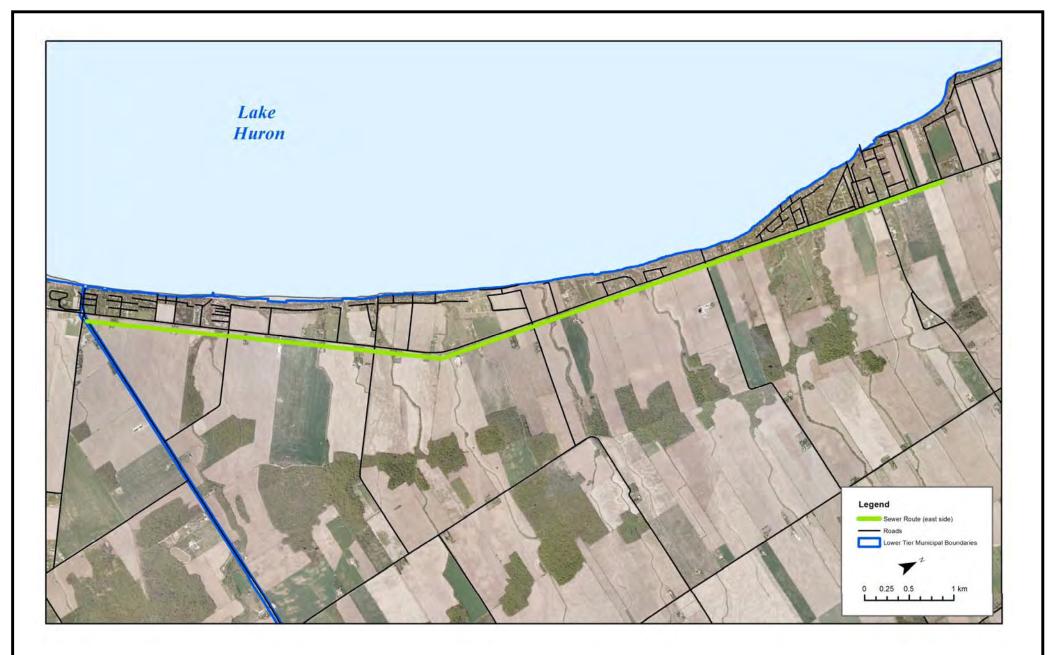
- The Bluewater lakeshore from Waterworks Road/Huron Road 83 (the South Huron/Bluewater municipal boundary) to St. Joseph from Lake Huron to the west side of Highway 21.
- The hamlet of St. Joseph at Highway 21 and Huron Road 84.
- Hessenland Inn and Driftwood Trailer Park located north of St. Joseph. Since these two uses are outside the St. Joseph hamlet area, the owners will be responsible for 100% of the cost of servicing.

The farmhouses, non-farm residences and golf course on the east side of Highway 21 are not located in the Service Area, but may hook-up to the system, if they wish.

### 6.3 Selected Design

As shown on the Preliminary Design drawings included in **Appendix D**, the Municipality of Bluewater selected a low pressure sanitary sewage collection system to service the lakeshore Service Area. The system consists of the following components:

• A 250 mm to 300 mm diameter <u>forcemain</u> located in an easement on the east side of Highway 21 (shown on **Figure 14**) extending from Huron Road 83 (the municipal boundary) to Hesssenland Lane, just past the hamlet of St. Joseph. The easement will be located outside the Highway 21 ROW on private property, mostly consisting of cultivated farmland, and installed by Horizontal Directional Drilling (HDD). HDD is a steerable trenchless method of installing underground pipes and/or conduits in a shallow arc along



Municipality of Bluewater Highway 21 Corridor
Sanitary Sewage Collection System
Class EA & Preliminary Design

DILLON CONSULTING

Figure 14

a prescribed bore path using a surface launched drilling rig. This method has minimal impacts on the surrounding area.

- Low pressure sanitary sewers servicing the residences in the subdivisions in the Service Area along the lakeshore installed by HDD. Sewage will be collected and transported in a grid network of small diameter shallow high density polyethylene (HDPE) sewers (only 1.5 metres deep) fed by individual, <u>submersible grinder pump stations</u> installed adjacent to each residence. These pumps are housed in a high grade engineered wet well, including a backflow preventor and electrical control panel.
- The number of traditional pumping stations are minimized with the recommended low pressure system and individual household grinder pumps. The individual pumps maintain a "slug flow" in the low pressure sewers when running, pumping the sewage out towards the Grand Bend Area STF. The only <u>main pumping station</u> (Lift Station 3) with an atmospheric break is Lift Station 3 located on the Phases 1 and 2 boundary, just north of Hendrick Road. This lift station will pump all of the flow from north of Hendrick Road within the Service Area directly to another pump station, at the south limit of the Service Area in front of the LHPWSS Water Treatment Plant, bypassing the low pressure sewer network in Phase 1.
- The lakeshore collection system will be connected to the Grand Bend Area STF by a <u>shared gravity sanitary sewer</u> in South Huron installed along the west side of Highway 21 in the highway ROW, extending from Waterworks Road/Huron Road 83 to the existing Pump Station 2 at Main Street and Ontario Streets, with a forcemain along Mollard Drive to the Grand Bend Area STF. This is a shared system between the Municipality of South Huron and Bluewater.

The shared gravity sewer is along the route chosen by South Huron as part of its on-going *Grand Bend Area Sewage Collection System Class Environmental Assessment*. This route was presented as the recommended route at a PIC held by South Huron on May 25, 2011. Alternative routes for the gravity sewer were also evaluated as part of Bluewater's Class EA, as documented in Section 3.4 of this Environmental Screening Report. The impacts of the shared sewer, including mitigating measures, will be addressed in South Huron's Class EA.

# 6.4 Phasing

The collection system will be constructed in four phases from south to north, as shown on **Figure 15**. Phases consist of Phase 1 South, Phase 1 North, Phase 2 South and Phase 2 North. Constructing the services from south to north reflects the needs for municipal sewers. In general, the older subdivisions and trailer park in the southern portions of the lakeshore are older and have small lots that are not large enough to accommodate a properly sized septic system. In

addition, they do not have engineered road ROWs, storm sewers and lot grading. The resulting poor drainage contributes to the malfunctioning of existing septic systems.

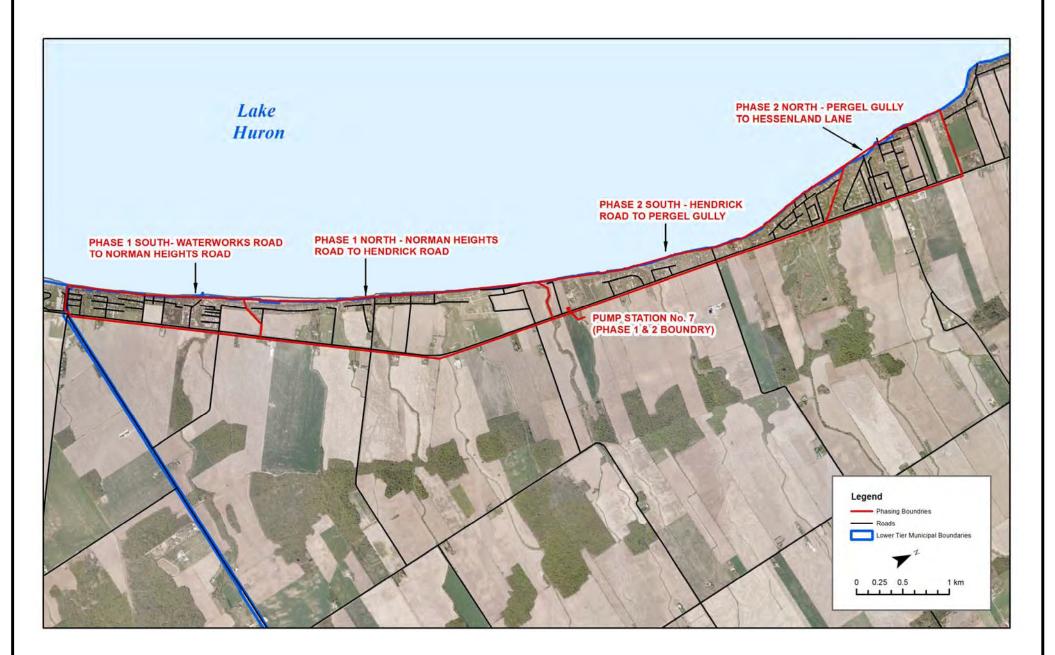
<u>Phase 1 South</u> extends from Waterworks Road/Huron Road 83 to Norman Heights Road. This phase will service approximately 320 residences located in Highlands 1, 2 and 3 Subdivisions, Elmwood Subdivision, Turnbull's Grove Trailer Park (about 160 units) and the Windy Hill Subdivision. In general, all of the lots in these subdivisions are too small to accommodate a properly sized septic system. In addition, none of the subdivisions or trailer park has engineered roads or drainage systems.

<u>Phase 1 North</u> extends from Norman Heights Road to north of Hendrick Road at the Pepper Drain. This phase will service approximately 275 residences located in Norman Heights Subdivision, Ridgeway Subdivision, Schadeview Subdivision, Cedar Banks Subdivision and Poplar Beach 1 and 2 Subdivisions. With the exception of Poplar Beach 2 Subdivision, located on Sunyridge Crescent, most of the lots in this area are small and the subdivisions do not have engineered roads or drainage systems. In general, however, lots in this phase are larger than those in Phase 1 South.

In Phase 1 North, most of the land north of Poplar Beach Road is currently farmed. The owners of this land have approached Bluewater with a proposal to develop these lands with "several hundred" condominiums. The proposed development extends beyond the north boundary of Phase 1 North to the Sunnyridge Subdivision. Although no formal application has been received by the County of Huron or Bluewater, the phasing boundary can be changed to accommodate the development application, providing all required planning and development approvals are obtained for the development.

<u>Phase 2 South</u> extends from the Pepper Drain (north of Hendrick Road) to the Pergel Gully. Phase 2 South will service about 140 residences in the Sunnyridge, Lakewood Gardens, Cliffside, Pavillion, Bayview and Moore Subdivisions. Lots in this area are generally larger than the lots in the southern portion of the Service Area. In addition, some appear to have engineered roads and drainage systems.

<u>Phase 2 North</u> covers the rest of the Service Area and extends from the Pergel Gully to Hessenland Inn. Subdivisions in this area include about 185 residences in the Gendron and Bluewater Properties Subdivisions, on Josephine Street in St. Joseph, Antoinette's Lane, Huron Road 84 (Zurich-Hensall Road), Driftwood Trailer Park (45 trailers) and Hessenland Inn. With the exception of the trailer park, most of the lots are large and the subdivisions appear to be



$\langle$	Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System	Phasing	
DILLON	Class EA & Preliminary Design	Figure 15	

engineered. The owners of Driftwood Trailer Park and Hessenland Inn have both requested that they be serviced by the collection system.

**Table 19** is an estimate of capital costs per phase.

Phase	Estimated Capital Cost
Phase 1 South – Waterworks Road to Norman Heights Road (approximately 35% of existing development)	\$8.74 Million
Phase 1 North – Norman Heights Road to Hendrick Road (approximately 30%)	\$5.52 Million
Phase 2 South – Hendrick Road to Pergel Gully (approximately 15%)	\$2.76 Million
Phase 2 North – Pergel Gully to Hessenland Lane (approximately 20%)	\$3.68 Million

### Table 19: Estimated Capital Costs Per Phase

Per lot cost estimates are included in Section 6.9 of this report. If only Phase 1 South proceeds (approximately 320 residences), per lot costs will increase from \$22,800 to \$24,500.

### 6.5 "Grandfathering" of Existing Septic Systems

Many proprietary systems installed along the lakeshore (such as "Eco-Flow" and "Waterloo Biofilter" systems) and convertional "raised bed" septic systems are fairly new and were installed at considerable expense to the property owner. The Municipality may consider "grandfathering" systems that are less than ten years old and functioning well.

### 6.6 Benefits, Impacts and Mitigating Measures

**Table 20**, starting at Page 107 of this report, is an assessment of the benefits and impacts of the lakeshore sewage collection system. Mitigating measures are also identified.

### 6.6.1 Benefits

The proposed sewage collection system has several short and long-term benefits. In the short term, it allows the replacement of the existing malfunctioning septic systems. In many cases, replacement of existing septic systems may be impossible due to the small lot sizes. In these cases, a holding tank may be required with regular "pump-outs". Over the long term, the collection system will provide an environmentally sustainable sanitary sewage collection system for existing and future development along the lakeshore since it:

- Avoids the need to repair/replace existing septic systems. As mentioned, replacement of many systems may be impossible. Also, the cost of a proprietary or raised bed septic system could be comparable to the per lot cost of the proposed collection system for a typical small lot along the Bluewater lakeshore.
- Eliminates the public nuisance and potential health and environmental problems caused by malfunctioning systems.

Other benefits, as shown on **Table 20**, include improvements in groundwater and surface water quality. The replacement of septic systems with municipal sewers will reduce impacts on water resources by improving groundwater and surface water quality. These benefits, in turn, benefit terrestrial resources, including vegetation and wildlife.

## 6.6.2 Impacts and Mitigating Measures

As shown on **Table 20**, the proposed Bluewater sewage collection system will have some impacts on archaeological resources, fisheries and aquatic habitat, terrestrial resources and the socio-economic environment. It also involves significant capital costs for the Municipality of Bluewater and individual property owners. Since the HDD method of construction minimizes surface disruption and excavation, it avoids all impacts on the built heritage and cultural landscape features of the hamlet of St. Joseph. These include the Roman Catholic church and historical site commemorating the founding of St. Joseph.

As mentioned, the impacts of the South Huron/Bluewater gravity sewer will be addressed in South Huron's on-going Class EA.

### 6.6.2.1 Wastewater/Civil Engineering Considerations

As noted on **Table 20**, the low-pressure system is sensitive to power outages. According to Ontario Hydro, power outages typically last only three hours. The grinder pumps provided for each residence as part of the collection system have about four hours of storage capacity, resulting in no sewage overflows for individual residences. This issue will be investigated further during the Detailed Design phase of the project.

With respect to civil engineering considerations, some conflicts and relocations are anticipated with existing utilities in subdivisions. Utility Relocation Plans will be prepared during Detailed Design.

#### 6.6.2.2 Impacts on Archaeological Resources

A Stage 1 Archaeological Assessment was prepared by FAC for the Class EA. The assessment identified lands potentially affected by the collection system with moderate and high potential for the discovery of as yet undiscovered archaeological sites. In general, impacts on these areas are avoided by the HDD method of construction which minimizes surface disruption and excavation. All impacts on archaeological resources will be avoided by:

- The completion of subsequent more detailed archaeological assessments, such as a Stage 2 assessment involving shovel testing, during Detailed Design.
- Obtaining archaeological clearance from MTC during Detailed Design prior to construction. <u>No</u> construction can occur prior to clearance from the Ministry.

#### 6.6.2.3 Impacts on Fisheries and Aquatic Habitat

The lakeshore collection system potentially impacts about 16 warmwater and two cold/cool watercourses located along the Highway 21 ROW. Cold/cool watercourses include the Pergel Gully and the Schroeder/Hay H Drain, with trout and salmon potentially present.

With HDD, many impacts associated with other watercourse crossing methods (i.e., opencut/trench crossing) can be avoided. HDD is a non-intrusive construction method for working near watercourses since it causes little to no disturbance to the watercourse bed or bank (DFO 2007). However, some impacts can occur with HDD. Potential impacts include the escape of drilling mud into the environment as a result of a spill, tunnel collapse or rupture of mud to the surface (i.e., a frac-out). Additional impacts may include the wash-out of stockpiled materials and erosion of disturbed areas at the drilling and target sites on either side of the watercourse. **Table 20** and **Appendix B** include mitigation measures recommended by DFO to avoid any impacts.

Impacts are limited to minimal vegetation disturbance, setback from the watercourse. Removal of any riparian vegetation to facilitate construction should be kept to a minimum to maintain bank stability. Where feasible, machinery should be operated above the ordinary high water mark of the watercourse and all watercourse crossings by equipment should occur on existing roadways.

Based on Dillon's review of the Study Area, there are *no known occurrences* of aquatic SAR. However, it should be noted that species may be "up listed" periodically and afforded protection under the *Endangered Species Act*, 2007 or the *Species at Risk Act*. During the Detailed Design phase and prior to construction, Dillon recommends that any species identified as present or potentially present in the Study Area be screened against species listed under each Act.

As required by the DFO (*In-Water Construction Timing Window Guidelines for the Protection of Fish and Fish Habitat*), no in-water work should occur in cool/coldwater watercourses from **September 15** to **July 15**. These include the Pergel Gully and the Schroeder Drain/Hay H Drain. In warmwater watercourses, no in-water work should occur from **March 15** to **July 15**. These restrictions are based on the geographical location of the Study Area, as well as the presence of either warm or cool/cold water fish habitat (DFO 2007a). These dates are approximate and will require confirmation from local agencies as part of the Detailed Design phase.

For the proposed collection system, the following DFO Operational Statements (in **Appendix B**) are applicable:

- *Timing Windows* (DFO 2007a)
- Maintenance of Riparian Vegetation in Existing Rights-of-Way (DFO 2007b)
- *High-Pressure Directional Drilling* (DFO 2007c).

With the use of appropriate mitigation measures and relevant DFO Operational Statements, an authorization under the federal *Fisheries Act* will likely not be required. However, the area adjacent to each watercourse is regulated by ABCA under Ontario Regulation 147/06 (*Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*). Consultation with ABCA during Detailed Design should determine if any approvals and/or permits are required.

Additional mitigation considerations for construction activities developed during Detailed Design may include, but are not limited to the following:

- In-water works should <u>not</u> be conducted during high flow conditions.
- All construction materials and equipment used for site preparation and project completion should be operated and stored in a manner that prevents any deleterious substances from entering any watercourse.
- Any stockpiled construction materials should be stored away from watercourses.
- Vehicular and equipment refueling and maintenance should be conducted away from watercourses.

- Implementation of erosion and sediment control measures should occur prior to the commencement of construction and maintained and upgraded, as necessary, during construction to prevent entry of sediment into the water.
- Riparian vegetation removed for construction should be reinstated through a Planting Restoration Plan.
- All disturbed surfaces should be stabilized as soon as possible after construction.
- All sediment and erosion control measures should be left in place and maintained until vegetative cover is established and/or until the construction site has stabilized.

As noted, DFO has several Operational Statements that are applicable to the proposed collection system. The following sections outline the measures that must be followed, as included in **Appendix B**.

#### Riparian Vegetation

Riparian areas are the vegetated areas adjacent to a waterbody and directly contribute to fish habitat by providing shade, cover and food production areas. Riparian areas are also important because they stabilize watercourse banks and shorelines. To minimize disturbance to fish habitat and prevent bank erosion, it is important to retain as much riparian vegetation as possible, especially the vegetation directly adjacent to the watercourse in the ROW corridor.

If the project can conform to DFO'S conditions outlined in the Ontario Operational Statement, *Maintenance of Riparian Vegetation in Existing Rights-of-Way*, including *Measures to Protect Fish and Fish Habitat when Maintaining Riparian Vegetation in Rights-of-Way*, the project may be able to proceed without a formal review from DFO.

#### Horizontal Directional Drilling

When constructing by HDD, it is important to adhere to the following practices, as described in DFO's Ontario Operational Statement for *High-Pressure Directional Drilling*:

- Use existing trails, roads or cut lines wherever possible to avoid riparian disturbance.
- Design the drill path (i.e., tunnel) to an appropriate depth below the watercourse to avoid frac-out and prevent the line from becoming exposed due to natural scouring.
- Drill entry and exit points should be far enough from stream banks to have minimal impact on streams.
- A dugout or settling basin should be constructed to contain drilling mud to prevent sediment from entering the watercourse.
- Install all sediment and erosion control measures before work is started.

- Monitor the fluid pressure of watercourses to observe signs of surface migration of drilling mud during all phases of construction.
- Install water depth monitors in adjacent water features to ensure minimum drawdown level is not exceeded.
- Prepare an Emergency Frac-out Response and Contingency Planning before work is started.

If the project can conform to DFO'S Ontario Operational Statement for *High-Pressure Directional Drilling*, including *Measures to Protect Fish and Fish Habitat when High Pressure Directional Drilling*, the project may proceed to construction without a formal review from DFO.

#### Fisheries Summary

Watercourse crossings required for the Highway 21 Corridor Sanitary Sewage Collection System are mostly characterized as warmwater watercourses. Most of the watercourses along Highway 21, north of Huron Road 83, contain barriers to fish movement. As a result, Dillon recommended that the sewer be placed on the east side of Highway 21 since fish cannot migrate past the highway corridor.

At the time of preparation of this Environmental Screening Report, there were *no known occurrences* of aquatic SAR in the Study Area. However, MNR – Guelph District emphasizes that this does not mean SAR are absent from the Study Area. MNR may request field surveys be conducted during the Detailed Design phase to further characterize the current fish community and habitat conditions in potentially impacted watercourses. Prior to construction, and during Detailed Design, it is recommended that further SAR work be undertaken to screen for species whose status may have changed. Additional permitting and/or authorizations for construction of this project may be required by ABCA under *Ontario Regulation 147/06*.

In summary, if the measures outlined in DFO's Ontario Operational Statements are implemented, potential impacts on fish and fish habitat caused by this project can be mitigated if the HDD construction method is used.

#### 6.6.2.4 Impacts on Terrestrial Resources

Potential impacts and mitigation for terrestrial resources are shown in **Table 20**. Since it minimizes surface disruption and excavation, the HDD construction method minimizes impacts on potentially affected terrestrial resources, including soils, areas designated "Natural Environment" in the Bluewater Official Plan, vegetation, birds and other wildlife:

- Minimal erosion and sedimentation is expected as a result of construction. An Erosion and Sedimentation Control Plan will be prepared during Detailed Design to deal with any impacts on soils.
- The collection system has been routed to avoid all impacts on lands designated "Natural Environment" in the Bluewater Official Plan along the lakeshore. The contract drawings for this project will designate these areas as "off-limits" to the contractor during construction.
- Since the HDD construction method minimizes surface disruption and excavation, tree and vegetation removal and damage to tree routes will be minimal. The drilling and target pits for pipe installation is typically 2 metres by 3 metres at 120 to 300 metre pipe run intervals. Impacts on herbaceous communities (i.e. old fields) are not expected due to the depth of directional drilling which is typically 1.5 metres below the soil surface. Measures to minimize vegetation impacts are discussed in the following section.
- Impacts on migratory and other protected birds will be avoided by timing any vegetation removal. No vegetation removal should occur from **April 15 to August 15** during the bird nesting season.
- Wildlife is typical of an agricultural area. Minimal impacts are expected since the HDD construction method avoids impacts on wildlife habitat.

#### **Tree Preservation**

Typically, mitigation includes ensuring that excavation does not occur within the critical root zone "drip line" of the tree. As shown on **Table 21**, the critical root zone is a function of the tree's diameter. The table shows typical distances that should be maintained to protect the critical root zone.

Diameter at breast height (dbh) (cm)	Critical Root Zone Protection Area (m)
30 to 40 cm	2.4 m
41 to 50 cm	3.0 m
51 to 60 cm	3.6 m
61 to 70 cm	4.2 m
71 to 80 cm	4.8 m
81 to 90 cm	5.4 m
91 to 100 cm	6.0 m

 Table 21: Critical Root Zone Protection Areas

For example, if a sugar maple with a dbh of 75 cm is encountered within the construction area, equipment/excavation/storage of equipment etc., must stay a minimum of 4.8 metres away from the trunk of this tree. Other deep rooted trees located along the lakeshore forcemain may be damaged depending on the proximity of construction to the drip line of individual trees.

As shown on Table 20, measures to minimize damage to trees include the following:

- Construction can be scheduled in the tree dormant season (late fall or late spring) to minimize stress on trees.
- Delineate Tree Protection Zones (TPZ) around the trees prior to construction. **Table 21** can be used as a guideline for delineating the zones.
- Prohibit construction, construction equipment, contractor vehicles and stockpiled materials in the TPZs.
- All of these provisions will be included in the construction contract to be prepared during Detailed Design.

#### Terrestrial SAR Species – Snapping Turtle

A Snapping Turtle was observed during Dillon's field investigations near a pool in the Unnamed Ravine #3 (Hay H Drain/Schroeder Drain), north of Turnbull's Grove Road on the west side of Highway 21. Since this is a Species of Conservation Concern, the turtle's habitat is protected under the PPS issued under the *Planning Act*. A sewer will cross the ravine along the highway, but the HDD construction method will avoid impacts on the turtle and its habitat. A Species Specific Contractor Information Package will be prepared during Detailed Design. The package will include instructions to the contractor to avoid impacts on this species.

#### Terrestrial SAR Species - Vegetation

A large specimen Butternut Tree was observed during Dillon's field survey on private property on the west side of Highway 21. The location of the sewer and the HDD construction method will avoid impacts on this tree. To ensure the tree is protected, a TPZ will be established around it during Detailed Design and shown on the contract drawings.

Two small Kentucky Coffee Trees were observed on the east side of Highway 21. These trees are located within the highway ROW near the fenceline. Since the forcemain will be located outside the highway ROW, these trees will likely not be affected. TPZs will also be established around these trees during Detailed Design and shown on the contract drawings.

Since the project does have potential to disturb or injure Species at Risk, special attention must be paid to ensuring that these trees are properly protected <u>before</u> construction begins. If there is any chance of injury occurring, the appropriate permits must be obtained from MNR <u>before</u> earth works occur near the trees. If the trees are removed, MNR requires replanting at a 20:1 ratio.

Terrestrial SAR species may be "up listed" periodically and afforded protection under relevant Federal and Provincial species at risk legislation. During the Detailed Design phase and prior to construction, Dillon recommends that any species identified as present or potentially present in the Study Area be screened against relevant legislation.

#### 6.6.2.5 Impacts on the Socio-Economic Environment

The collection system will have some impacts on farmland, residences and commercial properties, as shown on **Table 20**. All impacts can be mitigated by the measures shown on the table.

#### Farmland

No farmland is required from the farms on the east side of Highway 21, but easements are required for the lakeshore forcemain from more than ten large farms used for the production of cash crops. The Municipality will negotiate easements with the property owners. Compensation will be based on a percentage of fair market value for the area encumbered by the easement.

Since surface disruption and excavation is minimized by the HDD construction method, construction will cause only minor crop loss. The drilling and target pits for pipe installation are typically 2 metres by 3 metres at 120 to 300 metre pipe run intervals at a depth of 1.5 metres. Other short-term construction impacts, as shown on **Table 20**, include noise, vibrations and air quality impacts that can be mitigated by standard measures implemented during construction. Access disruptions will also be minimized. There are expected to be no long-term impacts on soil productivity since, aside from the drilling and target pits, no excavation is required with the HDD construction method.

The proposed collection system also has potential to cause damage to agricultural infrastructure, including field tiles, drainage ditches and fences during construction. The construction contract will require that any infrastructure damaged during construction will be repaired and restored.

#### **Other Land Uses**

Other land uses potentially affected by the collection system include over 900 residences and trailers located along the lakeshore, cultivated farmland (but no farmhouses or buildings) on the west side of Highway 21, a golf course near St. Joseph on the east side of the highway, a few commercial uses in St. Joseph and residential uses on Huron Road 84 in St. Joseph. Property will be required for the lift stations from agricultural or residential properties, as shown on the "Property Requirements and Easement Drawings" in **Appendix D**. Minimal impacts are expected since the lift station sites are small (approximately 10 metres by 20 metres) and have

been sited to avoid impacts on the affected properties. Most of the sites are located at the dead end of road ROWs, removed from existing residences. In the case of agricultural land, the lift stations are located in the corners of fields where they will have minimal impacts on farming operations.

The Municipality will negotiate the required property purchases with the property owners. The purchase price will be based on the market value of the land and any injurious affection on the remaining land. Any property damage caused during construction will be repaired/restored.

Easements are required throughout the Service Area for the collection system piping from various agricultural, residential and commercial lands. Most of the required easements are from residential properties. Easements will be negotiated with the property owners by the Municipality. Any property damage caused by construction will be repaired/restored, as required by the construction contract.

Other short-term impacts on these land uses, as shown on **Table 20**, include noise, vibrations and air quality impacts during construction that can be mitigated by standard measures implemented during construction. Access disruptions will also be minimized.

#### Future Development

The collection system will allow future development to be serviced with full municipal services, as required by Provincial, Huron County and Bluewater land use and servicing policies. Future development will be controlled by the policies of the PPS, County of Huron Official Plan and Bluewater Official Plan. The Municipality may wish to consider amending the Official Plan's land use designations and policies in the lakeshore area to recognize the availability of municipal sanitary sewers, if the sewage system proceeds to construction.

# Conformity to County of Huron and Bluewater Official Plans and Consistency with Provincial Policy Statement (PPS)

The proposed lakeshore sewage collection system conforms to the Huron County Official Plan by providing a long-term environmentally sustainable servicing solution for existing and future development along the Bluewater lakeshore. The lakeshore is designated for lakeshore residential uses in the County's Official Plan. The proposed collection system conforms to the following policies of the Bluewater Official Plan:

- One of the Official Plan's "Natural Environment" goals is to improve the quality of groundwater, rivers, streams, gullies and Lake Huron. As mentioned, the collection system will help improve the quality of water resources.
- Another relevant "Lakeshore and Recreation" goal is "to ensure clean ... ravine and lake water for residents through the appropriate management of services and land uses".
- The plan's "Lakeshore Residential" policies require that lot sizes be sufficient to accommodate the proposed method of servicing over the long term. Based on the existing lack of sewers, the Official Plan states that the density of development shall not exceed one dwelling per acre. According to the plan, the Municipality may require a study on the need for a sewage collection system to service new development.
- The plan's "Natural Environment" policies mention that septic system maintenance is an important initiative for a healthy ecosystem.

The proposed collection system is also consistent with the PPS issued under the *Planning Act*, including policies for "Transportation and Infrastructure Corridors" and "Wise Use and Management of Resources". Consistent with the Policy Statement:

- The proposed collection system will reduce the impacts of septic systems on water resources providing for environmentally sustainable development.
- If upper government funding is available, the system is financially viable.
- It will comply with all regulatory requirements.
- The proposed system protects human health and the environment though improvements to groundwater and surface water quality. In addition, mitigation measures developed for the project protect other significant resources identified in the PPS. These include cold/cool watercourses, Snapping Turtle habitat, vegetation Species at Risk and archaeological resources.
- The Class EA completed for this project and the 2006 Master Plan integrated servicing and land use considerations at all stages of the planning process.

#### 6.7 Approvals

Approvals required during Detailed Design and prior to construction are:

- Transport Canada approval under the NWPA may be required for the construction of the collection system in the vicinity of navigable waterways. The navigability of the watercourses affected by the collection system will be determined during Detailed Design.
- MOE, Certificate of Approval, Application for Approval of Sanitary Sewage Works.
- MTC archaeological clearance.
- Permits from MTO for any works crossing the Highway 21 ROW.
- Written approval from the ABCA under Ontario Regulation 157/06, Section 28 of the *Conservation Authorities Act* prior to undertaking any work in regulated areas, including grading, filling and construction.
- Since species are periodically "up listed" under relevant Species at Risk legislation, any species identified as potentially present should be screened against species listed in the legislation prior to construction. Permits from MNR may be required for species not previously identified in this Environmental Screening Report as "at risk".

#### 6.8 Timing Restrictions

Timing restrictions for construction of the project include:

- Construction timing to avoid impacts on migratory and other protected birds. To avoid impacts on nesting birds, <u>no</u> vegetation clearing can occur from **April 15 to August 15**.
- If any in-water works are required, construction should avoid the period of March 15 to July 15 for warmwater watercourses and September 15 to July 15 for cold/coolwater watercourses (Pergel Gully and Hay H Drain/Schroeder Drain).

#### 6.9 Capital, Operating and Maintenance Costs

All of the costs included in this report will be further reviewed/updated during Detailed Design (by the engineer), Tender Award (by the contractor) and End of Construction (by the contractor). The costs do not include HST, contingency or lifecycle costs.

#### 6.9.1 Off-Site Communal Capital Cost Estimates

The estimated capital cost to construct the off-site or communal portion of the collection system is shown on **Table 22**.

Treatment and Collection System Component	Estimated Capital Cost
Bluewater (Zone 1) Share of Sewage Treatment	\$2.1 Million (to service lakeshore only)
Facilities (includes Federal and Provincial funding)	
Collection System (includes 10% for engineering,	\$20.2 Million
but no government funding)	
Bluewater and South Huron Shared System from	\$2.5 Million (to service lakeshore only) <sup>1</sup>
south limit Zone 1 to Grand Bend Area STF	
(includes 10% for engineering, but no government	
funding)	
Property Costs (easements and property)	\$276,000
Per Lot Cost (lakeshore only, does not include	\$22,800
government funding)	
funding)Property Costs (easements and property)Per Lot Cost (lakeshore only, does not include	

Notes:

1 This cost will be \$5.5M (not including engineering) if Bluewater does not have a shared system with South Huron

#### 6.9.2 On-Site Private System Capital Cost Estimates

On-site private system costs for the homeowner (from the street/lot line to the residence or building) are shown on **Table 23**. Costs have been calculated based on typical "small", "medium" and "large" lot areas. Examples of these lots are included in Section 3 of this report.

Example Lot Sizes	"On-Site Private System Estimated Capital Costs <sup>5</sup>
1. "Small" Lot Area (see $A + B$ ) <sup>1, 3, 6</sup>	\$8,800 to \$12,200
2. "Medium" Lot Area (see $A + B$ ) <sup>2, 3, 6</sup>	\$9,500 to \$10,000
3. "Large Lot Area (see $A + B$ ) <sup>4, 3, 6</sup>	\$10,000 to \$17,000

 Table 23: On-Site Private System Capital Cost Estimates (2010 Dollars)

Notes:

1. For "Small" B lots, a new 100 amp hydro service was included to replace the existing potentially obsolete 60 amp service

2. For "Medium" B lots, assumed existing electric panel on opposite side of house to pump unit

3. No "expensive" restoration included (i.e., asphalt driveways, large diameter tree tunnelling, decks, brick/concrete sidewalks/planters)

4. For "Large" A lots, electrical costs have been increased for access inside building due to interlock brick and large masonry flower beds

5. These costs include the pumping unit (\$5,000, approximately) to supply and install (no connections or electrical)

6. Special options, such as balancing tanks and standby generators, are not included

**Table 24** is provided for property owners to calculate the total per lot cost estimate for their property. The table includes the off-site costs of the communal system, shown as "A" on the table. The property owner can then fill in the on-site private costs from the three example lot sizes included in **Table 23**. The individual cost per lot equals the total of A and B, as shown on **Table 24**.

Component2010 DollarsA - Off-Site Communal Cost\$22,800/lotB - On-Site Private CostChoose from B (one of three example lot<br/>costs) \_\_\_\_\_Total of A + B = individual cost per lotTo be calculated by the individual<br/>homeowner

 Table 24: Estimated Total Per Lot Capital Cost Estimates (2010 Dollars)

#### 6.9.3 Estimated Operating and Maintenance Costs

These are shown on **Table 25** in 2010 dollars. For each property, property and maintenance costs are estimated to be approximately \$182 per year.

Collection System Component	Low Pressure Collection System
Bluewater (Zone 1) Share of Sewage Treatment Facilities <sup>1</sup>	\$325,000/year
	(lakeshore only)
Off-site or Communal Collection System Costs	\$70,000/year
On-site or Private System Costs)	\$182/lot/year <sup>3</sup>
Per Lot Cost <sup>2</sup>	\$535/lot/year

Notes:

1. Based on data from Bluewater's agreement with Lambton Shores and South Huron

2. Based on an estimate of 920 existing houses and projected growth over 20 years

3. Includes life cycle costs analysis.

#### 6.10 **Project Funding**

Under the Municipal Class EA, the Municipality of Bluewater has ten years to implement the proposed sewage collection system. Since the preliminary municipal and per lot cost estimates are high, Dillon has recommended that the system not be constructed until upper government funding is available. Bluewater will use this Environmental Screening Report as the basis for seeking funding from the Provincial Ministry of Infrastructure and Energy.

Any funding will be applied directly to project costs. The balance will be funded by per lot costs. Bluewater may offer debentures to individual property owners through municipal property taxes.

#### 6.11 Project Schedule

Following Bluewater Council adoption, this Environmental Screening Report will be put on the "public record" for 30 days for public and agency review and comments. During the 30-day review period, the Municipal Class EA entitles any person who has significant concerns about the project to request the Minister of the Environment to issue a Part II Order to change the status of the project from a Class EA to an individual environmental assessment.

Due to the uncertainty regarding the availability of funding and the timing of construction, the Municipality has not determined a schedule for the commencement of the Detailed Design phase. This phase involves:

- Preparation of Detailed design drawings and Contract Documents for the construction of the proposed collection system, including:
  - Foundation and geotechnical investigations
  - Utility Relocation Plans
  - Erosion and Sedimentation Control Plan
  - Riparian Planting Plans, where required
  - Species Specific Contractor Information Package to protect Snapping Turtles
  - the establishment of Tree Protection Zones (TPZs) around the tree SAR species and other specimen trees affected by construction of the collection system
  - all design and construction related approvals.
- The issue of Ontario Hydro power outages will be investigated in more detail during Detailed Design.
- The "up listing" of SAR species will be checked during Detailed Design.
- As required by the Municipal Class EA, the drawings and contract documents <u>must</u> incorporate all of the environmental and mitigation measures identified in this

Environmental Screening Report to avoid/mitigate adverse impacts. During Detailed Design, all mitigation measures will be developed in more detail, including the application of DFO's Operational Statements, as included in **Appendix B**.

A time frame for construction has not been determined by Bluewater and depends on the availability of upper government funding.

DILLON CONSULTING LIMITED LONDON, ONTARIO

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Janet Smolders, MCIP Project Manager



Bill Boussey, P.Eng. Project Engineer



Table 20: Denemis, impacts and writigation weasures		
Environmental Feature	Potential Benefits & Impacts	Avoidance, Mitigation & Monitoring Measures
1. Wastewater/Civil E	ngineering	
Short-Term Servicing Solution	Provides a short-term solution for the replacement of existing malfunctioning septic systems. Also allows existing lots to be redeveloped or developed with new residences	Not required
Long-Term Servicing Solution	<ul> <li>Provides a long-term, environmentally sustainable sanitary sewage collection solution for existing and future development along the Bluewater lakeshore:</li> <li>avoids the need to repair/replace existing septic systems. In some cases, replacement may be impossible due to small lot sizes</li> <li>eliminates potential public nuisance, health and environmental problems caused by malfunctioning systems</li> </ul>	Not required
Power Outages	Low pressure system is sensitive to power outages. Additional or standby power may not be required, however, since power outages typically only last 3 hours. A typical grinder pump has about 4 hours of storage capacity	This issue will be further investigated during Detailed Design
Utility Relocations	Some conflicts/relocations anticipated with existing utilities in subdivisions	Utility Relocation Plans will be prepared during Detailed Design
2. Impacts on Cultura	Resources	
Archaeological Resources	Potential impacts on areas with moderate and high archaeological potential as identified in Stage 1 Archaeological Assessment. Impacts are minimized by HDD method of construction for low pressure system	All impacts on archaeological resources will be avoided by: - completion of a Stage 2 Archaeological Assessment and subsequent more detailed assessments, if required, during Detailed Design - archaeological clearance from the Ministry of Tourism and Culture prior to construction
Built Heritage and Cultural Landscapes	HDD method of construction avoids all impacts on cultural heritage features in St. Joseph	Not required

#### **Table 20: Benefits, Impacts and Mitigation Measures**

Environmental Feature	Potential Benefits & Impacts	Avoidance, Mitigation & Monitoring Measures
3. Impacts on Fisherie	s and Aquatic Habitat	
Warmwater Wartercourses	Collection system potentially impacts approximately 16 watercourses located along the Highway 21 ROW. HDD construction method avoids all direct disturbances to aquatic habitat. Impacts limited to minimal vegetation disturbance. Disturbance will be setback from watercourses	Mitigation recommended by Fisheries and Oceans Canada (DFO), Operational Statement for "High Pressure Directional Drilling" will be implemented during construction. Measures include: - avoid/limit disturbance to riparian vegetation - an emergency frac-out response plan - design the drill path to an appropriate depth to minimize the risk of frac-out - operate machinery on land above the ordinary high water mark - use appropriate erosion and sediment control measures to contain drilling mud and prevent sediment and other deleterious substances from entering the watercourse
Cold/Cool Watercourses (Pergel Gully, Schroeder/Hay H Drain)	Collection system potentially impacts 2 cold/cool watercourses (with trout or salmon present) located along Highway 21 ROW. HDD construction method avoids all direct disturbances to aquatic habitat. Impacts limited to minimal vegetation disturbance setback from watercourses	See preceding mitigation measures recommended by DFO
Ausable Bayfield Conservation Authority (ABCA) Regulated Areas	Portions of the collection system are located in flood and fill regulated areas. However, HDD construction method avoids surface disruption and excavation impacts in regulated areas	Written approval is required from ABCA prior to undertaking any work in regulated areas, including grading, filling and construction
Aquatic Species at Risk (SAR) in Study Area	No impacts since there are no known occurrences of aquatic SAR (fish and mussels) in Study Area. If present, all impacts avoided by HDD construction method	Not required, but "up listing" of SAR will be checked during Detailed Design
Aquatic Species at Risk (SAR) in Huron County	Potential impacts on four aquatic SAR species (Wavy-rayed lamp mussel, redside dace, black redhorse, northern brook lamprey) that potentially occur in Huron County, but have no known occurrences in Study Area.	Prior to construction, any species identified as potentially present should be screened against species listed in relevant legislation. Permits from MNR may be required for species not previously identified

Environmental Feature	Potential Benefits & Impacts	Avoidance, Mitigation & Monitoring Measures
Aquatic Life Cycles	Potential impacts on aquatic life cycles, including spawning and nursery periods, in warmwater and cold/coolwater watercourses	No in-water works should occur from: - September 15 to July 15 in cold/coolwater watercourses - March 15 to July 15 in warmwater watercourses
Groundwater Quality	Replacement of septic systems with municipal sewers will reduce impacts on groundwater and improve groundwater quality. These improvements will also benefit terrestrial resources	Not required
Surface Water Quality	Replacement of septic systems with municipal sewers will reduce impacts on surface water quality and help improve surface water quality in Lake Huron and area watercourses. These improvements will also benefit terrestrial resources	Not required
4. Impacts on Terrestr	ial Resources	
Soils	HDD construction method minimizes surface disruption excavation and erosion and sedimentation	An Erosion and Sedimentation Control Plan will be prepared during Detailed Design
"Natural Environment" Areas in Bluewater Official Plan	System location avoids all impacts on lands designated "Natural Environment" along lakeshore. HDD construction method minimizes impacts on woodlands and wildlife habitat designated "Natural Environment" on east side of Highway 21	Contract drawings to be prepared during Detailed Design will designate "Natural Environment" as "Environmentally Significant Areas (ESAs)", "off-limits" to the contractor
Vegetation	HDD construction method minimizes surface disruption, thereby limiting tree and vegetation removal and damage to tree roots. Drilling and target pits for pipe installation and typically 2 metres by 3 metres at 120 to 300 metre pipe run intervals	<ul> <li>Mitigation measures are:</li> <li>schedule construction in dormant season (late fall or late spring) to minimize stress on trees</li> <li>delineate Tree Protection Zones (TPZ) prior to construction</li> <li>prohibit construction, construction equipment, contractor vehicles and stockpiled materials in TPZs</li> <li>"up listing" of SAR species will be checked during Detailed Design</li> </ul>

Environmental Feature	Potential Benefits & Impacts	Avoidance, Mitigation & Monitoring Measures
Terrestrial Species at Risk (SAR) – Snapping Turtle ( <i>Chelydra serpentine</i> )	Snapping Turtle (Species of Conservation Concern) observed in Unnamed Ravine #3 (Hay H Drain) north of Turnbull's Grove Road. Habitat is protected under PPS. Sewer crosses ravine along Highway 21, but HDD construction method will avoid impacts on turtle and its habitat	Protection of Snapping Turtle habitat requires the preparation of a Species Specific Contractor Information Package during Detailed Design. The package includes instructions to the contractors for avoiding impacts on species. Also "up listing" of terrestrial SAR species will be checked during Detailed Design
Terrestrial Species at Risk (SAR) – Vegetation: - Butternut Tree (Juglans cinera)	Butternut tree (large specimen) observed on west side of Highway 21 on private property. Sewer location and HDD construction method will avoid impacts on tree	A TPZ will be established around the tree during Detailed Design and marked on the contract drawings. A permit from MNR must be obtained prior to construction if there is any potential for damage to this tree. If removed, replanting is required at a 20:1 ratio
- Kentucky Coffee Trees ( <i>Gymnocladus</i> <i>diocus</i> )	Two small specimens observed on east side of Highway 21 ROW along fenceline. Sewer location (outside highway ROW) and HDD construction methods will avoid impacts on these trees	A TPZ will be established around these trees during Detailed Design and marked on the contract drawings. A permit from MNR must be obtained prior to construction if there is any potential for damage to these trees. If removed, replanting is required at a 20:1 ratio
Migratory and other Protected Birds	Potential harmful alteration, destruction or disruption of breeding bird habitat, nest and young caused by vegetation removal for construction	All impacts avoided by timing of vegetation removal. No vegetation removal should occur from <b>April 15 to August 15</b> during the bird nesting season
Other Wildlife Habitat	Minimal impacts on existing habitat of typical species in an agricultural area. HDD construction method avoids impacts on wildlife habitat	Not required
5. Socio-Economic Imp		
Farmland - Required Easements	No farmland required but easements required along east side of Highway 21 ROW from more than 10 large farms used for production of cash crops	Municipality will negotiate easements with property owners. Compensation for easements will be based on percentage of fair market value for area encumbered by easement

Environmental Feature	Potential Benefits & Impacts	Avoidance, Mitigation & Monitoring Measures
Farmland – Short- Term Construction Impacts	Since surface disruption and excavation minimized by HDD construction method, construction will cause only minor crop loss. The drilling and target pits for pipe installation are typically 2 metres by 3 metres at 120 to 300 metre pipe run intervals. Other short-term construction impacts include noise, vibrations and air quality impacts mitigated by standard measures. Access disruptions will be minimized	Impacts during construction mitigated by standard measures implemented during construction
Farmland – Long- Term Impacts	Minimal long-term impacts on soil productivity since HDD construction method minimizes surface disruption and excavation. Access pit is only 2 metres by 3 metres at 120 to 300 metre pipe run intervals	Long-term impacts on soil productivity minimized by HDD construction method
Agricultural Infrastructure	Some potential for damage to field tiles, drainage ditches and fences during construction	Any infrastructure damaged during construction will be repaired and restored as required by the construction contract
All other Land Uses (agricultural and residential on west side of Highway 21)- Property Purchase	Property required for lift stations from agricultural and residential properties. Minimal impacts since pumping station sites are small and were sited to minimize impacts on farming operations and existing residences	Municipality will negotiate property purchases with property owners. Purchase price will be based on market value of land and any injurious affection. Any property damage will be repaired or restored as required by the construction contract
All Land Uses (agricultural, residential and commercial) - Required Easements	Easements required throughout Service Area for collection system piping. No long-term impacts are expected	Municipality will negotiate easements with property owners. Compensation for easements will be based on a percentage of fair market value for area encumbered by the easement. All property damage will be repaired or restored
All other Land Uses – Short-Term Construction Impacts	Other short-term construction impacts include noise, vibrations and air quality impacts mitigated by standard measures. Access disruptions will be minimized	Impacts during construction mitigated by standard measures implemented during construction as required by the construction contract
Future Development	Allows future development to proceed on full municipal services as required by Provincial, Huron County and Bluewater land use and servicing policies	Future development will be controlled by the PPS, County of Huron and Bluewater Official Plans

Environmental Feature	Potential Benefits & Impacts	Avoidance, Mitigation & Monitoring Measures
Conformity to Huron	Conforms since it is a long-term	Not required
County Official Plan	environmentally sustainable for	
	existing and future development along the Bluewater lakeshore	
Conformity to	Conforms to Official Plan's land use	Not required
Municipality of	and servicing policies to by providing	
Bluewater Official	adequate infrastructure and roads for	
Plan	the agricultural community	
Consistency with	Consistent with servicing,	Not required
Provincial Policy	"Transportation and Infrastructure	
Statement	Corridors" and the "Wise Use and	
	Management of Resources" policies	
6. Costs		
Capital, Operating and	-	-
Maintenance Costs are		
included in Section 6		
of this report		

### **APPENDIX** A

## SCREENING OF ON-SITE TERTIARY TREATMENT SYSTEMS

#### MUNICIPALITY OF BLUEWATER HIGHWAY 21 CORRIDOR SANITARY SEWAGE COLLECTION SYSTEM CLASS EA AND PRELIMINARY DESIGN

#### **Screening of On-Site Tertiary Treatment Systems**

Table C-1 EcoFlo	
Factors	Treatment Specifications
EcoFlo Treatment System	
Design Criteria	<ul> <li>Model ST-500 or STB-500 (1and 2 bedroom): 1 500 L/d (peak daily design flow rate)</li> <li>Model ST-650 or STB-650 (3 and 4 bedroom): 2 200 L/d (peak daily design flow rate)</li> <li>Note: There are two configurations, ST having an open bottom and STB with a submersible collecting bottom</li> </ul>
Treatment Capacity (L/d)	For residential units capacity ranges up to 2 200 L/d
Treatment Performance for Nitrate (mg/L)	<ul> <li>50-60% Nitrate reduction in cold weather 60-75% reduction in warm weather with recirculation (based on performance letter)</li> <li>&lt; 50% with no recirculation</li> </ul>
Treatment Performance for BOD, TSS and TP (mg/L)	<ul> <li>BOD: &lt;10 mg/L, 95% removal (approx. 2 mg/L)</li> <li>TSS: &lt;10 mg/L, 90% removal (approx. 2 mg/L)</li> <li>TP: no removal</li> <li>Fecal coliforms: &lt;25 000/100 mL, 99% removal (approx. 1250 mg /100 mL)</li> </ul>
System Reliability	• Provided excessive flows don't occur, excessive chemicals not dumped down the drain, etc. (according to manufacturer)
Potential for Odour Formation	<ul> <li>Potential odour issue if vent stack not properly connected to house/septic tank or improper installation causing unit malfunction</li> <li>If odour detected, EcoFlo installs a carbon filter until cause is determined</li> <li>Remediation is easy in 99% of cases</li> </ul>
Maintenance Requirement	<ul> <li>Requires cleaning effluent filter, raking peat</li> <li>All maintenance done by a trained technician certified by the manufacturer (Premier Tech Environmental)</li> <li>No maintenance required by owner</li> </ul>
Frequency for Media Replacement	Once approximately every 8 years peat must be replaced
Monitoring Requirement	<ul> <li>Area Bed:</li> <li>Conduct sampling and testing in accordance with the requirements of the Ontario Building Code (OBC): <ul> <li>once during first 12 months</li> <li>thereafter every 48-month period</li> </ul> </li> <li>Shallow Buried Trench: <ul> <li>Once during first 12 months, thereafter once every 12 months (and between 10 to 18 months of previous sampling event)</li> </ul> </li> </ul>

