Petawawa Net Zero Project
Renewable Energy Approval Modification Report
Draft Report
(Revision #1)

28 March 2025

REA# 5211-CM3MB6

Prepared by:

Town of Petawawa
1111 Victoria Street
Petawawa, Ontario K8H 2E6

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Mississauga, Ontario L5A 4G1

LAND ACKNOWLEDGEMENT

The Corporation of the Town of Petawawa respectfully acknowledges that this project is taking place on the traditional territory of the Omamiwinini (OHMAH ME WIN INN KNEE) (Algonquin) People. We thank the Omamiwinini People and express our respect and support for their rich history, and we are extremely grateful for their many and continued displays of friendship. We also thank all the generations of people who have taken care of this land for thousands of years.

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1 PROJECT DETAILS

Project Name:	Petawawa Net Zero Project
Energy Source:	Biogas/Bioenergy
Facility Class:	Anaerobic Digestion, Class 3
REA Number:	5211-CM3MB6
Applicant:	The Corporation of the Town of Petawawa
Lead Contact:	Director of Public Works
Address:	1111 Victoria Street Petawawa ON K8H 2E6

Document Revision History

Revision	Date	Reason for Update
Rev. 0	2024-09-23	N/A
Rev. 1	2025-03-28	Revisions to modification report per MECP's initial review

2 INTRODUCTION

The Town of Petawawa (Town), in collaboration with, Ontario Clean Water Agency (OCWA) and Anaergia (Anaergia), received an approval for the Renewable Energy Approval (REA) application that had been submitted for the REA project at the Town of Petawawa's Water Pollucation Control Plant. The approved REA (REA#5211-CM3MB6 dated April 25, 2023) from the Ministry of Environment, Conservation and Parks (MECP) provided the approval for the construction, installation, use, operation, maintenance and retiring of a Class 3 Anaerobic Digestion (AD) facility with an overall project nameplate capacity of 200 kWe. The REA approval provided by the MECP required that prior to the receipt of Organic Waste at the facility, the Town must submit a secondary containment plan, a stormwater management pland and a ground water monitoring plan to the satisfaction of the Director.

The REA project (Project) is located at the Town of Petawawa's Water Pollution Control Plant (WPCP) and will transform the WPCP into a resource recovery facility by upgrading the two of four digesters to co-digest wastewater sludge and liquid external organics by diverting waste from landfill and boost biogas production for use as electricity, making the plant energy neutral or positive, and reducing greenhouse gas emissions. The project will involve the generation and utilization of biogas on site using a combined heat and power (CHP) unit.

All project information including the initial Renewable Energy Approval (REA) supporting documents and notices are posted on the Town's website: https://www.petawawa.ca/residents/public-works/petawawa-net-zero-project/.

As part of the approval provided by the MECP on April 25, 2023 (REA # 5211-CM3MB6), Condition I23 under Spill Containment was not met in the original REA submission (dated August 17, 2022, see APPENDIX A). As such, this modification document has been prepared to address Spill Containment Condition I23.

Spill Containment, Condition I23 states:

> *(1) Prior to the receipt of Organic Waste at the Facility (not including the sludge generated from the on-site municipal wastewater treatment plant), the Company shall submit to the Director for review and approval, the following information:*
>
> *a. a secondary containment plan for the Anaerobic Digesters and Digestate Storage Tanks prepared by a Professional Engineer;*
>
> *b. a Stormwater Management Plan that addresses stormwater quality and quantity controls at the Facility, prepared by a Professional Engineer; and*
>
> *c. a groundwater monitoring plan (including upgradient and downgradient monitoring wells, monitoring frequency and parameters) that will identify any leaks in the partially below-ground Anaerobic Digesters and Digestate Storage Tanks, for which the Company has received written concurrence from the District Manager.*
>
> *(2) Prior to the submission to the Director for approval under condition I23(1), the groundwater monitoring plan shall be submitted to the District Manager for review and written concurrence by the Ministry's Regional Technical Support Section.*
>
> *(3) Organic Waste at the Facility (not including the sludge generated from the on-site municipal wastewater treatment plant) shall not be received until this Approval has been amended to approve the information submitted under condition I23(1).*

This Modification Documents Report has been prepared in accordance with the latest version of the *Technical Guide to Renewal Energy Approvals, Chapter 10 Making Changes to Renewable Energy Approval (REA) Projects*, published by the Province of Ontario. Source: https://www.ontario.ca/document/technical-guide-renewable-energy-approvals-0/chapter-10-making-changes-renewable-energy.

3 PROPOSED TECHNICAL CHANGES AND IMPACTS

The technical changes are in support of adhering to Spill Containment Condition I23 of the Project's REA issued on April 25, 2023. These technical changes include:

1. Design and implementation of a secondary containment plan for the Anaerobic Digesters and Digestate Storage Tanks,
2. Development of a Stormwater Management plan that addresses stormwater quality and quantity controls at the WPCP, and
3. Development of the Groundwater Monitoring plan that will identify any leaks in the partially below-ground Anaerobic Digesters.

It is important to note that the overall Project design and nameplate capacity will not change and no physical modifications to equipment installed will be required. As per the *Technical Guide to Renewable Energy Approvals, Chapter 10 Making changes to Renewable Energy Approval (REA) Projects*, the technical changes proposed in this modification document are changes that will result in improvements to the environment and will not result in increased negative environmental effects.

Please refer to APPENDIX D for both the original and revised site plan that details the revisions to the existing WPCP based on the proposed technical changes outlined in this document.

3.1 SECONDARY CONTAINMENT PLAN

Prior to accepting organic waste at the WPCP, a secondary containment design and plan must be in place to contain any spillage of the organic waste onsite. Without proper spill containment of the organic waste, leachate contamination may occur, negatively impacting the surrounding environment to the Project location.

The proposed secondary containment system will consist of a dual function dry pond serving the needs for both secondary spill containment and stormwater management of the Anaerobic Digesters and Digestate Storage Tanks. The dry pond has been designed in accordance to both the *Guidelines for environmental protection measures at chemical and waste storage facilities, Section 3: Secondary containment* and the *2003 Stormwater Management Planning and Design Manual* established by the Province of Ontario. The secondary containment will mitigate potential environmental impacts from surface leaks of potential contaminates from any of the structures associated with the REA project. Any surface leaks from these structures will be diverted into the dry pond and preventing them from entering into the surrounding environment. Accumulations from the secondary containment system will be treated in accordance to the WPCP's existing Facility Emergency Plan as per O.Reg.224/07 as well as adhering to the existing effluent discharge limits indicated in the WPCP's Environment Compliance Approval (ECA). The secondary containment plan can be found in APPENDIX B for more details.

It is anticipated that during the construction and decommissioning of the secondary containment that there will be similar environmental impacts as indicated for the REA project construction and decommissioning activities. These similar environmental impacts as indicated in the construction report (section 6.2) includes:

1. Vegetation and soil removal for the excavation of soil to construct the secondary containment and
2. Air quality associated with construction activities including mobile emissions from construction equipment and dust generation from excavation activities.
3. Dust creation
4. Noise Impacts
5. Truck traffic

As noted in the construction report, mitigation measures and monitoring to address the potential environmental impacts noted above include:

1. Silt fencing to be used where appropriate to contain sediment on the construction side. Any soil stripped during construction will be set aside and replaced post construction or used as backfill. Excess soil that cannot be used for backfill will be removed and used in local projects where appropriate or sold to third parties as fill material. Stockpiles of fill material will be safely stored on the property until it is hauled offsite.
2. To reduce the adverse effects of construction equipment emissions during construction and decommissioning, there will be no idling of any vehicles during construction or decommissioning of the Project. Operators of all construction/decommissioning equipment will be required to complete a vehicle check daily prior to operation to ensure engine oil and equipment are in good conditions to operate.
3. To address dust creation during construction and decommissioning of the secondary containment, site clearing will be scheduled during appropriate periods when wind speeds are anticipated to be low, to minimize the creation of dust. Water trucks will also be available for dust suppression.
4. To address noise impacts, construction and decommissioning activities will be scheduled to occur during daylight hours with no activities to occur past 7:00 PM or before 7:00 AM on any given day.
5. To address truck traffic, truck deliveries will travel to the site primarily during daylight hours in order to reduce the likelihood of vehicle accidents. In addition, oversized loads will be accompanied by an traffic personnel to and from the site to re-direct traffic.

It is anticipated that during the operation of the secondary containment, there will be similar odour impacts as detailed in the odour study report prepared for the REA project. The mitigation measures as detailed in the odour study report will be used to address the odour impacts during operation of the secondary containment which includes:

1. Ensuring proper coverage of the secondary containment when there is an organic waste spill to contain odours from dispersing and travelling into the neighbouring properties to the Project location.
2. Following organic waste spill clean-up protocols and conducting clean-ups when wind speeds are anticipated to be low.

3.2 STORMWATER MANAGEMENT PLAN

Although the initial REA application supporting documents that were prepared indicated that the existing site's stormwater/drainage systems were sufficient to mitigate any potential negative environmental impacts from stormwater runoff associated with the REA project, a stormwater management plan has been prepared that will result in additional improvements to the existing site's stormwater/drainage system. The stormwater management plan can be found in APPENDIX B for more details.

As noted in section 3.1, the dry pond serves as a dual function secondary containment and stormwater management system and it has been designed in accordance to both the *Guidelines for environmental protection measures at chemical and waste storage facilities, Section 3: Secondary containment* and *2003 Stormwater Management Planning and Design Manual*. The dual function dry pond meets the required volume for a 100-year storm event, in addition to exceeding the minimum stormwater quality control requirements. The Stormwater Management Plan will improve the site's existing stormwater/drainage system and will further mitigate any potential negative environment impacts caused by stormwater runoff associated with the REA project.

As the secondary containment serves as a dual function dry pond for stormwater management, the anticipated environmental impacts and mitigation measures are that as mentioned above in section 3.1.

3.3 GROUNDWATER MONITORING PLAN

The modified Anaerobic Digesters are partially below-grade and may store potential organic waste contaminates as part of the REA project, which poses a potential negative environmental impact of contaminating groundwater should a sub-surface leak occur. To mitigate this potential environmental impact, a Groundwater Monitoring Plan has been prepared to establish a robust groundwater monitoring program that will be implemented during the use, operation, and maintenance, of the REA project. The Groundwater Monitoring Plan has been prepared in accordance to the *Ontario Provincial Water Quality Objectives* and O.Reg 153/04, which includes a response plan that details steps and actions to be taken should any key monitoring parameters exceed the applicable criteria, or if an abrupt shift or gradual changes indicate leakage from any of the partially below-grade structures.

As required by Condition I23 (2), the prepared Groundwater Monitoring Plan has received written concurrence from the District Manager/Regional Technical Support Section, refer to APPENDIX C.

As part of the groundwater monitoring plan, an additional monitoring well will be installed (refer to APPENDIX D for the additional monitoring well location) to monitor the groundwater within the existing WPCP. It is anticipated that during the construction and decommissioning of the monitoring well, that there will be similar environmental impacts as indicated for the REA project construction and decommissioning activities. These similar environmental impacts as indicated in the construction report (section 6.2) includes:

1. Vegetation and soil removal for the excavation of soil to construct the secondary containment and
2. Air quality associated with construction activities including mobile emissions from construction equipment and dust generation from excavation activities.
3. Dust creation

As noted in the construction report and in section 3.1, mitigation measures and monitoring to address the potential environmental impacts noted above include:

1. Silt fencing to be used where appropriate to contain sediment on the construction side. Any soil stripped during construction will be set aside and replaced post construction or used as backfill. Excess soil that cannot be used for backfill will be removed and used in local projects where appropriate or sold to third parties as fill material. Stockpiles of fill material will be safely stored on the property until it is hauled offsite.
2. To reduce the adverse effects of construction equipment emissions during construction and decommissioning, there will be no idling of any vehicles during construction or decommissioning of the Project. Operators of all construction/decommissioning equipment will be required to complete a vehicle check daily prior to operation to ensure engine oil and equipment are in good conditions to operate.
3. To address dust creation during construction and decommissioning of the secondary containment, site clearing will be scheduled during appropriate periods when wind speeds are anticipated to be low, to minimize the creation of dust. Water trucks will also be available for dust suppression.

4 POTENTIAL IMPACTS TO REA REPORTS AND STUDIES

The Project team has previously completed all the required REA reports and studies (including the Environmental Impact Study, Cultural Heritage and Archaeological Resources Assessment, Surface Water Assessment, Acoustic Assessment, Archaeological Assessment, Odour Study, Geotechnical Investigation and Hydrogeological Study) for the construction, installation, use, operation, maintenance and retiring of the Project.

The technical changes outlined in this modification document will require minor changes to some of the REA technical reports and studies completed. Changes to these assessments and reports are outlined in Table 1 below.

Table 1. Potential Impacts to REA Reports and Studies

REA Reports & Studies	Change (Yes/No)	Section Modified	Discussion of change
Project Description Report	Yes	Section 3.3 – Water bodies & surface water	Amend section to include secondary containment plan, stormwater management plan and groundwater monitoring plan.
Site Plan	Yes	N/A	Amend site plan to include the locations of: i. dual function stormwater management and secondary containment dry pond ii. 3x existing groundwater monitoring wells and 1x proposed new groundwater monitoring well as identified in the Groundwater Monitoring Plan.
Groundwater Monitoring Plan	N/A – new plan requested per technical change	N/A	Requested from MECP district manager per REA review. The Groundwater Monitoring Plan includes details of the refurbishment works for digester #3 and #4 as per the request of the MECP hydrogeologist technical reviewer.
Stormwater Management and Secondary Containment Design Report	N/A – new plan per technical change	N/A	Requested from MECP District Manager per REA review. The stormwater management and secondary containment design report will detail organic waste spill containment and treatment of the accumulated spill containment prior to discharge.
Design and Operations Report	Yes	Table 7.1 – Environmental Effects Monitoring Plan Appendix D –	Amend to include reference to the stormwater management plan and secondary containment plan for spill containment management and emergency response.

REA Reports & Studies	Change (Yes/No)	Section Modified	Discussion of change
		Petawawa WPCP Emergency Response Plan	Amend appendix to include organic waste spill containment, management and treatment.
Decommissioning Plan Report	Yes	Section 3 – Decommissioning structures, equipment, and site components	Amend section to include decommissioning details for the dual function stormwater management and secondary containment dry pond and groundwater monitoring wells.
Consultation Report	TBC	N/A	Amendment to the consultation report may be required following the completion of the MECP Director assigned consultation requirements.
Construction Plan Report	Yes	Section 4 – Facility Components	Amend section to include secondary containment/stormwater management system as part of the facility components to address during construction planning.
Surface Water Assessment Report	No	N/A	No modifications are required. The technical changes proposed in this modification document are covered in the secondary containment plan and stormwater management plan which improves upon the mitigation measures identified in the existing surface water assessment report.
Effluent Management Report	No	N/A	No modifications are required. The technical changes proposed do not have any additional negative environmental impacts and does not impact the effluent requirements noted in the Effluent Management Report.
Emissions Dispersions and Modelling Report	No	N/A	No modifications are required. The technical changes proposed in this modification document

REA Reports & Studies	Change (Yes/No)	Section Modified	Discussion of change
			does not impact the overall emissions dispersion model as detailed in the Emissions Dispersions and Modelling Report.
Odour Study Report	No	N/A	No modifications are required. The technical changes proposed do not have any additional negative environmental impacts and does not impact the overall odour study developed in the Odour Study Report.
Acoustic Assessment Report	No	N/A	No modifications are required. The technical changes proposed do not have any additional negative environmental impacts and does not impact the acoustic assessment developed in the Acoustic Assessment Report.
Environmental Impact Study	No	N/A	No modifications are required. The technical changes are an additional avoidance measure of an existing negative potential environmental impact identified and are covered in the existing study, Section 4.3 – avoidance measures.
Site Investigation Report	No	N/A	No modifications are required. The technical changes proposed do not have any additional negative environmental impacts and are within the Project location on pre-disturbed land that has been investigated through the Site Investigation Report.
Cultural Heritage and Archaeological Resources Report	No	N/A	No modifications are required. The technical changes proposed do not have any additional negative environmental impacts and are within the Project location on pre-disturbed land that has

REA Reports & Studies	Change (Yes/No)	Section Modified	Discussion of change
			been investigated through the Cultural Heritage and Archaeological Resources Report.
Archaeological Assessment Report	No	N/A	No modifications are required. The technical changes proposed do not have any additional negative environmental impacts and are within the Project location on pre-disturbed land that has been assessed in the Archaeological Assessment Report.
Natural Heritage Records Review Report	No	N/A	No modifications are required. The technical changes proposed do not have any additional negative environmental impacts and are within the Project location on pre-disturbed land that has been investigated through the Natural Heritage Records Review Report.
Geotechnical Investigation Report and Hydrogeological Study	No	N/A	No modifications are required. The technical changes proposed do not have any additional negative environmental impacts and has been designed to adhere to the findings within the investigation conducted to develop the Geotechnical Investigation Report and Hydrogeological Study.

5 CONSULTATION

Consultation regarding the technical changes proposed in this modification document may be required upon the MECP's review of the Modification Report.

6 CONCLUSION

The purpose of the proposed technical changes is to satisfy Spill Containment Condition I23 of the REA. The proposed technical changes will not result in new or increased negative environmental impacts but rather are additional mitigation measures implemented to address the potential environmental impacts that the REA project pose to the surrounding environment. The mitigation measures have been designed by qualified professionals in accordance with MECP requirements and with consideration of the relevant information contained within the various existing supporting documents that were prepared for the initial REA application.

Construction of the proposed dual function secondary spill containment and stormwater management dry pond and installation of the additional groundwater monitoring well, will be located on areas within the existing developed and maintained Project site, thus minimizing any potential environmental impacts to the surrounding environment during the implementation and operation of these proposed technical changes.

