

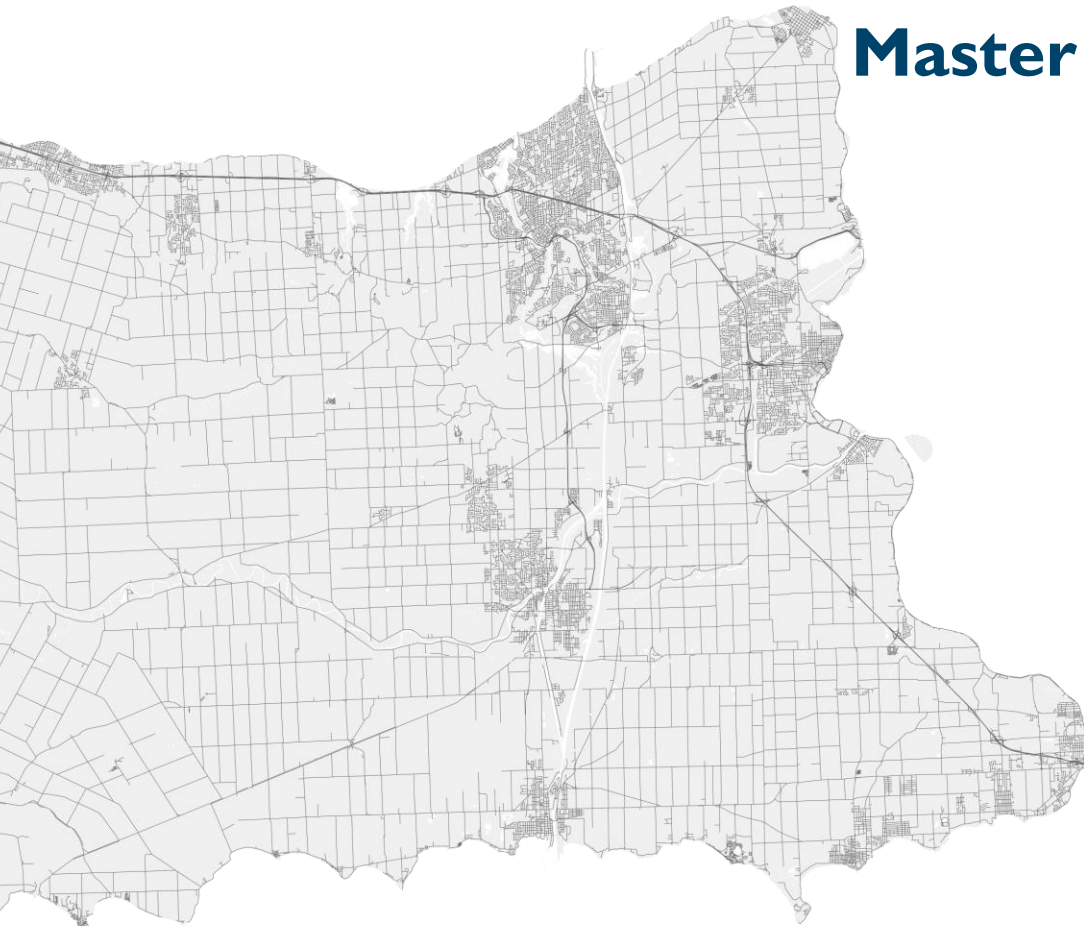


## Niagara Region

Phase I Class EA and Public Information Centre No. 2  
Summary Report

# 2021 Biosolids Management Master Plan Update

June 2023



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**621143 – Niagara Biosolids Management Master Plan Update  
Phase 2 Class EA & Public Information Centre No. 2 Summary Report**

**QA/QC - SIGN OFF SHEET**

This report has been reviewed and approved by the undersigned.



---

Laura Verhaeghe, P.Eng  
Project Manager

## 1.0 Study Introduction

### 1.1 Background and Purpose

In alignment with Niagara’s Growth Management Strategy and under the legislative context of the Province’s Place to Grow Plan and the Regional Policy Plan, growth in the Region of Niagara should occur in a sustainable manner addressing economic, social, and environmental considerations. The Region initiated the current Biosolids Management Master Plan (BMMP) Update to review the existing biosolids management strategy in light of these Provincial and Regional growth targets, to identify limitations, develop and evaluate alternative management strategies, and recommend a preferred strategy for implementation. The study will address Phases 1 and 2 of the Municipal Engineers Association Class Environmental Assessment Master Planning Process, while meeting the goals and objectives of the Region.

The BMMP will be developed to:

- Meet future population growth needs to the year 2051,
- Consider future regulations,
- Educate stakeholders regarding the benefits of biosolids reuse,
- Address community expectations,
- Protect the environment,
- Provide greater flexibility, reliability and cost efficiency for biosolids management, and
- Provide a ‘Made in Niagara’ strategy that incorporate features unique to this area

The study area, as shown in **Figure 1**, covers the entire Region of Niagara and all lower tier municipalities including Grimsby, West Lincoln, Lincoln, St. Catharines, Thorold, Welland, Pelham, Port Colborne, Niagara-on-the-Lake, Niagara Falls, and Fort Erie, and includes all wastewater and water treatment plants.

A key part of the public consultation component of this Master Plan study are Public Information Centres (PICs), which serve as a forum for information exchange between the public, stakeholders, and the project team. This report summarizes the second PIC held virtually from May 17, 2023 to May 31, 2023 on the Region’s website as well as the Phase 2 consultation activities. This report documents the following:

- Information presented at PIC No. 2
- Summary of engagement and consultation
- Summarized table of comments received, and responses provided in order to track correspondence in a transparent and traceable manner.

This report will be appended to Tech Memo 3 on Customer Service and Public Awareness, which will be appended to the Master Plan Report submitted at the end of the study.



Figure 1: Niagara Biosolids Management Master Plan Study Area

## 1.2 Class EA Content

The Niagara BMMP study follows Phases 1 and 2 of the Municipal Class EA Process which includes the following:

- Phase 1: Development of the Problem and Opportunity Statement
- Phase 2: Assessment of Alternative Solutions and Selection of the Preferred Solution

The PIC No. 2 event is part of Phase 2 of the Class EA Process. **Figure 2** displays the Municipal Class EA planning process and design planning process.

The Problem and Opportunity Statement for the Niagara Region BMMP Plan is defined as follows:

*“The purpose of the Biosolids Management Master Plan Update is to develop a holistic, long-term strategy for biosolids management in Niagara in a manner that is transparent, sustainable, reliable, environmentally friendly, cost-effective and flexible.”*

The PIC No. 2 event also presented the proposed approach for the EA process. This defined the process of identifying alternative solutions for the problem and opportunity statement listed above and provided a long list of alternative strategies for biosolids management in Niagara Region. Finally, PIC No. 2 presented the long list of biosolids treatment technologies and end use markets, screening level evaluation, detailed evaluation of short-listed strategies and a preliminary proposed implementation plan.

Overall, the objectives of PIC 2 were to:

- Present the Region’s biosolids management approach and provide insight to future needs;
- Provide a progress update on the BMMP and work completed to date; and
- Obtain feedback on the list of alternative biosolids management strategies, detailed evaluation of these strategies and preliminary recommendations.

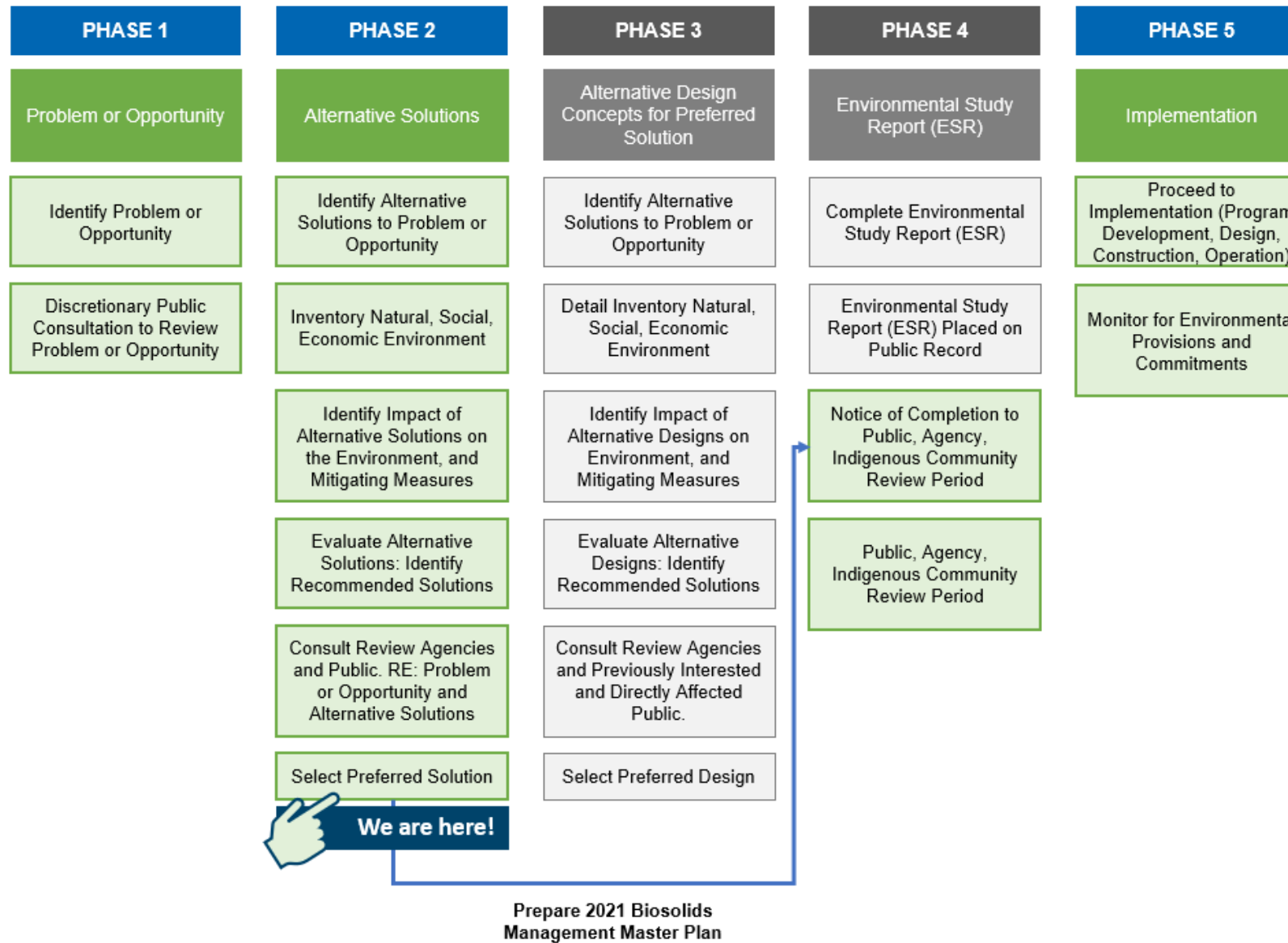


Figure 2: Municipal Class EA Planning and Design Process

## 2.0 Project Initiation

### 2.1 Public Consultation and Stakeholder Engagement Plan

The Region's approach to communicate and consult with stakeholders is driven by five (5) key considerations.