Table C-1 EcoFlo	
Factors	Treatment Specifications
Order of Magnitude Capital Cost	\$12 000-\$17 000 Installed depending on pre-existing conditions (included: septic tank and 2-year annual maintenance contract which has a value of \$260)
Order of Magnitude Operating Costs	<ul> <li>If no pump, \$0 for first 2 years (incl. in capital cost above) except for regular pumping costs associated with cleaning out septic tank</li> <li>If pump is installed the cost of operating a 0.3 kW effluent pump must be considered</li> <li>Annual maintenance contract of \$130 per yr for single system varies for multiple systems (peat change-out extra)</li> </ul>
Acceptance by MOE and Heath Units	<ul> <li>Ontario Building Code Approval of EcoFlo Biofiltration Treatment Unit for meeting secondary effluent quality criteria (based on MOE letter dated Feb. 9, 1998)</li> <li>Building Material Evaluation Commission (BMEC) Approval of EcoFlo ST-650 Biofilter System for tertiary level treatment- April, 1999</li> <li>MOE acceptance based on approved C of A's</li> <li>Health Unit acceptance based on Building Materials Evaluation Commission (BMEC) approval</li> </ul>
Number of Installations and Service Life	<ul> <li>Ontario: close to 5,000 as of 2006</li> <li>Started in 1988 in Ontario, first installed in 1994</li> <li>Service life is approximately 8 years; replace peat, and it will be good for another 8 years, etc.</li> <li>10 year warranty on system</li> <li>Total Lifespan approx. 30 years</li> </ul>
EcoFlo Sub-surface Discharge	
Type Sub-surface Discharge System based on Soil Type	<ul> <li>Sand: <ul> <li>shallow buried trench for percolation times (T) of 125 min/cm or less</li> </ul> </li> <li>Clay: <ul> <li>to avoid a mound, put bottom on EcoFlo and pipe to an absorption system below grade (EcoFlo no longer on top of absorption system)</li> <li>shallow buried trench for percolation times (T) of 125 min/cm or less</li> <li>raised absorption system</li> </ul> </li> </ul>

Table C-1 EcoFlo	
Factors	Treatment Specifications
Factors         Design Criteria for Sub- surface System (based on Part 8 of OBC)	<ul> <li>Absorption System:</li> <li>Stone layer of 200 mm (minimum) over 250 mm (minimum) of sand (with percolation time of 6-10 min/cm)</li> <li>Provided that the underlying native soil has a percolation time of less than 6 min/cm, the water table shall be a minimum of 600 mm below the bottom of the stone layer required</li> <li>Stone Layer</li> <li>Q ≤ 3 000 L/d: the loading on the surface of the stone layer should not exceed 75L/m<sup>2</sup> per day</li> <li>Q &gt; 3 000 L/d: the loading on the surface of the stone layer should not exceed 50 L/m<sup>2</sup> per day</li> <li>minimum area of crushed stone is 27 m<sup>2</sup></li> <li>Sand Layer</li> <li>The sand layer shall have a minimum area that is the greater of: the area of the stone layer required, and</li> <li>A = QT/850 where,</li> <li>A = the area of contact, m<sup>2</sup></li> <li>Q = the total daily design flow, L and,</li> <li>T = the lesser of 50 and the percolation time of the underlying soil, min/cm</li> <li>In a raised absorption system, the sand layer shall extend at least 15 m beyond the perimeter of the system, in any direction which the effluent entering the soil will move horizontally</li> </ul>
Bed Size based on soil type (analysis utilized hydraulic loading rate and Q = 2500L/d)	<ul> <li>Length of distribution pipe (L) shall not be less than 30 m when constructed as a shallow buried trench</li> <li>1 min/cm &lt; T ≤ 20 min/cm, Area = 250 m<sup>2</sup></li> <li>20 min/cm &lt; T ≤ 35 min/cm, Area = 313 m<sup>2</sup></li> <li>35 min/cm &lt; T ≤ 50 min/cm, Area = 417 m<sup>2</sup></li> <li>T &gt; 50 min/cm, Area = 625 m<sup>2</sup></li> </ul>
Minimum Lot Area required for Treatment System per Soil Category (sum of disposal system and treatment unit area)	$\begin{array}{l} 1 \; min/cm < T \leq 20 \; min/cm, \; Area = 275 \; m^2 \\ 20 \; min/cm < T \leq 35 \; min/cm, \; Area = 338 \; m^2 \\ 35 \; min/cm < T \leq 50 \; min/cm, \; Area = 442 \; m^2 \\ T > 50 \; min/cm, \; Area = 650 \; m^2 \end{array}$
Does the system meet MOE reasonable use policy requirements?	<ul> <li>Yes, if a solution is devised to treat nitrates (recycle, etc.)</li> <li>Yes, if based on travel through absorption bed</li> </ul>
Life Expectancy of Sub- surface System	<ul> <li>Indefinite, if system working effectively to reduce nutrients</li> <li>Only treated water is discharged so life expectancy is "indefinite"</li> </ul>
Acceptance of Sub-surface System by MOE and Health Unit	<ul> <li>MOE developed sizing calculations</li> <li>Health Unit relies on MOE/Building Code evaluation</li> </ul>
Maximum Observed Life of Sub-surface system	First installed system in 1994
Potential for Treatment	• An EcoFlo could malfunction due to misuse by owner

Table C-1 EcoFlo	
Factors	Treatment Specifications
System Failure	• Moving parts limited to tray and pumps, therefore cause for failure is easily identified and can be easily fixed
Remedial Step to Correct Equipment Failure	<ul><li>Pump out peat and replace</li><li>If system was installed incorrectly, dig up and replace</li></ul>
Overall Impact of Equipment Failure on System Performance	If equipment fails, system performance will likely halt until equipment is remediated
Potential for Sub-surface System failure	<ul> <li>Provided system is working properly, sub-surface system should last indefinitely</li> <li>If owner misuses systems (dumping chemicals down drain, etc.), sub-surface system could temporarily fail or in the worst case permanently fail</li> </ul>
Remedial step to correct system failure without contingency for sub-surface system replacement	<ul> <li>Attempt to remediate by fixing source of problem</li> <li>Dig up area bed and replace with new media</li> </ul>
Remedial step to correct system failure with contingency for sub-surface system replacement	<ul> <li>Attempt to remediate by fixing source of problem</li> <li>Dig up area bed and replace with new media</li> <li>Add new area bed or new shallow pressure trench and divert flow to this system. May have to install bottom on system to allow for diversion of flow if system was previously sitting on top of the area bed</li> </ul>

Table C-2: Waterloo Biofilter	
Factors	Treatment Specifications
Waterloo Biofilter Treatment S	System
Design criteria	<ul> <li>Model # 11 - 1100 L/d (2 bedroom) system</li> <li>Model # 16 - 1600 L/d (3 bedroom) system</li> <li>Typical domestic wastewater:</li> <li>500 L/m<sup>2</sup>/day or 50 cm/day for a 0.9 m deep bed</li> <li>Treatment improves if 50-66% of the effluent is re-circulated to the septic system (must account for this additional flow in the design)</li> <li>For residential sewage maximum loading rate of 750 L daily design flow per m<sup>3</sup> of biofilter medium (specified by OBC)</li> </ul>
Treatment Capacity (L/d)	For residential units capacity ranges from 1 100 to 10 000 L/d
Treatment Performance for Nitrate (mg/L)	<ul> <li>20 – 40% TN removal single pass</li> <li>50 – 65% TN removal with recirculation</li> <li>Nitrate: &lt; 5 mg/L</li> </ul>
Treatment Performance for BOD, TSS and TP (mg/L)	<ul> <li>BOD &lt; 10 mg/L, 90 -99 % removal</li> <li>TSS &lt; 10 mg/L, 90 -99 % removal</li> <li>Fecal coliforms: &lt; 25 000/100mL, 99% removal</li> <li>TP: no removal but an upflow chemical filter can be added as a module to remove P</li> </ul>
System Reliability	<ul> <li>System is reliable, provided:</li> <li>owner should not use excessive disinfectant, bleach or fats during cooking</li> <li>nozzles can become plugged</li> </ul>
Potential for Odour Formation	<ul> <li>Optional ventilation system</li> <li>Passive air vents through enclosure</li> <li>Activated carbon filter can be used</li> <li>Odour control necessary, if septic tank is unhealthy</li> <li>Odour problems can occur if water supply is from black shale or limestone containing iron sulphide</li> </ul>
Maintenance Requirement	<ul> <li>Persons authorized by manufacturer are required to service and maintain Biofilter</li> <li>Annual maintenance</li> <li>Owner not permitted to maintain Biofilter</li> </ul>
Frequency for Media Replacement	<ul> <li>May need to replace</li> <li>In 2009, expected warranty on foam bed of 20 yrs</li> <li>If used correctly should only have to replace foam bed once every 20 yrs</li> <li>May need minimal replacement of foam on a year to year basis depending on flows</li> </ul>

Table C-2: Waterloo Biofilter	
Factors	Treatment Specifications
Monitoring Requirement	<ul> <li>Area Bed:</li> <li>Conduct sampling and testing in accordance with the requirements of the OBC:</li> <li>once during first 12 months</li> <li>thereafter every 48-month period</li> <li>Shallow Buried Trench:</li> <li>Once during first 12 months, thereafter once every 12 months (and between 10 to 18 months of previous sampling event)</li> </ul>
Order of Magnitude Capital Cost	<ul> <li>1 100 L/d (2 bedroom) and 1 600 L/d (3 bedroom) systems typically cost from \$14 000 to \$16 000 fully installed</li> <li>this capital cost estimate incl. the septic tank, effluent filter, Biofilter, pumps, disposal bed, etc.</li> <li>Varies based on existing conditions</li> </ul>
Order of Magnitude Operating Costs	<ul> <li>\$200 - \$400 per year for maintenance agreement</li> <li>Electrical consumption have been report to be 451 kWh per year</li> </ul>
Acceptance by MOE and Health Units	<ul> <li>Ontario Building Code Approval of Waterloo Biofilter for meeting secondary effluent quality criteria (based on MOE letter dated June 26, 1996 and March 12, 1996)</li> <li>Building Material Evaluation Commission (BMEC) Approval of Waterloo Biofilter Area Bed System for tertiary level treatment- April, 1999</li> <li>Health Units accept provided technology is approved under the BMEC. After BMEC approval, Health Unit checks distances, percolation times, etc.</li> <li>MOE has accepted system as per C of A applications</li> </ul>
Number of Installations and Service Life	<ul> <li>Number of systems in Ontario is greater than 1 300</li> <li>First installations in Ontario began in 1991 with many still in operating condition</li> </ul>
Waterloo Biofilter Sub-surface Discharge	
Type of Sub-surface Discharge System based on Soil Type	See Below

Table C-2: Waterloo Biofilter	
Factors	Treatment Specifications
Design Criteria for Sub-surface System (based on Part 8 of OBC)	<ul> <li>Absorption System:</li> <li>Stone layer of 200 mm (minimum) over 250 mm (minimum) of sand (with percolation time of 6-10 min/com)</li> <li>Provided that the underlying native soil has a percolation time of less than 6 min/cm, the water table shall be a minimum of 600 mm below the bottom of the stone layer required</li> <li>Calculations for bed sizes are as follows: <ul> <li>Minimum area of Sand layer:</li> <li>A = QT/850</li> </ul> </li> <li>Minimum area of Stone layer:</li> <li>A = Q/75 for Q ≤ 3000 L/d or A = Q/50 for Q &lt; 3000 L/d Q = design flow (L/d) T = soil percolation rate (min/cm)</li> <li>For Model #16 – 1600 L/d</li> <li>A = (1600 L/d)(50 min/cm) / 850 = 94 m<sup>2</sup> of Sand A = (1600 L/d) / 75 = 21 m<sup>2</sup> of Stone Therefore the bed area will be 94 m<sup>2</sup></li> <li>For Model #11 – 1100 L/d</li> <li>A = (1100 L/d)(50 min/cm) / 850 = 65 m<sup>2</sup> of Sand A = (1100 L/d) / 75 = 15 m<sup>2</sup> of Stone Therefore the bed area will be 65 m<sup>2</sup></li> </ul>
Bed size (m/d) based on Soil Type. (Analysis used hydraulic load calculations for determining area) Minimum Lot Area required for Treatment System per Soil Category (sum of disposal system and treatment unit area) Does the system meet MOE reasonable use policy requirements?	$\begin{array}{l} 1 \mbox{ min/cm} < T \leq 20 \mbox{ min/cm}, \mbox{ Area} = 250 \mbox{ m}^2\\ 20 \mbox{ min/cm} < T \leq 35 \mbox{ min/cm}, \mbox{ Area} = 313 \mbox{ m}^2\\ 35 \mbox{ min/cm} < T \leq 50 \mbox{ min/cm}, \mbox{ Area} = 417 \mbox{ m}^2\\ T > 50 \mbox{ min/cm}, \mbox{ Area} = 625 \mbox{ m}^2\\ 1 \mbox{ min/cm} < T \leq 20 \mbox{ min/cm}, \mbox{ Area} = 275 \mbox{ m}^2\\ 20 \mbox{ min/cm} < T \leq 20 \mbox{ min/cm}, \mbox{ Area} = 338 \mbox{ m}^2\\ 35 \mbox{ min/cm} < T \leq 50 \mbox{ min/cm}, \mbox{ Area} = 442 \mbox{ m}^2\\ T > 50 \mbox{ min/cm}, \mbox{ Area} = 650 \mbox{ m}^2\\ \bullet \mbox{ Typically obtains} \mbox{ 10 - 15 mg/L TN or 75-80\% removal of TN} (including both Biofilter and Septic Tank operations) by recycling flows 20-30 times the design flow/day back to septic tank\\ \bullet \mbox{ If removal through disposal system is included, may meet} reasonable use \end{array}$
Life Expectancy of Sub-surface System Acceptance of Sub-surface System by MOE and Health Unit	<ul> <li>Manufacturer predicts that &gt;90% of systems will last +20 years and 5% will last 5 years</li> <li>MOE developed sizing calculations</li> <li>Health Unit relies on MOE/Building Code evaluation</li> </ul>
Maximum Observed Life of Sub-surface System	<ul> <li>Bed: 20-30 yrs, if installed and designed in align with capacity and soil conditions</li> <li>Shallow Buried Trench: more maintenance required but still capable of 20+ yr sub-surface system life</li> </ul>

	Table C-2: Waterloo Biofilter	
Factors	Treatment Specifications	
Waterloo Biofilter Risk Assess	nent	
Potential for Treatment System Failure	Mostly related to use of disinfectant in a household (or other chemicals)	
Remedial Step to Correct Equipment Failure	<ul><li>Remove source of chemicals, fats, etc.</li><li>Pump failure, replace pump</li></ul>	
Overall Impact of Equipment Failure on System Performance	<ul> <li>Equipment failure does not affect bed because system stops putting water through bed</li> <li>Backed up sewage into yard is possibility but this is a "quick fix"</li> </ul>	
Potential for Sub-surface System Failure	• Bed fails based on excessive flows (ponding in bed)	
Remedial Step to Correct System Failure without Contingency for Sub-surface System Replacement	<ul> <li>Remove bed and put new bed in soil underneath, Bed should be fine provided it was not disturbed</li> <li>Remediate bed</li> <li>Shallow buried (pressurized) trenches, no options if remediation efforts fail</li> </ul>	
Remedial Step to Correct System Failure with contingency for Sub-surface System Replacement	<ul> <li>Remove bed and put new bed in soil underneath, Bed should be fine provided it was not disturbed</li> <li>Remediate bed</li> <li>Shallow buried (pressurized) trenches, remediate or replace in another location</li> </ul>	

	Table C-3: FAST Canada
Factors	Treatment Specifications
FAST Treatment System	
Design Criteria	<ul> <li>Fixed film, aerated system using combo of attached and suspended growth</li> <li>Pre-engineered, therefore flows are calculated and system is specified based on flow <ul> <li>MicroFAST 0.5 flow range: 1 300 to 1 900 L/d</li> <li>MicroFAST 0.75 flow range: 1 900 to 2 800 L/d</li> <li>MicroFAST 0.9 flow range: 1 900 to 3 400 L/d</li> <li>MicroFAST 1.5 flow range: 2 850 to 5 700 L/d</li> </ul> </li> </ul>
Treatment Capacity (L/d)	For residential units capacity ranges from 1 900 to 10 000 L/d
Treatment Performance for Nitrate (mg/L)	<ul> <li>TN: &lt;10 mg/L, &gt;70% reduction (Note: all models include recirculation)</li> <li>TKN: &lt; 10 mg/L</li> <li>Nitrate: &lt; 5 mg/L</li> </ul>
Treatment Performance for	• BOD: < 10 mg/L
BOD, TSS and TP (mg/L)	<ul> <li>TSS: &lt; 10 mg/L</li> <li>P: no removal</li> </ul>
System Reliability	<ul> <li>Smith &amp; Loveless System Certifications: <ul> <li>U.S. Coast Guard</li> <li>Canadian Great Lakes</li> <li>UK Department of Trade</li> <li>National Sanitation Foundation (NSF) International</li> <li>Standard 40, Class I</li> <li>International Maritime Organization (IMO)</li> <li>2 year warranty available, will soon be upgraded to 5 years</li> <li>If chemicals dumped, or other misuse by owner, warranty may be void</li> <li>If treatment system fails, can pump out solids and will remediate itself</li> <li>Can also easily replace media if necessary</li> <li>No pumps required, system on grade</li> </ul> </li> </ul>
Potential for Odour Formation	<ul> <li>Chemicals flushed into system in sufficient quantity, could kill off bacteria and cause odour</li> <li>If blower fails, no oxygen, anaerobic, could result in odour</li> </ul>
Maintenance Requirement	<ul> <li>Area Bed:</li> <li>Conduct sampling and testing in accordance with the requirements of the OBC</li> <li>once during first 12 months</li> <li>thereafter every 48-month period</li> <li>Shallow Buried Trench:</li> <li>Once during first 12 months, thereafter once every 12 months (and between 10 to 18 months of previous sampling event)</li> </ul>
Frequency for Media Replacement	<ul><li> PVC media, does not corrode</li><li> Never have to replace</li></ul>

Table C-3: FAST Canada	
Factors	Treatment Specifications
Monitoring Requirement	Yearly for shallow buried trench
Order of Magnitude Capital Cost	<ul> <li>\$11 000 to \$13 000 for 1 900 L/d (MicroFAST 0.5) system installed</li> <li>\$12 000 to \$14 000 for 2400 L/d (MicroFAST 0.75) system installed</li> <li>both vary based upon pre-existing conditions</li> <li>these capital cost estimates also include the cost of a two (2) year inspection plan</li> </ul>
Order of Magnitude Operating Costs	<ul> <li>Electricity: 0.25 kw blower (for MicroFAST 0.5, 0.75 and 0.9 systems)</li> <li>No chemicals</li> <li>2 visits per year at \$75 per visit for total of \$150 per year is typical after 2<sup>nd</sup> year for maintenance</li> <li>Blower has 2-yr warranty, 7-yr life expectancy, and a \$525 replacement cost</li> </ul>
Acceptance by MOE and Heath Units	<ul> <li>Building Material Evaluation Commission (BMEC) Approval of Bio-Microbic Area Bed System (models MicroFAST 0.25, 0.75, 0.9, and 1.5) for tertiary level treatment - November, 2004</li> <li>Approved for a Northern Ontario Lodge &gt;10,000 L/d for a C of A by MOE</li> <li>Prior to BMEC Approval the systems had been approved in certain areas: Ottawa, Lucan, Lambton County</li> </ul>
Number of Installations and Service Life	<ul> <li>130 residential units installed in Ontario (in 2004 and 2005)</li> <li>Service life of system 25 years</li> <li>400-500 installs in Ontario (in 2006 and 2007)</li> <li>More installations in U.S. where max. observed life is 30 years</li> </ul>
FAST Sub-surface Discharge	
Sub-surface System based on Soil Type	<ul> <li>Shallow Buried Trench (Clay):</li> <li>majority of systems employ shallow buried trench follow Building Code specifications</li> <li>shallow buried trench for percolation times 125 min/cm or less</li> <li>Other disposal systems provided at owner's request</li> </ul>

	Table C-3: FAST Canada
Factors	Treatment Specifications
Factors Design criteria for sub-surface system (based on Part 8 of OBC)	<ul> <li>Treatment Specifications</li> <li>Adsorption System: <ul> <li>Stone layer of 200 mm (minimum) over 250 mm (minimum) of sand</li> <li>The water table, rock, or soil with a T time of 6 or less or greater than 50 min/cm:</li> <li>shall be a minimum of 600 mm below the bottom of the stone layer required</li> </ul> </li> <li>Stone <ul> <li>Q &lt;3 000L/d: the area shall be such that the loading on the stone layer does not exceed 75 L/m<sup>2</sup> per day</li> <li>Q &gt;3 000L/d: the area shall be such that the loading on the stone layer does not exceed 75 L/m<sup>2</sup> per day</li> </ul> </li> <li>Area of sand layer: <ul> <li>A = QT/850</li> <li>where A = the area of contact, m<sup>2</sup></li> <li>Q = the total daily design flow, L and T = the lesser of 50 and the percolation time of the underlying soil, min/cm</li> </ul> </li> <li>Calculations from BMEC. Suggested that the dimensions of the bed be in a 2:1 or 3:1 ratio in order to encourage best flow characteristics for moving effluent away from the bed and into surrounding soil.</li> <li>When the sand layer is installed in or on soil having a T time of greater than 15 min/cm, the sand layer shall extend at least 15 m beyond the perimeter of the system or distribution pipes if utilized, in any direction which the effluent entering the soil will move horizontally</li> </ul>
	<ul> <li>Shallow Buried Trench:</li> <li>Length of distribution pipe (L) shall not be less than 30 m when constructed as a shallow buried trench</li> </ul>
Bed Size (m/d) based on Soil Type. (analysis utilized hydraulic load calculations for determining area)	$\begin{array}{l} 1 \ min/cm < T \leq 20 \ min/cm, \ Area = 250 \ m^2 \\ 20 \ min/cm < T \leq 35 \ min/cm, \ Area = 313 \ m^2 \\ 35 \ min/cm < T \leq 50 \ min/cm, \ Area = 417 \ m^2 \\ T > 50 \ min/cm, \ Area = 625 \ m^2 \end{array}$
Minimum Lot Area required for Treatment System per soil category (sum of disposal system and treatment unit area) Does the system meet MOE reasonable use policy requirements?	$\begin{array}{l} 1 \ min/cm < T \leq 20 \ min/cm, \ Area = 275 \ m^2 \\ 20 \ min/cm < T \leq 35 \ min/cm, \ Area = 338 \ m^2 \\ 35 \ min/cm < T \leq 50 \ min/cm, \ Area = 442 \ m^2 \\ T > 50 \ min/cm, \ Area = 650 \ m^2 \\ \end{array}$ Yes, see TN removals above
Life Expectancy of Sub-surface System	30 years, will not plug (or can remediate), System is made out of plastic

Table C-3: FAST Canada	
Factors	Treatment Specifications
Acceptance of Sub-surface System by MOE and Health Unit	<ul><li>MOE developed sizing calculations</li><li>Health Unit relies on MOE/Building Code evaluation</li></ul>
Maximum Observed Life of Sub-surface System	At least 20 years, 30 years (potentially) in United States
FAST Risk Assessment	
Potential for Treatment System Failure	<ul> <li>Chemicals, paint, etc. discharged by owner could cause death of system</li> <li>Problem with blower results in no oxygen, therefore anaerobic power outage, no air</li> </ul>
Remedial Step to Correct Equipment Failure	Pump out solids
Overall Impact of Equipment Failure on System Performance	<ul> <li>If shallow buried trench used, will no longer meet tertiary effluent requirements and could plug</li> <li>Can remediate build-up in trench when system is operating properly, as high dissolved oxygen (DO) levels allow for remediation of bed</li> </ul>
Potential for Sub-surface System Failure	<ul><li>If system fails, shallow buried trench could plug</li><li>If hydraulic overloading, could have breakthrough</li></ul>
Remedial Step to Correct System Failure without Contingency for Sub-surface System Replacement Remedial Step to Correct System Failure with	<ul> <li>Remediate shallow buried trench by ensuring system working properly.</li> <li>High DO levels will allow bed to remediate</li> <li>If conventional bed, can remediate as well</li> <li>Remediate using existing system with high DO levels inherent in treatment</li> </ul>
Contingency for Sub-surface System Replacement	<ul> <li>Install new shallow buried trench disposal system</li> </ul>

APPENDIX B FISHERIES



# **South Gullies** Watershed Report Card

Grades:	
Forest Conditions	D
Surface Water Quality	С

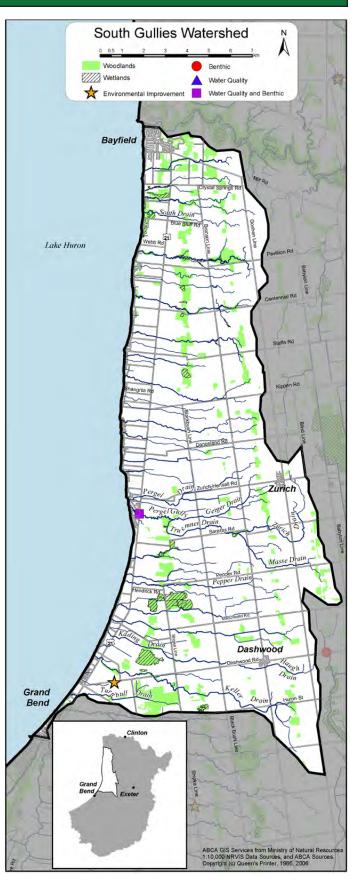
This report card summarizes water quality and forestry information for the South Gullies watershed (the highlighted area on the map at right). This map also shows water quality stations and example environmental improvement locations. For consistency across watersheds, Conservation Ontario has recommended the use of specific water quality and forestry indicators that are described in the following tables. The summary is intended to provide landowners, groups, municipalities and agencies with information to protect, enhance and improve natural features of the watershed. The ongoing monitoring will be reported on a five-year cycle which will help local people manage their natural features. This report card is part of a larger report entitled The Ausable Bayfield Conservation Authority Watershed Report Card available at: www.abca.on.ca. Further information, including methodology, comparisons to the other 15 Ausable Bayfield watersheds and references are also found in the report.

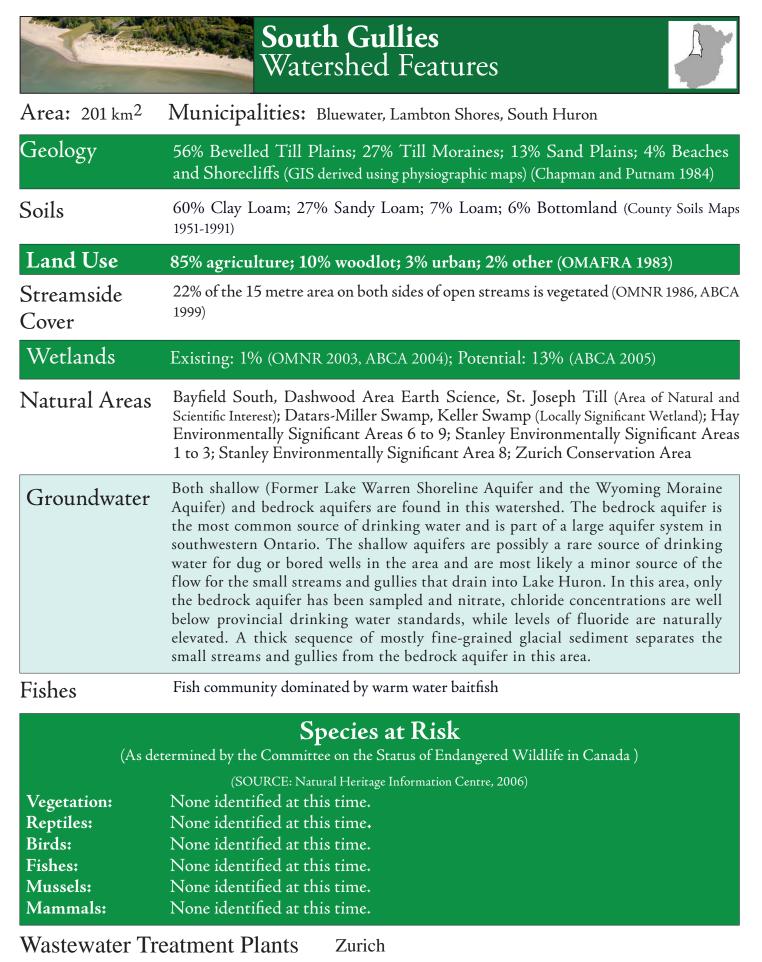


# Priority Strategy for South Gullies Watershed

## Improve:

Develop an assessment of shoreline tributary contaminant loading and erosion potential.







	Indicator and Description	%         9.8%         D         12.6%         C           at	South Gullies		
	indicator and Description	Result	Grade		
litions	<b>Forest Cover</b> is the percentage of the watershed that is forested. Environment Canada recommends <b>30%</b> of a watershed should be in forest cover.	9.8%	D	12.6%	С
Forest Conditions	<b>Forest Interior</b> is the area inside a woodlot that some bird species need for breeding. Environment Canada recommends <b>10%</b> of a watershed should be in forest cover that is at least 100 m from the forest edge.	1.7%	F	2.8%	D
	<b>Total Phosphorus</b> is an element that enhances plant growth and contributes to excess algae and low oxygen in streams and lakes. The Ministry of the Environment has established an environmental health objective concentration of <b>0.03 mg/L</b> .	0.07	В	0.08	В
Water Quality	<b>E. coli</b> ( <i>Escherichia coli</i> ) are bacteria found in human and animal waste. Their presence in water indicates the potential for the water to have other disease-causing organisms. The Ministry of Health has established a guideline of <b>100 cfu</b> (colony forming units)/ <b>100 mL</b> in recreational waters.	236	С	233	С
M	Benthic Invertebrates are small animals without backbones that live in stream or lake sediments. The Family Biotic Index (FBI) summarizes the information about the numbers and types of these animals in a sediment sample. FBI values provide stream health information and values range from 1 (healthy) to 10 (degraded).	5.2	C	5.6	С

Grade	Explanation
А	Indicates excellent ecosystem conditions and protection may be required. Some
	areas may require enhancement.
В	Indicates good ecosystem conditions. Some areas may require enhancement.
С	Indicates ecosystem conditions that need to be enhanced.
D	Indicates poor ecosystem conditions that need to be improved.
F	Indicates degraded ecosystem conditions that need considerable improvement.



**South Gullies** Next Steps and Local Successes



# To improve forest conditions ...

- Dogwood, wild rose, and honey locust are native shrubs/trees that help to prevent erosion yet not block lake views.
- More forests required in headwater areas.

# To improve water quality ...

• Protect all wetlands.

• The drinking water intake located north of Grand Bend services approximately 500,000 people. A committee comprised of both agricultural and lakeshore representatives would be one long-term strategy that might provide a forum to discuss specific water quality issues.

• Short but severe rain events that occur in the small watersheds that drain directly to Lake Huron can cause downstream erosion problems. To address this issue, a first step is to assess the gullies to determine which tributary has potential to have the most severe erosion issues. A second step is to determine what storm water retention options exist upstream in these most severe cases.

• Plant windbreaks and practise conservation tillage on erosion-prone soils (Programs available through ABCA).

- Fix faulty septic systems and establish a septic maintenance plan.
- Decommission abandoned wells and upgrade existing wells to prevent groundwater contamination.
- Upgrade Zurich sewage lagoons.
- Manure Management:
  - Apply manure at rates and times to optimize crop uptake of nutrients and prevent runoff.
  - Monitor tile outlets for contaminants during and following manure application and implement spill contingency plans if necessary.
  - Ensure manure storage facilities are adequate and properly functioning.
  - Keep records; develop a nutrient management plan (Environmental Farm Plan funding may be available).

# Other recommendations

• Continue to support the province's natural heritage policies through local official plans and zoning by-laws (i.e., storm water management, tree cutting bylaw).

• Complete Environmental Action Plans (Farmers see Environmental Farm Plan; Lakeshore residents see Lakeshore Stewardship Manual). A stewardship manual for rural non-farm landowners should be completed by 2007. Contact the ABCA for more information.



# Thumbs up!

The local community through the Huron County Water Protection Steering Committee continues to facilitate dialogue about water quality issues in the lakeshore and agricultural communities.

This is just one example in the watershed – give us a call and tell us about your project.

## Ausable Bayfield Conservation Authority



Ausable Bayfield Conservation Author 71108 Morrison Line, RR 3 Exeter, ON N0M 1S5 E-mail: info@abca.on.ca Web site: www.abca.on.ca Phone (519) 235-2610, 1-888-286-2610

Photo 1 Station 1, Pergel Drain (Pergel Drain #13)	Photo 2 Station 2, Fourcier Drain (Fourcier Drain #14)	
Photo 3 Station 3, Pergel Gully (Pergel Gully #12)	Photo 4 Station 4, Charette Drain (Charette Drain #11)	

Photo 5 Station 5, Unnamed Ravine #10	Photo 6 Station 6, Pepper Drain (Pepper Drain #9)	
Photo 7 Station 7, Unnamed Ravine #8	Photo 8 Station 8, Datars Miller Drain (Datars Miller Drain #8)	

Photo 9 Station 9, Unnamed Ravine #7	Photo 10 Station 10, Adams Drain (Adams Drain #6)	
Photo 11 Station 11, Kading Drain (Kading Drain #5)	Photo 12 Station 12, Unnamed Drain #4	

Photo 13 Station 13, Unnamed Ravine #3 (Schroeder Drain)	Photo 14 Station 13, Unnamed Ravine #3 (Schroeder Drain)	
Photo 15 Station 14, Lake Huron Trib. G (Lake Huron Tributary #2)	Photo 16 Station 15, Fahner Drain #1	

Photo 17 Station 16, Turnbull Drain	Photo 18 Station 17, Turnbull Drain	
Photo 19 Station 18, Maple Grove Branch	Photo 20 Station 19, Adams Drain	

Photo 21 Station 20, Webb Drain	Photo 22 Station 21, Ratz Drain	
Photo 23 Station 22, Ratz Drain	Photo 24 Station 23, Ratz Drain	

Photo 25 Station 24, Simmons Drain	Photo 26 Station 25, Simmons Drain	
Photo 27 Station 25, Simmons Drain	Photo 28 Station 26, Desjardine Drain	

Photo 29 Station 27, Desjardine Drain	Photo 30 Station 28, Desjardine Drain	
Photo 31 Station 28		



## HIGH-PRESSURE DIRECTIONAL DRILLING

Fisheries and Oceans Canada Ontario Operational Statement

For the purpose of this Operational Statement, the term High-Pressure Directional Drilling (HPDD) means trenchless methods of crossing a watercourse using pressurized mud systems. HPDD is used to install cables and pipelines for gas, telecommunications, fibre optics, power, sewer, oil and water lines underneath watercourses and roads. This method is preferable to open-cut and isolated crossings since the cable or pipeline is drilled underneath the watercourse with very little disturbance to the bed or banks. HPDD involves drilling a pilot bore hole underneath the watercourse towards a surface target, back-reaming the bore hole to the drill rig while pulling the pipe along through the hole. This process typically uses the freshwater gel mud system composed of a mixture of clean, freshwater as the base, bentonite (clay-based drilling lubricant) as the viscosifier and synthetic polymers.

The general order of preference for carrying out a cable or pipeline stream crossing in order to protect fish and fish habitat is: a) a punch or bore crossing (see *Punch & Bore Crossings* Operational Statement), b) HPDD crossing, c) dry open-cut crossing, and d) isolated open-cut crossing (see *Isolated or Dry Open-cut Stream Crossings* Operational Statement). This order must be balanced with practical considerations at the site.

One of the risks associated with HPDD is the escape of drilling mud into the environment as a result of a spill, tunnel collapse or the rupture of mud to the surface, commonly known as "frac-out". A frac-out is caused when excessive drilling pressure results in drilling mud propagating toward the surface. The risk of a frac-out can be reduced through proper geotechnical assessment practices and drill planning and execution. The extent of a frac-out can be limited by careful monitoring and having appropriate equipment and response plans ready in the event that one occurs. HPDD can also result in excessive disturbance of riparian vegetation and sedimentation and erosion due to operation of equipment on the shoreline or fording to access the opposite bank.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the *Fisheries Act* no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the *Fisheries Act*.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat. You may proceed with your

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high-pressure directional drill project without a DFO review when you meet the following conditions:

- the crossing technique will not damage the stream bed and thereby negatively impact fish or fish habitat,
- the crossing is not a wet open-cut crossing,
- you have an emergency frac-out response plan and a contingency crossing plan in place that outline the protocol to monitor, contain and clean-up a potential frac-out and an alternative method for carrying out the crossing, and
- you incorporate the *Measures to Protect Fish and Fish Habitat when High-Pressure Directional Drilling* listed below in this Operational Statement.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact your Conservation Authority, or the DFO office in your area (see Ontario DFO office list) or Parks Canada if the project is located within its jurisdiction, including the Trent-Severn Waterway and the Rideau Canal, if you wish to obtain an opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

You are required to respect all municipal, provincial or federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with the Species at Risk Act (www.sararegistry.gc.ca). If you have questions regarding this Operational Statement, please contact one of the agencies listed above.

We ask that you notify DFO, preferably 10 working days before starting your work by filling out and sending the Ontario Operational Statement notification form (**www.dfo-mpo.gc.ca**/ **regions/central/habitat/os-eo/prov-terr/index\_e.htm**) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

### Measures to Protect Fish and Fish Habitat when High-Pressure Directional Drilling

- **1.** Use existing trails, roads or cut lines wherever possible, as access routes to avoid disturbance to the riparian vegetation.
- 2. Design the drill path to an appropriate depth below the watercourse to minimize the risk of frac-out and to a depth



to prevent the line from becoming exposed due to natural scouring of the stream bed. The drill entry and exit points are far enough from the banks of the watercourse to have minimal impact on these areas.

- **3.** While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to access the construction site. This removal should be kept to a minimum and within the road or utility right-of-way.
- 4. Machinery fording the watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and should occur only if an existing crossing at another location is not available or practical to use. A *Temporary Stream Crossing* Operational Statement is also available.
  - **4.1.** If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage.
  - **4.2.** Grading of the stream banks for the approaches should not occur.
  - **4.3.** If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation are likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.
  - **4.4.** Time the one-time fording to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows (see the *Ontario In-Water Construction Timing Windows*).
  - **4.5.** Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.
- 5. Operate machinery on land above the ordinary high water mark (see definition below) and in a manner that minimizes disturbance to the banks of the watercourse.
  - **5.1.** Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
  - **5.2.** Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent any deleterious substance from entering the water.
  - **5.3.** Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.
  - **5.4.** Restore banks to original condition if any disturbance occurs.
- 6. Construct a dugout/settling basin at the drilling exit site to contain drilling mud to prevent sediment and other deleterious substances from entering the watercourse. If this cannot be achieved, use silt fences or other effective sediment and erosion control measures to prevent drilling mud from entering the watercourse. Inspect these measures regularly during the course of construction and make all necessary repairs if any damage occurs.
  - **6.1.** Dispose of excess drilling mud, cuttings and other waste materials at an adequately sized disposal

facility located away from the water to prevent it from entering the watercourse.

7. Monitor the watercourse to observe signs of surface migration (frac-out) of drilling mud during all phases of construction.

#### **Emergency Frac-out Response and Contingency Planning**

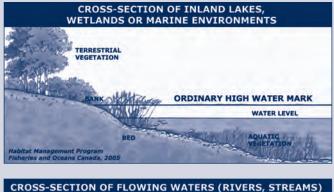
- 8. Keep all material and equipment needed to contain and clean up drilling mud releases on site and readily accessible in the event of a frac-out.
- 9. Implement the frac-out response plan that includes measures to stop work, contain the drilling mud and prevent its further migration into the watercourse and notify all applicable authorities, including the closest DFO office in the area (see Ontario DFO office list). Prioritize clean up activities relative to the risk of potential harm and dispose of the drilling mud in a manner that prevents re-entry into the watercourse.
- **10.** Ensure clean up measures do not result in greater damage to the banks and watercourse than from leaving the drilling mud in place.
- Implement the contingency crossing plan including measures to either re-drill at a more appropriate location or to isolate the watercourse to complete the crossing at the current location. See *Isolated or Dry Open-cut Stream Crossings* Operational Statement for carrying out an isolated trenched crossing.
- **12.** Stabilize any waste materials removed from the work site to prevent them from entering the watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with preferably native grass or shrubs.
- 13. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent erosion and to help seeds germinate. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.
  - **13.1.** Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

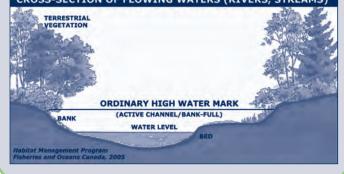
#### **Definition:**

**Ordinary high water mark** – The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the "active channel/bank-full level" which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial

vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (Full Supply Level).

For the Great Lakes this refers to the 80th percentile elevation above chart datum as described in DFO's *Fish Habitat and Determining the High Water Mark on Lakes.* 





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#### Burlington

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#### Aussi disponible en français

http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/ modernizing-moderniser/epmp-pmpe/index\_f.asp

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## **TIMING WINDOWS**

### **Fisheries and Oceans Canada Ontario Operational Statement**

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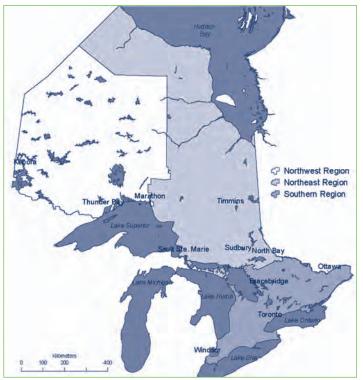
#### **ONTARIO IN-WATER CONSTRUCTION TIMING** WINDOW GUIDELINES FOR THE PROTECTION **OF FISH AND FISH HABITAT**

Restricted activity timing windows are just one of many measures used to protect fish and fish habitat when carrying out a work or undertaking in or around water. Be sure to follow all of the measures outlined in the Operational Statements to avoid negative impacts to fish habitat.

Restricted activity timing windows are applied to protect fish from impacts of works or undertakings in and around water during spawning migrations and other critical life history stages. In Ontario, the Ministry of Natural Resources (MNR) has the responsibility for setting timing window guidelines. These guidelines are determined on a case by case basis according to the species of fish in the water body, whether those fish spawn in the spring or fall, and whether the water body is located in the Northwest, Northeast or Southern Region of Ontario.

The timing windows in Table 1 identify periods when **no** in-water work is allowed, except with permission (see measure #5) and the implementation of protective measures.

Note that the restricted activity timing windows below only apply to projects completed using an Operational Statement. Timing windows identified on Conservation Authority permits, MNR work permits or DFO Fisheries Act authorizations may differ and take precedence.



## Figure 1:

**Ontario's Northwest, Northeast and Southern Region** boundaries for determining application of restricted activity timing windows.

### **How To Determine Timing Windows**

- Determine the fish species living in the water body where you 1. wish to do work. Consult your Ontario Ministry of Natural Resources, Conservation Authority, Parks Canada (if the project is located within an area under its jurisdiction, including the Trent-Severn Waterway and Rideau Canal), or Fisheries and Oceans Canada (DFO) office.
- 2. Determine if the water body is located in the Northwest, Northeast or Southern Region of Ontario according to Figure 1.
- Use Table 1 to determine the in-water restricted activity 3. timing windows according to the location of the waterbody and all of the species of fish found within that waterbody (spring or fall spawners).
- For water bodies with more than one species, the most 4 restrictive timing windows should be combined for all species present (e.g. for a water body with both walleye and bass in Southern Region, the combined timing window should be: Mar. 15 to July 15).
- 5. If the intended work cannot be conducted outside of the timing windows below, please contact your local Conservation Authority, DFO or Parks Canada office (if the project is located within an area under its jurisdiction), as appropriate, for other options.



#### Table 1:

Restricted Activity timing windows for the protection of spawning fish and developing eggs and fry. Dates represent the period of time when NO in-water work should occur. Regional boundaries are shown in Figure 1.

Spawning Period	Fish Species	Northwest Region	Northeast Region	Southern Region
Spring	Walleye Northern Pike Lake Sturgeon Muskellunge Large/Smallmouth Bass Rainbow Trout Other/Unknown Spring Spawning Species	Apr. 1 to June 20 Apr. 1 to June 15 May 1 to June 30 May 1 to July 15 May 15 to July 15 Apr. 1 to June 15 Apr. 1 to June 15	Apr. 1 to June 20 Apr. 1 to June 15 May 1 to July 15 May 15 to July 15 May 15 to July 15 Apr. 1 to June 15 Apr. 1 to June 15	Mar. 15 to May 31 Mar. 15 to May 31 May 1 to June 30 Mar. 15 to May 31 May 1 to July 15 Mar. 15 to June 15 Mar. 15 to July 15
Fall	Lake Trout Brook Trout Pacific Salmon Lake Whitefish Lake Herring Other/Unknown Fall Spawning Species	Sept. 1 to May 31 Sept. 1 to June 15 Sept. 1 to June 15 Sept. 15 to May 31 Oct. 1 to May 31 Sept. 1 to June 15	Sept. 1 to May 31 Sept. 1 to June 15 Sept. 1 to June 15 Sept. 15 to May 15 Oct. 1 to May 31 Sept. 1 to June 15	Oct. 1 to May 31 Oct. 1 to May 31 Sept. 15 to May 31 Oct. 15 to May 31 Oct. 15 to May 31 Oct. 15 to May 31 Oct. 1 to May 31

#### FISHERIES AND OCEANS CANADA OFFICES IN ONTARIO

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http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/ modernizing-moderniser/epmp-pmpe/index\_f.asp

DFO/2007-1329

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This Operational Statement (Version 3.0) may be updated as required by Fisheries and Oceans Canada. It is your responsibility to use the most recent version. Please refer to the Operational Statements web site at <a href="http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/index\_e.asp">http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/habitat/modernizing-moderniser/epmp-pmpe/index\_e.asp</a> to ensure that a more recent version has not been released.

### MAINTENANCE OF RIPARIAN VEGETATION IN EXISTING RIGHTS-OF-WAY

### Fisheries and Oceans Canada Ontario Operational Statement

#### Version 3.0

Rights-of-way are areas of land devoted to providing transportation corridors (e.g., highways, railways) or utilities (e.g., pipelines, power lines, water lines) that often intersect waterways. Vegetation is closely managed in these areas to prevent disruption to transportation or utilities (e.g., circuit outages, fires) and to ensure personal safety. Maintenance activities include mowing, brushing, topping and slashing of terrestrial vegetation. This Operational Statement applies only to existing rights-of-way at the location where they intersect and cross a water body.

Riparian areas are the vegetated areas adjacent to a water body and directly contribute to fish habitat by providing shade, cover and food production areas. Riparian areas are also important because they stabilize stream banks and shorelines. In order to minimize disturbance to fish habitat and prevent bank erosion, it is important to retain as much riparian vegetation as possible, especially the vegetation directly adjacent to the watercourse, in the right-of-way corridor.

Activities carried out to maintain riparian vegetation in existing rights-of-way can negatively impact fish and fish habitat by causing excessive loss of riparian vegetation, erosion and sedimentation, disturbance to the banks and the bottom of the water body from use of heavy equipment, and introduction of deleterious substances as a result of inadequate containment of spoil piles and improper maintenance of equipment.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the *Fisheries Act* no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the *Fisheries Act*.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to be incorporated into your project in order to avoid negative impacts to fish habitat. You may proceed with your right-of-way maintenance project without a DFO review when you meet the following conditions:

- the work involves the maintenance of vegetation in an existing right-of-way for a transportation or utility corridor and not construction of a new right-of-way,
- it is an existing right-of-way at the location where it intersects and crosses a water body,

- it involves the use of vegetative maintenance techniques that allow the root system to stay intact, to help bind the soil and encourage rapid colonization of low-growing plant species, and
- you incorporate the Measures to Protect Fish and Fish Habitat when Maintaining Riparian Vegetation in Rights-ofway listed below in this Operational Statement.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact your Conservation Authority, or the DFO office in your area (see Ontario DFO office list) or Parks Canada if the project is located within its jurisdiction, including the Trent-Severn Waterway and the Rideau Canal, if you wish to obtain an opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

You are required to respect all municipal, provincial or federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with the Species at Risk Act (www.sararegistry.gc.ca). If you have questions regarding this Operational Statement, please contact one of the agencies listed above.

We ask that you notify DFO, preferably 10 working days before starting your work by filling out and sending the Ontario Operational Statement notification form (**www.dfo-mpo.gc.ca/ regions/central/habitat/os-eo/prov-terr/index\_e.htm**) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

### Measures to Protect Fish and Fish Habitat when Maintaining Riparian Vegetation in Rights-of-way

- 1. While this Operational Statement does not cover the complete clearing of riparian vegetation, the alteration (e.g., topping and pruning) of select plants may be necessary to meet operational and safety needs.
- 2. Combined maintenance activities (e.g., mowing, brushing, topping, slashing, etc.) will affect no more than one third (1/3) of the total woody vegetation, such as trees and



shrubs, in the right-of-way within 30 metres of the ordinary high water mark (see definition below) in any given year.