We trust the details of this Modification Documents are to the satisfaction of the MECP Director. Any questions may be directed to the contacts noted below.

Trevor Woodtke, C.Tech.
Asset/Energy Management Coordinator – Town of Petawawa, Public Works Department

Kerry Tuyen, P.Eng.
Director – Innovation, Technology and Alternate Delivery – Ontario Clean Water Agency

Kevin Lutes, P.Eng.
Lead R&D Engineer – Anaergia Inc.

APPENDIX A. REA APPROVAL LETTER

RENEWABLE ENERGY APPROVAL

NUMBER 5211-CM3MB6
Issue Date: April 25, 2023

The Corporation of the Town of Petawawa
1111 Victoria St
Petawawa, Ontario
K8H 2E6

Project Location: Petawawa Water Pollution Control Plant
560 Abbie Lane
Petawawa Town, County of Renfrew
K8H 2X2

You have applied in accordance with Section 47.4 of the Environmental Protection Act for approval to engage in a renewable energy project in respect of a Class # 3 Anaerobic Digestion Facility consisting of the following:

- the construction, installation, use, operation, maintenance, and retiring of a Class 3 anaerobic digestion facility with a nameplate capacity of 200 kilowatts of electricity (kW_{el}) as outlined in Schedule "A" to:

- receive, temporarily store and process a maximum of 36,135 tonnes of liquid Organic Waste per year;
- generate a maximum of 200 kilowatts of electricity (kW_{el}) per year;

Note: use of the facility for any other type of waste is not approved under this Renewable Energy Approval, and requires obtaining a separate approval amending this Renewable Energy Approval.

For the purpose of this renewable energy approval, the following definitions apply:

1. "Acoustic Assessment Report" means the report, prepared in accordance with Publication NPC-233 submitted in support of the application, that documents all sources of noise emissions and Noise Control Measures present at the Facility. "Acoustic Assessment Report" also means the Acoustic Assessment Report prepared by Cambium Inc., dated October 7, 2022, and signed by Trevor Copeland, P. Eng.

2. "Act" means the *Environmental Protection Act, R.S.O 1990, c.E.19* , as amended;

3. "Adverse Effect" has the same meaning as in the Act;

4. "Anaerobic Digester" means the Anaerobic Digester(s) used for anaerobic digestion of the approved Organic Waste and as defined in Reg. 347;

5. "Application" means the application for a Renewable Energy Approval dated August 17, 2022, and signed by David Unrau, Director of Public Works, Town of Petawawa, and all supporting documentation submitted with the Application up to the date of this approval;

6. "Approval" means this Renewable Energy Approval issued in accordance with Section 47.5 of the Act, including any schedule attached to it;

7. "Best Management Practices for Industrial Sources of Odour" means the Ministry Publication "Best Management Practices for Industrial Sources of Odour", dated January 31, 2017, as amended;

8. "Biogas" means the gaseous waste generated from microbial biodegradation of the approved Organic Waste conducted under anaerobic conditions and has the physical attributes and the chemical composition, in particular the methane and carbon dioxide content, of a gas considered to be a biogas by the biogas industry;

9. "Biogas-CHP Treatment System" means the biogas pre-treatment and reciprocating engine generators for generating heat and electricity and any associated gas treatment equipment described in the Company's application, this Approval and in the supporting documentation submitted with the application, to the extent approved by this Approval;

10. "Clean-Out Material" means the Residual Waste removed from the Digester due to floating or settling of the material and that has been recovered as part of maintenance of the Digester;

11. "Company" means the Corporation of the Town of Petawawa that is responsible for the construction or operation of the Facility and includes any successors and assigns in accordance with section 19 of the Act;

12. "Decommissioning Plan Report" means the report entitled "Petawawa Net Zero Facility Decommissioning Plan Report, August 2, 2022";

13. "Design and Operations Report" means the report entitled "Petawawa Net Zero Facility, Design and Operations Report, March 2, 2023";

14. "Desulphurization System" means the desulphurization system in the Biogas-CHP Treatment System described in the Company's application, this Approval and in the supporting documentation submitted with the application, to the extent approved by this Approval;

15. "Digestate" is a Processed Organic Waste and within the context of this Approval it means the

output from the Digestate Storage Tanks;

16. "Director" means a person appointed in writing by the Minister of the Environment, Conservation and Parks pursuant to section 5 of the Act as a Director for the purposes of section 47.5 of the Act;

17. "District Manager" means the District Manager of the appropriate local district office of the Ministry where the Works is geographically located;

18. "EASR" means the Environmental Activity and Sector Registry;

19. “Equipment” means the equipment and processes described in the Company's application, this Approval and in the supporting documentation submitted with the application, to the extent approved by this Approval;

20. 'Exhausted" means the capacity of the Biogas-CHP Treatment System to adsorb emissions is reached and the Biogas-CHP Treatment System cannot effectively condition the biogas for use in the CHP engine set;

21. "Facility" means the renewable energy generation facility, including the Equipment, as described in this Approval and as further described in the Application, to the extent approved by this Approval;

22. "Final Disposal" within the context of this Approval means land disposal and thermal treatment, both as defined in Reg. 347, and does not include handling, storing, transferring, treating or processing of waste at a land disposal or a thermal treatment site;

23. "Flare" means the biogas flare system described in the Company's application, this Approval and in the supporting documentation submitted with the application, to the extent approved by this Approval;

24. "Foreign Matter" within the context of this Approval means materials that include but are not limited to glass, metallic objects, plastic and other foreign objects that are not typically considered naturally occurring;

25. "IC&I" means industrial, commercial and institutional;

26. "Incoming Organic Waste" within the context of this Approval means liquid non-hazardous organic waste derived from plants, humans or animals that is readily biodegradable and suitable for microbial biodegradation conducted under anaerobic conditions, but not including the sewage sludge generated at the on-site municipal wastewater treatment plant;

27. "Manual" means a document or set of documents that provide written instruction to staff of the Company;

28. "Ministry" means the ministry of the government of Ontario, responsible for the Act and the OWRA and includes all officials, employees or other persons acting on its behalf;

29. "NASM" or “Non-agricultural Source Material" has the same meaning as in O. Reg. 267/03;

30. "NMA" means the *Nutrient Management Act* , 2002, S.O. 2002, c. 4, as amended;

31. "Noise Control Measures" means measures to reduce the noise emission from the Facility and/or Equipment including, but not limited to silencers, acoustic louvers, enclosures, absorptive treatment, plenums and barriers. It also means the noise control measures outlined in the Acoustic Assessment Report;

32. "Odour Management Plan" means a document or a set of documents which describes the measures to minimize odour emissions from the Facility and/or Equipment;

33. "O. Reg. 267/03" means Ontario Regulation 267/03 "General" made under the NMA;

34. "Off-farm Anaerobic Digestion Materials" is as defined in O. Reg. 267/03 and Reg. 347, and within the context of this Approval it means the Organic Waste destined for the Anaerobic Digester(s) at the Facility;

35. "Organic Waste" means liquid non-hazardous organic waste derived from plants, humans or animals that is readily biodegradable and suitable for microbial biodegradation conducted under anaerobic conditions;

36. "OWRA" means the *Ontario Water Resources Act* , R.S.O. 1990, c. O.40, as amended;

37. "PA" means the *Pesticides Act* , R.S.O. 1990, c. P-11, as amended;

38. "Processed Organic Waste" has the same meaning as in Reg. 347;

39. "Professional Engineer" means a Professional Engineer as defined within the *Professional Engineers Act, R.S.O. 1990, c. P.28* , as amended;

40. "Publication NPC-233" means the Ministry Publication NPC-233, “Information to be Submitted for Approval of Stationary Sources of Sound”, October, 1995 as amended;

41. "Publication NPC-300" means the Ministry Publication NPC-300, " Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning, Publication NPC-300", August 2013, as amended;

42. "Reg. 347" or "Regulation 347" means Regulation 347 "General - Waste Management", R.R.O. 1990, made under the Act;

43. "Rejected Waste" means the Incoming Organic Waste received at the Facility that does not meet

the incoming waste quality criteria set out in this Approval or which cannot be anaerobically digested (processed);

44. “Residual Waste” means waste resulting from the storage and/or processing of the Organic Waste at the Facility and which cannot be anaerobically digested (processed) and is destined for Final Disposal;

45. "Sampling and Analysis Protocol" means the document of that name prepared by the Ministry of Agriculture, Food and Rural Affairs and the Ministry of the Environment, Conservation and Parks for the purposes of O. Reg. 267/03 and dated July 1, 2021, as amended;

46. "Septage" within the context of this Approval means contents removed from septic tanks, portable toilets, privy vaults and holding tanks serving houses, schools, motels, mobile home parks, campgrounds and small commercial endeavors, all receiving sewage from domestic sources only;

47. "SDWA" means *Safe Drinking Water Act, 2002* , S.O. 2002, c. 32, as amended;

48. "Source Separated Organics" or "SSO" means the source separated organic waste which consists of the organic waste suitable for anaerobic digestion, which has been separated at its source of origin by the generator of the waste and including the bags used by the generator to encase the organic waste at the source of generation;

49. "Spill" is as defined in the Act;

50. "Trained Personnel" means competent personnel that have been trained through instruction and/or practice in accordance with condition K1 of this Approval; and

51. "Works" means the sewage Works described in the Company's application, and this Approval.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

A - GENERAL

Compliance

A1. The Company shall construct, install, use, operate, maintain and retire the Facility in accordance with the terms and conditions of this Approval and the Application and in accordance with the following schedules attached hereto:

Schedule A – Facility Description;

A2. The Company shall ensure a copy of this Approval is:

(1) accessible, at all times, by Company staff operating the Facility; and

(2) submitted to the clerk of each local municipality and upper-tier municipality in which the Facility is situated along with the Application.

A3. If the Company has a publicly accessible website, the Company shall ensure that the Approval and the Application are posted on the Company's publicly accessible website within ten (10) business days of receiving this Approval.

A4. The Company shall ensure compliance with all the conditions of this Approval and shall ensure that any person authorized to carry out work on or operate any aspect of the Facility is notified of this Approval and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

A5. Any person authorized to carry out work on or operate any aspect of the Facility shall comply with the conditions of this Approval.

A6. The Company shall provide the District Manager and the Director at least ten (10) days written notice of the following:

(1) the commencement of any construction or installation activities at the project location; and

(2) the commencement of the operation of the Facility.

Interpretation

A7. Where there is a conflict between a provision of this Approval and any document submitted by the Company, the conditions in this Approval shall take precedence. Where there is a conflict between one or more of the documents submitted by the Company, the document bearing the most recent date shall take precedence.

A8. The requirements of this Approval are severable. If any requirement of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this Approval shall not be affected thereby.

Other Legal Obligations

A9. The issuance of, and compliance with the conditions of this Approval does not:

(1) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or

(2) limit in any way the authority of the Ministry to require certain steps be taken or to require the Company to furnish any further information related to compliance with this Approval.

Adverse Effects

A10. The Facility shall be constructed, installed, used, operated, maintained, and retired in a manner which ensures the health and safety of all persons and does not cause an Adverse Effect.

A11. The Company shall take steps to minimize and ameliorate any Adverse Effect resulting from the operations at the Facility, including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the Adverse Effect.

A12. Despite the Company or any other person fulfilling any obligations imposed by this Approval, the person remains responsible for any contravention of any other condition of this Approval or any applicable statute, regulation, or other legal requirement resulting from any act or omission that caused the Adverse Effect.

A13. If at any time odour, pests, litter, dust, noise or other such negative effects are generated at the Facility and cause an Adverse Effect, the Company shall take immediate appropriate remedial action that may be necessary to alleviate the Adverse Effect, including suspension of all waste management activities if necessary.

Change of Ownership

A14. The Company shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any of the following changes:

(1) the ownership of the Facility;

(2) the operator of the Facility;

(3) the address of the Company;

(4) the partners, where the Company is or at any time becomes a partnership and a copy of the most recent declaration filed under the *Business Names Act* , R.S.O. 1990, c. B.17, as amended, shall be included in the notification; and

(5) the name of the corporation where the Company is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act* , R.S.O. 1990, c. C.39, as amended, shall be included in the notification.

A15. No portion of this Facility shall be transferred or encumbered prior to or after closing of the Facility unless the Company or its successor has deposited with the Ministry sufficient financial assurance for the Director to be satisfied that the conditions of this Approval will be complied with.

A16. In the event of any change in ownership of the Facility, the Company shall notify the successor of and provide the successor with a copy of this Approval, and the Company shall provide a copy of the notification to the District Manager and the Director.

Inspections by the Ministry

A17. No person shall hinder or obstruct a Provincial Officer from carrying out any and all inspections authorized by the OWRA, the Act, the PA, the SDWA or the NMA of any place to which this Approval relates, and without limiting the foregoing:

(1) to enter upon the premises where the approved processing is undertaken, or the location where the records required by the conditions of this Approval are kept;

(2) to have access to, inspect, and copy any records required to be kept by the conditions of this Approval;

(3) to inspect the Facility, related equipment and appurtenances;

(4) to inspect the practices, procedures, or operations required by the conditions of this Approval;

(5) to conduct interviews with staff, contractors, agents and assignees of the Company; and

(6) to sample and monitor for the purposes of assessing compliance with the terms and conditions of this Approval or the Act, the OWRA, the PA, the SDWA or the NMA.

Information

A18. Any information requested by the Ministry, concerning the operation of the Facility and its operation under this Approval, including but not limited to any records required to be kept by this Approval, manuals, plans, records, data, procedures and supporting documentation shall be provided to the Ministry, immediately upon request**.**

A19. The receipt of any information by the Ministry or the failure of the Ministry to prosecute any person or to require any person to take any action, under this Approval or under any statute, regulation or other legal requirement, in relation to the information, shall not be construed as:

(1) an approval, waiver, or justification by the Ministry of any act or omission of any person that contravenes any term or condition of this Approval or any statute, regulation or other legal requirement; or

(2) acceptance by the Ministry of the information's completeness or accuracy.

A20. The Company shall ensure that a copy of this Approval, in its entirety and including all its notices of amendment, and the Application, are retained at the Facility at all times.

Decommissioning and Closure

A21. The Company shall, at least six (6) months prior to the anticipated retirement date of the entire Facility, or part of the Facility, review its Decommissioning Plan Report to ensure that it is still accurate. If the Company determines that the Facility cannot be decommissioned in accordance with the Decommissioning Plan Report, the Company shall provide the Director and District Manager a written description of plans for the decommissioning of the Facility.

A22. The Facility shall be retired in accordance with the Decommissioning Plan Report and any directions provided by the Director or District Manager.

A23. Within ten (10) days after closure of the Facility, the Company shall notify the Director and District Manager, in writing, that the Facility is closed and that the Facility Decommissioning Plan Report has been implemented.

Approval for Phase 0 under the Design and Operations Report

A24. This Approval only approves the design set out for phase 0 under the Design and Operations Report. An amendment to this Approval is required for all other phases of development described under the Design and Operations Report.

B - EXPIRY OF APPROVAL

B1. Construction and installation of the Facility must be completed within three (3) years of the later of:

(1) the date this Approval is issued; or

(2) if there is a hearing or other litigation in respect of the issuance of this Approval, the date that this hearing or litigation is disposed of, including all appeals.

B2. This Approval ceases to apply in respect of any portion of the Facility not constructed or installed before the later of the dates identified in Condition B1.

C - ARCHAEOLOGICAL RESOURCES

C1. Should any archaeological resources be discovered, the Company shall:

(1) immediately cease all alteration of the area in which the resources were discovered;

(2) engage a consultant archaeologist to carry out the archaeological fieldwork necessary to further assess the area and to either protect and avoid or excavate any sites in the area in accordance with the *Ontario Heritage Act* , the regulations under that act and the Ministry of Citizenship and Multiculturalism's *Standards and Guidelines for Consultant Archaeologists* ; and

(3) notify the Director and District Manager as soon as reasonably possible and within 30 days.

D - NATURAL HERITAGE

D1. The Company shall implement the commitments made in the Environmental Impact Study report "Environmental Impact Study - Proposed Anaerobic Digester at the Petawawa Water Pollution Control Plant" dated January 25, 2023, prepared by Cambium Inc. and included in the Application, and which the Company submitted to the Ministry of Natural Resources and Forestry in order to comply with O. Reg. 359/09.

D2. The Company shall provide a summary of the implemented commitments from the Environmental Impact Study report in the annual report in accordance with condition N9 of this Approval.

E - MUNICIPAL CONSULTATION

E1. Within three (3) months of receiving this Approval, the Company shall prepare a traffic management plan and provide it to the County of Renfrew.

E2. Within three (3) months of having provided the traffic management plan to the County of Renfrew, the Company shall make reasonable efforts to enter into a road users agreement with the County of Renfrew.

E3. If a Road Users Agreement has not been signed with the County of Renfrew within three (3) months of having provided the traffic management plan to the County of Renfrew, the Company shall provide a written explanation to the Director as to why this has not occurred.

F - INDIGENOUS CONSULTATION

F1. During the construction, installation, operation, use and retiring of the Facility, the Company shall: (1) create and maintain written records of any communications with Indigenous communities; and (2) make the written records available for review by the Ministry upon request.

F2. The Company shall provide the following to indentified Indigenous communities:
updates on key steps in the construction, installation, operation, use and retirement phases of the Facility, including notice of the commencement of construction activities at the Project Location.

F3. If an Indigenous community requests a meeting to obtain information relating to the construction, installation, operation, use and retiring of the Facility, the Company shall make reasonable efforts to arrange and participate in such a meeting.

F4. The Company shall invite members of Indigenous communities to participate in any further archaeological fieldwork.

F5. If any archaeological resources are found during the construction of the Facility, the Company shall:

(1) notify any Indigenous community considered likely to be interested or which has expressed an interest in such finds; and

(2) if a meeting is requested by an Indigenous community to discuss the archaeological find(s), make reasonable efforts to arrange and participate in such a meeting.