1. Keeping Niagara Region and area municipality councillors and senior management up to date and aware of study progress and findings.
2. Undertaking and maintaining the appropriate level of communication with the public and agency stakeholders.
3. Effectively engaging Indigenous Communities.
4. Maintaining Niagara's brand and public reputation.
5. Meeting or exceeding MEA Standards for public and stakeholder consultations.

Considering the above factors, the Region's consultation and engagement program aims to offer the following key opportunities:

- Educating the community about biosolids infrastructure and beneficial use.
- Building public and stakeholder understanding and buy-in to support the EA process and the preferred solutions.
- Raising awareness of Region services.
- Building the foundation for future steps in the project including implementation of subsequent studies, design and construction.

### 2.2 Stakeholder Communication Distribution List

Early in the study process a stakeholder communication distribution list was established. The list included government review agencies, public interest groups, municipalities, Indigenous Communities, utilities and other stakeholders. The list was based on the mailing list established through the Water and Wastewater Master Plan process, input from the Ministry of Environment, Parks and Conservation (MECP), and input from the Region and area municipalities. The mailing list is continually updated through the study as additional interested parties and individuals are identified.

### 2.3 Project Website

A dedicated project website for the 2021 BMMP Update has been established and is regularly updated. The site includes notices, information bulletins, and Public Information Centre (PIC) information and is found at: [www.niagararegion.ca/projects/biosolids-master-plan/](http://www.niagararegion.ca/projects/biosolids-master-plan/). In addition, the Region has established a dedicated email address for contact throughout the project: [niagarabiosolidssmp@niagararegion.ca](mailto:niagarabiosolidssmp@niagararegion.ca).



## 3.0 Public Information Centre No. 2

### 3.1 Purpose

PIC No. 2 was the second public event for this study and was held virtually from May 17 to May 31, 2023. PIC No 2 presented the following information:

- Project Overview (including background)
- Described the Class EA process
- Identified the Problem and Opportunity Statement
- Described the Alternative Evaluation Approach
- Long List of Treatment Technologies / End Use Markets and Screening of Long Lists
- Development and Detailed Evaluation of Short-Listed Strategies
- Preliminary Recommendations and Implementation
- Methods to provide comments and feedback.

The public review material included a presentation with voice-over and an AODA-compliant pdf document summarizing all presented information.

### 3.2 Notice of Public Information Centre No. 2

Stakeholders and the public were informed by local newspaper advertisements, mail and or email (study stakeholder communication list), and through the Region of Niagara website.

For a copy of the Notice PIC No. 2, please refer to Appendix A.

#### 3.2.1 Newspaper Advertisements

The Notice of PIC No. 2 was published in local area newspapers as follows:

- Standard Review Tribune - Saturday May 13, 2023
- Niagara Falls Review – Saturday May 13, 2023
- Welland Turbine – Saturday May 13, 2023
- Niagara This Week – Zones 1, 2, 3, 4, 5, 6, & 7 – Thursday May 11, 2023
- Fort Erie Observer – Thursday May 11, 2023
- News Now (Grimsby) – Thursday May 11, 2023
- Niagara-on-the-Lake Local – Wednesday May 10, 2023
- The Lake Report – Thursday May 11, 2023
- Voice of Pelham – Wednesday May 10, 2023
- Thorold News – Wednesday May 10, 2023
- Regional Website – Wednesday April 26, 2023

### 3.2.2 Online Advertisements

This notice was also posted to the Niagara Region website and the Project website. The website includes details for members of the public to sign up in order to stay involved through this study and receive future study notifications.

### 3.2.3 Stakeholder Communication List Notification

The Notice of PIC No. 2 was mailed and/or emailed to local government, review agencies and other stakeholders on May 4, 2023.

Notification was sent to the following groups:

#### Provincial

- Ministry of the Environment, Conservation and Parks
- Ministry of Northern Development, Mines, Natural Resources and Forestry
- Infrastructure Ontario
- Ministry of Agriculture, Food and Rural Affairs
- Ministry of Economic Development, Employment and Infrastructure
- Ministry of Infrastructure
- Ministry of Municipal Affairs and Housing
- Ministry of Heritage, Sport, Tourism and Culture
- Ministry of Transportation
- Niagara Parks Commission
- Ontario Provincial Police
- Peace Bridge Authority
- Ministry of the Attorney General, Aboriginal Justice Division
- Ministry of Indigenous Affairs

#### Federal

- Canadian Section, International Niagara Board of Control
- Canadian Environmental Assessment Agency
- Department of Fisheries and Oceans Canada
- Department of Environment and Climate Change Canada
- Department of Indigenous and Northern Affairs Canada
- Federal Economic Development Agency for Southern Ontario
- Health Canada
- Transport Canada
- Canadian Food Inspection Agency

#### Third Party Biosolids Contractors and End Users

- Walker Industries
- Thomas Nutrient Solutions
- Ontario Federation of Agriculture

### Conservation Authorities

- Niagara Peninsula Conservation Authority

### Rail and Transit

- CN Rail
- CP Rail
- GO Transit/Metrolinx
- TransCanada Pipelines

### School Boards and Interest Groups

- Conseil Scolaire Viamode
- Conseil Scolaire Catholique MonAvenir
- District School Board of Niagara
- Canadian Section, International Niagara Board of Control
- Friends of the Greenbelt
- Greater Niagara Chamber of Commerce
- Lundy’s Lane BIA
- Niagara Catholic District School Board
- Niagara College
- Niagara Emergency Medical Services
- Niagara Health
- Niagara Home Builders Association
- Niagara Regional Police
- Ontario Realty Corporation
- Ontario Wine Country

### Utilities

- Bell Canada
- Canadian Niagara Power Inc.
- Canadian Automobile Association – South Central Ontario
- Cogeco Cable Hamilton/Niagara
- Cogeco Cable Niagara
- Enbridge Gas Inc.
- Enbridge Pipelines Inc.
- Grimsby Power Incorporated
- Hydro One Networks
- Niagara-on-the-Lake Hydro
- Niagara Peninsula Energy Inc.
- Niagara Region Broadband Networks
- Ontario Power Generation
- Telus
- Welland Hydro Electric System Corporation

### 3.2.4 Indigenous Community Engagement

In their acknowledgement letter to the Notice of Commencement (June 3, 2023), the MECP provided direction as to the Indigenous Communities to engage and the protocols for engaging these communities. Personalized letters were sent to the following Indigenous Communities, as identified by the MECP:

- Mississaugas of the Credit First Nation

- Six Nations of the Grand River
- Haudenosaunee Confederacy Chiefs Council
- Haudenosaunee Development Institute

The letters were emailed and mailed to the community contacts on April 19, 2023. The letter provided an update on the study including details on the preliminary preferred strategies and to provide an opportunity for input on the study.

Copies of the letters are provided in Appendix B.

### **3.3 PIC No. 2 Meeting Details**

The virtual PIC No. 2 was held from May- 17 – 31, 2023. The PIC No. 2 materials were available for public comment via the study website.

### **3.4 PIC No. 2 Display Material**

The information presented on the PIC No. 2 video presentation slides included:

- Project Introduction
- Project Approach
- PIC Objectives
- Study Area
- Existing Biosolids Management System
- Evaluation Approach
- Long List of Biosolids End Use Markets and Treatment Technologies and Screening Results
- Detailed Evaluation
- Preliminary Recommendations
- Project Schedule
- How to Get Involved

A copy of the PIC No. 2 presentation material is provided in Appendix C.

### **3.5 Online Survey**

Recipients of the PIC No. 2 notice were encouraged to complete an online survey regarding the proposed evaluation approach for the biosolid management alternatives. At the end of the two (2)-week engagement period, no survey results were submitted to the Region.

The survey included the following questions/comments:

- Do you have any comments regarding the long list of treatment technologies or end-use markets and the results of the screening evaluation?
- Do you have any questions or comments on the seven strategies developed for detailed evaluation?
- Do you agree or disagree with the three strategies selected for implementation?
- Do you have any comments or questions about this Master Plan?

A copy of the survey is provided in Appendix D.

### **3.6 PIC No. 2 Attendance**

During the two (2)-week engagement period, the video presentation received 29 views.

### **3.7 PIC No. 2 Comments Received and Region's Responses**

Attendees were encouraged to provide comments related to Class EA in writing through the project website during the two (2)-week comment period. Comments were accepted through the project website, by phone, email and/or mailed letters. These comments were then reviewed and considered by the Project Team to inform the decision-making process.

A summary of the comments received is provided in Table 1 below. A one-page event summary was posted to the project website to demonstrate engagement as provided in Appendix E.

