APPENDIX E SOLID WASTE REPORT

Middlesex Centre Master Servicing Plan – Solid Waste Report

April 19, 2024

Prepared for:

Municipality of Middlesex Centre

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Sign-off Sheet

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Executive Summary

Stantec Consulting Ltd. was retained by the Municipality of Middlesex Centre to undertake a Master Servicing Plan for five different components. These components include water, wastewater, solid waste, transportation, and storm water management. This Solid Waste Report will be used to assess the existing level of service and programs, identify the changes in regulations and estimate the increase in population to assist in identifying how these will impact the future waste management system.

Stantec reviewed historical waste practices. In the present state, Public Works oversees waste management services for the Municipality. Bluewater Recycling Association (BRA) conducts the bulk of the waste collection and processing for the Municipality. Try Recycling owns and operates the Environmental Processing Facility and provides composting services. In 2021, BRA serviced 7262 households collecting 5,918 tonnes of material (3,847.5 waste and 2,070.8 recycling), with small additional volumes being collected at the 2 municipal run enviro depots.

Going forward, solid waste will continue to be a key component of municipal servicing. Waste's role in public and private sector sustainability targets has been discussed for years. But the impacts of climate change are showing up more in day-to-day collection and in how municipalities and other operators anticipate future risks.

Future waste generation is based, in large part, on projected future populations. This is combined with an estimate of kg/person per year of waste to calculate future waste quantities. Based on historical growth rates of waste volumes and the population growth assumptions from the Watson & Associates Growth Management Strategic Plan, February 2022, (Watson Report), the future waste generation rates were derived, and a 2.35% annual population growth rate was used for predicting future waste volumes. Waste generation rates of 238 kg/person/year were obtained from actual data produced from Bluewater Recycling Association historical records. Although this is lower than typically encountered, trends towards lower waste generation rates are not uncommon. The analysis assumed a consistent generation rate on a per capital basis for the growth rate which will likely be somewhat conservative.

Under new regulations, producers will be responsible for the end-of-life handling of their products and product packaging and producers will start to move towards paying one hundred percent of associated fees for the blue box program. By December 31, 2025, producers will be fully responsible for providing blue box services across Ontario under the Extended Producer Responsibility (EPR) regulations. The intention of the new regulations is to significantly increase the amount of waste recycled as the province moves towards the 'Circular Economy'. The municipally run Blue Box program will be dissolved with producers assuming the cost of recycling. An estimate of 50% of the total waste stream is predicted to be recycled from 2023 forward.

As the Municipality transitions away from the Blue Box program, there may be funds available from the savings (of no longer delivering the Blue Box Program) for enhancing other waste reduction programs, such as participating in waste-to-energy by developing a source separated organics collection system, increasing composting, and increasing public education to minimize waste generation. The challenge will

be to balance the cost of new programs with the long-term funding needed to cover escalating inflation costs for labour, fuel and equipment. The biggest opportunity for diversion would be with a source separated organics program.

Industry trends will likely follow regulatory updates imposed by the various levels of government. With over 68% of the average waste bag containing organic matter that can be composted or digested, the opportunity for great advances in waste reduction can be made. Composting on a large scale typically costs twice as much as landfilling the same material. However, if municipalities are legislated to collect organic matter and taxes imposed on landfilling, the prices will likely become more competitive. In the meantime, the use of home composters and digesters should be promoted further.

It is key for the municipality to have a dynamic waste management system including collection system that will be able to develop and evolve with changes in policy and environmental trends. During the transition period of moving to the new Extended Producer Responsibility model between (January 2023 – December 2025), exactly how producers, collectors, municipalities, and the general public respond to these new pieces of legislation will determine how waste will be handled in the next few years. Ultimately the total amount of waste destined for landfilling should decrease, depending on the success of the program(s). One of the key concerns of municipalities is that producers may switch packaging to compostable material thereby shifting a portion of the recycling stream back to the waste stream. This transition will have to unfold and may result in changes to EPR regulations if it evolves in a negative way.

It is anticipated that recycling should move from the historical 35% diversion to closer to 60% and that the volume of waste generated per capita should decrease. Future predictions of waste volumes and the effectiveness of EPR should be reviewed in about 3-5 years once the transition has occurred. The recommendation is to maintain the status quo and monitor changes associated with the EPR model over the next few years.

1.0 INTRODUCTION

Stantec Consulting Ltd. was retained by the Municipality of Middlesex Centre to undertake a Master Servicing Plan for five different components. These components include water, wastewater, solid waste, transportation, and storm water management.

Planning for each component is addressed in a separate report which are then compiled and summarized in the Master Servicing Plan. This report addresses Solid Waste Management.

Projections of future waste generation based on population/growth projections will be developed in conjunction with future waste diversion and disposal goals for which a range of alternative strategies will be developed. Based on population/growth projections and the waste diversion and disposal alternatives technically and economically feasible systems, facilities, and equipment will be identified that will be required to implement the Waste Management Plan.

Relevant statutes, regulations, policies, and guidelines will be reviewed (Section 4.0) to determine which regulations, will impact how the Municipality manages its waste both now and in the near future.

This Report will also assess the existing level of service and existing servicing components. Municipal waste management programs, policies, procedures, systems, and facilities will be inventoried, current waste quantities will be determined, and a summary of diversion and disposal options and identification of relevant trends in waste management will be provided.

The Municipality's current system of solid waste collection and management provides residents with an excellent level of service. The goal of this report is to:

- Describe the system in its present state;
- Identify and describe the new waste management regulations in the province designed to increase diversion rates;
- Discuss the transition phase as recycling regulations shift from municipality responsibilities to Producer responsibilities; and
- Understand how future regulations may impact the system.

2.0 WORK SCOPE

This Solid Waste Report will be used to generate a Waste Management Plan which will provide a status report of how much waste is currently being generated within Municipality of Middlesex Centre (Municipality) at present and how it is dealt, in terms of diversion and disposal, including waste generated both by the Municipality and the private sector. Projections of future waste generation based on population/growth projections will be developed in conjunction with future waste diversion and disposal goals for which a range of alternative strategies will be developed. Based on population/growth projections and the waste diversion and disposal alternatives technically and economically feasible systems, facilities, and equipment will be identified that will be required to implement the Waste Management Plan.

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3.0 EXISTING LEVEL OF SERVICE

This section describes the level of service currently existing in the Municipality. The entire waste management system in Ontario is under a regulatory driven state of transition which is occurring between January 1st, 2023 through to December 31, 2025 after which, the Producer Responsibility model for recycling will be fully implemented. This transition is detailed in Section 4 of the report.

3.1 EXISTING SERVICES

3.1.1 Middlesex Centre Public Works Department

Public Works oversees the waste management services for the Municipality. The department's responsibilities and assets include:

- Recommending tax rates for Waste Management services to Council to pay for the collection and disposal of solid waste and to partially subsidize collection and processing of recyclables.
- Overseeing contractors for the automated collection system where solid waste and recyclables are picked up once a week with one pass by the same truck (co-collection).
- Owning two Enviro Depots located in the Municipality of Middlesex Centre, namely the Denfield Road Enviro Depo and the Longwoods Road Enviro Depot.
- Owning and sharing one tandem truck with Public Works for collection of bulky items.
- Owning 3 roll-off bins for use at enviro depots.

3.1.2 Bluewater Recycling Association (BRA)

Bluewater Recycling Association (BRA,) was founded by municipalities located in southwest Ontario including Middlesex Centre. These member municipalities include ones located in Huron, Perth, Lambton, and Middlesex Counties in Southwestern Ontario. It is a non-profit corporation governed by an elected representative from each municipality and has provided collection services for all households for solid waste and recycling for nearly 30 years. With the transition in place, the future of BRA is in limbo depending upon their success in bidding on future recycling contracts with Producer Organizations as responsibility for recycling transfers from municipalities to producers.

Currently the BRA represents 21 municipalities servicing nearly 150,000 residents and over 63,000 households and has been in operation for over 20 years. Now in its third decade, the BRA has continually adapted, changed, and been at the forefront of waste management and reduction. The current diversion rate for BRA is close to 30% which puts it in the middle of its category along with the volume of waste it collects per capita.

BRA provides the following services to Middlesex Centre until contracts expire as required under the transition period:

- Co-collecting solid waste and recycling using an automated cart system for the Municipality as part of a collection fleet of 43 trucks (6 front end, 1 hook lift, 36 dual stream side load trucks).
- Collecting, processing and disposal of residential garbage, recyclable materials, organics, leaf and yard waste.
- Operating two Enviro depots.
- Working with Mars Environmental to provide front end and roll off bin service for waste and recyclables.
- Owning and Operating the Materials Recovery Facility (MRF) located in Huron Park.

BRA is responsible for providing solid waste management services to all residents in the municipalities that are members. The services provided by BRA include providing service to small businesses in Business Improvement Areas (BIAs) along residential collection routes, to municipal and regional facilities, and to schools (recycling collection only).

BRA does not own or operate any landfill site or transfer station.

3.1.3 Try Recycling

Try Recycling operates an environmental processing facility which includes accepting a number of waste streams (non-hazardous) including bulky items at Clark Road in London Ontario. Their assets and services include:

- Owning and operating the Try Recycling Environmental Processing Facility on Clarke Road in London.
- Providing composting services for leaf and yard waste in southwestern Ontario.
- Providing services for a fee as listed on the tryrecycling.com website.
- Working with BRA to receive leaf and yard waste for composting.

Try is in the process of installing a new GORE Cover in-vessel composting systems at their Clark Side Road which will comply specifically with Canadian licensing requirements. The Gore Cover is designed for ease of use and feature low investment and operating costs. These covers utilize semi-permeable laminate and oxygen-controlled pressurized aeration, and system features include control unit, tarpaulin retainer, temperature profile probe, oxygen/ temperature probe, winding gear, ventilator station, drainage systems, in-floor aeration channels and the GORE Cover.

3.2 SOLID WASTE AND RECYCLING COLLECTION

Middlesex Centre oversees an automated co-collection system where solid waste and recyclables are picked up once a week. If a collection falls on a holiday, the collection will occur as scheduled except for Christmas and New Year's Day when collection will be rescheduled to an alternate date. During 2022 in Middlesex Centre, waste was collected from bins, available in three different sizes;

1 a small-sized bin of 35 gallons (US) at $120 per year,

2 a medium-sized bin of 65 gallons (US) at $222 per year,

3 a large-sized bin of 95 gallons (US) at $324 per year.

In addition, there are two options for a recycling bin (a medium (65 Gallons) or large (95 Gallons)) that are complementary and have no fees attached. It should be noted that every property receives a small waste bin and a large recycling bin, by default. However, the waste bin size can be increased depending on the household's waste needs.

The Blue Box Program was launched in the mid-1980s as a partnership between industry, and provincial and municipal governments. Today nearly 99% of the Ontario population has access to recycling. The framework of the Waste Diversion Act financially supported the Blue Box program. The net costs of the program were previously shared on a 50/50 basis between producers whose packaging is collected in the program, and the municipalities that have a Blue Box Program (i.e., all municipalities with a population greater than 5,000, including Middlesex Centre). Currently, the Blue Box program in Ontario is shifting to a waste management approach where producers are responsible for the waste generated from their products and packaging. Further details on the transition are provided in **Section 4.2**

Solid waste and recyclables collection is done by BRA. Refer to **Figure 3-1** for a map of collection areas provided by the BRA.

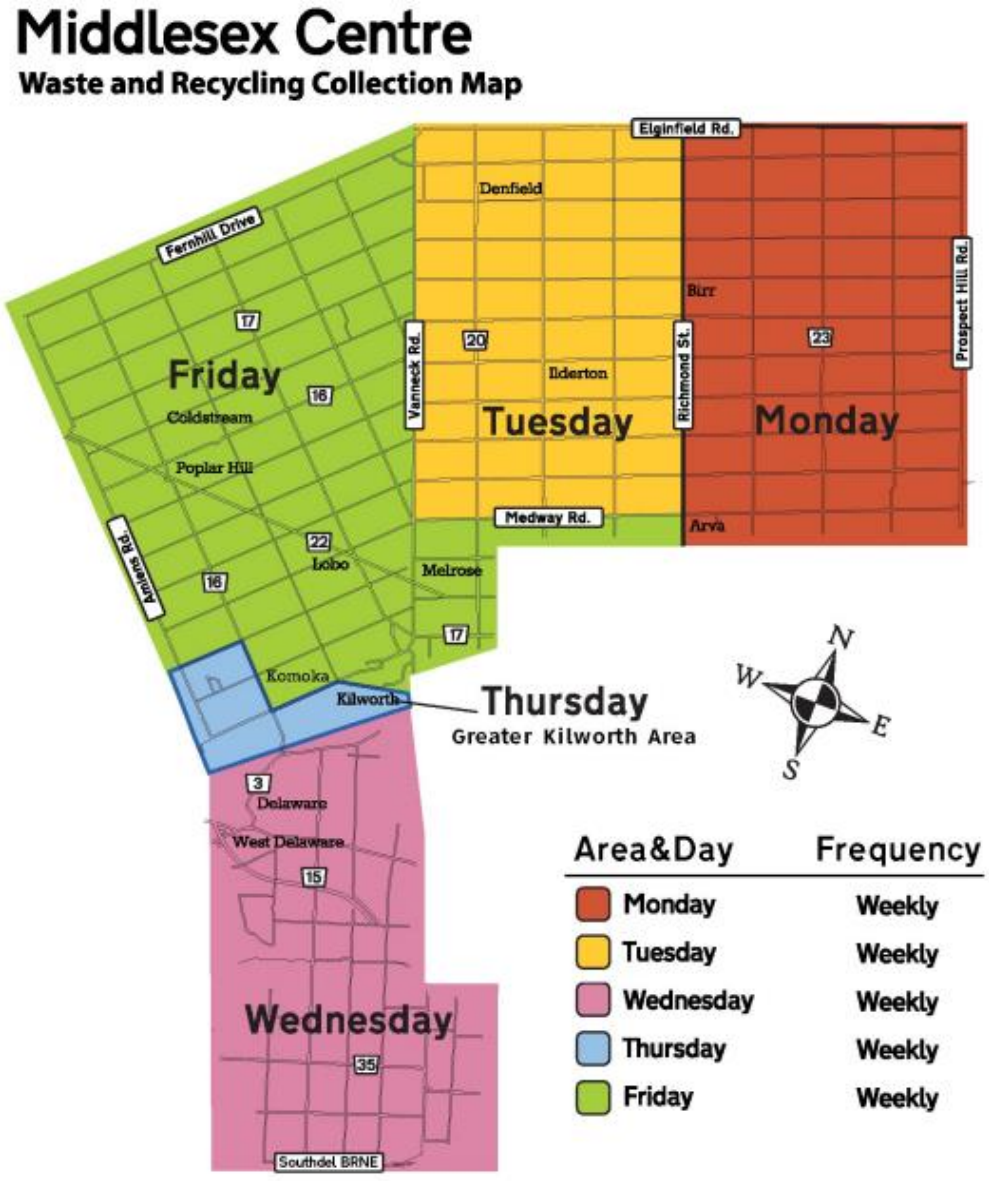


Figure 3-1: Solid Waste and Recycling Collection Map for Middlesex Centre

Unacceptable waste items include:

- Foam containers of any kind;
- Pails or buckets exceeding twenty (20) litres capacity;
- Containers or materials previously used for hazardous materials;
- Biological containers;
- Household items;
- Construction materials; and
- Scrap metal.