G - AIR

Operation and Maintenance

G1. The Company shall ensure that the Equipment is properly operated and maintained at all times. The Company shall:

(1) prepare, before commencement of operation of the Equipment, and update, as necessary, a Manual outlining the operating procedures and a maintenance program for the Equipment, including:
- (a.) routine operating and maintenance procedures in accordance with good engineering practices and as recommended by the Equipment suppliers;
- (b.) emergency procedures, including spill clean-up procedures;
- (c.) procedures for any record keeping activities relating to operation and maintenance of the Equipment;
- (d.) all appropriate measures to minimize noise and odorous emissions from all potential sources;
- (e.) procedures for monitoring hydrogen sulphide emissions from the headspace air of the roof membrane system for the Anaerobic Digester;
- (f.) procedures for monitoring the performance of the Biogas-CHP Treatment System for conditioning the biogas to be used for the operation of the CHP engine set; and
- (g.) the frequency of the inspection and replacement of the media(s) in the Biogas-CHP Treatment System.

(2) implement the recommendations of the Manual.

G2. The Company shall ensure that the activated carbon in the Equipment is replaced before it is Exhausted.

Flare

G3. The Company shall ensure that the Flare system is designed to and operated to comply, at all times, with a destruction efficiency of at least 98%.

G4. The Company shall maintain the Flare system, so that the instance of the CHP unit is not burning Biogas, the flare may be utilized to burn the Biogas produced.

Odour Management Plan

G5. The Company shall, at all times, take all reasonable measures to minimize odorous emissions and odour impacts from all potential sources at the Facility.

G6. The Company shall submit to the District Manager, an Odour Management Plan that includes measures in place and proposed, to minimize odour impacts of the Facility on nearby receptors, no later than three (3) months prior to the receipt of Organic Waste at the Facility (not including the sludge generated from the on-site municipal wastewater treatment plant). If the District Manager does not accept the Odour Management Plan, then the District Manager may require the Odour Management Plan to be revised and re-submitted prior to the receipt of Organic Waste at the Facility.

G7. The Odour Management Plan shall include:

(1) Facility and process descriptions including a list of all potential sources of odour;

(2) best management practices described in Ministry's Best Management Practices for Industrial Sources of Odour to ensure the effective implementation of the odour impact reduction measures, including:

i. periodic preventative activities and their frequency;

ii. inspection and maintenance procedures;

iii. monitoring initiatives; and

iv. record keeping practices for odour complaints and steps taken to address each complaint.

G8. The Company shall:

(1) update and revise the Odour Management Plan within three (3) months of the implementation of any proposed modifications that may impact odour emissions;
(2) review and evaluate once every twelve (12) months from the date of this Approval, or at a frequency directed or agreed to in writing by the District Manager, the Odour Management Plan for the control of odour emissions;
(3) record the results of each annual review and evaluation, and update the Odour Management Plan accordingly;
(4) maintain the updated Odour Management Plan at the Facility and make it available to the Ministry staff upon request; and
implement, at all times, the most recent version of the Odour Management Plan within sixty (60) days of an update.

G9. The Company shall record, and retain such records, each time a specific preventative and odour impact reduction measure described in the Odour Management Plan is implemented.

Desulphurization System Monitoring

G10. The Company shall install, conduct and maintain a program to monitor and record the operational parameters of the Desulphurization System.

G11. The Company shall monitor and record the operational parameters of the Desulphurization System, either as specified in the Manual of the Desulphurization System manufacturer, or as deemed necessary in accordance with site operational conditions, as follows:

(1) pressure drop across the Desulphurization System beds (kilopascals) weekly;

(2) process air flow through the Desulphurization System (cubic metres per second) daily;

(3) Desulphurization System bed moisture (percent) weekly;.

(4) Desulphurization System bed temperature (degrees Celsius) daily;

(5) inlet air temperature (degrees Celsius), after the pre-humidification chamber, daily;

(6) inlet air relative humidity (percent), after the pre-humidification chamber, daily;

(7) pH of the water runoff from the Desulphurization System bed, monthly; and

(8) water flow in the pre-humidification chamber and the media irrigation system, daily.

H - NOISE PERFORMANCE LIMITS

H1. The Company shall:

(1) at all times, ensure that the noise emissions from the Facility comply with the limits set in Ministry Publication NPC-300;

(2) ensure that the Noise Control Measures outlined in section 5.1.3 of the Acoustic Assessment Report are properly maintained and continue to provide the acoustical performance outlined in the Acoustic Assessment Report; and

(3) restrict the operation of shipping / receiving trucks to the daytime hours from 7 a.m. to 7 p.m.

I - ORGANIC WASTE MANAGEMENT

General

Build in Accordance

I1. Except as otherwise provided by this Approval, the Facility shall be designed, developed, built, operated and maintained in accordance with the Application.

I2. The most updated Design and Operations Report shall be retained on-site at all times.

As-built Drawings

I3. Within ninety (90) days after the construction of the Facility:

(1) the Company shall prepare and submit a statement to the District Manager, certified by a Professional Engineer, that the Facility is constructed in accordance with this Approval.

(2) the Company shall prepare a set of as-built drawings certified by a Professional Engineer and showing the design of the Facility as constructed. The drawings shall be kept up-to-date through periodic revisions and shall be retained at the Facility. An amendment to this Approval shall be sought for changes to the as-built drawings requiring approval.

Complaints Response Procedure

I4. (1) A designated representative of the Company shall be available to receive public complaints caused by the operations at the Facility twenty-four (24) hours per day, seven (7) days per week.

(2) If at any time, the Company receives any environmental complaints from the public regarding the operation of the Facility, the Company shall respond to these complaints according to the following procedures:

(a.) Step 1: Receipt of Complaint - The Company shall record each complaint in a computerized tracking system. The information recorded shall include the following:

(i.) the name, address and the telephone number (or contact information) of the complainant, if known;

(ii.) the date and time of the complaint; and

(iii.) details of the complaint, including the description and duration of the incident.

(b.) Step 2: Investigation of Complaint - After the complaint has been received by the Company and recorded in the tracking system, the Company shall immediately notify either the District Manager by phone during office hours or the Ministry's Spills Action

Centre at 1-800-268-6060 after office hours. The Company shall immediately initiate an investigation of the complaint. The investigation shall include, as a minimum, the following:

(i.) determination of the activities undertaken in the Facility at the time of the complaint;

(ii.) general meteorological conditions including, but not limited to the ambient temperature, approximate wind speed and its direction, sunny versus cloudy, inversion versus clear and windy, etc. at the time of the complaint;

(iii.) location of the person who submitted the complaint, if known, at the time of the incident; and

(iv.) determination if the complaint is attributed to activities being undertaken at the Facility and if so, determination of all the possible cause(s) of the complaint;

(c.) Step 3: Corrective Action - The Company shall determine the remedial action(s) to address the cause(s) of the complaint and implement the remedial action(s) to eliminate the cause(s) of the complaint, as soon as practicably possible, and to prevent a similar occurrence in the future;

(d.) Step 4: Written Response - The Company shall forward a formal reply to the complainant, if known and to the District Manager within one (1) week after the receipt of the complaint. The response shall include the results of the investigation of the complaint, the action(s) taken or planned to be taken to address the cause(s) of the complaint, and if follow-up response would be provided.

(e.) Step 5: Recording - All of the information collected and actions taken must be recorded in the tracking system.

(3) If the District Manager deems the remedial measures taken as per Condition I4(2)(c.) to be unsuitable, insufficient or ineffective, the District Manager may direct the Company, in writing, pursuant to the remedial order section (s.17) or the preventative measures order section (s.18) of the Act to take further measures to address the noted failure, upset or malfunction, including but not limited to the following:

(a.) reduction in the receipt of the waste;

(b.) cessation of the receipt of the waste;

(c.) removal and off-site disposal of waste; and

(d.) repairs or modifications to the Equipment or processes at the Facility.

Service Area, Approved Waste Types, Rates and Storage

Service Area & Waste Types

I5. The Company shall only accept waste generated within the service areas described under condition I6.

I6. The operation of this Facility is limited to receipt and processing of the following types of liquid Organic Waste:

(1) liquid Organic Waste generated from the following IC&I sources within the Province of Ontario:
(a.) restaurants;
(b.) food and beverage manufacturing, processing and distribution facilities;
(c.) grocery stores;
(d.) pet food manufacturing; and
(e.) rendering facilities.

(2) pre-processed liquid SSO generated from residential (domestic) curbside collection program(s) operated by or on behalf of a municipality within the Province of Ontario, which has been pre-processed to remove Foreign Matter and generate a liquid slurry, using equipment that minimizes the production of plastics with lengths less than 5 mm.

(3) sewage sludge generated at municipal wastewater treatment plants in the Province of Ontario and Quebec, which within the context of this Approval means the organic materials resulting from treatment of sewage up-to the anaerobic/aerobic digestion processing step at municipal wastewater treatment plants that only process wastewater similar in character to the residential (domestic) sewage from a household.

(4) Septage generated within the Province of Ontario.

I7. The Company shall not accept the following waste types at the Facility:
(1) any waste that is classified as hazardous waste in accordance with Regulation 347;
(2) solid waste;
(3) any waste that is classified as "Specified Risk Materials" which has the same meaning as in section 6.1 of the Health of Animals Regulations (C.R.C., c. 296), made under the *Health of Animals Act* (S.C. 1990, c. 21), as amended;
(4) any non-hazardous animal carcasses, including deadstock as defined in O. Regulation 105/09: Disposal of Deadstock under the *Food Safety and Quality Act,* 2001, S.O. 2001, c.20;
(5) dedicated loads of soiled diapers, soiled incontinence products, soiled sanitary products and pet waste from the IC&I sources; and
(6) any liquid IC&I waste that does not meet the definition of the Organic Waste.

I8. Waste receipt rates and storage limits at the Facility:

(1) The total amount of Organic Waste approved to be accepted at the Facility shall not exceed 99 tonnes per day (equivalent to 36,135 tonnes per year), subject to the following:

(a) no more than 41.1 tonnes per day of Organic Waste from sources other than the on-site municipal wastewater treatment plant.

(2) The maximum quantity of Organic Waste, Biogas and Digestate to be stored/processed at the Facility at any one time is subject to the following limitations:
(a) 1,990 cubic metres of Organic Waste in the two (2) Digesters (995 cubic metres in each Digester);
(b) 1,100 cubic metres of Biogas in the two (2) Digesters (550 cubic metres in each Digester)
(b) 8,400 cubic metres of Digestate in the two (2) Digestate Storage Tanks (4,200 cubic metres in each Digestate Storage Tank).

(3) No Organic Waste, Biogas or Digestate shall be stored at any part of the Facility other than those identified in Condition I8(2) at any time.

(4) In the event that Organic Waste cannot be processed at the Facility and the Facility is at its approved Organic Waste storage capacity, the Company shall cease accepting additional Organic Waste. Receipt of additional Organic Waste may be resumed once such receipt complies with the Organic Waste storage limits approved in this Approval.

(5) No Incoming Organic Waste storage is approved under this Approval.

(6) No storage of Organic Waste in its transportation vehicle is approved under this Approval.

(7) Any temporary storage of the Clean-Out Material shall be as follows:
(a) the Clean-Out Material shall be kept separate from Digestate; and
(b) the Clean-Out Material shall be stored within the confines of the tank it originated it (limited to either the Anaerobic Digesters or Digestate Storage Tanks), at all times until it is ready for removal off-site.

I9. The following waste management activities are approved under this Approval:
(1) receipt of liquid Organic Waste at the Liquid Unloading Station via cam lock connections for transfer into the Digesters;
(2) receipt of sewage sludge from the on-site municipal wastewater treatment plant for transfer into the Digesters;
(3) Anaerobic Digestion of the Organic Waste slurry in the Anaerobic Digesters to generate Digestate and Biogas, with the temporary storage of Biogas in the headspace of the Digesters;
(4) Transfer of the Digestate from the Digesters to the Digestate Storage Tanks for temporary storage;
(5) loading of Digestate into enclosed tanker trucks at the Digestate Loading Station via cam lock connections for shipment from the Facility;
(6) transfer of the Biogas from the Digesters to the Biogas-CHP Treatment System for use in the Combined Heat and Power engine to generate heat and electricity;
(7) flaring of the Biogas; and
(8) temporary storage of spent activated carbon within a covered, leak-proof bin prior to its transfer off-site in accordance with Reg. 347 and the Act.

Signs

I10. Prior to the receipt of Organic Waste at the Facility (not including the sludge generated from the on-site municipal wastewater treatment plant), the Company shall ensure that a sign is posted at the entrance to the Facility. The sign shall be visible from the main road leading to the Facility. The following information shall be included on the sign:

(1) name of the Company;
(2) this Approval number;
(3) hours during which the Facility is open;
(4) Organic Waste types that are approved to be accepted at the Facility;
(5) Company's telephone number (a hotline) to which complaints may be directed;
(6) Company's twenty-four hour emergency telephone number (if different from above);
(7) a warning against unauthorized access; and
(8) a warning against dumping at the Facility.

I11. The Company shall ensure that appropriate signs are posted at the Facility clearly identifying the Organic Waste and stating warnings about the nature of the Organic Waste and any possible hazards.

I12. The Company shall install and maintain appropriate and visible signs at the Facility to direct vehicles to the Organic Waste receiving area and the Digestate removal area.

Facility Security

I13. The Company shall ensure that all waste loading, unloading and transfer to or from vehicles/containers at the Facility are supervised at all times by Trained Personnel.

I14. The Company shall ensure that access to the Facility is regulated and that all entrances are secured by lockable gates to restrict access only to authorized personnel when the Facility is not open.

I15. The Company shall ensure the Facility is operated in a safe and secure manner, and that all waste is properly handled, packaged or contained and stored so as not to pose any threat to the general public and the Facility personnel.

Facility Operations

I16. The Facility is approved to receive waste generated off-site Monday to Friday from 7:00 am to 4:00 pm, and operate 24 hours per day, 7 days per week, 365 days a year.

I17. No sorting, source separating or unpacking of the Organic Waste shall be conducted at the Facility.

I18. Incoming Organic Waste receipt:

(1) The Company shall inspect all Incoming Organic Waste loads and the accompanying waste characterization documentation to ensure that only the waste that is approved under this Approval is received at the Facility.

(2) The Incoming Organic Waste that has not been characterized in accordance with this Approval or that is not accompanied by the required documentation shall not be accepted at the Facility and shall immediately be directed off-site.
(3) The Company shall establish and implement a waste screening and tracking system for all waste received, processed, stored at and transferred from the Facility.

I19. Rejected Waste handling:
(1) In the event that waste that is not approved under this Approval is inadvertently accepted at the Facility, the Company shall ensure that the Rejected Waste is returned in the same truck in which it arrived at the Facility.
(2) In the event that a load of liquid Organic Waste that does not meet the quality criteria from this Approval is inadvertently accepted at the Facility and is mixed with the approved Organic Waste in the Digester(s), the content of the Digester(s) shall be considered the Rejected Waste and the Company shall ensure that this Rejected Waste is handled and removed from the Facility in accordance with the contingency measures as required in Condition L1 of this Approval.
(3) Rejected Waste shall be removed from the Facility and disposed of in accordance with Regulation 347, the EPA and the OWRA.
(4) District Manager shall be notified in writing of the receipt of the Rejected Waste within three (3) business days. The following information shall be included in the notification to the District Manager:
(a) quantity and type of the waste;
(b) source of the waste;
(c) reason why the waste was refused;
(d) final destination of the Rejected Waste, if known; and
(e) time and date of receipt and time and date of removal from the Facility.

Tanks

I20. The Company shall ensure that sufficient storage capacity is available in the storage/processing tanks prior to loading of the tanks.

I21. The Company shall,
(1) install, operate and maintain **all** waste storage and processing tanks with a liquid level monitoring devices;
(2) monitor and control the liquid levels and loading rates in all storage and processing tanks on a continuous basis to ensure that the design storage capacity available within the tanks is not exceeded; and
(3) install, operate and maintain a high-level auditory alarm at the Facility and a remote alarm to the dedicated Trained Personnel, that triggers when the high level setpoint in any storage/processing tanks is reached.

Spill Containment

I22. Except for the Anaerobic Digesters and Digestate Storage Tanks, all liquid waste and chemicals shall be handled and stored in accordance with the Ministry's "Guidelines for Environmental Protection Measures at Chemical and Waste Storage Facilities" dated May 2007.

I23. (1) Prior to the receipt of Organic Waste at the Facility (not including the sludge generated from the on-site municipal wastewater treatment plant), the Company shall submit to the Director for review and approval, the following information:

a. a secondary containment plan for the Anaerobic Digesters and Digestate Storage Tanks prepared by a Professional Engineer;
b. a Stormwater Management Plan that addresses stormwater quality and quantity controls at the Facility, prepared by a Professional Engineer; and
c. a groundwater monitoring plan (including upgradient and downgradient monitoring wells, monitoring frequency and parameters) that will identify any leaks in the partially below-ground Anaerobic Digesters and Digestate Storage Tanks, for which the Company has received written concurrence from the District Manager.

(2) Prior to the submission to the Director for approval under condition I23(1), the groundwater monitoring plan shall be submitted to the District Manager for review and written concurrence by the Ministry's Regional Technical Support Section.

(3) Organic Waste at the Facility (not including the sludge generated at the on-site municipal wastewater treatment plant) shall not be received until this Approval has been amended to approve the information submitted under condition I23(1).

I24. The outdoor loading and unloading areas for the transfer of liquids into and from the storage tanks shall be constructed such that any spills during loading/unloading would be collected and contained on-site, as set out in the Application.

I25. The Company shall ensure that a drip tray is placed under the cam-lock connection when the liquids are being unloaded from or loaded into the tanker trucks.