**Table 1 – Summary of PIC 2 Comments Received**

No.	PIC No. 2 Comments/Questions Received	Project Team Response
1	One public stakeholder signed-up to be on the mailing list and receive future project notices	The individual interested in the study has been added to the stakeholder communication list to receive study information.
2	Resident noted concerns regarding Per- and Polyfluoroalkyl Substances (PFAS) within the biosolids that are land applied on Niagara farmland. The resident also inquired if the Region is testing or would consider testing for PFAS in biosolids before land application and if this will be addressed within the BMMP.	<p>The Region explained that biosolids are applied as non-agricultural source materials (NASM) following strict regulations under the Nutrient Management Act or as a commercial fertilizer under the Federal Fertilizer Act of the Canadian Food Agency and highlighted that there has been no evidence of adverse impacts to the environment or health of people / animals.</p> <p>The Region highlighted that the government has been proactive in researching PFAS and setting policies to protect human health and the environment and noted that they have been phasing out PFAS compounds in various consumer products. The Region also noted that the Canadian Food Inspection Agency (CFIA) has started to implement an interim standard for domestic and imported biosolids contaminated with PFAS sold in Canada as commercial fertilizers. The CFIA is working to develop a plan for standards and a detailed guide for importers, producers and commercial users of biosolids. The Region described that they are committed to providing water and wastewater treatment that meets or better provincial requirements and noted that the preferred BMMP is diverse and flexible to meet potential future environmental and legislative changes (i.e. biosolids quality and land application requirements).</p>
3	Resident noted concerns regarding the perceived increase in biosolids truck traffic (estimating around 120 transports/day) and requested consideration of alternative routes. The resident also inquired who determines the routes that the biosolids hauling trucks take.	<p>The Region described that they are looking to minimize impacts of the biosolids hauling on local communities while also providing a direct route to farmers' fields to minimize environmental impacts. The Region noted that biosolids hauling trucks are to stay on Provincial Highways and Regional roads and they are required to apply best management practices while transporting and applying biosolids to the land. The Region described that as part of the BMMP study, it has been recommended that the Region increases dewatering of biosolids which will result in a reduced total volume of biosolids needing to be hauled, therefore decreasing truck traffic.</p>

## 4.0 Next Steps

Now that this second round of public consultation is complete, the project team will:

- Consider comments and input received into the Class EA process,
- Continue to work with review agencies and interested stakeholders,
- Finalize the Recommendations
- Finalize the Biosolids Management Master Plan Update Report and File for 30-Day Public Review

**APPENDIX A:  
Notice of PIC No. 2**

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## Notice of Public Information Centre No. 2

### Biosolids Management Master Plan Update Municipal Class Environmental Assessment

Niagara Region completed a Biosolids Management Master Plan in 2010 to ensure a long-term, environmentally sustainable, reliable and cost effective biosolids management program for Niagara Region and its citizens. This update to the plan will identify and develop a strategy for meeting Niagara's biosolids treatment needs to the year 2051, in a manner that is transparent, sustainable, reliable, environmentally friendly, cost effective and flexible.

The Biosolids Management Master Plan will be developed to:

- Meet the unique needs of Niagara Region and its customers, including treatment requirements, land uses and users, and environmental features
- Meet future needs associated with population growth, new regulations, climate resiliency, and energy efficiency
- Provide greater flexibility and reliability for biosolids management, both in the short term (i.e., 5 years) and long term (to the year 2051)
- Improve biosolids marketability; and
- Address community expectations regarding level of service, odour, air/noise, water quality, protection of the environment and aesthetics



Through this study, alternative strategies for managing biosolids were developed and evaluated, considering environmental and socio-cultural impacts, along with technical feasibility and cost. The objective of PIC 2 is to present our preliminary evaluation results and get your feedback on the preferred strategies.

### The Process

The Study follows the master planning process as established by the Municipal Engineer's Association Class Environmental Assessment process for Master Plans, which is an approved Ontario Environmental Assessment process. The Biosolids Management Master Plan Update will satisfy Phases 1 and 2 of the Class Environmental Assessment process. Public and stakeholder input will be sought throughout the process, and a Biosolids Management Master Plan Update Report will be prepared and filed for public review.



## Get Involved

Public feedback is an important part of the process. Information about the project will be available on Niagara Region's website as part of Public Information Centre No. 2. You can learn about the project, preliminary recommendations, and how you can have your voice heard.

### Public Information Centre No. 2 Details

Public Information Centre 2 will be made available on the project website beginning **Wednesday, May 17, 2023**. This will be followed with a two-week period to submit comments to the Project Team.



You can access the project website using the link below or by scanning the QR code with your smart phone.

**[niagararegion.ca/projects/biosolids-master-plan](https://niagararegion.ca/projects/biosolids-master-plan)**

If you have questions, comments or wish to be added to the study mailing list, please contact:

**Jason Oatley**, Project Manager  
Niagara Region  
3501 Schmon Pkwy., PO Box 1042  
Thorold, ON L2V 4T7  
905-685-4225 ext. 3758  
Fax: 905-685-5205  
[niagarabiosolidssmp@niagararegion.ca](mailto:niagarabiosolidssmp@niagararegion.ca)

Personal information collected or submitted in writing at public meetings will be collected, used and disclosed by members of Regional Council and Regional staff in accordance with the Municipal Freedom of Information and Protection of Privacy Act (MFIPPA). The written submissions including names, contact information and reports of the public meeting will be made available. Questions should be referred to the Privacy Office at 905-980-6000, ext. 3779 or [FOI@niagararegion.ca](mailto:FOI@niagararegion.ca).

If you require any accommodations in order to participate, please let us know in advance so that arrangements can be made in a timely manner. Special accessibility accommodations and materials in alternate formats can be arranged by contacting the Niagara Region's Accessibility Advisory Coordinator at 905-980-6000 ext. 3252 or [accessibility@niagararegion.ca](mailto:accessibility@niagararegion.ca).

**APPENDIX B:  
Indigenous Consultation Letters**

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April 19, 2023

Mr. Leroy Hill  
Secretary  
Haudenosaunee Confederacy Chiefs Council  
2634 6th Line Road  
P.O. Box 714, Suite 600  
Ohsweken, ON N0A 1M0

Dear Mr. Hill:

**Niagara Region Biosolids Management  
Master Plan Update  
Region-Wide  
Our File: O.02 13 20001326 - 2020 Biosolids MSP**

We wish to take this opportunity to provide an update regarding the above noted project. The Region of Niagara is undertaking a Region-wide Biosolids Management Master Plan (BMMP) Update for the future management of biosolids from each of the Region's water and wastewater treatment plants to the year 2051. Biosolids are the organic materials resulting from the physical, chemical and biological treatment of sewage sludge generated at wastewater treatment plants. Biosolids have many potential beneficial uses such as application on agricultural lands.

As Niagara Region continues to grow, it is essential that we plan infrastructure and services to meet increasing demands. More people mean more wastewater, which also means more biosolids and a higher demand for treatment and management of these materials. This Master Plan will develop a holistic, long-term strategy for biosolids management in Niagara that is transparent, sustainable, reliable, environmentally friendly, cost-effective and flexible.

Currently, the Region is serviced by ten (10) wastewater treatment plants (WWTP), a wastewater lagoon serving Stevensville / Douglastown and six water treatment plants (WTPs). A new WWTP is planned to service south Niagara Falls. Biosolids are currently processed at the Garner Road Biosolids Facility, the Walker Environmental N-Viro Facility, or both, before being converted into a product appropriate for land application in the form of fertilizer or liquid biosolids. **A map of the Region showing these facilities is attached to this letter.**

As part of this study, the project team developed alternative strategies for managing biosolids. Based on results of our detailed evaluation, the preliminary preferred strategies are:

1. Anaerobically digest biosolids and land apply stabilized liquid biosolids
2. Anaerobically digest biosolids, dewater and land apply stabilized biosolids cake
3. Anaerobically digest biosolids, dewater, and treat with advanced alkaline stabilization (for example, the N-Viro process) to create a fertilizer quality product for land application

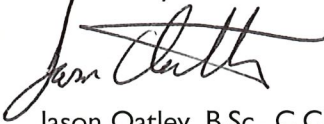
To ensure flexibility and diversity in the biosolids program, a combination of the above strategies is proposed, which will reduce the number of trucks required to haul biosolids, reducing greenhouse gas emissions and community impacts. All biosolids in the Region would continue to be land applied for beneficial use.

This study follows the master planning process, as established by the Municipal Engineer's Association Class Environmental Assessment. Following this master plan study, additional Environmental Assessments studies will follow to implement the preferred solution. The Region will continue to consult key stakeholders and landowners throughout the specific EAs following this Master Plan.

The Niagara Region values its relationships with Indigenous communities, and we appreciate any input or meaningful information you have to offer as the Region proceeds through this project. If your team is interested in hearing more about this project, please contact us to arrange either a virtual or in-person meeting.

We look forward to hearing from you. Should you have any questions, we invite you to please contact me at the email address or phone number below.

Yours truly,



Jason Oatley, B.Sc., C.Chem.  
Project Manager  
Water and Wastewater Services  
905-980-6000, ext. 3758  
[jason.oatley@niagararegion.ca](mailto:jason.oatley@niagararegion.ca)

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Attach.

cc: Leroy Hill: [ohahokta@hotmail.com](mailto:ohahokta@hotmail.com)  
Wayne Hill: [tworowarchaeology@gmail.com](mailto:tworowarchaeology@gmail.com)

April 19, 2023

VIA EMAIL ([janicehdi@gmail.com](mailto:janicehdi@gmail.com))

Ms. Janice Bomberry  
Office Administrator  
Haudenosaunee Development Institute  
16 Sunrise Court, Suite 402B  
P.O. Box 714  
Ohsweken, ON N0A 1M0

Dear Ms. Bomberry:

**Niagara Region Biosolids Management  
Master Plan Update  
Region-Wide  
Our File: O.02 13 20001326 - 2020 Biosolids MSP**

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To ensure flexibility and diversity in the biosolids program, a combination of the above strategies is proposed, which will reduce the number of trucks required to haul biosolids, reducing greenhouse gas emissions and community impacts. All biosolids in the Region would continue to be land applied for beneficial use.

This study follows the master planning process, as established by the Municipal Engineer's Association Class Environmental Assessment. Following this master plan study, additional Environmental Assessments studies will follow to implement the preferred solution. The Region will continue to consult key stakeholders and landowners throughout the specific EAs following this Master Plan.

The Niagara Region values its relationships with Indigenous communities, and we appreciate any input or meaningful information you have to offer as the Region proceeds through this project. If your team is interested in hearing more about this project, please contact us to arrange either a virtual or in-person meeting.

We look forward to hearing from you. Should you have any questions, we invite you to please contact me at the email address or phone number below.