BRA collects the following recyclables but not limited to:

- Fibre/Paper materials (e.g., loose newspapers, flyers, cardboard cartons);
- Glass materials (e.g., all clear and coloured glass food and beverage containers; caps, lids, and corks to be removed; organic materials to be emptied);
- Metal materials (e.g., aluminum and steel beverage and food cans; clean aluminum foil; empty aerosol containers; and empty metal paint cans); and
- Plastic materials (e.g., grocery and retail bags stuffed in one tie bag).

More detail is available on their website at www.bra.org

3.3 HOUSEHOLD HAZARDOUS WASTE

Household hazardous waste generated by residents of Middlesex Centre can be dropped off at the Household Special Waste Drop-off Depot on Manning Drive in London. Drop off is allowed under a special arrangement with the County of Middlesex and the City of London.

Permitted household hazardous waste includes cleaners, batteries, medicine, compact florescent lights, vehicle fluids, paint, solvents, fertilizers, pesticides, and propane tanks.

3.4 BULKY, APPLIANCES, AND FURNITURE ITEMS

Bulky waste cannot be disposed of at curbside. Bulky waste/oversized items can be disposed during certain events such as a spring clean-up or through a renovation project where a containerized service such as Mars Environmental can be utilized. These may be brought directly to Try Recycling or the nearest landfill site which can be found on the bra.org website. It should be noted that people should call the landfill site ahead of time to avoid any disappointment in not being able to dispose of their materials and be expected to pay a fee at the drop-off location. Permitted waste includes household items too large for curbside collection, cold ashes, small furnishings, rubber tires, clean wood products, appliances, and scrap metal.

Unacceptable items include car batteries, propane tanks, explosive and combustible materials, hazardous and toxic materials, liquid waste materials, brick, concrete, shingles, asphalt and other construction materials, fast food outlet and restaurant waste, and animal carcasses and excrement. Compostable materials are also not accepted.

3.5 YARD WASTE

The Municipality accepts residential yard waste free-of-charge at their two Enviro Depots as well as the privately-owned Try Recycling Depot. Each yard waste item must be less than 1 m in length, brush less than 10 cm in diameter, and be in paper bags or loose (no plastic bags are accepted). Yard waste includes plant materials, brush, limbs, grass clippings, leaves and pumpkins.

The TRY facility produces a finished compost from materials such as food waste and yard trimmings, that is eventually bagged and sold at local retailers everywhere.

3.6 OTHER PROGRAMS

3.6.1 E-Waste

Electronic waste (e-waste) is growing four times faster than any other waste stream, with only 12.5% of generated waste recycled. It is illegal to dispose of e-wastes, which include computers, monitors, laptops, printers, and TVs, in municipal landfills that do not specifically accept e-wastes due to the toxic nature of the materials which may potentially leach out over time. Electronic components and materials are resources that can be re-used or recycled.

The Municipality is a member municipality of the BRA, which has identified markets that are able to reuse, recycle, and dispose of e-waste while ensuring that any data stored in the electronic device has been destroyed to protect your privacy. e-waste is accepted at the two Enviro Depots as well as the privately-owned Try Recycling Depot. The province has an EPR contract for the collection and management of WEEE (waste electronics and electrical equipment) materials that could be implemented at the Enviro Depots should change to accommodate the structure of BRA changes brought about by the institution of the EPR program.

3.6.2 Organics Collection Service Program

In the Municipality of Middlesex Centre, there currently is no scheduled curbside collection service for source separate organic materials and leaf and yard waste. Currently, the Municipality encourages its residents to use a backyard composter or a digester for managing organic waste in a household.

In March 2022, the BRA proposed a organics collection service program to the Municipality of Middlesex Centre which involves adding a “green” bin to the Municipality’s current collection service in gathering compostable materials for collecting a SSO waste stream. The BRA has always had the ability to collect organic materials for recovery, but it did not have access to a reputable processing facility to deliver the material for conversion. The proposal was that co-collection of compostable materials organics and waste on one week and then organics and recycling on second week.

3.6.3 Bag Tag Program

As of May 31, 2015, Bag Tags are no longer required for waste collection in Middlesex Centre as the Municipality has transitioned to a bin system.

3.7 MATERIAL RECOVERY SYSTEM (MRF)

The MRF is in Huron Park and is a 43,000 sq. ft. facility. Over the years, BRA has developed this unique technologically advanced processing facility that incorporates the latest technologies in waste processing including using an eddy current system, in line and overhead magnets, a venturi-based air classification system with a cyclone effect separation, air induced conveying systems, material perforation and fluffing systems, as well as a trommel screening-based sortation.

In 1996, co-collection was added with the development of a new vehicle, which allows for the co-collection of three streams at the same time with variable compaction on the three streams. This allowed BRA to expand its recycling collection to include waste. The three streams collected are: Waste, Fibres, and Containers.

3.8 LANDFILLS

BRA uses the Twin Creeks Landfill site for the majority of its waste disposal. Although the Green Lane Environmental site is situated close to the City of London, it is designated exclusively for waste generated by the City of Toronto. The Twin Creeks Landfill site is a regional facility located in Watford, Ontario and is owned and operated by WM of Canada Corporation (WM 2022). There are 6 local landfills located within the Municipality. These sites include:

- Kellam Road Landfill
- Limerick Landfill
- School Road Landfill
- Thames Landfill
- Trillium Drive Site
- W12A Landfill Site

The only two sites still receiving waste are the Thames Landfill and London's W12A Landfill. The Thames Landfill services the Thames Centre municipality and has a projected remaining life to 2045 (Note 8 of 2022 Financial Statement. The City of London's W12A Landfill Site is currently awaiting an approval by the Minister of the Environment, Conservation and Parks for its Environmental Assessment for the expansion of the W12A landfill to increase capacity by 13.8 million m3 and extending the service life to 2048. Included in the EA is the proposed expansion of the service area to include several surrounding Counties, including the County of Middlesex, where the EA requested consideration for 500,000 tonnes of residual waste from these surrounding Counties over the 25 year planning period.

3.9 ANEROBIC DIGESTORS AND COMPOSTING

In Canada, diverting one tonne of food waste through composting or anaerobic digestion reduces GHG emissions by approximately one tonne of CO_2 equivalent compared to landfilling.

Currently, there are no anerobic digestion facilities being used by the municipality, subsequently there is not a Source Separated Organics (SSO) collection program for food waste in the Municipality. The nearest biogas facility in London (Ontario), owned by Generate Capital in London (Ontario) and operated by StormFisher. This facility is currently processing over 135,000 tonnes per year of organic waste. Generate Capital has intentions to continue to expand the facility in the near future to meet increased demands.

Try Recycling is currently using composting technology for leaf and yard waste at their enviro depots. The intention is to add a vessel to their Clark Side Road site and begin accepting SSO wastes from future sources.

A few sites where organic waste could be disposed of would include the Try Recycling Inc. (TRY) leaf and yard waste compost facility, located at R.R. #1 Arva in the Municipality of Middlesex Centre (Clark Side Road, just south of Medway Road), and the biogas facility operated by StormFisher at 1087 Green Valley Rd in London. The StormFisher biogas facility generates renewable electricity and renewable natural gas, along with creating nutrient-rich organic fertilizer from materials being disposed such as food waste and soiled papers.

BRA has reported that some areas in Middlesex Centre are interested in adding SSO collection to their services in 2023. As costs for collecting and processing recycling shifts from the municipality to the producer, funds currently being used for recycling operations may be shifted to increasing the collection of SSO. The costs of collecting and processing SSO will partially offset the landfilling costs.

4.0 WASTE MANAGEMENT REGULATIONS AND POLICIES

Significant changes in the regulatory environment for Waste Management has occurred since the previous Technical Memo on Solid Waste in 2010 was produced for Middlesex Centre. This section will summarize these changes by providing a discussion on the following:

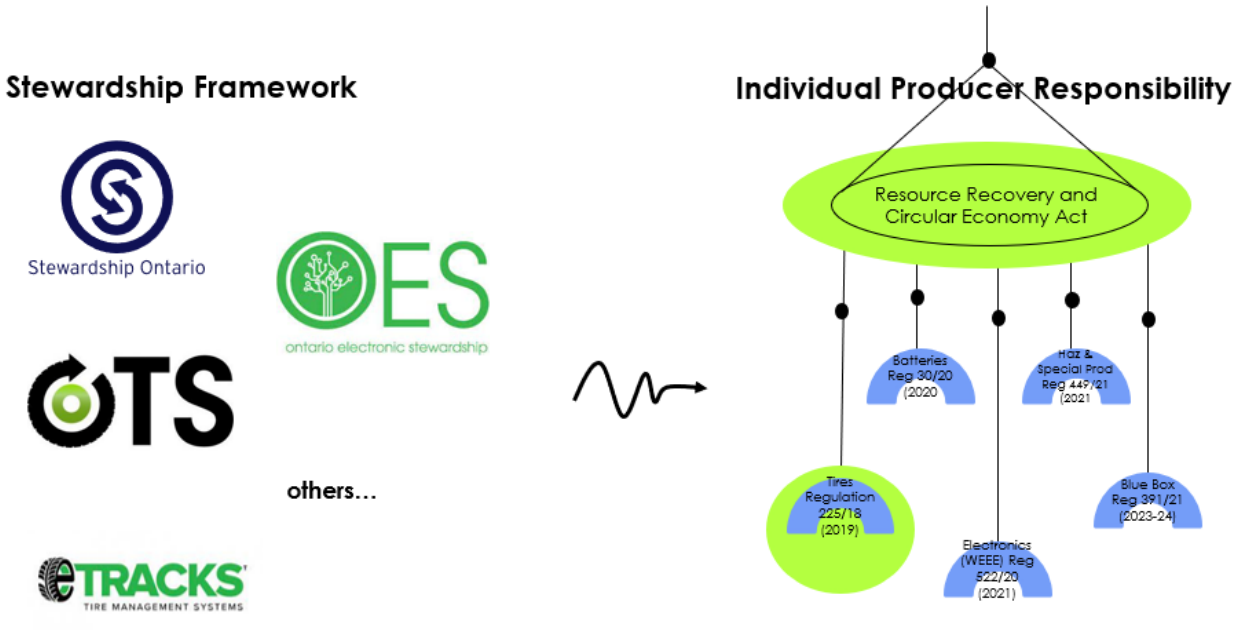
1. Overview of Waste Management Regulation Changes
2. Blue Box Program Transition to Producer Responsibility
3. Municipal Hazardous or Special Waste Program Transition to Producer Responsibility
4. Waste Diversion Programs
5. Waste Types
6. Related Legislation

4.1 OVERVIEW OF WASTE MANAGEMENT REGULATION CHANGES

In 2016, the Government of Ontario passed the Resource Recovery and Circular Economy Act (RRCEA). The RRCEA outlined a framework for individual producer responsibility (IPR) in Ontario. IPR makes those who make and sell products responsible for managing their goods and packaging once consumers are finished using them.

- Tires were the first material to move to IPR on January 1, 2019.
- Single-use batteries transitioned on July 1, 2020.
- Information technology, telecommunications and audio-visual (ITT/AV) equipment transitioned January 1, 2021, and lighting equipment will transition January 1, 2023.
- Hazardous and special products transitioned October 1, 2021.
- Blue Box will transition between July 1, 2023 and December 31, 2025.

The following illustrates these transitions:



The RRCEA established the Resource Productivity and Recovery Authority (RPRA) to regulate businesses and ensure their compliance with IPR requirements. IPR gives businesses choice in how they meet IPR requirements. Producers can choose to collect and recycle their own products and packaging, or they can engage producer responsibility organizations (PROs) meet the IPR requirements.

Waste generated by residential and Industrial, Commercial, Institutional (ICI) sources will apply a ‘circular economy’ lens, that is, treating waste as a resource, and implementing sustainable diversion/resource recovery options for these waste streams.

This ‘circular economy’ lens represents a major shift from a ‘disposal’ approach. It considers how to eliminate waste and pollution, and conserve and make mindful lifecycle choices about equipment, processes and maintenance activities. This approach aims to extend the lifecycle of goods, materials and assets through better design and reuse, to minimize what goes to waste. In a circular economy, innovators will ultimately design more durable, reusable, repairable and recyclable products.

In the context, Contractors are being asked to provide recommendations on the first steps towards a circular economy approach, including identifying opportunities such as rent/borrow/donate materials, repair and repurpose products or assets, recycle and compost materials, recover, reuse and reduce materials or energy where possible. Adopting ‘circular’ principles in contracts involving waste disposal/management, and in procurement good and service contracts requires reviewing and recommending updated policies and clauses on disposal of assets to facilitate reuse and other diversion strategies.