Anaerobic Digestion

I26. Each Digester shall be mechanically mixed, insulated, heated and covered with a double membrane cover with a permeability of less than 500 cm^3/m^2/bar/day.

I27. Treatment of the Organic Waste in the Anaerobic Digesters shall be carried out in the mesophilic temperature range of 35°C to 43°C, at all times.

I28. The Company shall provide a minimum hydraulic retention time of twenty (20) days for the Organic Waste in each Anaerobic Digester at all times during normal Anaerobic Digestion operations.

I29. The Company shall operate each Anaerobic Digester with a maximum organic loading rate of less than 3.5 kg of volatile solids per cubic metre per day at all times during normal Anaerobic Digestion operations.

I30. The hydraulic retention time, liquid level and temperature of the Organic Waste in the Anaerobic Digesters shall be monitored on a continuous basis and recorded to verify compliance with Conditions I27 and I28.

I31. The Company shall sample and analyse the waste in the Anaerobic Digesters for pH, alkalinity, volatile fatty acids, ammonia, and volatile solids reduction percentage (inlet vs outlet of the digesters) on a quarterly basis.

I32. The Biogas in the headspace of each Anaerobic Digester shall be contained and exhausted into the Biogas-CHP Treatment System, boiler and/or the Flare, at all times.

I33. The Company shall electronically monitor the pressure within the Anaerobic Digesters to ensure that if the over/under pressure relief valves are opened, it is recorded and the Company is notified. Should any unintentional raw (untreated) Biogas be released from the over/under pressure relief values to the atmosphere, regardless of quantity, the Company shall immediately notify the Ministry, in writing.

I34. The total Biogas production flow rate and the concentration of methane and carbon dioxide in the Biogas shall be continuously monitored to identify process upsets in the Anaerobic Digestion process.

I35. The Digesters shall be equipped with:

(1) sampling ports or other means by which a sample can be taken that represents the Organic Waste entering the Digesters, to allow for collection of samples of the Organic Waste for the testing required under this Approval; and

(2) sampling ports or other means by which a sample can be taken that represents the contents of the Digesters before the Digestate from the Digesters enters into the Digestate Storage Tanks, to allow for collection of samples of the Digestate for the testing required under this Approval.

I36. The Digestate Storage Tanks shall be equipped with sampling ports or other means by which a sample can be taken that represents the contents of the Digestate Storage Tanks, to allow for collection of samples of the Digestate for the testing required under this Approval.

Liquid Digestate Handling

I37. Prior to receiving Organic Waste at the Facility at a receipt rate that exceeds 70 tonnes per day, the Company shall obtain and maintain agreements for the transfer and storage of the Digestate off-site that provides for an additional approximately 2,324 cubic metres of Digestate storage (approximately 52 days of storage time), which are signed by the owners of the off-site NASM storage locations and include the owner's total NASM storage volume that is constructed, approved, readily-available and designated for the Facility's Digestate. Copies of the agreements shall be maintained at the Facility for inspection purposes at all times.

I38. The Digestate shall be loaded into the transfer vehicles via a cam lock at the Digestate Loading Station.

Wastewater Management

I39. The Company shall ensure that all wastewater, including:

(1) spills/stormwater collected within the sumps at the Liquid Unloading Station/Digestate Loading Station and the concrete pad housing the Biogas treatment and utilization Pad;
(2) supernatant removed from the Digestate Storage Tanks, and
(3) all condensate that is generated in the Biogas condensate trap, Biogas-CHP Treatment system and boiler,

is contained within the leak-proof collection systems for immediate discharge into the headworks of the on-site municipal wastewater treatment plant via gravity pipes and/or forcemains, at all times.

I40. The Company shall conduct monthly inspections of all sumps (i.e., the sumps located at the Liquid Unloading Station/Digestate Loading Station and the Biogas treatment and utilization pad), and empty, clean and disinfect as necessary to ensure they are functioning as intended.

I41. The Company shall ensure that the sump(s) within the Liquid Unloading Station/Digestate Loading Station are emptied prior to the unloading and loading of any waste, respectively.

142. In the event that the effluent limits of the Petawawa Water Pollution Control Plant are exceeded as a result of the operations covered under this Approval, the Company shall:

a. immediately notify the District Manager;
b. reduce and/or cease the receipt of Organic Waste at the Facility, as needed;
c. determine the corrective actions needed to allow for the Petawawa Water Pollution Control Plant's effluent limits to be met at the maximum Organic Waste receipt rates set out in this Approval; and
d. prior to implementing the corrective actions, submit the proposed corrective actions to the District Manager for written concurrence, including the need for any amendments to this Approval that are required to allow for the receipt of Organic Waste at the maximum rates set out in this Approval.

Stormwater Management

I43. The Company shall install and maintain temporary sediment and erosion control measures during construction and conduct inspections once every two (2) weeks and after each significant storm event (a significant storm event is defined as a minimum of 25 mm of rain in any 24 hours period). The inspections and maintenance of the temporary sediment and erosion control measures shall continue until they are no longer required and at which time they shall be removed and all disturbed areas reinstated properly.

I44. The Company shall maintain records of inspections and maintenance which shall be made available for inspection by the Ministry, upon request. The record shall include the name of the inspector, date of inspection, and the remedial measures, if any, undertaken to maintain the temporary sediment and erosion control measures.

Biogas Management

I45. The Company shall maintain the Flare system so that in the instance of a process upset, excessive Biogas production, and/or when the Biogas-CHP Treatment System is inoperable or producing Biogas that is out of compliance with the required quality criteria, the Flare may be utilized to combust the Biogas.

Prohibitions

I46. Burning of any wastes, other than the Biogas, as approved in this Approval, is prohibited at the Facility.

I47. Truck washing is prohibited at the Facility.

I48. There shall be no public access to the Facility for waste drop off.

Facility Inspection and Maintenance

I49. Within ninety (90) days from the issuance of this Approval, the Company shall prepare a comprehensive written inspection program which includes inspections of all aspects of the Facility's operations including, as a minimum, the following:

(1) all waste loading, unloading, storage, handling and processing areas;
(2) condition of all major pieces of the equipment;
(3) condition of all instruments for monitoring required under this Approval;
(4) security fence and property line;
(5) presence of excessive fugitive dust emissions from the operation of the Facility;
(6) presence of leaks and drips; and
(7) presence of off-site odours.

I50. The inspection program shall be up-dated, as required, and shall be retained at the Facility and be made available for inspection by a Provincial Officer, upon request.

I51. The Company shall ensure that the required Facility inspections are undertaken daily from Monday to Friday (not including statutory holidays) by the Trained Personnel in accordance with the applicable inspection program to ensure that all Equipment, processes, working areas and supporting units at the Facility are maintained in good working order at all times and that no off-site impacts are occurring. Any deficiencies detected during these regular inspections must be promptly corrected.

I52. The Company shall prepare a list of critical spare parts and update this list annually or more frequently, if necessary, to ensure that this list is maintained up-to-date. The list shall be retained at the Facility and be made available for inspection by a Provincial Officer, upon request.

I53. The Company shall ensure that the critical spare parts are available at the Facility at all times or be immediately available from an off-site supplier.

I54. The Company shall develop and implement a preventative maintenance program for all on-site equipment associated with the processing and managing of wastes and control of fugitive odour and dust emissions in accordance with the manufacturer's requirements.

I55. The preventative maintenance program referred to in Condition I54. shall be maintained up-to-date, be retained at the Facility and be available for inspection by a Provincial Officer, upon request.

I56. When the waste storage and processing tanks/areas are cleaned out, the tanks/areas shall be internally inspected to ensure the integrity of it's structure.

Organic Waste Quality Criteria / Testing / Monitoring

I57. (1) For the purpose of demonstrating compliance with the quality criteria set out in this condition, the Company shall use the most recent results of the required analysis.

(2) The collection and analysis of samples of the Organic Waste, Digestate and Clean-Out Materials shall be performed in accordance with the Sampling and Analysis Protocol and by:

(a) a laboratory that is accredited by the Ministry of Agriculture, Food and Rural Affairs for that purpose; or

(b) a laboratory that is accredited in accordance with the International Standard ISO/IEC 17025 - General Requirement for the Competence of Testing and Calibration Laboratories, dated December 15, 1999, as amended from time to time.

Incoming Organic Waste Quality Criteria and Testing

(3) The Company shall ensure that the Incoming Organic Waste from each source complies with the following:

(a) the maximum metal concentrations set out in column 2 or 3, as applicable, of Table 2 of Schedule 5 of O. Reg. 267/03;

(b) Foreign Matter content shall not exceed 2% calculated on a dry weight basis;

(c) plastic content shall not exceed 0.5% calculated on a dry weight basis;

(d) there shall not be any particles of any waste that will not pass through a screen whose largest opening has an area of 2.5 square centimetres; and

(e) any off-site pre-processing shall be designed and operated to minimize the production of plastics with lengths of less than 5 millimetres.

(4) For metals, plastics and particle size:

(a) The Company shall ensure that prior to its first acceptance of a given new Incoming Organic Waste, the Incoming Organic Waste is characterized for metals, Foreign Matter content, plastic content, and particles of any material that will not pass through a screen

whose largest opening has an area of 2.5 square centimetres during the 14-day period preceding its first-time receipt at the Facility.

(b) If the Company relies on the published data for the well-studied/characterized Incoming Organic Waste, the latest published information shall be used to confirm that the characteristics of the proposed Incoming Organic Waste to be received at the Facility are in compliance with the Incoming Organic Waste's Foreign Matter metal, plastic and particle size quality criteria required under this Approval.

(c) If the published data is not available or used to confirm compliance of the Incoming Organic Waste with the metal, Foreign Matter, plastic and particle size quality criteria from this Approval, the Company shall collect samples as follows to confirm that the characteristics of the Incoming Organic Waste to be received at the Facility are in compliance with the Incoming Organic Waste quality criteria required under this Approval:

(i) for the initial characterization, a minimum of one (1) composite sample from the proposed Incoming Organic Waste stream, composed of no less than five (5) sub-samples for liquids; and

(ii) following the initial characterization of the Incoming Organic Waste, one (1) composite sample every 1,000 m^3 of the given Organic Waste or once a year, whichever comes first, provided the said Organic Waste is of the same type and is from the same source. If, after the first twelve (12) months of sampling and analysis, the results are consistent and continuously below the prescribed limits, one (1) composite sample shall be conducted for the given Organic Waste once a year or following any process changes, operational issues or other factors that may affect the quality of the said Organic Waste. Each composite sample shall be composed of no less than five (5) sub-samples for liquids.

(d) The Company shall ensure that each sample of the Incoming Organic Waste has been analysed for Foreign Matter content (dry weight basis), plastic content (dry weight basis), particles of any material that will not pass through a screen whose largest opening has an area of 2.5 square centimetres, and metals listed in column 1 of Table 2 of Schedule 5 of O. Reg. 267/03, in accordance with the methods and frequencies specified in this Approval.

(e) In order to resume accepting a given Organic Waste following previous rejection, the Company shall ensure that the analytical requirements listed in this Approval have been fulfilled and that two (2) independent composite samples of the said Organic Waste generate analytical results which, separately and consecutively, do not exceed the particle size, metals, Foreign Matter content and plastic content limits set out in Condition I57(3).

(f) Should results of testing of the Incoming Organic Waste fail to meet the quality criteria specified in this Approval for particle size, metals, Foreign Matter content and plastic content, the said Organic Waste shall be handled in accordance with the Contingency and

Emergency Response Plan.

(g) The Company shall ensure a copy of the analysis sets out the metal concentration in each Organic Waste in:
  (i) milligrams of metal per kilogram of total solids, dry weight, in case of the analysis of metals in materials that have a concentration of total solids of 10,000 milligrams or more per litre; and
  (ii) milligrams of metal per litre, in the case of the analysis of regulated metals in materials that have a concentration of total solids of less than 10,000 milligrams per litre.

(5) The Incoming Organic Waste shall not be accepted at the Facility if the analytical requirements listed in this Approval have not been fulfilled or if the analysis of the said Organic Waste as described in this Approval determines that the particle size, Foreign Matter content, plastic content, and/or metal content in the said Organic Waste exceeds the limits set out in Condition I57(3).

Digestate and Clean-Out Material Quality Criteria and Testing

(7) If the Digestate is managed as a material destined for land application on agricultural land, the Digestate shall comply with the following requirements unless O. Reg. 267/03 requires otherwise for a NASM:
  (a) regulated metal shall not exceed the maximum concentrations set out in Table 1 or 2, as applicable, of Schedule 5 of O. Reg. 267/03; and
  (b) pathogens shall not exceed the maximum pathogen levels set out in Table 3 of Schedule 6 of O. Reg. 267/03 for CP2 NASM.

(8) If the Digestate is managed as a waste destined for land application on non-agricultural land:
  (a) the Digestate shall meet the quality criteria required by the conditions of the Environmental Compliance Approval for the site where it is to be land-applied; or
  (b) in the absence of specific quality criteria requirements in the Environmental Compliance Approval for the site where the Digestate is to be land-applied, it shall meet the requirements set out in Condition I57(7) of this Approval.

(9) If the Digestate is managed as a NASM destined for land application on agricultural land, the Company shall:
  (a) collect one (1) sample per month from each Digestate Storage Tank, and analyze the samples for metals listed in Table 2 of Schedule 5 of O. Reg. 267/03; and
  (b) collect one (1) sample at a minimum of every two weeks from each Digestate Storage Tank, and analyze each of the samples for E.coli.

(10) If the results required by Condition I57(9)(b.) for twelve (12) consecutive sampling events are all less than the maximum pathogen levels set out in Table 3 of Schedule 6 of O. Reg. 267/03 for CP2 NASM within the preceding period of no less than three (3) months (i.e., six months of biweekly sampling or three months of weekly sampling), then the Digestate sampling frequency

set out under Condition I57(9)(b.) can be reduced to once per month.

(11) If the Digestate is managed as a waste destined for land application on non-agricultural land, the Company shall,
- (a) undertake quality control sampling and testing as required by the conditions of the Environmental Compliance Approval for the site where the Digestate is to be land-applied; and
- (b) in the absence of specific sampling and testing requirements in the Environmental Compliance Approval for the site where the Digestate is to be land-applied, the Company shall undertake quality control sampling and testing required by Conditions I57(9), and (10).

(12) If the Clean-Out Material is managed as a material destined for land application on agricultural land, the Clean-Out Material shall comply with the following requirements unless O. Reg. 267/03 requires otherwise for a NASM:
- (a) regulated metal shall not exceed the maximum concentrations set out in Table 1 or 2, as applicable, of Schedule 5 of O. Reg. 267/03;
- (b) pathogens shall not exceed the maximum pathogen levels set out in Table 3 of Schedule 6 of O. Reg. 267/03 for CP2 NASM;
- (c.) Foreign Matter content shall not exceed 2% calculated on a dry weight basis;
- (d.) plastic content shall not exceed 0.5% calculated on a dry weight basis; and
- (e.) there shall not be any particles of any material that will not pass through a screen whose largest opening has an area of 2.5 square centimetres.

(13) If the Clean-Out Material is managed as a waste destined for land application on non-agricultural land:
- (a) the Clean-Out Material shall meet the quality criteria required by the conditions of the Environmental Compliance Approval for the site where it is to be land-applied; or
- (b) in the absence of specific quality criteria requirements in the Environmental Compliance Approval for the site where the Clean-Out Material is to be land-applied, it shall meet the requirements set out in Condition I57(12) of this Approval.

(14) If the Clean-Out Material is managed as a NASM destined for land application on agricultural land, the Company shall collect one (1) sample from each batch of Clean-Out Material, and analyze the samples for E.coli., Foreign Matter, plastics, particles of any material that will not pass through a screen whose largest opening has an area of 2.5 square centimetres and the metals listed in Table 2 of Schedule 5 of O. Reg. 267/03.

(15) If the Clean-Out Material is managed as a waste destined for land application on non-agricultural land, the Company shall,
- (a) undertake quality control sampling and testing as required by the conditions of the Environmental Compliance Approval for the site where the Clean-Out Material is to be land-applied; and
- (b) in the absence of specific sampling and testing requirements in the Environmental Compliance Approval for the site where the Clean-Out Material is to be land-applied, the

Company shall undertake quality control sampling and testing required by Condition I57(14).

End Use of Digestate and Clean-Out Material

I58. (1) If the Digestate or Clean-Out Material is to be land-applied to agricultural land, the Digestate or Clean-Out Material shall be managed in accordance with the requirements of the NMA for CP2 NASM.

(2) If the Digestate or Clean-Out Material is not managed in accordance with the requirements of the NMA, it is considered a Processed Organic Waste, and it shall be managed as follows:

(a) Digestate or Clean-Out Material managed as waste shall only be in accordance with the requirements of the Act and the OWRA and any other relevant Ministry legislation;

(b) Digestate or Clean-Out Material managed as waste shall only be removed from the Facility by a hauler approved by the Ministry to transport such waste, as required;

(c) Digestate or Clean-Out Material managed as waste shall be transferred for further processing or Final Disposal to a Ministry-approved site or a site approved to accept such waste by an equivalent jurisdiction.

Trucks and Traffic

I59. (1) The Company shall visually inspect the vehicles that have delivered the waste to the Facility for evidence of leaking or dripping waste. The Company of the vehicles that leak shall be given a written notice of the presence of the leak. The notice shall include the vehicle owner's name, the vehicle Environmental Compliance Approval number, the type of waste delivered to the Facility and the date of the delivery. A copy of the notice shall be retained at the Facility and it shall be provided to the Ministry staff upon request.

(2) The Company shall ensure that there is no queuing or parking of vehicles that are waiting to enter the Facility on any roadway that is not a distinct part of the Facility.

(3) The Company shall ensure that the vehicles transporting waste to and from the Facility use the designated on-site traffic routes.

(4) The Company shall ensure that all new drivers of vehicles transporting waste to and from the Facility are instructed/trained on the acceptable on-site traffic routes.