Yours truly,



Jason Oatley, B.Sc., C.Chem.  
Project Manager  
Water and Wastewater Services  
905-980-6000, ext. 3758  
[Jason.oatley@niagararegion.ca](mailto:Jason.oatley@niagararegion.ca)

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Attach.

cc: General Inbox: [www.info@hdland](mailto:www.info@hdland)  
Todd Williams: [williams.todd@gmail.com](mailto:williams.todd@gmail.com); [toddwilliams@hdi.land](mailto:toddwilliams@hdi.land)  
Janice Williams: [janicewilliams@hdi.land](mailto:janicewilliams@hdi.land)

April 19, 2023

Ms. Abby LaForme  
Acting Consultation Coordinator  
Mississaugas of the Credit First Nation  
2789 Mississauga Road, R.R. #6  
Hagersville, ON N0A 1H0

Dear Ms. LaForme:

**Niagara Region Biosolids Management  
Master Plan Update  
Region-Wide  
Our File: O.02 13 20001326 - 2020 Biosolids MSP**

We wish to take this opportunity to provide an update regarding the above noted project. The Region of Niagara is undertaking a Region-wide Biosolids Management Master Plan (BMMP) Update for the future management of biosolids from each of the Region's water and wastewater treatment plants to the year 2051. Biosolids are the organic materials resulting from the physical, chemical and biological treatment of sewage sludge generated at wastewater treatment plants. Biosolids have many potential beneficial uses such as application on agricultural lands.

As Niagara Region continues to grow, it is essential that we plan infrastructure and services to meet increasing demands. More people mean more wastewater, which also means more biosolids and a higher demand for treatment and management of these materials. This Master Plan will develop a holistic, long-term strategy for biosolids management in Niagara that is transparent, sustainable, reliable, environmentally friendly, cost-effective and flexible.

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As part of this study, the project team developed alternative strategies for managing biosolids. Based on results of our detailed evaluation, the preliminary preferred strategies are:

1. Anaerobically digest biosolids and land apply stabilized liquid biosolids
2. Anaerobically digest biosolids, dewater and land apply stabilized biosolids cake
3. Anaerobically digest biosolids, dewater, and treat with advanced alkaline stabilization (for example, the N-Viro process) to create a fertilizer quality product for land application



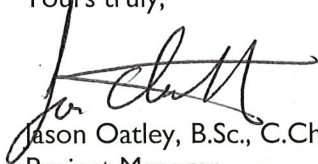
To ensure flexibility and diversity in the biosolids program, a combination of the above strategies is proposed, which will reduce the number of trucks required to haul biosolids, reducing greenhouse gas emissions and community impacts. All biosolids in the Region would continue to be land applied for beneficial use.

This study follows the master planning process, as established by the Municipal Engineer's Association Class Environmental Assessment. Following this master plan study, additional Environmental Assessments studies will follow to implement the preferred solution. The Region will continue to consult key stakeholders and landowners throughout the specific EAs following this Master Plan.

The Niagara Region values its relationships with Indigenous communities, and we appreciate any input or meaningful information you have to offer as the Region proceeds through this project. If your team is interested in hearing more about this project, please contact us to arrange either a virtual or in-person meeting.

We look forward to hearing from you. Should you have any questions, we invite you to please contact me at the email address or phone number below.

Yours truly,



Jason Oatley, B.Sc., C.Chem.  
Project Manager  
Water and Wastewater Services  
905-980-6000, ext. 3758  
[Jason.oatley@niagararegion.ca](mailto:Jason.oatley@niagararegion.ca)

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Attach.

cc: Chief R. Stacey LaForme: [stacey.laforme@mncfn.ca](mailto:stacey.laforme@mncfn.ca)  
Abby LaForme: [abby.laforme@mncfn.ca](mailto:abby.laforme@mncfn.ca)  
Cathie Jamieson: [cathiej@mncfn.ca](mailto:cathiej@mncfn.ca)  
Mark LaForme: [mark.laforme@mncfn.ca](mailto:mark.laforme@mncfn.ca)  
Adam LaForme: [adam.laforme@mncfn.ca](mailto:adam.laforme@mncfn.ca)  
Adrian Blake: [adrian.blake@mncfn.ca](mailto:adrian.blake@mncfn.ca)  
[DOCA.admin@mncfn.ca](mailto:DOCA.admin@mncfn.ca)

April 19, 2023

VIA EMAIL ([tanyahill-montour@sixnations.ca](mailto:tanyahill-montour@sixnations.ca))

Ms. Tanya Hill-Montour  
Archaeology Supervisor  
Six Nations of the Grand River  
2498 Chiefswood Road  
P.O. Box 5000  
Ohsweken, ON N0A 1M0

Dear Ms. Hill-Montour

**Niagara Region Biosolids Management  
Master Plan Update  
Region-Wide  
Our File: O.02 13 20001326 - 2020 Biosolids MSP**

We wish to take this opportunity to provide an update regarding the above noted project. The Region of Niagara is undertaking a Region-wide Biosolids Management Master Plan (BMMP) Update for the future management of biosolids from each of the Region's water and wastewater treatment plants to the year 2051. Biosolids are the organic materials resulting from the physical, chemical and biological treatment of sewage sludge generated at wastewater treatment plants. Biosolids have many potential beneficial uses such as application on agricultural lands.

As Niagara Region continues to grow, it is essential that we plan infrastructure and services to meet increasing demands. More people mean more wastewater, which also means more biosolids and a higher demand for treatment and management of these materials. This Master Plan will develop a holistic, long-term strategy for biosolids management in Niagara that is transparent, sustainable, reliable, environmentally friendly, cost-effective and flexible.

Currently, the Region is serviced by ten (10) wastewater treatment plants (WWTP), a wastewater lagoon serving Stevensville / Douglastown and six water treatment plants (WTPs). A new WWTP is planned to service south Niagara Falls. Biosolids are currently processed at the Garner Road Biosolids Facility, the Walker Environmental N-Viro Facility, or both, before being converted into a product appropriate for land application in the form of fertilizer or liquid biosolids. **A map of the Region showing these facilities is attached to this letter.**

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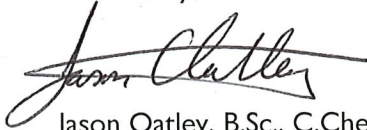
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We look forward to hearing from you. Should you have any questions, we invite you to please contact me at the email address or phone number below.

Yours truly,



Jason Oatley, B.Sc., C.Chem.  
Project Manager  
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Attach.

cc: Chief Mark B. Hill: [markhill@sixnations.ca](mailto:markhill@sixnations.ca)  
Dawn LaForme: [dlaforme@sixnations.ca](mailto:dlaforme@sixnations.ca)  
Tayler Hill: [tayler.hill@sixnations.ca](mailto:tayler.hill@sixnations.ca)  
Lonny Bomberry: [lonnybomberry@sixnations.ca](mailto:lonnybomberry@sixnations.ca)  
Arleen Maracle: [arleenma@sixnations.ca](mailto:arleenma@sixnations.ca)

**APPENDIX C:  
PIC No. 2 Material**

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# Biosolids Management Master Plan Update

## Virtual Public Information Centre No. 2



# Project Introduction

The Niagara Region is undertaking a region-wide **Biosolid Management Master Plan (BMMP) Update** for the future management of biosolids from each of the Region's water and wastewater treatment plants.

As Niagara Region continues to grow, we need to make sure that we plan our infrastructure and services to meet increasing demands. More people means more wastewater, which also means more biosolids and a higher demand for treatment and management of these materials. This study will also build upon the recommendations in the 2010 BMMP, by considering regulatory and environmental changes since its implementation. As part of Niagara Region's planning activities, the BMMP will continue to be updated every ten years.

# What are Biosolids?

Biosolids are the organic materials resulting from the physical, chemical and biological treatment of sewage sludge generated at wastewater treatment plants.

Biosolids have many potential beneficial uses including land application on agricultural lands and use in landscaping projects in parks, on golf courses and at private residences. The Region's biosolids are currently land applied throughout Niagara Region.

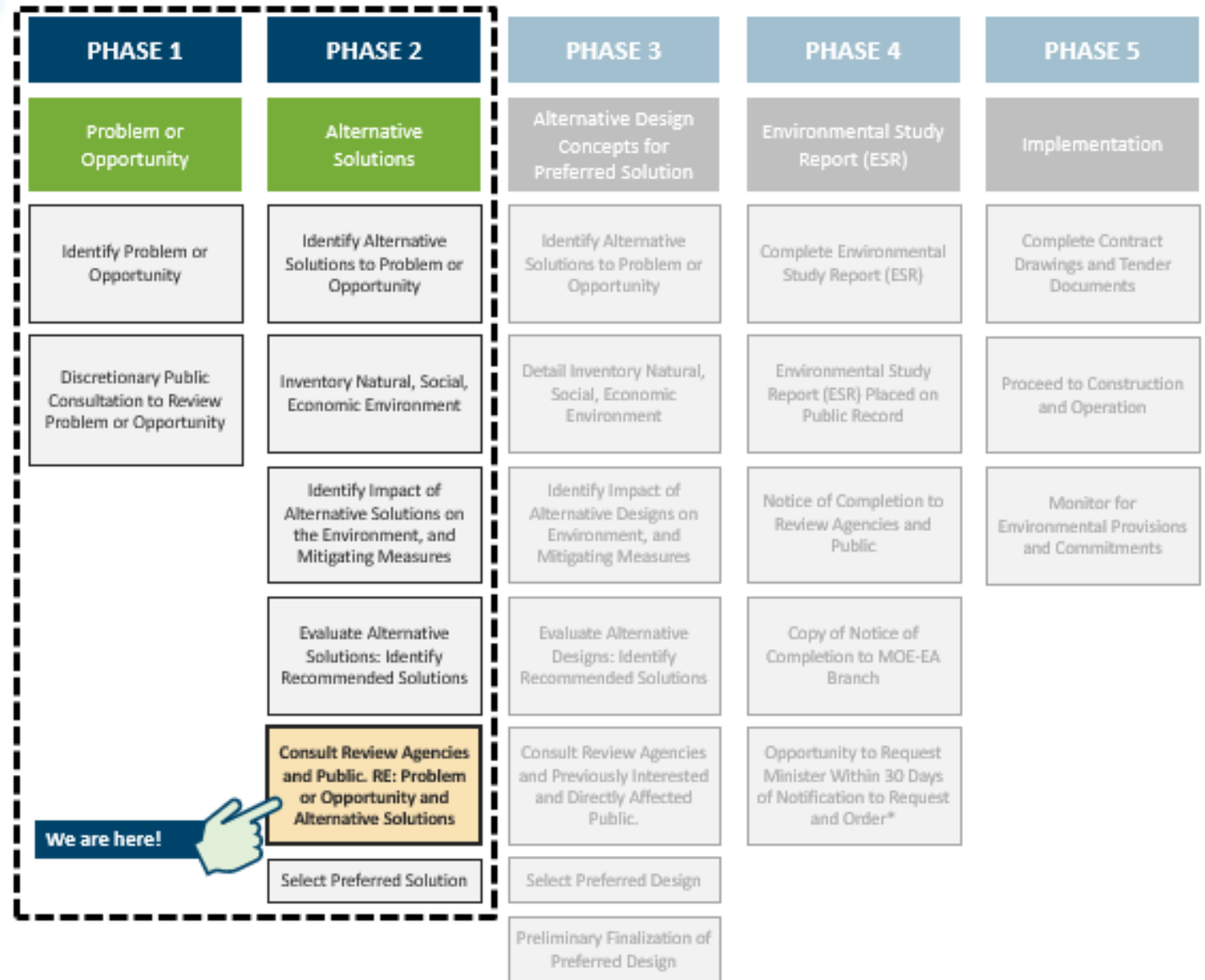
The Region's biosolids also incorporate residuals from water treatment.