A PRO is a business established to contract with producers to provide collection, management, and administrative services to help producers meet their regulatory obligations for IPR including:

- arranging, establishing, or operating a collection or management system
- arranging, establishing, or operating a promotion and education system
- preparing and submitting reports

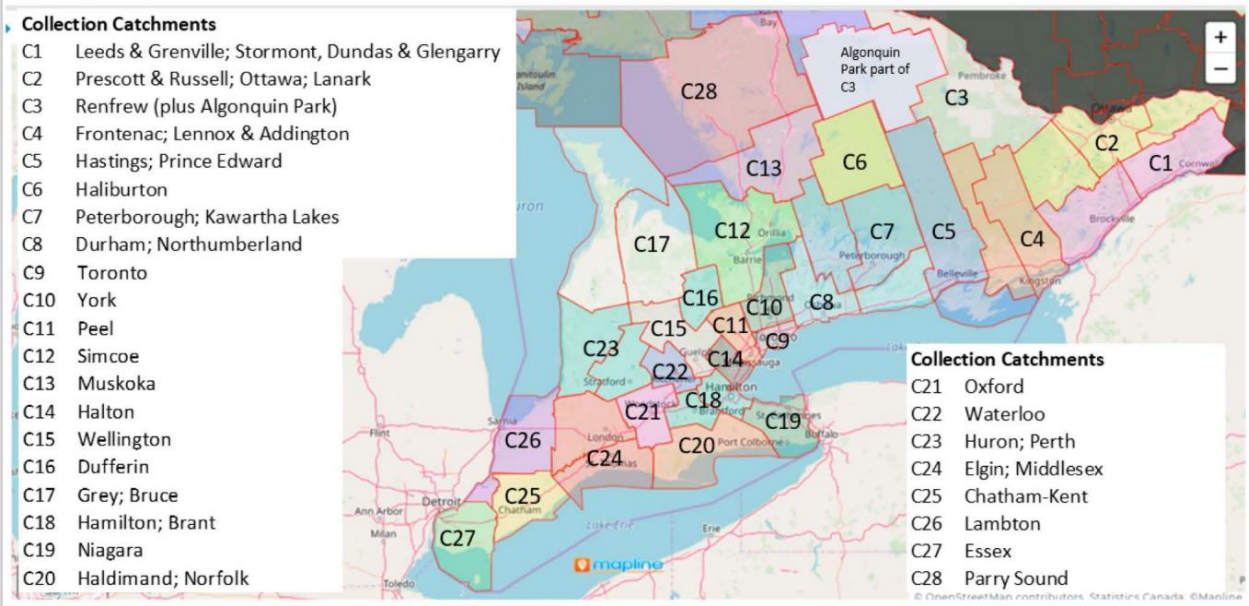
The new IPR Model is intended to move the stagnant recycling rates up by giving producers the tools to find efficiencies and lower costs by:

- allowing producers to find cost efficiencies to improve the collection and management of materials,
- encouraging producers to make packaging that is easier to recycle, and
- putting valuable materials back into the economy.

The new model has been designed to create competition in the market for producers to find new and innovative ways to manage their products and minimize costs to consumers for their everyday purchases. The province intends to have the highest recycling targets in North America which will be intended to:

- drive producers to collect recycling from a broad number of sources,
- ensure producers reach a diversion rate that will be effective,
- encourage innovation and competition,
- help create a better collection system for all communities, and
- protect the environment.

Ontario has initially been divided into 3 regions which are further divided into 35 Catchments.



4.2 BLUE BOX TRANSITION TO PRODUCER RESPONSIBILITY

As described in the previous section, Ontario is committed to shifting to a waste management approach where producers are responsible for the waste generated from their products and packaging, and waste is seen as a resource that can be recovered, reused and reintegrated back into the economy. This new approach has been adopted because Ontario's recycling rates have been stalled for over 15 years because the economics of blue box recycling are becoming increasingly more challenging.

Ontario Regulation 391/21 Blue Box (O. Reg 391/21) under the RRCEA was announced on June 3, 2021, and implementation will begin in July 2023. Under the new regulation, producers will be responsible for the end-of-life handling of their products and product packaging and producers will start to move towards paying one hundred percent of associated fees for the blue box program. By December 31, 2025, producers will be fully responsible for providing blue box services across Ontario. According to the MECP's "Blue Box Transition Schedule" (June 1, 2021), the transition date for the Municipality of Middlesex Centre, is April 1, 2024.

Under the regulation, blue box materials are products and packaging made of materials that will be disposed in the residential waste stream. It breaks down blue box materials into three major types: paper products, packaging-like products, and product packaging. The new plan is intended to ensure that the Blue Box Program continues to be convenient and accessible for all Ontarians by:

- standardizing what goes in the blue box across the province.
- proposing a consistent list of materials that residents can recycle at more locations which is intended to reduce confusion about what goes in the blue box and make recycling as easy as possible.
- taking the cost burden off municipalities and allowing producers to innovate.

- expanding recycling services to more communities, including smaller, rural and remote communities.
- putting recycling systems in places like parks, schools, apartment buildings or industrial sources.
- providing producers with greater options for recycling while maintaining Ontario's alcoholic beverage deposit return program.
- setting high targets to drive collection from more sources.

It is hoped the model will improve recycling across the province by:

- addressing the serious problem of plastic pollution and litter,
- expanding collection to all communities outside the Far North by 2026,
- standardizing what can be recycled across Ontario,
- accepting common single-use and packaging-like products such as paper and plastic cups, foils, trays, bags, and boxes sold for home use, and
- collecting single-use items that are distributed or sold to consume food and beverage products, like stir sticks, straws, cutlery and plates.

Through the public consultation process, a number of recommendations were made including:

- Transition should occur over a six-year period according to the following approximate timelines (i.e., from 2019 through 2025):
  - Before the end of 2019: Minister issues transition direction to Stewardship Ontario outlining the timeline for transition.
  - Over a one to one-and-a-half-year period (e.g., 2019-2020): Government consults on, and finalizes, regulations that specify how the blue box will move to producer responsibility.
  - Over a two-year period (e.g., 2021-2022): Producers prepare to assume responsibility for the blue box and engage all parties, including municipalities and service providers.
  - Over a three-year period (e.g., 2023-2025): Phased transfer of responsibility from municipalities to producers that transitions a similar amount of waste over each year.
- The province should provide transition direction and begin gathering the necessary information as early as possible to help all parties plan for the new producer responsibility framework.
- The province should issue a consultation document to provide additional information and clarification when consulting on the draft regulations.

- To provide the certainty needed to kick-start planning for transition, the timeline should provide early notification of the government's plan for producer responsibility, expedited development of producer responsibility regulations, and sufficient time for municipalities and producers to prepare.

4.2.1.1 Municipal Transition Plan for Blue Box Producer Responsibility

As described by the RPRA and in accordance with the Blue Box Regulation, communities that are eligible for the new producer responsibility transition mentioned above include a local municipality or local services board area not located in the Far North, or a reserve in the Far North registered with the Authority and not located in the Far North (RPRA 2022). For those municipalities that currently have blue box services, producers will be responsible for delivering these services starting July 1, 2023 through to December 31, 2025 (RPRA 2022). As of January 1, 2026, producers will be responsible for providing collection for eligible communities that do not have an existing blue box program (RPRA 2022).

Stewardship Ontario will continue to operate the Blue Box Program on behalf of stewards until December 31, 2025. To ensure the transition runs smoothly for municipalities and producers, Initial, Transition, and Change Reports will need to be completed (RPRA 2022). The Initial report process whereby municipalities provided information to the RPRA about their current blue box collection systems was completed in fall 2021 (RPRA 2022).

For the Transition Report, municipalities are to submit more in-depth information about their blue box collection systems to the RPRA ahead of their transition date, which varies for each municipality. Information that is required from each eligible community includes (RPRA 2022):

- The location of residences that receive curbside garbage collection.
- The location of residences that receive depot garbage collection.
- The location of every garbage depot collection site.
- The location of residences that receive curbside collection under the Waste Diversion Transition Act (WDTA) blue box program.
- The location of residences that receive depot collection under the WDTA blue box program.
- The location of facilities that receive collection services pursuant to the WDTA blue box program.
- A description of a method pursuant to which additional information about the addresses of residences and facilities that receive collection under its garbage collection program and the WDTA blue box program can be provided.
- The location of each blue box receptacle in a public space that received collection under the WDTA blue box program.
- A list of materials that are collected under the WDTA blue box program.
- The frequency at which residences receive collection under the WDTA blue box program.

- The number of collection streams under the WDTA blue box program.
- The location of every depot collection site under the WDTA blue box program.
- The languages used for communications about the WDTA blue box program.

If any change is required from an eligible local municipality or local services board based on the initial and transition reports they provided, then the RPRA must be contacted and update the information where applicable via a Change Report (RPRA 2022).

4.2.1.2 Blue Box Producer Exemptions

The Blue Box regulation helps to identify if a municipality is a Blue Box producer based on two exemptions which focus on revenue and supply (RPRA 2022). In accordance with the Blue Box regulation, those producers that generate less than $ 2 million in gross annual revenue would be exempt from registration, reporting, and performance requirements (collection, management, promotion and education), and would need to provide proof of documentation to the RPRA. For the supply-based exemption, the decided factor based on weight for different material categories such as paper, rigid plastic, flexible plastic, glass, metal, and beverage containers can be found on the RPRA website. If a producer is above the revenue-based exemption level but is below the weight supply levels as mentioned on the RPRA website, they would be exempt from performance requirements and just need to register and report. A producer would need to register, report and identify performance requirements if they are above the revenue-based threshold and at least one material category is above the exemption threshold for supply. However, producers would only need to meet the management requirement in material categories where they are above the exemption level (RPRA 2022).

4.2.1.3 Entities Registered as Blue Box Registrants

The list of entities that have registered as Blue Box Producer Responsible Organizations as of September 30, 2022 are 3 organizations:

- Canadian Beverage Container Recycling Association
- Circular Materials and
- Ryse Solutions Ontario Inc.

The list of entities that have registered as Blue Box Processors as of November 1, 2022 are 21 organizations:

- Bluewater Recycling Association
- Bruce Area Solid Waste Recycling
- Cascades Canada ULC
- Chatham-Kent Recycling Inc

- City of Greater Sudbury
- City of Guelph
- City of Kingston
- Corporation of the City of Cornwall
- Emterra Environmental
- GFL Environmental Inc.
- HGC Management Inc.
- Miller Waste Systems Inc.
- Quinte Waste Solutions
- Recycle Action inc.
- TCT Mobile Canada Limited
- The Corporation of the City of London
- The Corporation of the County of Northumberland
- The Municipal Corporation of the Township of Armour
- Township of North Glengarry
- Waste Connections of Canada
- Waste Management

The list of entities that have registered as Blue Box Producers as of November 1, 2022, are 1,119 organizations. All these organizations can be found on Resource Productivity and Recovery Authority's website at rpra.ca.

On the horizon are new developments in plastics recycling, especially in the United States. One question to tackle is which types of plastic are truly recyclable. California is expected to continue its rulemaking processes this year to determine the recyclability and labeling of certain plastic packaging. Oregon has already issued its "truth in labeling" report as part of an ongoing extended producer responsibility implementation strategy. These statewide decisions could affect future markets for plastic packaging materials and spur MRF operators and haulers to change how they operate. Municipal Hazard or Special Waste Program Transition to Producer Responsibility

In 2008, Ontario established a Municipal Hazardous and Special Waste (MHSW) program to ensure materials, such as paints, solvents, pressurized containers, oil filters and more, are being properly collected and managed. This program was run by Stewardship Ontario (SO) with a shared funding model between producers and municipalities.

Ontario Regulation 449/21 Hazardous Waste and Special Products (O. Reg 449/21) under the RRCEA was announced on June 8, 2021 and came into effect on October 1, 2021. The RPRA now oversees and enforces the new regulatory requirements. O. Reg 449/21 sets out obligations for hazardous and special products:

- producers (e.g., brand holders, importers, and marketers in certain circumstances)
- processors
- haulers, and
- disposal facilities.

As of September 30, 2021, the SO program ended, and the program will transition to an IPR model where producers will take on full responsibility for program funding and the collection and management of products.

The intent is that it will make producers environmentally accountable and financially responsible for managing their products at end-of-life, and will:

- ensure hazardous and special products are properly and safely collected and managed,
- protect our environment by keeping these products out of our landfills.

As part of the plan to make government work smarter, with processes that are simpler, faster and more cost-effective, the plan is to modernize hazardous waste reporting by shifting from a primarily paper-based reporting service to a modern digital service.

The proposed changes to the guidance manual in combination with the changes that have been made to Regulation 347, to Regulation 323/22, and combined with the modern digital reporting service with mobile capability, will make it easier and faster for the regulated community to meet their reporting requirements, reducing administrative burden and costs that the regulated community experiences today. **Table 4-1** notes the categories of hazardous waste and special products under O. Reg 449/21 and the producer hierarchy for each category.

Table 4-1: *Hazardous Waste and Special Products Categories under O. Reg 449/21*

Category	Items	Producer Hierarchy
Category A	• Oil filters • Non-refillable pressurized containers	1. Brand holder – resident in Canada 2. First importer – resident in Ontario 3. First marketer – resident in Ontario 4. Marketer (if no resident in Ontario)

Category	Items	Producer Hierarchy
Category B	• Refillable pressurized containers • Antifreeze • Oil containers • Paints and coatings • Solvents • Pesticides	1. Brand holder – resident in Canada 2. First importer – resident in Ontario 3. First marketer – resident in Ontario 4. Marketer (if no resident in Ontario)
Category C	• Mercury-containing devices o Barometers o Thermometers o Thermostats	1. All brand holders – resident in Canada 2. If there are one or more brand holders (resident in Canada) of a marketed product in Ontario that is similar but does not contain mercury, all of those brand holders are obligated
Category D	• Fertilizers	1. Brand holder – resident in Canada
Category E	• Refillable propane containers	1. Brand holder – resident in Canada 2. First importer – resident in Ontario 3. First marketer – resident in Ontario 4. Marketer (if no resident in Ontario)

The date collection systems needing to be established varies depending on the material category:

- Collection systems for categories C and E needed to be in place for October 1, 2021.
- Collection systems for categories A and B have a transitional period from October 1, 2021 to December 31, 2022 with the full system being implemented for January 1, 2023.
- Category E does not have a collection requirement.

Figure 4-1 provides a summary of the requirements for Hazardous Waste and Special Products Producers under O. Reg 449/21.