(5) All waste must be transported to and from the Facility in accordance with the Act and Reg. 347 and in vehicles that have been approved by the Ministry or registered on the Environmental Activity and Sector Registry (EASR), as required.

(6) The Company shall ensure that all on-site roads and operations/yard areas are swept/wetted to

prevent dust impacts off-site on an as-needed basis.

(7) The Company shall ensure that all vehicles hauling solid waste are adequately covered to prevent fugitive odour or dust emissions during transport.

Vectors, Vermin and Wildlife

(8) The Company shall:
  (a) implement necessary housekeeping procedures to eliminate sources of attraction for vermin, vectors and wildlife; and
  (b) if necessary, hire a qualified, licensed pest control professional to design and implement a pest control plan for the Facility.

Gas Monitoring

(9) The Company shall install and maintain monitors and audible/visual alarms for explosive methane concentrations and hazardous hydrogen sulfide concentrations within the CHP enclosure, digester gallery and boiler building, with immediate corrective actions should any alarm be triggered.

J - OPERATIONS MANUAL

J1. Within ninety (90) days from the issuance of this Approval, the Company shall prepare and implement an Operations Manual for use by the Facility personnel. As a minimum, the Operations Manual shall contain the following:
(1) outline the responsibilities of the Facility personnel;
(2) personnel training protocols;
(3) waste receiving procedures;
(4) waste unloading, handling and storage procedures;
(5) waste processing and monitoring procedures;
(6) sampling and testing procedures;
(7) Facility inspections, fire, spill, upset, and leakage recording procedures;
(8) emergency response procedures;
(9) procedures for handling complaints as described in this Approval;
(10) routine operating and maintenance procedures in accordance with good engineering practices and as recommended by the Equipment manufacturers;
(11) the frequency of the replacement of the activated carbon in the Activated Carbon Adsorption Units;
(12) procedures for monitoring the performance of the Activated Carbon Adsorption Units; and
(13) all appropriate measures to minimize odour, dust and noise emissions from all potential sources at the Facility.

J2. The Company shall:
(1) keep a copy of the operations manual at the Facility and accessible to Facility personnel at all times;

(2) update the operations manual as required; and
(3) make the operations manual available for review by the Ministry upon request.

K - STAFF TRAINING

K1. All operators of the Facility shall be trained with respect to the following:
(1) terms, conditions and requirements of this Approval;
(2) operation and management of the Facility, or area(s) within the Facility, as per the specific job requirements of each individual operator, and which may include equipment and operating procedures for receiving, screening and identifying waste, refusal, handling, processing and temporarily storing wastes;
(3) an outline of the responsibilities of Facility personnel including roles and responsibilities during emergency situations;
(4) the Emergency Response and Contingency Plan including exit locations and evacuation routing, and location of relevant equipment available for emergency situations;
(5) environmental and occupational health and safety concerns pertaining to the process and wastes to be handled at the Facility;
(6) emergency first-aid information;
(7) relevant air, noise, wastewater and waste management legislation, regulations, and guidelines, including the Act and Reg. 347;
(8) record keeping and retention procedures, as required by this Approval;
(9) Facility inspection and maintenance procedures, as required by this Approval;
(10) nuisance impact control and housekeeping procedures, as required by this Approval;
(11) procedures for recording and responding to public complaints;
(12) specific written procedures for the control of Adverse Effects from the Facility; and
(13) specific written procedures for refusal of unacceptable incoming waste loads.

K2. The training of the operators of the Facility shall also include the procedures contained in the Operations Manual.

K3. The training of the operators of the Facility shall be undertaken:
(1) upon commencing employment at the Facility;
(2) whenever procedures are updated or during the planned three (3)-year refresher training.

L - EMERGENCY RESPONSE AND CONTINGENCY PLAN

L1. Within three (3) months from the issuance of this Approval, the Company shall submit to the District Manager an Emergency Response and Contingency Plan. The Emergency Response and Contingency Plan shall be prepared in consultation with the District Manager, the local municipality, and the local fire department, and as a minimum, shall include the following information and items described:
(1) emergency response procedures to be undertaken in the event of a spill, process upset, power failure, fire, or any other emergency situation, including specific clean up methods for wastes expected to be generated from the emergency situation;
(2) odour abatement plan to propose the design and operation of the contingency measures necessary to alleviate impacts from odours emitted from the Facility;

(3) dust abatement plan to propose the design and operation of the contingency measures to alleviate impacts from dust originating from the waste management and vehicular activities at the Facility;
(4) trigger mechanism for implementation of the abatement plans required by (2) and (3), above;
(5) a list of equipment and clean up materials available for dealing with the emergency situations;
(6) notification protocol with names and telephone numbers of persons to be contacted, including persons responsible for the Facility, the Ministry's District Office and Spills Action Centre, the local fire department, the local municipality, the local Medical Officer of Health, and the Ontario Ministry of Labour, and the names and telephone numbers of waste management companies available for emergency response;
(7) procedures and actions to be taken should the Incoming Organic Waste not meet the quality criteria specified by this Approval and requires removal from the Facility as set out in this Approval;
(8) procedures and actions to be taken should the Digestate fail to meet the requirements under the NMA;
(9) procedures and actions to be taken should the occurrence of the substantiated complaints require the Company to suspend the Organic Waste processing activities at the Facility; and
(10) a spill contingency plan - that is a set of procedures describing how to mitigate the impacts of a spill within the area serviced by the Works. This plan shall be implemented for all the identified containment areas and include as a minimum:
    a. the name, job title and location (address) of the Company, person in charge, management or person(s) in control of the facility;
    b. the name, job title and 24-hour telephone number of the person(s) responsible for activating the spill contingency plan;
    c. a site plan drawn to scale showing the facility, nearby buildings, streets, catch-basins and manholes, drainage patterns (including direction(s) of flow in storm sewers), any receiving body(ies) of water that could potentially be significantly impacted by a spill and any features which need to be taken into account in terms of potential impacts on access and response (including physical obstructions and location of response and clean-up equipment);
    d. steps to be taken to report, contain, clean up and dispose of contaminants following a spill;
    e. a listing of telephone numbers for: local clean-up company(ies) who may be called upon to assist in responding to spills; local emergency responders including health institution(s); and Ministry Spills Action Centre 1-800-268-6060;
    f. Safety Data Sheets (SDS) for each hazardous material which may be transported or stored within the area serviced by the Works;
    g. the means (internal corporate procedures) by which the spill contingency plan is activated;
    h. a description of the spill response training provided to employees assigned to work in the area serviced by the Works, the date(s) on which the training was provided and by whom;
    i. an inventory of response and clean-up equipment available to implement the spill contingency plan, location and, date of maintenance/replacement if warranted; and
    j. the date on which the contingency plan was prepared and subsequently, amended.

L2. An up-to-date version of the Emergency Response and Contingency Plan shall be kept at the Facility at all times, in a central location available to all staff, and a copy shall be submitted to the District Manager, the local Municipality and the Fire Department, if requested.

L3. The Emergency Response and Contingency Plan shall be reviewed on an annual basis and updated, if necessary. The revised version of the Emergency Response and Contingency Plan shall be submitted to the District Manager, the local Municipality and the Fire Department for comments and concurrence.

L4. Should a Spill occur at the Facility, in addition to fulfilling the requirements from the Act, the Company shall submit to the District Manager a written report within three (3) calendar days outlining the nature of the Spill, remedial measure taken and the measures taken to prevent future occurrences at the Facility.

M - EMERGENCY SITUATIONS RESPONSE AND REPORTING

M1. The Company shall immediately take all necessary measures, as outlined in the Emergency Response and Contingency Plan, to handle the emergency situations occurring at the Facility.

M2. The Company shall ensure that the equipment and materials outlined in the Emergency Response and Contingency Plan are immediately available at the Facility at all times and are in a good state of repair and fully operational.

M3. The Company shall ensure that all Facility personnel are fully trained in the use of the equipment and materials outlined in the Emergency Response and Contingency Plan, and in the procedures to be employed in the event of an emergency.

M4. All Spills shall be immediately reported to the Ministry's Spills Action Centre at 1-800-268-6060 and shall be recorded in the log book as to the nature and cause of the Spill, and the action taken for clean-up, correction and prevention of similar future occurrences.

N - RECORD KEEPING AND RETENTION

Daily Activities

N1. The Company shall establish and maintain an on-site written or digital record of activities undertaken at the Facility. All measurements shall be recorded in consistent metric units of measurement. The record shall include, as a minimum, the following:

(1) date of record;
(2) details on the quantity and type of the Organic Waste received at the Facility, including the Incoming Organic Waste characterization results, or published characterization data, as applicable;
(3) amount of the Digestate shipped from the Facility, its categorization and destination (include the receiving site's Environmental Compliance Approval number if applicable) ;
(4) quantity and type of waste processed at the Facility;
(5) quantity and type of waste present at the Facility, including the Organic Waste in-storage and in-process;
(6) quantity and type of any Rejected Waste and Residual Waste removed from the Facility;
(7) process monitoring results;
(8) housekeeping activities, including litter collection, washing/cleaning activities, etc. ;

(9) date and the quantity of Biogas generated at the Facility;
(10) date and duration of the Flare being used for Biogas flaring.
(11) all records on the maintenance, repair and inspection of the Equipment; and
(12) all records on the monitoring activities of the Activated Carbon Adsorption Units as required by this Approval.

N2. The Company shall retain all records retaining to waste characterization required by this Approval for a minimum of five (5) years.

Emergency Situations

N3. The Company shall establish and maintain an on-site written or digital record of emergency situations. The record shall include, as a minimum, the following:
(1) the type of emergency situation;
(2) description of how the emergency situation was handled;
(3) the type and amount of material spilled, if applicable;
(4) a description of how the material was cleaned up and stored, if generated; and
(5) the location and time of Final Disposal, if applicable.

Inspections

N4. The Company shall establish and maintain an on-site written or digital record of inspections as required by this Approval. The record shall include, as a minimum, the following:
(1) the name and signature of the person that conducted the inspection;
(2) the date and time of the inspection;
(3) the list of any deficiencies discovered;
(4) the recommendations for remedial action; and
(5) the date, time and description of actions taken.

Training

N5. The Company shall establish and maintain an on-site written or digital record of training as required by this Approval. The record shall include, as a minimum, the following:
(1) date of training;
(2) name and signature of person who has been trained; and
(3) description of the training provided.

Sampling and Testing Records

N6. The Company shall establish and maintain a written or digital record of all sampling and testing activities at the Facility. This record shall include, as a minimum, the following information:
(1) waste sampled, sample collection locations and volume collected;
(2) day and time of collection;
(3) sample handling procedures;
(4) parameters tested for and the resulting concentrations;

(5) name of the laboratory facility conducting the testing; and
(6) conclusions drawn with respect to the results of the sampling and testing.

Monitoring Records

N7. The Company shall establish and maintain a written or digital record of all monitoring activities at the Facility as required by this Approval.

Complaints Response Records

N8. The Company shall establish and maintain a written or digital record of complaints received and the responses made as required by this Approval.

Annual Report

N9. By March 31st following the end of each operating year, the Company shall prepare and submit to the District Manager an annual report summarizing the operation of the Facility covering the previous calendar year. The annual report shall include, as a minimum, the following information:
(1) a monthly summary of the quality and the quantity of all Organic Waste received, all outgoing Digestate, Residual Waste and Rejected Waste, including analytical data required to characterize the waste;
(2) material balance for each month documenting the amount of Organic Waste stored at the Facility;
(3) a monthly summary of the quality and the quantity of the Digestate pumped to the Digestate Storage Tanks;
(4) a monthly summary of the quality and the quantity of the Digestate shipped from the Facility and its end-use designation (ie. CP2 NASM or Processed Organic Waste) and its final end-use destination (ie. agricultural or non-agricultural location) and address;
(5) annual amount of Biogas produced at the Facility;
(6) annual duration of the Flare being used for Biogas flaring;
(7) a summary of implemented commitments from the Environmental Impact Study report;
(8) any environmental and operational problems, that could negatively impact the environment, encountered during the operation of the Facility or during Facility inspections and any mitigative actions taken;
(9) any recommendations to minimize environmental impacts from the operation of the Facility and to improve Facility operation and monitoring programs in this regard;
(10) a summary of any complaints received and the responses made;
(11) a summary of any emergency situations, including use of over/under pressure relief valves, that have occurred at the Facility and how they were handled;
(12) a summary of all inspections and maintenance carried out at the Facility;
(13) a written statement that the Facility was in compliance with the Approval; and
(14) any other information the District Manager requires from time to time.

SCHEDULE "A" Facility Description

The Facility shall consist of the construction, installation, operation, use, maintenance and retiring of:

- a Class 3 anaerobic digestion facility, to process a maximum of 36,135 tonnes of liquid Organic Waste per year to generate 200 kilowatts of electricity (kW_{el}) and consisting of the following processes, working areas and supporting units:

    - one (1) outdoor Liquid Unloading Station and Digestate Loading Station consisting of two (2) cam lock connections (one for unloading of the Incoming Organic Waste and one for the unloading of the outgoing Digestate), and a 5 m x 7 m impermeable concrete unloading pad with 150 mm curbing along the length of the pad and a 2% slope towards a sump for the collection of any spills during unloading/loading, discharging any collected spills and stormwater to the headworks of the on-site municipal wastewater treatment plant via a pump and forcemain;
    - two (2) partially below-ground primary concrete Anaerobic Digesters with a double-membrane 1/2 dome roof with a maximum permeability of 500 cm^3 of methane/m^2/bar/day, each having a liquid Organic Waste working capacity of 995 m^3 and a Biogas working capacity of 550 m^3, equipped with insulation, an anti-corrosive liner in the headspace, a waterproof liner, over and under pressure relief devices (including a secondary over pressure relief device), pressure sensor(s), heat-exchanger with recirculation and hot water pumps, mixers, blowers, a level sensor, temperature sensor(s), a chemical dosing system for dosing nutrients/anti-foamers/pH/ferric chloride, and low-level and high-level alarms;
    - two (2) partially below-ground glass-lined-steel Digestate Storage Tanks, each with a working volume of 4,200 m^3, equipped with an open hatch for under/over pressure relief, pressure sensor(s), three (3) sludge mixing and transfer pumps, and supernatant withdrawal equipment, discharging supernatant to the headworks of the on-site municipal wastewater treatment plant and liquid Digestate to the Digestate Loading Station
    - one (1) Biogas-CHP Treatment System including:

        - one (1) desulphurization system for the desulphurization of the unconditioned biogas prior to directing it to the combined heat and power generator described below, with a rated capacity of 279 normal cubic metres per hour, equipped with 20 cubic metres of packing media, an empty bed residence time of 4 minutes, and an irrigation system comprised of a process liquid recirculation system and spray nozzles;
        - a gas analyzer;
        - an oxygen injection system;
        - one (1) biogas conditioning system, having a rated capacity of 112 normal cubic metres per hour, consisting of a preliminary knock out tank, inlet blower, chiller, heat exchangers, secondary knock out tank, and activated carbon tank, equipped with 450 kilograms of activated carbon media, for the

removal of moisture, siloxanes and other impurities from the unconditioned biogas;

- one (1) combined heat and power generator having a generating output capacity of 200 kilowatts of electricity (kWe) and a maximum conditioned biogas firing rate of 112 normal cubic metres per hour, discharging to the air at a maximum volumetric flow rate of 0.23 cubic metre per second through a stack having an exit diameter of 0.15 metre, extending 6.5 metres above grade;
- one (1) Flare to combust biogas at a maximum biogas firing rate of 279 normal cubic metres per hour, discharging through a stack having an exit diameter of 0.5 metre, extending 5 metres above grade;
- two (2) natural gas or biogas fired boilers, each having a maximum heat input of 1,328,400 kilojoules per hour;

all in accordance with the application.

The reasons for the imposition of these terms and conditions are as follows:

GENERAL

(1) Conditions A1, A7, A8 and A24 are included to ensure that the Facility is constructed, installed, used, operated, maintained and retired in the manner in which it was described for review and upon which Approval was granted. These conditions are also included to emphasize the precedence of conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review.

(2) Conditions A2 and A3 are included to require the Company to provide information to the public and the local municipality.

(3) Conditions A4, A5, A9, A10, A11, A12, A13, A18, A19, and A20 are included to clarify the legal rights and responsibilities of the Company.

(4) Condition A6 is included to require the Company to inform the Ministry of the commencement of activities related to the construction, installation, and operation of the Facility.

(5) Condition A14 is included to ensure that the Facility is operated under the corporate name which appears on the Application submitted for this Approval and to ensure that the Director is informed of any changes.

(6) Conditions A15 and A16 is included to restrict potential transfer or encumbrance of the Facility without the approval of the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Approval.

(7) Condition A17 is included to ensure that the Ministry has ready access to the operations of the Facility. The condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the EPA, the OWRA, the PA, the NMA and the SDWA.

(8) Conditions A21, A22, and A23 are included to ensure that the Facility is decommissioned in accordance with the Decommissioning Plan Report approved by the Ministry and that final closure of the Facility is completed in accordance with Ministry's standards.

(9) Condition B is intended to limit the time period of the Approval.

ARCHAEOLOGICAL RESOURCES

(10) Condition C is included to protect archaeological resources that may be found at the project location.

NATURAL HERITAGE

(11) Conditions D and I26 to I48 are included to ensure that the Facility is constructed, installed, used, operated, maintained and retired in a way that does not result in an Adverse Effect or hazard to the natural environment or any persons.

MUNICIPAL CONSULTATION

(12) Condition E is included to ensure that the Facility is constructed, installed, used, operated, maintained and retired in a way that does not result in an Adverse Effect or hazard to the natural environment or any persons.

INDIGENOUS CONSULTATION

(13) Condition F is included to ensure continued communication between the Company and interested Indigenous communities.