# Project Approach

This project is following the Class Environmental Assessment (EA) process for Master Plan Projects, which is a decision-making process that all Ontario municipalities follow for rehabilitating and building new infrastructure.

The 2021 BMMP follows the Municipal Engineers Association (MEA) Class Environmental Assessment (EA) process for Master Plans and will satisfy Phases 1 and 2 of the Class EA process.





# Problem and Opportunity Statement

*The purpose of the Biosolids Management Master Plan Update is to develop a holistic, long-term strategy for biosolids management in Niagara in a manner that is transparent, sustainable, reliable, environmentally friendly, cost-effective and flexible.*

# Public Information Centre (PIC) Objectives

## Timeline

**May 17, 2023:**

Project information, project overview video, and transcript posted

**May 17 to May 31, 2023:**

Submit questions or comments related to the PIC No.2 materials to Niagara Region [niagarabiosolidssmp@niagararegion.ca](mailto:niagarabiosolidssmp@niagararegion.ca)

**June 14, 2023**

Responses to questions and comments posted



Present the Public and Stakeholders with an opportunity to learn about Niagara Region's biosolids management approach and provide insight to future needs.



Provide a progress update on the Biosolids Management Master Plan and work completed to date.

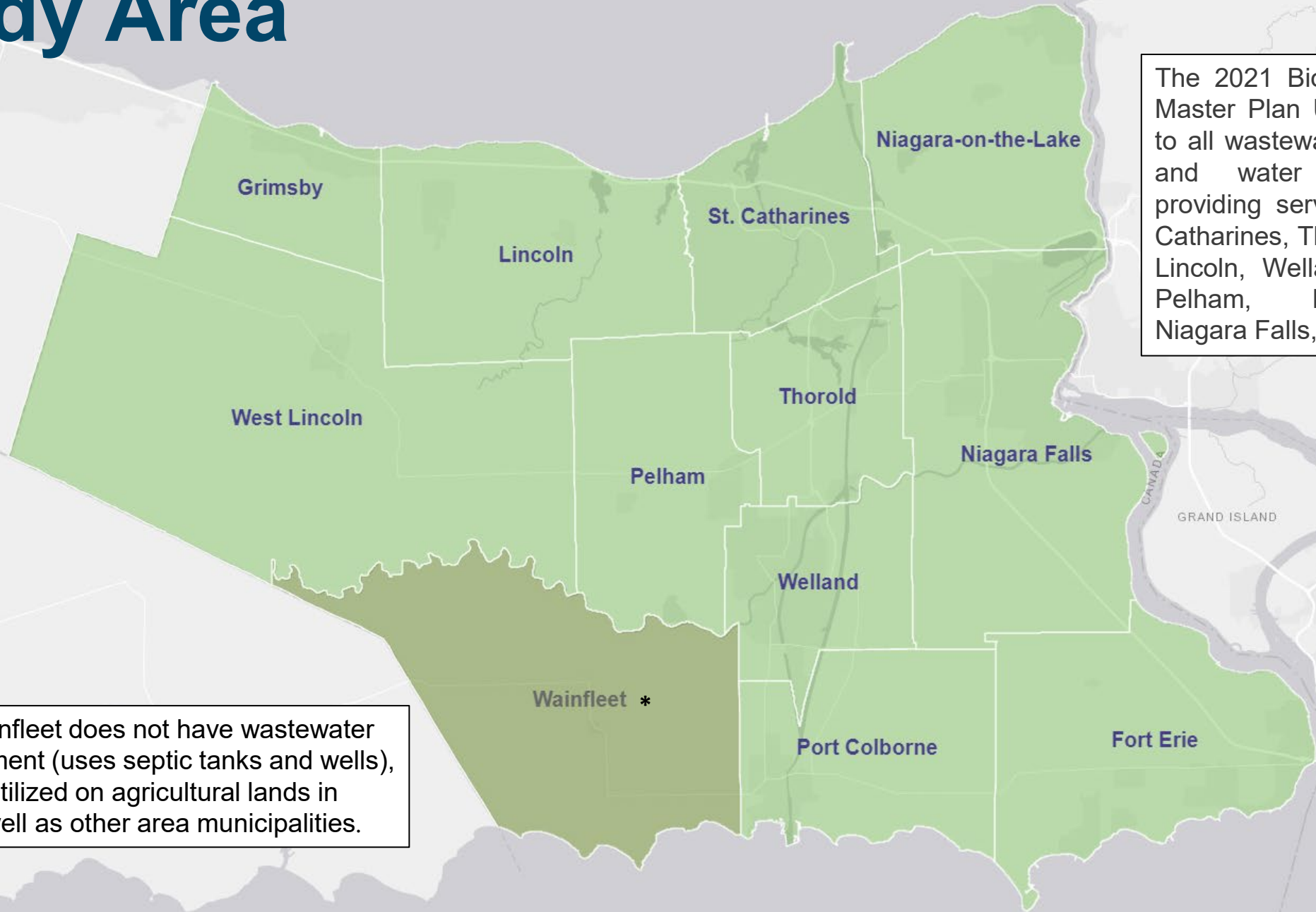


Answer any questions you may have about the Project process or potential outcomes.



Obtain your feedback and answer any questions you may have on the list of alternative biosolids management strategies, the detailed evaluation of these strategies and preliminary recommendations

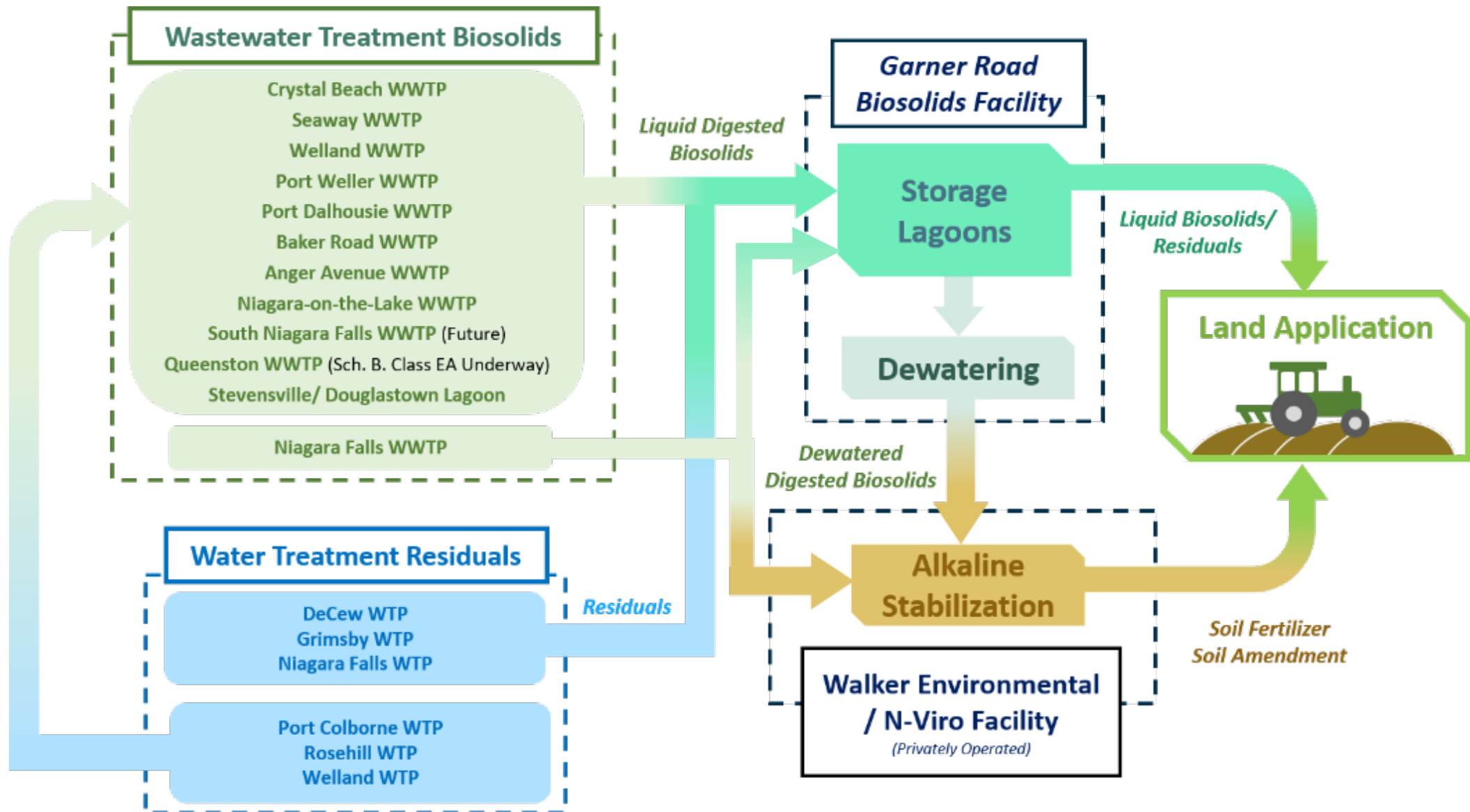
# Study Area



The 2021 Biosolids Management Master Plan Update is applicable to all wastewater treatment plants and water treatment plants providing service to Grimsby, St. Catharines, Thorold, Lincoln, West Lincoln, Welland, Port Colborne, Pelham, Niagara-on-the-Lake, Niagara Falls, and Fort Erie.