Category	Material	Collection System	Mgmt. System incl. Registration	Minimum Mgmt. Req.	RER	P & E	Registration	Supply Data Reporting	Performance Reporting	Audit of Performance
A	Oil Filters	●	●	●	●	●	●	●	●	●
A	Non-refillable Pressurized Containers	●	●	●	●	●	●	●	●	●
B	Refillable Pressurized Containers	●	●		●		●	●	●	●
B	Antifreeze	●	●		●	●	●	●	●	●
B	Oil Containers	●	●		●	●	●	●	●	●
B	Solvents	●	●		●	●	●	●	●	●
B	Paints and Coatings	●	●		●	●	●	●	●	●
B	Pesticides	●	●		●	●	●	●	●	●
C	Mercury-containing devices	● (call-in only)	●		●	●	●		●	●
D	Fertilizers					●	●		●	
E	Propane Containers (refillable)	● (call-in only	●				●			

Figure 4-1: Summary of requirements for Hazardous Waste and Special Products Producers under O. Reg 449/21

Source: Resource Productivity & Recovery Authority, 2022

To help reduce administrative burden and cost for small producers, the regulation includes a small producer exemption (also known as a de minimis threshold). If a producer supplies less than or equal to the following product weights (in **Table 4-2**) into the Ontario market in the previous calendar year, they are exempt from the following sections of the regulation:

- IV – Collection
- VI – Management
- VII – Promotion & Education

Table 4-2: Small Producer Category Exemptions

Category	Products
A	• Non-refillable pressurized containers: 3 tonnes • Oil filters: 3.5 tonnes
B	• Antifreeze (including factory-fill antifreeze): 20 tonnes • Paints and coatings: 10 tonnes • Pesticides: 1 tonne • Solvents: 3 tonnes • Oil containers: 2 tonnes • Refillable pressurized containers: 8 tonnes

Small producers are still required to register, report, keep records, etc.

There are promotion and education requirements for categories A (except refillable pressurized containers), B, C and D. PROs will be able to help with promotion and education requirements.

Information must be provided on a website including:

- Location of collection sites/types of HSP that are accepted.
- How the producer manages that type of HSP after collection.
- Presence of mercury/hazards to human health and the environment for Category C products.

The Government of Ontario is currently updating the Registration guidance manual for generators of liquid industrial and hazardous waste. The guidance manual outlines:

- Ontario's hazardous waste management rules and the requirements for generators, carriers and receivers of subject waste
- obligations that are not specified in Regulation 347 (e.g. the specifics of what information the regulated community must submit to comply with various reporting obligations)

Some key proposed updates to the guidance manual to align with recent regulatory changes include:

- removing references to the existing Hazardous Waste Information Network (HWIN).
- clarifying that report submissions will now be to RPRA through the new Hazardous Waste Program Registry.
- outlining factors that may be considered by the ministry when determining whether 'undue hardship' exists.
- outlining requirements for the written agreement for authorizing delegates to report on behalf of generators of hazardous waste.

- reflecting changes made in May 2021 to make it easier for businesses to participate in the Provincial Antigen Screening Program. The changes exempted waste from COVID-19 antigen point-of-care testing from certain regulatory requirements, such as registration, manifesting and specific management requirements that apply to hazardous waste while still requiring that the waste be safely disposed.
- outlining updated requirements for short term storage notices as part of the registration.

4.3 WASTE DIVERSION PROGRAMS

Bill 151, Waste-Free Ontario Act is an Act to enact the Resource Recovery and Circular Economy Act, 2016 and the Waste Diversion Transition Act, 2016 and to repeal the Waste Diversion Act, 2002.

With the introduction and implementation of IPR programs to manage products (tires, HHW, WEEE), other waste types still require management and will need to manage thru curbside collection (such as SSO - organics) or delivered to the depots by residents (such as scrap metal, white goods, leaf & yard waste) or directly to landfill by users (such as C&D, contaminated soils, cleanup from fires, and damages to land/structures from flooding and other natural events). Regardless of changes being imposed thru the RPRA, the depots are essential for the continuation of programs that are not subject to IPR.

4.4 EXCESS SOILS

4.4.1 Background

In December 2019, a new regulation to support improved management of excess construction soil was enacted. Ontario Regulation 406/19 On-Site and Excess Soil Management (O. Reg 406/19 under the Environmental Protection Act) introduced a new framework for the excavation, removal and transport of excess soils between two or more sites. This regulation is a key step to support the proper management of excess soils, ensure valuable resources don't go to waste and to provide clear rules on managing and reusing excess soil. Risk-based standards referenced by this regulation help to facilitate local beneficial reuse which in turn reduces greenhouse gas emissions from soil transportation, while ensuring strong protection of human health and the environment. O. Reg 406/19 does not apply to certain categories of excavated soil such as those involving hazardous or asbestos waste and the operation of pits and quarries, among other exemptions.

At its core, O. Reg. 406/19 is intended to help keep "contaminated" soil away from otherwise "clean" sites, ensuring that recipients of excess soil are fully informed, and reducing the strain on landfill capacity. This regulation seeks to provide clarity around how soil must be characterized for appropriate re-use. It also offers new opportunities to reduce soil disposal costs and reduce the generating site's overall environmental footprint by facilitating the excess soil beneficial reuse and keeping it out of landfills.

To protect receivers, under O. Reg. 406/19, before any soil is removed from a generating site, a pre-approved destination must have agreed to accept that specific quantity and quality of soil. The regulation also provides options for better staging of projects. Sometimes, excess soil from one building site can be

trucked directly to its intended destination as fill on another project, provided certain specific conditions are satisfied (such as the same Owner both projects).

Usually, it is not that straightforward, so O. Reg. 406/19 has offered provisions around the temporary storage of soil. There may also be need for treatment such as dewatering or removal of stones and woody debris, right through to remediating chemical impacts. The regulation provides for “Class 1” soil sites, some of which are permitted to store soil before its next use, and others that can carry out soil processing to remove contaminants. “Class 2” sites require less permitting but are limited as to the amount of processing (namely sorting and no chemical treatment) and the volume of soil to be stored on them.

The regulation also acknowledges that not all projects generate contaminated soil, and so some projects may be subject to fewer rules. O. Reg. 406/19 has provisions that apply specifically to excess soil originating from “brownfield” and “greenfield” sites, stormwater management ponds, and infrastructure projects such as sewer or watermain line replacement.

4.4.2 Elements of Excess Soil Regulations

Key elements of the regulation include:

- Clear excess soil reuse rules and clarity around when excess soil is not a waste.
- Clarity on reusing excess soil and replacing of waste-related approvals with regulatory rules for low-risk soil management activities.
- Enhanced reuse through improved reuse planning for larger (greater than 2000 cubic metres) and riskier sites (for example, gas stations and industrial sites), including tracking, registration, an assessment of past uses, and if necessary, soil sampling and characterization.
- Greater assurance that reuse sites are not receiving waste soil and requiring larger reuse sites (10,000 cubic metres) to register and develop procedures to track and inspect soil received.
- Restrictions on landfilling clean soil that is suitable for reuse at a sensitive site (for example, schools and agricultural sites).

In Municipalities that develop ways to support waste-to-resource opportunities and enact their own bylaws may find lower solid waste management costs on their own projects, better management of the movement of “contaminated” soil within their jurisdiction, a slower rate of landfill space depletion, and a better reputation as a place to build a business.

4.4.3 Timing for Implementation

The timing for the implementation of the regulation is phased in over time as follows:

- Phase 1: January 1, 2021 - reuse rules, including risk-based standards, waste designation and approvals

- Phase 2: Originally January 1, 2022, postponed to January 1, 2023 - testing, tracking and registration (some exemptions apply)
- Phase 3: January 1, 2025 - restrictions on landfilling soils

Subject to certain exceptions, the new framework will now apply to all construction projects that generate "excess soil. These regulatory changes will affect property owners, developers, consultants, and the construction industry as a whole, exposing its participants to new risks and legal requirements.

Phase Two will introduce new filing, documentation and tracking requirements for those responsible for leading projects that involve the removal of soil from a site and owners and operators of reuse sites at which excess soil will be deposited. Notices now need to be filed prior to the removal or deposit of excess soil with the Excess Soil Registry, a new online repository operated by the RPRA.

The Government of Ontario has released the Rules for Soil Management and Excess Soil Quality Standards (Ontario Ministry of Environment, Conservation and Parks 2022). This document includes both Part I: Rules for Soil Management ("Soil Rules") and "Part II: Excess Soil Quality Standards" ("Excess Soil Standards") which are incorporated by reference into the regulation and must be read alongside it.

It contains rules related to the following key elements:

- assessments of past uses, sampling and analysis plans, excess soil characterization reports and excess soil destination assessment reports
- soil storage and processing
- requirements for excess soil tracking systems
- applicable soil quality standards and related reuse rules

The government of Ontario has also developed the Beneficial Reuse Assessment Tool (BRAT) to allow for the implementation of site-specific standards at a reuse site. This development of site-specific standards aims to promote greater reuse of excess soil through consideration of local conditions, while protecting human health and the environment.

4.5 RELATED LEGISLATION

The Environmental Protection Act deals with issues relating to waste on land, defining all aspects of waste management and places a duty on local authorities to collect waste.

4.5.1 Introduction

Federal and provincial regulations and guidelines have been put in place that pertains to waste management and future trends in deal with waste. As part of this document, they were reviewed and used to gain an understanding on how Middlesex Centre can provide best management planning options that work within these regulations and guidelines.

Related Legislation

The policies, rules and regulations that guide Ontario's resource recovery and waste reduction include:

- Resource Recovery and Circular Economy Act, 2016
- Waste Diversion Transition Act, 2016
- Environmental Protection Act
- Environmental Assessment Act
- Nutrient Management Act
- Food and Organic Waste Policy Statement

The Environmental Protection Act addresses waste collection, disposal and environmental approvals, including:

- Landfill design standards under O. Reg. 232/98
- Standards for disposal sites, the management, tracking and disposal of hazardous and liquid industrial waste under O. Reg. 347/1990
- Requirements for landfill gas collection under O. Reg. 217/08
- Requirements for municipal Blue Box programs under O. Reg. 101/94
- Requirements for IC&I sector to reduce waste and recover resource under '3Rs' regulations: O. Reg. 102/94, O. Reg. 103/94 and O. Reg. 104/94
- Requirements for producers of pharmaceuticals and sharps to establish free collection locations across Ontario for pharmaceuticals and sharps they no longer need under O. Reg. 298/12
- Ontario Compost Quality Standards under Reg. 347 and Guidelines for the Production of Compost
- Hazardous waste management: business and industry
- Act on Litter

4.5.1.1 The Waste Diversion Transition Act (2016)

Bill 151, Waste-Free Ontario Act is an Act to enact the Resource Recovery and Circular Economy Act, 2016 and the Waste Diversion Transition Act, 2016 and to repeal the Waste Diversion Act, 2002. The Waste Diversion Transition Act, 2016 (WDTA) provides the Ministry of the Environment and Climate Change with an approach to wind-up the four previously existing waste diversion programs that were established, and were operating under, the Waste Diversion Act, 2002 (WDA). The WDTA is intended to enable the wind-up of the industry funding organizations that operate those programs.

In order to wind-up the programs and the industry funding organizations under the WDTA, the programs and their governing regulations were transferred from the WDA to the WDTA.

The four waste diversion programs are for:

1. blue box waste;
2. municipal hazardous or special waste;
3. used tires; and
4. waste electrical and electronic equipment.

The proposed regulations were updated to reflect the provisions in the WDTA and current drafting standards. They will continue to address the designation of wastes, governance of the three industry funding organizations (Ontario Tire Stewardship, Ontario Electronic Stewardship, and Stewardship Ontario) as well as prescribe a cost recovery fee methodology for the used tire and municipal hazardous or special waste programs.

The proposed changes are largely administrative and technical in nature. The provisions in the proposed WDTA regulations that differ from the current regulations under the WDA include:

- Updating references to refer to WDTA provisions (e.g. where existing regulations refer to subsection 30 (3) of the Waste Diversion Act, 2002 for the purposes of referencing the costs principles that are used when applying the cost recovery fee methodology), the new regulations will refer to the equivalent provision in the WDTA, which is subsection 33 (5)).
- Removing provisions that have either served their purpose or are unnecessary under the WDTA (e.g. removing the provisions that designate an industry funding organization for a waste diversion program, as these designations are already made under section 15 of the WDTA).
- Addressing issues related to the transition from the WDA to the WDTA relating to members of the board of directors for the industry funding organizations and providing for member appointments going forward (e.g. include provisions providing for the continuation and appointment of an industry funding organization's board members).
- Updating and amending as appropriate references to bodies who appoint members of the board of directors.
- Governing the composition of Stewardship Ontario's board of directors to reflect representation from stewards of designated wastes currently managed under the blue box and the municipal hazardous or special waste diversion programs.
- Addressing issues related to the transfer of the programs from the WDA to the WDTA affecting the use of the cost recovery fee methodology (e.g. include provisions that provide for continuity of the requirement to pay steward fees until the program is wound-up).

- Consequential amendments to other regulations that reference defined terms and provisions in regulations made under the Waste Diversion Act, 2002 (e.g., amendments to O.Reg.79/15 (Alternative Low-Carbon Fuels) so that the definitions of 'used tires' and 'municipal hazardous or special waste' refer to the new WDTA regulations).

The regulations are proposed to come into force simultaneously with the coming into force of the WDTA and the repeal of the Waste Diversion Act, 2002. Designated waste is blue box waste or material prescribed as a designated waste by the regulations, described below.

4.5.1.2 O. Reg 391/21 Blue Box Regulation

After considering input received from stakeholders on the proposed producer responsibility regulation for blue box materials under the Resource Recovery and Circular Economy Act, 2016, (the “blue box regulation”) the regulation was filed on June 3, 2021.

Under the blue box regulation, producers of blue box materials will be fully responsible for managing their products by:

- transitioning existing municipal, local services board and First Nation blue box services to producer responsibility between July 1, 2023 and December 31, 2025.
- making producers responsible for a consistent set of blue box materials and eligible sources beginning on January 1, 2026.

The blue box regulation will put in place a new framework that:

- makes individual producers responsible for the collection and end-of-life management of the blue box materials they supply to consumers in Ontario.
- gives producers control over how they provide blue box collection services to residents, manage collected blue box wastes, and achieve compliance with diversion targets.

To support this transition, we also amended Ontario Regulation 101/94: Recycling and Composting of Municipal Waste. The amendments require any local municipality that operates a blue box waste management system as of August 15, 2019 to continue to provide this service until the local municipality’s blue box program has transitioned to producer responsibility under the blue box regulation. Requirements that a local municipality operate a blue box waste management system would be fully repealed by 2026.