- **3.** When practicable, alter riparian vegetation in the right-ofway by hand. If machinery must be used, operate machinery on land and in a manner that minimizes disturbance to the banks of the water body.
  - **3.1.** Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
  - **3.2.** Wash, refuel and service machinery and store fuel and other materials for the machinery, which include hand tools, at locations away from the water to prevent any deleterious substance from entering the water body.
  - **3.3.** Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.
  - **3.4**. Restore banks to original condition if any disturbance occurs.
- 4. Machinery fording the watercourse to bring equipment required for maintenance to the opposite side is limited to a one-time event (over and back) and should occur only if an existing crossing at another location is not available or practical to use. A *Temporary Stream Crossing* Operational Statement is also available.
  - **4.1.** If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage.
  - **4.2.** Grading of the stream banks for the approaches should not occur.
  - **4.3.** If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation are likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.
  - **4.4.** The one-time fording should prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows (see the *Ontario In-Water Construction Timing Windows*).
  - **4.5.** Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.
- 5. When altering a tree that is located on the bank of a water body, ensure that the root structure and stability are maintained.
- 6. Stabilize any waste materials removed from the work site to prevent them from entering the water body. This could include covering spoil piles with biodegradable mats or tarps. All long-term storage of waste materials should be kept outside of the riparian area.
- 7. In order to prevent erosion and to help seeds germinate, vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch. If there is insufficient time remaining in the

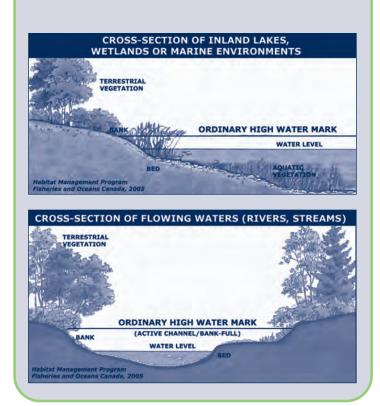
growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.

7.1. Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

#### **Definition:**

**Ordinary high water mark** – The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the "active channel/bank-full level" which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (Full Supply Level).

For the Great Lakes this refers to the 80th percentile elevation above chart datum as described in DFO's *Fish Habitat and Determining the High Water Mark on Lakes.* 



#### FISHERIES AND OCEANS CANADA OFFICES IN ONTARIO

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# APPENDIX C PUBLIC AND AGENCY CONSULTATION

Names and addresses of private individuals not included to comply with the Freedom of Information and Protection of Privacy Act

## *Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA and Preliminary Design Contact List, November 21, 2011*

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1915. Dilca		· · ·		A/Environmental Supervisor, Environment &							
Ms. Beaulieu	Linda	Transport Canada Ontario-Region Aboriginal Affairs and Northern Developmen	Environmental Affairs, Programs Branch nt Office of the Federal Interlocuter for Métios and N	Engineering on-	4900 Yonge Street, Suite 300	North York, ON	M2N 6A5	416-952-0475 416-952-0514	linda.beaulieu@tc.on.ca		
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## *Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA and Preliminary Design Contact List, November 21, 2011*

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			7. 0	Cottagers/Subdivision Assoc	iations, Developers							
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## *Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA and Preliminary Design Contact List, November 21, 2011*

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	Riesberry	Bill	Bluewater Properties			72838 ARCHAMBAULT STREET RR2	ZURICH ON	NOM 2T0			
	Mungar	Martha	Copper's Cove			RR 2	ZURICH ON	N0M 2T0			mkmungar@hay.net
	Evans	Bob	Antoinette's Lane Association			25332 Nairn Road, RR 3	DENFIELD ON	N0M1P0	519-666-2368		bob.evans@sihclondon.on.ca
	Heitzmann	Werner	Vista Beach			RR 2	ZURICH ON	N0M 2T0			werma@hay.net
	Higgins	Stewart	Higgins Engineering Limited			Suite 306, 416 Moore Avenue	TORONTO ON	M4G 1C9			



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#### HIGHWAY 21 CORRIDOR SANITARY SEWAGE COLLECTION SYSTEM CLASS ENVIRONMENTAL ASSESSMENT (EA) & PRELIMINARY DESIGN

#### **Project Initiation Notice**

The 2006 "Grand Bend and Area Sanitary Sewage Servicing Master Plan" recommended that the Bluewater lakeshore area from Huron Road 83 to Huron Road 84 and the hamlet of Dashwood be serviced by a municipal sanitary sewage collection system. The Potential Service Area in Bluewater is shown on the map. To implement the recommendations of the Master Plan, the Municipality of Bluewater has initiated a Class EA and Preliminary Design study of the proposed collection system.

As required by the *Municipal Class Environmental Assessment* (2007) for a Schedule 'B' project, the study consists of the following major components:

- Phase 1, "Problem/Opportunity Identification Review/Update", will confirm the need for sanitary sewage servicing improvements, based on population/sewage flow projections, soils investigations, Provincial, County and local servicing policies and a survey of septic systems in the Potential Service Area
- Phase 2, "Refine Sanitary Sewage Servicing Solution", will:
  - Refine the potential Service Area and the timing of improvements
  - Recommend the type, location and sizing of the collection system, including pumping stations
  - Recommend a route for the forcemain to connect the Bluewater collection system through the Municipalities of South Huron and Lambton Shores to the Grand Bend Sewage Treatment Facility in Lambton Shores, as shown on the map



- *Preliminary Design* of the proposed collection system, including construction costs and phasing
- Schedule 'B' Environmental Screening will assess the impacts of the project and identify measures to mitigate adverse impacts.

**Public and Agency Consultation** will occur throughout the project. Public Information Centre 1 (PIC 1), to present the findings of Phases 1 and 2, is tentatively scheduled for July 2010. PIC 2 will be held towards the end of the project in 2011 to present the recommended Preliminary Design.

If you have any comments, questions or concerns or would like to be added to our Contact List, please contact the following by **May 28, 2010**:

Brent Kittmer Utilities Superintendent Municipality of Bluewater 14 Mill Avenue, P.O. Box 250 Zurich, Ont. NOM 2T0 Tel: 519-236-4351, Ext. 221 Fax: 519-236-4329 b.kittmer@town.bluewater.on.ca Janet Smolders, MCIP Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

The *Freedom of Information and Protection of Privacy Act* applies to information gathered for this project. With the exception of personal information, all comments will become part of the public record.



×



Affaires indiennes et du Nord Canada Affairs Canada

Indian and Northern

www.ainc.gc.ca

www.inac.gc.ca

RECEIVED OCT 1 8 2010 DILLON, LONDON

Notre référence - Our file

Janet Smolders **Project Manager Dillon Consulting** 130 Dufferin London, Ontario N6A 5R2

Dear Ms. Smolders:

### Re: Highway 21 Corridor Sanitary Sewage Collection System Class EA & **Preliminary Design**

I am writing in response to your letter of September 1<sup>st</sup>, 2010 addressed to Mr. Marc-Andre Millaire inquiring about any claims that may affect the subject property. I regret that we were unable to respond earlier.

We can inform you that our inventory includes active litigation in the vicinity of this property. They are: Chippewas of Kettle and Stoney Point v. Her Majesty the Queen in Right of Canada as represented by Attorney General of Canada and Minister for Department of Indian Affairs and Northern Development, Corporation of Township of Bosonquet, Paul Hendrick Wilmink, Joanne Cecilia Wilmink, Joyce Van Geel, Martha Jean Morrison, Paul L. Winger, Agnes J. Winger, Leon Edward, St. John, Margaret J. St. John, Daniel Albert Vincent Rusciolelli, Rachel Emma Rusciolelli, Domenico Abrogio, Maurina Ambrogio, William Walter Ellison, Gail Ann Ellison, National Trust Company, Joseph John Huybers, Joanne Maria Huybers, Karl Huetter, Inge Huetter, Annie Jeanette Dunston, Grace Marie Lasenby, Jack Harold Lasenby, Amin Mussani (in Trust), Donald Bruce Grav. Juliaan Alfons D'Hanyns, Simonne Clara D'Hanyns, Brian Bernard McGowan, Margaret Ann McGowan, Mary Lou LaPratte, Christopher Thomas Allan King, William John Harkness, Frances Curry Harkness, Barbara L. St. Louis, Eugene M. Sorin, Bank of Montreal, Frank Thoren, Cynthia Marie Thoren, The Toronto-Dominion Bank, Daniel Leo Bosnak, Ellen J. Bosnak, Edward G. Paschalidis, Veronika E. Paschalidis, Jack Malcolm Galbraith, Margaret Irene Galbraith, John Archibald Pedden, Dorothy Harriet Pedden, Gloria Ann Redmond, Carolyn Jane Sheprak, Diana Mary Susan Sheprak, Lotte Nachtnebel, Josef Szela, Erika Szela, Roy Francis Giroux, Madonna Giroux, Derek Leslie Barker, Nan Francis Barker, George C. Wallis, Janet Wallis, Bernardus Josephus Veel, Hendrika Petronella Veel, St. Willibrord Community Credit Union Limited, David A. Voll,



Diane M. Voll, CIBC Mortgage Corporation, Pierre Conrad Morisset, 876709 Ontario Ltd. Court file reference #C22725

Walpole Island First Nation, Bkejwanong Territory v. Attorney General of Canada, Her Majesty the Queen in Right of Ontario, Ontario Superior Court of Justice, filed in Toronto, court file #00-CV-189329;

Chippewas of Sarnia v. CN Railway, CN Realties, Great Western Railway, Attorney General of Canada, Supreme Court of Canada, filed in Toronto, court file #95-CU-92484.

I am unable to comment with respect to the possible effect of these claims as the cases have not yet been adjudicated and any statement regarding the outcome of the litigation would be speculative at this point. It is recommended that you consult legal counsel as to the effect these actions could have on the lands you are concerned with.

If you are interested in further details about these claims, copies of the pleadings can be obtained from the Court for a fee. Please contact the appropriate Court Registry Office and make reference to the court file numbers listed above.

We cannot make any comments regarding claims filed under other departmental policies. For information on any claims you should also contact Don Boswell of the Specific Claims Branch at (819) 953-1940 to inquire about any Specific Claims. To inquire about any current Comprehensive Claims, please contact Nicole Cheechoo of Treaty and Aboriginal Government Central Operations at (819) 997-3499.

If you have any further questions please do not hesitate to contact me at (819)994-1947. Also, please note that all future requests of this nature should no longer be addressed to Marc-André Millaire. Instead, could you kindly modify your distribution list to send these requests to the following destination:

Josée Beauregard, Ontario/Nunavut Team Indian and Northern Affairs LITIGATION MANAGEMENT AND RESOLUTION BRANCH 25 Eddy Street Gatineau, Quebec K1A 0H4

Sincerely,

cours

Josée Beauregard Litigation Team Leader Eastern Litigation Directorate Litigation Management and Resolution Branch

DISCLAIMER: In this Disclaimer, "Canada" means Her Majesty the Queen in right of Canada and the Minister of Indian Affairs and Northern Development and their servants and agents. Canada does not warrant or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any data or information disclosed with this correspondence or for any actions in reliance upon such data or information or on any statement contained in this correspondence. Data and information is based on information in departmental records and is disclosed for convenience of reference only. Canada does not act as a representative for any Aboriginal group for the purpose of any claim. Information from other government sources and private sources (including Aboriginal groups) should be sought, to ensure that the information you have is accurate and complete. Highway 21 Corridor Sanitary Sewage Collection System Class EA, Municipality of Bluewater - NEAT... Page 1 of

#### Smolders, Janet

From:	Mitchell, Heather [heather.mitchell@tc.gc.ca]
Sent:	Friday, April 30, 2010 2:10 PM
То:	Smolders, Janet
Subject:	Highway 21 Corridor Sanitary Sewage Collection System Class EA, Municipality of Bluewater - NEATS 22964
	NWP_App_Guide_EN.pdf

Thank you for your letter regarding the above referenced environmental assessment. Please in future forward correspondence on this environmental assessment to the undersigned.

We have reviewed the information, and note the following:

Transport Canada is responsible for the administration of the *Navigable Waters Protection Act*, which prohibits the construction or placement of any "works" in navigable waters without first obtaining approval. If any of the related project elements or activities may cross or affect a potentially navigable waterway, you are requested to prepare and submit an application in accordance with the requirements as outlined in the attached Application Guide. Any questions about the NWPA application process should be directed to the Navigable Waters Protection Program at 1-866-821-6631 or NWPontario-PENontario@tc.gc.ca.

Please note that certain approvals under the *Navigable Waters Protection Act* or *Railway Safety Act* trigger the requirement for a federal environmental assessment under the Canadian Environmental Assessment Act. You may therefore wish to consider incorporating CEAA requirements into your provincial environmental assessment.

<<NWP\_App\_Guide\_EN.pdf>>

Please contact me should you wish to discuss this further.

Regards,

#### **Environmental Assessment Coordinator**

Transport Canada, Ontario Region Environment & Engineering (PHE) 4900 Yonge St., 4th Fl., Toronto, ON M2N 6A5 Email: <u>EnviroOnt@tc.gc.ca</u>

A Please consider the environment before printing this email,

#### **Ministry of Aboriginal Affairs**

160 Bloor St. East, 9<sup>th</sup> Floor Toronto, ON M7A 2E6 Tel: (416) 326-4740 Fax: (416) 325-1066 www.aboriginalaffairs.gov.on.ca Ministère des Affaires Autochtones

160, rue Bloor Est, 9<sup>e</sup> étage Toronto ON M7A 2E6 Tél. : (416) 326-4740 Téléc. : (416) 325-1066 www.aboriginalaffairs.gov.on.ca



OCT 2 5 20,0

Janet Smolders Dillon Consulting Box 426 London, Ontario N6A 4W7

Reference: OCMS #2010-315

RECEIVED

DILLON, LONDON

#### Re: Municipality of Bluewater – Highway 21 Corridor Sanitary Sewer

Dear Ms. Smolders:

Thank you for your inquiry regarding the above noted project.

The responsibilities of the Ministry of Aboriginal Affairs (MAA) include conducting land claim and related negotiations on behalf of the Province. MAA can provide you with information about land claims that have been submitted to the Ministry, are currently in active negotiations, or are being implemented. We can also advise as to whether there is any litigation with an Aboriginal community that may be relevant to your project.

You should also be aware that many First Nations and Métis communities either have or assert rights to hunt and fish in their traditional territories. These territories often include lands and waters outside of a First Nation reserve. As well, in some instances project work may affect archaeological and burial sites. Aboriginal communities with an interest in such sites may include communities other than those in the vicinity of the proposed project.

With respect to your project, we have reviewed the brief materials you have provided, and can advise that the project appears to be located in an area where First Nations and may have existing or asserted rights that could be impacted by your project. Contact information is below:

Bkejwanong Territory (Walpole Island) R.R. #3 WALLACEBURG, Ontario N8A 4K9	Chief Joseph Gilbert (519) 627-1481 (Fax) 627-0440 <u>Joseph.gilbert@wifn.org</u>
Chippewas of Kettle & Stony Point 53 Indian Lane, R.R. #2 FOREST, Ontario N0N 1J0	Chief Elizabeth J. Cloud (519) 786-2125 (Fax) 786-2108 Faye.jackson@kettlepoint.org
Aamjiwnaang First Nation (Sarnia) 978 Tashmoo Avenue SARNIA, Ontario N7T 7H5	Chief Chris Plain (519) 336-8410 (Fax) 336-0382 <u>CPlain@aamjiwnaang.ca</u>

MAA is not the approval or regulatory authority for this project. To determine what consultation with Aboriginal communities may be required, please consider the information provided in this letter in light of the legislative, regulatory and policy framework for your project. Should you have any questions, please contact the appropriate ministry.

The Government of Canada sometimes receives claims that Ontario does not receive, or with which Ontario does not become involved. For information about possible claims in the area, MAA recommends the proponent contact the following federal contacts:

Ms. Janet Townson A/ Claims Analyst, Ontario Team Specific Claims Branch Indian and Northern Affairs Canada 1310-10 Wellington St. Gatineau, QC K1A 0H4 Tel: (819) 953-4667 Fax: (819) 997-9873 Mr. Sean Darcy Manager Assessment and Historical Research Indian and Northern Affairs Canada 10 Wellington St. Gatineau, QC K1A 0H4 Tel: (819) 997-8155 Fax: (819) 997-1366

For federal information on litigation contact:

Mr. Marc-André Millaire Litigation Team Leader for Ontario Litigation Management and Resolutions Branch Indian and Northern Affairs Canada 10 Wellington St. Gatineau, QC K1A 0H4 Tel: (819) 994-1947 Fax: (819) 953-1139

Additional details about your project or changes to it that suggest impacts beyond what you have provided to date may necessitate further consideration of which Aboriginal communities should be contacted. If you think that further consideration may be required, please bring your inquiry to whatever government body oversees the regulatory process for your project.

You should also be aware that information upon which the above comments are based is subject to change. First Nation or Métis communities can make assertions at any time, and other developments can occur that might require additional communities to be notified.

Yours truly,

Neather Levecque Manager, Consultation Unit Aboriginal Relations and Ministry Partnerships Division



APR 2 9 2010

**OMAFRA LONDON** 

#### HIGHWAY 21 CORRIDOR SANITARY SEWAGE COLLECTION SYSTEM CLASS ENVIRONMENTAL ASSESSMENT (EA) & PRELIMINARY DESIGN

Please fill out this form and return it to Dillon Consulting Limited.

Þ	I/we would like to be kept informed about this project. The contact name and address is: CAROL NEUMANN RURAL PLANNER
	6484 WELLINGTON BOAD 7
	ELORA, ON NOB 150
	Phone: 519-846-3393
	E-mail: carol. neumann @ ontario. ca
	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
Comn	nents/Questions/Concerns:
_ <del>_</del> _	LEASE REMOVE DREW CRINKLAW
6	Rom MALLING UST.
	-THANKS !
	-

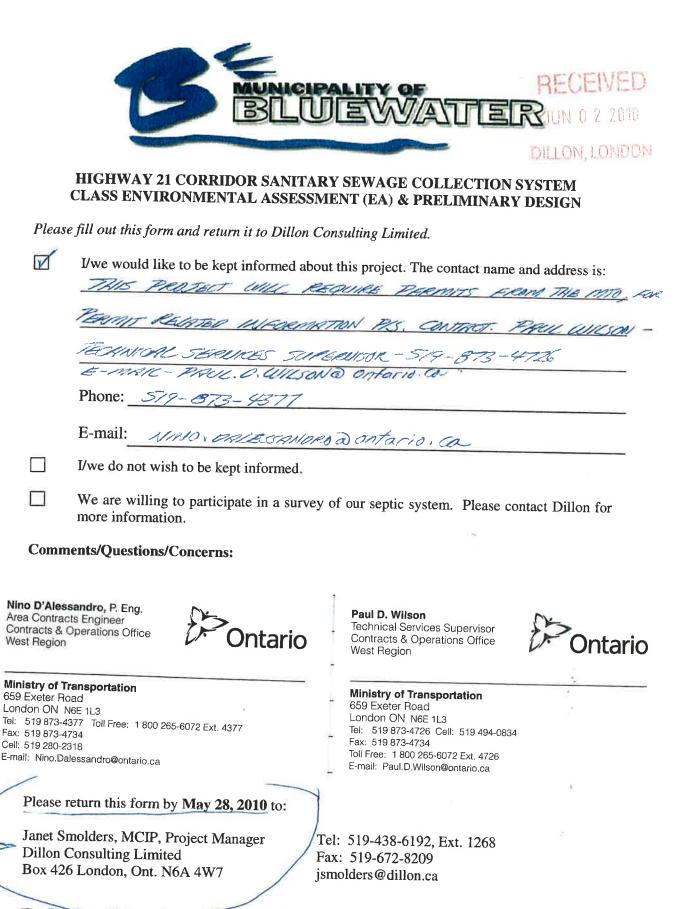
Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7

Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

The Freedom of Information and Protection of Privacy Act applies to information gathered for this project. With the exception of personal information all comments will become part of the public record.





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#### MUNICIPALITY OF BLUEWATER HIGHWAY 21 CORRIDOR SANITARY SEWAGE COLLECTION SYSTEM CLASS EA AND PRELIMINARY DESIGN

#### **MINUTES OF MEETING WITH MTO**

DATE: March 9, 2010

TIME: 1:30 p.m.

LOCATION: MTO Boardroom 2B

- PRESENT:
   Kevin Boudreau, Field Services Engineer
   ) Ministry of Transportation, Ontario

   Conor Byrne, Technical Services Officer
   )

   Richard Vanden Boorn, Regional Operations Officer
   )

   Bill Boussey
   ) Dillon Consulting Limited

   Emily Roadhouse
   )

   PURPOSE:
   Highway 21 R.O.W. and Municipal Infrastructure

   FILE:
   10-3169
- Action By Item
- Dillon Dillon provided an overview of recently completed and current Class EA and Preliminary Design projects related to the Grand Bend and Area Sanitary Sewage Servicing Master Plan (2006) within the Municipalities of Bluewater (Zone 1), South Huron (Zone 2) and Lambton Shores (Zones 3 and 4). Servicing of the Pinery Provincial Park is now complete, including a crossing of Highway 21 (within the hydro easement).

During Detailed Design, it is likely that some areas will require pipe installations within the MTO Highway 21 right-of-way (ROW). Where possible an easement would be obtained from property owners, but in some cases this may not be possible in all cases. Potential "problem" areas include:

- Bluewater/South Huron connection (location to be determined in recently initiated Class EA's)
- o Individual connecting pieces within Zone 3
- o North of Greenway to Klondyke within Zone 4

Dillon noted that if installations within the ROW are not allowed, multiple linear crossings would be required along Highway 21.

A map of the Master Plan Study Area was provided to MTO.

MTO MTO noted that St. Joseph/Highway 84 is the northern limit for the MTO London office's jurisdiction.

Action By	Item
	Highway crossings are easier for MTO to deal with and are preferred by the Ministry. Notification to MTO should be initiated early in the design phase to allow for negotiations and internal review of any request(s) for property within the ROW.
Dillon	The Contact List for the Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA will include Head of Corridor Management and Manager of Contracts and Operations. Conor Byrne may also be included for this project.

#### NEXT MEETING

No additional meetings are currently scheduled.

#### ERRORS AND/OR OMISSIONS

These minutes were prepared by Emily Roadhouse, who should be notified immediately of any errors and/or omissions.

#### DILLON CONSULTING LIMITED LONDON, ONTARIO

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#### DISTRIBUTION:

E-Mail All Present Brent Kittmer, Municipality of Bluewater Peggy Van Mierlo-West, Municipality of Lambton Shores JMS WWI/RFK



Public Works Department

1 Court House Square, Goderich ON N7A 1M2 **Phone:** 519-524-8394 ext 504 **Fax:** 519-524-9291 **Toll Free:** 1-888-524-8394 ext 504 www.huroncounty.ca

RECEIVED MAY 0 4 2010 DILLON, LONDON

April 30, 2010

Janet Smolders, MCIP Dillon Consulting Limited Box 426 London, ON N6A 4W7

#### <u>Re: Highway 21 Corridor Sanitary Sewage Collection System Class Environmental</u> <u>Assessment (EA) & Preliminary Design</u>

Dear Janet,

Please add the County of Huron to you contact list for the above noted project. Our address is:

County of Huron Dave Laurie, Director of Public Works 1 Courthouse Square Goderich, ON N7A 1M2

Yours truly,

anon Mann 0

Suzanne Renon Administrative Assistant Public Works Department



Please fill out this form and return it to Dillon Consulting Limited.

z.	AUSAIBLE BARFFIED CONSOLVATION AUTHORITY	
	Phone: 519-235-2610	
	E-mail: gcade@abca.on.ca.	
	I/we do not wish to be kept informed.	
	We are willing to participate in a survey of our septic system. Please contact Dillon more information.	fo
	ments/Questions/Concerns:	
	ments/Questions/Concerns:	
se	return this form by May 28, 2010 to: molders, MCIP, Project Manager Tel: 519-438-6192, Ext. 1268	

With the exception of personal information all comments will become part of the public record.

DILLON CONSULTING

BLUEWATER	RECEIVED MAY 0 4 2010
	ILLON, LONDON

Please fill out this form and return it to Dillon Consulting Limited.

Ø	I/we would like to be kept informed about this project. The contact name and address is: Lake Huron Water Supply System
	235 North Gentre Rd., Soite 200, London N5X 4ET
	Attn: Andrew Henry, Division Manager
	Phone: 519-930-3505 ext. 1355
	E-mail: AHENRY @ London, Ca
	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
Comm	ents/Questions/Concerns:
Wo	ster treatment plant located within South Huron
00	Huy 21 2 Waterworks Rd. We are interested is
-the	2 saniterry server system will be on waterworks Rd
(mu	micipal boundary between South Huron & Blueinater) or
01	Huyal in South Huron.

Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7

Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca





Please fill out this form and return it to Dillon Consulting Limited.

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I/we would like to be kept informed about this project. The contact name and address is:

Phone: E-mail:

I/we do not wish to be kept informed.

We are willing to participate in a survey of our septic system. Please contact Dillon for more information.

Comments/Questions/Concerns:

Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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17.1



DEC 2 1 2010 DILLON, LONDON

December 6, 2010

Dillon Consulting 130 Dufferin Avenue London, ON N6A 5R2

Your File No: 10-3169

#### Attn: Janet Smolders, MCIP Project Manager

Dear Ms. Smolders:

#### RE: Highway 21 Corridor Sanitary Sewage Collection System <u>Class EA & Preliminary Design</u>

Thank you for your letter of dated September 1, 2010.

Southern First Nations Secretariat has not been delegated any consultation authority by our member First Nations. The Duty to Consult obligation is between The Crown and the First Nations.

We have attached a list of the appropriate member First Nations and their contact information so you may contact the respective First Nations directly.

If you require any further clarification, please contact myself at (519) 692-5868, Ext. 242 or Kimberly Snake at Ext. 234.

Yours truly,

Michael J. George Executive Director SOUTHERN FIRST NATIONS SECRETARIAT

(1) Attach

cc: Robert Olivier, P. Eng., Southern First Nations Secretariat cc: Chief Louise Hillier, Caldwell First Nation, Chief Joe Miskokomon, Chippewas of the Thames, Chief Greg Peters, Delaware Nation, Chief Patrick Waddilove, Munsee-Delaware Nation, Chief Joel Abram, Oneida Nation of the Thames, Chief Chris Plain, Aamjiwnaang First Nation

> 22361 Austin Line Bothwell, Ontario N0P 1C0 Tel: (519) 692-5868 Fax: (519) 692-5976 Toll Free: 1-800-668-2609 Post Secondary Fax: (519) 692-3062 www.sfns.on.ca

# **Contact Information for First Nations**

# Aamjiwnaang First Nation

978 Tashmoo Ave Sarnia, ON N7T 7H5 **Chief Chris Plain** ~ <u>cplain@aamjiwnaang.ca</u> Chris cell # 519-464-8410 **A/Band Administrator – Kelly Williams** – <u>Kwilliams@aamjiwnaang.ca</u> (519) 336-8410 ~ Telephone (519) 336-0382 ~ Fax

### **Caldwell First Nation**

P.O. Box 388 Leamington, ON N8H 3W3 Chief Louise Hillier ~ <u>wlh@porchlight.ca</u> Work #: 519-966-1656, Ext. 4276 Cell #: 519-322-9804 Cell #: 519-322-1766 Band Administrator Melody Watson ~ <u>mdwatson@mnsi.net</u> (519) 326-6914 ~ Telephone (519) 322-1533 ~ Fax

# Chippewas of Kettle and Stony Point First Nation

6247 Indian Lane RR #2 Forest, ON NON 1J0 **Chief Elizabeth Cloud** ~ <u>liz.cloud@kettlepoint.org</u> Cell #: 519-466-0274 **KP Assistant: Toni George** – <u>KPAssistant@kettlepoint.org</u> **Band Administrator Mark French** - <u>Mark.French@kettlepoint.org</u> (519) 786-2125 ~ Telephone (519) 786-2108 ~ Fax Health Centre # 519-786-5674

### Chippewas of the Thames First Nation

320 Chippewa Road Muncey, ON N0L 1Y0

> Chief Joe Miskokomon ~ jmiskokomon@cottfn.ca or chiefjoe@sympatico.ca Cell #: 519-318-9503 Secretary: Candace Deleary ~ cdeleary@cottfn.ca (maternity leave Sept 2010) Acting Band Administrator Brenda French ~ bfrench@cottfn.ca (519) 289-5555 ~ Telephone (519) 289-2230 ~ Fax

#### **Delaware Nation**

14750 Schoolhouse Line Thamesville, ON N0P 2K0 **Chief Greg Peters** ~ <u>gcpeters@mnsi.net</u> Cell # 519-355-6832 **Executive Assistant to Chief: Cathy Stonefish** – <u>castonefish@xplornet.com</u> **Director of Operations Denise Stonefish** ~ <u>dstonefish@xplornet.com</u> (519) 692-3936 ~ Telephone (519) 692-5522 ~ Fax

#### Munsee-Delaware Nation

289 Jubilee Road RR #1 Muncey, ON N0L 1Y0

Chief Patrick Waddilove ~ <u>pwaddilove@munsee.on.ca</u> Band Administrator Paul Henry ~ <u>band.manager@munsee.on.ca</u> (519) 289-5396 ~ Telephone (519) 289-5156 ~ Fax

### **Oneida Nation of the Thames**

2212 Elm Ave Oneida, ON NOL 2G0 Chief Joel Abram ~ joel.abram@oneida.on.ca cc: Holly Elijah ~ holly.elijah@oneida.on.ca Director of Operations Jessica Hill ~ jessica.hill@oneida.on.ca Assistant (Ext. 247) Laura Phillips – laura.phillips@oneida.on.ca (519) 652-3244 ~ Telephone (519) 652-2930 ~ Fax

#### **Smolders**, Janet

From: Helen.An@HydroOne.com

Sent: Monday, May 10, 2010 4:28 PM

To: Smolders, Janet

Cc: ierullo@HydroOne.com

Subject: Highway 21 Corridor Sanitary Sewage Collection System Class EA

Attachments: 20100510162831439.pdf

Dear Ms. Smolders,

In our initial review, we can confirm that there are no Hydro One Transmission Facilities in the subject area. Please find our response form in the attachment.

Please be advised that this is only a preliminary assessment based on current information. No further consultation with Hydro One Networks Inc. is required if no changes are made to the current information.

If you have any further questions or concerns, please feel free to contact me.

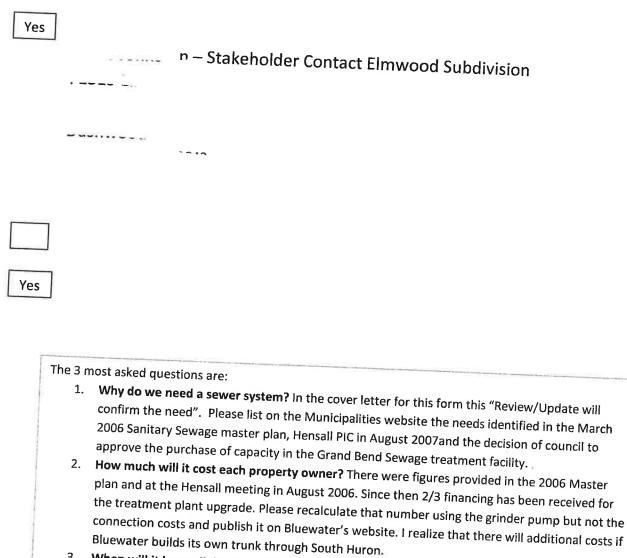
Regards,

#### **Helen An**

Transmission Lines Sustainment System Investment, Asset Management Hydro One Networks Inc. 416-345-5155 Helen.An@HydroOne.com Yes

The 3 most asked questions are:

- Why do we need a sewer system? In the cover letter for this form this "Review/Update will confirm the need". Please list on the Municipalities website the needs identified in the March 2006 Sanitary Sewage master plan, Hensall PIC in August 2007and the decision of council to approve the purchase of capacity in the Grand Bend Sewage treatment facility.
- 2. How much will it cost each property owner? There were figures provided in the 2006 Master plan and at the Hensall meeting in August 2006. Since then 2/3 financing has been received for the treatment plant upgrade. Please recalculate that number using the grinder pump but not the connection costs and publish it on Bluewater's website. I realize that there will additional costs if Bluewater builds its own trunk through South Huron.
- 3. When will it be available to me? Please use timelines to indicate the earliest and likely scenarios. Indicate the steps necessary, wait points, major approvals, etc. Again publish on the website.



3. When will it be available to me? Please use timelines to indicate the earliest and likely scenarios. Indicate the steps necessary, wait points, major approvals, etc. Again publish on the website.

	TS MUN	CIPALITY (		50	RECE
					MAY 0 4
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	HIGHWAY 21 CORRIDOR SAN CLASS ENVIRONMENTAL ASS	ESSMENT (EA) 8	& PRELIMIN	ION SYSTI NARY DESI	EM IGN
Pleas	se fill out this form and return it to Dil	llon Consulting Lim	ited.		
<b>I</b>	I/we would like to be kept informe	d about this project. TES M	The contact	name and ad	dress is:
	CIO BOB	EVANS			
	25332 NA, RI		RR3	ENFIE	ed out
	Phone: 519666	2368		Nom	1/20
	E-mail: Bob, era	ens e sil	hc.lon	don.	on ca
	E-mail: <u>best</u> et a	eas e sji	hc.lon	don.	on ca
		ed.	,		
Comm	I/we do not wish to be kept informe We are willing to participate in a s	ed.	,		
Comm	I/we do not wish to be kept informe We are willing to participate in a s more information.	ed.	,		
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Please fill out this form and return it to Dillon Consulting Limited.

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	Phone:
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Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

The *Freedom of Information and Protection of Privacy Act* applies to information gathered for this project. With the exception of personal information all comments will become part of the public record.



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Please fill out this form and return it to Dillon Consulting Limited.

	Phone:
	E-mail:
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Ø	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
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	South Huron.

Please return this form by May 28, 2010 to:

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Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca





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Please	fill out this form and return it to Dillon Consulting Limited.
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Please fill out this form and return it to Dillon Consulting Limited.

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I/we do not wish to be kept informed.

We are willing to participate in a survey of our septic system. Please contact Dillon for more information.

### **Comments/Questions/Concerns:**

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RECEIVED 11. Ms. Janet Smolders, Mc IP, Project Manager, Dillow Consulting Limited, Brd 426. Linden, Ontario, NGA HW7 Dear Ms. Smolders: Re: Proposed Sanitary Sewage Collection System. Regarding the above mentioned property, I do not have the septic tank hooked up to the toilet nor do I have the Lake Huren water system available at this property. In the event a new tenant was to occupy this home, a new weeping bed would have to be dove. I also wish to decline the availability of surers since the home is not presently occupied yours very truly, Knel (1) CC - Mr. Brent Kittmer municipality of Bluewater



Please fill out this form and return it to Dillon Consulting Limited.

	Phone: NUA IN
	* * * <b>/</b>
	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
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Please return this form by May 28, 2010 to:

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Please fill out this form and return it to Dillon Consulting Limited.

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	I/we would like to be kept informed about this project. The contact name and address is:
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Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca



#### **Smolders**, Janet

From:	
Sent:	Saturday, May 01, 2010 1:41 PM
То:	Smolders, Janet
Subject:	Hwy 21 Corridor Sewage System project - confirmation form
Attachments	: header.htm; 2913_001.pdf

Dear Ms. Smolders:

Attached is my form confirming (once again!) that I want to be kept informed of the HWY 21 Corridor Sanitary Sewage Collection System project. Could you please change your process so that we are asked if we do NOT want to be kept informed of this project and told that otherwise our names will be kept on your list of informees? I want to be kept informed until there is a sewage system attached to my property!

Thanks for your patience.

If you have received this e-mail in error or are not the named recipient, please immediately notify the sender and delete or destroy all electronic or hard copies of this e-mail. This e-mail is intended only for the receipt and use of the named recipient(s). It may contain information that is privileged, confidential or protected from disclosure under applicable law.



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Phone:	1 )			
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We are willing to participate in a survey of our septic system. Please contact Dillon for more information.

#### **Comments/Questions/Concerns:**

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Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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Please fill out this form and return it to Dillon Consulting Limited.

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Please fill out this form and return it to Dillon Consulting Limited.

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	E-mail:	-7
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Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager **Dillon Consulting Limited** Box 426 London, Ont. N6A 4W7

Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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Please fill out this form and return it to Dillon Consulting Limited.

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Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca



# RECEIVED

FEB 1 0 2010

MUNICIPALITY OF BLUEWATER

Feb 8, 2009

11111

**Bluewater Council** To: Sewage Project Re:

Does everyone have to hook up?

What about all the people who have already spent \$15-18,000.00 to put in a recommended septic system in the last few years? It would not be right to have to spend more when the lakeshore residents are already unfairly taxed.

Why is Zurich not hooking up? Their system runs into the lake. If this about the environmental concerns of the lake, what about the age old septic system north to Bayfield? What about farm runoffs close to the lake? I think we should look at the real reason for this II



Please fill out this form and return it to Dillon Consulting Limited.

	I/we would like to be kept informed about this project. The contact name and address is:	
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	Phone:	
	E-mail:	
	I/we do not wish to be kept informed.	
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.	
	ments/Questions/Concerns:	
	EMPTY RAVINE LOT - NO SEPTIC SYSTEM	4,
	NO NEED FOR SYSTEM IN FARMAREN	9
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	ONLY FOR GRAND BENDS NEEDS ANYWAY	
	NO COMMON SENSE IN THE WORLD ANY	MORE

Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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Please fill out this form and return it to Dillon Consulting Limited.

	DRIFTWOOD PARK INC. GMB 480, RR#2
	ZURICH, ON
	NOM 2TO
	Phone:
	E-mail:
	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon f more information.
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Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca





Please fill out this form and return it to Dillon Consulting Limited.

I/we would like to be kept informed about this project. The contact name and address is:

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Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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Please fill out this form and return it to Dillon Consulting Limited.

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Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca





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	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
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$\square$	I/we would like to be kept informed about this project. The contact name and address is:
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	OWNERS AND NECKBOITT TO PRE-PERPOTE
	( ? MANDATORY)

Please return this form by May 28, 2010 to:

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Please fill out this form and return it to Dillon Consulting Limited.

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The F With t	reedom of Information and Protection of Privacy Act applies to information gathered for this project. the exception of personal information all comments will become part of the public record.

DILLON CONSULUNG

Our File: 10-3169

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Please fill out this form and return it to Dillon Consulting Limited.

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	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
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Please return this form by May 28, 2010 to:

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	I/we would like to be kept informed about this project. The contact name a	nd address is:
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	roposed server system?	
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Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
mm	ents/Questions/Concerns:
8	We are willing to porticipate in survey but
	Only with more detailed information of
	what would be involved. Please inform

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7

Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
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	DON'T KNOW IF OUR SYSTEM WOULD BE OF USE IN
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Please return this form by May 28, 2010 to:

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Hessenland Country Inn RR#2 Zurich, Ontario 72981 Bluewater Highway

#### Attention: Ms. Wolfe, C.A.O., Municipality of Bluewater Municipality of Bluewater Council

RE: Letter of request to be given the option to connect to proposed sewer line project currently ending at Antoinette's Lane just north of St. Joseph, Ontario.

We the owners of Hessenland Country Inn would once again be very interested in having the opportunity to tie into the sewer line project that has been approved along Hwy #21 currently planned to end at Antoinette's Lane, just north of St. Joseph, Ontario. . Hessenland Country Inn is situated on approximately 38 acres of land just off the shores of Lake Huron north of St. Joseph, Ontario. 25 acres of this parcel of land are being considered for residential development in the future. Sewers would of course be imperative for this to happen. We contacted the Huron County Planning Department and spoke with Senior Planner Craig Metzger who advised us that approximately 100 single family units would be the maximum on a parcel of land this size. Of course this is just a rough estimate given the limited amount of information at his disposal.

Once again, we would appreciate consideration to be a part of this sewer line project and are open to meeting with and sharing information that may be required by the Municipality of Bluewater and Dillon Consulting to evaluate the feasibility of Hessenland Country Inn tying into the sewer line. We look forward to hearing from you in the near future.

Best regards, Frank Ihrig

Hessenland Country Inn T – 519 236 7707 F- 519 236 7505 1 866 543 7736 <u>hessen@hessenland.com</u> www.hessenland.com

#### Smolders, Janet

From: Higgins Engineering [higginsengineering@bellnet.ca]

Sent: Tuesday, June 08, 2010 12:34 PM

To: Smolders, Janet

Subject: Re: Highway 21 Corridor Sanitary Sewage Collection System

Janet,

Higgins Engineering Limited, Suite 306, 416 Moore Avenue, TORONTO, Ontario. M4G 1C9

We will be representing Christa Eckert who owns the 30.8 Ha. parcel at Hwy 21 & Hendrick Road. (Part of Lots 20 & 21, 72001 & 72049 Bluewater Highway)

The properties will be developed as Lakeshore Residential with an anticipated yield of several hundred units.

Accordingly, we are interested in the location, capacity and general layout of any proposed sanitary pump stations or force mains. We anticipate investigating how the proposed design will tie into any local connections via the gravity collection system we will most certainly use for most of the proposed development.

We would be quite happy to meet with you and your design team prior to your "phase 2" presentation to make sure we are all on the same course.

(We met briefly with Brent Kittmer a couple of months ago when this project was initiated).

Thank You,

Stewart Higgins, P.Eng

----- Original Message -----From: <u>Smolders, Janet</u> To: <u>Higgins Engineering</u> Sent: Tuesday, June 08, 2010 11:36 AM Subject: RE: Highway 21 Corridor Sanitary Sewage Collection System

Thanks, if you could send a land address, that would be most appreciated. Thanks, Janet



Janet Smolders, MCIP Associate Dillon Consulting Limited 130 Dufferin Avenue, Suite 1400 London, Ontario, N6A 5R2 T - 519.438.1288 ext. 1268 F - 519.672.8209 JSmolders@dillon.ca www.dillon.ca

A Please consider the environment before printing this email

From: Higgins Engineering [mailto:higginsengineering@bellnet.ca]
Sent: Tuesday, June 08, 2010 11:32 AM
To: b.kittmer@town.bluewater.on.ca
Cc: Russell Higgins; ceckert1@tcc.on.ca; Smolders, Janet
Subject: Highway 21 Corridor Sanitary Sewage Collection System

Good morning,

Would you be so kind as to add the writer to your contact list for the above noted project.



Please fill out this form and return it to Dillon Consulting Limited.

	I/we would like to be kept informed about this project. The contact name and address is:
	Phone:
	E-mail:
	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
Comm	ents/Questions/Concerns:
a	your covering letter indicated this project for
bien	in Limpo" Juice 2006. I understand the
11.	intria - 1 1 this norman to A at in 1

Lete get the mess men and get on muth the job. It seems the Cottagers keep paying to keep farmers and huge cottagers home owners happy & mosthy.

Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

The *Freedom of Information and Protection of Privacy Act* applies to information gathered for this project. With the exception of personal information all comments will become part of the public record.



#### Smolders, Janet

From:	•
Sent:	Sunday, May 02, 2010 9:57 AM
То:	Smolders, Janet
Subject:	Hwy 21 sanitary sewage
Attachments:	Sewage project communication request0001.pdf

Response attached as requested.

By the way, when I called Dillon with a question last year, no one called me back which I (as a professional project manager)considered a blemish on the professionalism of the man I called (he represented Dillon at the meeting in Hensall).

Hopefully your stakeholder management and communication management performance will be an improvement over his.

Regards,



Please fill out this form and return it to Dillon Consulting Limited.

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	Phone:						,	X
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Please return this form by May 28, 2010 to:

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Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca





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	I/we would like to be kept informed about this project. The contact name and address is:
	Phone:
	E-mail:
	I/we do not wish to be kept informed. $\mathcal{O}$
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
Comi	ments/Questions/Concerns:
	what is involved in a septic
	what is involved in a septic system survey + is there a cost?
Please	e return this form by May 28, 2010 to:
	Smolders, MCIP, Project ManagerTel: 519-438-6192, Ext. 1268n Consulting LimitedFax: 519-672-8209

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jsmolders@dillon.ca



Our File: 10-3169

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Box 426 London, Ont. N6A 4W7



Please fill out this form and return it to Dillon Consulting Limited.

g	I/we would like to be kept informed about this project. The contact name and address is:		
	*		
	- 1		
	Phone:		
	E-mail:		
	I/we do not wish to be kept informed.		
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information. No signific system on said property		
Comme	ents/Questions/Concerns:		
	he property under consideration has no		
buil	dings on it. We are in the process of		
tran	sferring said property into our daughter's		
nam			
<u>. ام</u>			
Please re	turn this form by May 28, 2010 to:		
Dillon Co	olders, MCIP, Project ManagerTel: 519-438-6192, Ext. 1268onsulting LimitedFax: 519-672-8209London, Ont. N6A 4W7jsmolders@dillon.ca		

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U	I/we would like to be kept informed about this project. The contact name and address is:
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	Phone:
	E-mail:
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	We are willing to participate in a survey of our septic system. Please contact Dillon for more information. $POSSIBAY$
Comm	ents/Questions/Concerns:
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THE	RE IS UNAWIMOUS SUPPORT ALONG
LA	KESHORE RESIDENTS.
	SPITE WHAT BSRA SPORESMAN SAYS
SU	PPORT IS NOT THERE AMOUNG
	ST RESIDENTS ALONG LAKE SHORE

Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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#### Smolders, Janet

From:Sent:Wednesday, May 26, 2010 9:43 AMTo:Smolders, JanetSubject:survey

Hi Janet

I have sent the notice by mail to your office re keeping informed of the HWY 21 CORRIDOR project

My main concern is that the cause of bacterial contamination of the lake has been shown by numerous studies to be of animal nature due to farming practices that legally allow farmers to apply liquid manure to fields

Since this is deemed a nutrient in the eyes of the government instead of a pollutant ( which it really is ) therefore it is safe to apply this

The spokesman from BSRA that stated at a public meeting there was support for this project was not speaking for everyone .There has been vocal opposition to this project from Lakeshore Grand Bend as well as Dashwood residents

Putting in this system will NOT solve the pollution problem and will let the real culprits (i.e. farmers) off the hook.

I am leery of participating in a survey on my septic system as this propagates the tunnel vision approach that planners and politicians have that septic systems are the problem. I would like to see the questions and an overview of what it entails before I would participate

Yours with respect

	HIGHWAY 21 CORRIDOR SANITARY SEWAGE COLLECTION SYSTEM CLASS ENVIRONMENTAL ASSESSMENT (EA) & PRELIMINARY DESIGN
Please	fill out this form and return it to Dillon Consulting Limited.
	I/we would like to be kept informed about this project. The contact name and address is:
	Phone:
	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information NO, SEPTIC SYSTEM IS ONLY 7 YEARS OLD (WHITEWATER SYSTEM) AND ments/Questions/Concerns: WORKS WELL)
	FAVOUR OF MUNICIPAL SEWERS!
11	OME NEIGHIBOURS HAVE "PUNCHED HOLES" N SEPTIC TANKS TO DRAIN AW SEWAGE AND LAUNDRY BUBBLES ON BEAM
- D	RAINAGE PIPES ON CLIFF CAUSING DDITIONAL EROSION PROBLEMS EROSION A PROBLEM IN THIS AREA

Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager **Dillon Consulting Limited** Box 426 London, Ont. N6A 4W7

Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

DILLON

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Our File: 10-3169



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V	I/we would like to be kept informed about this project. The contact name and address is:
	Phone:
	E-mail:
n	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
Comr	nents/Questions/Concerns:
5 . N	ven would construction start if everything
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ac	es through?
5	be are concerned as we are building a
2_U	
	rottage that requires a septiched soon.
	Thank you!
	Masio
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Please return this form by May 28, 2010 to:

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DILLON CONSULTING

	CLASS ENVIRONMENTAL ASSESSMENT (EA) & PRELIMINARY DESIGN
d -	I/we would like to be kept informed about this project. The contact name and address is:
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	Phone:
	E-mail:
	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
Comn	nents/Questions/Concerns:
	Non survey mean inspection?

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Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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Please fill out this form and return it to Dillon Consulting Limited.

I/we	would like to be kept informed about this project. The contact name and address is:
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Pho	ne: <u></u>
E-m	ail:
I/we	do not wish to be kept informed.
We a more	are willing to participate in a survey of our septic system. Please contact Dillon for information.
Comments/C	Questions/Concerns: Accord a person in a neighbouring Aubdicesco
Spoke Sewag	at the Hensall gathering in farmer of this a project. But he had not consent to do so
on ou	r behalf. In the min, we ware on the
periph	eral, and would need grinders. This apparatus is
mot a	cceptables, thereford exclude Bayview, My system
	this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7

Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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tank less than 2 years ago. And a young woman on behalf of ABCAN put down a coloured substance tracing the out flow, and no trace from our system was to the lake. I speak only for my situation apparently, Zurick lagoon out flow tells a different story. Maybe this should be the first focus. 1. Cleanup Zunich outflow to the lake Summary 2. Etelude Bayview unless other than grinden are available 3. Cut the lost 4. Delay the project



Please fill out this form and return it to Dillon Consulting Limited.

2	I/we would like to be kept informed about this project. The contact name and address is:
	Phone:
	E-mail:
	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
Comn	nents/Questions/Concerns:
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<i></i> )	PALVIDE low interst loons to homeowners Soilngtest & Sir
-37	This subsidizes developers helding redestile days
loke	by allowing smaller lots

Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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	I/we would like to be kept informed about this project. The contact name and address is:
	and address is:
	Phone:
	E-mail:
	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
-ALTI	ents/Questions/Concerns: To A SENAGE SYSTEM ERNATIVES IF YOUR SEPTIC SYSTEM IS UP TO DATE + VIABLE.
LUAT	TERLOO BIOFILTER SYSTEM) MAR. 2002
 	NOT UPDATE + HAVE INSPECTIONS OF SEPTIC SYSTEMS
	J

Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7

Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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Please fill out this form and return it to Dillon Consulting Limited.

V	I/we would like to be kept informed about this project. The contact name and address is:
	James Russell Oakes
	293 Riverside DRive, London
	Ontario NGH162
	Phone: <u>519-433-9416</u>
	E-mail: joesaddy@sympatico.ca
	I/we do not wish to be kept informed.