\*Although Wainfleet does not have wastewater or water treatment (uses septic tanks and wells), biosolids are utilized on agricultural lands in Wainfleet as well as other area municipalities.

# Existing Biosolids Management System



# Existing Beneficial Uses Program

## Liquid Biosolids Management



Garner Road Biosolids Facility

Liquid biosolids and residuals (~50% of biosolids produced in Niagara Region) are:

1. Hauled to the Garner Road Biosolids Facility by Third Party Contractor (currently Thomas Nutrient Solutions),
2. Stored and thickened in lagoons at the Garner Road Biosolids Facility,
3. Hauled away and applied as a liquid fertilizer to agricultural land by Third Party Contractor (currently Thomas Nutrient Solution)



Land application of biosolids

# Existing Beneficial Uses Program

## Dewatered Biosolids Management



**Biosolids Management Centre with Alkaline Stabilization**

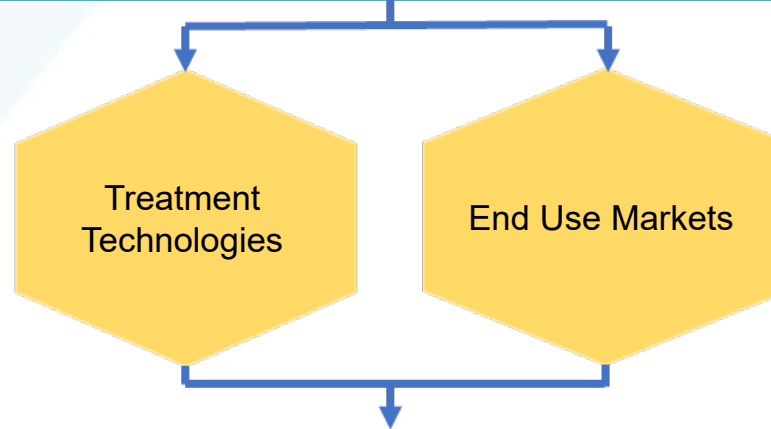
**Dewatered biosolids from the Garner Road Biosolids Facility and Niagara Falls WWTP (~50% of biosolids produced in Niagara Region) are:**

1. Hauled to a privately owned Biosolids Management Facility in Niagara Falls.
2. Treated using alkaline stabilization to produce a high solids, nutrient rich soil-like product
3. Hauled away and applied as a solid cake fertilizer to agricultural land by Third Party Contractor

# Alternative Evaluation Approach

Step 1

Develop Long List of Alternatives



Step 2

Screen Long Lists based on “Must Have Criteria” to develop short lists

Step 3

Develop Alternative Biosolids Management Strategy

Combine short-listed technologies and end use markets to create strategies

Step 4

Detailed Evaluation of Biosolids Management Strategies

Step 5

Recommend and Develop Biosolids Management Plan

- Service Delivery Options (3<sup>rd</sup> party vs In House)
- Sewer Use By Law Changes
- Infrastructure and operational requirements at WWTPs, WTPs and Garner Road Facility
- Implementation and Contingency Plans

# Step 1 – Develop Long List of Biosolids End Use Markets



## Beneficial Reuse

Agriculture, Silviculture and Horticulture

Parks and Recreation Departments

Ontario Ministry of Transportation

Landscape Contractors

Golf Courses

Land Rehabilitation

Co-management with Source Separated Organics

Fuel Additives (ie. syngas, biochar).



## Disposal

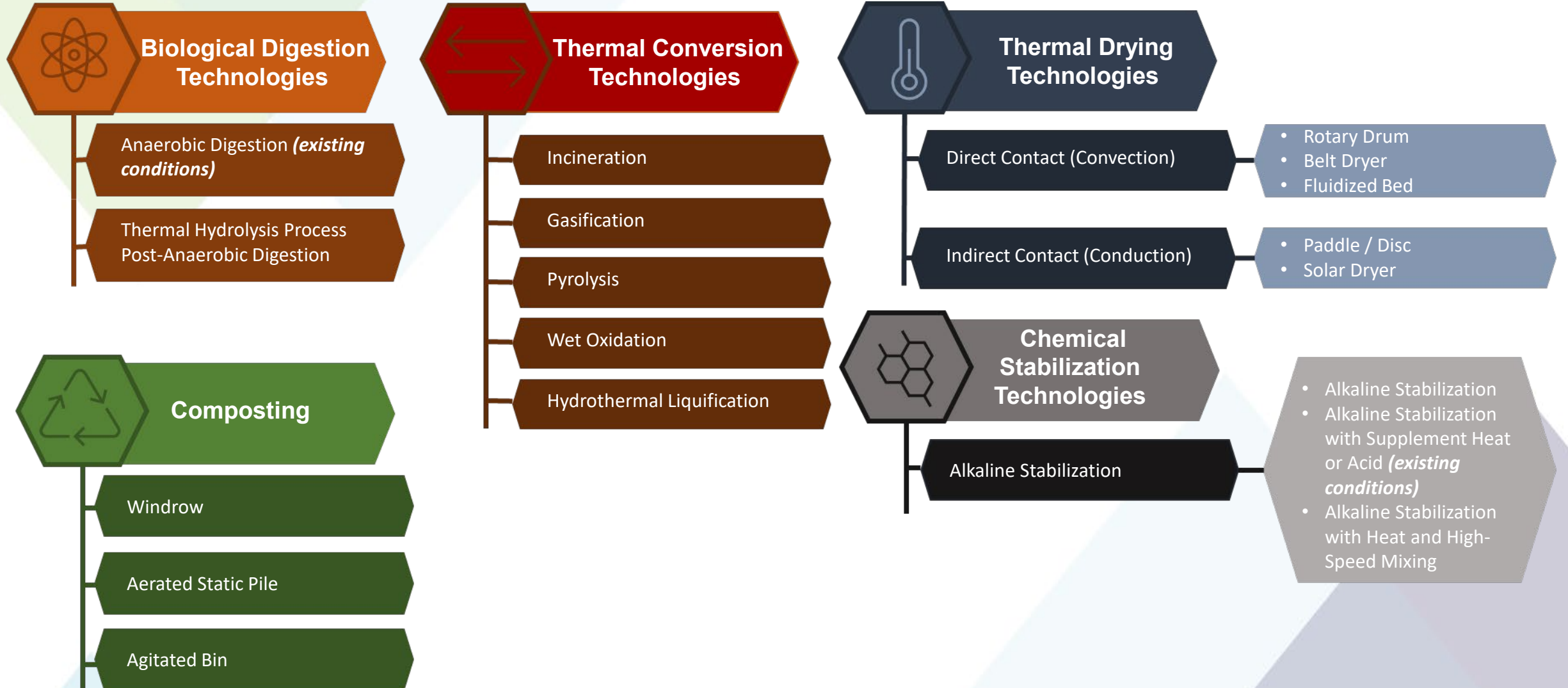
Landfill



## Step 2 – Screen Long List of Biosolids End Use Markets

	Market Availability		Compatibility with Current Program		Long Term Reliability and Sustainability		Implementable		Screening Results
<b>Agricultural, Silviculture and Horticulture</b>	✓	Pass	✓	Pass	✓	Pass	✓	Pass	Carried Forward
<b>Parks and Recreation Department</b>	✓	Pass	✓	Pass	✓	Pass	✓	Pass	Carried Forward
<b>Ontario Ministry of Transportation</b>	✗	Fail	✓	Pass	✓	Pass	✓	Pass	Screened Out
<b>Landscape Contractors</b>	✓	Pass	✓	Pass	✓	Pass	✓	Pass	Carried Forward
<b>Golf Courses</b>	✓	Pass	✓	Pass	✓	Pass	✓	Pass	Carried Forward
<b>Land Rehabilitation</b>	✗	Fail	✓	Pass	✗	Fail	✓	Pass	Screened Out
<b>Co-management with Source Separated Organics</b>	✓	Pass	✓	Pass	✓	Pass	✓	Pass	Carried Forward
<b>Fuel Additions (i.e. Syngas)</b>	?	Further Review	✓	Pass	✓	Pass	?	Further Review	Carried Forward
<b>Landfill</b>	✗	Fail	✓	Pass	✗	Fail	✓	Pass	Screened Out

# Step 1 – Develop Long List of Biosolids Treatment Technologies



# Step 2 – Screen Long List of Biosolids Treatment Technologies

		1. Maturity of Technology	2. Compatibility with Existing and Future Site Development and Biosolids End Use Markets	3. Proven Applicability at Similar Scale Facilities	4. Implementable	Consider for Detailed Evaluation
<b>Biological Digestion Technologies</b>	Thermal Hydrolysis Post-Treatment (THP)	✔ Pass	✔ Pass	✔ Pass	✔ Pass	Carried Forward
<b>Thermal Drying Technologies</b>	Direct Thermal Dryer (Drum Dryer, Belt Dryer)	✔ Pass	✔ Pass	✔ Pass	✔ Pass	Carried Forward
	Fluidized Bed Dryer	✔ Pass	✔ Pass	✘ Fail	✘ Fail	Screened Out
	Indirect Thermal Dryer (Paddle Dryer, Disc Dryer)	✔ Pass	✔ Pass	✔ Pass	✔ Pass	Carried Forward
	Solar Dryer	✔ Pass	✔ Pass	✘ Fail	✘ Fail	Screened Out
<b>Chemical Stabilization Technologies</b>	Alkaline Stabilization	✔ Pass	✔ Pass	✔ Pass	✘ Fail	Screened Out
	Alkaline Stabilization with Supplemental Heat or Acid	✔ Pass	✔ Pass	✔ Pass	✔ Pass	Carried Forward
	Alkaline Stabilization with Supplemental Heat and High-Speed Mixing	✔ Pass	✔ Pass	✔ Pass	✔ Pass	Carried Forward
<b>Composting Technologies</b>	Composting (Open Technologies Aerated Static Pile and Windrow Composting)	✔ Pass	✔ Pass	✔ Pass	✔ Pass	Carried Forward
<b>Thermal Conversion Technologies</b>	Incineration	✔ Pass	✔ Pass	✔ Pass	✔ Pass	Carried Forward
	Gasification	✘ Fail	✔ Pass	✘ Fail	✘ Fail	Screened Out
	Pyrolysis	✘ Fail	✔ Pass	✘ Fail	✘ Fail	Screened Out
	Wet Oxidation	✘ Fail	✔ Pass	✘ Fail	✘ Fail	Screened Out
	Hydrothermal Liquification	✘ Fail	✔ Pass	✘ Fail	✘ Fail	Screened Out