New requirements for blue box materials

The blue box regulation requires producers of paper, packaging, packaging-like products and single-use items to:

- maintain or improve existing blue box services, including participating in a common curbside blue box collection system across Ontario.
- expand blue box services to communities outside the Far North, regardless of their population.

- expand blue box collection services to additional sources, such as multi-unit residential buildings, schools, some public spaces, and specified retirement and long-term care homes.
- collect a consistent set of materials in blue boxes across the province.
- meet management requirements for blue box materials, such as diversion targets.
- implement a promotion and education program to increase awareness about collection, reuse, recycling and recovery of materials.

The blue box regulation will not:

- impact existing deposit return initiatives operated for alcohol beverage containers.
- require producers to provide blue box services in the industrial, commercial, and institutional (IC&I) sectors, except for:

  - beverage containers must be collected in the IC&I sectors- all blue box material must be collected in multi-unit residential dwellings, schools, specified long-term care and retirement homes, and some public spaces as specified in the regulation.

Producers of blue box materials are required to register with the RPRA (the “Authority”) by October 1, 2021.

For municipalities, local services boards and First Nation communities that currently operate blue box services, producers are responsible for delivering these services according to the dates listed in the Transition Schedule. At this time, the proposed “Blue Box Transition Schedule” includes municipalities and local services board areas with blue box programs. The “Blue Box Transition Schedule” would be updated to include First Nation reserves and specify certain calendar dates for each transitioning program within a given year, with quarterly transition dates based on contract expiry.

For all other eligible communities, producers are responsible for providing collection as of January 1, 2026. Producers will begin reporting on results starting in 2024, continuing annually thereafter.

Municipalities and local services boards are required to register and provide information to facilitate the delivery of collection services by producers. First Nations may choose to register if they wish to participate in the blue box collection program. Registration and reporting dates vary depending on the community and their transition date as listed in the Transition Schedule.

The blue box regulation makes individual producers responsible for meeting the requirements. However, to facilitate an efficient delivery model and allow for economies of scale, producers would have the flexibility to meet their obligations individually, or collaboratively with other producers, by retaining service providers (e.g. a Producer Responsibility Organization).

Amended definition of alcohol beverage products and packaging to ensure there is no impact to existing deposit return initiatives by clarifying that non-alcoholic beer and wine:

- containers and packaging and other packaging or products associated with alcohol producers are also exempt from the blue box.
- Refined definition of compostable products and packaging to ensure recyclable paper materials are not captured and to better capture complex compostables that are not suitable for traditional mechanical recycling processes.
- Refined definition of packaging-like products to exclude flexible plastic materials used to contain, protect, or handle food.
    - This recognizes the vital role these materials play in helping residents extend the life of food and reduce food waste and reduces risk of cost increases on these products.
- Clarified that de minimis thresholds (e.g., minimum thresholds for exempted businesses) apply to revenue generated in Ontario and materials supplied in Ontario to consumers.

Common collection system and allocation table:

- Revised the threshold that a producer responsibility organization (PRO) must account for at least 10% of total supplied blue box material to be rule creators in developing the rules for the allocation table to 20,000 tonnes of total supplied blue box material, as supplied by client producers.
    - This would help ensure that PROs at the negotiation table represent a broad range of producers in the negotiation.
- Require that the rules for the allocation table must be agreed-upon by producer responsibility organizations that are retained by producers who collectively represent at least 66% of the total blue box material supplied into Ontario reported by those producers.
    - This will help make sure that the rules take into account the views of most producers represented by the producer responsibility organizations who are developing the rules.
- Amended the timeline for the submission of the allocation table to the Authority from March 31, 2022 to July 1, 2022.
    - This provides producers a full year to plan for transition in advance of a transition start date of July 1, 2023, as per the revised Transition Schedule.
    - The earliest date for rule submission is maintained at January 1, 2022.
- Specified that only producer responsibility organizations can develop the initial rules that govern the allocation table.

    - This would simplify the initial rule creation process. Producers would only need to join a producer responsibility organization to influence the initial rules – they could still choose to fulfill collection and management obligations individually.

- Clarified the rule creation process and simplified the factors to be considered in developing the rules for the allocation table to reduce burden and focus on outcomes. Included a provision which states that nothing in the regulation shall be construed as requiring or authorizing any person or entity to engage in an activity that would constitute a contravention of the Competition Act.

Collection:

- Clarified that producers are obligated to collect materials from eligible sources, and not third-party operated areas located in a facility.

    - This confirms that producers are not responsible for collecting blue box wastes from retailers, restaurants, or other ineligible sources where they are located in a multi-unit residential building or other facility.

- Provided additional clarity on the scope of long-term care and retirement homes that will receive blue box collection from producers, by excluding for-profit homes from new collection requirements.

    - This approach maintains Blue Box services for long-term care and retirement homes currently included in municipal programs and allows additional municipal and non-profit homes to opt-in for services starting in 2026.

- Revised approach to public space collection to require producers to provide and collect from a minimum number of bins per capita and provide flexibility to place bins in parks, playgrounds, sidewalks and public transit stations and stops, according to a frequency that would collect materials from the receptacles before they would ordinarily be full.

    - This sets consistent standards for eligible communities while providing operational flexibility to target high traffic areas where blue box materials are more frequently generated.

- Clarified circumstances where producers and/or producer responsibility organizations are required to repair or replace blue box receptacles to ensure residences do not lack access to collection services if bins are damaged.

Alternative collection systems

- Added convenience and accessibility standards for mail-back systems.

Management requirements:

- Clarified material categories.

- To drive ambitious and achievable diversion results that reflect operational realities of collection and management and that maintain Ontario's leadership position in North America, set:
    - Paper management requirement at 80% for 2026 and 85% for 2030;
    - Rigid plastic management requirement at 50% for 2026; and
    - Flexible plastic management requirement at 25% for 2026.
- Eliminated use of recycled content to reduce annual management requirement (e.g. diversion target) to ensure that new provision can align with the federal intent to develop national recycled content standards.

Registration, reporting, auditing, and record-keeping:

- Amended producer reporting requirements to allow producers to deduct the following materials from their annual supply of blue box materials, as it pertains to their management requirement:
    a) materials sold and managed in a single location.
    b) materials removed from the consumer's premises upon delivery
        - Producers would not count these materials toward their annual management requirement, as they have been managed outside the common collection system.
- Clarified reporting requirements for compostable products and packaging marketed in Ontario, to provide data on the weight of materials marketed by each standard used to certify the composability of these materials, to better understand the composition of the market.
- Updated timelines for producer registration and reporting to provide more time for producers to report 2021 blue box supply data and reflect the revised process for allocation table and the allocation table itself.
- Updated timelines for producer responsibility organization registration and reporting to provide more time to self-nominate as a rule creator and reflect the revised process for developing the rules that govern the allocation table and the allocation table itself.
- Clarified that producers can have PROs report on supply, collection and management of blue box materials on their behalf.
- Amended registration and reporting requirements and timelines for communities to reduce burden and have communities provide the right data when it is needed.

Promotion and education:

- Clarified requirements with regard to providing information online and in print.

Transition

- Amended regulation and Transition Schedule to begin transition on July 1, 2023.
    - This provides PROs additional time to plan for transition and to establish the allocation table that assigns collection responsibilities in the common collection system.
- Amended service standards during transition. Producers can choose whether to:

    a) provide collection services consistent with what a local community delivered as of August 15, 2019, or

    b) provide collection according to the 2026 service standards, including all designated materials. In both options, producers must maintain the collection frequency previously provided by the municipality until 2026.

    - This maintains collection frequency and reduces disruption for residents during the transition period.
    - This allows producers and producer responsibility organizations to use the transition period to develop economies of scale and avoid separate and fragmented contracts for pre- and post-2026 blue box service operation, while maintaining or improving access to collection services.
- Modified the Transition Schedule to reference lower-tier municipalities to be consistent with the regulation.
- Modified the Transition Schedule to include communities with blue box services that were inadvertently omitted from the proposed schedule.
- Modified the Transition Schedules to change some transition years for municipalities that were assigned proposed transition dates that were not consistent with the transition dates assigned to neighbouring or partner communities with whom they deliver a coordinated Blue Box Program.
    - This better reflects existing catchment areas for regional blue box services, maintains geographic continuity for transition groups, and avoid potential disruption to existing blue box services.
- Modified the Transition Schedule to set specific months and days in the Transition Schedule for municipal transition.
    - Municipalities with expiring contracts or a preferred date within their assigned year were assigned that date to reduce the need for contract extensions.
    - Where a municipality’s preferred year could not be accommodated, municipalities with contracts expiring shortly before their assigned year were given a transition date of January 1 to reduce costs to taxpayers.

- Where a municipality's preferred year could not be accommodated, municipalities were assigned their preferred month and day in their assigned transition year to facilitate contract extensions in yearly increments.
- Municipalities that rely on other municipalities for collection or infrastructure were assigned a date that is consistent with or earlier than their municipal partner, where this information was known, to avoid disruption to municipal Blue Box programs.
- Municipalities that provided no contract expiry date or preference were assigned quarterly dates within their assigned year to better balance costs for producers across each transition year.

4.5.1.3 O. Reg 542/06 Municipal Hazardous or Special Waste

Municipal hazardous or special waste is prescribed as a designated waste for the purposes of the Waste Diversion Act under this regulation. Municipal hazardous or special waste means waste that consists of municipal hazardous waste or municipal special waste, or any combination of them, whether or not the waste is owned, controlled, or managed by a municipality.

Municipal hazardous waste consists of:

- Corrosive products, flammable products, or toxic products, if the sale of the product is permitted only if the container displays information required by the Hazardous Products Act and associated regulations;
- Containers that display information required by the Hazardous Products Act and associated regulations;
- Flammable hazards, corrosive hazards, or toxicity hazards that shall not be disposed of in one or more systems within the regular domestic waste stream because of significant risks posed to humans or the environment;
- Corrosive waste, ignitable waste, leachate waste, reactive waste, or containers that contain these types of waste, as defined under the Environmental Protection Act;
- Antifreeze, and containers in which it is contained; and
- Solvents and the containers in which they are contained.

4.5.1.4 Waste Diversion Programs

Our Made-in-Ontario Environment Plan commits to making producers responsible for the waste generated from their products and packaging.

Ontario has several diversion programs to reuse, recycle or safely dispose of waste:

1. **Tire Collection and Recovery requirements** under a new regulatory framework, which makes tire producers responsible for creating an accessible, convenient and free tire collection and recycling or retreading network across the province, is now in place. This replaces the Used Tires Program which ceased operation on December 31, 2018.

2. **Waste Electrical and Electronic Equipment requirements** under a new regulatory framework, which makes producers of electronic equipment like computers, televisions and stereos responsible for creating an accessible, convenient and free collection and recycling or refurbishing network across the province, is now in place. This replaces the Waste Electrical and Electronic Equipment Program which ends on January 1, 2021.

3. **Hazardous and Special Products requirements** under a new regulatory framework, which makes producers of products such as paints, pesticides, solvents, oil filters, antifreeze and pressurized containers responsible for creating an accessible, convenient and free collection network, is now in place. This will be phased in to replace the Municipal Hazardous or Special Waste Program, starting on October 1, 2021.

4. **Battery Collection and Recovery requirements** under a new regulatory framework, which makes producers of all primary and rechargeable batteries that weigh less than 5kg responsible for creating an accessible, convenient and free battery collection and recycling or refurbishing network across the province, is now in place. This replaces the Used Battery Program which ceases operation on July 1, 2020.

5. **Blue Box Program** recycles printed paper and packaging (plastics, paper, glass, aluminum, steel).

    - Read the Special Advisor on Recycling and Plastic Waste's report and recommendations for transitioning the Blue Box Program to producer responsibility.

6. **The Ontario Deposit Return Program** for beverage and alcohol containers.

Learn more about how Ontario is making producers responsible for managing the waste generated from their products and packaging to promote innovation, reduce waste and lower costs for taxpayers.

4.5.1.5 O. Reg 85/03 Used Oil Material

Used oil material is prescribed as a designated waste for the purposes of the Waste Diversion Act. Used oil material means waste that consists of any of the following materials, or any combination of them:

- Lubricating oil after it has been used for its intended purpose;
- Lubricating oil that is not suitable for its intended purpose;
- An empty container, with a capacity of 30 L or less, manufactured and used for the purpose of containing lubricating oil; and

- An oil filter after it has been used for its intended purpose.

4.5.1.6 O. Reg 84/03 Used Tires

Used tires are prescribed as a designated waste for the purposes of the Waste Diversion Act and consist of used tires that have not been refurbished for road use, and tires that, for any reason, are not suitable for their intended purpose, or any combination of the above.

Ontario Regulation 225/18 Tires (O. Reg 225/18) under the RRCEA came into force on April 8, 2018. Under the regulation, producers are directly responsible and accountable for meeting mandatory collection and recycling targets for used tires. Prior to January 1, 2019, Ontario Tire Stewardship operated the Used Tires Program that kept light truck, medium truck, and off-the-road tires out of landfills so that they could be reused and recycled. Under O. Reg 225/18, producers must register with the RPRA and report new tire supply information annually. The reported new tire supply information is used to establish the producer's used tire collection target for the following year.

4.5.1.7 Single-Use Batteries

Ontario Regulation 30/20 Batteries (O. Reg 30/20) under the RRCEA came into force on February 7, 2021. As of July 1, 2020, following the wind up of SO's battery recycling program on June 30, 2020, battery producers are individually accountable and financially responsible for collecting and reusing, refurbishing or recycling their batteries when consumers discard them. O. Reg 30/20 applies to the following types of batteries sold separately in Ontario (i.e. not embedded in products):

- Single-use (primary) batteries weighing 5 kg or less
- Rechargeable batteries weighing 5 kg or less.

Producers must ensure that every battery picked up from a collection site, regardless of whether it is part of the producer's collection system, is managed (reused, refurbished, or processed) within three months of the pickup date. From July 1, 2020 to December 31, 2022, every producer shall make best efforts to reuse, refurbish, or recycle of batteries supplied in Ontario. Starting in 2023, every producer is required to manage a minimum amount of batteries from each applicable category during an applicable performance period as laid out in Part IV of O. Reg 30/20. As of January 1, 2023, producers, or PROs on their behalf, can rely on battery processors listed on RPRA's website to meet their management requirements that start in 2023.Producers also have promotion and education requirements to raise public awareness of battery recovery and encourage public participation.