We are willing to participate in a survey of our septic system. Please contact Dillon for more information.

#### **Comments/Questions/Concerns:**

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Sill	erect r	Si Santo	an pra	age serv

Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca





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I/we would like to be kept informed about this project. The contact name and address is:

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E-mail:	
I/we do not wish to be kept informed.	
We are willing to participate in a surve more information.	ey of our septic system. Please contact Dillon for
mments/Questions/Concerns:	
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& fran Ano Ditch	herestentfer Hon
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Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7

Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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Our File: 10-3169

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DILLON

(internet) **Telephone Discussion Record** May 3/10 Call FROM \_\_\_\_ Date \_\_\_ Organization Swolderf Fax No. Call TO Project <u>BW Collection</u> Subject <u>Plan of Sub.</u> File No. <u>File</u> Subject Plan of Copies to \_ rhas existing lots for development in St. Joseph, approved in 2002 - a couple of houses have " been mult with septic syste eting today's standard could here be grandfattend and allowed to continue for a -could certain length of time?

Sa Signed

Dillon Consulting Limited



Please fill out this form and return it to Dillon Consulting Limited.

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8 848	si in the constant of the cons						
	E-mail:						
	I/we do not wish to be kept informe						
ď	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.						
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Please	return this form by May 28, 2010 to:						
Janet S	molders, MCIP, Project Manager	Tel: 519-438-6192, Ext. 1268					
	Consulting Limited 26 London, Ont. N6A 4W7	Fax: 519-672-8209 jsmolders@dillon.ca					
Box 42							
The Fre	edom of Information and Protection of F e exception of personal information all co	<i>Privacy Act</i> applies to information gathered for this project. In the public record.					
The Fre With th	eedom of Information and Protection of F e exception of personal information all co e: 10-3169	Privacy Act applies to information gathered for this project. Symmetrics will become part of the public record.					

May. 3. 2010 7:40AM THE BEER STORE 3140

No. 0350 P. 2

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Please fill out this form and return it to Dillon Consulting Limited.

	I/we would like to be kept informed about this project. The contact name and address is:
	Phone:
	E-mail:
	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
Comme	ents/Questions/Concerns:
1.	How Long Defore Sewer
	hook-ups IN This Areq?
2.	ESTIMATE HOOK-UP COSTS

Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7

Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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dy .	I/we would like to be kept informed about it
	I/we would like to be kept informed about this project. The contact name and address is:
	Phone:
	E-mail:
	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
	ents/Questions/Concerns:
_We	own a lot and plan to build in the next
	3 years so we are very interested in the
- Pr	oject timing.

Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7

Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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A.	I/we would like to be kept informed about this project. The contact name and address is:
	connor poregies.
	Phone:
	E-mail:
	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
Comn	nents/Questions/Concerns:
	SEPTIC SYSTEM INSTALLED \$1997
	LAST PUMPOUT 2008
	WE WISH NOT TO THE CONNECTED TO THE
	SANITARY SEWAGE COLLECTION SYSTEM.
	WE RESIDE AT THIS ADRESS ONLY FROM
	MAY TO NOV.

Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7

Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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ŀ	lease fill out this form and return it to Dillon Consulting Limited.
	I/we would like to be kept informed about this project. The contact name and address is:
	Phone:
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18	I/we do not wish to be kept informed.
D	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
	Comments/Questions/Concerns:
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	a stoned servage pump system -
	not Individual props

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Our File: 10-3169

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D	I/we would like to be kept informed about this project. The contact name and address is:
	Phone:
	E-mail:
	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
Comme 	nts/Questions/Concerns: ny Septie Tankies fire for the second time.

Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7

Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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Please fill out this form and return it to Dillon Consulting Limited.

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We are willing to participate in a survey of our septic system. Please contact Dillon for more information.

**Comments/Questions/Concerns:** need is de lemme nce C 0 lion 1me rame 10 cons

Please return this form by May 28, 2010 to:

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ferved	E-mail:			1		

We are willing to participate in a survey of our septic system. Please contact Dillon for more information.

**Comments/Questions/Concerns:** 

V

n 11 1 . 11 1 100 11 S Please return this form by May 28, 2010 to: Janet Smolders, MCIP, Project Manager Tel: 519-438-6192, Ext. 1268 **Dillon Consulting Limited** Fax: 519-672-8209 Box 426 London, Ont. N6A 4W7 jsmolders@dillon.ca

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Please fill out this form and return it to	ANITARY SEWAGE COLLECTION SYSTEM SSESSMENT (EA) & PRELIMINARY DESIGN
Phone:	
<ul> <li>E-mail:</li> <li>I/we do not wish to be kept inform</li> <li>We are willing to participate in a more information.</li> </ul>	ned. survey of our septic system. Please contact Dillon for
Comments/Questions/Concerns: Estimated of Sever North to St.	Date of Construction main from Grand Bend Joerophs
Please return this form by <b>May 28, 2010</b> to: Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7	Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.co

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jsmolders@dillon.ca

Our File: 10-3169





Please fill out this form and return it to Dillon Consulting Limited.

Y	I/we would like to be kept i	nformed about	this project	. The contact name	and address is:
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	<i>D</i>				*
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J	We are willing to participate more information. $ H_{o}$	in a sum	f our septic	system. Please con	ntact Dillon for
Comm	ents/Questions/Concerns:	,	Us A	DETAILED	REPORT.
		-			
Please ref	turn this form by <b>May 28, 201</b>	<b>0</b> to:			
Dillon Co	olders, MCIP, Project Manage onsulting Limited London, Ont. N6A 4W7	Fax:	519-438-619 519-672-82		

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jsmolders@dillon.ca





Please fill out this form and return it to Dillon Consulting Limited.

	I/we would like to be kept informed about this pr	roject. The contact name and address is:
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Phone:	t	e	4	

E-mail:

I/we do not wish to be kept informed.

We are willing to participate in a survey of our septic system. Please contact Dillon for more information.

**Comments/Questions/Concerns:** 

EM WORKS FINE SYST OUB

NEVER ANY PROBLEMS

GRAVITY SYSTEN OUR CHOICE

Please return this form by May 28, 2010 to:

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Weare	willing to formation	o participate in	n a survey	of our septic sys	stem. Please cor	ntact Dillon for

Please return this form by May 28, 2010 to:

about 10 yrs old

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7

Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

The *Freedom of Information and Protection of Privacy Act* applies to information gathered for this project. With the exception of personal information all comments will become part of the public record.





Please fill out this form and return it to Dillon Consulting Limited.

	I/we would like to be kept informed about this project. The contact name and address is:
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	Phone:
	E-mail:
]	I/we do not wish to be kept informed.
3	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
m	nents/Questions/Concerns:
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and a	

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I/we do not wish to be kept informed.

We are willing to participate in a survey of our septic system. Please contact Dillon for more information.

**Comments/Questions/Concerns:** 

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Please return this form by May 28, 2010 to:

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DILLON

#### Smolders, Janet

From:	
Sent:	Thursday, May 13, 2010 11:15 AM
To:	Smolders, Janet
Cc:	b.kittmer@town.bluewater.on.ca
Subject	Sanitary sewage system Grand Bend Project

#### Ms Smolders,

I am in receipt of a project initiation notice and a request form from the Dillon Construction compare relative to a sewage system extending from Highway 83 through to Highway 84. I own a home within the projected development area and it is regrettable that this notice is the first information I have received concerning this endeavor. It is of great interest to me since the project will have a financial impact on me well as other owners within the project area.

May I please have written information as to the preliminary discussions and decision making proce used by the Municipality of Bluewater for said project and the detailed proposals of Phase 1 and 2, the findings of which are to be presented in July 2010.

Additionally, I would appreciate receiving timely updates on the discussion, progres and results including projected costs for individual home owners impacted by this project.

Thank you in advance for consideration of my requests.



Please fill out this form and return it to Dillon Consulting Limited.

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**Comments/Questions/Concerns:** projected time frame, it in projected Casts. and cel 2001 12315 at ul time living 2011. In way

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**DILLON** CONSULTING



Please fill out this form and return it to Dillon Consulting Limited.

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I/we do **me** wish to be kept informed.

We are willing to participate in a survey of our septic system. Please contact Dillon for more information.

**Comments/Questions/Concerns:** 

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Please return this form by May 28, 2010 to:

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Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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CONSULTING

Our File: 10-31-3



Please fill out this form and return it to Dillon Consulting Limited.

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Please	e return this form by May 28, 2010 to:	
Dillon	Smolders, MCIP, Project Manager Consulting Limited 26 London, Ont. N6A 4W7	Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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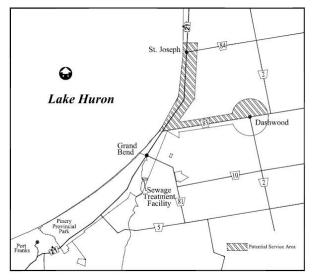


#### **Public Information Centre 1 Notice**

On behalf of the Municipality of Bluewater, Dillon Consulting Limited is currently preparing a Class EA and Preliminary Design of a proposed sanitary sewage collection system potentially serving the area shown on the map. A Public Information Centre will be held on **August 28**, **2010** to obtain public and agency input on the following:

- the need for sanitary sewers
- Dillon's recommendation that the lakeshore area be included in the Service Area as the first priority for servicing, with Dashwood serviced sometime in the future
- the recommended treatment solution at the Grand Bend Sewage Treatment Facility
- alternative collection system types
- alternative routes for a connecting forcemain through the Municipalities of South Huron and Lambton Shores to the Grand Bend Sewage Treatment Facility
- preliminary capital, operating and per household costs.

The Public Information Centre will be held on:



#### Saturday, August 28, 2010, 2:00 to 5:00 p.m. Dashwood Community Centre Dashwood, Ontario

If you require further information, please contact:

Brent Kittmer Utilities Superintendent Municipality of Bluewater 14 Mill Avenue, P.O. Box 250 Zurich, Ont. NOM 2T0 Tel: 519-236-4351, Ext. 221 Fax: 519-236-4329 b.kittmer@town.bluewater.on.ca Janet Smolders, MCIP Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca



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# **Municipality of Bluewater**

Highway 21 Corridor Sanitary Sewage Collection System Class Environmental Assessment & Preliminary Design

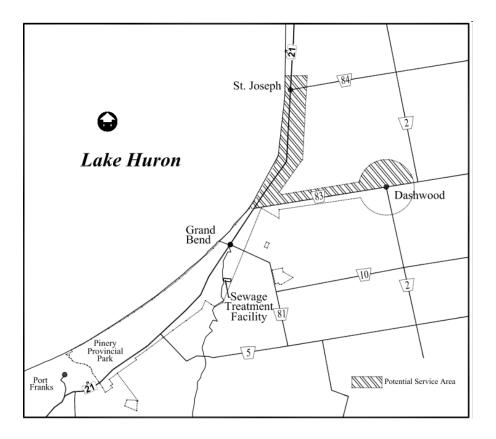
## Public Information Centre 1 August 28, 2010





## Grand Bend and Area Sanitary Sewage Servicing Master Plan (2006)

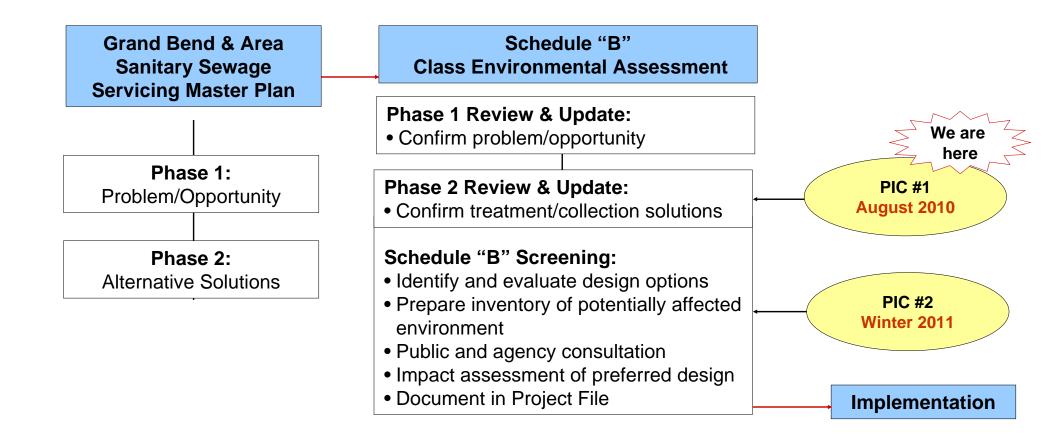
- Comprehensive, long-range (20 year) plan for sanitary sewage infrastructure improvements along Lake Huron
- Expansion and upgrade of Grand Bend STF identified as preferred treatment solution- approved under *EA Act*, construction scheduled for 2011
- Extension of sewers along Bluewater lakeshore to St. Joseph identified as a priority for servicing improvementssimilar EA studies currently underway in Lambton Shores and South Huron







### **Municipal Class Environmental Assessment Process**







## Public and Agency Consultation Replies to Project Initiation Notice (April/May 2010)

### Lakeshore Residents- about 170 replies:

- Most requested to be kept informed (125) or asked general questions
- 15 <u>positive</u> comments: want to build soon; area needs sewers (sewage, laundry bubbles on beach, drainage pipes out of cliff); septic failed many years ago
- 22 <u>negative</u> comments: concerns about cost; don't need sewers since septics work well; have new tertiary on-site treatment systems; problems caused by manure and Zurich lagoons; concerns about grinder pumps

### Dashwood Residents – 14 replies:

- Most (10) asked to be kept informed
- 4 negative comments- don't need sewers since septics work well





## **Five Key Reasons:**

- 1. Future Growth & Increasing Year Round Use
- 2. Soils/Geomorphology
- 3. Engineering & Drainage Considerations
- 4. Environmental/Health Concerns
- 5. Changing Provincial Policies

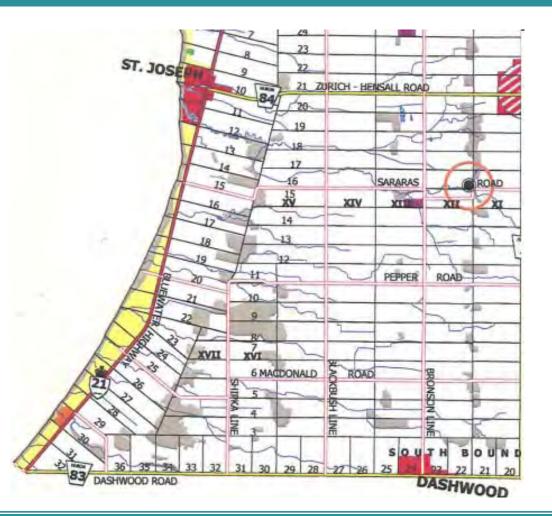




### Future Growth & Increasing Year Round Use

Increasing usage and pressure on septic systems caused by:

- Official Plan designates Bluewater lakeshore as "Lakeshore Residential"-1% per year <u>population growth</u> projected over next 20 years due to attractiveness of lakeshore for retiring "baby boomers"
- Year round residents expected to increase from current 30% to 40%
- Changing lifestyles increased water use/appliances, residence size







## Soils/Geomorphology

### Golder Associates Ltd., Soils Overview (2010)

- <u>Clay soils</u> least accepting soil type for sewage effluent. Not suitable for conventional inground tile beds – requires raised beds or specially designed proprietary systems,
- Min. <u>0.6 hectare</u> lot size (6000m<sup>2</sup> or 1.48 acres) required,
- <u>Almost all lots too small</u>. Yellow shows subdivisions with inadequate lot sizes

Subdivision	Typical Smaller Lot Size (m²)	Typical Larger Lot Size (m <sup>2</sup> )
Highlands 1, 2 and 3	550	2,000
Elmwood	700	1,100
Turnbull's Grove -residential lots -trailer sites	1,150 200	2,800 500
Windy Hill	450	1,100
Norman Heights	750	1,500
Ridgeway	700	1,500
Schadeview	700	4,000
Cedar Bank	900	2,250
Poplar Beach 1 and 2	700	2,850
Sunnyridge	1,400	4,200
Lakewood Gardens	1,200	4,350
Cliffside	1,350	2,100
Pavillion	3,300	7,050
Bayview	800	4,200
St. Joseph's Phase 1 and 2	2,000	4,300
Gendron and Bluewater Properties	1,050	3,800
Antoinette's Lane	850	2,400
Driftwood Trailer Park -trailer sites	400	500
Vista Beach	1,500	2,800
Josephine Street	2,300	6,450









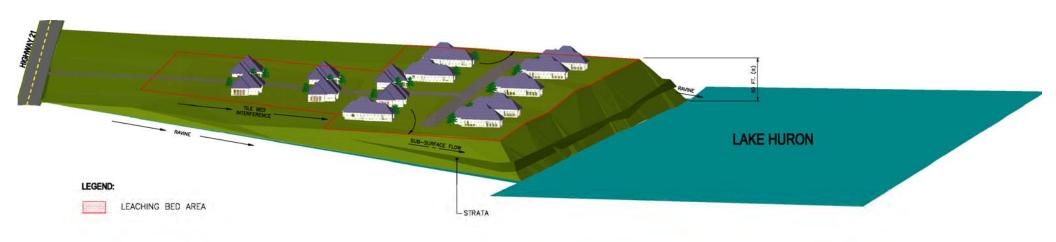


## Soils/Geomorphology

### **Typical Area Section Transmissivity Geomorphology**

EAST

WEST







## **Engineering & Drainage Considerations**

#### Rainwater surface drainage -

- Un-engineered rights-of-way, especially in southerly lakeshore area
- Few engineered public and private sewers/drains. Most systems are shallow, overlap with leaching bed areas
- Overall lot grading pattern not in sync with engineered rights-of-way

#### Small lot sizes and high lot coverage -

- No provision for 100% reserve area, expansion/upgrades difficult/impossible
- Some new service trenches (e.g. watermains) have created barriers to leaching bed flow paths
- Lot patterns did not consider flow paths (i.e. east to west)
- Older systems not sized for future year round use

**Poor septic system operation**, breakdowns, "jerry rigging" -

- Illegal connections to agricultural/surface drains
- Strata, cliff and bank erosion on lake and ravines
- Leachate springs in bed areas, down gradient

#### Aging conventional systems -

- First signs usually occur within 20 years
- Primarily in natural soils below the bed
- Fouling around distribution trench stone, if not maintained/operated properly





### **Environmental/Health Concerns**

Burns Ross Limited, Consulting Engineers, Hay Township, Review of Lakeshore Septic Systems, 1995:

- Documents many problems, as noted by Huron County Health Unit, ABCA:
  - Clay soils not suitable, systems undersized for residence size, water use/appliances, extended seasonal use
  - Poor surface drainage contributes to septic malfunctions
  - Many systems installed more than 40 years ago with inadequate/no standards, suffer from lack of maintenance/abuse (structures, paving, tree planting, parking)
- 2006 Master Plan implemented Study's <u>recommendation</u> that Bluewater develop a Master Plan with adjacent municipalities
- GAP Enviro/Microbial Services, DNA Study, St. Joseph Beach, 2005- <u>E.coli</u> samples from St.Joseph Drain/Beach are from agriculture <u>and</u> domestic sewage
- Ausauble Bayfield Conservation Authority, South Gullies Watershed Report Card, 2007- Grade C for Surface Water Quality
  - E.coli from human/animal waste (236 cfu) exceeds MOE guidelines (100 cfu)
  - ABCA recommends fixing faulty septic systems to improve water quality





### **Environmental/Health Concerns**

### Huron County Voluntary Septic Reinspection Program, 2005-2007

- Suggested by lakeshore community to address pollution caused by faulty septic systems
- 41 inspections completed in Bluewater (most in St. Joseph Shores), including 23 in Study Area

Area (mo.)	Establishment Type	Occupancy			Age of System	Class of System	Type of System/Leaching Bed	Mantle?	Size of	i Bed	Problems	
		Avg.	Max.	No. of Bedrooms	Sleeping Capacity					Distribution Trench	Square Meters	
North of Hendrick Road (20)	- 17 year round - 3 seasonal cottages	2	11	4	8	21	-all Class 4 systems	- 14 inground - 4 raised beds - 2 tertiary	-6 have mantles indicating newer system	approx. 76ft	approx 176ft	- 2 failing systems
South of Hendrick Road (3)	-2 seasonal cottages - 1 year round	2	8	3	7	33	-all Class 4 systems	-all in ground systems	-no mantles	unknown	unknown	-1 system has a brick septic tank

Of the 23 systems surveyed:

- up to 1/3 require immediate repair/replacement (e.g. brick septic tank)
- 2 properties not suitable for septics (too many bathrooms/fixtures, underground water flow)
- 3 are failing
- 3 not properly maintained (never been pumped, structures on beds, gray water connected to stormwater drainage ditch)





### **Environmental/Health Concerns**

### **Dillon's Septic System Survey – 19 Surveys**

Area (No)	Establishment Type	Occupancy			Age of System	Type of System	Structur es, Trees or Vegetati on Over Bed?		Soils
		Avera ge	Maximum	No. of Bedrooms				Soil Losses	Grass Striping, Damp/Wet Areas, Leachate Springs
North of Hendrick Road (6)	- 3 year round - 3 seasonal cottages	2	6	3	7.5	-3 tertiary - 2 ingroung - 1 raised	-2 of 6	-1 of 6	-2 of 6 (33%)
South of Hendrick Road (13)	- mostly cottages	2.5	6	3	34	- 9 inground - 4 raised or tertiary	-8 of 13	-only on ravine lots	-7 of 13 (54%)

Area (No)	% Lot Area Disturbance			Rainwater Drai	No. of Beds in East/West Row	Odours	Other Information		
		Overall Lot grading	Swales	Drains Away from Bed	Ponding	Subsurface Drainage Infrastructure			
North of Hendrick Road (6)	26%	- Enginee red	-4 of 6	-4 of 6	-1 of 6	-2 of 6	-1 of 6 in cluster of beds	-2 of 6	-2 of 6 showing signs of stress
South of Hendrick Road (13)	42%	-Not engineer ed	-3 of 13	-4 of 13	-1 of 13	-5 of 13	-generally operate in clusters	-2 of 13	-6 of 13 showing signs of stress, 3 reported odours from neighouring properties

#### MUNICIPALITY OF BLUEWATER BYELD - NOV - REVEAL - SWALEY - ZURCH 2001

Highway 21 Corridor Sanitary Sewage Collection System Class Environmental Assessment & Preliminary Design

#### North of Hendrick Road -

• 1/3 of systems show signs of stress although average age is 7.5 years, % lot disturbance is low (26%) and rainwater systems are engineered

• 1/3 complain of odours

#### South of Hendrick Road -

- Average system age of 34 years far exceeds 20 year service life
- Over 60% of lots have structures, trees, etc. over tile beds
- High average % of lot area (42%) disturbed by structures, trees, etc.
- Rainwater systems not engineered
- Damp/wet areas, grass striping, leachate springs on more than half
- Almost half show signs of stress, 3 report odours



### **Provincial Policies-** *becoming more restrictive*

- Ontario Clean Water Act.
  - Building Code amendments allow Bluewater to establish a <u>maintenance re-inspection program</u> for septic systems (planned for 2011). Inspections will be invasive
  - Municipality may <u>order</u> that a faulty/failing system be replaced. Many lots too small to accommodate a properly sized system then what?
  - Source Water Protection Plan: will restrict point and non-point sources of potential contamination, like septic system discharges (due by 2012)
  - Bluewater lakeshore within "Intake Protection Zone" around Lake Huron Water Treatment Plant
- Provincial Policy Statement (PPS):
  - Large lot sizes required for septic systems <u>not consistent</u> with PPS- inefficient use of land/infrastructure, impacts significant natural features and prime farmland
  - Sanitary sewers required for multi-lot developments by PPS, Huron County and Bluewater Official Plans





### **Provincial Policies**

Intake Water Protection Zone – Lake Huron Water Treatment Plant (WTP)

- WTP provides drinking water to 350,000 people in three counties
- IPZ-2, south of Hendrick Road, will be implemented in Source Water Protection Plan (due by 2012)
- Sources of potential contamination, such as septic system discharges, will be regulated







## Phase 2, "Alternative Solutions" Review/Update Potential Service Area

Evaluation Criteria	Lakeshore	Dashwood
Existing Land Uses	Approx. 920 houses (2,295 people) and some commercial uses along 10.5km of lakeshore	Approx. 90 houses (200 people) and some commercial uses in Bluewater portion of hamlet
Future Land Uses	Significant development potential for vacation and retirement homes. Year round population expected to increase from 30% to 40% over next 20 years	Little development potential, very slow/declining growth projected
Existing and Potential Septic System Failure Rates	Expected to be high over next 20 years due to unsuitability of soils, aging systems, small lot sizes, poor rainwater surface drainage	Expected to be high over next 20 years due to unsuitability of soils, aging systems and small lot sizes, poor rainwater surface drainage
Existing and Potential Adverse Water Quality Impacts	Malfunctioning septic systems potentially adversely affect water quality in: -South Gullies Watershed -Lake Huron WTP Intake Protection Zone, including Lake Huron and tributaries	Malfunctioning systems will adversely affect water quality in South Gullies Watershed. Not in Lake Huron WTP Intake Protection Zone, but will affect tributaries (Hough and Kiddings drains)
Ease of Servicing (constructability and required infrastructure)	Challenging construction and extensive infrastructure – 10.5km forcemain along Highway 21, over 900 houses, 20+ subdivisions, 15 ravines and many non- standard, private rights-of-way	No significant challenges – 8.4km forcemain along Huron Road 83, 90 houses on grid pattern streets, standard public rights-of-way
Costs/Benefits	Significant capital costs justified by number of residents potentially served (2,295 year round and seasonal), future growth	Difficult to justify significant capital costs for only 200 residents and limited growth potential
Conclusions	Recommended as 1 <sup>st</sup> priority Service Area	Recommended as 2 <sup>nd</sup> priority Service Area. System will be designed to service Dashwood in the future





### Phase 2, "Alternate Solutions" Review/Update Recommended Service Area







# Phase 2, "Alternative Solutions" Review/Update

### Preferred Sewage Treatment Solution- Expansion and Upgrade of Grand Bend STF, construction scheduled for 2011

- To confirm preferred treatment solution, Dillon evaluated four alternatives
- No other feasible alternatives

Alternative Solution	Advantages	Disadvantages
1. "Do Nothing" (Continue with existing septic systems)	No initial costs to homeowners. However, replacement septic system may cost as much as municipal sewage system. Existing recently installed systems may be "grandfathered" in.	Not a long-term environmentally sustainable solution. May be suitable for newer subdivisions with required minimum lot size.
2. On-Site Tertiary Treatment Systems*	Existing recently installed systems may be "grandfathered" in.	Not a long-term environmentally sustainable solution. High capital cost (\$10,000- \$20,000), complex systems that fail from misuse/lack of maintenance, do not disinfect or remove phosphorous or man-made chemicals.
3. Discharge to Zurich STF	None.	Not enough capacity, currently being upgraded.
4. New Stand-Alone Municipal Sewage Treatment Plant in Bluewater	None.	Likely impossible to find a suitable receiving body of water/stream suitable for plant effluent.

\* see handout on tertiary systems





## Phase 2, "Alternative Solutions" Review/Update Alternative Collection Systems

Alternatives are shown on 1:2000 scale plans available on Municipality of Bluewater website – www.town.bluewater.on.ca

#### **Alternative 1- Conventional Gravity System**

- Sewage collected and transported by gravity through buried piping installed from 2.5 metres deep to 10 metres deep
- Up to 15 pumping stations and forcemains required to lift or "jockey" sewage from north to south

#### **Alternative 2- Low Pressure System**

- Sewage collected and transported in a network of small diameter shallow piping (only 1.5 metres deep) fed by individual grinder pump stations
- Submersible grinder pump stations at each house
- All pressures required to "drive" sewage provided by individual grinder pump stations – no communal pump stations or forcemains required









## Phase 2, "Alternative Solutions" Review/Update

### **Basic Operation of a Low Pressure Pump System**

#### Low pressure pump system –

- Submersible grinder pump housed in a high grade engineered wet well with valving and electrical control panel for each home
- The sewage level in the wet well is monitored by 2 differential pressure monitors. When the level in the wet well reaches the high level, the pumps are activated by the controller
- Solids are ground into fine particles by the grinder pump to allow particles to easily pass through fittings and small diameter piping

#### Overall collection system -

- Consists of a grid network of small diameter piping similar to a water system
- Sewage is transferred through different network pressure zones of increasing pipe diameters until it reaches the Grand Bend STF









# Phase 2, "Alternative Solutions" Review/Update Comparative Evaluation of Gravity and Low Pressure Sewage Collection Systems

# (Advantages shown in blue)

Evaluation Factors	Alt. 1 Gravity System	Alt. 2 Low Pressure System
Engineering Considerations	Well established technology, but not suitable for most of Bluewater, due to distance and topography. Sewage from upstream areas pumped multiple times - up to 8. Sewers up to 10m deep, requiring extensive excavation. Still functions during power outages. Susceptible to inflows (up to 20%) as system ages (both pipe and STF)	<ul> <li>Proven technology- many successful systems in Ontario (Lambton Shores).</li> <li>All sewage only pumped once.</li> <li>All pipe only 1.5 metres deep installed by directional drilling, small pipe diameters requiring almost no excavation.</li> <li>Sensitive to power outages, but homeowner can opt to include additional storage or standby power.</li> <li>Less susceptible to inflows.</li> </ul>
Impacts on Cultural Resources (Archaeology)	Significant impacts caused by extensive excavation. Can be mitigated by further archaeological assessments.	Trenchless technology minimizes excavation and impacts. Can be drilled around and under significant features.
Impacts on Natural Features (aquatic, terrestrial)	Significant impacts caused by extensive excavation.	Trenchless technology minimizes excavation and impacts. Can be drilled around and under significant features.
Socio-Economic Impacts (land- uses, County/local and Provincial planning policies)	Extensive excavation causes significant impacts on existing land uses, significant disruption (noise, access) during construction. Not as consistent with planning policies due to potential impacts on significant resources.	Trenchless technology: -minimizes impacts on existing land uses -minimizes disruption during construction -conforms to planning policies since it minimizes impacts on significant resources
Economic/Financial Considerations (municipal, homeowner capital and operating costs)	<ul> <li>High capital construction cost due to depth of sewers, number of pumping stations.</li> <li>High restoration costs, including complete roadway reconstruction.</li> <li>Less homeowners awareness required</li> <li>Significantly more expensive than low pressure system</li> </ul>	Lower capital construction and surface restoration costs More homeowner awareness required Significantly less expensive than gravity system





# Phase 2, "Alternative Solutions" Review/Update Preliminary Capital and Operating Cost Estimates (2010 \$'s)

# Preliminary Capital Cost Estimates (2010 \$)

	Alternative 1 Gravity System	Alternative 2 Low Pressure System
Grand Bend STF Expansion and Upgrade (Bluewater Zone 1)	\$ 2.3 Million	
Communal Collection System *	\$ 44.8 Million *	\$ 18.4 Million *
Pump Station Number One and Forcemain from south limit of Zone 1 to Grand Bend STF (Bluewater and South Huron)	\$ 5.5 Million	

\* Costs do not include any Federal or Provincial Funding, initial capital cost and installation costs for onsite works

# Preliminary Operating and Maintenance Cost Estimates (2010 \$)

	Alternative 1 Gravity System	Alternative 2 Low Pressure System	
Grand Bend STF Expansion and Upgrade (Bluewater Zone 1)	\$ 354,000/year (as included in recently signed agreement with South Huron and Lambton Shores)		
Communal Collection System	\$ 306,000/year	\$ 70,000/year	
Private/Onsite System (Property Line to House)	\$50/home/year	\$182/home/year	

Note: Costs will be refined as the project proceeds through the planning and design process





# Phase 2, "Alternative Solutions" Review/Update Recommended Sanitary Sewage Collection System

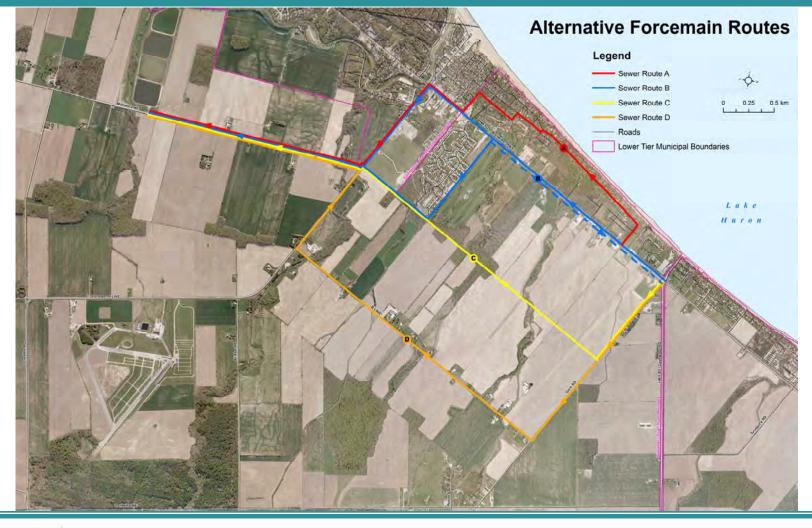
# Alternative 2, Low Pressure System

- Directional drilling avoids impacts on existing land uses/buildings, cultural resources, trees and other environmental features
- Lower capital construction and surface restoration costs
- Lower costs per lot
- Typical system provides about 170 L (37 imp. gallons) of storage, equivalent to about 4 hours of storage capacity for a typical home under normal conditions





# Phase 2, "Alternative Solutions" Review/Update Alternative Forcemain Routes to Grand Bend STF







# **Funding and Financing Options**

- Bluewater is seeking funding from the Provincial Ministry of Infrastructure and Energy for the proposed collection system
- Any funding received will be applied directly to the cost of the project
- Balance funded by per property costs Bluewater may offer debentures through municipal property taxes





# What's Next?

- Municipality and Dillon will consider all input received at PIC
- Refinement of recommended collection system:
  - Evaluation of alternative forcemain routes
  - On-going consultation with the public, affected property owners (easements) and agencies (MTO, South Huron, Lambton Shores)
- Detailed environmental screening of recommended sewage collection system:
  - Preparation of Preliminary Engineering Design of recommended system
  - Archaeological, fisheries/aquatic, terrestrial resources and socio-economic impact assessments
  - Refine capital, operating and homeowner costs
- PIC 2 in Winter 2011 to present recommended Preliminary Design.

Thank you for attending.

Please complete a comment form and submit it to Dillon by September 17, 2010.







Indian and Northern Affairs Canada www.inac.gc.ca Affaires indiennes et du Nord Canada www.ainc.gc.ca

Your file - Votre rélérence

# RECEIVED

SEP 0 3 2010 MUNICIPALITY OF BLUEWATER

Brent Kittmer Utilities Superintendant Municipality of Bluewater 14 Mill Avenue, P.O. Box 250 Zurich, Ontario N0M 2T0

#### Dear Mr. Kittmer:

#### Re: Highway 21 Corridor Sanitary Sewage Collection System Class Environmental Assessment and Preliminary Design. Public Information Centre #1.

I am writing in response to your letter of August 13 inquiring about any claims that may affect the subject property. I regret that we were unable to respond earlier. Thank you for your invitation to PIC #1 being held on Saturday, August 28, 2010. Unfortunately, we are unable to attend; however, the following information regarding active litigation may be useful to you as it could affect the lands that you are concerned with.

We can inform you that our inventory includes active litigation (cases) in the vicinity of this property. They are *Chippewas of Kettle and Stony Point v. Attorney General of Canada et al. Ontario Superior Court of Justice, filed in London, Ontario, court file #C22725;* 

Walpole Island First Nation, Bkejwanong Territory v. Attorney General of Canada, Her Majesty the Queen in Right of Ontario, Ontario Superior Court of Justice, filed in Toronto, court file #00-CV-189329; and

Chippewas of Sarnia v. CN Railway, CN Realties, Great Western Railway, Attorney General of Canada, Supreme Court of Canada, court file #95-CU-92484.

I am unable to comment with respect to the possible effect of these claims as the cases have not yet been adjudicated and any statement regarding the outcome of the litigation would be speculative at this point. It is recommended that you consult legal counsel as to the effect these actions could have on the lands you are concerned with.

....12

⊲



If you are interested in further details about these claims, copies of the pleadings can be obtained from the Court for a fee. Please contact the appropriate Court Registry Office and make reference to the court file numbers listed above.

We cannot make any comments regarding claims filed under other departmental policies. For information on any claims you should also contact Don Boswell of the Specific Claims Branch at (819) 953-1940 to inquire about any Specific Claims. To inquire about any current Comprehensive Claims, please contact Nicole Cheechoo of Treaty and Aboriginal Government Central Operations at (819) 997-3499.

If you have any further questions please do not hesitate to contact me at (819)994-2071.

Sincerely,

Joanne Lutfy A/Litigation Team Leader Eastern Litigation Directorate Litigation Management and Resolution Branch

DISCLAIMER: In this Disclaimer, "Canada" means Her Majesty the Queen in right of Canada and the Minister of Indian Affairs and Northern Development and their servants and agents. Canada does not warrant or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any data or information disclosed with this correspondence or for any actions in reliance upon such data or information or on any statement contained in this correspondence. Data and information is based on information in departmental records and is disclosed for convenience of reference only. Canada does not act as a representative for any Aboriginal group for the purpose of any claim. Information from other government sources and private sources (including Aboriginal groups) should be sought, to ensure that the information you have is accurate and complete.

From:	Alana Newbury [Alana.Newbury@ainc-inac.gc.ca]
Sent:	Wednesday, August 11, 2010 2:26 PM
То:	Smolders, Janet
Subject:	RE: Inquiry for HWY 21 Corridor Sanitary Sewage CollectionSystem

The Office of the Federal Interlocutor for Métis and Non-Status Indians (OFI) is aware that the Métis Nation of Ontario (MNO) have asserted a Métis right to harvest in large section of the province including in the project area. The link to the organization's web-site is: http://www.metisnation.org/ . Should you decide to pursue your investigation further, this would be the organization to contact in order to obtain further assistance when deciding if there is a rights-asserting Métis community in the project area.

The OFI is providing the information on Métis interests in the geographic areas you have requested in order to assist Municipality of Bluewater in performing its due diligence as to whether or not a duty to consult exists. In providing this information, the OFI is not advocating a position as to whether or not a duty to consult with Métis communities exists in the particular circumstances described; nor has OFI obtained a legal opinion with regard to the existence of Métis rights in the area.

If you have further questions please contact:

Jeffrey Betker Senior Policy Analyst Aboriginal Relations Office of the Federal Interlocutor for Metis and Non-Status Indians(OFI) Bureau de l'interlocuteur Federal aupres des Metis et des Indiens Non Inscrits(BIF) Indian and Northern Affairs Canada Affaires Indiennes et du Nord Canada 66 Slater St, Room 1225 Ottawa, Ontario, KIA OH4

T: (613) 992-7037 C: (613) 219-9578 F: (613) 996-1737 E: Jeffrey.Betker@inac.gc.ca

Alana Newbury Research Assistant/ Junior Policy Analyst (Co-op Student) Aboriginal Relations Office of the Federal Interlocutor for Métis and Non-status Indians (OFI) Indian and Northern Affairs alana.newbury@ainc-inac.gc.ca



August 13, 2010

Our File No.: H42

RECEIVED

AUG 1 9 2010

DILLON, LONDON

Don Giberson, Manager of Public Works Municipality of South Huron 322 Main Street South P.O. Box 759 Exeter, ON N0M 1S6

Janet Smolders, Project Manager Dillon Consulting Limited Box 426 London, ON N6A 4W7 Brent Kittmer, Utilities Superintendent Municipality of Bluewater 14 Mill Avenue, P.O. Box 250 Zurich, ON N0M 2T0

## Re: Highway 21 Corridor Sanitary Sewage Collection System

I am writing to obtain an update on the status and schedule for the coordinated works proposed by the municipalities of Lambton Shores, South Huron and Bluewater relating to the implementation of the Highway 21 Corridor Sanitary Sewage Collection System.

The water treatment plant located at 71155 Bluewater Highway (Highway 21), on the northeast corner of Bluewater Highway and Waterworks Road, would be serviced by the proposed infrastructure and it is important to understand the timing of the works, timelines for connections, and details of the sewage pipeline construction with respect to our existing infrastructure crossing Bluewater Highway. In particular, and specifically necessary for our pre-planning, we need to understand if a sewage collector pipeline will be constructed on Waterworks Road and if we will be required to connect to a sewage pipeline on Waterworks Road or Bluewater Highway.

We're aware that a public meeting is being held on August 28<sup>th</sup> in Dashwood, as part of the Municipality of Bluewater's Class Environmental Assessment Process, but unfortunately we are not available to attend this session. Notwithstanding, we would like to receive any available information on the planned project, specifically an update on the timing and details of construction noted above.

Best regards,

Andrew J. Benry, P. Eng. Division Manager, Regional Water Supply Lake Huron & Elgin Area Primary Water Supply System

c.c. B. Lima, J. Walker V. Martin, American Water Canada Corp.

Lake Huron Primary Water Supply System Office 519.930.3505 ext.1355 Fax 519.474.0451 ahenry@london.ca www.watersupply.london.ca



c/o The City of London Regional Water Supply Division 235 North Centre Road, Suite 200 London, Ontario N5X 4E7



# THE CORPORATION OF THE MUNICIPALITY OF SOUTH HURON

322 Main Street South, P.O. Box 759, Exeter, Ontario N0M 1S6 PHONE: 519-235-0310 • FAX: 519-235-3304 • TOLL FREE: 1-877-204-0747

www.southhuron.ca

RECEIVED SEP 0 9 2010

DILLON, LONDON

August 30, 2010

Lake Huron Primary Water Supply c/o The City of London Regional Water Supply Division 235 North Centre Road, Suite 200 London, Ontario N5X 4E7

Attention: Andrew Henry, P. Eng.

Dear Sir:

### RE: Grand Bend Area Sewage Collection System Environmental Assessment Highway No. 21 Corridor Sanitary Sewage Collection System

Further to your correspondence of August 13, 2010, this is to clarify the scope of the Municipality of South Huron *Grand Bend Area Sewage Collection System Environmental Assessment* and to provide an update on the status of our joint projects with the Municipalities of Lambton Shores and Bluewater.

The LHPWSS Water Treatment Plant is located in the Study Area for the South Huron *Grand Bend Area Sewage Collection System Environmental Assessment*. As such, the impact of this facility will be fully considered, including the SWP Intake Protection Zone, when assessing the need for a sewage collection system along the Highway No. 21 corridor. Our first PIC is scheduled for September 1, 2010 between 6:00pm and 8:00pm at the St. John's by-the-lake Anglican Church, 70762 Bluewater Highway. This is an "open house" type public meeting with display boards and a hand out, but no formal presentations.

The Municipality of South Huron's Grand Bend Area Sewage Collection System Environmental Assessment is being coordinated with the Municipality of Bluewater's Highway 21 Corridor Sanitary Sewage Collection System Environmental Assessment. The main commonality between to the Environmental Assessments is related to Bluewater's routing options for a trunk sewer through South Huron, to the new Grand Bend Sewage Treatment Plant on Mollard Line. One of the options being considered in the Bluewater EA is a route along Highway No. 21, in front of the Water Treatment Plant to the village of Grand Bend. If this route is selected, South Huron will consider a joint project with Bluewater, as we have an interest in servicing properties along the Highway No. 21 corridor in South Huron. If the need for a trunk sewer along the Highway No. 21 corridor is established through the Environmental Assessment process; scheduling of construction would be dependent on Bluewater's timing. If it is not possible to proceed immediately with a sewer along the Highway No. 21 corridor; we will investigate phasing-in a sewer system, starting at the south end of the Municipality. Since there is no remaining unused or uncommitted treatment capacity in the existing Grand Bend Area Sewage Lagoon, timing of completion of the new Grand Bend Area Sewage Treatment Facility will control scheduling of construction of our new sewage collection systems.

The new Grand Bend Area Sewage Treatment Facility is scheduled to proceed to construction. This is a joint project between the Municipalities of Lambton Shores, South Huron and Bluewater. An Agreement has been executed and the plant is scheduled to go to tender in September 2010; for a Spring 2011 construction start and completion by the Spring of 2013.

It is anticipated that the South Huron Grand Bend Area Sewage Collection System Environmental Assessment will be completed by June of 2011. We will be a much better position, at that time, to discuss potential construction schedules for the Highway No. 21 sewage collection system.

If you have any other questions in this regard, please don't hesitate to contact me.

Regards,

Don Giberson Environmental Services Director

cc. Dave Hicknell, Gamsby and Mannerow

cc. Janet Smolders, Dillon

cc. Brent Kittmer, Bluewater

cc. Peggy Van Mierlo-West, Lambton Shores

From:

Sent: Sunday, August 29, 2010 7:27 AM

To: Smolders, Janet

Subject: Re: Highway 21 Sanitary....

Janet

1.) Regarding costs of the proposed "Low Pressure System" of \$18.4 million, does this cost include the grinding pumps required for each user?

2.) What is the estimated timeline for the installation and initial use of;

A Gravity feed system? A Low pressure system?

3.) Will the funding from the Provincial Government, which I understand is available until sometime in 2014, be secured as long as the construction on the collection system has started, or does the construction have to be completed before the 2014 deadline?

4.) Are there any other Federal or Provincial programs for funding available to support this project?

Thank You Regards, Dillon Consulting Highway 21 Corridor Sanitary Sewage Collection System.

Reviewing your information, it appears that the area in Bluewater up to Hendrick Road, has a number of situations that may not be as relevant north of this area.

The south end has the largest number of homes, on the smallest lots, has the lesser number of gullies and the shallowest ones, is closest to the sewer plant and , most important of all, is it is in the Lake Water Protection Zone, where the ultimate secure system is important.

Would it be technically possible to do a gravity feed system up to the Hendrick Road and complete the balance of the installation, where greater distances are involved, deeper valleys and less houses, from this location, further north, with the low pressure system?

Yours truly,

To: Paul Klopp

Fax/email: klopps@hay.net

Paul Klopp Deputy Mayor Municipality of Bluewater

Dear Mr. Klopp Lakeshore Sewage Collection System - Steering Committee Meeting March 10 2011

In my opinion, Council did a great job of setting the policy position for the next P I C.

Things that came to mind plus other thoughts:

1) Extension to Hessenland appears to be just a "notation" to Dillon and your question as to the approval being official or notational should be followed up. This seems to be past the optimum reach for the systems and a significant expense to the entire system for a small single or small group of properties.

2) Council approved the purchase, by the Municipality, of grinder pumps if the low pressure system is adopted. This would be charged back to the property owners and paid as part of the system, as I understand it. If my memory is correct, Dillon indicated that the price per pump was about

(todays price) 975.00 + 13 % tax = 1,1101.75 per household x 920 households gives the Municipality a cost of 1,013,610.00.

If you are applying for grant money, it is doubtful that this kind of an expenseunits on individually owned properties - would qualify for grant purposes. If we can expect any kind of a grant, this would seriously change the individual cost to the homeowners, while not changing the cost to the Municipality.

3) In trying to assess the different systems, some notes came from the gallery additional costs associated with the grinder pumps - electrical installation construction (read dig them in) - adequate space on some lots (read, who wants their B B Q next to the sewage vent) - electricial and plumber both needed to install.

4) Grinder pumps can not service basement washrooms or laundry. This is an important point as the comparison of the two systems seems to be based on the low pressure system at ground level with the gravity feed system at the 8 foot deep level. This is apples and oranges comparison. At best would be a cost difference of the 6 foot level for the gravity feed, to the grinder pump. It would be very interesting to know the percentage of homes in the collection area that have basements or even more interesting to know the percentage that have basement washrooms or lower level laundry - anything needing a below ground collection system.

To evaluate the Cadillac at 8 feet to the Chevy at ground level is not good math.

5) In past meetings - the previous P I C for instance - I have asked if there could be a hybrid system - gravity feed to Hendrick Road since this area has the greater number of lots and the highest density, is closest to the sewage plant, has the fewest ravines with the shallowest ravines, then go with a low pressure grinder pump system from Hendrick Road to the north end, where ever that is determined to be.

The answer from Dillon was "yes" but this never seems to come up in the costing estimates.

Dillon's breakdown of the territory into 4 parts, as explained last night, would make this viable for your review with this split in mind and I would encourage the discussion in this light.

A break out of the number of services needed north vs south of Hendrick Road would make this an interesting discussion.

6) Several times during your debate, it was asked "What is South Huron doing".

I believe that they have taken the low pressure / grinder pumps off the discussion table. If this is true, are we in the same position in Bluewater? It is not hard to tell that the residents are not in favour of the pump option. The ones I talked to anyway.

7) Estimates of electrical use per month for pumps have been quoted as about \$50.00 per month. This is at our current rates.

Back to the math -  $50.00 \times 12$  months = 600.00 per year x 920 homes =  $552,000.00 \times 10$  years = 5,500,000.00 in hydro.

At todays debenture rates, the systems could be equally priced if the gravity feed system were a minimum of \$4,500,000.00 more expensive, for just the first 10 years, over the pumps - and that assumes that no pump maintenance is needed and no replacements are required. In my calculations it is assumed that \$1,000.000.00 of the amount was needed to service the original debt outlay.

Grinder pump system is not a bargain, to the home owner, in my view.

8) It is admirable to consult the electorate with major issues but Council was elected to make the necessary tough decisions for the benefit of the entire region.

Page # 3 Sewage

I have been around long enough to remember when we moved from leaded gas to unleaded - no one wanted to pay at the pumps but everyone wanted to fix the environment.

I believe Bluewater is at this same place now with the Sewage issue. If you ask folks if they want to pay more taxes the answer is quick and pointed but this is a much larger issue, that Council, in their wisdom, must deal with in the interests of the future of Bluewater.