AIR

(14) Conditions Nos. G1 and G2 are included to emphasize that the Equipment must be maintained and operated according to a procedure that will result in compliance with the Act, the regulations and this Approval.

(15) Conditions Nos. G3 to G9 are included to provide the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility and/or Equipment.

(16) Conditions Nos. G10 and G11 are included to require the Company to gather accurate information so that the environmental impact and subsequent compliance with the EPA, the regulations and this Approval can be verified; and to require the Company to gather accurate information on a continuous basis so that the environmental impact and subsequent compliance with the EPA, the regulations and this Approval can be verified.

NOISE PERFORMANCE LIMITS

(17) Condition Nos. H1.(1) and H1.(2) are included to provide the minimum performance requirement considered necessary to prevent an adverse effect resulting from the operation of the Facility / Equipment.

(18) Condition No. H1.(3) is included to ensure that the operation of the shipping / receiving trucks is not extended beyond the stated hours to prevent an adverse effect resulting from the operation of the Facility / Equipment.

ORGANIC WASTE MANAGEMENT

BUILD IN ACCORDANCE AND AS-BUILT DRAWINGS

(19) Conditions I1, I2, and I3 are included to ensure that the Facility is operated in accordance with the Application and not in a manner which the Director has not been asked to consider.

COMPLAINTS RESPONSE PROCEDURE

(20) Condition I4 is included to require the Company to respond to any environmental complaints regarding the operation of the Facility, according to a procedure that includes methods for preventing recurrence of similar incidents and a requirement to prepare and retain a written report.

SERVICE AREA, APPROVED WASTE TYPES, RATES & STORAGE

(21) Conditions I5, I6, I7, and I8 are included to specify the approved Organic Waste receipt rate and the approved Organic Waste types and the service area from which Organic Waste may be accepted at the Facility based on the Company's Application. Condition I12 is also included to specify the maximum amount of waste that is approved to be stored at the Facility.

SIGNS

(22) Conditions I10, I11 and I12 are included to ensure that the Facility's users, operators and the public are fully aware of important information and restrictions related to the operation of the Facility.

FACILITY SECURITY

(23) Conditions I13, I14, and I15 are included to ensure that the Facility is sufficiently secured, supervised and operated by properly trained personnel and to ensure controlled access and integrity of the Facility by preventing unauthorized access when the Facility is closed and no Facility personnel are on duty.

FACILITY OPERATIONS

(24) Condition I16 is included to specify the hours of operation for the Facility to ensure that the hours of the Facility's operations do not result in an Adverse Effect or hazard to the natural environment or any persons.

(25) Conditions I9, I17, I20, I21, I22, I23, I24, I25 are included to ensure that waste handling and storage are undertaken in a way which does not result in an Adverse Effect or hazard to the natural environment or any persons.

(26) Condition I18 is included to ensure that only the approved waste types are accepted and processed at the Facility.

(27) Condition I19 is included to specify the requirements for handling of the Rejected Waste that was inadvertently received at the Facility.

(28) Condition I24 is included to specify odour control measures to minimize the potential for odour emissions from the Facility.

FACILITY INSPECTION AND MAINTENANCE

(29) Conditions I49 to I56 are included to require the Facility to be maintained and inspected thoroughly and on a regular basis to ensure that the operations at the Facility are undertaken in a manner which does not result in an Adverse Effect or hazard to the natural environment or any persons.

QUALITY CRITERIA / TESTING / MONITORING

(30) Condition I57 is included to require all Organic Waste received at the Facility and shipped from the Facility to be characterized so that only Organic Waste approved by this Approval is handled at the Facility and that all waste transferred off-site is handled in accordance with the Ministry’s requirements.

END USE OF PROCESSED MATERIAL

(31) Conditions I58 are included to ensure that all Digestate is processed and disposed of in accordance with the Ministry’s regulatory requirements and in a manner that protects the health and safety of the public and the environment.

NUISANCE IMPACT CONTROL AND HOUSEKEEPING

(32) Conditions I59 is included to ensure that the Facility is operated and maintained in an environmentally acceptable manner which does not result in an Adverse Effect or hazard to the natural environment or any persons.

OPERATIONS MANUAL AND TRAINING

(33) Conditions J and K are included to ensure that personnel employed at the Facility are fully aware and properly trained on the requirements and restrictions related to the Facility operations under this Approval.

EMERGENCY RESPONSE AND CONTINGENCY PLAN AND EMERGENCY SITUATIONS RESPONSE AND REPORTING

(34) Condition L is included to ensure that the Company is prepared and properly equipped to take action in the event of an emergency situation.

(35) Condition M is included to require further spill notification to the Ministry, in addition to the requirements already listed in Part X of the Act.

RECORD KEEPING AND RETENTION

(36) Condition N is included to ensure that detailed records of Facility activities, inspections, monitoring and upsets are recorded and maintained for inspection and information purposes.

NOTICE REGARDING HEARINGS

In accordance with Section 139 of the *Environmental Protection Act,* within 15 days after the service of this notice, you may by further written notice served upon the Director, the Ontario Land Tribunal and the Minister of the Environment, Conservation and Parks, require a hearing by the Tribunal.

In accordance with Section 47 of the *Environmental Bill of Rights,* 1993, the Minister of the Environment, Conservation and Parks will place notice of your request for a hearing on the Environmental Registry.

Section 142 of the *Environmental Protection Act* provides that the notice requiring the hearing shall state:

a. The portions of the renewable energy approval or each term or condition in the renewable energy approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The signed and dated notice requiring the hearing should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The renewable energy approval number;
4. The date of the renewable energy approval;
5. The name of the Director;
6. The municipality or municipalities within which the project is to be engaged in;

This notice must be served upon:

Registrar*
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5
OLT.Registrar@ontario.ca

and

The Minister of the Environment,
Conservation and Parks
777 Bay Street, 5th Floor
Toronto, Ontario
M7A 2J3

and

The Director
Section 47.5, *Environmental Protection Act*
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or www.olt.gov.on.ca**

Under Section 142.1 of the *Environmental Protection Act,* residents of Ontario may require a hearing by the Ontario Land Tribunal within 15 days after the day on which notice of this decision is published in the Environmental Registry. By accessing the Environmental Registry at https://ero.ontario.ca/, you can determine when this period ends.

Approval for the above noted renewable energy project is issued to you under Section 47.5 of the *Environmental Protection Act* subject to the terms and conditions outlined above.

DATED AT TORONTO this 25th day of April, 2023

Mohsen Keyvani, P.Eng.
Director
Section 47.5, *Environmental Protection Act*

KD/
c: District Manager, MECP Ottawa
Aaron Law, Ontario Clean Water Agency
Brad Sweet, Ontario Clean Water Agency
John Felix, Town of Petawawa

APPENDIX B. SECONDARY CONTAINMENT PLAN/ STORMWATER MANAGEMENT PLAN

PETAWAWA NET-ZERO PROJECT
STORMWATER MANAGEMENT AND SECONDARY CONTAINMENT
DESIGN REPORT
560 ABBIE LANE, PETAWAWA, ONTARIO

STONECREST ENGINEERING INC.
440 Wright Blvd.
STRATFORD, ONTARIO

File no. 8549
August 16, 2024

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PETAWAWA NET-ZERO PROJECT
STORMWATER MANAGEMENT AND SECONDARY CONTAINMENT
DESIGN REPORT
560 ABBIE LANE, PETAWAWA, ONTARIO

File no. 8549

1.0 INTRODUCTION

Stonecrest Engineering Inc. was retained by Anaergia to provide the design for secondary containment and stormwater management to satisfy the requirements for a Renewable Energy Approval under Ontario Regulation 359/09.

The subject property is located at 560 Abbie Lane, Petawawa, Ontario. The property is an established Water Pollution Control Plant (WPCP) with anaerobic digestion.

This report documents the design of a stormwater management system secondary containment design for the site located at 560 Abbie Lane in the Town of Petawawa. This report is to be read in conjunction with other submitted documents, including the engineering design drawings (provided separately) which provide the proposed design and construction details.

2.0 SITE INFORMATION

2.1 Overview of Site Operations

The Petawawa Water Pollution Control Plant has existing anaerobic digestion facilities to digest an organic slurry and wastewater solids. The Petawawa Net-Zero Project is upgrading the existing facilities to generate electricity using combined heat and power (CHP). Overall, the upgrades account for an impervious area increase of less than 1%.

The modifications to the site include:

- Improving the anaerobic digesters so they are compliant with current regulations administered by Technical Standards and Safety Authority;
- Modifying the digesters so they can accept an organic slurry;
- Construction of concrete pads for placement of equipment;
- Addition of biogas cleaning and conditioning equipment; and
- Installation of a CHP with a nameplate capacity of 200 kWe to generate electricity and heat.

2.2 Contaminant Overview

The anaerobic digestion facility is designed to handle and process biomass, source separated organics, farm materials, and digestate. The primary function of the anaerobic digestion facility is to treat

wastewater from the Town of Petawawa, reducing the risk of contamination. The wastewater solids fed into the digester have a total solids content of 2-3%. The organic slurry is expected to have a total solids content of 15%, and will make up approximately 10% of the liquid being fed into the digesters.

2.3 Existing Drainage Patterns

The site has an established stormwater management network which utilizes swales to reduce flow velocities and directs water towards the property outlets.

The drainage patterns and features referenced in this report are from the Site Investigation Report completed by Cambium (Cambium 11757-002) and the topographical survey provided to Stonecrest by Anaergia.

Figure 1 provides an overview of the existing drainage at the site. Most of the property outlets through the swale and culvert located on the east side of the property. These flows ultimately are received by the Ottawa River. The north-west corner of the property is drained via a swale to the unnamed water course.

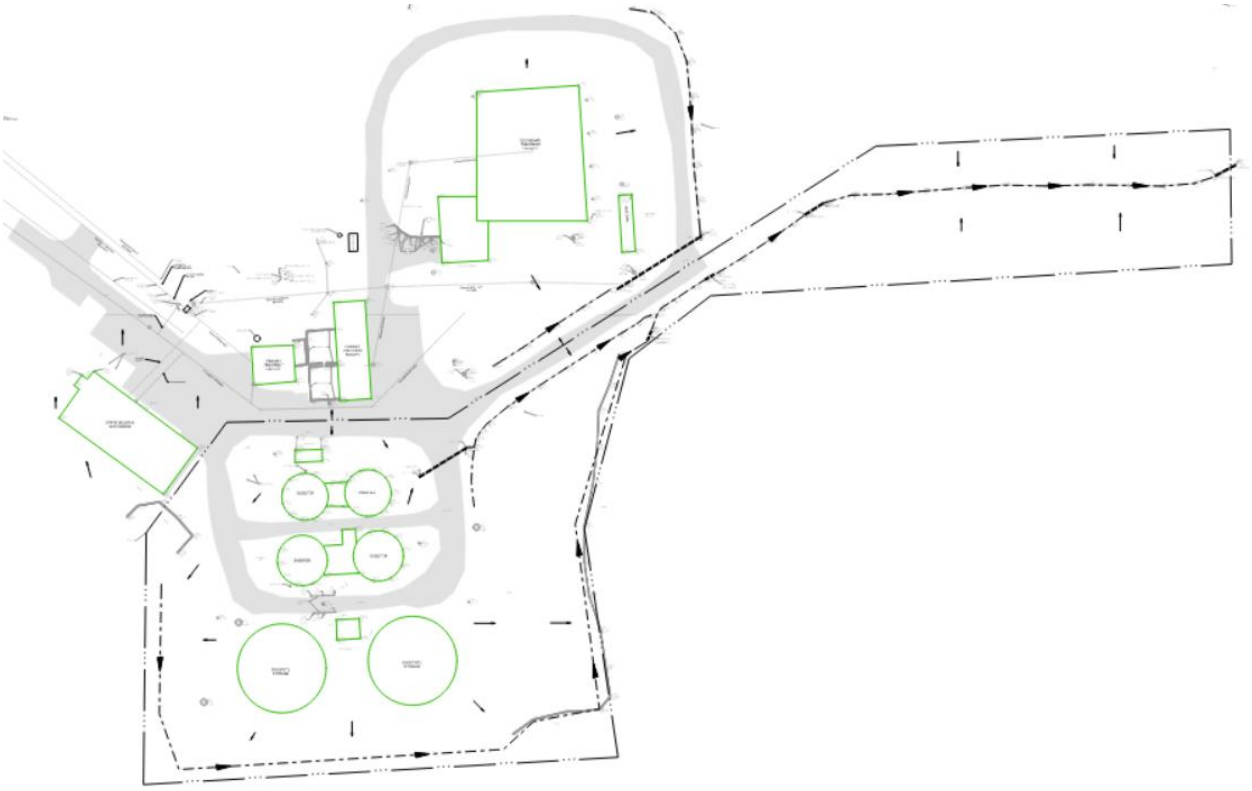

Figure 1: Existing Drainage Patterns and Features on the Site

3.0 DESIGN CRITERIA

3.1 Site Definition

The area of study for the secondary containment and stormwater quantity controls were limited to the areas which may be affected by the current proposed development. It was decided that the stormwater in all areas outside of areas outside of secondary containment were appropriately handled by existing stormwater infrastructure.

The area of study was determined by observing the flow directions (as shown in Figure 1) around the anaerobic digestion equipment. The study area boundary encapsulates the area that may be affected in the event of a spill.

3.2 Secondary Containment Design Criteria

The *Guidelines for environmental protection measures at chemical and waste storage facilities* set out by the Government of Ontario recommend a containment capacity of 100% of the volume of the largest tank plus the greater of 10% of the volume of the largest tank or 10% of the aggregate volume of all remaining tanks. Other factors to consider during design include:

- Ensure the containment area shall be structurally sound and has soils or is lined with material having adequate hydraulic conductivity to prevent excessive infiltration.
- The containment area shall be designed to withstand a 100-year storm event.
- All grades within the project area shall be sloped towards the containment pond to ensure no pooling of contaminants occurs.

3.3 Stormwater Management Design Criteria

The Town of Petawawa follows the Stormwater Management Criteria set out in the Ontario Ministry of the Environment *Stormwater Management Planning and Design Manual (2003)* for Water Quality.

As the receiving aquatic habitat of the project area (Ottawa River) is relatively insensitive to stormwater impacts, Basic Protection can be used for the design of end-of-pipe volumes. Basic Protection corresponds to the long-term average removal of 60% of suspended solids. Table 1 outlines the requirements for Basic Protection set out by the MECP Design Manual.

Table 1: Water Quality Storage Requirements

% Impervious	0%	35%	20.8%
SWMP Type	Dry-Pond (Continuous Flow)		
Storage Volume Requirement	0 m^3/ha	90 m^3/ha	53.6 m^3/ha

The new additions to the site account for less than a 1% increase in impervious area. With such minimal increase to this value, the Town of Petawawa permitted the assumption that the existing infrastructure on the site could handle storm water runoff volumes.

To protect the receiving aquifer, the secondary containment capacity must also be able to handle the volumes produced by a 100-year design storm event.

4.0 SECONDARY CONTAINMENT DESIGN

Secondary containment must be provided for the structures associated with the renewable energy project that store potential contaminants. This includes Digesters 3 and 4, and both Digestate Storage tanks. Digesters 1 and 2 have been decommissioned and no longer store any material, nor is there an intention to store material in these digesters in the future. Table 2 outlines the above grade capacities of these facilities.

Table 2: Above Grade Storage Volumes.

Storage Structure	Above Grade Volume
Digester 3	776 m^3
Digester 4	967 m^3
Digestate Storage 1	2100 m^3
Digestate Storage 2	2100 m^3

As per the criteria outlined in Section 3.3, the volume required for secondary containment is 2484 m^3. This value does not include the necessary volumes to withstand a 100-year storm. The secondary containment pond shall be lined with suitable soils.

5.0 STORMWATER MANAGEMENT DESIGN

5.1 Design Approach

The increase in stormwater quantity is of minimal concern as there is only a 0.9% increase in imperviousness in the study area. However, to properly design a secondary containment system the containment area must be able to hold both the secondary containment design volume with the additional safety factor of the volume for a 100-year storm.

Runoff volumes for a 100-year 24-hour storm were calculated using the Modified Rational Method. IDF data used was for PEMBROKE CLIMATE Station (6106367).

5.3 Drainage Area and Control Methods

The discharge rates are consistent with the previous discharge rates due to the minimal increase in impervious surfaces. The following components form the conditions of the study area:

Study Area Conditions

i)	Buildings/digesters	1657 m^2
ii)	Pavement/concrete	2380 m^2
iii)	Grassed	15341 m^2
		19378 m^2

To meet the stormwater management quantity control criteria, an additional 510 m^3 of storage is required.

5.4 Quality Control

The study area is 19378 m2 (1.9 ha), with an imperviousness of 21%. Based on the criteria outlined in Section 3.3, 104 m3 of Continuous Flow Dry-Pond is prescribed to achieve 60% suspended solids removal. Due to the increased pond volume required for secondary storage, the storage volume required for water quality control is exceeded.

To ensure water quality is protected from surface water contamination, the surface water features (swales and pond) are to be vegetated.

6.0 DESIGN SUMMARY

The study area drains into the existing swales surrounding the study area which direct surface water to the pond. The pond has sufficient volume to hold both the required volume for secondary containment and for a 100-year storm event. The total storage volume required is 2994 m^3.

The outlet of the pond shall be through a 600 mm pipe with a gate valve. The valve shall be left open to allow for stormwater flow to pass through the site outlet. As a spill is unlikely to occur rapidly and the with the length of the proposed flow path there should be sufficient time to manually close the valve prior to discharging into the receiver. In the event of a spill, the valve shall be manually closed and kept closed until the spill can be appropriately remediated. The pond shall be lined with material having a low hydraulic conductivity to minimize excessive infiltration.

The area north of the study area which previously drained to the same swale has been redirected to a new, adjacent swale of equivalent storage volumes. This outlet of this swale ties into the existing outlet to the Ottawa River. No additional runoff volumes are expected on the site.