4.5.1.8 Information technology, telecommunications and audio-visual (ITT/AV) equipment

Ontario Regulation 522/20 Electrical and Electronic Equipment (O. Reg 522/20) under the RRCEA came into force on September 20, 2020. O. Reg 522/20 designates ITT/AV equipment as the third material after tires and batteries under Ontario's IPR regulatory framework. As of January 1, 2021, following the wind up of the Waste Electrical and Electronic Equipment Program operated by the industry funding organization Ontario Electronic Stewardship on December 31, 2020, ITT/AV producers are individually

accountable and financially responsible for collecting and reusing, refurbishing or recycling their products when consumers discard them.

ITT/AV is equipment that has a primary purpose of collecting, storing, processing, presenting or communicating information, including sounds and images, recording or reproducing sounds and images. ITT/AV includes equipment supplied into any sector (e.g., residential, business, hospital, institutional, commercial, industrial, etc.) and includes any batteries supplied with the ITT/AV (i.e., in packaging or in product). Examples of excluded materials include:

- ITT/AV equipment weighing more than 250 kg
- Small and large appliances
- Power tools
- Motor vehicles
- Children's toys
- Textiles, clothing, furniture or any other upholstered or stuffed articles containing Electrical and Electronic Equipment

Producers must ensure that all ITT/AV picked up from a collection site, regardless of whether it is part of the producer's collection system, is managed (reused, refurbished, or processed) within three months of the pickup date. For the 2021 and 2022 performance periods, every obligated producer shall make best efforts to reuse, refurbish, or recycle 55% of the ITT/AV they supply in Ontario for each performance period. For the 2023 performance period, producers must reuse, refurbish or recycle 60% of ITT/AV supplied in Ontario. As of January 1, 2023, producers, or PROs on their behalf, can rely on ITT/AV processors listed on RPRA's website to meet their management requirements that start in 2023. Producers also have promotion and education requirements to raise public awareness of ITT/AV recovery and encourage public participation.

4.5.2 Environmental Protection Act

The purpose of this Act is to provide for the protection and conservation of the natural environment.

4.5.2.1 O. Reg 103/94 Industrial, Commercial and Institutional Source Separation Programs

Source separation programs required under this Regulation must include:

- Facilities for the collection, handling, and storage of source separated wastes;
- Measures to ensure that the source separated wastes that are collected are removed;
- Provision of information to users and potential users of the program; and

- Reasonable efforts to ensure that full use is made of the program and that the separated waste is reused or recycled.

Source separate programs are required for Retail Shopping Establishments (over 10,000 m2), Retail Shopping Complexes (at least 10,000 m2), Large Construction Projects (total floor area of 2,000 m2), Large Demolition Projects (total floor area of 2,000 m2), Office Buildings (at least 10,000 m2), Multi-Unit Residential Buildings (six or more units), Restaurants, Hotels and Motels (more than 75 units), Hospitals, Educational Institutions (where more than 350 people are enrolled), and Large Manufacturing Establishments.

4.5.2.2 O. Reg 104/94 Packaging Audits and Packaging Reduction Work Plans

A packaging audit includes the examination of the type and amount of packaging, the extent to which the packaging consists of reused or recycled material, the management decisions, and policies that relate to packaging, the reusability and recyclability of the packaging after use, and the impacts of packaging that becomes waste, including the final destination of the packaging after use.

A packaging reduction work plan plans to reduce the amount of packaging used, to increase the extent to which packaging consists of reused or recycled materials, to increase the reusability and recyclability of the packaging after use, and to reduce the impacts of packaging that becomes waste.

Packaging audits and packaging reduction work plans are required for the following establishments:

- Large Food or Beverage Manufacturing Establishments.
- Paper Manufacturing Establishments.
- Chemical Manufacturing Establishments.
- Importers.

4.5.2.3 O. Reg 101/94 Recycling and Composting of Municipal Waste

Local municipalities with a population of a least 5,000 shall establish, operate and maintain a blue box waste management system. An annual report on the operation of the blue box management system is required to be submitted to the Director on or before June 1 of each year. Annual reports must set out the name of the municipality and the type and amount of wastes that were collected or accepted in the previous calendar year and a description of the information provided that year to users and potential users.

In addition to blue box waste a municipality with a population of at least 5,000 shall establish, operate, and maintain a leaf and yard waste system. The leaf and yard system must include the provision of home composters to residents by the municipality at cost or less and the provision of information to residents, publicizing the availability of home composters, explaining the proper installation and use of home composters and the use of compost, and encouraging home composting.

At the leaf and yard waste composting sites only leaf and yard waste and wood, not including painted or treated wood, or laminated wood, may be accepted and the total amount of compost on the site that is in or has completed the curing stage shall not exceed 18x the monthly process design capacity of the site.

4.5.2.4 O. Reg 102/94 Waste Audits and Waste Reduction Work Plans

Waste audits address the amount, nature and composition of waste, how the waste gets produced, and the way in which the waste is managed.

Waste reduction work plans pan to reduce, reuse, and recycle waste, to the extent that is reasonable.

The following are required to perform Waste Audits and prepare Waste Reduction Work Plans;

- Retail Shopping Establishments and Complexes (at least 10,000 m2);
- Large Construction Projects (total floor area of at least 2,000 m2);
- Large Demolition Projects (total floor area of at least 2,000 m2);
- Office Buildings (at least 10,000 m2);
- Restaurants;
- Hotels and Motels (more than 75 units);
- Hospitals;
- Educational Institutions; and
- Large Manufacturing Establishments.

4.5.2.5 O. Reg 232/98 Landfilling Site

This regulation pertains to landfilling sites that come into existence on or after August 1, 1998, have a total waste disposal volume of more than 40,000 m^3, and accept only municipal waste for disposal.

Design specifications are required to be provided in a written report and address the following:

- A legal site plan;
- An up-to-date plan and description of the site;
- Detailed plans, specifications and descriptions for the design of the site;
- A hydrogeological assessment;
- A surface water assessment and control;
- Groundwater protection design;

- Leachate disposal and contingency plan;
- Mitigation measures for subsurface and atmospheric landfill gas; and
- Operations and Maintenance Procedures.

In addition, financial assurance must be provided by the owner and operator of the landfill and include provision for any contingency plans for the site.

4.5.2.6 R.R.O. 1990, Regulation 347 and 558/00

General – Waste Management This regulation deals with the following aspects of waste management:

- Designation and exemption of wastes;
- Waste disposal sites and waste management systems;
- Standards for waste disposal sites;
- Management of asbestos waste;
- Waste generation facilities, registration, and requirements;
- Waste carrier requirements, and waste transportation within, out of, into, and through Ontario;
- Refusals;
- On-site thermal treatment equipment;
- Wood waste combustor sites;
- Waste-derived fuel sites;
- Existing hospital incinerators;
- Stationary and mobile refrigerant waste;
- Selected waste depots;
- Pesticide container depots; and
- Land disposal of hazardous waste.

4.5.3 Pharmaceuticals and sharps

Pharmaceutical or sharp (needle) producers must establish a minimum number of locations where these products can be collected and properly disposed.

A minimum number of collection locations is required, based on either:

- the lesser of a specified percentage of the number of retail locations where products are sold;
- a specified percentage of the total number of pharmacies in Ontario as of October 1 in the preceding year.

Ontario determines the number of pharmacies accredited under the Drug and Pharmacies Regulation Act, in consultation with the Ontario College of Pharmacists.

For 2020, the minimum number of collection locations required is 4,089 and for 2021 is 4,178.

4.5.4 Surplus Food Redistribution Infrastructure Program

The Surplus Food Redistribution Program will provide support to help food rescue organizations, First Nation communities and Indigenous organizations get surplus food from grocery stores, restaurants, farms and other businesses to vulnerable communities impacted by COVID-19, helping prevent nutritious food from ending up in landfills.

This program provides funding:

- for food redistribution (such as refrigeration trucks)
- for food preservation (such as fridges or freezers, or cold storage)
- for preparation (such as industrial kitchen equipment, food dehydration equipment or food smokers)
- to cover associated costs of retrofits and construction or expansion of facilities
- to support the transportation and distribution of surplus food from food donors to community food charity organizations

The food rescue organizations selected to receive support as part of the new program include:

- Afri-Can Food Basket
- Food for Life Canada Charitable Corporation
- Food Sharing Ottawa
- Gathering Place, North Bay's Community Soup Kitchen
- Harvest Share Community Soup Kitchen
- London Food Coalition Inc.
- MAZON Canada
- Muslim Welfare Centre

- Parkdale Food Centre
- Regional Food Distribution BRA of Northwest Ontario
- Road to Zero Waste
- Second Harvest
- The United Church Downtown Mission of Windsor Inc.
- Unemployed Help Centre of Windsor Inc.

Indigenous communities and organizations include:

- Anishinaabeg of Kabapikotawangag Resource Council Inc.
- Bimose Tribal Council
- Grand Council Treaty #3
- Matawa First Nations Management
- Mushkegowuk Council
- Nigigoonsiminikaaning First Nation
- Nokiiwin Tribal Council
- Ontario Federation of Indigenous Friendships Centres (OFIFC)
- Shibogama First Nations Council
- Tungasuvvingat Inuit (TI)
- Waasegiizhig Nanaandawe'iyewigamig Health Access Centre
- Windigo First Nations Council

These organizations and Indigenous communities can use the funding to support the purchase of refrigerated trucks, storage space and other equipment to help ensure that unused, nutritious food from places like grocery stores and restaurants does not go to waste.

For more information on the Surplus Food Redistribution Program email RRPB.mail@ontario.ca.

4.6 POLICIES AND GUIDELINES

4.6.1 Food and Organic Waste Policy Statement (2018)

The Food and Organic Waste Policy Statement, was issued under section 11 of the Resource Recovery and Circular Economy Act, 2016 April 30, 2018 by the MECC. It provides direction to provincial ministries, municipalities, industrial, commercial and institutional establishments, and the waste management sector to increase waste reduction and resource recovery of food and organic waste.

By focusing on preventing, reducing, rescuing surplus food, and recovering food and organic waste, it sets the policy foundation to achieving our goals of building a circular economy for Ontario while contributing to the reduction of greenhouse gases and the province's Climate Change Action Plan targets.

The Policy Statement focuses on waste reduction and resource recovery through preventing and reducing food waste, effectively and efficiently collecting and processing food and organic waste, and reintegrating recovered resources back into the economy. It provides policy direction to further the provincial interest related to waste reduction and resource recovery of food and organic waste. In particular, the policies that make up the Policy Statement further the following aims of the provincial interest set out in section 2 of the Resource Recovery and Circular Economy Act, 2016:

- Protect the natural environment and human health.
- Foster the continued growth and development of the circular economy.
- Minimize greenhouse gas emissions resulting from resource recovery activities and waste reduction activities.
- Minimize the generation of waste, including waste from products and packaging.
- Minimize the need for waste disposal.
- Minimize the environmental impacts that result from resource recovery activities and waste reduction activities, including from waste disposal.
- Provide efficient, effective, convenient and reliable services related to waste reduction and resource recovery, including waste management services.
- Increase the reuse and recycling of waste across all sectors of the economy.
- Increase opportunities and markets for recovered resources.
- Promote public education and awareness with respect to resource recovery and waste reduction.
- Promote co-operation and co-ordination among the various persons and entities involved in resource recovery activities and waste reduction activities.

Reading the Policy Statement in its entirety will assist in understanding how its individual policies apply to specified persons or entities who are required to do things in a manner consistent with it. This Policy Statement is intended to support mutual understanding and co-operation among various persons and entities involved in waste reduction and resource recovery in Ontario in order to further the aims of the provincial interest.

By-laws made under acts identified in Section 12 of the Resource Recovery and Circular Economy Act, 2016 that relate to waste reduction and resource recovery, as well as relevant prescribed instruments, must also be made consistent with the Policy Statement within 2 years of the Policy Statement being issued.

4.6.2 Ontario Food Recovery Hierarchy

The Ontario Food Recovery Hierarchy Policy Statement prioritizes the highest and best use of food resources in Ontario. was issued under section 11 of the Resource Recovery and Circular Economy. Municipality of Middlesex Centre is responsible for the implementation of provincial programs and creation of programs to address provincial requirements. The Policy Statement gives direction to prevent and reduce food and organic waste at each stage of the food supply chain, including the production, distribution, consumption and recovery of food and organic waste. The Policy Statement establishes waste reduction and resource recovery targets as a means of assessing progress in addressing food and organic waste.

The Ontario Food Recovery Hierarchy prioritizes actions that governments, businesses, organizations and consumers can take in order to move towards a sustainable model of waste reduction and resource recovery. The Ontario Food Recovery Hierarchy consists of the following steps in order of importance:

- Reduce: prevent or reduce food and organic waste at the source.
- Feed People: safely rescue and redirect surplus food before it becomes waste.
- Recover Resources: recover food and organic waste to develop end-products for a beneficial use.

Persons or entities engaging in waste reduction and resource recovery activities should consider prioritizing their activities according to the Ontario Food Recovery Hierarchy set out in policy 1.1.

In order to ensure that waste reduction and resource recovery efforts are reflective of an evidence-based policy approach, targets need to be established. Sector-specific waste reduction and resource recovery targets are included in the table below. The persons or entities set out in column 1 must meet the targets in column 2 by the dates set out in column 2.