# Step 2 – Results of Biosolids Treatment Technologies Screening and Associated Products

Short-Listed  
Biosolids  
Technologies

Associated  
Products

## Anaerobic Digestion

- Liquid biosolids
- Dewatered biosolids (when combined with dewatering)

## Thermal Hydrolysis Post- Treatment

- Fertilizer

## Direct Thermal Dryer

- Fertilizer

## Alkaline Stabilization with supplemental heat

- Fertilizer

## Composting

- Compost product

## Incineration

- Residual Ash

Technologies  
currently in use for  
biosolids produced in  
Niagara Region

# Step 3 – Develop Alternative Biosolids Management Strategies

	Management Alternative	Technology	Product	End Use
Strategy 1	Beneficial Use on Land	AD	Stabilized Liquid biosolids	Land application with liquid biosolids
Strategy 2		AD + Dewatering	Stabilized Biosolids Cake	Land application with biosolids cake
Strategy 3		AD+ Advanced Digestion + Dewatering	Fertilizer quality Cake	Land application of cake / un-restricted use
Strategy 4		AD + Dewatering + Advanced Alkaline Stabilization	Fertilizer / soil amendment	Un-restricted use on land
Strategy 5		AD + Dewatering + Composting	Compost	Un-restricted use on land
Strategy 6		AD + Dewatering + Drying	Dried Product	Un-restricted use on land or fuel source
Strategy 7	Thermal Processing	AD + Dewatering + Incineration	Ash	Ash beneficial use + landfill

Strategy 0 – “Do Nothing” was screened out as it does not pass criteria for ‘Long Term Sustainability and Reliability’ due to capacity limitations in existing system to process future biosolids quantities.

AD = Anaerobic Digestion

# Step 4 - Detailed Evaluation Criteria

## Natural Environment



- Terrestrial Systems
- Aquatic Systems
- Surface Water Quality
- Groundwater Quality, Quantity and source water protection
- Soil Quality
- Air Quality/GHG

## Technical Considerations



- Performance
- Sustainability
- Ease of Operation
- Resiliency
- Ease of Implementation
- Compatibility with existing infrastructure
- Energy use and recovery
- Climate change adaptability
- Permits and Approvals

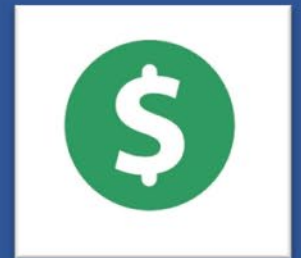
## Socio-Cultural Environment

- Odour
- Noise/Vibrations during operation
- Visual/Aesthetics
- Truck Traffic
- Disruption during Construction
- Property Acquisition and Easements
- Recreational Use and Users
- Agricultural Land Users
- Human health and well being
- Existing and Future Adjacent Land Use Compatibility
- Archaeology / Cultural Heritage



## Economic Considerations


- Capital Cost
- Operating and Maintenance Cost
- Life Cycle Costs
- Best Use of Existing Investments





**Approach:** Equal weighting initially followed by sensitivity analysis prioritizing different criteria categories







































































# Step 4 – Detailed Evaluation Results

## LEGEND

Good / Low Impact 

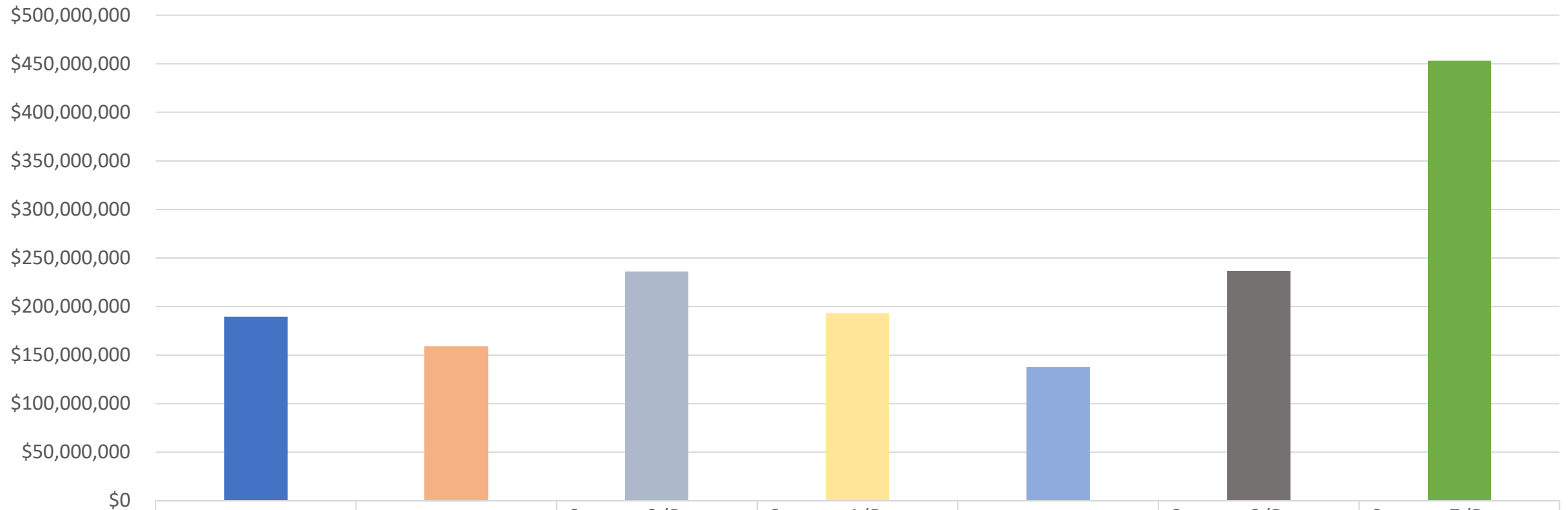
Neutral / Moderate Impact 

Poor / High Impact 

Key Differentiating Criteria	Strategy 1: AD + Liquid Biosolids Land Application	Strategy 2: AD + Dewatering + Cake Land Application	Strategy 3: AD + Advanced Stabilization (THP) + Fertilizer Quality Product	Strategy 4: AD + Dewatering + Advanced Alkaline Treatment	Strategy 5: AD + Dewatering + Composting + Product Distribution	Strategy 6: AD + Dewatering + Thermal Drying + Product Distribution	Strategy 7: AD + Dewatering + Thermal Processing (Incineration)
Greenhouse Gas Emissions	Neutral 	Neutral 	Good 	Neutral 	Good 	Good 	Poor 
Nutrient Recovery and Potential for Beneficial Reuse by Agricultural Users	Good 	Good 	Good 	Good 	Good 	Good 	Poor 
Proven Performance	Good 	Good 	Neutral 	Good 	Good 	Good 	Good 
Odour at Garner Road Facility	Good 	Good 	Good 	Neutral 	Neutral 	Neutral 	Good 
Truck Traffic	Neutral 	Good 	Good 	Neutral 	Good 	Good 	Good 
Long Term Sustainability	Good 	Good 	Good 	Good 	Good 	Good 	Poor 
Ease of Operation	Good 	Good 	Poor 	Good 	Neutral 	Neutral 	Neutral 
Resiliency	Neutral 	Neutral 	Good 	Good 	Good 	Good 	Good 
Ease of Implementation	Good 	Good 	Poor 	Poor 	Poor 	Poor 	Poor 
Life Cycle Cost	Neutral 	Good 	Good 	Good 	Good 	Good 	Poor 
<b>RANKING</b>	<b>3</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>6</b>	<b>4</b>	<b>7</b>

# Step 4 – Detailed Evaluation Results - Costs

## 30 Yr. Life Cycle Cost for Biosolids Management Strategies



	Strategy 1 (Liquid Land App)	Strategy 2 (Dewater + Cake Land App)	Strategy 3 (Dewater + THP Dewater + Fert dist)	Strategy 4 (Dewater + Advanced Alkaline Treatment)	Strategy 5 (Dewater + Compost + PrD)	Strategy 6 (Dewater + Thermal Drying + PrD)	Strategy 7 (Dewater + Incineration + Ash App)
30Yr. Life Cycle Cost	\$189,301,000	\$158,324,000	\$235,647,000	\$192,708,000	\$137,309,000	\$236,896,000	\$453,251,000
Cost per Dry Tonne (based on O&M only)	\$250/dt	\$408/dt	\$441/dt	\$561/dt	\$293/dt	\$516/dt	\$656/dt