All swales and the pond shale be vegetated to enhance nutrient uptake and reduce erosion, improving water quality reaching the site outlet. Several factors to consider when selecting plants include but are not limited to climate conditions, soil conditions, frequency of flooding, maintenance requirements, and availability.

7.0 CONCLUSION AND RECOMMENDATIONS

In summary, the features of the storm water management system are as follows:

- A containment pond sized for secondary storage of digester and digestate storage materials able to withstand the runoff volumes produced from a 100-year design storm event.
- Recreation of the existing outlet swale to handle the stormwater from the rest of the site.

We recommend the storm water management system be constructed as shown on the Drawing G1 which accompanies this report.

All of which is respectfully submitted.

STONECREST ENGINEERING INC.

Per:

N. Hendry, P.Eng.

PETAWAWA NET-ZERO PROJECT
STORMWATER MANAGEMENT AND SECONDARY CONTAINMENT
DESIGN REPORT
560 ABBIE LANE, PETAWAWA, ONTARIO

APPENDIX A – STORMWATER VOLUME ANALYSIS

Modified Rational Method:

Q=kCiA

k	2.78
C	Runoff coefficient
i	Rainfall Intensity (mm/hr)
A	Contribution Area (ha)

Rainfall Parameters:

Climate Station	Rainfall Event	I (mm/hr)	Duration (hr)
PEMBROKE CLIMATE	100-yr	3.4	24

Catchment Characteristics:

Surface Type	Area (m^2)	Runoff Coefficient (C)
Building	1657	0.9
Asphalt/Concrete	2379	0.9
Grassed	15342	0.17
Total:	19378	0.32

Storage Volume Calculation:

Rainfall Event	C	I (mm/hr)	A (ha)	Q (L/s)	Duration (hr)	Volume (m3)
100-yr	0.32	3.4	1.94	5.9	24	509.7

PETAWAWA NET-ZERO PROJECT
STORMWATER MANAGEMENT AND SECONDARY CONTAINMENT
DESIGN REPORT
560 ABBIE LANE, PETAWAWA, ONTARIO

APPENDIX B – STORAGE VOLUME ANALYSIS

Secondary Containment Volume Requirements

Structure	Above Grade Volume
Digester 3	776 m^3
Digester 4	967 m^3
Digestate Storage 1	2100 m^3
Digestate Storage 2	2100 m^3
Secondary Containment Required	**2484 m^3**

Total Storage Volume Required

100-year 24-hour Storm Volume	510 m^3
Secondary Containment Volume	2484 m^3
Total Volume:	**2994 m^3**

Existing Outlet Swale Stage Storage:

Pond Elevation	Area (m^2)	Volume (m^3)	Cumulative Volume (m^3)
113.40	0.59	0.00	0.00
113.50	13.35	0.70	0.70
113.60	47.88	3.06	3.76
113.70	112.05	8.00	11.75
113.80	205.12	15.86	27.61
113.90	291.39	24.83	52.44
114.00	418.90	35.51	87.95
114.10	5.27	21.21	109.16
114.20	8.26	0.68	109.84
114.30	11.95	1.01	110.85
114.40	16.28	1.41	112.26
114.50	21.28	1.88	114.14

Designed Outlet Swale Stage Storage:

Pond Elevation	Area (m^2)	Volume (m^3)	Cumulative Volume (m^3)
113.60	1.44	0.00	0.00
113.70	13.80	0.76	0.76
113.80	39.00	2.64	3.40
113.90	77.02	5.80	9.20
114.00	127.73	10.24	19.44
114.10	191.14	15.94	35.38
114.20	266.93	22.90	58.29
114.30	355.18	31.11	89.39
114.40	1306.17	83.07	172.46
114.50	1284.73	129.54	302.01
114.60	1265.37	127.50	429.51
114.70	1246.60	125.60	555.11

Secondary Storage Pond Design Stage Storage:

Pond Elevation	Area (m^2)	Volume (m^3)	Cumulative Volume (m^3)
113.00	0.00	0.00	0.00
113.10	337.94	16.90	16.90
113.20	694.06	51.60	68.50
113.30	1073.92	88.40	156.90
113.40	1477.82	127.59	284.48
113.50	1903.87	169.08	453.57
113.60	2162.67	203.33	656.89
113.70	2260.45	221.16	878.05
113.80	2359.23	230.98	1109.03
113.90	2458.95	240.91	1349.94
114.00	2559.64	250.93	1600.87
114.10	2661.30	261.05	1861.92
114.20	2763.92	271.26	2133.18
114.30	2867.50	281.57	2414.75
114.40	2972.05	291.98	2706.73
114.50	3077.56	302.48	3009.21

APPENDIX C. GROUNDWATER MONITORING PLAN

Ministry of the Environment, Conservation and Parks
Eastern Region
Ottawa District Office
2430 Don Reid Drive, Suite 103
Ottawa ON K1H 1E1
Phone: 613.521.3450
or 1.800.860.2195
Fax: 613.521.5437

Ministère de l'Environnement, de la Protection de la nature et des Parcs
Région de l'Est
Bureau du district d'Ottawa
2430, promenade Don Reid, unité 103
Ottawa (Ontario) K1H 1E1
Tél: 613 521-3450
ou 1 800 860-2195
Téléc : 613 521-5437

Ontario

December 17, 2024

Sent by email: twoodtke@petawawa.ca

The Corporation of the Town of Petawawa
1111 Vitoria Street
Petawawa, ON
K8H 2E6

Attention: Trevor Woodtke, Asset/Energy Management Coordinator

Dear Trevor:

Re: Town of Petawawa REA 5211-CM3MB6 - Condition I23 Review - Groundwater Monitoring Plan - Re-Submission

It is understood that Cambium Inc. was retained by the Town of Petawawa to prepare a groundwater monitoring plan to satisfy Condition I23 of the Renewable Energy Approval number 5211-CM3MB6.

The ministry has completed its review of the Town's groundwater monitoring plan submission entitled "Groundwater Monitoring Plan for the Petawawa Net Zero Project" completed by Cambium consultants and dated October 9, 2024. Electronic communication was sent to you on November 22, 2024 from the Ministry's Regional Technical Support Section advising you that the Groundwater Monitoring Plan you submitted had been reviewed and deemed acceptable.

Pursuant to REA 5211-CM3MB6 - Condition I23 Spill Containment, please accept this letter as written concurrence from the Ottawa District Manager with the Groundwater Monitoring Plan dated October 9, 2024.

If you have any questions, please do not hesitate to contact me, by cell phone at (613) 866-1386, or by e-mail at tracy.hart@ontario.ca. You can also contact your local Water Compliance Officer, Karine Bourgon, at 613-818-3667 or karine.bourgon@ontario.ca.

Yours truly,

Tracy Hart

Tracy Hart
Ottawa District Manager
Drinking Water and Environmental Compliance Division

ec: Scott Randolph, Chief Administrative Officer, Corporation of the Town of Petawawa, Email: srandolph@petawawa.ca
- Brad Sweet, Senior Operations Manager, Laurentian View Cluster, Ontario Clean Water Agency, Email: BSweet@ocwa.com
- Shannon Hamilton-Browne, Water Compliance Supervisor, MECP, Email: Shannon.hamiltonbrowne@ontario.ca
- Karine Bourgon, Water Compliance Officer, Email: karine.bourgon@ontario.ca

c: File SI-RE-PT-AB-442, Petawawa Water Pollution Control Plant, 560 Abbie Lane, Petawawa, ON, DWS # 120000587

CAMBIUM

Environmental

Geotechnical

Building Sciences

Construction Testing & Inspection

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(705) 742.7907

Website
cambium-inc.com

Mailing Address
P.O. Box 325,
Peterborough, Ontario
Canada, K9J 6Z3

Locations
Peterborough
Kingston
Barrie
Ottawa
Whitby

Laboratory
Peterborough

Professional Engineers Ontario

APGO

October 9, 2024

Town of Petawawa
1111 Victoria Street
Petawawa, ON K8H 2E6

Attn: Trevor Woodtke
Asset/Energy Management Coordinator

Re: Groundwater Monitoring Plan for the Petawawa Net Zero Project
Cambium Reference: 11757-004

Dear Trevor,

Cambium Inc. (Cambium) was retained by the Town of Petawawa (the Client) to prepare a groundwater monitoring plan for the Petawawa Net Zero Project (PNZP), which is situated within the Petawawa Water Pollution Control Plant (WPCP), located at 560 Abbie Lane, Petawawa, Ontario (the Site; Figure 1).

Cambium understands that the PNZP will transform the WPCP by upgrading the plant's existing anaerobic digesters, improving the digestion efficiency of the WPCP sludge, and allowing additional biosolids and organics (from food waste or fats, oils and grease) to be brought into WPCP from the Town and neighbouring wastewater plants as well as other biosolid producers. The resulting biogas production will be used in a Combined Heat and Power (CHP) unit. Upon completion, the PNZP will comprise a Class 3 anaerobic digestion facility that will receive, temporarily store, and process a maximum of 36,135 tonnes of liquid organic waste and generate a maximum of 200 kW of electricity per year.

A condition of Renewable Energy Approval Number 5211-CM3MB6 is the preparation of a groundwater monitoring plan that will identify any leaks in the partially below-ground Anaerobic Digesters and Digestate Storage Tanks.

The following sections provide the details of the baseline and ongoing monitoring and sampling plan for the Site, including the locations and construction of monitoring points, monitoring frequency and parameters, and contingency actions.

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Building Sciences

Construction Testing & Inspection

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Kingston
Barrie
Ottawa
Whitby

Laboratory
Peterborough

Professional Engineers Ontario

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October 9, 2024

SUBSURFACE CONDITIONS

Cambium completed a borehole investigation at the Site on May 17 to 18, 2021 (Cambium, 2021). Seven boreholes were advanced to depths ranging from 2 to 6.5 metres below ground surface (mbgs) or refusal. All borehole locations are shown in Figure 1. Four of the boreholes (BH) were completed as monitoring wells (MW) to allow for the ongoing measurement of groundwater elevations and water quality (see Figure 1).

Due to the variable nature of the soils onsite, subsurface conditions for the subject site have been separated into three areas, as shown on Figure 1. Table 1, below, shows each area with the corresponding boreholes advanced within the area.

Table 1 Areas of Investigation

	Area 1		Area 2	Area 3				
Borehole/ Monitoring Well	MW101 -21	BH105 -21	MW102 -21	MW103 -21	BH104 -21	BH106 -21	BH107 -21	MW10 8-21

Area 1 is located at the southeast side of the site where the buffer tank, slurry tank, and truck reception pad are to be located. Area 2 is located in the northern area of the Site where the gas conditioning and CHP area is to be located. Area 3 is located in the northern area of the Site where the dewatering building and digester upgrades are to be located.

The footprint of the treatment plant appeared to be built up approximately 1 meter higher than the surrounding area. This is likely due to the swampy, saturated nature of the area which was evident by the standing surface water observed surrounding the treatment plant footprint during the July 2021 field work.

Site conditions generally consist of up to 150 mm of topsoil overlying fill material mixed with sands, gravels, and rock. Beneath the fill material stratigraphy includes sand with varying amounts of gravel, underlain by finer grained sands and occasional silt or clay matrices (Cambium, 2021). Difficult drilling conditions were encountered within the fill material which may have included blasted rock

fill. This material may have been placed previously to fill in low lying areas or bridge soft, weaker materials.

Native subgrade soils encountered at the Site are variable but generally consist of sands to sandy silty clays overlying glaciofluvial deposits predominately consisting of sands with varying amounts of gravel, silt, and clay.

GROUNDWATER FLOW CONDITIONS

Four of the boreholes advanced during the geotechnical investigation were instrumented with monitoring wells (Figure 2). Monitoring wells MW101-21, MW102-21, and MW108-21 are screened between 0.91 and 3.91 mbgs. As groundwater was encountered almost near surface in MW103-21, the monitoring well was screened from 0.91 to 3.0 mbgs (Cambium, 2021).

Piezometric elevations measured in the four monitoring wells were on July 26, 2021, were used to estimate groundwater flow direction (Figure 2). Groundwater flow was to the northeast, toward the Ottawa River, with MW103-21 and BH108-21 located upgradient of the digester, and MW101-21 and MW102-21 located downgradient. Horizontal hydraulic gradients ranged from approximately 0.008 to 0.02 during the 2021 monitoring event.

Hydraulic conductivity of soils was estimated via single well hydraulic testing (slug tests). Results ranged over three orders of magnitude, from 4.89×10^{-7} to 1.27×10^{-5} m/s.

Monitoring Well	Hydraulic Conductivity (m/s)
MW101-21	4.89×10^{-7}
MW102-21	1.27×10^{-5}
MW103-21	8.24×10^{-6}
MW108-21	3.81×10^{-5}

Assuming a soil porosity between 0.15 and 0.30, average linear groundwater velocities during the 2021 monitoring event were between 0.4 and 54 m per year.

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GROUNDWATER MONITORING PROGRAM

Three of the four monitoring wells installed during the geotechnical investigation remain operational and will be used during the baseline and ongoing monitoring (MW101-21, MW103-21, and MW108-21, see Figure 1). A fourth monitoring well will be installed outside the footprint of the physical plant and bunding to provide a second downgradient monitoring point following the decommissioning of MW102-21.

Based on the groundwater flow directions measured during the July 2021, the recommended location of the replacement monitoring well is between Area 1 and Area 2, in the centreline of groundwater flow downgradient from the digestate storage tanks, as shown on Figure 2 and the attached draft site grading plan.

Initial Monitoring

To identify any seasonal trends in groundwater elevations, flow direction, or quality, and to establish baseline conditions, groundwater elevations in all four monitoring wells will be manually measured quarterly (every three months) for the first year of the program. Water levels will be measured manually during the quarterly events using an electronic water level meter.

During the first monitoring event, a pressure transducer data logger will be installed in the nearest downgradient monitoring well to enable ongoing, high-resolution (twice-daily) measurements of water levels and temperature. A barometric data logger will also be installed to compensate for changes in atmospheric pressure.

During the first monitoring event, all monitoring wells will be developed by mechanically surging the screened portion using a surge block and HDPE tubing. During all events, static water levels will first be measured, then each well will be purged of a minimum of three well volumes or until water runs clear and the following field parameters stabilize:

pH, temperature, electrical conductivity, dissolved oxygen, oxygen reduction potential.

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Following well purging, groundwater samples will be taken from all monitoring wells during each quarterly monitoring event and analyzed at the project laboratory for the following physical and geochemical indicators of potential impacts from the PNZP operations:

pH	total dissolved solids	total coliform, E. coli.	total Kjeldahl nitrogen
alkalinity	dissolved metals	total ammonia nitrogen	chemical oxygen demand
chloride	total organic carbon	nitrate	biological oxygen demand
potassium	total dissolved phosphorus	nitrite	dissolved methane

Samples will be collected in laboratory-provided containers, stored between 0 and 10°C, and be submitted under chain-of-custody to a CALA-certified laboratory for analysis within 24 hours of collection.

Blind duplicate samples will be collected at a rate of approximately 1:10 and analysed for the analytical suite listed above.

Ongoing Monitoring

A datalogger will remain installed and operational in the downgradient well for the duration of the monitoring program. Given the estimated groundwater flow rates at the Site, monitoring frequency will be reduced to semi-annually (twice yearly, during the spring and autumn) in the second and all subsequent years of the program.

Groundwater elevations in all four monitoring wells will be manually measured and samples will be taken from all monitoring wells during each monitoring event for the physical and geochemical indicators of potential impacts from the PNZP operations collected during the baseline events.

MONITORING RESPONSE PLAN

Trend Analysis

Water levels, and the physical and chemical indicator measurements will be evaluated immediately upon completion of analysis for abrupt shifts at a specific point in time (step trend) and for gradual changes over time that are consistent in direction (monotonic trend).

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A step change will be considered abrupt if any parameter:

1. which did not exceed the applicable Provincial Water Quality Objectives (PWQO) or O.Reg. 153/04 criteria during the baseline period is determined to subsequently exceed the corresponding criteria.
2. is less than the applicable criteria but is greater than three times the maximum baseline concentration if >5 times the laboratory limit of reporting, or five times the maximum baseline concentration if < 5 times the limit of reporting.

Monotonic trends will be evaluated using the Mann-Kendall or seasonal Kendall procedures, depending on the significance of seasonal changes measured during the baseline monitoring period. An increasing monotonic trend will be followed up if, over three consecutive monitoring events, there is:

1. sustained parameter concentrations of more than three times the maximum baseline concentration (for laboratory analyses)
2. sustained measurement of field parameters more than 10% greater than the maximum baseline results

Response Plan

The Client or their representative will promptly notify the MECP District Officer should any parameter exceed the applicable criteria at the Site, or if an abrupt shift or gradual changes indicate leakage from the facility to groundwater

If an abrupt step change or increasing monotonic trend is observed, the relevant wells will be promptly resampled to verify the result(s).

Should results be confirmed, monitoring frequency will be increased to quarterly, and the Client will coordinate an inspection of the PNZP and associated plant to determine the potential cause(s) of the observation.

Additional tasks that may be undertaken will depend on the nature of the observed changes and may include: additional analyses for a broader range of chemical indicators; further subsurface investigation; and/or detailed hydrogeological assessment of the Site.

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The response will continue until such time as the cause of the change(s) is determined and resolved, and it can be demonstrated the PNZP operations are consistent with the requirements of the REA for the facility.

CLOSING

We trust that the information in this submission meets your current requirements. If you have any questions regarding the contents of this plan, please contact the undersigned.

Respectfully submitted,

Cambium Inc.

Signed by:

Signed by:

A84A949C3B4C4B4...