Person or entity	Target
a) Municipalities subject to policy 4.1	70% waste reduction and resource recovery of food and organic waste generated by single-family dwellings in urban settlement areas by 2023

Person or entity	Target
b) Municipalities in Southern Ontario subject to policy 4.2i	70% waste reduction and resource recovery of food and organic waste generated by single-family dwellings in urban settlement areas by 2025
c) Municipalities in Southern Ontario subject to policy 4.2ii	50% waste reduction and resource recovery of food and organic waste generated by single-family dwellings in urban settlement areas by 2025
d) Municipalities in Northern Ontario subject to policy 4.3	50% waste reduction and resource recovery of food and organic waste generated by single-family dwellings in urban settlement areas by 2025
e) Multi-unit residential buildings subject to policy 4.10	50% waste reduction and resource recovery of food and organic waste generated at the building by 2025
f) Industrial and commercial facilities subject to policy 4.14	70% waste reduction and resource recovery of food and organic waste generated in the facility by 2025
g) Industrial and commercial facilities subject to policy 4.15	50% waste reduction and resource recovery of food and organic waste generated in the facility by 2025
h) Educational institutions and hospitals subject to policy 4.18	70% waste reduction and resource recovery of food and organic waste generated in the facility by 2025

Persons or entities subject to policy 2.1 shall achieve their target through waste reduction and resource recovery efforts with respect to the following types of waste:

- Food waste
- Organic waste, including:
    - Organic waste resulting from food preparation Soiled paper

Municipalities subject to policy 2.1 shall, in addition to the waste reduction and resource recovery efforts set out in policy 2.2, achieve their target through further waste reduction and resource recovery efforts with respect to the following types of organic waste:

- Leaf and yard waste
- Seasonal outdoor wastes
- Flowers and houseplants
- Persons or entities subject to policy 2.1 are encouraged to engage in additional waste reduction and resource recovery efforts to achieve their target, with respect to the following types of organic waste:

- Personal hygiene wastes
- Sanitary products
- Shredded paper
- Additional paper fibre products
- Compostable products and packaging
- Pet food and wastes

The targets referred to in policy 2.1 shall be achieved through waste reduction activities and resource recovery activities, relating to one or more of the following:

- The prevention or reduction of food and organic waste at the source.
- The safe rescue and redirection of surplus food before it becomes waste.
- The recovery of food and organic waste to develop end-products for a beneficial use.

The targets referred to in policy 2.1 cannot be achieved through the following methods or uses:

- The use of food and organic waste to generate alternative fuels or energy from waste without the concurrent recovery of nutrients.
- The direct discharge of food waste or organic waste into a municipal sewer, including when facilitated by food waste disposers or other grinding devices.
- The use of recovered organic resources for landfill cover.

4.6.3 Municipality of Middlesex Centre

The Municipality of Middlesex Centre is located in the County of Middlesex and is subject to County by-laws and policies. The Municipality of Middlesex Centre is responsible for the implementation of provincial programs.

Guidelines for curbside recycling and solid waste pick up are set by BRA. Guideline for heavy items and yard waste are set by the municipality and were discussed in Section 3.0.

Middlesex Centre's Official Plan (OP) addresses landfilling. The following are listed in the OP and pertain to landfill sites (Municipality of Middlesex Centre 2022):

- New landfill sites, or the expansion of existing landfill sites will require an amendment to the OP,
- The Municipality shall be consulted by approval authorities during site rehabilitation or land reclamation,

- No development will be permitted within the identified influence area of a landfill until satisfactory measures have been implemented to mitigate the impacts from the landfill site; and
- Prior to the consideration of development proposals in or within the influence of active or former landfill sites, the County or Municipality can require the completion of various studies.

4.6.4 The County of Middlesex

The County of Middlesex is an upper tier municipality which does not deliver any waste services but has policies around waste. In addressing waste management, the County of Middlesex OP mentions the following in relation to how they coordinate with local levels of government such as the Municipality of Middlesex Centre (County of Middlesex 2006):

- Require all local Official Plans to identify all known closed, abandoned and active waste disposal sites and provide policies for development in proximity to such sites.
- Cooperate with all levels of government and other agencies to promote public awareness of waste issues and innovative ways of reducing waste.
- As noted earlier, the service area for the City of London expansion of their W12A landfill has increased the service area that can be accommodated by the expansion to include surrounding Counties, which includes County of Middlesex. Once approved, site W12A would provide for additional disposal of 500,000 tonnes from these Counties over the 25 year planning period.

4.7 ISSUES OF CONCERN TO REGULATORY AGENCIES

4.7.1 Ontario Ministry of the Environment, Conservation and Parks (MECP)

The WDA was the main legislation in Ontario used to promote reduction, reuse, and recycling of waste through the development, implementation, and operation of waste diversion programs. The Resource Recovery and Circular Economy Act, 2016, identifies the provincial interest in having a system of waste reduction and resource recovery in Ontario, and allows the Minister of the Environment and Climate Change to issue Policy Statements to further the provincial interest. When undertaking activities related to resource recovery and waste reduction, persons or entities need to be consistent with any applicable resource recovery and waste reduction policy statements.

Moving towards a zero-waste future requires tools that drive innovation, technological development, and a shift in societal behaviour. Through potential future iterations of the WDA, the MECP aims to work towards a zero-waste future by building upon these four keys building blocks:

1. A clear framework built upon the foundation of extended producer responsibility;
2. A greater focus on waste reduction and reuse – the first and second of the 3Rs;
3. Increase the reduction and diversion of wastes from industrial, commercial, and institutional sectors; and

4. A greater clarity around roles, responsibilities, and accountabilities, to ensure that all players are contributing to a common goal.

The goal of zero waste and extended producer responsibility go hand-in-hand.

4.7.2 County of Middlesex

Waste diversion programs	Tires - January 1, 2019 Single-Use Batteries - July 1, 2020 Information technology, telecommunications and audio-visual (ITT/AV) equipment – January 1, 2021 Lighting equipment – January 1, 2023 Hazardous and special products – October 1, 2021	Municipality to coordinate with producers as applicable
Blue Box	Between July 1, 2023 and December 31, 2025	Municipality works with Bluewater Recycling to facilitate transition of collection according to the Transition Report developed by RPRA.
Excess Soil	January 1, 2023	Include requirements for handling of soils in all contracts where excess soils are generated. Comply with excess soil regulation when County or Municipality generates excess soil that exceeds the thresholds in the regulation.

4.8 ISSUES OF CONCERN TO THE PUBLIC

After meeting with Middlesex Public Works and BRA, it was reported that more availability for the general public to drop off waste was desired. Currently, there are three Enviro Depots in the Municipality of Middlesex Centre – Denfield Rd Enviro Depot, Longwoods Rd Enviro Depot, and TRY Recycling Depot. The only depot that operates on a consistent basis throughout the whole year is the TRY Recycling Depot as it runs from 8am to 5pm from Monday to Friday and 8am to 12pm on Saturday. The Denfield Rd and Longwoods Rd Enviro Depot only operate on Saturdays from 9am-1pm and from the spring to the fall each year.

Current tax bill covers all costs for landfilled waste and a portion of the recycling costs. With IPR, costs of recycling borne by municipalities will be reduced. Middlesex is considering implementing a curbside organics collection program.

Landscape Ontario started a recycling program for landscaping materials including nursery pots and greenhouse films in 2008.This program was put on hold due to receiving countries halting the import of plastic combined with the cost of other methods of recycling.

5.0 GROWTH PROJECTIONS

5.1 CURRENT WASTE GENERATION

For households, the co-collection of municipal household waste and recyclables is carried out by the BRA. The overall waste generation volumes are slightly higher than other BRA municipalities, which can be attributed to the substantial urban commuter population in the community. Current diversion rates for the industrial, commercial and institutional (IC&I) sector are typically lower than the household sector, although this sector is responsible for approximately two thirds of the waste generated in Ontario per year. The type and numbers of wastes generated by the IC&I sector make this sector difficult to target and therefore it is the IC&I waste generators, rather than the product manufacturers who tend to pay directly for costs associated with waste diversion.

To determine the current waste generation rate, Stantec used the growth plan from the Growth Management Strategy (Watson, February 2022) in combination with household count provided by BRA which does underestimate total volumes since a portion of the waste collected at the two eco depots are not recorded in BRA's records. BRA obtains their number from what is reported by the Municipal Property Assessment Corporation (MPAC) and is usually two years behind actual counts. BRA reported that the MPAC changed the way they calculated households for a period of time, and after 2016 they simply stopped providing them.

The waste generation tracking indicated a noticeable increase from 2014 onward being directly related to a system change when, on June 1, 2015, Middlesex Centre launched the automated collection program using wheelie bins. Prior to that, residents paid for waste management services using bag tags where every bag of waste needed a $2.00 tag (or more later) to receive service. Anecdotally it was reported that a number of residents refused to pay, and they used other means to dispose of the waste (burn barrels, dumpster at work, compost more, etc.).

The introduction of the wheelie bins changed the way residents paid for waste management services. They now pay a subscription fee based on the size of bin they have. The smallest bin is 35 US gallons or the same as two regular garbage bags (one industrial size). When paying by tag, the average resident generated 0.8 bag per week. Now they have the capacity to manage two bags (more if they subscribe to a larger bin). Since the program is mandatory, people are paying for the bin whether it is full or not. This change has resulted in a substantial increase in measured volume generated. The COVID years further accentuated that with many people working from home.

Table 5-1 summarizes waste and recycling generated in the Municipality from 1998-2021. **Table 5-2** is a summary of the records provided by BRA. One trend worth noting is that it appears the recycling has not increased since the elimination of the bag-tag program has been replaced with carts in 2015. This has resulted in an increase in the volume of waste slightly above the population growth rate. The most likely cause has been that it is easier for the customer to throw all waste into one bin rather than separate out the recyclable and compostable materials.

Table 5-1: Historical Waste Generation
Municipality of Middlesex Centre
Quarterly Co-collection Report

Fiscal Quarter Ending December 31, 2021

kg	Waste					Recycling					Combined Total
Year	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	
1998	278,280	329,742	358,378	347,237	1,313,637	232,417	266,500	252,730	259,866	1,011,513	2,325,150
1999	321,654	367,702	385,472	371,910	1,446,738	227,974	276,588	271,491	301,903	1,077,956	2,524,694
2000	344,439	395,755	431,124	400,071	1,571,390	283,168	298,262	267,230	329,321	1,177,981	2,749,371
2001	376,138	452,648	434,697	429,600	1,693,083	280,664	300,056	293,210	318,160	1,192,090	2,885,173
2002	383,749	441,008	413,814	409,345	1,647,916	293,728	291,790	289,420	298,650	1,173,588	2,821,504
2003	387,163	463,546	465,896	452,685	1,769,289	301,535	303,880	295,737	331,568	1,232,720	3,002,009
2004	421,287	450,303	466,778	461,451	1,799,820	361,178	343,580	337,270	355,334	1,397,362	3,197,182
2005	443,366	486,019	492,214	475,930	1,897,529	342,680	369,372	347,570	371,230	1,430,852	3,328,381
2006	476,798	490,522	509,562	499,816	1,976,698	365,459	360,020	353,692	386,510	1,465,681	3,442,379
2007	473,990	492,749	524,670	525,455	2,016,864	365,140	347,460	350,810	382,870	1,446,280	3,463,144
2008	473,390	531,750	557,580	502,800	2,065,520	367,400	367,680	367,676	386,150	1,488,906	3,554,426
2009	516,710	513,000	518,100	505,880	2,053,690	375,780	340,290	325,190	357,140	1,398,400	3,452,090
2010	466,060	507,320	528,870	510,240	2,012,490	367,730	364,080	362,710	418,530	1,513,050	3,525,540
2011	485,820	534,340	541,550	530,110	2,091,820	382,810	377,810	361,050	351,910	1,473,580	3,565,400
2012	496,220	542,250	539,300	520,830	2,098,600	332,700	305,530	316,050	342,310	1,296,590	3,395,190
2013	500,380	542,670	556,710	527,370	2,127,130	313,670	335,990	319,320	356,680	1,325,660	3,452,790
2014	490,090	595,660	585,190	563,860	2,234,800	348,430	354,420	332,300	363,020	1,398,170	3,632,970
2015	522,490	612,360	718,530	713,360	2,566,740	348,290	381,080	437,880	445,260	1,612,510	4,179,250
2016	674,790	724,410	766,120	753,870	2,919,190	439,290	468,230	458,410	501,950	1,867,880	4,787,070
2017	727,020	796,990	798,940	789,740	3,112,690	447,250	502,060	459,350	472,050	1,880,710	4,993,400
2018	758,260	841,570	851,980	839,740	3,291,550	432,770	467,530	472,820	521,700	1,894,820	5,186,370
2019	762,320	845,850	854,070	833,350	3,295,590	463,600	500,280	468,540	497,140	1,929,560	5,225,150
2020	776,520	937,890	950,890	938,200	3,603,500	456,210	490,900	474,840	517,420	1,939,370	5,542,870
2021	853,350	961,530	1,016,080	1,021,190	3,852,150	504,440	502,590	506,770	546,540	2,060,340	5,912,490
Average	*502,475*	*560,698*	*576,106*	*560,993*	*2,200,273*	*353,473*	*365,799*	*357,187*	*385,507*	*1,461,966*	*3,662,239*

kg/hhld	Waste					Recycling					Combined Total
Year	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	
1998	56	66	72	70	263	47	53	51	52	203	465
1999	64	74	77	74	290	46	55	54	60	216	505
2000	69	79	86	80	315	57	60	53	66	236	550
2001	75	91	87	86	339	56	60	59	64	239	578
2002	77	88	83	82	330	59	58	58	60	235	565
2003	78	93	93	91	354	60	61	59	66	247	601
2004	84	90	93	92	360	72	69	68	71	280	640
2005	86	95	96	93	370	67	72	68	72	279	649
2006	88	91	94	93	366	68	67	66	72	271	638
2007	88	91	97	97	374	68	64	65	71	268	641
2008	85	96	100	91	372	66	66	66	70	268	640

kg/hhld	Waste					Recycling					Combined Total
Year	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	
2009	93	92	93	91	370	68	61	59	64	252	622
2010	84	91	95	92	362	66	66	65	75	273	635
2011	85	91	92	90	356	65	64	61	60	251	606
2012	83	90	90	87	349	55	51	53	57	216	565
2013	83	90	93	88	353	52	56	53	59	220	574
2014	80	97	95	92	364	57	58	54	59	228	592
2015	85	100	117	116	418	57	62	71	73	263	681
2016	110	118	125	123	476	72	76	75	82	304	780
2017	115	126	126	125	493	71	79	73	75	298	790
2018	120	133	135	133	521	69	74	75	83	300	821
2019	121	134	135	132	522	73	79	74	79	305	827
2020	123	148	151	149	570	72	78	75	82	307	877
2021	130	146	154	155	586	77	76	77	83	313	899
Average	*90*	*100*	*103*	*101*	*395*	*63*	*65*	*64*	*69*	*261*	*656*

Table 5-2: Waste Generation Rates Provided by BRA

kg				Household Count					
Year	Waste	Recycling	Total	MPAC	FIR	hhld	kg/hhld/yr	Population	kg/capita/yr
2005	1,897,529	1,430,852	3,328,381	5,131	5,238	5,238	635	14,900	223
2006	1,976,698	1,465,681	3,442,379	5,399	5,342	5,342	644	15,500	222
2007	2,016,864	1,446,280	3,463,144	5,399	5,552	5,552	624	16,000	216
2008	2,065,520	1,488,906	3,554,426	5,552	5,616	5,616	633	16,000	222
2009	2,053,690	1,398,400	3,452,090	5,552	5,735	5,735	602	16,000	216
2010	2,014,820	1,511,850	3,526,670	5,552	5,931	5,931	595	14,787	238
2011	2,091,250	1,475,870	3,567,120	5,879	5,962	5,962	598	14,930	239
2012	2,097,860	1,296,610	3,394,470	6,006	6,110	6,110	556	16,487	206
2013	2,124,540	1,324,450	3,448,990	6,018	6,110	6,110	564	16,487	209
2014	2,237,860	1,399,900	3,637,760	6,138	6,991	6,138	593	17,622	206
2015	2,559,330	1,606,210	4,165,540	6,138	5,301	6,138	679	14,916	279
2016	2,920,840	1,870,470	4,791,310	6,138	6,289	6,289	762	17,262	278
2017	3,117,890	1,883,050	5,000,940	6,317	6,489	6,489	771	17,262	290
2018	3,291,480	1,890,750	5,182,230	6,317	6,512	6,512	796	17,262	300
2019	3,298,350	1,930,750	5,229,100	6,317	6,578	6,578	795	17,262	303
2020	3,601,940	1,937,980	5,539,920	6,317	6,578	6,578	842	17,262	321
2021	3,847,500	2,070,810	5,918,310	6,578	7,262	7,262	815	18,928	313
2022	3,932,170	2,151,630	6,083,800	6,979		7,262	838	18,929	321

The numbers provided by BRA indicate a slightly lower total as this does not represent volumes collected at municipal run depots. An additional 5% is estimated to be generated by waste taken directly to the two Enviro depots in the Municipality.