· ·

Yours truly,



MUNICIPALITY OF BLUEWATER Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design RECEIVED SEP 1 5 2010 DILLON, LONDON

Public Information Centre 1 – Record of Comments August 28, 2010

**Comments:** Dushwood 2/ 11A) Renda

Please complete and place in the comment box or return by September 17, 2010 to:

Janet Smolders, MCIP Project Manager Dillon Consulting Limited Box 426, London, Ontario, N6A 4W7 Tel: (519) 438-1288 Ext. 1268 Fax: (519) 672-8209 Email: jsmolders@dillon.ca

**DILLON** CONSULTING

Name: \_\_\_\_

Address and Postal Code: \_\_\_\_\_

Telephone/e-mail:

The *Freedom of Information and Protection of Privacy Act* applies to this project. With the exception of personal information, all comments will become part of the public record.

From:

Sent:Tuesday, August 10, 2010 4:18 PMTo:Smolders, JanetSubject:FW: Meeting Sat Aug 28

From:

To: jsmolders@dillion.ca CC: b.kittmer@town.bluewater.on.ca Subject: Meeting Sat Aug 28 Date: Mon, 9 Aug 2010 16:02:33 -0400

Janet

Thanks for your notice of this meeting. We appreciate the commitment of Dillon and Bluewater to keep residents informed of the process. Best Regards w.

Page 1 of 1

From:Boussey, WilliamSent:Wednesday, May 18, 2011 1:29 PMTo:Brent KittmerCc:Smolders, JanetSubject:RE: Macerator System

Unfortunately, the hydraulics of this system are not able to meet the hydraulic requirements of a pressure sewer system.

From: Sent: Tuesday, May 17, 2011 12:16 PM To: Brent Kittmer

Subject: Macerator System

Hello Brent,

1

I am a cottage owner in Turnbulls Grove, and became aware that at your last community information system on the sewage system, that there was a proposed requirement for residents to have macerator and pump system to process their sewage into the sewage treatments system.

You will find attached a sketch of a macerator system that may be suitable at a very reasonable cost. This system will pump up to 18 feet vertical rise, and 150 feet horizontal, which should easily handle most of the individual residential volumes in Turnbulls Grove. If you would like more detailed information on this great system, kindly contact our Sales Manager

We would be glad to work with you on these challenges.

All the Best,

From:

To: "Mayor Bill Dowson" <wjdowson@tcc.on.ca>; "Paul Klopp Deputy Mayor Bluewater" <klopps@hay.net> Sent: March-11-11 1:30 PM Attach: 070815 MOE directive(2).pdf Subject: Lewis Apology April 10 Meeting

April 11/2011.

Municipality of Bluewater, County of Huron Box 250 14 Mill Ave,

Zurich, ON N0M 2T0 519-236-4351 or 1-877-236-4351

Dear Mayor Bill Dowson & Council;

I apologize to yourself and the members of the council of Municipality of Bluewater for any disruption my behavior may have caused at the open meeting of council on April 10/2011. I have always found it a privilege to sit in the gallery and listen to the proceeding of the council. I have great respect for your positions and appreciate the difficult decisions you are often required to make in the best interest of your community.

I cannot speak to the reasons for the engineer's words or actions, directed at me as the meeting was ending, as he would not clarify them. If it was the comments I made to the council earlier, referring to the directive from the MOE for all EA's found within the Master Plan/2006, I have attached this document found in the North Lambton Shores Project File/2008 for the council's reference.

This letter, dated August 15/2007 from the director James O'Mara of the Environmental Assessment and Approvals Branch states; that one of the Ministry's minimum expectation is to "prepare detailed per household estimates for all six projects planned under the Master Plan". I believed this was a part of the council's discussions with Dillon Consulting during the meeting.

To date, I have not seen a costing document, as requested in the directive, for any of the collection projects.

Once again, my apologies;

# RECEIVED

1438

AUG 1 1 2010

# **DILLON, LONDON**

 From:
 Diamond

 To:
 <b.kittmer@twon.bluewater.on.cca>

 Sent:
 August-07-10 2:15 PM

 Subject:
 Public Info Meeting re: sewag collection for Aug 28,2010

Brent Kittmer,

A very nice move on having the meeting in Dashwood on the same day as the Bean Festival.

You know very well that people cannot do both, so it will go well for the nonsense that "Our Council"

is forcing on us, or maybe they don't have much to say!

Our taxes along the lakeshore are crazy now. Most of the crap that goes into the lake comes from

spraying the pig poo and dumping into the creeks and going into the lake when it rains, we watch this

with our own eyes. Will the east side of the #21 highway have to comply also? What is wrong with

mandatory septic testing? That would make a lot more sense and solve the problem. The old septics

would need to be upgraded without penalizing all of the new septic systems that were installed to code

withing the last 0-10 years.

I suspect that we have to do this so certain subdivisions in Lambton can go ahead and the lakeshore

owners and the lakeshore owners have to pay in Bluewater...such nonsense!!

copy to: Dillon Consulting and Lakeshore-Advance



# MUNICIPALITY OF BLUEWATER Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

DILLON, LONDON

Public Information Centre 1 – Record of Comments August 28, 2010

### **Comments:**

see attached eu 1 .

Please complete and place in the comment box or return by September 17, 2010 to:

Te	Janet Smolders, MCIP Project Manager Dillon Consulting Limited 26, London, Ontario, N6A 4W7 el: (519) 438-1288 Ext. 1268 Fax: (519) 672-8209 Email: jsmolders@dillon.ca	DILLON CONSULTING
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Name:		
Address and Postal Code:	· · · · · ·	
Telephone/e-mail:	- 14	/

The Freedom of Information and Protection of Privacy Act applies to this project. With the exception of personal information, all comments will become part of the public record.

From:	Forrest, Ben [BForrest@southhuron.com]
Sent:	Sunday, March 13, 2011 9:14 PM
То:	Smolders, Janet
Subject:	Questions from Exeter Times-Advocate

Hi Janet,

This is Ben Forrest from the Exeter Times-Advocate. Below are the questions I mentioned in my phone message. The good news is, they're very basic and you will likely know the answers off the top of your head.

My apologies, but I'm on a tight deadline and need to hear from you by 11 a.m. on Monday, March 14.

My questions are:

1) Is Bluewater is considering a collection system that would run along Highway 83 from Dashwood to the Grand Bend Sewage Treatment Plant, and north along Highway 21 past St. Joseph?

2) Is Bluewater considering both gravity sewers and low-pressure grinder pumps for the proposed collection system?

3) A portion of the collection system may be shared (the portion that runs along Highway 83 from Dashwood to the Grand Bend Sewage Treatment Plan).

Is the total estimated cost of this portion \$5.5 million, or is \$5.5 million the portion Bluewater would have to pay for this portion of the system?

Thanks, Sincerely,

Ben Forrest Exeter Times-Advocate 519-235-1336 ext. 114 bforrest@southhuron.com



## MUNICIPALITY OF BLUEWATER Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Public Information Centre 1 – Record of Comments August 28, 2010

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	Janet Smolders, MCIP Project Manager Dillon Consulting Limited Box 426, London, Ontario, N6A 4W7 Tel: (519) 438-1288 Ext. 1268 Fax: (519) 672-8209	DILLON
ame:	Janet Smolders, MCIP Project Manager Dillon Consulting Limited Box 426, London, Ontario, N6A 4W7 Tel: (519) 438-1288 Ext. 1268 Fax: (519) 672-8209 Email: jsmolders@dillon.ca	DILLON
ame:4	Janet Smolders, MCIP Project Manager Dillon Consulting Limited Box 426, London, Ontario, N6A 4W7 Tel: (519) 438-1288 Ext. 1268 Fax: (519) 672-8209 Email: jsmolders@dillon.ca	DILLON
ease complete and place in ame: ddress and Postal Code:	Janet Smolders, MCIP Project Manager Dillon Consulting Limited Box 426, London, Ontario, N6A 4W7 Tel: (519) 438-1288 Ext. 1268 Fax: (519) 672-8209 Email: jsmolders@dillon.ca	DILLON
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By email: jsmolders @ dillon.ca - aug. 30/1

Project No. 10-3169

From: Higgins Engineering [higginsengineering@bellnet.ca]

Sent: Tuesday, June 08, 2010 12:34 PM

To: Smolders, Janet

Subject: Re: Highway 21 Corridor Sanitary Sewage Collection System

Janet,

Higgins Engineering Limited, Suite 306, 416 Moore Avenue, TORONTO, Ontario. M4G 1C9

We will be representing who owns the 30.8 Ha. parcel at Hwy 21 & Hendrick Road.

(Part of Lots 20 &21, 72001 &72049 Bluewater Highway)

The properties will be developed as Lakeshore Residential with an anticipated yield of several hundred units.

Accordingly, we are interested in the location, capacity and general layout of any proposed sanitary pump stations or force mains. We anticipate investigating how the proposed design will tie into any local connections via the gravity collection system we will most certainly use for most of the proposed development.

We would be quite happy to meet with you and your design team prior to your "phase 2" presentation to make sure we are all on the same course.

(We met briefly with Brent Kittmer a couple of months ago when this project was initiated).

Thank You,

Stewart Higgins, P.Eng

----- Original Message -----From: <u>Smolders, Janet</u> To: <u>Higgins Engineering</u> Sent: Tuesday, June 08, 2010 11:36 AM Subject: RE: Highway 21 Corridor Sanitary Sewage Collection System

Thanks, if you could send a land address, that would be most appreciated. Thanks, Janet



Janet Smolders, MCIP Associate Dillon Consulting Limited 130 Dufferin Avenue, Suite 1400 London, Ontario, N6A 5R2 T - 519.438.1288 ext. 1268 F - 519.672.8209 JSmolders@dillon.ca www.dillon.ca

A Please consider the environment before printing this email

From: Higgins Engineering [mailto:higginsengineering@bellnet.ca]
Sent: Tuesday, June 08, 2010 11:32 AM
To: b.kittmer@town.bluewater.on.ca
Cc: Russell Higgins; ceckert1@tcc.on.ca; Smolders, Janet
Subject: Highway 21 Corridor Sanitary Sewage Collection System

Good morning,

Would you be so kind as to add the writer to your contact list for the above noted project.

9/30/2011

Thank You,

L. Stewart Higgins, P. Eng.

Higgins Engineering Limited 416-443-8001

This message is directed in confidence solely to the person(s) named above and may contain privileged, confidential or private information which is not to be disclosed. If you are not the addressee or an authorized representative thereof, please contact the undersigned and then destroy this message.

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No virus found in this incoming message.

Checked by AVG - www.avg.com

Version: 9.0.829 / Virus Database: 271.1.1/2925 - Release Date: 06/08/10 02:35:00

From:

Sent: Thursday, September 02, 2010 1:46 PM

To: Smolders, Janet

Subject: feedback concerning the municipality of Bluewater Highway 21 corridor sanitary sewage collection system

Hello Janet,

I am writing to provide you my feedback concerning the municipality of Bluewater Highway 21 corridor sanitary sewage collection system proposed preliminary design. I attended the information session in Dashwood last weekend, spoke with the engineers present, gathered and read the various information that was handed out and also studied the posters at the session.

My wife and I own a waterfront cottage (

We are both strongly in favour of the sewer project going ahead, as soon as possible. We have spent considerable money since first building our cottage 29 years ago, ensuring that our septic system works as well as possible. We have installed surface water drain lines and catch basins on both sides of our property to reduce the extent of water sitting or top of the septic leaching bed. We've also had the leaching bed itself completely replaced once, about 10 years ago. In spite of all this due diligence, we and our cottage neighbours have periodically experienced problems with our septic systems, partly due to the fact that the clay soil here does not absorb water very quickly. As well as potentially causing environmental damage, the unreliable functioning of the septic systems along our cottage road can play havoc with our lives here - e.g., a family Christmas gathering two years ago during the middle of which we had to call in Grand Bend sanitation on an emergency basis to have the septic tank pumped, because the system wasn't working properly.

I studied the two alternative solutions put forward by Dillon Consulting - the conventional gravity system, and the low pressure system. (I am an engineer myself by training). It appears to me there is no choice in the matter: the low pressure system is the only way to go. The gravity system would be far more disruptive, far more expensive, and simply doesn't make sense in this environment.

However, I did raise a question concerning the efficacy of the low pressure system with the engineers at the meeting in Dashwood. I never did really get a satisfactory answer to the question. So I'll put it here also.

The question is this: many of the cottage communities along Highway 21 are highly seasonal. In practically all of our communities north of the water plant, there are a small number of year-round residents, and a large majority of residents are here during the summer months only. For example on our cottage road, there are 34 cottages altogether, or which three are permanent and the other 31 are seasonal. This pattern is typical for many of the cottage communities in this area.

My concern and question arises regarding how well the low pressure system would work during the winter months, when there are very few homes in the subdivision actually trying to push effluent out through the pipe. The one horsepower grinder pumps being promoted by Dillon would be perfectly adequate for pressuring the effluent liquid ou from the house into the line running along the cottage Road, at which time during the summer months other pumps would also be contributing to pushing the load along the pipe. However in the winter months, it could be that just a single pump (e.g., mine) has to push the effluent liquid the **entire length of the pipe** (i.e., to the first collection station which would probably be at the far end of my cottage road). The further a pump has to push liquid along a pipe, the harder it has to work to push the next bit along. The question then is, would these pumps possibly burn out, or have a unexpectedly short life, because they're having to work so hard at pushing the liquid down the line in the winter months?

Another way of thinking about this, is to imagine the pipe that the pump is pumping into being vertical, instead of

9/2/2010

horizontal. It's obvious then that the higher you have to pump the liquid in the pipe, the harder the pump has to work. The same principle applies even if the pipe is horizontal, it just doesn't happen quite so quickly. The forces of friction and turbulence of the water flow in the pipe put back pressure on the line, causing the pump to have to work harder and harder the more it pushes down the line. It could be quite a long stretch of pipe between my cottage and the first collection point at the end of the cottage road - it could be perhaps 500 m or more. Can the one horsepower pump actually push the liquid that far, day after day, during the winter months, without overheating or possibly even burning out, or shortening its life?

I asked all the engineers at the meeting this question, and got different answers from each person, although none of them seem to think it would be a problem. However none of the answers were really convincing to me. I don't think they were understanding my point. So I would very much like to have this question raised during the discussion of the design, and would like to receive specific feedback and a guarantee from Dillon Consulting or perhaps from the manufacturers of the low pressure pump system, guaranteeing that their pumps would be able to handle this load, and would not have their life notably shortened as a result of the phenomenon I'm talking about above.

That issue aside, you can put us both in the "very keen to proceed as soon as possible" column.

Yours sincerely,

.....

From: Sent: June 9, 2011 9:44 PM To: Boussey, William Cc: Smolders, Janet; Brent Kittmer; Subject: 18 mile study reference to human waste at 3%

Hi Bill,

It was nice to catch up today. I hope the following helps.

The report which indicates that human waste is 3% is at <u>http://www.nrcresearchpress.com/doi/abs/10.1139/W08-123</u>. The report is *Repetitive element (REP)-polymerase chain reaction (PCR) analysis of Escherichia coli isolates from recreational waters of southeastern Lake Huron* Published on the web 27 March 2009.

BSRA makes reference to it on page 9 of its 2009 Water Quality Report - <u>http://www.bsra.ca/Water\_Quality/wq%</u> 2020091216%20BSRA\_2009\_Water\_Quality\_Report%20Final.pdf

I am no longer a director of BSRA but continue to support them. The BSRA spring newsletter article was originated by Mal Kay. I have copied Mal as a means of connecting you for further discussion.

For my part I think I understand the options I as a homeowner in Bluewater face. In reading today's materials I come away thinking that it will cost me a minimum of \$29,800 (page 22 + 23) to have a sewer connection. While I don't know the exact cost I understand, from discussion with some who have recently installed a tertiary system for homes larger than mine, that the cost would be less. It is not within the purview of this study (communal) however should my recently inspected system deteriorate and subsequently fail; a tertiary system could be installed in the 40x50 clear space that I have. I don't know if a tertiary system can come close to the proposed sewage treatment plant I wonder if Bluewater cannot set the treatment bar higher for tertiary systems. I am not happy with the simple I flush and it goes away as long as I maintain my old septic system.

With significant government funding a pressure system is an alternative and I am pleased that we have this on the shelf However this means deferring growth therefore some tax relief.

6/14/2011



MUNICIPALITY OF BLUEWATER Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design





Public Information Centre 1 – Record of Comments August 28, 2010

Comments: MORE PUBLIC INPUT BESIDES COMMENT CARPS

THE NEXT PIC MUST HAVE A PANEL

OF REPS FROM DILLION, THE MUNICIPALITY

AND INTEREST GROUPS IC BSRA, RATEPAYER ASS'NS

THIS PANEL MUST TAKE QUESTIONS FROM

# RESIDENTS

JANET AS PROJECT MANAGER, YOU COULD BE THE FACILITATOR TO ENSURE PROCEEDINGS ARE DONE IN REPECTFUL, PROFESSIONAL MANNER Please complete and place in the comment box or return by September 17, 2010 to: THES DI

Janet Smolders, MCIP Project Manager Dillon Consulting Limited Box 426, London, Ontario, N6A 4W7 Tel: (519) 438-1288 Ext. 1268 Fax: (519) 672-8209 Email: jsmolders@dillon.ca

DILLON

Name: \_\_\_\_\_

Address and Postal Code:

Telephone/e-mail: \_\_\_\_\_

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# MUNICIPALITY OF BLUEWATER Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Public Information Centre 1 – Record of Comments August 28, 2010

Comments: 00 etu 05

Please complete and place in the comment box or return by September 17, 2010 to:

	Janet Smolders, MCIP Project Manager Dillon Consulting Limited Box 426, London, Ontario, N6A 4W7 Tel: (519) 438-1288 Ext. 1268 Fax: (519) 672-8209 Email: jsmolders@dillon.ca			DILLON CONSULTING	
Name:					
Address and Postal Code:		·	1	5	1
Telephone/e-mail: _	·	· //	.1.		1

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#### Smolders, Janet

From:Brent Kittmer [b.kittmer@town.bluewater.on.ca]Sent:Tuesday, September 07, 2010 8:54 AMTo:Image: Comparison of the second second

Subject: RE: Comments on Bluewater Highway 21 Corridor Sanitary Sewage Collection System

I do not see any errors in your information. I would like to explain that the per household costs are scheduled to be released later into the fall once the steering committee has received a recommendation for the preferred technology, and has made certain policy decisions regarding the infrastructure (i.e. municipality to pay for grinder pumps etc.).

I would also like to mention that a delegation from council has approached the upper levels of government for funding to reduce the cost to each homeowner.

I have added your contact information to my contacts list. I periodically send out information updates to this group. Please let me know if you do not wish to be included on the list.

Kind regards, Bren

#### **Brent Kittmer**

Utilities Superintendent Municipality of Bluewater 14 Mill Avenue, PO Box 250 Zurich, ON NOM 2T0 519-236-4351 ext. 221 (phone) 519-236-4329 (fax) b.kittmer@town.bluewater.on.ca

From: Column Head of Sent: Monday, September 06, 2010 5:31 PM To: jsmolders@dillon.ca; Brent Kittmer Subject: Comments on Bluewater Highway 21 Corridor Sanitary Sewage Collection System

Attached is a writeup I prepared based on information I received at the Public Information Meeting regarding the above subject on August 28th. These will be circulated to the Schadeview Residents Association and possibly the Bluewater Shoreline Residents Association. Please let me know if there are any errors in the information.

# Notes from August 28, 2010 Public Information Meeting on Bluewater Highway 21 Corridor Sanitary Sewage Collection System by

The handout from this meeting is available at: \\\<u>http://bluewater.civicweb.net/Documents/DocumentList.aspx?ID=1859</u> .

# Background

The Municipality of Bluewater is proposing to construct a Sanitary Sewage collection system to serve the Lakeshore area from Highway 83 north to St. Joseph, and along Highway 83 from Highway 21 to Dashwood. They have identified the Lakeshore area as the first priority with the Dashwood area to be serviced at a later date.

Sewage from the area would be piped to the Grand Bend Sewage Treatment Plant. At present, an expansion to this plant is planned to accommodate sewage from Lambton Shores, Bluewater and South Huron.

The main reasons given for the project were accommodation of future growth and increased year round use combined with poor soils for septic systems and increased environmental concerns about pollution from septic systems. Part of the area under consideration (including Schadeview) is along the Lake Huron Water Treatment Plant Intake Water Protection Zone, and will likely come under increasing pressure from the Provincial Government to reduce pollution.

The information presented shows that roughly one half of septic systems in the Lakeshore area have problems of various degrees. The clay soil in this area is not suitable for conventional inground tile beds. The study by Dillon Consulting claims that a minimum lot size of 6000m<sup>2</sup> (1.48 acres) is required for a conventional septic system, and this is well above the typical lot size. A previous study by Dillon identified that the new Tertiary Treatment Systems, such as the Waterloo Biofilter System (the Griffiths have one) only need 650m<sup>2</sup>.

# **Consultants Information**

The Dillon Study concluded that septic systems were not a long term sustainable solution and that a sewage collection and treatment system is necessary for the Bluewater Shoreline area. Since no suitable site for a sewage treatment plant was identified in Bluewater, it is proposed to treat the sewage at the Grand Bend plant. Bluewater is spending \$2.3 million to secure capacity in the plant expansion for sewage treatment. This cost will be recovered from users. An additional \$5.5 million is budgeted to convey the sewage from Bluewater to the Grand Bend plant. Two options have been proposed for the remainder of the sewage collection system. These are: a gravity system; and a low pressure pumped system.

The gravity system would collect sewage from each residence by gravity flow, as is done in most systems. Due to the number of ravines and varying grades in the area, a number of pumping stations

would be required. The estimated cost for this type of system to serve the Highway 21 corridor is \$44.8 million. It would require extensive excavation and restoration work.

The low pressure system would require each residence to have a device called a grinder pump which collects the sewage, grinds it into a slurry and pumps it into the sewer. This system uses smaller sized pipes and can be installed using directional drilling technology, the same way that gas lines are now installed. The homeowner would be responsible for the purchase and maintenance of this device. The estimated cost for the low pressure system is \$18.4 million, not including the cost of the grinder pump and its installation. The grinder pump is estimated to cost at least \$5000 (plus HST), and will require electrical wiring and plumbing connections, so that installation costs could be an additional \$5000. This system is the one preferred by Dillon.

#### **Cost Analysis**

The representatives present at the information meeting refused to give an estimated cost for an individual installation. The best that they could do was to suggest that I calculate the number based on the information provided. The following are my calculations, based on the information provided by Dillon.

According to Dillon, there are about 1010 houses in the area to be serviced, including Dashwood. If we spread the cost of the Grand Bend Plant Expansion and connection over these, the cost per house is: (\$2.3 M + \$5.5 M)/1010 = \$7700.

The cost of a gravity system for the 920 houses along the Lakeshore is estimated at \$44.8 M, giving a cost per house of \$48,700, not including the cost of connecting the house to the sewer. Therefore, the total cost from the Dillon information would be \$48,700 + \$7700 = \$56,400 per house for the gravity sewer system. In addition, there would be a \$700 per year operating cost per house.

The cost of the low pressure pumped system is estimated to be \$18.4 M, giving a cost per house of \$20,000. This does not include the grinder pump, which could add an additional \$10,000, giving a cost of \$30,000 per house. Therefore, the total cost from the Dillon information would be \$30,000 + \$7700 = \$37,700 per house for the low pressure system. Operating costs would be an additional \$600 per year per house.

As a comparison, Dillon estimates the cost of an on-site tertiary treatment system as \$10,000 to \$20,000, which they label as "high".

#### Comments

Bluewater seems committed to spending over \$36 million for a sewage collection and treatment system. The costs for this will have to be recovered from users, or subsidized by the taxpayer through grants. All of the existing septic systems could be replaced with on site tertiary treatment systems for \$20 Million.



## MUNICIPALITY OF BLUEWATER Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Public Information Centre 1 – Record of Comments August 28, 2010

**Comments:** 

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Please complete and place in the comment box or return by September 17, 2010 to:

Janet Smolders, MCIP Project Manager Dillon Consulting Limited Box 426, London, Ontario, N6A 4W7 Tel: (519) 438-1288 Ext. 1268 Fax: (519) 672-8209

.



Name:

Address and Postal Code: \_\_\_\_

Telephone/e-mail: \_\_\_\_

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#### MUNICIPALITY OF BLUEWATER Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Public Information Centre 1 – Record of Comments August 28, 2010

**Comments:** 

COST FIGURES ARE VERY THE CONFUSING. PLEASE RE-CALCULATE SHOW THE ACTUAL PUSSIBLE COSTS - BOTH INSTALLATION AND MAINTENANCE. TIMING OF EACH PHASE IS THE UNCLEAR. WHAT WOULD BE THE EARLIEST POSSIBLE INSTALLATION AND THE RANGE LIKELY INSTALLATION NATES

Please complete and place in the comment box or return by September 17, 2010 to:

Janet Smolders, MCIP Project Manager Dillon Consulting Limited Box 426, London, Ontario, N6A 4W7 Tel: (519) 438-1288 Ext. 1268 Fax: (519) 672-8209 Email: jsmolders@dillon.ca



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#### HIGHWAY 21 CORRIDOR SANITARY SEWAGE COLLECTION SYSTEM CLASS ENVIRONMENTAL ASSESSMENT (EA) & PRELIMINARY DESIGN

Please fill out this form and return it to Dillon Consulting Limited.

U	I/we would like to be kept informed about this project. The contact name and address is:
	Phone:
	E-mail:
Г	I/we do not wish to be kept informed.
	We are willing to participate in a survey of our septic system. Please contact Dillon for more information.
Comm	nents/Questions/Concerns:
11	DO NOT NEED A SURVEY OF OUR SEPTIC -
SYS	TEMO
M	Y COMMENTS AT ATTACHED.
/	
3 <u></u>	

Please return this form by May 28, 2010 to:

Janet Smolders, MCIP, Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca

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Our File: 10-3169

The following comments are comments by myself and echoed by many other people of the Municipality of Blue Water through day to day discussions. The true feelings of the people are much more able to be expressed in these surroundings than at a meeting held for that purpose.

1) Many individuals from the surrounding areas with low incomes are unable to afford the astronomical cost of the sewage treatment systems that have been suggested at this point.

2) The people do not feel they are being treated properly by those who are well off financially and seem to want to live by the lake or in a wealthy retirement settlement and have the nerve to try to drag finances from the local people for the treatment plant these wealthy individuals think they need. The feeling is if the people from Lampton Shores and the cottage country people along Lake Huron, have the money to live the way they do and where they do, with quite likely two or more homes, then they should have to pay the cash themselves needed to have what they want Stop trying to dictate to the citizens of these country municipalities how to spend the money they do not have on sewage systems that will advantage them very little, unless their septic system is not working properly of course.

3) The Municipalities need to spend their time making sure the septic systems that are not working properly are repaired and this would be much more necessary and cost effective for those who have paid taxes here for many years, than what is being proposed by the hired firms at this point.

4)Many of the people in Dashwood and east of St Joseph on Hwy # 83 have newer homes and / or have septic systems which are oversize and have a weeping bed in sand or fine stone that is working very well, and will for many years to come. My home and many others are similar to this in Dashwood and do not have a need for this system. Even though my lot is smaller it has the finest washed stone and sand with the best weeping ability possible.

5) My final comment is primarily for Blue Water Municipality.

I would like to suggest, after researching grinder pumps as a way to move the sewage from the homes, it should not even be recorded in the books as an option. This idea would be at a very high cost to each home owner and does not make any sense. There must be electrical power just to flush a toilet. There is much more upkeep and repairs to a mechanical system such as this. With more gravity or natural fall from Dashwood to Lake Huron than the height of a silo this system would seem foolish and this idea needs to be removed from the books even if something were to be done in the future with the Village of Dashwood. I would hope nothing is ever done in Dashwood until a gravity system is the option for both the Blue Water side and the South Huron side of the Village. Both sides need to work together with one main pipe down the main street When I spoke to both Municipalities I realized there does not seem to be any agreement between South Huron and Blue Water at this point. My final point is a question to Blue Water. Why are you using a different company to research the sewage treatment plant for this area than South Huron is? How can you expect to get a system to work when you put together plans from two different firms with each having different ideas as to how the job should be done? Grinder pumps need to be left out of the future plans!!

Thanks, Sincerely,

1

-

From:Sent:Tuesday, August 31, 2010 11:13 AMTo:Smolders, Janet; Boussey, WilliamCc:d.giberson@southhuron.ca; r.hardy@southhuron.ca; dhicknell@gamsby.comSubject:Sewer collection system: Route from Bluewater to Grand Bend lagoons

#### Dear Ms. Smolders, Mr. Boussey, et al.,

I am writing to you concerning the potential routing of a sanitary sewer to serve residents along the lake shore in Bluewater. I received notice of a public meeting to be held on Sept. 1, but I cannot attend at that time, so I contacted Don Giberson to find out about the sewer study and proposal. According to Mr. Giberson, one of the routes under consideration to deliver sewage from Bluewater to the Mollard Line sewage lagoons runs along Gore Rd. and the B Line. I would like to express my strongest opposition to such a plan. There are at least two significant reasons why running the sewer from Bluewater to the lagoons along the B Line is completely unacceptable.

The first problem is the idea that one can justify performing this work to benefit one group of people in one municipality to the detriment of another group in another municipality. The residents and property owners along Gore Rd. and the B Line will derive no benefit at all from the proposed forcemain sewer, yet its installation and ongoing maintenance will have a major negative impact on us. Already we have suffered and continue to experience the headaches resulting from installation of major municipal water lines under our road. Several years ago, our lives, mobility, and enjoyment of our properties were severely disrupted for an extended period by activities related to the installation of 10" and 24" mains under the middle of the road. The work began with breaking up the asphalt paving on the entire length of the road, followed by the excavation of a deep pit at the pipeline junction box. The latter spanned the whole width of the road, rendering it impassable. At that point, the work was suspended to wait for needed parts; the pit was not filled and the road remained closed and impassable for many months while still no work was proceeding. A year went by before the job was completed. The road was eventually re-paved. Since then, the road has been dug up at least twice for repair work on the water lines, each instance of disruption persisting for several months. I do not want to suffer through this kind of intrusion again, nor do I like the prospect of compounding the already annoying and repeated repairs to the water distribution system with sewer repairs, both of which, of course, will be made more complicated by the close proximity of the two systems (not to mention the 5 waterways/drains crossing the B Line).

The second substantial fault with the proposed route is that it rejects the obvious opportunity available for collaboration between neighbouring municipalities for the common good. Lake shore developments in South Huron and in Bluewater both require sanitary sewer service. It would be foolish and irresponsible to pass up the chance to deal with this common issue jointly to create a positive solution that has the maximum benefit for all concerned and avoids negative impacts on unrelated parties, such as Gore Rd. and B Line residents. It seems pretty obvious that the sewer should run along the Hwy. 21 corridor from Bluewater to the village of Grand Bend, and from there up Grand Bend Line (Rd. 81) to Mollard and the lagoons. The capacity of the pipe would, of course, need to be larger for a joint project than for each of the two pipes required for the municipalities to act individually, but this offers the benefit afforded by economies of scale in the costs of both materials and labour (and probably maintenance as well), and minimizes the associated disruption to residents and travellers alike. In fact, although I am not current on the details, I understand that Lambton Shores is also considering sewer projects, and it is quite likely that some form of collaboration benefiting all three municipalities could be achieved if the parties have an honest commitment to the common good.

Sincerely,



#### MUNICIPALITY OF BLUEWATER Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Public Information Centre 1 – Record of Comments August 28, 2010

**Comments:** 

Please complete and place in the comment box or return by September 17, 2010 to:

Janet Smolders, MCIP	
Project Manager	1
Dillon Consulting Limited	
Box 426, London, Ontario, N6A 4W7	DILLON
Tel: (519) 438-1288 Ext. 1268	CONSULTING
Fax: (519) 672-8209	
Email: jsmolders@dillon.ca	
Name:	
10	
Address and Postal Code:	
Telephone/e-mail:	

The *Freedom of Information and Protection of Privacy Act* applies to this project. With the exception of personal information, all comments will become part of the public record.

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From: Brent Kittmer [b.kittmer@town.bluewater.on.ca]

Sent: Tuesday, March 08, 2011 8:30 AM

To: Boussey, William; Smolders, Janet

Subject: FW: Lakeshore Sewage Collection Project - Notice of Steering Committee Meeting #3

FYI

Brent Kittmer Utilities Superintendent Municipality of Bluewater 14 Mill Avenue, PO Box 250 Zurich, ON NOM 2T0 519-236-4351 ext. 221 (phone) 519-236-4329 (fax) b.kittmer@town.bluewater.on.ca Please consider the environment before printing this e-mail

From: jandonrob@golden.net [mailto:jandonrob@golden.net]
Sent: Monday, March 07, 2011 9:46 PM
To: Brent Kittmer
Subject: Re: Lakeshore Sewage Collection Project - Notice of Steering Committee Meeting #3

Mr Kittmer

Thank you for the notification of the meeting this Thursday in Varna. Since I have a meeting in Kitchener Thursday morning, I probably will not be able to reach Varna in time.

For that reason I am sending you this e-mail to identify a serious concern I have about the sewage project for zone 3. Without going into the highly emotional tangle and controversy, there is one very real physical problem that does not seem to be on anyone's radar. That problem is the distance that raw sewage will be pumped from Bluewater to Grand Bend. An independent civil engineer has told me that the amount of flow and the regulation of pressure over that distance is an engineering and maintenance nightmare. He has done the math.

Could someone at the meeting seek an independent engineering assessment of that aspect of the project ?

The engineer who spoke to me said there are other knowledgeable engineers in Goderich who are quite happy they are not involved in the project, because they sense disaster in that aspect.

If zone 3 does need a sewage system, it might be a good idea to build something more local, without the dangerous transportation threat.

I will be happy to discuss this if I can get to the meeting, but I thought it was important to raise this now in case I don't. Thank you for your attention.

Regards

From:

Sent: Wednesday, March 09, 2011 2:45 PM To: Brent Kittmer

...

Subject: Re: Lakeshore Sewage Collection Project - Notice of Steering Committee Meeting #3

....

Hello Brent

Thank you for your follow up. I will be in contact with my engineer to see how we can communicate the info.

 $\hat{\omega}$ 

Roughly, his concern was that there will be solids in the main sewer even if grinders are used, and to keep these solids from settling out in the flow a significant amount of flow will have to be maintained at all time, 24/7, twelve months of the year. A second concern he had was that in a system of the proposed length, there would have to be relief valves, and when these functioned they would be excreting raw sewage as part of the relief outflow.

I think you can see that these concerns are not part of the emotional debate. They are pretty specific engineering concerns. I will try to have more precise data from him as soon as possible.

Thanks again for your efforts.

Regards

If you could provide the information by email that would be great. I can have Dillon's engineers make contact, and possibly they could start their communication via email.

Thanks, Brent

Brent Kíttmer

Utilities Superintendent Municipality of Bluewater 14 Mill Avenue, PO Box 250 Zurich, ON NOM 2T0 519-236-4351 ext. 221 (phone) 519-236-4329 (fax) b.kittmer@town.bluewater.on.ca A Please consider the environment before printing this e-mail

From: ;

-- cyviuu..... Sent: Tuesday, March 08, 2011 2:01 PM To: Brent Kittmer Subject: Re: Lakeshore Sewage Collection Project - Notice of Steering Committee Meeting #3

**Hello Brent** 

Thank you for your prompt response. My engineer is finishing a house-sitting in Vancouver until April 10. I could ask him to provide his info by e-mail, or we could wait 'til he gets home. What would be your preference ? Thanks again for your attention to this matter. Regards

1 to

From: Brent Kittmer [b.kittmer@town.bluewater.on.ca] Sent: Friday, March 04, 2011 11:41 AM

To: Boussey, William; Smolders, Janet

Subject: FW: sewers

FYI

#### Brent Kittmer

Utilities Superintendent Municipality of Bluewater 14 Mill Avenue, PO Box 250 Zurich, ON NOM 2T0 519-236-4351 ext. 221 (phone) 519-236-4329 (fax) b.kittmer@town.bluewater.on.ca Please consider the environment before printing this e-mail

#### From:

Sent: Friday, March 04, 2011 10:01 AM To: Brent Kittmer Subject: sewers

#### Dear Brent,

have a summer cottage . We are totally against sewers. They make no 1 sense. They are a money making proposition and are a ridiculous idea. Any Engineer will tell you that septic systems are far more sensible and environmentally better than sewage systems. Sewers make no sense when the residences being served are strung along a long line along Lake Huron and most of those residences are not being used for 8-9 months of the year. If there is a problem in the Highlands subdivisions, then perhaps better drains or holding tanks need to be installed there, rather than ramming sewers onto to everyone, when our septic systems are working fine. Clearly our large lots in the St. Joseph subdivions 1 and 2 are not problematic. If we had a problem with our own septic system, we'd replace or repair it, which would be far cheaper than these sewers. Also, it is suspect that such an important meeting is being held March 10, in the dead of winter, when clearly many residents are vacationing down south or are back at their permanent homes in the city. Even John Gilespie is conveniently absent for this due to a vacation, when he indicated prior the election that he'd be strongly opposed to sewers and won our votes because of his supposed stance on the issue. Coincidence?? One wonders. Too much politics are going on. They appear to be rammed down our throats. Clearly the sewage systems and pumps used in Bayfield are problematic and causes of ongoing expense to the home owners. Sewers are a waste of OUR money. I have a strong feeling those of us who are against them and there are many many of us will not back down easily to all the pressure to put them in place, and may have to look at options to protect our rights and interests. Has the council or BSRA even considered polling by letter the residents of St. Joseph 1 and 2 to get their opinion? Surely this is part of our democratic right. Also it has been documented that the main source of pollution comes from the farmers, not the single family homes and cottages along the lake. It is a make work project plain and simple. We are already the highest taxed subdivisions in the area. Why burden us further when they are not needed.

I ask respectfully that those in charge deal with the problems in the Highlands subdivision, who want sewers and leave us out of the sewer consideration.

Respectfully,

----Original Message----From: Bob [mailto:robert.slow@sympatico.ca] Sent: June 23, 2011 4:45 PM To: Boussey, William Cc: Bill kelliher Subject: Draught proposal

....

Last kick at the cat Bill.Interesting article in the London Free Press about an 80 acre farm in Mt.Brydges.A new sewer trunk line and pumping station has led to developers buying this prime farmland for a 214 home subdivision!Better that than a solar array facility!So much for protecting prime farmland!! Here we go!

pg. 20-What are specs., costs, and warranties on grinder pumps?What is Dillon recommending?

pg. 21-systems are successful because of annual maintenance contracts paid for by the homeowner.Imagine such contracts on septics!!Also with power outages what would a generator cost?Again give specs, costs and warranties of same.

pg. 22-note 6-What are each of these costs per lot and add this to the \$21000 in table A section 5.

pg. 23-note 7-\$5500 for grinder pump?Seems like a lot for a pump?Is this \$5500 included in costs in table B last column?

-note 8-costs of these options?

What then would the overall costs be with the HST, the generator, the grinder pump, the balancing tanks and the decommissioning of the old septic tank?My guesstimate for my property tops out at close to \$50000!!Say it isn't so Bill!!

pg.24-explain what these costs are and how they are calculated in table sections 2,3,&4.

pq.25-recalculate on basis of my queries about pg. 22&23 above.

pg.26-bullet 4-4hours is not a lot of capacity.I doubt that neighbors will be as accommodating as the person on pg.5 during an electrical outage and could existing septics be used as holding tanks during such emergencies?Also are grinder pump contracts honored 24 7 365?

pg.28-how many lots are there in each phase and what is the average cost of each with the pressure system?

pg.29-Agree that the system not proceed and applying a benefit cost analysis the costs far outstrip the benefits that mainly accrue to developers!!

Might I suggest that Dillon develop a septic reinspection program based on the Tiny Township model for communities that lack resources to install sewer systems. I earlier alluded to a solution re the manure problem in the province.Dillon should look closely at anaerobic digester technology for this and many other wastes.These digesters are diverse and versatile digesting a host of organic substrates (I visited a greenhouse near Jordan which was producing electricity and heat from waste potatoes and dog food that formerly was sent at great expense to a landfill) and reliable supplying energy 24 7 365!!Take that Mr.McGuinty! I pitched this proposal to Carol Mitchell and the then Environment Minister Leona Dombrowsky and they appeared enthused but unfortunately Ms.Dombrowsky was moved to Agriculture where I think the idea died!!Perhaps if the Standard Offer Contract now the FIT program would be increased to 30 cents/ kWh farmers and venture capitalists would finance such facilities.The economic benefits would be great but the environmental value would be enormous.Engineering possibilities for you and Dillon? Hope this is helpful and gives you a break in your day. ----Original Message----From: Sent: June 9, 2011 8:25 PM To: Boussey, William Subject: E.coli info

Hello Bill-we talked after the meeting today and I gave you and Janet? some info on DNA analysis in 18 Mile Creek north of Goderich.Study was published in the Canadian Journal of Microbiology Mar.2009Vol.55#3 pgs 269-276.Study found 3% of E.coli was human and 60% was due to agricultural (manure).E coli as you know is the main indicator of fecal pollution and as such is used as a guide for water quality throughout the world.

The other issue was the voluntary septic inspection program initiated by the HCHU and terminated several years ago. They inspected several hundred septics over the years and found few problems with none requiring replacement. The actual numbers are available through their offices in Clinton.I will address other issues with your draft later with a few suggestions to improve it?I will address the agricultural problem with an Engineering solution also. This is where I see Dillon making a real contribution to our agricultural conundrum. Off to the turbine meeting tomorrow!! Will stay in touch.

Bob Slow

Sent from my iPad



MUNICIPALITY OF BLUEWATER Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

**Public Information Centre 1 – Record of Comments** August 28, 2010 **Comments:** use Sconer han Rnow Re (r Ŝ 54 15 C a Many Marqu CM. 10 SPUL KSIdon Pm, ho JUS Please complete and place in the comment box or return by September 17, 2010 to: has Janet Smolders, MCIP Project Manager Europea Dillon Consulting Limited Box 426, London, Ontario, N6A 4W7 DILLON with the Tel: (519) 438-1288 Ext. 1268 Fax: (519) 672-8209

Name: \_\_\_

Address and Postal Code: \_\_\_\_

Telephone/e-mail: \_\_\_\_

The Freedom of Information and Protection of Privacy Act applies to this project. With the exception of personal information, all comments will become part of the public record.

Email: jsmolders@dillon.ca

From:	Brent Kittmer [b.kittmer@town.bluewater.on.ca]
Sent:	Monday, July 25, 2011 10:09 AM
То:	
Cc:	Smolders, Janet
Subject:	RE: Question from concerned tax payer
Attachments:	: Lakeshore Sanitary Sewer EA - Frequently Asked Questions (March 24, 2011).pdf

Good morning,

I have attached a list of frequently asked questions that has been developed for this project that provide information with respect to your questions below.

Please do not hesitate to contact me if you require further information.

Regards, Brent

Brent Kittmer

Utilities Superintendent Municipality of Bluewater 14 Mill Avenue, PO Box 250 Zurich, ON NOM 2T0 519-236-4351 ext. 221 (phone) 519-236-4329 (fax) b.kittmer@town.bluewater.on.ca Please consider the environment before printing this e-mail

#### From:

**Sent:** Friday, July 15, 2011 1:01 PM **To:** Brent Kittmer **Subject:** Question from concerned tax payer

re. the proposed sanitary sewage collection system. I am unable to attend the upcoming meeting but have the following questions:

1.) doesn't anyone realize what the current economy is??? paying taxes as they are now is more than difficult for people in this area but any kind of increase will force at least some homeowners out. Just check what's happened in the Bruce area. Cottages and homes which have been in families for generations have had to be sold off due to escalating taxes.

2.) does the proposed system recommend mandatory involvement?

3.) what's the latest re. propsed timeframe?

Thanks for your direct response to me.

#### Have your say

Home Have your say Pssst--ya wanna buy a sewel

#### Pssst--ya wanna buy a sewer

#### Have your say

Letter to ed

Posted By Bob Slow

Posted 1 day ago

Well no not really as we already own one in London thanks. It is a marvel of modern engineering and expensive to maintain thus the Sewer Surcharge (not a tax) implemented 8 years ago at 8 to 10% annually. As sewers need water we pay a Water Surcharge (not a tax) again at 8 to 10% annually for the past 8 years. Occasionally the system overloads and backs up in Londoners' basements and fun is had as one fights City Hall and one's insurance company for compensation.

So why does Bluewater with the assistance of Dillon Consulting want me and 1000 or so others along the Lakeshore to abandon our low tech, inexpensive, tried and true septic systems for an expensive, wonky, Rube Goldbergian lowpressure system?

Well it seems that Dillon hired by Bluewater feels that septics suck.I gained this insight from a 26 page Dillon handout a few weeks ago in Dashwood. (PIC session #1-does PIC stand for pick my wallet?) My Engineer friend said that it's like putting the fox in charge of the proverbial henhouse.It's dillicuit to respond to all the disparaging remarks in the report but let me address a few.

1.Septics have a service life of 20 years-Even if we accept this as Gospel I must caution Dillon that 70% of Lakeshore owners are part-timers spending only a few months annually here thus alleviating the loading and stress on their septics and hence extending their service life. Among full-time residents (30% of Lakeshore owners) are the substantial number of "Snowbirds" who again by their absence enjoy the aforementioned septic benefits.

2.Dillon cites a 2005 E. coll DNA study on the Zurich Drain stating that these E. coll came from agriculture and domestic sewage. I participated in this study with sampling limited to only 1 day and expected E. coll from domestic sewage as Zurich empties its lagoons annually into the drain.No E. coll was proven to come from cottager's septical! Dillon should have cited the more recent and extensive 2 year E.coll DNA study north of Goderich carried out by the University of Guelph and the Ministry of the Environment. The findings showed that 65% of the E.coll in the streams and beaches came from agricultural waste while only 1 to 3% came from human wastel! Septics are NOT the problem!!

3.Dillon plays the "Fear Card" stating concern for septic contamination of the

Lake Huron water intake pipe. Rest assured the intake is located well offshore and the raw water is extensively and constantly monitored for chemical and biological activity including the presence of E.coll. Treatment assures all users both Lakeshore owners and Londoners of high quality pathogen free water!!

4.Dillon cites many other real or perceived shortcomings of septics. (odour-it's not manure?,lots too small, houses too big,transmissivity geomorphology?-wowll) in response I would simply ask Dillon,Bluewater and readers to Google \*Tiny Township septics" or phone 1-866-939-8469. Tiny is a resort community south of Georgian Bay.Faced with similar problems as Bluewater they implemented a septic reinspection program in 2002 covering 9000 septics. The program is led by a consulting Engineering group (not Dillon) and costs homeowners \$80 that's EIGHTY dollars each!!The program is cheap and effective with overwhelming acceptance and satisfaction.

In closing we should remind Dillon and Bluewater Council that septics are a perfectly acceptable method of sewage treatment if properly built, maintained and treated. It seems timely then that we send out to the new incoming Bluewater Council our S.O.S.-Save Our Septics! The coming elections offer us an opportunity to ask candidates where they stand on the sewer issue, why they believe they are necessary, what are the cost implications for typical homeowners, how do they hope to alleviate the substantial charges if and when sewers are built, and finally WHY ARE THEY RESISTANT TO A MANDATORY SEPTIC REINSPECTION PROGRAM??

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#### Have your say Articles:

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   Election questions to ask
- 0/21/2010



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#### HIGHWAY 21 CORRIDOR SANITARY SEWAGE COLLECTION SYSTEM CLASS ENVIRONMENTAL ASSESSMENT (EA) & PRELIMINARY DESIGN

#### **Public Information Centre 2 Notice**

On behalf of the Municipality of Bluewater, Dillon Consulting Limited is currently completing a Class EA and Preliminary Design of a proposed sanitary sewage collection system to serve the Bluewater lakeshore from Huron Road 83 to St. Joseph. Dillon's recommendations regarding the proposed system will be presented at Public Information Centre 2 on:

#### Saturday, August 20, 2011, 10:00 a.m. Bluewater Community Centre 15 East Street, Zurich, Ontario

The Public Information Centre will consist of a formal presentation at 10:00 a.m. followed by a question and answer period. If you require further information, please contact:

Brent Kittmer Utilities Superintendent Municipality of Bluewater 14 Mill Avenue, P.O. Box 250 Zurich, Ont. NOM 2T0 Tel: 519-236-4351, Ext. 221 Fax: 519-236-4329 b.kittmer@town.bluewater.on.ca Janet Smolders, MCIP Project Manager Dillon Consulting Limited Box 426 London, Ont. N6A 4W7 Tel: 519-438-6192, Ext. 1268 Fax: 519-672-8209 jsmolders@dillon.ca



The *Freedom of Information and Protection of Privacy Act* applies to information gathered for this project. With the exception of personal information, all comments will become part of the public record.