Kyle Horner, Ph.D., P.Geo.
Senior Hydrogeologist – Senior Project Manager

Signed by:

PROFESSIONAL GEOSCIENTIST
KYLE N. HORNER
PRACTISING MEMBER
3066
ONTARIO

2024-10-09

KNH/knh

Encl. *Cambium Qualifications & Limitations*
Figure 1 Borehole Location Plan
Figure 2 Groundwater Configuration Plan
Grading Plan

\\cambiumincstorage.file.core.windows.net\projects\11700 to 11799\11757-004 Twn-Petawawa - PNZP GW Mntrng - 560 Abbie Ln\Deliverables\REPORT - Monitoring Plan\Final\2024-10-09 RPT PNZP GW Monitoring Plan.docx

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CAMBIUM QUALIFICATIONS AND LIMITATIONS

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Site Assessments

A site assessment is created using data and information collected during the investigation of a site and based on conditions encountered at the time and particular locations at which fieldwork is conducted. The information, sample results and data collected represent the conditions only at the specific times at which and at those specific locations from which the information, samples and data were obtained and the information, sample results and data may vary at other locations and times. To the extent that Cambium's work or report considers any locations or times other than those from which information, sample results and data was specifically received, the work or report is based on a reasonable extrapolation from such information, sample results and data but the actual conditions encountered may vary from those extrapolations.

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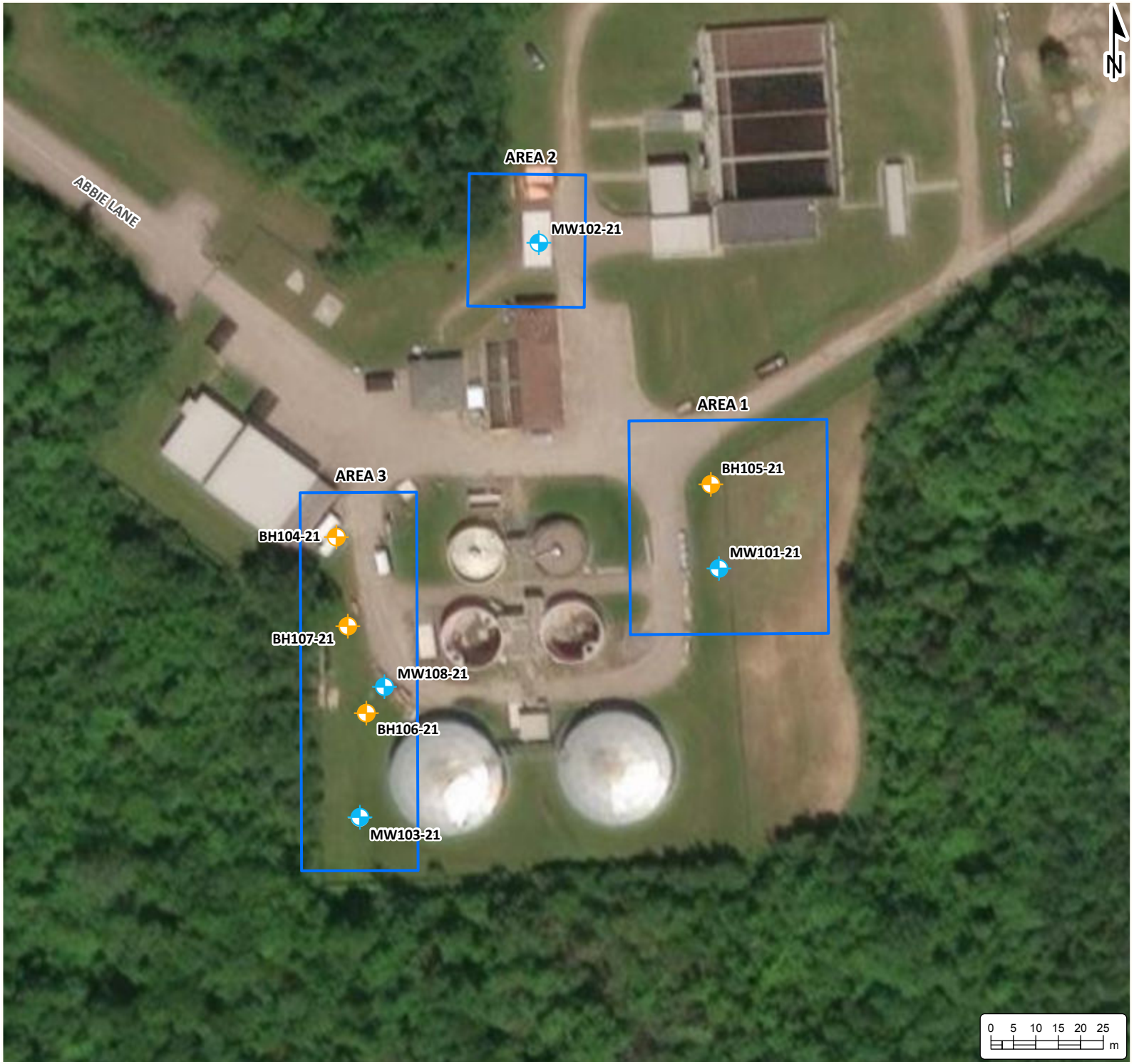

GROUNDWATER MONITORING PLAN

TOWN OF PETAWAWA
560 Abbie Lane
Petawawa, Ontario

LEGEND

- Borehole
- Monitoring Well
- Area of Interest

Notes:
- Aerial Imagery obtained from the Maxar (WV02) image captured on Jul 1, 2023 as shown in the 2024-03-28 version of the World Imagery map.
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- Distances on this plan are in metres and can be converted to feet by dividing by 0.3048.
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BOREHOLE LOCATION PLAN

Project No.:	11757-004	Date:	August 2024
		Rev.:	
Scale:	1:1,200	Projection:	NAD 1983 UTM Zone 18N
Created by:	LD	Checked by:	KH
Figure:	1		

O:\GIS\MXDs\11700-11799\11757-004 Twn-Petawawa - PNZP GW Mntng - 560 Abbie Ln\2024-08-06 Grounwater Monitoring 11757-004.aprx

GROUNDWATER MONITORING PLAN

TOWN OF PETAWAWA
560 Abbie Lane
Petawawa, Ontario

LEGEND

- Borehole
- Monitoring Well
- Proposed Monitoring Well
- Decommissioned Monitoring Well
- (196.71) Groundwater Elevation (July, 2021)
- Groundwater Contour (0.2m Interval)
- Groundwater Flow Direction (July, 2021)

Notes:
- Aerial Imagery obtained from the Maxar (WV02) image captured on Jul 1, 2023 as shown in the 2024-03-28 version of the World Imagery map.
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GROUNDWATER CONFIGURATION PLAN

Project No.: 11757-004		Date: October 2024	Rev.:
Scale: 1:1,200		Projection: NAD 1983 UTM Zone 18N	
Created by: LD	Checked by: KH	Figure: 2	

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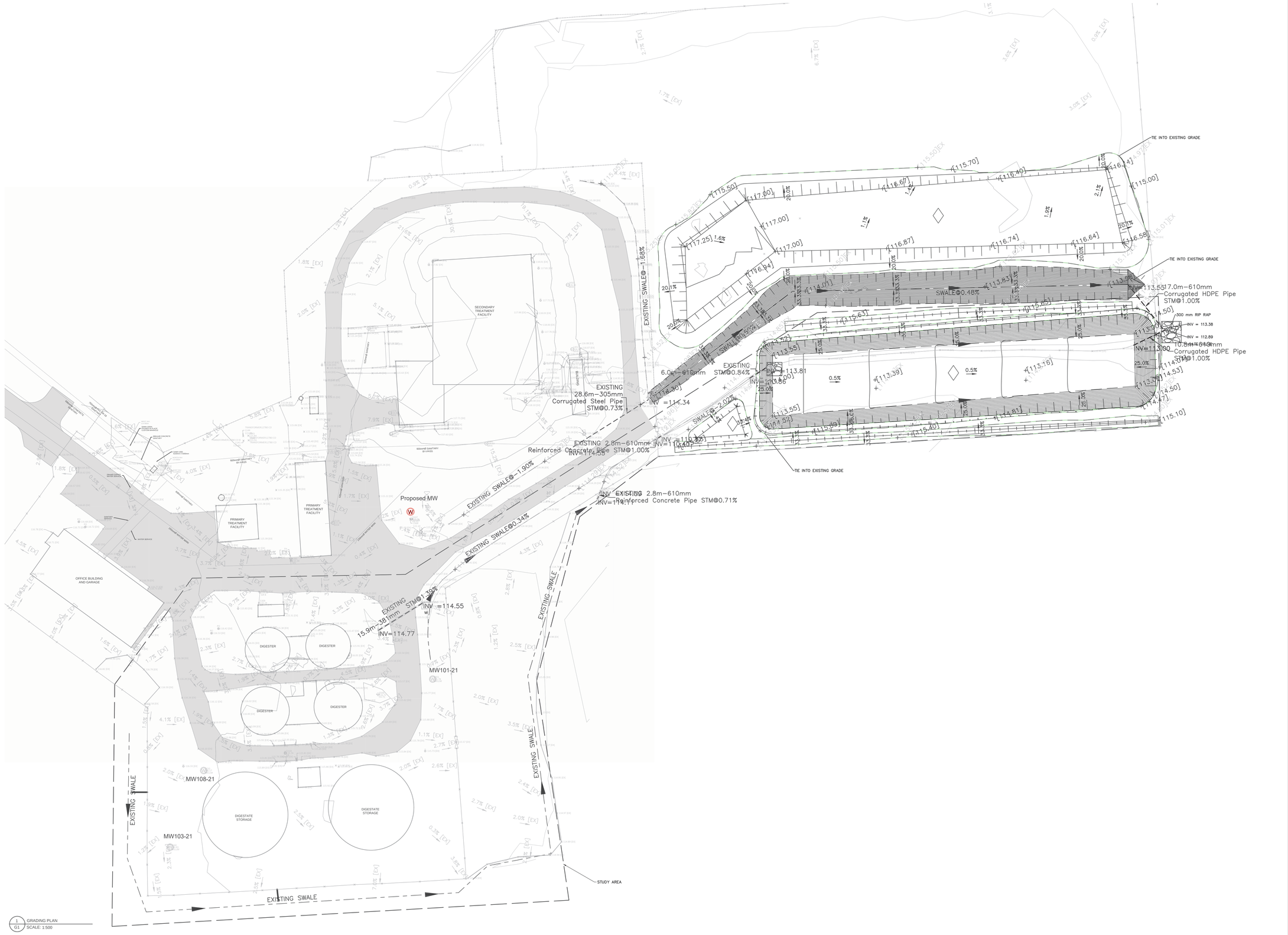


1 G1 GRADING PLAN
SCALE: 1:500

NOTES:

PLEASE READ NOTE PAGE AT BEGINNING OF DRAWING SET FOR ALL NOTES REGARDING THIS PROJECT

NO.	DATE:	DESCRIPTION:
A	AUG 16/24	ISSUED FOR REVIEW

LEGEND:

- PROPERTY LINE
- BUILDING
- FENCE LINE
- STORM SEWER
- SANITARY SEWER
- WATER SERVICE
- STUDY AREA
- [285.00] PROP. ELEVATION
- [285.00]EX EXIST. ELEVATION
- 2.8% PROP. SLOPE
- 2.8% EXIST. SLOPE
- 285.00 EXIST. CONTOUR
- SWALE
- Proposed Well

PROJECT NORTH | TRUE NORTH

DRAFT - NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER'S SEAL

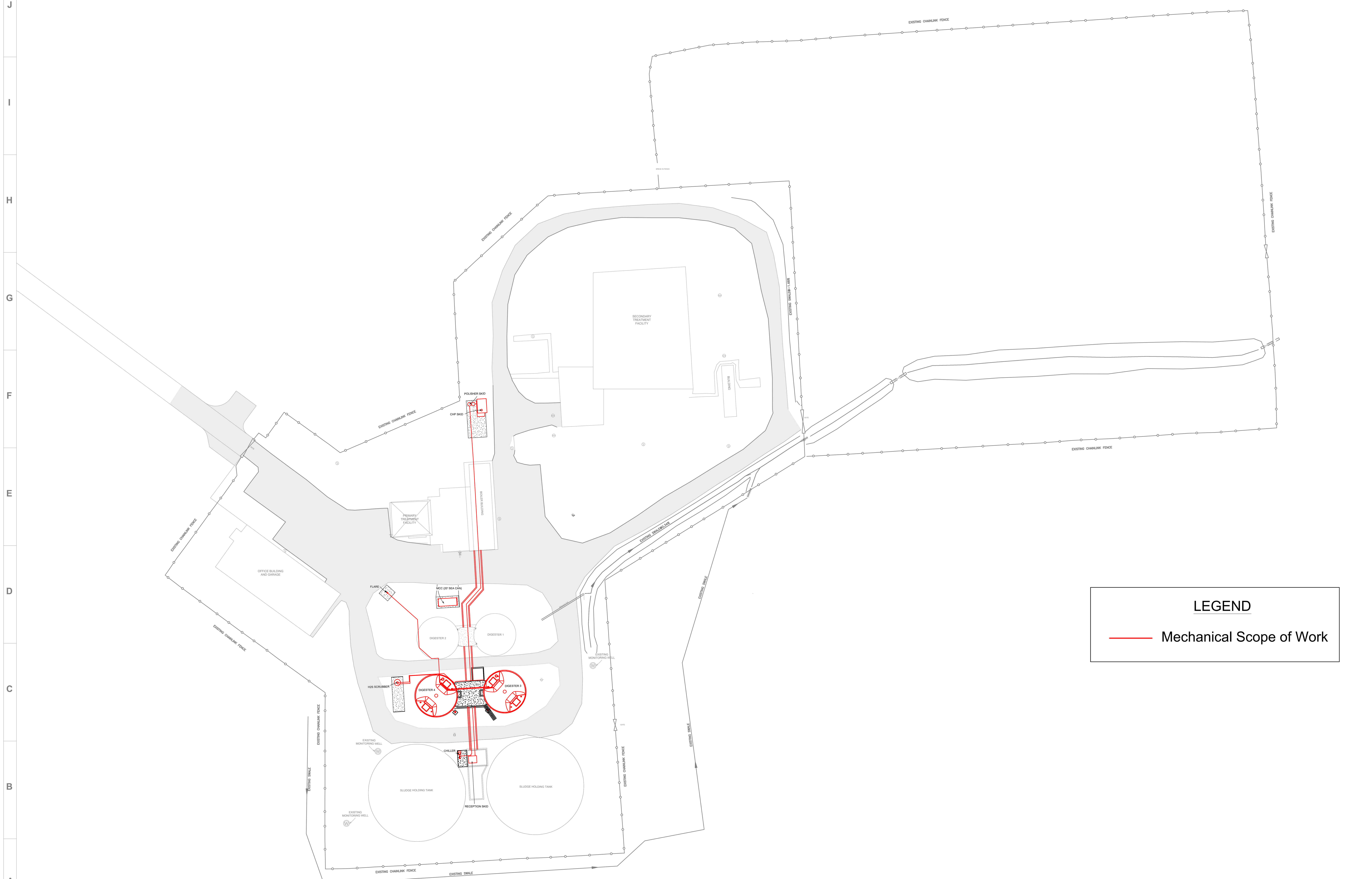
STONECREST ENGINEERING INC. EST. 1995
440 Wright Blvd Unit #2, Stratford, ON, N4Z 1H3
519-625-8025 ~ info@stonecrestengineering.com

CONTRACTOR TO CHECK ALL DIMENSIONS AND ELEVATIONS AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK

DO NOT SCALE THE DRAWINGS

CLIENT:	ANAERGIA
LOCATION:	560 ABBIE LANE, PETAWAWA, ON
PROJECT TYPE:	SECONDARY STORAGE AND STORMWATER DESIGN
PROJECT STATUS AND VERSION:	SITE GRADING
DRAWN BY: S.C.	PRINT DATE: 2024-08-16
PAGE DESCRIPTION:	GRADING PLAN
SCALE:	AS NOTED
FILE:	8459-1
PAGE NUMBER:	G1

APPENDIX D. ORIGINAL SITE PLAN & REVISED SITE PLAN



LEGEND

Mechanical Scope of Work

1 Phase 0 Site Arrangement
1 : 650

PRELIMINARY - NOT FOR CONSTRUCTION

2022-07-26 2:11:44 PM

REV NUM	DESCRIPTION	DRWN BY	CHK'D BY	DATE
0	INITIAL DESIGN	KL		2024.10.01

ATTENTION:

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" @ 22x34 or ½" @ 11x17, THEN DRAWING IS NOT TO SCALE - SCALE ACCORDINGLY

Anaergia
Breaking Barriers to Sustainability

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DRAWN:	KL
CHECKED:	
APPROVED:	
REFERENCE#:	
PROJECT NO.:	
SCALE:	1 : 600

PETAWAWA NET ZERO ENERGY PROEJCT

INITIAL SITE CONDITIONS

DRAWING NUMBER

D-01

REV
0

LEGEND

- Mechanical Scope of Work (red line)
- New Groundwater Monitoring Well (yellow line)
- New Secondary Containment Pond (green line)

1 Phase 0 Site Arrangement
1 : 650

REV NUM	DESCRIPTION	DRWN BY	CHK'D BY	DATE
0	INITIAL DESIGN	KL		2024.10.01
1	EDITS FOR REA AMMENDEMENT	KL		2024.10.11
2	EDITS FOR REA AMMENDEMENT	KL		2025.03.24

ATTENTION:
0 1/2 1
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Anaergia
Breaking Barriers to Sustainability

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DRAWN:	KL
CHECKED:	
APPROVED:	
REFERENCE#:	
PROJECT NO.:	
SCALE:	1 : 600

PETAWAWA NET ZERO ENERGY PROEJCT

REVISED SITE PLAN FOR REA AMMENDMENT

DRAWING NUMBER
D-02
REV
2

PRELIMINARY - NOT FOR CONSTRUCTION

2022-07-26 2:11:44 PM