# Step 4 – Detailed Evaluation Results - RANKING

Develop implementation plan  
to incorporate top 3 strategies

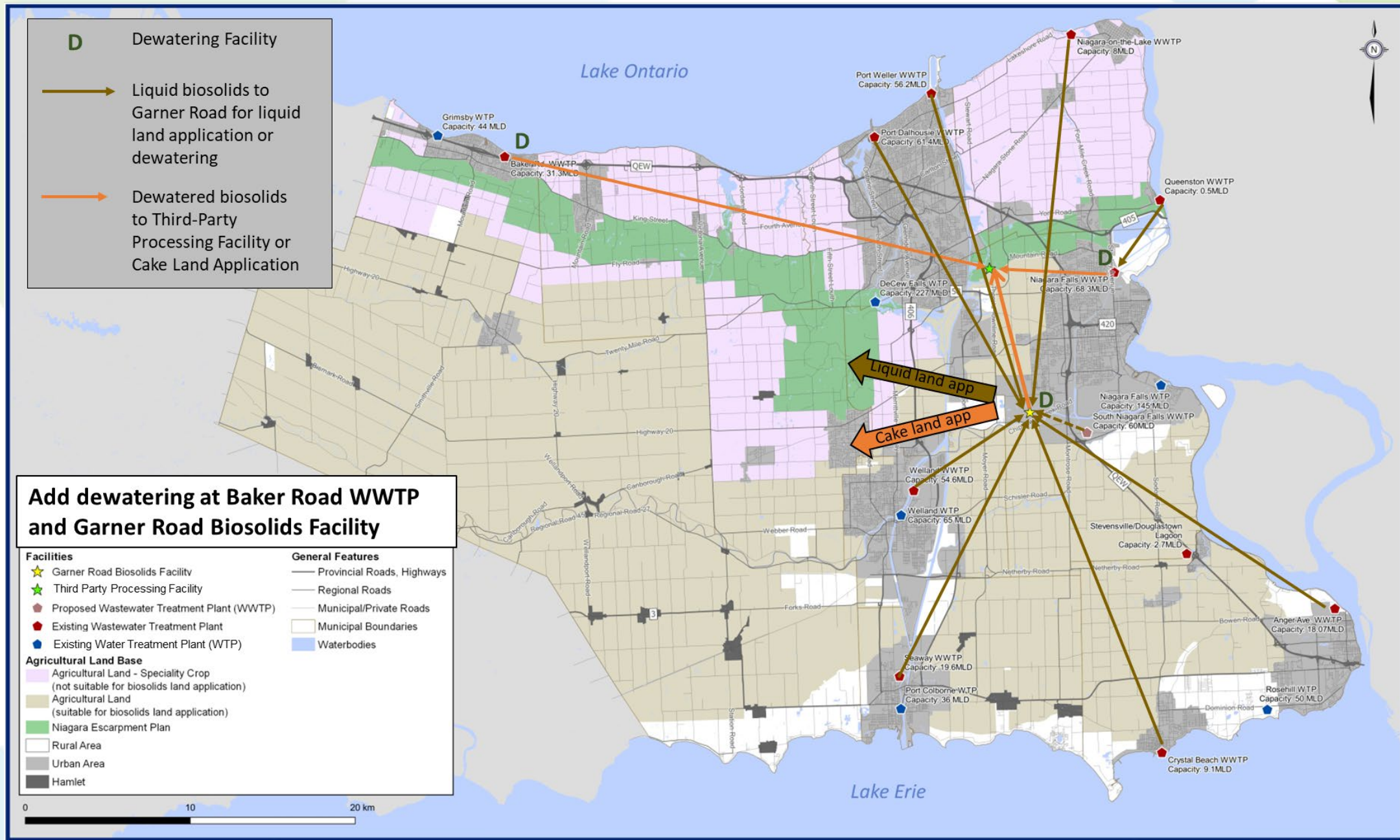


- 1** Strategy 4: AD + Dewatering + Advanced Alkaline Treatment + Fertilizer Quality Product
- 2** Strategy 2: AD + Dewatering + Cake Land Application
- 3** Strategy 1: AD + Liquid Biosolids Land Application
- 4** Strategy 6: AD + Dewatering + Thermal Drying + Product Distribution
- 5** Strategy 3: AD + Advanced Stabilization (THP) + Fertilizer Quality Product
- 6** Strategy 5: AD + Dewatering + Composting + Product Distribution
- 7** Strategy 7: AD + Dewatering + Thermal Processing

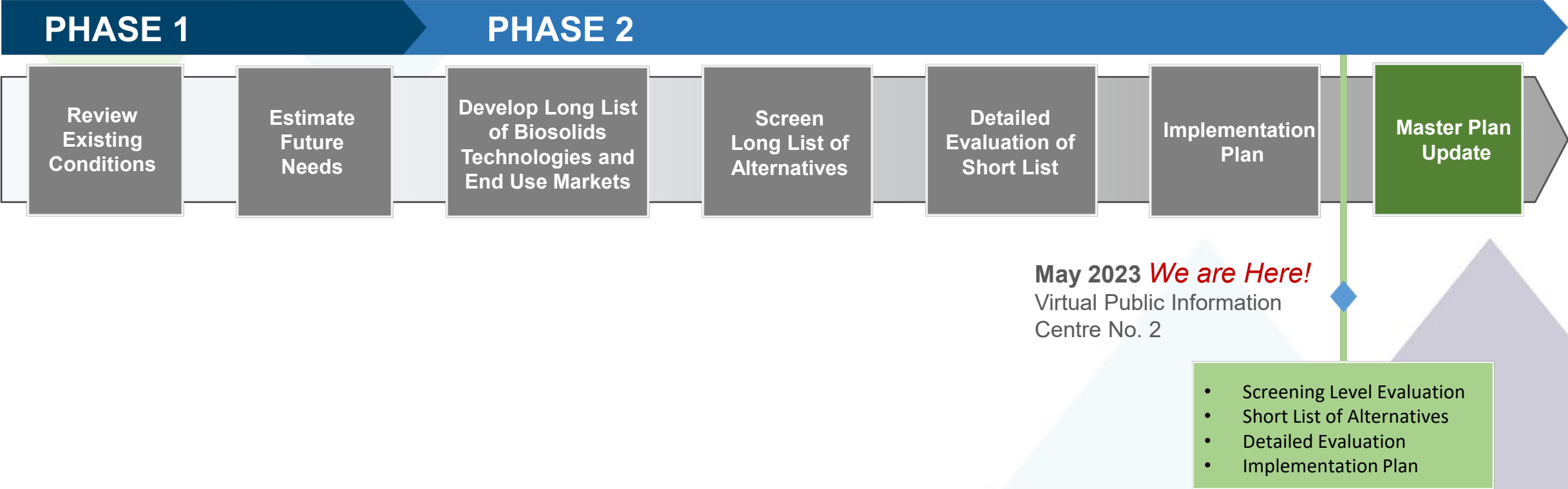
# Step 5 – Preliminary Recommendations and Implementation

- Short Term Solution (1-3 years)
  - Conduct pilot study involving local farmers and third-party hauler to assess feasibility of direct land application of cake
  - Using portable centrifuge for temporary dewatering at Garner Road when existing centrifuges are unavailable
  - Continue transporting dewatered cake to N-Viro from Garner Road and Niagara Falls WWTP
- Mid Term Solution (3-5 years)
  - Add biosolids dewatering at Baker Road WWTP
- Long-Term Solution (5+ Years)
  - Construct additional dewatering capacity at Garner Road, which may incorporate flows from Niagara Falls (NF) WWTP once centrifuge at NF WWTP reaches end of useful life
  - Construct cake storage facility at Garner Road if the pilot program confirms feasible / acceptance
  - Continue liquid storage at Garner Road to maximize flexibility

# Step 5 – Preliminary Recommendations and Implementation



# Project Schedule



# Get Involved

Public feedback is important. Sign-up to be added to the study contact list and submit any questions or comments to the Project Team. You may also submit comments at the link below, including feedback on the long list of alternatives and the evaluation criteria most important to you.

## Key Dates

- **May 17, 2023 to May 31, 2023:** Submit Questions and Comments to Region
- **June 14, 2023:** Responses to Questions and Comments Posted on the Region Website
- **Summer 2023:** Biosolids Management Master Plan Update files for 30-Day Public Review.

## Sign-up for Project Notification Updates and Provide Feedback

[Sign-Up for Project Updates](#)

[Project Survey](#)

## Contact Us

[niagarabiosolidssmp@niagararegion.ca](mailto:niagarabiosolidssmp@niagararegion.ca)

Jason Oatley, Project Manager, Niagara Region

Laura Verhaeghe, Project Manager, GM BluePlan Engineering Limited

**Project Webpage:** [2021 Biosolids Management Master Plan - Niagara Region, Ontario](#)

**APPENDIX D:  
PIC No. 2 Online Survey**

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# Public Information Centre #2 - Niagara Region 2021 Biosolids Management Master Plan

Public Information Centre No. 2 comments and feedback will be accepted between May 17, 2023 - May 31, 2023

The Niagara Region is committed to ensure that all Regional services, programs and facilities are inclusive and accessible. Please contact the Project Manager, Jason Oatley ([niagarabiosolidssmp@niagararegion.ca](mailto:niagarabiosolidssmp@niagararegion.ca)) if you require accommodations to provide feedback for this study.

Please note that information related to this study will be collected in accordance with the *Freedom of Information and Protection of Privacy Act*. All comments related will become part of the public record and may be included in the study documentation prepared for public review.

## 1. First and Last Name (Optional)

Enter your answer

## 2. Organization (Optional)

Enter your answer

## 3. Do you have any comments regarding the long list of treatment technologies or end-use markets, and the results of the screening evaluation? \*

Enter your answer

## 4. Do you have any questions or comments on the seven (7) strategies developed for detailed evaluation? \*

Enter your answer

5. Do you agree or disagree with the three (3) strategies selected for implementation?  
*(Strategy 1 - Land Application of Digested Biosolids, Strategy 2 - Land Application of Dewatered Cake Biosolids, Strategy 3 - Alkaline Stabilization of Dewatered Cake to Produce Fertilizer) \**

Enter your answer

6. Do you have any other comments or questions about this Master Plan? \*

Enter your answer

7. If you wish to be notified for continued involvement in the study progress, please enter your email below

Enter your answer



**APPENDIX E:  
Comments Received Summary**

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## 2021 Biosolids Management Master Plan Update Public Information Center No.2 – Comments Received

Virtual Public Information Centre (PIC) No. 2 was held from May 17 to May 31, 2023. This included an introductory video presentation, project materials for review, and opportunity for interested individuals to provide comments via an online submission form or through the project email.

PIC No. 2 materials for review included project introduction, the problem and opportunity statement, project approach, review of the existing biosolids and residuals management program and future needs, long list of alternatives and screening results, detailed evaluation, preliminary recommendations, and the project schedule. These materials will remain posted on the Biosolid Management Master Plan Update project website:

- Video Presentation: <https://www.youtube.com/watch?v=ydLe8X0v3B0>
- Project Information: <https://niagararegion.ca/projects/biosolids-master-plan/default.aspx>

During the 2-week engagement period, the video presentation received 29 views. One individual signed-up to be on the mailing list and receive future project notices. Comments were also provided from interested stakeholders including:

- Requested that the Region considers testing the biosolids that are land applied for Per-and Polyfluoroalkyl Substances (PFAS) and inquired if this will be addressed within the Biosolids Management Master Plan Update
- Requested consideration for reduced truck traffic related to biosolids hauling through their community

The feedback above will be considered in the development of the preferred biosolids management strategies and implementation plan. The Master Plan Update will satisfy Phases 1 & 2 of the Municipal Class Environmental Assessment process.