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# **Municipality of Bluewater**

Highway 21 Corridor Sanitary Sewage Collection System Class Environmental Assessment & Preliminary Design

## Public Information Centre 2 August 20, 2011

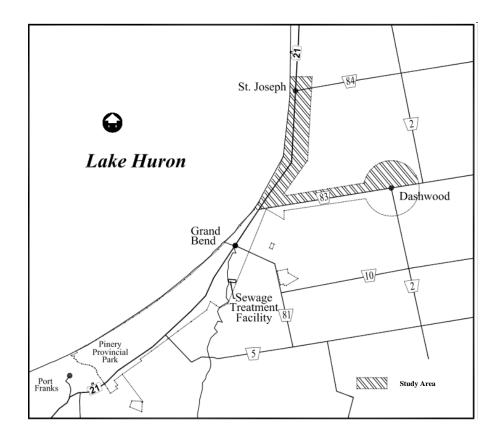




## **Study Area**

Consists of all lands potentially affected by the project, including:

- "Zone 1" along the Bluewater lakeshore from Huron Road 83 to Huron Road 84
- Hamlet of St. Joseph and uses to north (Hessenland Inn, Driftwood Trailer Park)
- North side of Dashwood and Huron Road 83
- "Fronting" lands in South Huron and Lambton Shores potentially affected by sewers required to connect the Bluewater Collection System to the Grand Bend Area STF

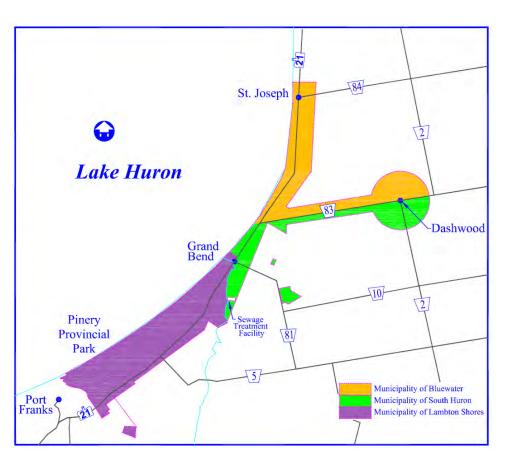






### Grand Bend and Area Sanitary Sewage Servicing Master Plan (2006)

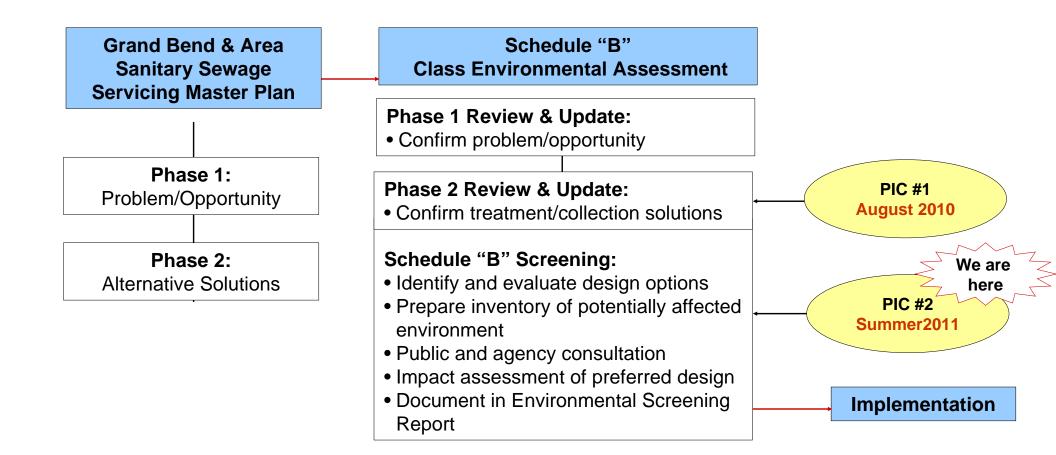
- Comprehensive, long-range (20 year) plan for sanitary sewage infrastructure improvements along Lake Huron
- Expansion and upgrade of Grand Bend Area STF identified as preferred treatment solution- approved under *EA Act*, construction scheduled for 2012
- Extension of sewers along Bluewater lakeshore to St. Joseph identified as a priority for servicing improvementssimilar EA studies currently underway in Lambton Shores and South Huron







### Municipal Class Environmental Assessment Process







### Public Information Centre 1 Dashwood Community Centre August 28, 2010

### Over 100 residents attended, 15 written submissions

### **Questions and Concerns**

### Support

Many residents are opposed:

- concerns about municipal, homeowner costs
- sewers not needed since septic or tertiary treatment systems work well
- most lake pollution comes from agricultural sources
- concerns about reliability of low pressure system
- support mandatory septic system inspections instead

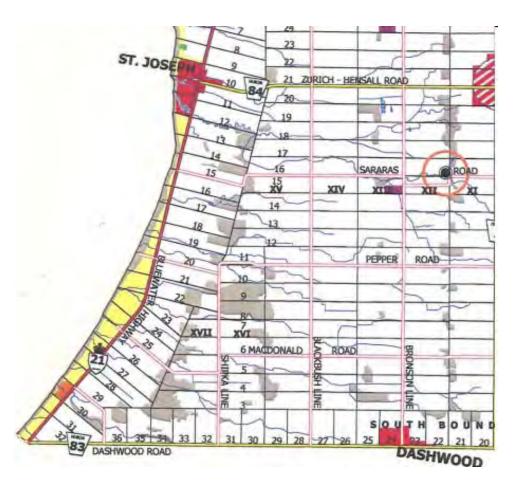
Some residents support the project:

- sewers needed for planned new houses
- "neighbours used our toilet all summer"
- existing septics are too unreliable
- sewers are needed for many houses





- 1. Future Growth & Increasing Year Round Use – more pressure on existing septics
- 155 hectares and 190 lots designated "Lakeshore Residential" in Official Plan
- 20 year population projections 1% per year growth, year round residents increasing from 30% to 40%
- Changing lifestyles increased water use/ appliances, residence size





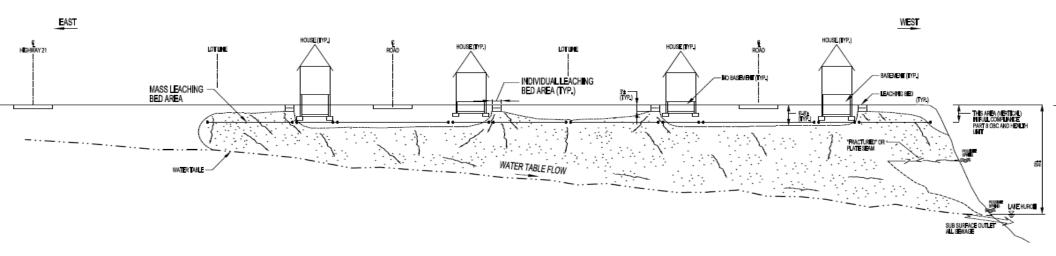


### 2. Soils/Geomorphology – *unsuitable for high concentration of septic systems*

- Clay soils least accepting soil type
- Minimum 6,000 m2 lot size required in clay soil to avoid cumulative impacts
- Transmissivity Geomorphology sewage from leaching beds not confined to individual lots. Aside from 10% evaporation (in summer only), all sewage goes into groundwater and out into Lake Huron







LEGEND Saturated zone

#### 2 DIMENSIONAL GEOMORPHOLOGY TYPICAL SECTION





### 3. Engineering & Drainage Considerations

- Few engineered storm sewers/drains, lack of lot grading poor surface drainage, overlaps with leaching beds
- Small lot sizes, high lot coverage no provision for 100% reserve area
- Poor septic system operation, breakdowns, illegal connections to agricultural/surface drains, cliff and bank erosion, leachate springs
- Aging conventional septic systems systems show signs of failure in 20 years





### 4. Environmental/Health Concerns – *long history of concerns*

- ABCA, <u>Clean up Rural Beaches Plan and Program</u> (CURB), 1989 faulty septics were greatest contributors to phosphorus and bacteria in Gullies watershed
- Huron County, <u>Rural Servicing Study</u>, 1992, undertaken to address MOE concerns, recommended that development on septics be curtailed
- Burns Ross Limited, Consulting Engineers, <u>Review of Lakeshore Septic Systems</u>, 1995, documented many problems - clay soils, undersized systems, poor surface drainage, many systems more than 40 years old
- GAP Enviro/Microbial Services, <u>DNA Study</u>, St. Joseph Beach, 2005 E-coli samples are from agriculture <u>and</u> domestic sewage
- ABCA, <u>South Gullies Watershed Report Card</u>, 2007 "C" for surface water quality, E.coli exceeds MOE guidelines (100 cfu), recommends fixing septics
- Huron County, <u>Voluntary Septic Re-Inspection Program</u>, 2005-2007 23 inspections in Study Area, 30% require immediate repair/replacement
- Dillon's <u>Septic System Survey</u>, Summer 2010 19 surveys. Over 40% show signs of stress, 25% report odours, avg. system age is 34 years south of Hendricks Road (20 year service life), 30% have damp wet areas, grass striping, leachate springs





### 5. **Provincial Policies** – *becoming more restrictive*

- Provincial Policy Statement (PPS) under the *Planning Act*.
  - Large lot sizes required for septic systems <u>not consistent</u> with PPS inefficient use of land/infrastructure, impacts natural features, prime farmland
  - Sanitary sewers required for multi-lot developments
  - > Municipalities must protect, improve or restore quality of groundwater and surface water
- Ontario Clean Water Act:
  - Huron County is implementing a mandatory septic inspection program
  - County may order that a faulty system be replaced. Many lots are too small to accommodate a properly sized system then what?





### 5. Provincial Policies, cont'd

Intake Water Protection Zone – Lake Huron Water Treatment Plant (WTP)

- WTP provides drinking water to 350,000 people in three counties
- IPZ-2, south of Hendrick Road, will be implemented in Source Water Protection Plan (due by 2012)
- Sources of potential contamination, such as septic system discharges, will be regulated







## Phase 2, Refine Sanitary Sewage Servicing Solution Recommended Service Area

**Bluewater Lakeshore – Recommended for Servicing**, based on existing/future servicing needs and potential environmental problems:

- Approx. 920 houses (2,295 population), some commercial uses
- Significant development potential for vacation and retirement homes:
  - 1% per year growth projected to 2031 (1,120 houses, 2,800 population)
  - Year round population expected to increase from 30% to 40%
  - Adds more pressure on existing septics
- Septic system failures expected to be high over next 20 years due to clay soils, aging systems, small lot sizes, poor drainage
- Malfunctioning systems potentially adversely affect water quality in South Gullies Watershed, Lake Huron WTP Intake Protection Zone (Lake Huron and tributaries)

### Dashwood – Not Recommended for Servicing at this time:

- Approx. 75 houses (185 population), some commercial uses
- Very slow to declining growth, little development potential over next 20 years
- Only affects water quality in two tributaries in Lake Huron WTP Intake Protection Zone





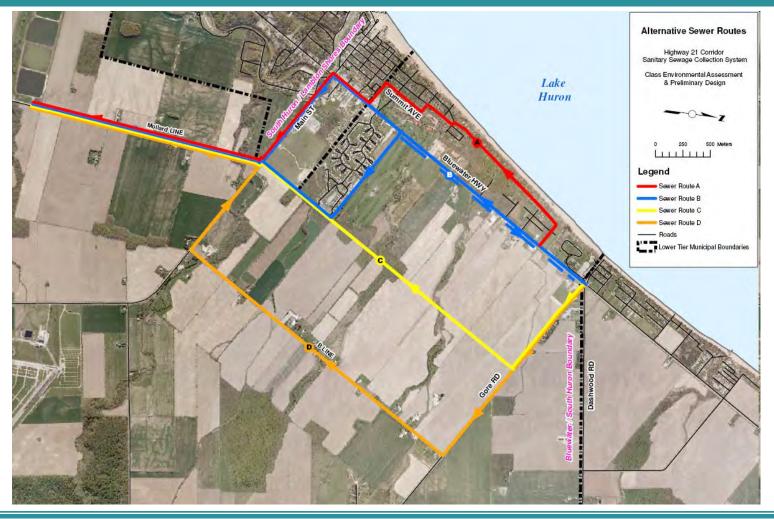
## Phase 2, Refine Sanitary Sewage Servicing Solution Recommended Service Area







## Phase 2, Refine Sanitary Sewage Servicing Solution Alternative Sewer Routes to Grand Bend Area STF







## Phase 2, Refine Sanitary Sewage Servicing Solution Recommended Sewer Route to Grand Bend Area STF

**Recommended Route - Sewer Route B**, gravity sewer along west side of Highway 21, from County Road 83 to existing Pump Station 2, with forcemain along Mollard Line:

- Minimizes length of sewer required, compared to most other routes
- Located in an existing disturbed corridor along Highway 21
- Avoids seasonal residential areas, such as Oakwood (Sewer Route A)
- Avoids prime agricultural farmland along Sewer Routes C and D
- Avoids natural features (aquatic and terrestrial) along Sewer Routes C and D
- •Agreed location with South Huron's Class EA, as presented at May 25, 2011 PIC





## Phase 2, Refine Sanitary Sewage Servicing Solution Alternative Lakeshore Forcemain Routes







## Phase 2, Refine Sanitary Sewage Servicing Solution Recommended Lakeshore Forcemain Route

**Recommended Route - Sewer Route A**, in an easement along east side of Highway 21:

- Affects significantly fewer residences, compared to Sewer Route B. East side of Highway 21 is primarily cultivated farmland with farmhouses
- Has significantly lower property, construction and restoration costs than Sewer Route B (approx. \$2.5 M)
- Fewer impacts on natural features in active ravines (aquatic and terrestrial) than Sewer Route B





## Phase 2, Refine Sanitary Sewage Servicing Solution Alternative Collection Systems

Alternatives are shown on 1:2000 scale plans available on Municipality of Bluewater website – www.town.bluewater.on.ca

### **Alternative 1- Conventional Gravity System**

- Sewage collected and transported by gravity through buried piping installed from 2.5 to 10 metres deep, extensive excavation
- Up to 15 pumping stations and forcemains required to lift or "jockey" sewage from north to south

### **Alternative 2- Low Pressure System**

- Sewage collected and transported in a network of small diameter shallow piping (only 1.5 metres deep) fed by individual grinder pump stations, minimal excavation
- Submersible grinder pump stations at each house
- All pressures required to "drive" sewage provided by individual grinder pump stations no communal pump stations or forcemains required









## Phase 2, Refine Sanitary Sewage Servicing Solution

### **Basic Operation of a Low Pressure Pump System**

#### Low pressure pump system –

- Submersible grinder pump housed in a high grade engineered wet well with valving and electrical control panel for each home
- Sewage level in wet well is monitored by 2 differential pressure monitors. When the level in wet well reaches the high level, the pumps are activated by the controller
- Solids are ground into fine particles by grinder pump to allow particles to easily pass through fittings and small diameter piping

### Overall collection system -

- Consists of a grid network of small diameter piping similar to a water system
- Sewage is transferred through different network pressure zones of increasing pipe diameters until it reaches the Grand Bend Area STF





Highway 21 Corridor Sanitary Sewage Collection System Class Environmental Assessment & Preliminary Design PIC 2



CONSULTING

## Phase 2, Refine Sanitary Sewage Servicing Solution

### **Comparative Evaluation of Gravity and Low Pressure Sewage Collection Systems**

(Advantages shown in blue)

Evaluation Factors	Alt. 1 Gravity System	Alt. 2 Low Pressure System
Engineering Considerations	<ul> <li>Well established technology, but not suitable for most of Bluewater, due to distance and topography.</li> <li>Sewage from upstream areas pumped multiple times - up to 8.</li> <li>Sewers up to 10m deep, requiring extensive excavation.</li> <li>Still functions during power outages.</li> <li>Susceptible to inflows (up to 20%) as system ages (both pipe and STF)</li> </ul>	<ul> <li>Proven technology- many successful systems in Ontario (Lambton Shores).</li> <li>All sewage only pumped once.</li> <li>All pipe only 1.5 metres deep installed by directional drilling, small pipe diameters requiring almost no excavation.</li> <li>Sensitive to power outages, but homeowner can opt to include additional storage or standby power.</li> <li>Less susceptible to inflows.</li> </ul>
Impacts on Cultural Resources (Archaeology)	Significant impacts caused by extensive excavation. Can be mitigated by further archaeological assessments.	Trenchless technology minimizes excavation and impacts. Can be drilled around and under significant features.
Impacts on Natural Features (aquatic, terrestrial)	Significant impacts caused by extensive excavation.	Trenchless technology minimizes excavation and impacts. Can be drilled around and under significant features.
Socio-Economic Impacts (land-uses, County/local and Provincial planning policies)	Extensive excavation causes significant impacts on existing land uses, significant disruption (noise, access) during construction. Not as consistent with planning policies due to potential impacts on significant resources.	Trenchless technology: -minimizes impacts on existing land uses -minimizes disruption during construction -conforms to planning policies since it minimizes impacts on significant resources
Economic/Financial Considerations (municipal, homeowner capital and operating costs)	<ul> <li>High capital construction cost due to depth of sewers, number of pumping stations.</li> <li>High restoration costs, including complete roadway reconstruction.</li> <li>Less homeowners awareness required</li> <li>Significantly more expensive than low pressure system</li> </ul>	Lower capital construction and surface restoration costs More homeowner awareness required Significantly less expensive than gravity system





A. <u>Preliminary</u> "Off-Site" or Communal Collection System Opinion of Probable Capital Cost Estimate (2010 \$'s)<sup>1,6</sup>

	Alternative 1 Gravity System	Alternative 2 Pressure System
<ol> <li>Bluewater (Zone 1) Share of Sewage Treatment Facilities <sup>2</sup></li> </ol>		
<ol> <li>Collection System         <ul> <li>(includes 10% for engineering)</li> </ul> </li> </ol>	\$ 49.3 Million	\$ 20.2 Million <sup>5</sup>
<ol> <li>Bluewater and South Huron Shared System (South Limit Zone 1 to STF Site) (includes 10% for engineering)</li> </ol>	\$ 2.8 Million (Dashwoo \$ 2.5 Million (Lak	,
4. Property Costs (easements and parcels)	\$ 430,000	\$ 276,000
5. Per Lot Cost (Lakeshore only) <sup>4</sup>	\$ 48,900	\$ 22,800

Notes:

- 1 All costs will be further reviewed/updated during Detailed Design (by Engineer), Tender Award (by Contractor) and End of Construction (by Contractor)
- 2 These costs include Federal and Provincial funding. Costs for items 2, 3 and 4 do not.
- 3 This cost will be \$5.5 Million (excluding engineering) if Bluewater does not have a shared system with South Huron
- 4 Based on an estimate of 920 existing houses and projected growth (1% per year population growth at 2.5 persons per household) of 200 new houses for a total of 1,120 houses along the lakeshore over 20 years
- 5 Costs will increase by \$2.5 million if pressure sewer is constructed on west side of Highway 21

6 Costs do not include HST, contingency or life cycle costs





#### B. <u>Preliminary</u> "On-Site" Private System (Street/Property Line to Building) Opinion of Probable Capital Cost Estimate (2010 \$'s)

Example Lot Sizes	Alternative 1 Gravity System <sup>6</sup>	Alternative 2 Pressure System <sup>7</sup>
1. "Small" Lot Area (see A + B) <sup>1, 3, 8</sup>	\$ 2,000 to \$ 6,000	\$ 8,800 to \$ 12,200
2. "Medium" Lot Area (see A + B) <sup>2, 3, 8</sup>	\$ 5,000 to \$ 6,500	\$ 9,500 to \$ 10,000
3. "Large" Lot Area (see A + B) <sup>4, 5, 3, 8</sup>	\$ 7,500 to \$ 17,000	\$ 10,000 to \$ 17,000

<u>Notes</u>:

1 For "Small" B, a new 100 amp hydro service was included to replace existing potentially obsolete 60 amp service

2 For "Medium" B, assumed existing electric panel on opposite side of house to pump unit

3 No "expensive" restoration included (i.e., asphalt driveways, large diameter tree tunnelling, decks, brick/concrete sidewalks/planters)

4 For "Large" A, electric cost increased for access inside building due to interlock brick and large masonry flower beds

5 For "Large" A, gravity option is not available due to excessive front yard depth (200m)

6 Costs are for first floor service only (i.e., no basement service on gravity). On-lot gravity cost will increase significantly to service basement floors.

7 Pumping unit is \$5,500, approximately, to supply and install (no connections or electrical)

8 Special options, such as balancing tanks and standby generators, are not included





C. <u>Preliminary</u> "Operating and Maintenance" Opinion of Probable Cost Estimate (2010 \$'s)

		Alternative 1 Gravity System	Alternative 2 Pressure System
1.	Bluewater (Zone 1) Share of Sewage Treatment Facilities (as included in 2011 signed agreement with South Huron and Lambton Shores) <sup>1</sup>	\$ 354,000/year (Dashwood and Lakeshore) \$ 325,000/year (Lakeshore only)	
2.	"Off-site" or Communal Collection System (Municipal Costs)	\$ 306,000/year \$ 70,000/year	
3.	"On-site" or Private System (street/property line to house) (Homeowner Costs)	\$ 50/lot/year	\$ 182/lot/year <sup>3</sup>
4.	Per Lot Cost <sup>2</sup> (Homeowner)	\$ 613/lot/year	\$ 535/lot/year

1 Based on data from Bluewater's agreement with Lambton Shores and South Huron

2 Based on an estimate of 920 existing houses and projected growth over 20 years (1% per year population growth at 2.5 persons per household) of 200 new houses for a total of 1,120 houses along the lakeshore

3 Includes life cycle costs analysis





#### D. Summary:

А

В

Preliminary Total "Per Lot" Opinion of Probable Capital Cost Estimate

Alternative 1 Gravity System	Alternative 2 Pressure System
\$ 48,900/lot	\$ 22,800/lot
noose from B (one of six example lot	t costs)





## Phase 2, Refine Sanitary Sewage Servicing Solution Recommended Sanitary Sewage Collection System

### Alternative 2, Low Pressure System

- Directional drilling avoids impacts on existing land uses/buildings, cultural resources, trees and other environmental features
- Lower capital construction and surface restoration costs
- Lower costs per lot
- Typical system provides about 170 L (37 imp. gallons) of storage, equivalent to about 4 hours of storage capacity for a typical home under normal conditions





## Phase 2, Refine Sanitary Sewage Servicing Solution Recommended Phasing







## Phase 2, Refine Sanitary Sewage Servicing Solution Preliminary Opinion of Probable Capital Costs per Phase

Phase	Alternative 1 Gravity System	Alternative 2 Pressure System
1 South – Waterworks Road to Norman Heights Road (approx. 35%)	\$ 17.98M	\$8.74M
1 North – Norman Heights Road to Hendrick Road (approx. 30%)	\$ 13.44M	\$ 5.52M
2 South – Hendrick Road to Pergel Gully (approx. 15%)	\$ 6.72M	\$ 2.76M
2 North – Pergel Gully to Hessenland Lane (approx. 20%)	\$ 8.96M	\$ 3.68M

Note: If only Phase 1 South (approx. 392 lots) proceeds, per lot costs will increase from \$22,800 (slide 22) to \$24,500





## **Funding and Financing Options**

Preliminary per lot cost estimates for the sewage collection system are high. Dillon recommends that the system <u>not proceed</u> until funding is available:

- Bluewater is seeking funding from the Provincial Ministry of Infrastructure and Energy
- Any funding will be applied directly to project costs
- Balance funded by per property costs Bluewater may offer debentures through municipal property taxes





## What's Next?

- Bluewater will consider all input received at PIC
- Planning and design process will be documented in an Environmental Screening Report (ESR):
  - > 30 day review period
  - > Any person may submit a Part II Order request to MOE
  - > Following the resolution of any requests, the project is approved under the EA Act
- ESR will be completed in September 2011

Thank you for attending.

Please complete a comment form and submit it to Dillon by September 9, 2011.





From: Sent: To: Cc: Subject: CAU-UCA [CAU-UCA@aadnc-aandc.gc.ca] Thursday, August 11, 2011 10:40 AM Smolders, Janet b.kittmer@town.bluewater.on.ca Public Information Centre 2 Notice

Attachments:

Incoming.pdf



Incoming.pdf (39 KB)

Dear Madame:

I am writing on behalf of the Consultation and Accommodation Unit (CAU) of Aboriginal Affairs and Northern Development Canada (AANDC). Your letter has been referred to us by Ms. Josée Beauregard (please see attached). The CAU's Consultation Information Service (CIS) has been established to help co-ordinate departmental responses to consultation-related queries within AANDC. The CIS also provides information, primarily to federal officials, related to Aboriginal groups and their Aboriginal and/or treaty rights, to the extent that these are known by AANDC.

As a rule, AANDC officials do not participate in environmental assessments that pertain to projects off-reserve, nor do we track how other parties carry out their EA or consultation activities where no reserve lands or AANDC programs are involved. Therefore, in future, please omit AANDC from your public information notifications for projects that do not intersect with reserve lands or engage AANDC programs.

Thank you for your assistance in this matter. Sincerely,

Dale Pegg Manager Consultation Information Service



RECEIVED

Attn: Janet Smolders, MCIP Project Manager Dillon Consulting Limited Box 426 London, Ontario N6A 4W7

Dear Janet,

#### RE: Highway 21 Corridor Sanitary Sewage Collection System Class Environmental Assessment (EA) & Preliminary Design

Thank you for your letter of received on July 18, 2011.

Southern First Nations Secretariat has not been delegated any consultation authority by our member First Nations. The Duty to Consult obligation is between The Crown and the First Nations.

We have attached a list of the appropriate member First Nations and their contact information so you may contact the respective First Nations Directly.

If you require any further clarification, please contact me at (519) 692-5868, Ext. 242 or Kimberly Snake at Ext. 234.

Yours truly,

Michael J. George Executive Director SOUTHERN FIRST NATIONS SECRETARIAT

(1) Attach

- cc: Janet Galant, Southern First Nations Secretariat
- cc: Chief Elizabeth Could, Chippewas of Kettle & Stony Point, Chief Chris Plain, Chippewas of Aamjiwnaang First Nation

22361 Austin Line Bothwell, Ontario N0P 1C0 Tel: (519) 692-5868 Fax: (519) 692-5976 Toll Free: 1-800-668-2609 Post Secondary Fax: (519) 692-3062 www.sfns.on.ca



#### First Nation Communities Located within 50km of London

Chief Joe Miskokomon Chippewas of the Thames First Nation RR#1 Muncey, ON N0L 1Y0

Chief Joel Abram Oneida Nations of the Thames 2212 Elm Street Southwold, Ontario N0L 2G0

Chief Patrick Waddilove Munsee-Delaware Nation RR#1 Muncey, Ontario N0L 1Y0

#### Other First Nation Communities Located within 150km of London

Chief Greg Peters Delaware Nation RR#3 Thamesville, ON N0P 2K0

Chief Elizabeth Cloud Chippewas of Kettle & Stony Point First Nation 53 Indian Lane RR#2 Forest, ON N0N 1J0

Chief Chris Plain Aamjiwnaang First Nation 978 Tashmoo Avenue Sarnia, ON N7T 7H5

Chief Louise Hillier Caldwell First Nation P.O. Box 388 Leamington, ON N8H 3W3

> 22361 Austin Line Bothwell, Ontario NOP 1C0 Tel: (519) 692-5868 Fax: (519) 692-5976 Toll Free: 1-800-668-2609 Post Secondary Fax: (519) 692-3062 www.sfns.on.ca

CHIPPEWAS OF THE THAMES First Nation AUG 1 6 2011

320 CHIPPEWA ROAD, MUNCEY, ONTARIO NOL 1YO TEL:(519) 289-5555 FAX:(519) 289-2250

August 9, 2011

Ms. Janet Smolders Project Manager Dillon Consulting Limited Box 426 London, ON N6A 4W7

#### Re: Highway 21 Corridor Sanitary Sewage Collection System

Dear Janet Smolders,

Thank you for consulting with Chippewas of the Thames First Nation (COTTFN) about your upcoming initiative. We refer to ourselves as Ojibwe and are a part of a larger group of Anishinabe (people) that come from the Algonkian language family. COTTFN is a Sovereign and Self-governing Nation residing on land that has never been ceded. We appreciate your recognition of our Treaties with the Crown and our Aboriginal inherent rights to this land we share.

Our traditional territory prior to European contact stretched from the Eastern states and provinces to West of the Great Lakes. At the time of our Treaties with the Crown our people moved freely throughout the Southern Great Lakes area utilizing the land, waterways and air for its' abundant and valuable resources. Since your project falls within our Traditional Territory we look forward to speaking with you regarding your project.

Our consultation staff will review your project shortly and will follow up with a letter indicating our interest in your project.

Sincerely,

Raymond Deleary, Policy Analyst

#### 1.0.0.00.00.00.0

From: Don Boswell [Don.Boswell@aadnc-aandc.gc.ca]

Sent: Thursday, September 08, 2011 9:28 AM

To: Smolders, Janet

Cc: Ralph Vachon

Subject: Municipality of Bluewater - Highway 21 Corridor Sanitary Sewage Collection System, Class EA & Preliminary Design

I am writing in response to your letter of August 29, 2011 inquiring about claims in the above noted area.

In determining your duty to consult, you may wish to contact the First Nations in the vicinity of your area of interest to advise them of your intentions. To do this you may:

find the Reserves in your area of interest by consulting a map of the region such as the Province of Ontario Ministry of Aboriginal Affairs online map at <a href="http://www.ainc-inac.gc.ca/ai/scr/on/rp/mcarte/mcarte-eng.asp">http://www.ainc-inac.gc.ca/ai/scr/on/rp/mcarte/mcarte-eng.asp</a>; then search for the First Nations located on those Reserves by using the INAC Search by Reserve site at <a href="http://pse5-esd5.ainc-inac.gc.ca/ai/scr/on/rp/mcarte-eng.asp">http://pse5-esd5.ainc-inac.gc.ca/ai/scr/on/rp/mcarte/mcarte-eng.asp</a>; then search for the First Nations located on those Reserves by using the INAC Search by Reserve site at <a href="http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/Search/SearchRV.aspx?lang=eng">http://pse5-esd5.ainc-inac.gc.ca/ai/scr/on/rp/mcarte/mcarte-eng.asp</a>; then inac.gc.ca/fnp/Main/Search/SearchRV.aspx?lang=eng.

To determine the First Nations in your area of interest who have submitted claims please consult the Reporting Centre on Specific Claims at <a href="http://pse4-esd4.ainc-inac.gc.ca/SCBRI/Main/ReportingCentre/External/ExternalReporting.aspx?lang=eng">http://pse4-esd4.ainc-inac.gc.ca/SCBRI/Main/ReportingCentre/External/ExternalReporting.aspx?lang=eng</a>.

It should be noted that the reports available on the INAC website are updated regularly and therefore, you may want to check this site often for updates. In accordance with legislative requirements, confidential information has not been disclosed.

Please rest assured that it is the policy of the Government of Canada as expressed in The Specific Claims Policy and Process Guide that:

"in any settlement of specific native claims the government will take third party interests into account. As a general rule, the government will not accept any settlement which will lead to third parties being dispossessed."

We can only speak directly to claims filed under the Specific Claims Policy in the Province of Ontario. We cannot make any comments regarding potential or future claims, or claims filed under other departmental policies. This includes claims under Canada's Comprehensive Claims Policy or legal action by a First Nation against the Crown. You may wish to contact the Assessment and Historical Research Directorate at (819) 994-6453, the Consultation and Accommodation Unit at (613) 944-9313 and Litigation Management and Resolution Branch at (819) 934-2185 directly for more information.

You may also wish to visit <u>http://www.ainc-inac.gc.ca/ai/mr/is/acp/acp-eng.asp</u> on the INAC website for information regarding the Federal Action Plan on Aboriginal Consultation and Accommodation.

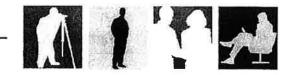
To the best of our knowledge, the information we have provided you is current and up-to-date. However, this information may not be exhaustive with regard to your needs and you may wish to consider seeking information from other government and private sources (including Aboriginal groups). In addition, please note that Canada does not act as a representative for any Aboriginal group for the purpose of any claim or the purpose of consultation.

I hope this information will be of assistance to you. I trust that this satisfactorily addresses your concerns.

Sincerely,

Don Boswell Senior Claims Analyst Ontario Research Team Specific Claims Branch





September 9, 2011 Our File: 310-001

Dillon Consulting 130 Dufferin Avenue London, Ontario N6A 5R2

Attention: Janet Smolders, MCIP Project Manager

> Re: Municipality of Bluewater Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

Dear Ms. Smolders:

Please accept this letter as South Huron's response to the PIC No. 2 conducted by the Municipality of Bluewater on August 20, 2011. Don Giberson attended the meeting and presentation and we (G&M) have reviewed the proceedings with him along with the printed hand out information and offer the comments below on behalf of the Municipality of South Huron.

We concur with Bluewater's support for a gravity trunk sewer route along the west side of Highway 21 from County Road 83 to existing Pump Station 2, with a forcemain along Mollard Line. We will be asking the MTO for approval of installing the trunk sewer through South Huron within the MTO right-of-way through the EA process now being conducted by the MTO for the reconstruction of Highway 21 in this area. We would appreciate Bluewater committing to an estimated time line for construction of their collection system so that South Huron can formulate a long term plan for budgeting and constructing the trunk sewer from County Road 83 to PS2.

Regards

Per:

GAMSBY AND MANNEROW LIMITED

Dave Hicknell

cc: Municipality of South Huron

Deople engineering environments Gamsby and Mannerow Limited • Guelph, Owen Sound, Listowel, Kitchener, Exeter 975 Wallace Avenue N. Listowei ON N4W 1M6 5 9-29 -9339 fax 5 9-291-5172 www.gamsby.com From:Cathie Brown [cbrown@abca.on.ca]Sent:Thursday, September 22, 2011 11:48 AMTo:Smolders, Janet; 'Lori Wolfe' (l.wolfe@town.bluewater.on.ca)Cc:'Geoff Cade'Subject:Presentation by Dillon on Aug 20th

Good morning Janet and Lori:

A couple of weeks ago, it was brought to my attention that during a PowerPoint presentation at a public meeting on the Grand Bend and Area Sanitary Sewage Servicing Master Plan, some comments were made about source protection planning that may require some clarification. Specifically slide 12 seems to imply that source protection policies for the IPZ-2 at the LHPWSS will regulate septic tanks. For clarifications sake, the vulnerability scoring for this intake is such that only moderate or low threats would be identified. The source protection plan will focus on significant threats. Thus no regulation will be forthcoming in 2012. Furthermore, with low and moderate threats, the tools provided under the *Clean Water Act* are softer such as education and do not include prohibition, or risk management plans. The source protection plan may address moderate threats in highly vulnerable aquifers or significant recharge areas which would include septic tanks but again, soft tools.

While I appreciate the need to improve the septic tank situation, the statements did rather concern folks associated with the source protection process who attended the meeting. For some months proponents and detractors of the Master Plan have been contacting us trying to use source protection for their cause. As far as I can see, given the parameters of the CWA and regs, our work is not helpful to either side.

Happy to help out in any way we can.

#### Cathie Brown

*Source Protection Project Manager* Ausable Bayfield Maitland Valley Source Protection Region 71108 Morrison Line, RR 3 Exeter, ON NOM 1S5 (t)519-235-2610 (f)519-235-1963 <u>www.sourcewaterinfo.on.ca</u>

#### **Confidentiality Notice**

The information contained here, including any attachments, may be confidential, is intended only for use of the recipient(s) named above and may be legally privileged. If the reader of the message is not the intended recipient, any dissemination, distribution, disclosure or copying of this communication is strictly prohibited. If you have received this communication in error, please resend this communication to the sender and delete it permanently from your computer system or communication device.



Public Information Centre 2 – Record of Comments August 20, 2011 SEP 0 9 2011 DILLON, LONDON

**Comments:** center system costs double a current new -R no new begrefit for the home owne brachle t need this huge expense unap included. If houses properties mus seasonal are polluters the west side of Highway 21 and mostly es on the east are also pollutors. The road 97% of the to aquifer 12 to siss cottagers. Sand allows water. less and polluting thus Maning becord and the potel must be include a. over 7

Please complete and place in the comment box or return by September 9, 2011 to:

Janet Smolders, MCIP Project Manager Dillon Consulting Limited Box 426, London, Ontario, N6A 4W7 Tel: (519) 438-1288 Ext. 1268 Fax: (519) 672-8209 Email: jsmolders@dillon.ca

DILLON

Name: /	2	
Address and Postal Code:	T	·
/	(#61 (***	
Telephone/e-mail:		

I feel a gravity system to a deep well at the highway and then force pumps to deliver at a shallow depth would be less complicated and expensive . It seems to me that 25 pumps is more logical than the 920 quoted in the report. What is the failure rate for individual pumps. I know of two houses where this happened at 2 years and 5 years. Many of the houses sit empty for 9 months and I wonder about corrosion in unreised pumps. If people are allowed to not join now, what would be the costs for hooking up later !

Dany Ut Banks

. . ..

From: Brent Kittmer [b.kittmer@town.bluewater.on.ca]

Sent: Tuesday, October 04, 2011 2:31 PM

To: Boussey, William; Smolders, Janet

Subject: FW: Lakeshore Sewer proposal

FYI

Brent Kittmer

Utilities Superintendent Municipality of Bluewater 14 Mill Avenue, PO Box 250 Zurich, ON NOM 2T0 519-236-4351 ext. 221 (phone) 519-236-4329 (fax) b.kittmer@town.bluewater.on.ca Please consider the environment before printing this e-mail

From:

Sent: October-04-11 11:45 AM To: Brent Kittmer; John Gillespie; Paul Klopp Subject: Lakeshore Sewer proposal

Hi Brent

I'm still having concerns regarding the sewer proposal and more and more I'm getting the feeling that Dillon Engineering is not being fully up front with ALL the facts.

I have a copy of the Minutes from The Steering committee meeting no 2 - dated June 10,2010

on page 6 of those minutes Dillon Engineering was to contact Higgins Engineering LTD to discuss servicing for a proposed 75 acre development at Hwy 21 & Hendricks rd - ??? My question is - what was the result of that meeting ?? has Dillon ever reported on the results of that meeting ? was this proposed development taken into account when determining what the needs for a treatment plant will be ?

#### MR. Klopp & Mr. Gillespie

Can you please follow up on this ? It seems to me that Dillon is only putting forward the information that shows a need for sewers , but holds back on other information when it's not in their best interest !

The involved property owners need to have ALL the information - not just what Dillon decides to release/ share.

#### Smolders, Janet

From:	Brent Kittmer [b.kittmer@town.bluewater.on.ca]
Sent:	Wednesday, October 05, 2011 8:41 AM
To:	
Cc:	Lori Wolfe; Boussey, William; Smolders, Janet; Bill Dowson; Dave Roy; Geordie Palmer; George Irvin; Janisse Zimmerman; John Becker; John Gillespie; Kay Wise; Paul Klopp; Tyler Hessel

Subject: RE: Lakeshore Sewer proposal

I can confirm that Dillon has had numerous communications over the past year with Higgins Engineering, the most recent of which was last week. Higgins represents the owner of the 75 acre lot who had previously contacted the municipality with an inquiry to the requirements that would need to be satisfied to develop this parcel. Dillon was instructed to contact Higgins Engineering to determine if there is a timeline for development, or any other firm details regarding the size and scope of development.

To date this information has not been available as their proposed development is only at the preliminary conceptual level. The owner and their engineering representation have provided formal comments throughout the project that they are in favor of sanitary servicing for their lands. Most recently the land owner has requested that the proposed first phase of the project be extended to Hendrick Road to include their lands.

The collection system ESR, when complete, will make note of this potential development, however since we have not received a formal application for development or details regarding the number of units, density, or scope of the development, projecting flows from this parcel is not possible. As such, the ESR will not assign a flow to this proposed development, and the flows from Bluewater's study area will be representative of those determined Master Plan, and updated in this process.

The sizing and design of the treatment plant are based on the Master Plan flows that we determined in 2006, and confirmed in the 2009 treatment plant ESR.

Please do not hesitate to contract me if you need any other information.

Brent

Brent Kíttmer Utilities Superintendent Municipality of Bluewater 14 Mill Avenue, PO Box 250 Zurich, ON NOM 2T0 519-236-4351 ext. 221 (phone) 519-236-4329 (fax) b.kittmer@town.bluewater.on.ca Please consider the environment before printing this e-mail

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Public Information Centre 2 – Record of Comments August 20, 2011

**Comments:** Sulpons ShacesDing 6 WITH NOTECT RID ENELOPMENT ERE BULK DK 1 ESTABNISHED ALSNY WIT sclutz -Non TH ENDRICK 2. Fak WE 70 KOCEED ANE FONCED BY 50, 10 DO MINISTRYS

Please complete and place in the comment box or return by September 9, 2011 to:



Public Information Centre 2 – Record of Comments August 20, 2011

**Comments:** 

a m will Hat 112T Ć, wares The unver Please complete and place in the comment box or return by September 9, 2011 to: Janet Smolders, MCIP Project Manager Dillon Consulting Limited Box 426, London, Ontario, N6A 4W7 DILLON Tel: (519) 438-1288 Ext. 1268 Fax: (519) 672-8209 Email: jsmolders@dillon.ca Name: Address and Postal Code: Telephone/e-mail: \_\_\_\_



Public Information Centre 2 – Record of Comments August 20, 2011

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Please complete and place in the comment box or return by September 9, 2011 to:

Janet Smolders, MCIP Project Manager Dillon Consulting Limited Box 426, London, Ontario, N6A 4W7 Tel: (519) 438-1288 Ext. 1268 Fax: (519) 672-8209 I: jsmolders@dillon.ca

DILLON CONSULTING

Name:\_\_

Address and Postal Code: \_

Telephone/e-mail:

From: Higgins Engineering [higginsengineering@bellnet.ca]

Sent: Wednesday, September 14, 2011 3:54 PM

To: Smolders, Janet

Cc: higgins Engineering

Subject: Lakeshore and Dashwood.

Janet,

We were unable to attend the August 20, 2011 public meeting for the above noted project. Will you or the Township be posting the presentation and/or minutes on the Bluewater website some time soon? We are still interested in finding out about the impacts on, and ramifications to, the lands at Hendrick Road and Hwy 21.

Thanks,

L. Stewart Higgins, P. Eng.

Higgins Engineering Limited 416-443-8001

From: Smolders, Janet

Sent: Tuesday, October 04, 2011 3:21 PM

To: 'Higgins Engineering'

Cc: 'Brent Kittmer'

Subject: RE: Lakeshore Sanitary Collection System - Eckert Farm

Hi Mr. Higgins. I discussed your question with our client, Brent Kittmer, Bluewater's Utilities Superintendent. We agree that it would be acceptable to extend the phasing boundary slightly north to include all of your client's lands. We will make this change for the Environmental Screening Report we are currently preparing.

We are planning on presenting a draft of the screening report to Council this month. As you know from the Public Information Centre presentation, we have recommended that, since the preliminary per lot cost estimates are high, the Municipality not proceed with the collection system until funding is available. If Council accepts this recommendation, they plan to used the screening report as the basis for funding requests to the Federal and Provincial governments. Thanks, Janet

DILLON

Janet Smolders, MCIP Associate Dillon Consulting Limited 130 Dufferin Avenue, Suite 1400 London, Ontario, N6A 5R2 T - 519.438.1288 ext. 1268 F - 519.672.8209 J\$molders@dillon.ca www.dillon.ca

A Please consider the environment before printing this email

From: Higgins Engineering [mailto:higginsengineering@bellnet.ca]
Sent: Thursday, September 22, 2011 9:22 AM
To: Smolders, Janet
Cc: Higgins Engineering; russ Higgins; ceckert1@tcc.on.ca
Subject: Lakeshore Sanitary Collection System - Eckert Farm

Re: Highway 21 Corridor Sanitary Sewer Collection System, Class Environmental Assessment and Preliminary Design.

Janet,

Further to our conversation of September 21, 2011, and on behalf of the owner of Part of Lots 20 & 21, 72049 Bluewater highway, we request that the Phase 1 / Phase 2 servicing boundary be moves slightly north (approximately 215 meters) to encompass the entire above noted parcel. It is likely that any development on the lands would be have a single (and internally connected) sanitary connection to a proposed collection system on Highway 21.

Would you be so kind as to inform the writer of any additional steps that may be necessary to accomplish the above?

Thank You,

L. Stewart Higgins, P. Eng.

Higgins Engineering Limited 416-443-8001



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~ mn ~

MUNICIPALITY OF BLUEWATER Highway 21 Corridor Sanitary Sewage Collection System Class EA & Preliminary Design

DILLON, LONDON

#### Public Information Centre 2 – Record of Comments August 20, 2011

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+BESIDES you NO	EES A BACK UP GENERAT	TWG SYSTEM TO BE SAFE.
- I BELIEVE TH	E GRAVITY SUSTEM (AS E	EXPENSIVE AS IT IS) IS THE
THE FEA & PRAL	GOVT. SHOULD PAD VIDE A G M SLACE IT IS A BETTER T comment box or return by September 9, 201 Janet Smolders, MCIP Project Manager Dillon Consulting Limited	FREE TO THE HOMEOWNER # BIGGER SUBSIDY FOR THIS INFRASTRUCTURE SYSTEM 11 10: FROM HOME TO SEWAGE PLANT.
	Box 426. London. Ontario, N6A 4W7 Tel: (519) 438-1288 Ext. 1268 Fax: (519) 672-8209	PRONSIL LITENS
$\cap$	Email: jsmolders@dillon.ca	
Name:		
Address and Postal Code: *-		
Telephone/e-mail: _		

From: Sent: To: Cc: Subject:

95 - -

Boussey, William Wednesday, August 24, 2011 8:34 AM

Smolders, \_.ent Kittmer RE: Pump Selection-Bluewater Collection System

1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -

WO'

----Original Messace From: Sent: Luesday, August 23, 2011 12:14 PM To: Boussey, William Subject: Pump Selection-Bluewater Collection System

Thanks for your reply. The unit I am referring to from E-One (the I series) is specifically made for indoor use. I wonder if you have looked at it or other similar units? I can safely say that I am not alone in requesting that such a unit be available for purchase. For those of us with basements, it is the ideal solution to avoid having to dig/burrow under/around objects on the property. It is infinitely easier to run a 1.5" ABS pipe across the basement ceiling to the connection point than to attempt to dig around outside and run conduited power to a buried outdoor unit.

Might I strongly suggest that you investigate such a unit and be prepared to offer it as an option for those residents with full basements? One further point: we are NOT in favour of being restricted to only one model by ONE manufacturer. This opens the door to kickback politics. As we property owners are paying the shot on this project, we feel that there MUST be a range of options available, both as to indoor/outdoor units and units from different manufacturers just as there must be a choice in who does the actual work.

Your statement "other pump mfg's, although the same size do not have the same hydraulic characteristics and would not function in the overall system" appears to me to be pure bullshit. Capacity and pressure might not be EXACTLY the same as a unit which might be deemed as first choice; however, that does not mean that an alternative unit will not function in the designed system. If you do your homework you will find that, in this very competitive world, different manufacturers create units with very similar characteristics for just such a system as is being proposed.

on behalf of Norman Heights Beach and Property Owners Association

ų,

1220

1

From:Sent:Sunday, August 21, 2011 1:40 PMTo:Smolders, JanetSubject:BLUEWATER SEWAGE COLLECTION SYSTEM

I have a question regarding the sewage pump. On page 1 of the set of sheets "Class EA and Preliminary Design", , section B-Pressure-para #3: "make sure contractor has data package on the chosen system sewage pump unit from the municipality, there are no options".

We have a full basement with septic connection at the back. Because we have the room, we believe that an indoor pump unit similar to the E/ONE "I" series would provide the least disruption and be the least expensive to install. I'm sure many others with full basements would opt for a similar unit rather than an outdoor buried pump whereas most cottages would require the outdoor pump unit.

In the light of the quoted statement from your handout at the Saturday Aug. 20 meeting, where would that leave homeowners such as ourselves? Would an indoor model be offered as one of the accepted units? What would stop us from purchasing our own unit as we see fit and having it installed to the system?



#### MUNICIPALITY OF BLUEWATER Highway 21 Corridor Sanitary Sewage Collection System

AUG 2 5 2011 DILLON, LONDON

RECEIVED

Public Information Centre 2 – Record of Comments

**Class EA & Preliminary Design** 

August 20, 2011

**Comments:** HEPEFULL THE PROJECT WILL QUICILLY 10 CEED

Please complete and place in the comment box or return by September 9, 2011 to:

	Box 426 Tel:	Janet Smo Project Dillon Cons J. London, (519) 438 Fax: (519) nail: jsmol	t Mana sulting Ontario -1288 I ) 672-8	ger Limited o, N6A 4W7 Ext. 1268 209	DILLON CONSULTING
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Name:	2	1.3	~		•
Address and Postal Code:	<u></u>				
11 1	2				<b>~</b> ,
·				R 14	1.
Telephone/e-mail:			~~~		

From:

Sent: Tuesday, September 06, 2011 8:01 AM

To: Smolders, Janet; b.kittmer@town.bluewater.on.ca

Subject: Comments re Municipality of Bluewater Public Information Centre 2 held August 20, 2011 at the Zurich arena

Tuesday September 6, 2011 Hello :

#### I am commenting on the five key reasons listed, which are proposed by Dillon, to answer the question "Why do we (Bluewater) need sewers".

#### 1) Future growth and increasing year round use

Dillon 155 hectares and 190 lots designated "Lakeshore Residential" in Official Plan

**Comment:** In Bluewater, Lakeshore Residential stretches from Waterworks Road (County Road 83) to Bayfield. Dillon has not specified how many of these lots and areas are only in the study area (Waterworks Road to St. Joseph) and how many development applications where denied by the OMB. The Official Plan has not been updated since 2005, so the numbers quoted by Dillon are six years old.

Also, the Conservation Authorities are restricting development along gullies and ravines, and the Municipalities are discouraging re-zoning of agricultural land, so future growth of Lakeshore Residential within the study area is going to be very, very limited.

Dillon : 20 year population projections - 1 % per year growth

**Comment** : The trend towards smaller families has been evident for many years now, and is showing up in the education system, with local schools closing due to shrinking student population. Also, the economy is such that it puts too much financial stress on a large family unit.

Dillon : year round residents increasing from 30 % to 40 %

**Comment** : According to the Official Plan, under Lakeshore Residential - Year Round, individual lots, in seasonal areas, will not be re-zoned for year round residential use. Zoning for year round residential use will apply to a development as a whole. If year round lots are approved, each individual septic system must be capable of supporting year round occupancy, and have appropriate contingency measures in place. Thus, if the frequency of sites changing from seasonal to year round use is increasing, and the Municipality is not informed, or has given approval, then it is the owner's responsibility to take corrective measures, and to comply with existing by-laws. The Municipality has several by-laws and procedures in place to control "change of use".

Dillon : Changing lifestyles - increased water use/appliances

**Comment** : This does not accurately represent the present situation. With the ever-increasing cost of treated potable water, residents are switching to more energy and water efficient appliances. The net result is that neighbouring municipalities have experienced a decreasing trend in water consumption over the last 5 to 6 years. There is no reason to think that the trend in Bluewater Municipality would be any different.

Dillon : Changing lifestyles - increased residence size

**Comment** : As stated previously, any increase to the size of an existing residence has strict controls and regulations that must be followed under Municipal direction. In future development, larger new residences must have an appropriate septic system sized to the scale of the residence.

#### 2) Soils/Geomorphology - unsuitable for high concentration of septic systems

**Dillon** : clay soils least accepting soil type.

9/12/2011

**Comment** : This is a true statement, but does not apply to the soil in the South Gullies. According to the Ausable Bayfield Conservation Authority (ABCA) Report Card, 2007, the break down of soil types for the South Gullies watershed is as follows :

sandy loam27 %excellent permeabilityloam7 %good permeabilityclay loam60 %poor permeabilitybottomland6 %low permeability

There is no "clay" type listed, which has very low permeability. Please note that clay loam, and clay are two completely different types of soil. Also note that different types of soil overlapping each other are not always arranged in order of high to low permeability. According to ABCA, the report Card grades for soil permeability in the South Gullies is

34 % very acceptable

60 % borderline acceptable

6 % unacceptable

Dillon : Minimum 6000 m2 lot size required in clay soil to avoid cumulative impacts

**Comment** : Again, since it is reported that there is no type "clay" soil found in the South Gullies watershed, this is a non issue. If Dillon's two parameters were true, ie, if clay soil was present, and was preventing a Class 4 sewage system from functioning properly, and the lot size was too small ( under the minimum of 6000 m2 ) for a class 4 sewage system to operate, then Bluewater Building Code parts 8.8.1.2 (b) and 8.8.1.2 (c) of a Class 5 sewage system ( holding tank ) have been satisfied, and the residences affected would be allowed to install a holding tank as an option.

**Dillon** : Transmissivity Geomorphology - sewage from leaching beds not confined to individual lots. Aside from 10% evaporation ( in summer only ) all sewage goes into groundwater and out into Lake Huron.

**Comment** : This is not a true statement. Water is drawn vertically downwards by gravity until it hits bedrock, or an impermeable clay layer. In this case, there does not appear to be a clay layer. Wells down to bedrock in the South Huron area are 95 to 100 meters deep, penetrating about 50 feet into the bedrock. This means there is about 250 feet of overburden to filter the contaminants out of the water, before it reaches the bedrock layer.

Seven kilometers west into Lake Huron, the water depth is about 80 feet. Thus, the bedrock layer is well below the bottom of Lake Huron. It is highly unlikely that any seepage gets into Lake Huron other than through surface water transport pathways.

Dillon : 2 dimensional geomorphology typical section

**Comment**: This is not a typical cross section because ground water does not migrate toward the lake, but vertically downwards, until it hits an impermeable layer. The impermeable layer is far below the bottom of the lake, and does not start at Highway # 21, and does not exit at the elevation of the surface of Lake Huron. Dillon has used a 2 dimensional cross-section because they do not know how the three dimensional contours of soil strata flow without drill testing.

#### 3) Engineering and Drainage Considerations

**Dillon** : Few engineered storm sewers/drains, lack of lot grading - poor surface drainage, overlaps with leaching beds

**Comment** : There is a long standing issue with the Municipality, and formerly with Hay and Stanley Townships. Local infrastructure along the lakeshore has not been addressed, as many "Lakeshore Residential" subdivisions get no paving, road repairs, road grading, curbs, storm water management, sidewalks, snowplowing and lighting for their tax dollars. It is unfair to identify the septics as the culprit, when in fact, this is the result of low priorities.

Dillon : Small lot sizes, high lot coverage

**Comment** : Lot sizes in "Plans of Subdivision" established prior to 1987 are grandfathered at 900 m2 which is less than half of the present required lot size. High lot coverage must conform to present Building and Planning codes.

#### Dillon: No provision for 100 % reserve area

**Comment:** I am not sure what this means. A reserve is usually money collected from taxpayers and set aside for a specific

purpose. If there is no sewer collection system, and it has not been successfully shown that there is a need for one, why would a reserve exist? It might be a good idea to set up a reserve to subsidize individual septic system upgrades/replacements and to assist in surface water management improvements.

Dillon : Poor septic system operation, breakdowns, illegal connections to agricultural/surface drains,

**Comment** : To the best of my knowledge, this has never been policy or acceptable practice, so "illegal" is the correct terminology. If Dillon has knowledge of any such "illegal" connections, then it should be reported and fixed immediately, otherwise Dillon would be an accessory to the infraction.

#### Dillon: Cliff and Bank erosion

**Comment:** If lakeshore property owner's lots erode to the point that the septic weeping beds are in jeopardy, then a holding tank is an acceptable option.

#### Dillon: Leachate springs

**Comment:** These can be detected by dye testing. Again, if Dillon has knowledge of any such occurrences, it must be reported and corrected immediately.

Dillon : Aging conventional septic systems - systems show signs of failure in 20 years

**Comment** : The recommendation by Dillon is to replace the septics with individual low pressure grinder pumps, that are only guaranteed for 3 years, and will show signs of failure in 7 to 10 years ?

#### 4) Environmental Concerns - long history of concerns

**Dillon** : ABCA, Clean up Rural Beaches Plan and Program (CURB) 1989, faulty septics were greatest contributors to phosphorus and bacteria in Gullies watershed

#### **Comment :** This is the expanded text quoted

Significant enrichment and bacterial contamination in southern Ontario rivers and lakes, originates from rural sources. The discharge of waste material to streams can result in elevated bacteria concentrations, nuisance algae blooms, fish kills, and present a potential health hazard to humans and livestock using the water. Watershed studies have found that a multitude of pollution sources and pathways may affect beaches in Ontario. These include:

- 1) Urban sanitary and stormwater runoff
- 2) Direct livestock manure access to watercourses
- 3) Inadequate manure management practices
- 4) Direct discharge of milkhouse wastes
- 5) Contaminated field tile systems and

#### 6) Faulty (rural) septic systems

**Dillon** : Huron County, Rural Servicing Study, 1992, undertaken to address MOE concerns, recommended that development on septics be curtailed.

**Comment** : I could not find this document. There is no indication of which area in Huron county that this is referring to.

**Dillon:** Burns Ross Limited, Consulting Engineers, Review of Lakeshore Septic Systems, 1995, documented many problems - clay soils, undersized systems, poor surface drainage, many systems more than 40 years old.

**Comment** :I could not find this document. Could not find the authors "Burns Ross Limited, Consulting Engineers" No link to a website was given. Could not verify if this 16 year old document is relevant to the South Gullies watershed. As the document talks about "clay" type soils, it has been previously shown that this type of soil is not listed by ABCA as existing in the study area.

**Dillon:** GAP Enviro/Microbial Services, DNA Study, St. Joseph Beach, 2005 - E-coli samples are from agriculture and domestic sewage.

**Comment:** As the Zurich lagoon outflows into St. Joseph Ravine, it is quite understandable that one would find domestic (human) DNA present.

#### 9/12/2011

**Dillon**: ABCA, South Gullies Watershed Report Card, 2007 - "C" for surface water quality, E-coli exceeds MOE guidelines (100 cfu) recommends fixing septics

**Comment:** The Report Card reading for the South Gullies is 236 cfu, while areas east of the South Gullies are :

Bannockburn 355 cfu and Black Creek 933 cfu It is quite possible that eastern bacteria is migrating westward in the form of surface water, evaporation, and rain. In any case, both Bannockburn and Black Creek also have recommendations to fix the septics.

**Dillon**: Huron County, Voluntary Septic Re-inspection Program, 2005-2007 - 23 inspections in Study Area, 30 % require immediate repair/replacement.

**Comment:** If these inspections have been done by the Huron County Health Unit, and the 30 % of the septics in question pose a health risk, has the repair/replacement been carried out ?

**Dillon** : Dillon's Septic System Survey, Summer 2010 - 19 surveys. Over 40 % show signs of stress, 25 % report odours, avg. system age is 34 years south of Hendricks Road ( 20 year service life ) 30 % have damp wet areas, grass striping, leachate springs.

**Comment:** Dillon does not explain the methodology or criteria used in choosing which septics were studied. It is therefore a logical conclusion to assume that the surveys were biased rather than random. Also, there is no mention that the Huron County Health Unit was involved to verify the survey documentation.

#### 5) Provincial Policies - becoming more restrictive

**Dillon**: Provincial Policy Statement (PPS) under the Planning Act - Large lot sizes required for septic systems not consistent with PPS - inefficient use of land/infrastructure, impacts natural features, prime farmland

**Comment**: Again, the large lot sizes (6000 m2) required for septic systems only apply in "clay" type soils, which is not an issue in the South Gullies watershed. The Conservation Authorities are very restrictive on new development applications which might have impacts to natural areas and features. The Municipality is very restrictive in re-zoning agricultural land.

Dillon: Sanitary sewers required for multi-lot developments

**Comment**: This only applies to large urban areas that already have existing sewers, collection systems and treatment facilities. Otherwise, what would the sanitary sewers connect to ?

Dillon: Municipalities must protect, improve or restore quality of ground water and surface water.

**Comment:** This is every one's responsibility, to improve water quality, and to abide by the rules put in place to protect our most valuable resource.

**Dillon**: Ontario Clean Water Act . Huron County is implementing a mandatory septic inspection program. County may order that a faulty system be replaced. Many lots are too small to accommodate a properly sized system then what.

**Comment:** It has already been shown that if (b) and (c) of the Class 5 sewage system is met, then a class 5 system is permitted. This is not a desirable option, so Dillon should not press this issue. Also, it is a matter of economics, as it would be much cheaper to replace an entire septic system to current codes, than it would be to connect to a new sewage collection system.

#### SUMMARY

The arguments for a new sewage collection system for Bluewater appear to be weak and poorly researched. There is a much stronger case for mandatory septic system inspection, and mandatory repair/replacement, if needed, in compliance with Municipal by-laws.

Thank you,

9/12/2011



Public Information Centre 2 – Record of Comments August 20, 2011

Comments: WE BELIEVE THAT THE SEWER
SHOULD PROCEED PROVIDED
THAT THE COST IS LESS THAN
CONTINUING WITH SEPTIC
SYSTEMS AND THAT A FURTHER
PUBLIC INFORMATION SESSION
IS MELD CONCE THE FINAL
COSTS LESS FEDERAL AND
PROVINCIAL GRANTS ARE KNOWN
AND BEFORE COUNCIL GIVES
FINAL APPROVAL).

Please complete and place in the comment box or return by September 9, 2011 to:

Janet Smolders, MCIP Project Manager Dillon Consulting Limited Box 426, London, Ontario, N6A 4W7 Tel: (519) 438-1288 Ext. 1268 Fax: (519) 672-8209 Email: jsmolders@dillon.ca

DILLON

Name: \_\_\_\_\_

Address and Postal Code: \_\_\_\_\_

Telephone/e-mail: \_

The Freedom of Information and Protection of Privacy Act applies to this project. With the exception of personal information, all comments will become part of the public record.

Project No. 10-3169

By email: jsmolders @ dillon.ca. - aug. 23/11.

Monday, August 15, 2011

Municipality of Bluewater Attention: Mr. Brent Kittmer, Utilities Superintendent Box 250 Zurich, ON N0M 2T0

Dear Mr. Kittmer:

Please consider this letter our request to be excluded from the proposed sewage collection system, and from any of the costs associated with the funding of this system.

We have spent considerable money to install our own septic systems, and have lot sizes large enough to handle our septic waste, with systems built according to Building Code specifications.

We see no reason why it would be necessary to decomission our present systems, which are working well, to tie into the proposed sewage collection system.

Please acknowledge receipt of this letter.

Thank you,

cc: Mr. John Becker, Hay East Ward Councillor Mr. Bill Dowson, Mayor Mr. Paul Klopp, Deputy Mayor

624 - X

St. Joseph's Shores Property Owners Assoc. R.R. #2 Zurich, Ontario NOM 2T0

August 10 2011

Dillon Consulting Attn: Ms. Janet Smolders Box 426, London, Ontario N6A 4W7

Dear Madame:

Re: Sewer Survey

The St. Josephs Shores Property Owners Association (representing both St. Josephs Shores 1 & 2) sent out a survey to all the association members regarding the installation of sanitary sewers in these two developments.

The questionnaires have been returned. The results of the surveys returned are one hundred (100%) percent in opposition to the sewer project as proposed.

I am also advising the Municipality of Bluewater council, Ms. Laurie Wolf the C.A.O. and Brent Kittmer E.I.T.

Thank you for your professional attention to this matter.

Yours truly

President St Josephs Shores Property Owners Association

were asked what would happen if the project didn't go forward. Bousey said the problem would never go away, citing a 2010 survey that concluded 40 per cent of the systems Dillon included showed signs of stress. Provincial regulations will also become more restrictive, Smolders said, in order to protect the lake from potential contamina-tion from septic-system discharge. Later, she suggested that the province will "likely work with the Hauro Courty Health Unit and say, "We are concerned by all the septic systems will maybe be shurt down." going to be shur down. He insisted that the committee will develop a protection plan, which has to be approved by the province, and then work with the county and municipalities on a Anyone can object the project by submit-ting a Part II Order tequest to the Environ-ment Ministry. Following the resolution of any requests, the project will be suproved under the Environmental Assessment Act. John Vanderburgt, who lives near St. Joseph and is amenber of the source water protection committee, said there's no rea-son to assume septic systems would be shut "I think that was out of lino," he said. "You're fear mongering people into think ing that all of a stidden their septic system's risk management plan. Two residents who live within the study area suggested the matter be put to a public vote before council makes its final Screening Report, which documents the planning and design process, by the end of September. A 30-day review will follow. Lakeshore sewage project a no go, says engineer according to one of Dillon's presentation Dillon will complete an Environmenta THE GRIEF RECOVERY Islon. down. for a medium jot; and between \$10,000 and \$17,000 for a large lot. Since 2006, Dillon Consulting has been Among other reasons, that corridor needs sewers to handle future growth within Blue-water. The population along the lakeshore and preliminary design to improve sewage collection to 920 lots along Highway 21, between Grand Bend and St. Joseph. is expected to grow by 1 per cent per year, mostly due to retiring Baby Boomers who want to move near the lake, said Smolders. During a question-and-answer session at the public meeting, Smolders and Boussey working on an environmental assessment



Areumatry Government grants, if approved, vary from covering 50 to 70 per cent of the costs, said Zurich Ward Counciler Jauses Simmeruan. Bluewater is seeking funding from the pro-vincial Ministry of Instanteure and Energy, but haan't treetved approval yer. We'd do not recommend hart this collection typestal proved unders you get significant upper-level government that this collection system proved unders you get significant upper-level government that this collection from youry of yars involved in these assessments, not a single (project) in these times period wort abard without a significant time provided wort abard without a significant time period wort abard without a significant

2 News Aecord • Wednesday, September 7, 2011 - 1.) WING 2. LANS 3/ UBJ 4.) fille

Vanessa Brown Clinton News Record

An engineer has advised Bluewater council not to move forward with a costly sewage col-lection system upgrade unless the munici-pality secures substantial government fundin

sewage collection system public meeting, affected residents were informed that a new sewer system would cost between \$31,600 and \$39,800 per property. All figures are At a recent Highway 21 corridor sanitary

preliminary.

upper-level government funding. Boussey and Janet Smolders, a Dillon envi-presentation slide, each property owner normental planner, circulated cost estimates based on small, medium, and large lots. Dillon is recommending the project would pay an additional \$0,800 - \$12,200 in involve pressure systems. According to a on-site costs for assmill lot; \$9,500 - \$10,000

Large crowd for lakeshore collection system meeting  $\frac{1}{8}$ 

we sure outewater courd, secting beds
 sectin

pressure on existing septic systems.

According to a presentation slide, ipate one per cent growth per year, with year-round residents increasing 20-year population projections artic-

rum ou gest per com. Changing lifestyles leading to according to the stide A slide success dire from 30 to 20 per cent.

also listed. Soils and geomorphology were 25 per cent report odours, and the odre environmental features. Bisted as the second key reason it's average system age is 34 years south The slide also suggests a low pres-believed the lakeshore needs severs. of Hendricks Road, among other sure system involves lower capital According to a presentation slide,

 Image: A state of the stat

of studies and surveys conducted in System options

voluntary septic n-inspection pro-the lakeshore, as opposed to a con-gram that included 23 inspections ventional gravity system and pre-and showed 30 per cent required sentation slides listed pres and oms Dillon has recommended a low pressure grinder pump system for the lakeshore, as opposed to a conthe last 22 years. The list includes a Huron County

Configure unsure secondary and account when the second sec

The I weam WPCP is a strateoic asset for the Taumshin and in

Action deferred until all-inducin



# MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT FOR THE LUCAN WATER POLLUTION CONTROL PLANT

The Township of Lacan Biddulph is Initiating a Municipal Class Environmen-tal Assessment (Municipal Class EA) for the Lucan Water Pollution Control Plant (WPCP). The Municipality has retained Stornec Controlling Lide to un-derate the Municipal Class EA for this project which will be conducted as ording to the requirements of the Ornerio Environmental Assessment Act as a Schedule B Municipal Class EA.

The following problem statement has been developed for this project:

# Collection system me

ing.

# **Continued from front page**

Smolders spoke again after does not recommend the project proceed unless Bluewater receives significant funding from upper levels of government.

Ministry of Infrastructure and Energy. Questions

A number of questions were raised after the presentations, many of which in September, followed by a 30-day focused on clarifying the cost of the review period. proposed system.

a vote was made at Saturday's meet- tion slide.

Another man suggested members of Boussey's presentation, saying Dillon the public try to lobby senior levels of government for funding.

# Next steps

Bluewater will consider all input received at Saturday's meeting, accord-A presentation slide states Bluewater ing to a presentation slide, and a planis seeking funding from the Ontario ning and design process will be documented in an Environmental Screening Report (ESR).

The ESR is expected to be completed

Any person may submit an objection A St. Joseph man suggested the mat- - known as a "Part II Order request" ter go to a public vote, though no deci- - to the Ontario Ministry of the sion on whether to proceed with such Environment, according to a presenta-

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	÷	¥ ×	Wednesd	Wednesday, October 12, 2011 • News Record 3
Bluewater c	ouncillor say	Bluewater councillor says no to lakeshore sewage collection	shore sewag	je collection
Vanessa Brown Clinton News Record At least one Bluewater councillor wants the municipality to take a pass on the expensive lakeshore sewage collection system. At a public meeting held in At usus will Boussey, Bluewater's consulting engineer, informed resi- dents a new collection system would cost each property owner between \$31,600 and \$39,800, depending on their lot size. Boussey has advised Bluewater council not to move forward with the project, which would increase sewage flows to move forward with the project, which would increase sewage flows to move forward with the project, which would increase sewage flows to move forward with the project, which would increase sewage flows to move forward with the project, which would increase sewage flows to move forward with the project, which would increase sewage flows to move forward with the project, which would increase sewage flow to move forward a grant. Hay West Coun. John Gillespie motioned not to proceed with the collection system during council's session last week, and advised fel- low councillors to update the tri- municipal committee at its next meeting. "There isn't any reason to delay making a decision on this collection system," he said last Monday. "And it's inappropriate, in my judgment, for this council to not be making a decision because it is critical for the tri-municipal committee to under- stand where we stand."	The Grant Bend Area Sewage Treatment Board, made up of three council members each from Blue- water, South Huron, and Lambton Shores, is scheduled to meet next on Oct. 21. It is expected a tender will be awarded at that meeting for the \$26 million treatment plant. Coun. Gillespie said Bluewater needs to keep the tri-municipal board in the know. "We should tell them now so that when they make their decisions on the size of the plant, they're not assuming they're going to deliver, Gillespie said. Coun. Gillespie's motion last Monday raised questions about Bluewater's involvement in the multi-million-dollar project. "If we say no (to the collection system) now, how could we sit at the table and accept the plant?" asked mayor Bill Dowson. "It's dead if we don't have enough (sewage) in." All three municipalities have until Dec. 31 to commit to, or opt out of, the project. Dowson and Stanley West Coun. George Irvin, who both sit on the tri-municipal board, said they couldn't support Gillespie's motion until council receives Boussey's final Environmental Screening Report which documents the plan- ning and design process. Utilities	superintendent Brent Kittmer said from his understanding Dillon has completed the report and is ready to come before council. His pres- ence would cost Bluewater between \$1,000 and \$2,000, which became another topic of contention among councillors. Coun. Gillespie's motion was eventually tabled pending Dillon's final report "on the understanding that it will be voted on by council before the next tri-municipal meet- ing," Gillespie said. Service clubs when they hold fund- raisers that benefit the community. Council unanimously passed the new policy at its Oct. 3 meeting. The new process, which eliminates much of the paperwork service clubs have to fill out, is intended to simplify the discount procedure. Service clubs will now pay 35 per cent of the rental hall fee rather than paying in full then being rebated afterward. Also, service clubs will now pay 35 per cent of the rental hall fee rather than paying in full then being rebated afterward. Also, service clubs will now pay 35 per cent of the rental hall fee rather than paying in full then being rebated afterward. Also, service clubs will now pay 35 per cent of the rental hall fee rather than paying in full then being rebated afterward. Also, service clubs will now pay 35 per cent of the rental hall fee rather than paying in full then being rebated afterward. Also, service clubs will now pay 35 per cent of the rental hall fee rather than paying in full then being rebated afterward. Also, service clubs will hele the community. "The intent and spirit of this pol- icy is leniency for fundraising for is policy is policy policy is policy policy is policy	"I'd be hard-pressed to find a situa- tion where there would be a denial." But in a delegation before council last week, Zurich Lions Club mem- bers Louis Schilbe and Richard Erb said the new policy still isn't clear. "It still doesn't say who gets the rebate and who doesn't," Schilbe said. After the meeting, Erb said the flons club hasn't yet received their \$400 rebate from a fish fry fund- raiser held in Zurich in April. Kittmer a cknowledged some service clubs haven't been rebated because council has been working for several months on the revised policy. Council then unanimously voted to approve the new policy with a retroactive date of Jan. 1, 2011, meaning service clubs can get in on the new policy with events held since January of this year. New water meters coming Council has directed staff to pro- ceed to tender the water meter upgrade project. The project in Cludes upgrading for superiment providing \$1.2 million. The project is \$1.857 million with the provincial government providing \$1.2 million. The project is \$1.857 million with the provincial government providing \$1.2 million. The project is \$1.857 million with the provincial government providing \$1.2 million. The project is \$1.857 million with the provincial government providing \$1.2 million. The project is \$1.857 million with the provincial government providing \$1.2 million. The project is \$1.857 million with the provincial government providing \$1.2 million. The project is \$1.857 million with the provincial government providing \$1.2 million. The project is \$1.857 million with the provincial government providing \$1.2 million. The project is \$1.857 million with the provincial government providing \$1.2 million. The project in cludes upgrading for the new neters will what don't have them. Utilities superintendent Brent Kittmer said the new meters will	lead to a 15 to 30 per cent reduction in water usage, which will decrease operating costs. "For (the municipality), the biggest benefit I could see is the availability of data," Kittmer added." With everybody having water more that the rest, we'll be able to find out where we're losing water and start targeting some of those bigger leaks. This report to council, Kittmer where we're losing water and start targeting some of those bigger factor, which works out to be about \$230 wer property. In two unmaninous votes, council decided that Zurich users will be but on a payment plan over five years with no interest. Bayfield's portion will be absorbed into the water debt accumulated from its water distribution project. <b>Solution will be absorbed into the water debt accumulated from its water distribution project.</b> <b>Geoded that Zurich users will be absorbed into the water debt accumulated from its water distribution project.</b> <b>Geoded that Zurich users and more.</b> Bayfield's portion will be absorbed into the water debt accumulated from its water distribution project.
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**Open letter to Mayor Dowson and Bluewater Council Members** 

Re: proposed Bluewater Lakeshore sewage system

STEVE NORTHEY Advertising Sales

posed lakeshore sewer project and have never written a letter to council before hor fekt the need to. I am unfolding has prompted to me to the manner in which things are Let me begin by saying that I not a political activist, however my concerns regarding the prowrite this letter.

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JULIE NARRISON

Advertising Sales

MARK STEPHEN

water council meeting and listened On Oct 17th I attended the Blueto Dillon Engineering's presenta-tion and took particular note of Mr. Boussey's comments.

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KATHY YOUNG

with his detractors, but never offers proof of his own. Clearly Mr. Bousopinion is needed in guiding coun-Pharmaceuticals than a septic sys-Boussey offers to debate the issue was Dillon hired? ). An impartial sewers were better at dealing with Boussey continues to provide only sey has a vested interest in seeing material that furthers the cause of wasn't going to be impartial, why way or the other. Once again Mr. implementing the sewer project and is not being impartial ( if he cil in this matter, not biased one Boussey inferred to council that tem is. Where is his proof ? Mr It is apparent to me that Mr. the project move forward.

**KESHORE ADVANCE CIRCULATION DEPARTMENT** 

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the soil north of St Josephs different Why not go all the way to Bayfield ? needed why stop at St Josephs ? is not officially recommending mov-& better suited for septic systems ? Although Dillon Engineering is is there a magic line somewhere ? If sewers are indeed really

ing ahead at this time unless there sources, comments made by Mr. is funding from senior Govt

Member of the Canadian Community Newspaper Association and the Ontario Community Newspapers Association

<u>A</u>ocina,

that the potential development was request for development on the site Two weeks ago I sent an email to sewer project. Mr. Kittmer advised me that since, there was no official Boussey made Monday night tell "Higgins Eng Ltd" project at Hendone for the proposed lakeshore Brent Kitmmer asking him if the drick Rd was included in the EA another story.

wants to use them to get the project Council members should be askthe "Higgins Eng Ltd" group. There is trying to sway the council in moving themselves, why did Mir. Bous-It is clear to me that Mr. Boussey comment other than to try & sway ing ahead with the project, regarddeveloper would be willing to pay position is. This was quite evident when he made the following com ment to council after his presentadrick Road". Clearly a reference to sey omit the Hendrick Rd project started. Clearly hinting/ implying less of what Dillon Eng's official. he whole thing to get it to Henfrom the EA numbers, but now is no reason to have made that tion. " who knows, maybe the not considered in the EA. the council's decision!

that they might be willing to pick up Boussey get that information from? going on here? Do you as a council ment ? The Cynic in me wonders .... member want that potential stain Why would he make such a state-Is there some back room dealing part of the costs. Where did Mr.

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519-238-5383

phone:

If you have been listening to your constituents....( as you should be the vast majority of the affected property owners clearly do NOT attached to you?

a similar result. I am convinced that sion has polled their members with if you poll the other affected subdivisions you will also find a very sim-\$10,000.00 range. Bayview subdiviall are opposed to mandatory sewers. Only one property owner was want the sewers. Dillon's own EA loseph's Shores I & II showed that of the owners that responded interested if the cost is in the will tell you that. A poll in St ilar result.

? What is the net benefit to Bluewation for senior government funding icits there is no reasonable expectastill debating supporting the STF in and with current governments defble future. Regardless , the majority of property owners are opposed at being asked and used to subsidize Grand Bend? Clearly the price for sive for property owners to absorb to assist anywhere in the foreseeaerty owners are opposed to the project, why is it still being considproperty owners of Hay West are Lambton Shores need to expand their STF. Once again I ask, Why tions. If the clear majority of prop implementation is far too expenered by council? Why is council This begs the following quesany cost. It's my belief that the ter?

Why weren't the minutes of the last Specifically in regards to Monday many weeks) to November 7, 2011 meeting available at your meeting had those minutes saved on a lapand not voted on Monday night? "deferred" ( for the 2nd time in as Monday night? Surely the clerk motion tabled by Mr Gillespie night's meeting. Why was the top, could they not have been

council members ? That way a vote could have been held Monday printed off & passed around to

and deserve to know what council's members are dragging their feet on too long, and clearly some council This matter is dragging on way waiting for an answer, they need he matter. Property owners are I can only hope that council decision is. night.

the majority of properly owners in avour of a small minority and one oarticular developer (Higgins Eng cotally disregarding the wishes of Ltd ) and going ahead with this members are not considering project.

commitment to hold a referendum yes" to that question and commithold true to that promise. Why are on this issue before a decision was At the all candidates meeting in Zurich last fall I stood and asked if each one of you would make the made. Each one of you answered ted to it. I am now asking you to you maling a decision without In conclusion I would like to holding a referendum ?

you to listen to the majority and put being heard and listened to. I urge demonstrations around the world once silent majority is insisting on remind you that "majority rule" is I trust that you will do the right the 1st tenet of a modern Democin recent weeks and months, the racy. As has been evidenced in a stop to the whole project.

Sincerely, COTT

thing for the right reasons. See this

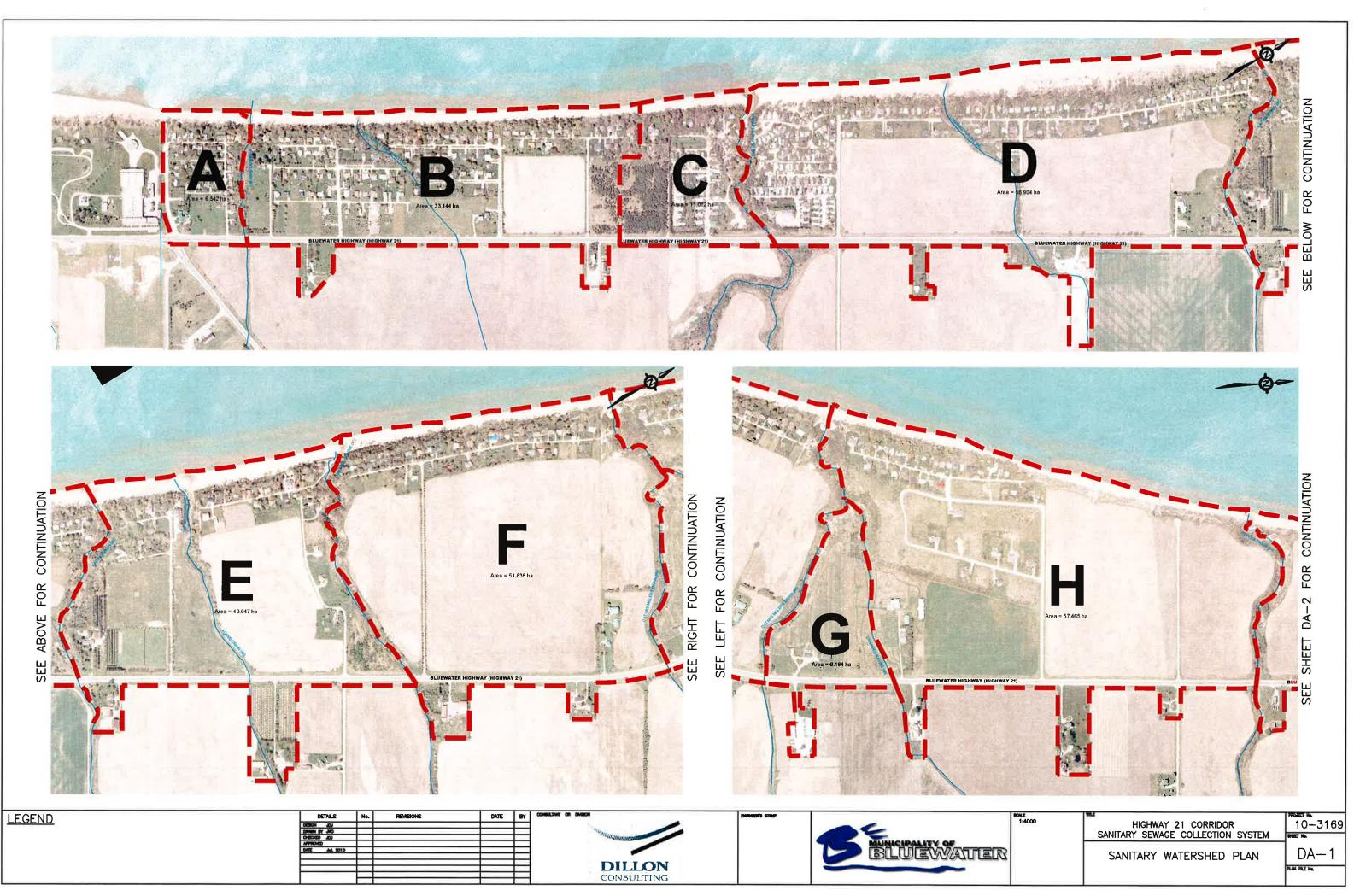
letter at www.lakeshoreadvance.

Dale Bray St Josephs

Lake Store Alvance Oct 2011

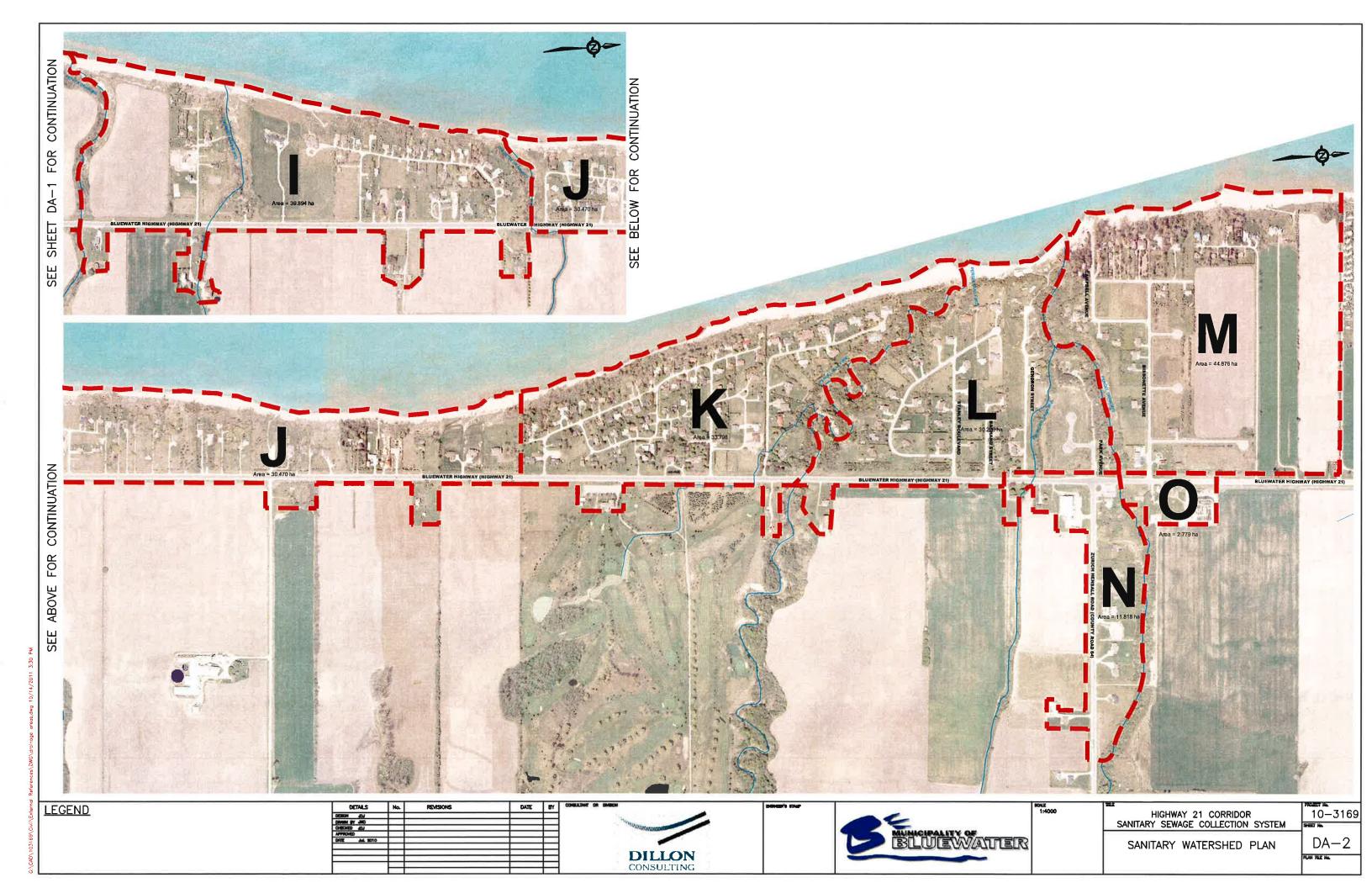
# **APPENDIX D**

# PRELIMINARY DESIGN DRAWINGS

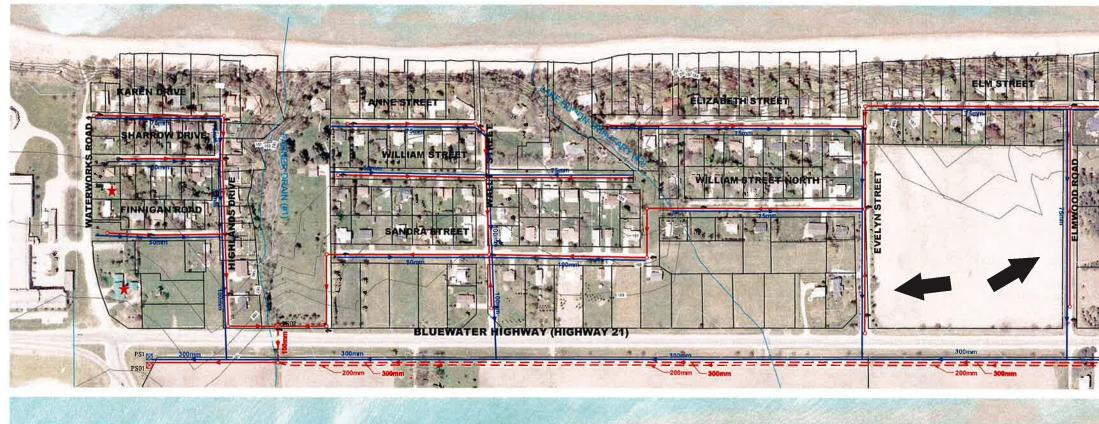


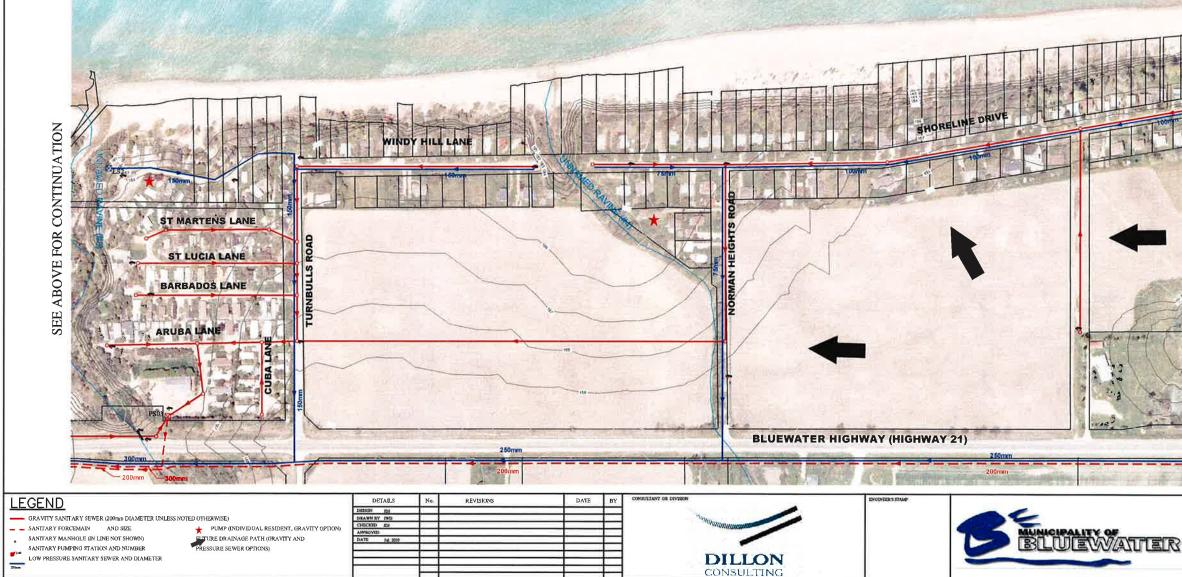
CAD\103169\Civil\External References\DWG\drainage areas.dwg 10/14/2011 3:29

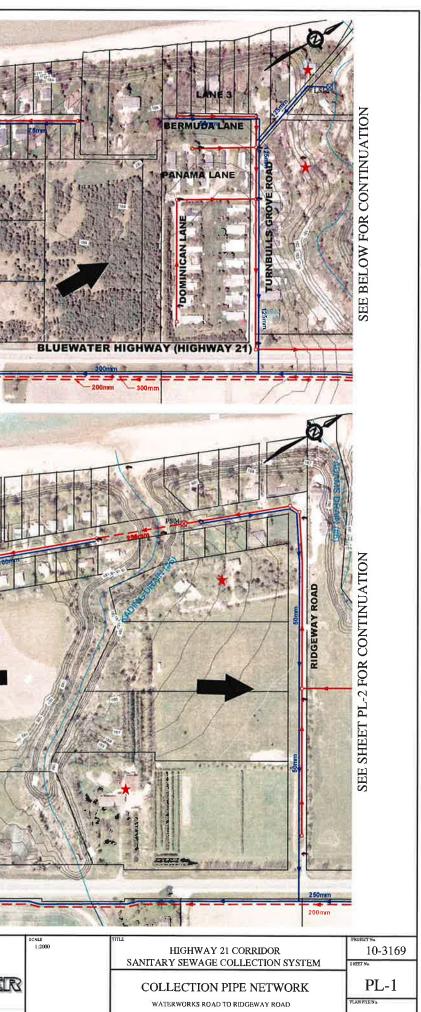
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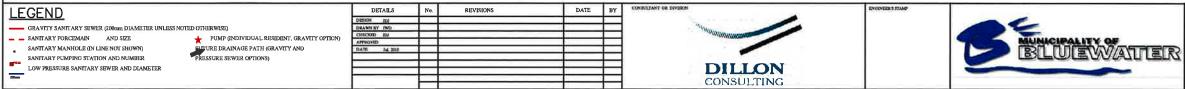






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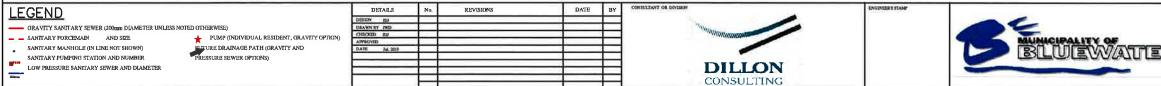
SCALE 1:2000 HIGHWAY 21 CORRIDOR 10-3169	STER STERET FR		
SANITARY SEWAGE COLLECTION SYSTEM	SCALE 1:2000	HIGHWAY 21 CORRIDOR	10-3169

RIDGEWAY	ROAD	то	DATARS	MILLERS	DRAIN

PLAN FILE No.

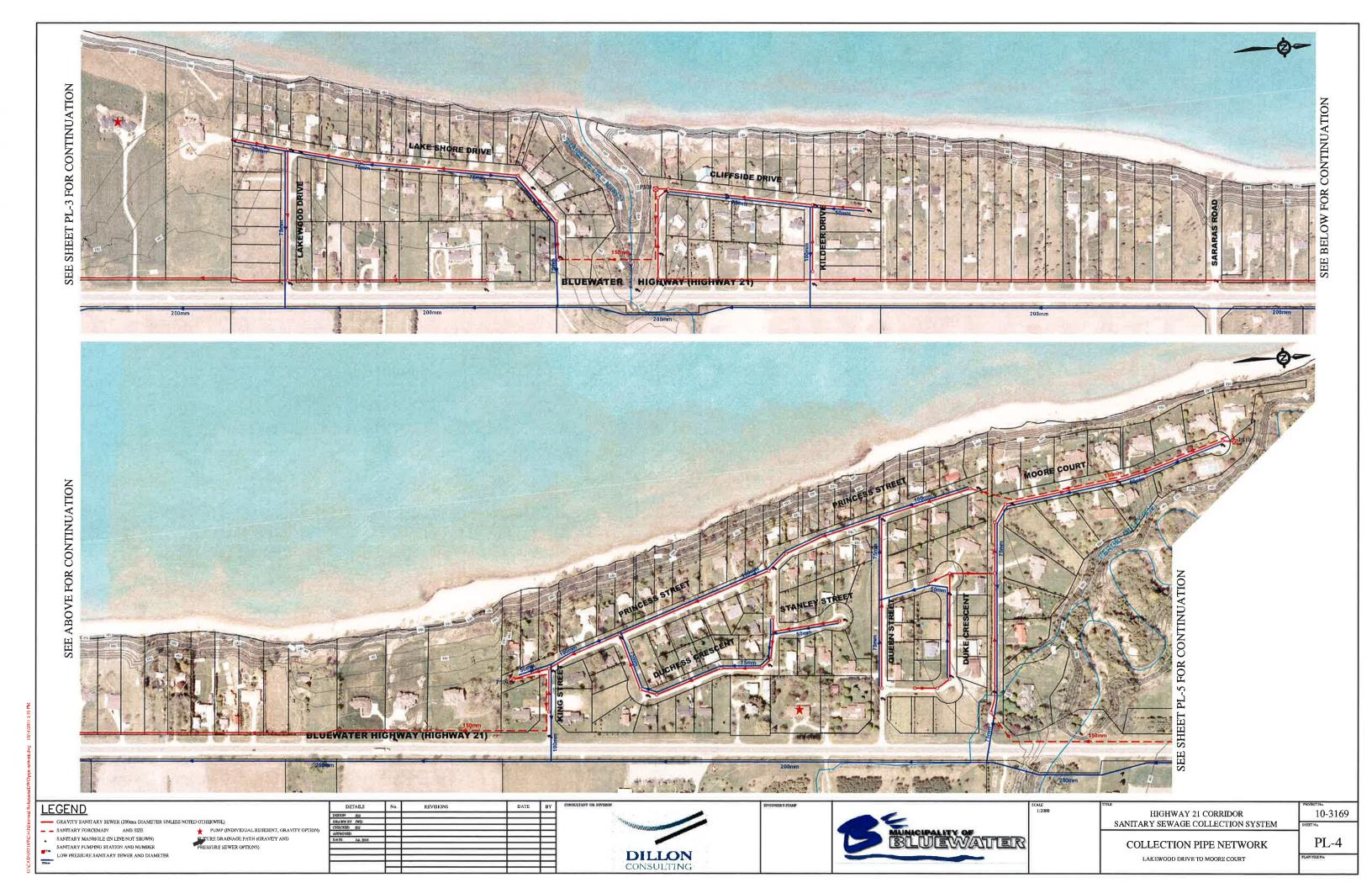
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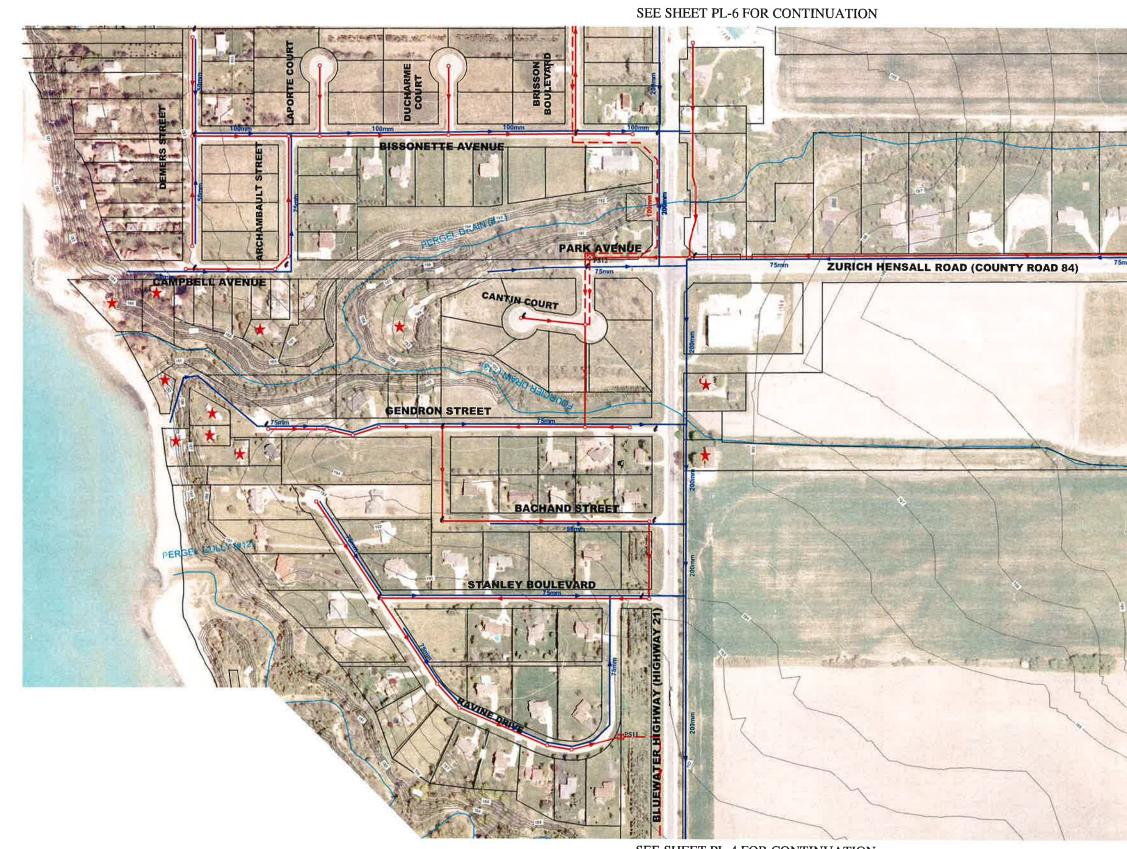


SCALE	TIME	PROJECT No.
1:2000	HIGHWAY 21 CORRIDOR	10-3169
	SANITARY SEWAGE COLLECTION SYSTEM	SHEET No.
R	COLLECTION PIPE NETWORK	PL-3
	DATARS MILLERS DRAIN TO SUNNYRIDGE ROAD	PLAN FILENG

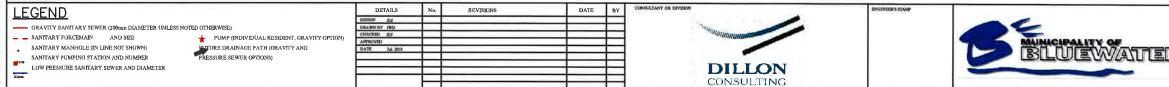
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SEE SHEET PL-4 FOR CONTINUATION



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#CALE 1:2000	HIGHWAY 21 CORRIDOR	PROJECT Na. 10-3169
IR	SANITARY SEWAGE COLLECTION SYSTEM COLLECTION PIPE NETWORK	PL-5
	STANLEY BOULEVARD TO BISSONETTE AVENUE	- LAN FILLEP

5



**DILLON** CONSULTING

**LEGEND** 

SANITARY FORCEMAIN AND SIZE SANITARY MANHOLE (IN LINE NOT SHOWN)

PUTURE DRAINAGE PATH (GRAVITY AND PRESSURE SEWER OPTIONS) SANTIARY PUMPING STATION AND NUMBER LOW PRESSURE SANITARY SEWER AND DIAMETER

14.300

	SCALE	псы	PROJECT HO.
	1:2000	HIGHWAY 21 CORRIDOR	10-3169
		SANITARY SEWAGE COLLECTION SYSTEM	SHERT No.
R		COLLECTION PIPE NETWORK ANTOINETTES LANE TO HESSENLAND LANE	PL-6

5

# SANITARY SEWER DESIGN SHEET - MUNICIPALITY OF BLUEWATER

RESIDENTIAL POPULATION DENSITIES

#### A) HECTARE BASIS

	THE FOLLOWING POPULATION ALLOWANCES W
	LOW DENSITY (SINGLE FAMILY/SEMI-DETACHED
	MEDIUM DENSITY (TOWNHOUSE/ROWHOUSE)
	HIGH DENSITY (APARTMENTS)
B)	LOT BASIS
	SINGLE FAMILY
	DUPLEX/SEMI

WILL APPLY WHEN DESIGNING SANITARY SEWERS; ED) = 30 UNIT S/HECTARE@3 PEOPLE/UNIT

	=3
	- 1

= 75 UNITS/HECTARE @ 2.4 PEOPLE/UNIT
= 150-300 UNITS/HECTARE @ 1.6 PEOPLE/UNIT

= 3 PEOPLE
=6 PEOPLE

DESIGN CRITERIA

SEWAGE = 363 LITRES/CAPITA/DAY INFILTRATION = 8640 LITRES/HECTARE/DAY PEAKING FACTOR; M = <u>14</u> 4+P<sup>00</sup>

							Highway 2	l Corridor S	anitary Sev	wage Collect	tion System	1				
-	LOCATION		la anti	(	POPULATI	ON	-		S	EWAGE FLO	W		SE	WER DES	IGN	-
Area No.	Street	Gross Hectares	Per Hectare	Per Lot	No. of Lots	Delta Pop.	Total Pop.	Peaking Factor	Infilt. L/sec	Sewage L/sec	Total L/sec	n	Pipe Size	Slope %	Capacity L/sec	Velocity m/sec
PHASE	TWO						_									
м		5.40		-	-			1000	0.510							
IVI	Campbell Avenue and Archambault Street Demers Street	5.12 12.19		3	19 14	57	57 42	4 303	0.512	1.030	1.54	0.013	200	0.42	21.26	0.68
-	Laporte Court	1.37		3	6	18	18	4.329 4.386	1 219 0 137	0.764	1.98	0.013	200	0.42	21.26	0.68
	Ducharme Court	1.37		3	6	18	18	4 386	0.137	0.332	0.47	0.013	200	0.42	21.26	0.68 0.68
	Bissonette Avenue and Brisson Boulevard to P S No. 13	5 59		3	15	45	180	4,164	0.559	3.149	3.71	0.013	200	0.42	21.26	0.68
	Antoinettes Lane and Brisson Boulevard to P S No. 13	26 11	90	3	22	2415 9	2416	3 521	2.611	35.734	38.35	0.013	1			
	13	20.11	30	<u> </u>	44	2413 3		3.521	2.011	55,734	38.30	0.015	250	0.42	30.54	0 79
	Forcemain (P.S. No. 13 to MH)	5175			-		2416				43.50		V		7 1	
0	Highway 21 to P S No 12	2.78		3	4	12	12	4 4 0 7	0.278	0 222	0.50	0.013	200	0.42	21.26	0.68
N	County Road 84 to P S. No. 12	1182		3	17	51	51	4.313	1.182	0.924	2.11	0.013	200	0.42	21.26	0.68
	Forcemain (P.S. No. 12 to MH)	14.60	-				63				3.00					
5			-						1			C				5.57
L	Cantin Court/Gendron Street	11.09		3	26	78	141	4.200	1.109	2 488	60.10	0.013	200	0.42	21.26	0.68
1	Bachand Street and Stanley Boulevard	12.19		3	13	39	180	4 164	1.219	3 149	60.87	0.013	200	0.42	21.26	0.68
8	Ravine Drive to P S. No. 11	15.15	-	3	22	66	246	4 1 1 4	1.515	4.252	52.27	0.013	200	0.42	21.26	0.68
20	Forcemain (P.S. No. 11 to MH)	53.03			-		246				63.20	-				
K	Moore Court to P.S. No. 10	12.19	-	3	17	51	96	4 248	1.219	1 714	66.13	0.013	200	0.42	21.26	0.68
	Forcemain (P.S. No. 10 to MH)	65 22					342				56.00			1		
											I	1				
K	Duke Crescent	2.83		3	15	45	45	4.324	0.283	0.817	1.10	0.013	200	0.42	21.26	0.68
1	Queen Street	1.94	-	3	6	18	18	4 386	0 194	0 332	0.53	0.013	200	0.42	21.26	0.68
-	Stanley Street and Duchess Crescent	6.57		3	29	87	87	4.260	0.657	1.557	2.21	0.013	200	0.42	21.26	0.68
-	King Street	1.22		3	3	9	9	4.419	0 122	0 167	0.29	0.013	200	0 42	21.26	0.68
	Princess Street to P.S. No. 9	8.44		3	40	120	279	4.092	0.844	4 796	61.64	0.013	200	0.42	21.26	0.68
	Forcemain (PS. No 9 to MH)	86 22			-		279				62.90					-
J	Kildeer and Cliffside Drive to P S. No. 8	5.06		3	22	66	66	4 289	0.506	1.189	1.70	0 013	200	0 42	21.26	0.68
	Highway 21 (west side) to P.S. No. 8	25.39	-	3	41	123	123	4 2 18	2.539	2.180	4.72	0.013	200	0.42	21.26	0.68
	Forcemain (P.S. No. 8 to MH)	116 67					123				72.00	( <b>1</b>		_		
1	Lakeshore Drive	8.99		3	36	108	108	4 234	0.899	1.921	74.82	0.013	200	0.42	21.26	0 68
	Highway 21 (west side)	6 74	-	3	10	30	30	4 355	0.674	0.549	73.22	0.013	200	0.42	21.26	0.68
	Lakewood Drive to P.S. No 7	10.37	90	3	7	954.3	1092	3 7 75	1_037	17 324	90.36	0.013	200	0.42	21.26	0.68
r	Land south of Sunnyridge Road	9 16	90	3	1	827.4	827	3 852	0.916	13.389	14,30	0.013	200	0.42	24.26	0.69
-	Sunnyridge Road to P.S. No. 7	6.92	00	3	16	48	875	3.837	0.692	14.110	14.80	0.013	200 200	0.42	21.26 21.26	0.68
	Forcemain (P.S. No. 7 to MHx)	158.85					3056				108.00	-				10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -
121				5								-		5	A	



GRAVITY SANITARY SEWER (200mm DIAMETER UNLESS NOTED OTHERWISE) SANITARY FORCEMAIN AND SIZE

SANITARY PUMPING STATION AND NUMBER

LOW PRESSURE SANITARY SEWER AND DIAMETER

+ PUMP (INDIVIDUAL RESIDENT, GRAVITY OPTION) PRETURE DRAINAGE PATH (GRAVITY AND PRESSURE SEWER OPTIONS)

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TATE FORM



DATE: 19-Oct-10 DESIGNED BY: JDJ

PROJECT FILE NO.: 10-3169

SCALE 1:2000	HIGHWAY 21 CORRIDOR	10-3169
100	SANITARY SEWAGE COLLECTION SYSTEM	THEFT No.
R	SANITARY DESIGN SHEET	PL-7
	PHASE ONE	PLAN FILE No.

### RESIDENTIAL POPULATION DENSITIES

Lakeshore Drive

Highway 21 (west side)

Lakewood Drive to P.S. No. 7

Land south of Sunnyridge Road

Sunnyridge Road to P S No 7

Forcemain (PS No 7 to MHx)

8.99

6.74

10.37

9.16

6.92

158.85

90

90

## HECTARE BASIS

MEDIUM DENSITY (TOWNHOUSE/ROWHOUSE) ENTS)

THE FOLLOWING POPULATION ALLOWANCES WILL APPLY WHEN DESIGNING SANITARY SEWERS; LOW DENSITY (SINGLE FAMILY/SEMI-DETACHED) = 30 UNITS/HECTARE @ 3 PEOPLE/UNI = 30 UNITS/HECTARE @ 3 PEOPLE/UNIT =75 UNITS/HECTARE @ 2.4 PEOPLE/UNIT = 150-300 UNITS/HECTARE @ 1.6 PEOPLE/UNIT

=3 PEOPLE =6 PEOPLE

SANITARY SEWER DESIGN SHEET - MUNICIPALITY OF BLUEWATER

Highway 21 Corridor Sanitary Sewage Collection System

## DESIGN CRITERIA

SEWAGE = 363 LITRES/CAPITA/DAY INFILTRATION = 8640 LITRES/HECTARE/DAY PEAKING FACTOR; M= 14 4+P<sup>00</sup>

HIGH DENSITY (APARTME
LOT BASIS

SINGLE FAMILY DUPLEX/SEMI

A)

B)

LOCATION			POPULATION						SEWAGE FLOW			SEWER DESIGN				_
Area No.	Street	Gross Hectares	Per Hectare	Per Lot	No. of Lots	Delta Pop.	Total Pop.	Peaking Factor	Infilt. L/sec	Sewage L/sec	Total L/sec	n	Pipe Size mm	Slope %	Capacity L/sec	Velocity m/sec
HASE	TWO															
11.01				1		1	(C)	21-21		1			1		1	
M	Campbell Avenue and Archambault Street	5.12	-	3	19	57	57	4.303	0.512	1 0 3 0	1.64	0.013	200	0.42	21.26	0.68
	Demers Street	1219		3	14	42	42	4 3 2 9	1 219	0.764	1.98	0.013	200	0.42	21.26	0.68
-	Laporte Court	1.37	9	3	6	18	18	4 386	0.137	0.332	0.47	0.013	200	0.42	21.26	0.68
· .	Ducharme Court	1.37		3	6	18	18	4.386	0.137	0.332	0.47	0.013	200	0.42	21.26	0.68
	Bissonette Avenue and Brisson Boulevard to P S. No. 13	5.59		3	15	45	180	4,164	0 559	3 149	3.71	0.013	200	0.42	21.26	0.68
	Antoinettes Lane and Brisson Boulev ard to P.S. No.								0.000			0.010	200	0.12	a care	0.00
-	13	2611	90	3	22	2415.9	2416	3 521	2 611	35.734	38.35	0.013	250	0.42	38.64	0 79
	Forcemain (P.S. No. 13 to MH)	51.75					2416				43.50					
-							· · · · · · · · · · · · · · · · · · ·	L						1.98.84		L
0	Highway 21 to P.S. No. 12	2.78		3	4	12	12	4.407	0 278	0.222	0.50	0.013	200	0.42	21.26	0.68
N	County Road 84 to P.S. No. 12	11.82		3	17	51	51	4.313	1 182	0 924	2.11	0 013	200	0.42	21.26	0.68
	Forcemain (P.S. No. 12 to MH)	14 60					63			-	3.00	-		-		
												1	1			
L	Cantin Court/Gendron Street	1109		3	26	78	141	4 200	1.109	2.488	50.10	0.013	200	0.42	21.26	0.68
	Bachand Street and Stanley Boulevard	12.19		3	13	39	180	4 164	1.219	3.149	50.87	0.013	200	0.42	21.26	0.68
	Ravine Drive to P.S. No. 11	15.15		3	22	66	246	4 1 1 4	1 515	4 252	52.27	0.013	200	0.42	21.26	0.68
	Forcemain (P.S. No. 11 to MH)	53.03				-	246				53.20					
К	Moore Court to P.S. No. 10	1219		3	17	51	96	4 248	1.219	1.714	56.13	0.013	200	0.42	21.26	0.68
	Forcemain (P.S. No. 10 to MH)	65.22					342				56.00	-				
ĸ	Dute Orecord	0.00		-	45	45		1001	0.000	0.047						
n	Duke Crescent	2.83		3	15	45	45	4 324	0.283	0.817	1.10	0.013	200	0.42	21.26	0.68
-	Queen Street Stanley Street and Duchess Crescent	6.57		3	6 29	87	18 87	4 386	0.194	0.332	0.63	0.013	200	0.42	21.26	0.68
-	King Street	1.22		3	3	9	9	4.260	0.657	1 557 0 167	2.21	0.013	200	0.42	21.26	0.68
1	Princess Street to P.S. No. 9	8.44		3	40	120	279	4.092	0.844	4 796	61.64	0.013	200	0.42	21.26	0.68 0.68
	Forcemain (P S. No. 9 to MH)	86.22					279				62.90					
J	Kildeer and Cliffside Drive to P.S. No. 8	5 06		3	22	66	66	4 289	0.506	1 189	1.70	0.013	200	0.42	21.26	0.68
-	Highway 21 (west side) to P.S. No. 8	25.39		3	41	123	123	4.218	2.539	2.180	4.72	0 013	200	0.42	21.26	0.68
	Forcemain (P S. No. 8 to MH)	116.67					123				72.00	-			-	

DATE BY CONSULTANT OR DIVISION LEGEND DETAILS No REVISIONS 101 101 GRAVITY SANITARY SEWER (200mm DIAMETER UNLESS NOTED OTHERWISE) + PUMP (INDIVIDUAL RESIDENT, GRAVITY OPTION) SANITARY FORCEMAIN AND SIZE SANTTARY MANHOLE (IN LINE NOT SHOWN) PRITURE DRAINAGE PATH (GRAVITY AND PRESSURE SEWER OPTIONS) 74.3018 SANITARY PUMPING STATION AND NUMBER LOW PRESSURE SANITARY SEWER AND DIAMETER DILLON CONSULTING

36

10

7

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3

3

3

3

3

108

30

954.3

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1 921

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14 110

74.82

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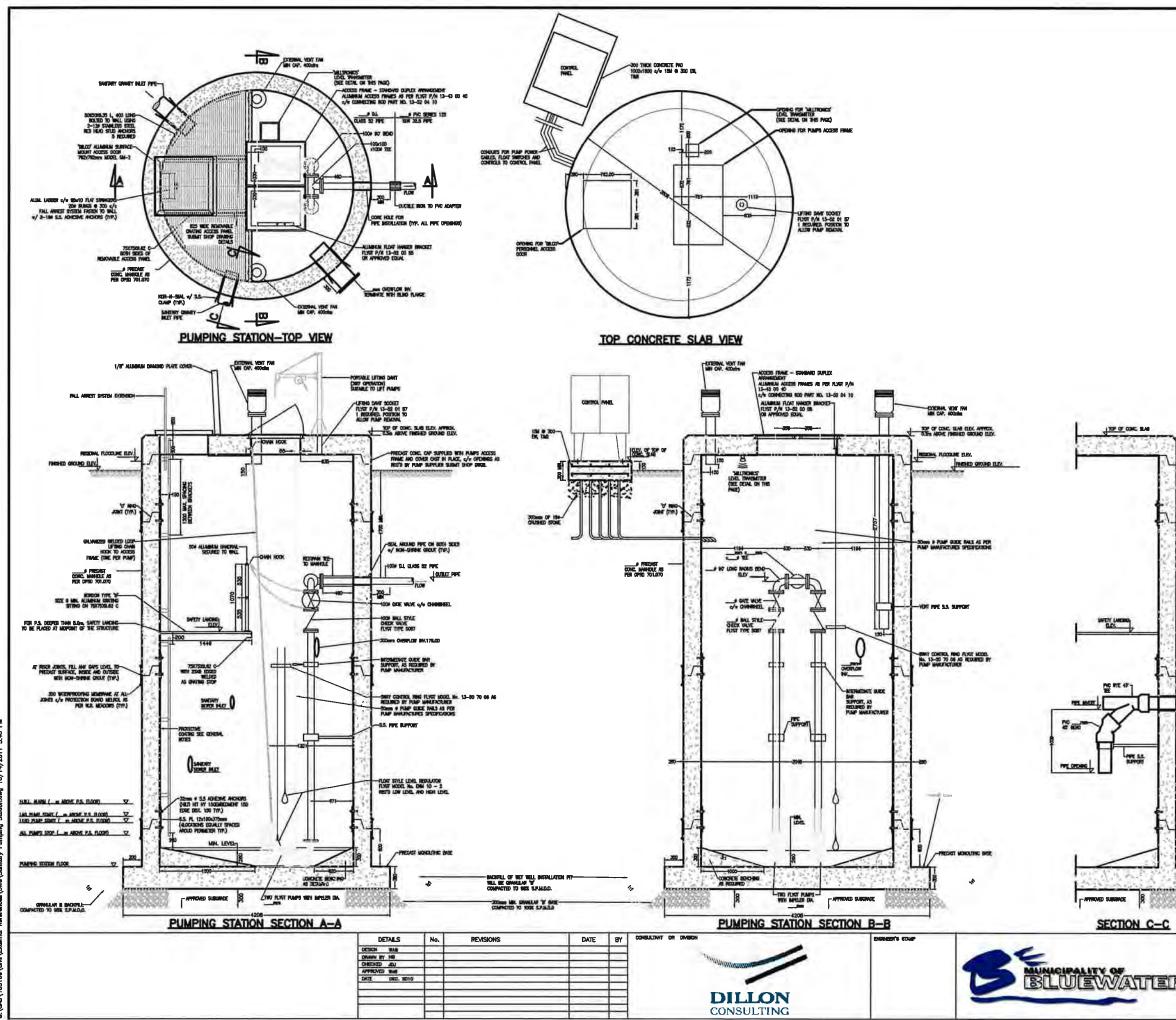
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0.68

19-Oct-10
JDJ

PROJECT FILE NO .: 10-3169

	SCALE 1:2000	HIGHWAY 21 CORRIDOR	10-3169
R		SANITARY SEWAGE COLLECTION SYSTEM SANITARY DESIGN SHEET	PL-8
		PHASE TWO	PLAN PLENS



## **GENERAL NOTES**

- 1. EQUIPMENT AND MATERIAL TO MOE SPECIFICATION No. 3, STANDARD SPECIFICATION FOR SUBMERSIBLE SEWAGE PUMPS.
- 2. PUMPING STATION FOUPMENT BY FLYGT
- -ELECTRICAL CONTROL PANEL C/W SCADA MONITORING SYSTEM -POWER CABLE
- -PUMP DISCHARGE CONNECTIONS
- -LIFTING CHAINS -CHAIN HOOKS
- -GUIDE BARS
- -UPPER GUIDE BAR HOLDERS
- -LEVEL REGULATOR HANGER
- -LEVEL REGULATOR
- -FLOATS
- -PUMPS ACCESS FRAME AND COVER
- -TWO PUMPS AND MOTORS :
- MPELLER \_\_\_\_mm. \_\_\_kW, 230V, \_\_PH, 60Hz,
- OPERATING AT \_\_\_\_\_ RPM, DELIVERING \_\_\_\_ I/s AT \_\_\_m TDH
- 3. PIPING AND PITTINGS TO BE \_\_\_\_\_MM IN DIA. DI (DUCTLE IRON) CLASS 82. COUPLINGS " VIC-FLANGE" STYLE 341, c/w GASKET GRADE 'S' FASTEN WITH TYPE JO4 STAINLESS STEEL BOLTS, NUTS AND WASHERS
- 4. COAT ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE WITH 2 COATS OF BITUMINOUS PAINT.
- 5. ALL FASTENERS TO BE S.S. TYPE 304L
- 6. WET WELL EXTERIOR TO BE INSPECTED AND APPROVED PRIOR TO BACKFILLING.
- 7. PROVIDE SAFETY PLACARDS FOR ALL PUMP STATION STRUCTURES AND EQUIPMENT, AS REQUIRED BY THE OCCUPATIONAL HEALTH & SAFETY ACT ANY REVELENT REGULATIONS READILY VISIBLE.
- 8. THOROUGHLY CLEAN INSIDE FACE OF NANHOLE AS PER PROTECTIVE COATING MANUFACTURERS REQUIREMENTS.
- 9. SEAL ALL JOINTS AND PENETRATIONS WATERTIGHT WITH EPOXY MORTAR.
- 10. SHOP DRAWINGS TO BE SUBMITTED FOR REVIEW.

## STRUCTURAL NOTES

RECAST COME, CAP

WHENED GROUND DLEY.

WHICLE AS PER OPEN

DANE (TTP.)

SWITNEY COMMEN

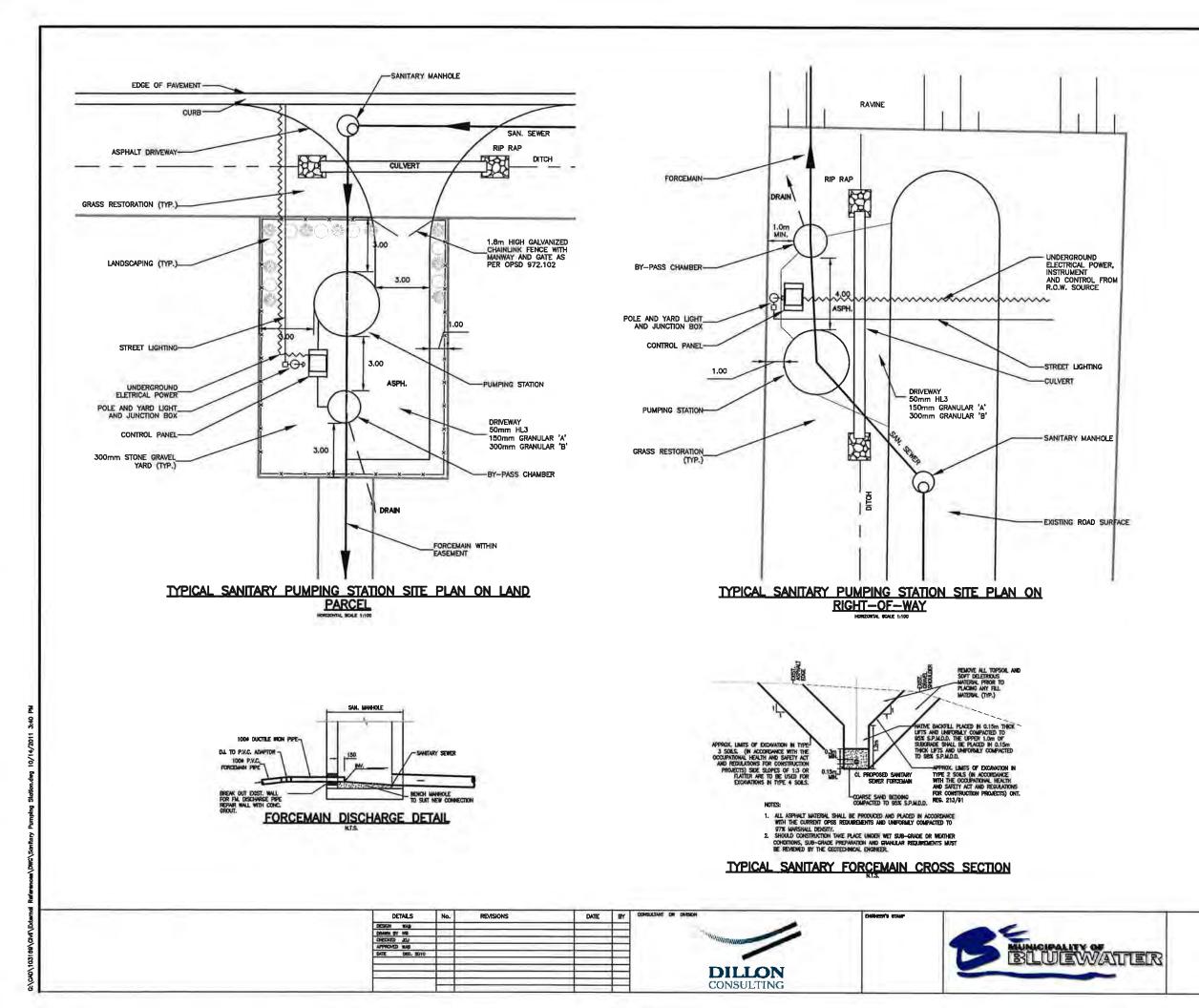
- 1. FOUNDATION DESIGN IS TO BE BASED ON GEOTECHINCAL INVESTIGATION REPORTS PREPARED BY A LICENSED PROFESSIONAL ENGINEER. 2. SUBGRADE ELEVATIONS TO BE APPROVED BY THE GEOTECHINICAL ENGINEER.
- 3. SUPPORT ALL FOOTINGS AND SLABS ON UNDISTURBED SUB-GRADE WHERE DEEMED SUITABLE BY GEOTECHNICAL ENGINEER, WHERE UNSUITABLE, REPLACE WITH ENGINEERED FILT OF ELEVATIONS RECOMMENDED BY GEOTECHICAL ENGINEER.
- 4. REVIEW GEDTECHNICAL REPORT FOR RECOMMENDATIONS CONCERNING DEWATERING AT ALL STRUCTURES.
- TANK BUOYANCY AND UPLIFT RESISTANCE
- 1. PROTECT ALL STRUCTURES FROM FLOTATION DURING CONSTRUCTION.
- 2. DEWATER EXCAVATION UNTIL CONSTRUCTION IS COMPLETE.
- MATERIAL SPECIFICATIONS
- 1. CONCRETE STRENGTH IN ACCORDANCE WITH CSA STANDARD A23.1-94 AND A23.2-94.
- 2. STRUCTURAL CONCRETE UNLESS OTHERWISE NOTED: 40 mPg AT 28 DAYS.
- 3. EXPOSURE CLASSIFICATION
- 4. MAXIMUM WATER CEMENT RATIO
- 5. USE WATER REDUCING AGENT AND SUPERPLASTICIZER. B. NORMAL MAXIMUM AGGREGATE SIZE 20mm.
- 7. ENTRAINED AIR CONTENT RANGE 5% TO 8%.
- 5. LEAN FILL AND MASS CONCRETE 25-DAYS COMPRESSIVE STRENGTH 13 MPd
- 9. REINFORCING STEEL: CSA STANDARD G30.18-M92, GRADE 400, DEFORMED BARS.
- 10. STRUCTURAL STEEL: CSA STANDARD G40.20/G40.21-98, GRADE 350 ROLLED SECTIONS, GRADE 300 PLATES.

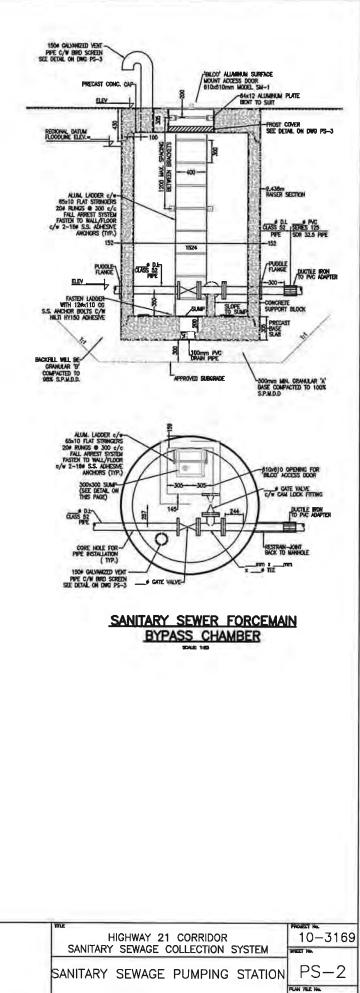
- 11. PROTECTIVE COATING FOR INTERIOR OF PUNPING STATION: INSTALLATION AS PER COATING MANUFACTURER A. SWEEP BLAST TO REMOVE LATANCE B. TEST FOR MOSTURE COMTENT C. APPLY SEALER DEVOE PRE-PRIME PENTRATING EPOXY © 1.5mils DRY THK D. 2 COATS DEVOE BARRUST 235 EPOXY © 4.0 TO 8.0 mills DRY THK E. PROVIDE TOTAL FILM BUILD OF 10.0 TO 15.0 mills

•	1 ILOUIDE		~	10.0	10	10.0	

c		
	HIGHWAY 21 CORRIDOR SANITARY SEWAGE COLLECTION SYSTEM	10-3169
	TYPICAL SANITARY SEWAGE PUMPING STATION	PS-1
	PLANS AND SECTIONS	PLAN THE MA.

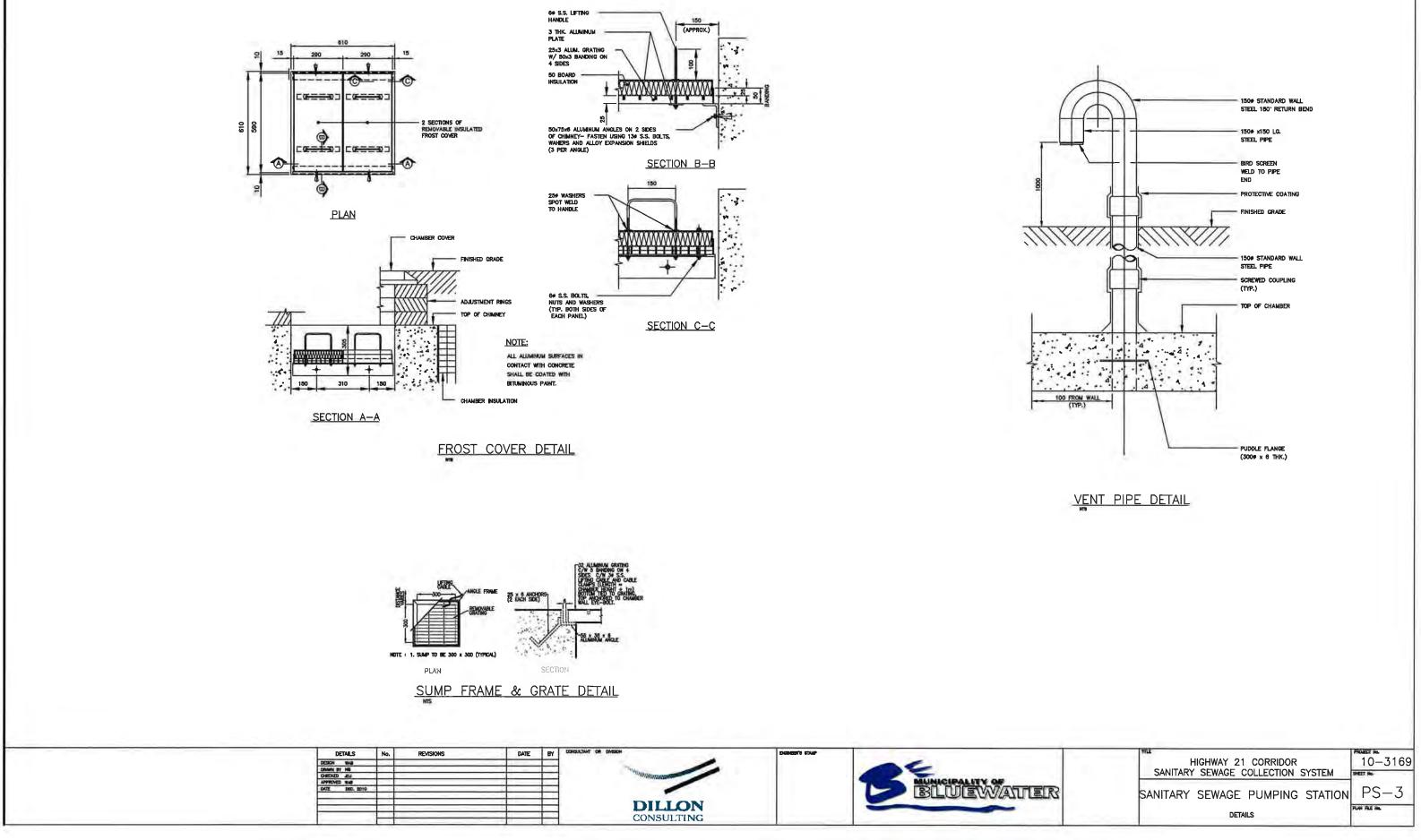
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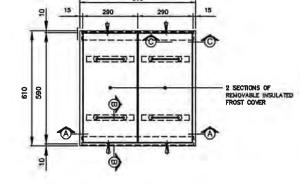


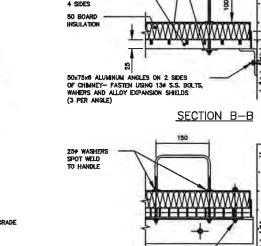


TYPICAL SITE PLAN AND DETAILS

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# **PUMPING STATIONS**

	Elevations				Wetwell	Forcemain			Submersible Pumps								
Station	Existing	Invert	Excavation	F/M	<b>]</b>		Diameter	Length	Velocity	No.	Capacity	Horsepower	Impellar		DH	Pressure	NPSH
No.	Ground	Inlet		Outlet	Flow (L/s)	(m)	(mm)	(m)	(m/s)	A second second	(L/s)	(kW)		Static	Dynamic	(max)	
	188.112									· · · · · · · · · · · · · · · · · · ·					1		
2	187.598	181.99		186.00	21.19	3.0	100	38.454	3.06	CP3102.181	24	3.7	LT	7.76	0.58		
3	188.145	182.07		186.00	235.99	3.0	300	1365.81	3.45	CS3231	244	82	665	17.15	4.69		
4	184.985	180.17		188.12	167.28	3.0	250	93.511	3.40	CP3231	167	67	605	8.71	1.63		
5	190.825	186.51		188.15	134.97	3.0	200	130.59	4.27	NP3153.181		14.9	MT	2.4	2.08	-	
6	190.532	185.59		189.36	76.09	3.0	200	112.622		CP3127.181		7.5	LT	4.53	1.86		
7	192.662	187.91		186.00	33.16	3.0	200	5526.32		NP3315,180		119	HT	0	68.67		
8	190.123	188.46	1.	192.10	6.42	3.0	150	211.268		NP3153.181		8.9	MT	3.06	4.4		
9	195.178	189.28		193.16	6.47	3.0	150	317.063	the second se	NP3153.181		8.9	MT	4.36	4.64		
10	187.584	185.03		192.11	65.33	3.0	150	354.21		NP3153.181		14.9	LT	4.81	7.84		
11	191.237	185.93		190.25	52.27	3.0	150	385.365		NP3153.181		8.9	MT	5.08	5.19		
12	195.382	193.36		193.28	2.61	3.0	50	27.91	0101	11.0100.101	3	0.9	184.9	0.00	5.19		
13	195.969	188.31		193.28	42.06	3.0	150	267.716	2,46	CS3127.181		7.5	НТ	5.73	3.75		

EN'S STAN

DETAILS

No.

REVISIONS

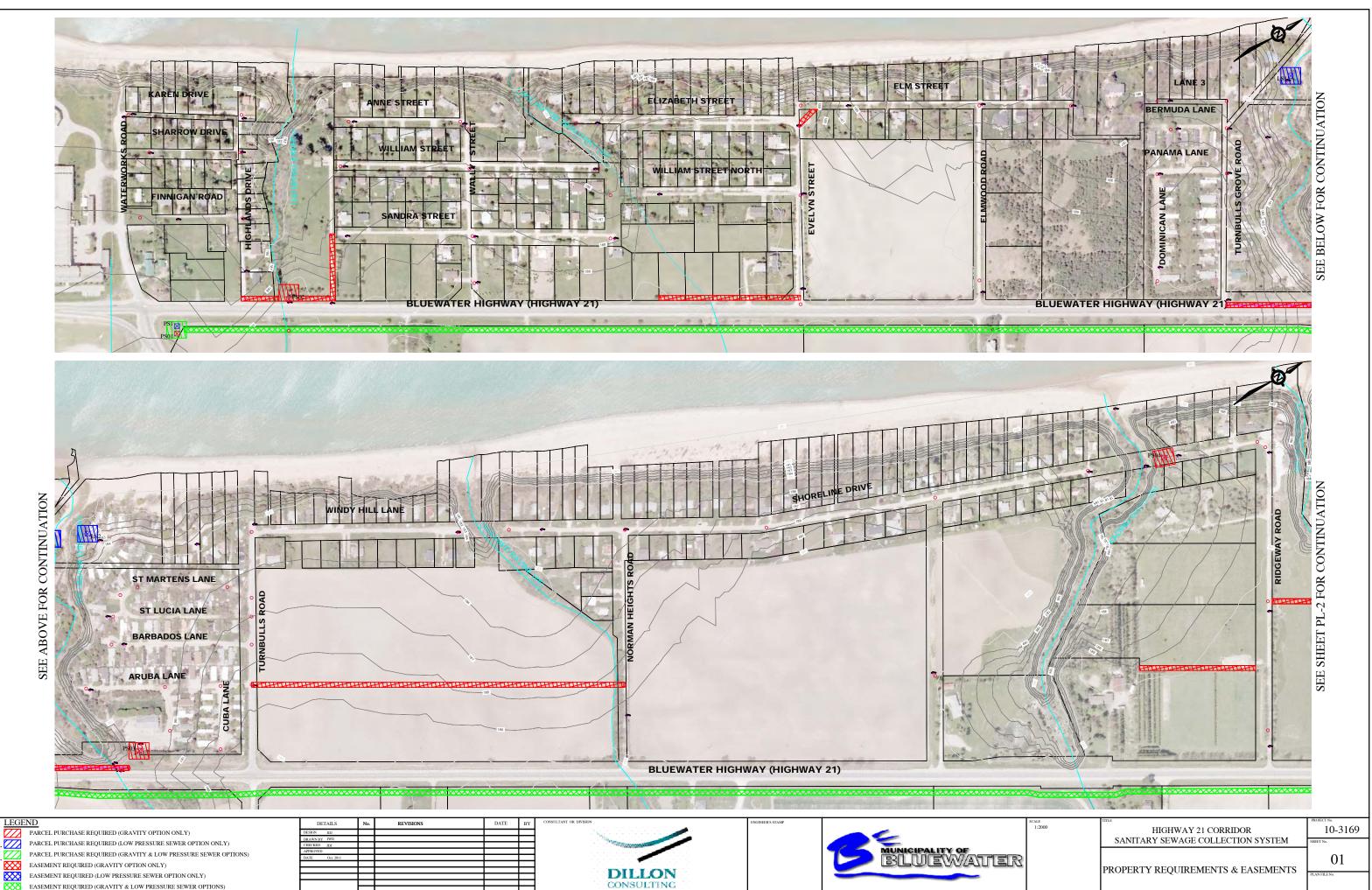
DATE BY

DILLON CONSULTING

E	HIGHWAY 21 CORRIDOR SANITARY SEWAGE COLLECTION SYSTEM	10-3169
BLUEWATER	PUMP STATION DESIGN CHART	PS-4

## APPENDIX E PROPERTY REQUIREMENTS AND EASEMENTS





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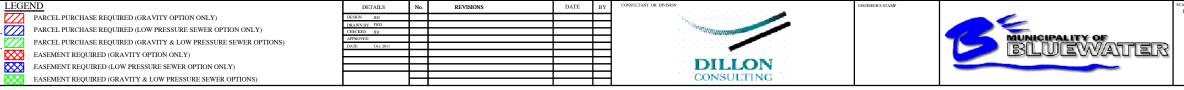
eferen	LEGEND	DETAILS	No.	REVISIONS	DATE	BY	CONSULTANT OR DIVISION	ENGINEER'S STAMP	SCALE 1:2000
al R	PARCEL PURCHASE REQUIRED (GRAVITY OPTION ONLY)	DESIGN JDJ					h ganaana aha gana g		1.2000
Ē	PARCEL PURCHASE REQUIRED (LOW PRESSURE SEWER OPTION ONLY)	DRAWN BY JWD	+				Manager and Annual A		
ĝ.		CHECKED JDJ APPROVED	+ +				A CONTRACTOR OF		
ģ	PARCEL PURCHASE REQUIRED (GRAVITY & LOW PRESSURE SEWER OPTIONS)	DATE Oct. 2011							6
8	EASEMENT REQUIRED (GRAVITY OPTION ONLY)								(
VDV103	EASEMENT REQUIRED (LOW PRESSURE SEWER OPTION ONLY)						DILLON		
GNC/	EASEMENT REQUIRED (GRAVITY & LOW PRESSURE SEWER OPTIONS)						CONSULTING		

			F04CT No.
	1:2000	HIGHWAY 21 CORRIDOR SANITARY SEWAGE COLLECTION SYSTEM	10-3169 SHEET No. 02
R		PROPERTY REQUIREMENTS & EASEMENTS	UZ PLAN FILE No.

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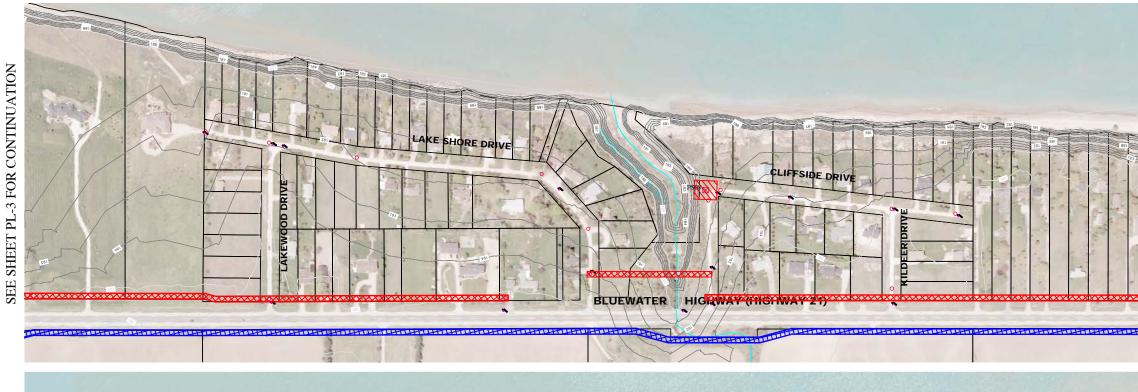
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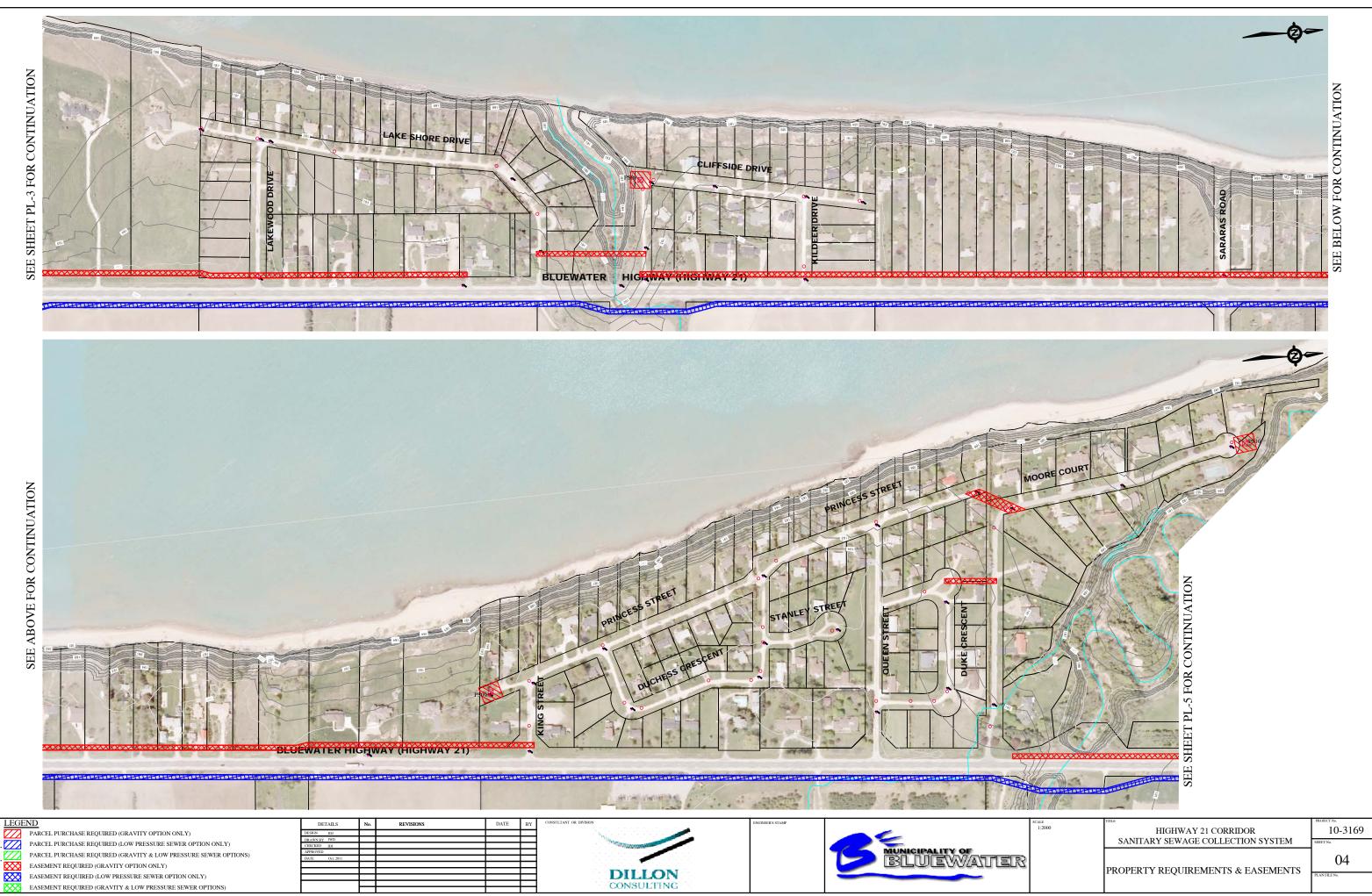


PROPERTY REQUIREMENTS & EASEMENTS

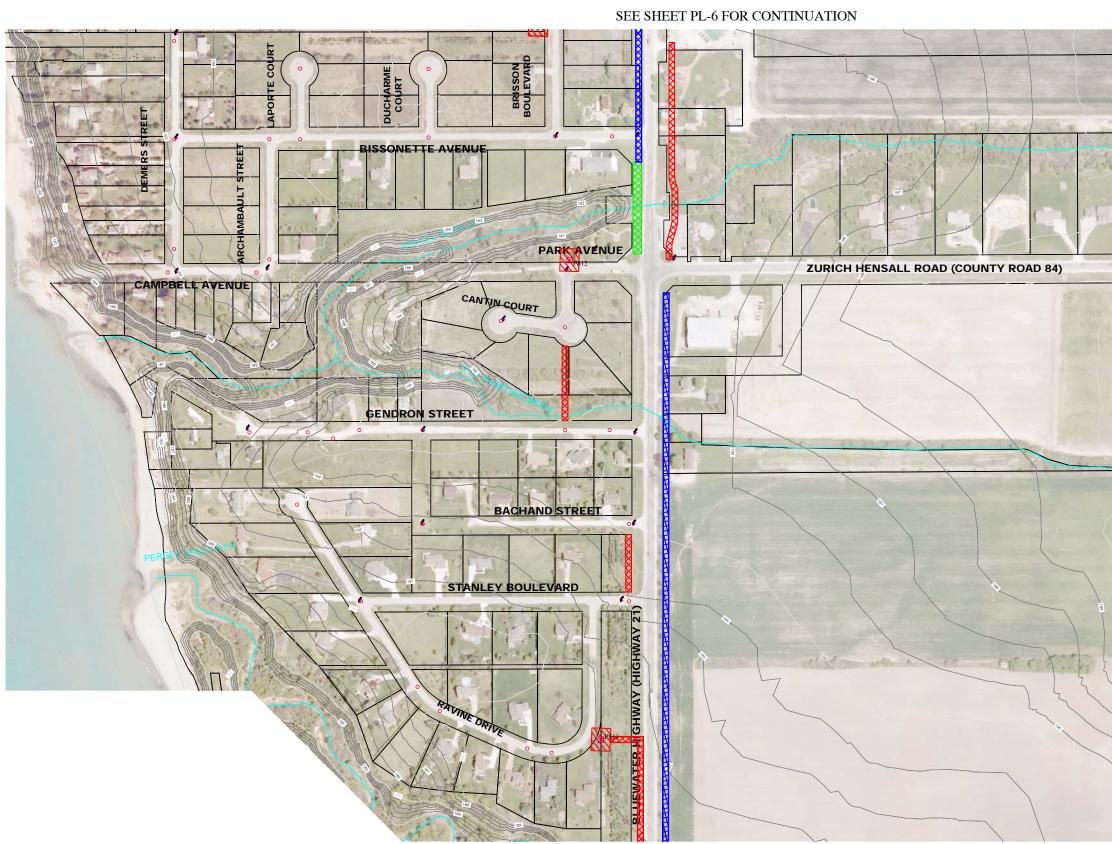
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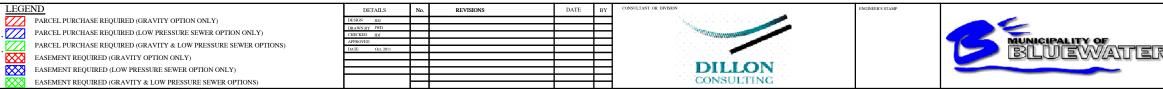




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SEE SHEET PL-4 FOR CONTINUATION



	SCALE	TITLE	PROJECT No.
	1:2000	HIGHWAY 21 CORRIDOR SANITARY SEWAGE COLLECTION SYSTEM	10-3169 SHEET No.
R		PROPERTY REQUIREMENTS & EASEMENTS	05 Plan file no.

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LEGEND

PARCEL PURCHASE REQUIRED (GRAVITY OPTION ONLY) PARCEL PURCHASE REQUIRED (LOW PRESSURE SEWER OPTION ONLY) PARCEL PURCHASE REQUIRED (GRAVITY & LOW PRESSURE SEWER OPTIONS) EASEMENT REQUIRED (GRAVITY OPTION ONLY) XX EASEMENT REQUIRED (LOW PRESSURE SEWER OPTION ONLY) EASEMENT REQUIRED (GRAVITY & LOW PRESSURE SEWER OPTIONS)

DETAILS REVISIONS DATE TANT OR DIVIS DILLON



	SCALE 1:2000	HIGHWAY 21 CORRIDOR	PROJECT No. 10-3169
R		SANITARY SEWAGE COLLECTION SYSTEM	SHEET No. 06
		PROPERTY REQUIREMENTS & EASEMENTS	PLAN FILE No.