5.2 FUTURE WASTE GENERATION

Future waste generation is based, in large part, on projected future populations. This is combined with an estimate of kg/person per year of waste to calculate future waste quantities. Based on historical growth

rates of waste volumes obtained from BRA, previous generation rates based on the 24-year historical average household growth rate for the Municipality, and the population growth assumptions from the Watson & Associates Growth Management Strategic Plan, February 2022, (Watson Report), the future waste generation rates were derived.

The household growth in the municipality from 1999 to 2022, obtained from the average growth rate derived from Table 5-1, was 1.2%. The Watson Report for the Municipality of Middlesex Centre had a historic growth rate of 1.2% as well. The Watson report states the most likely growth scenario is the high growth scenario which predicts an average growth rate of 2.3% in population and 2.4% in employment growth. The 2.3% rate was used for predicting future waste volumes.

To further break down the waste generated by recycling, the BRA measured recycling rate was used. In 2021 was measured at 35%. With EPR coming into place in 2023, this value is very likely increase. This assumption is consistent with literature expectations on the effects of implemented EPR. Institutes such as the Recycling Partnership for Circularity, reviewed jurisdictions worldwide that have implemented EPR confirmed that EPR programs have resulted in driving recycling rates up to as high as 75%. For the purposes of this technical memo, a more conservative estimate of 50% of the waste generated is assumed to be recycled from 2023 forward. This assumption should be verified in the next couple of years after the EPR initiative becomes more predictable as to its impact.

The residential population and the employment population growth estimates from the Watson Report were used along with the historical waste volumes obtained from BRA to produce a blended generation rate of 238 kg per person per year for all wastes. The generation rate is somewhat lower than what is typically is used to estimate generation rates, but the weight collected are substantiated by the actual BRA measurements in Table 5.2.

The BRA waste numbers reported were actuals but did not include the volume generated by the Municipal run two Eco-Stations. To account for this volume, 5% was added to the 2021 total volume of 5,918,310 to obtain a new total volume estimate in 2021 of 6,209,115 with 35% of this being recycling. From this, the future waste growth numbers generated are summarized in **Table 5-3**.

Table 5-3: Future Waste Generation

	Residential Population Growth Rate	Employment Population Growth Rate	Total Population	Total Waste Collected (kg/yr)	Total Recycling (kg/yr)	Remaining Waste* (kg/yr)
2021	19,458	6600	26058	6,208,115	2,172,840	4,035,274
2026	21,577	7600	29177	6,951,192	3,475,596	3,475,596
2031	24,089	8700	32789	7,811,723	3,905,861	3,905,861
2036	27,075	9900	36975	8,809,004	4,404,502	4,404,502
2041	30,631	10900	41531	9,894,436	4,947,218	4,947,218
2046	34,875	11700	46575	11,096,129	5,548,065	5,548,065
* Includes all other waste, including composting, anerobic digestion, landfilling, etc.						
**Estimated at 5% of total volume						

How much of the waste generated by future populations will be destined for landfilling is, in part, based on future waste diversion programs and initiatives. With the introduction of governmental recycling and waste diversion programs the total amount of waste destined for landfilling will likely decrease, depending on the success of the program(s).

6.0 REGULATOR, INDUSTRY AND CONSUMER TRENDS

6.1 REGULATORY TRENDS

Regulatory trends appear to be focused on the Zero Waste initiatives, where the ultimate goal is to have complete diversion from landfills by introducing initiatives that shift the majority of the obligation onto the producers and industry. In addition, the Government of Ontario is moving towards IPR for most waste streams.

6.1.1 Reducing Food Waste and Increasing Food Recovery

The Food and Organic Waste Policy Statement was issued under section 11 of the Resource Recovery and Circular Economy Act, in 2018 and provides direction to provincial ministries, municipalities, industrial, commercial and institutional establishments, and the waste management sector to increase waste reduction and resource recovery of food and organic waste.

6.1.2 Municipal Hazardous or Special Waste (MHSW) Program

The MHSW Program was developed to divert certain household hazardous and special wastes from disposal in landfills, incineration, and sewers with the aim of making the disposal of household hazardous and special wastes safer, simpler, and more convenient. Phase 1 of this program started to operate in July 2008 and shared responsibility between industry and municipalities along functional lines. Municipalities absorbed the costs associated with collecting subject wastes, which producers assumed financial responsibility for all post collection activities. The next phases of the program were intended to expand the list of material to be diverted and be fully funded by industry. However, in Fall 2021, the program wounded up and the Minister of the MECP enabled the transition of hazardous or special materials to the IPR framework outlined in the RRCEA, 2016 (RPRA 2022). On September 30, 2021, the MHSW program ceased and on October 1, 2021, the Hazardous and Special Products (HSP) Regulation came into effect (RPRA 2022).

The MOECC Emergency Response Plan ("the plan") fulfills the requirements of the EMCPA, Ontario Regulation 380/04, and related Order in Council for the Minister of the Environment and Climate Change to develop an emergency response plan for specific types of emergencies as assigned by the Lieutenant Governor in Council.

The primary purpose of this Plan is to establish a framework for a systematic and effective response to spill and drinking water emergencies that escalate to the level where MOECC is asked or is required to respond. MOECC's primary role in response to spill and drinking water emergencies is to ensure regulatory oversight of the duties and responsibilities of those regulated parties and to support response activities in conjunction with other authorities. This Plan also establishes the framework for a response to other types of emergencies where MOECC's support may be required.

6.1.3 Other programs wound up and covered by legislation

Other notable programs that have wound up and are now following an IPR framework that abide by regulations designated in the RRCEA, 2016 for how to manage and collect certain materials include (RPRA 2022):

- Stewardship Ontario's program for managing single-use batteries has been replaced by the Batteries Regulation IPR.
- The Waste Electrical and Electronic Equipment (WEEE) Program has been replaced by the Electrical and Electronic Equipment (EEE) Regulation IPR.
- The Ontario Tire Stewardship (OTS) which operated the Used Tires Program has been replaced by the Tires Regulation IPR.

6.1.4 Incentives for Diversion (Levies on Solid Waste)

Middlesex Centre, and the BRA, should continue to monitor the situation of waste diversion and make changes when necessary. Currently BRA recovers 90% of the available recyclables from blue boxes. An investigation into levies on solid waste at either the municipal or program wide level could provide details on increasing the effectiveness of waste diversion. Some municipalities have implemented programs whereby the ratepayer selects a size of curbside waste container and dependent on the selected size either pays a levy or receives a rebate.

In many jurisdictions it is commonplace for levies to be placed on waste entering landfills. This levy can be as low as a few dollars and in some cases, such as the Netherlands, as high $142 per tonne. Clearly the more costly it is to dispose of waste in landfills, the more incentive there is to avoid using landfills and bring the cost of diversion into a parallel economy.

6.1.5 Landfill Availability and Capacity

As a member of the BRA, Middlesex Centre does not need to independently administer landfills as this is provided via the BRA. Presently the BRA operates 30 landfills, of which, Twin Creeks Landfill is currently Middlesex Centre's disposal site, as per their agreement with BRA. So long as Middlesex Centre maintains its membership with the BRA, their security on landfill availability and capacity remains at the facility. As noted previously, the City of London has included provisions for disposal of waste in their expansion (EA awaiting Minister approval) of their W12A landfill for surrounding Counties, which includes Middlesex.

6.2 INDUSTRY TRENDS

For the most part, industry trends will likely follow regulatory updates imposed by the various levels of government.

The Business Development Bank of Canada has noted four new ways in which companies are already or can learn how to become more sustainable and determine ways for how to minimize costs when it comes to waste management (BDC 2022).

Waste data is one way for companies to identify significant cost savings as it helps identify how much waste is being produced, the types of waste being produced, and the total volume that goes to a landfill or recycling facility (BDC 2022). Four different types of waste data that are being used by companies include vendor invoices, weight reports, sensors, and waste audits. Businesses are now hiring third-party waste consultants to get an unbiased source of credible data (BDC 2022).

Another emerging trend that companies are focused on is monitoring and reducing food waste (BDC 2022). This has been done by Canadian cities prohibiting businesses from putting food waste in the garbage as it increases the amount of methane gas at a landfill site which is more effective than CO^2 in trapping heat in the atmosphere. Different types of reduction strategies for food waste can include (BDC 2022):

- Upcycle extra food into a new product;
- Sell unused food at a discounted price;
- Sell unused food to another business or donate to a charity; and
- Optimize food purchases to reduce the amount discarded.

As municipalities are adding residential composting programs, these programs are encouraging the contract opportunities restaurants and composting service providers could have (BDC 2022). Having on-site processing equipment such as using macerators, digesters and composters can decrease the volume of food waste while simultaneously creating useful items such as compost and fertilizer (BDC 2022).

To optimize service levels and reduce their carbon footprint, businesses across Canada have installed sensors (BDC 2022). In doing so, the contents of the container are displayed which can help monitor for possible cross contamination (eg. garbage and recycling items being mixed in the wrong bins), and data quality is significantly improved so you can exactly see how much waste volume as a business you are contributing towards the environment (BDC 2022).

Another trend that has been identified is companies measuring their carbon impact of waste such as using metrics in annual sustainability reports around sustainable waste and recycling where the focus used to be on energy and water (BDC 2022). One of the best ways to measure a company's carbon impact is through a waste assessment and audit with assistance from an outside expert. In doing so, a breakdown of a company's waste will be presented and recommendations will be provided for how to reduce waste levels, reduce cost, and improve data (BDC 2022).

Overall, the trend is to put more of the onus on the industry and producer when it comes to solid waste services, waste diversion, and creating less waste. This ethos reflects that over time the municipality will pay less of a burden for the materials produced by industry while providing the industry with a further

incentive to increase its effect on waste diversion. The cost for this trend will most likely be passed on from the industry to the consumer.

6.3 CONSUMER TRENDS

As the Zero Waste philosophy becomes more prevalent, consumers can expect to be further educated on what to do with their solid waste; ways to reduce it, what can be recycled, and ways to reuse. Education and information would be required for any changes to the current collection system. This could include any changes to the way solid waste is streamed by the rate payer. These could include new items added to the recycling system, the use of wet and dry collection system, or the addition of an organic stream for curbside pickup. Currently the Municipality offers rate payers options to digest their own organic matter in the form of composters and digesters.

With over 68% of the average waste bag containing organic matter that can be composted or digested, the opportunity for great advances in waste reduction can be made. Composting on a large scale typically costs twice as much as landfilling the same material. However, if municipalities are legislated to collect organic matter and taxes imposed on landfilling, the prices will likely become more competitive. In the meantime, the use of home composters and digesters should be promoted further.

7.0 SUMMARY OF OPPORTUNITIES AND THREATS

Waste management is dealt with by a third party organization, BRA, a membership of 21 separate municipalities, of which Middlesex Centre is one. With regards to future servicing of solid waste, Middlesex Centre has several options:

- Remain as a member of the BRA with the current level of service;
- Remain as a member of the BRA with a different level of service;
    - A lower level with the municipality or another third party maintaining existing level or an increased service level;
    - Higher level of service;
- Middlesex Centre to be sole service provider;
    - In full by the municipality;
    - With the assistance of another party; and
- Full service provided by a new third party.

Middlesex Centre's Master Plan Principles dictate that amongst other things, complexity be minimized, and as such, breaking the waste management collection up to different collectors would go against this. Further, if the Municipality took over collection this would also produce a list of startups and continued operating issues, whereas BRA has been in operation for over 20 years and is providing its service to 21 municipalities. In addition, by having BRA as the service provider any risk to the municipality has become the responsibility of the BRA.

Another principle is the notion of network servicing versus linear servicing. Normally this concept revolves around the thought that a network is easier and more efficient to service than an equivalent length linearly. Applying this to BRA's collection system, both solid waste and recyclables are collected in a single truck and sorted at their facility as opposed to separate trucks for each stream.

Finally, as part of the BRA, the municipality is subject to any threats to that organization; however, the threat is spread amongst 21 municipalities. Additionally, the municipality is also subject to any opportunities that the BRA may encounter. It is unlikely that a similar format could be found with a new third-party collector. However, regular audits of the current system should be completed at the municipality's convenience.

8.0 SUMMARY OF PLANNING SOLUTIONS AND RECOMMENDATIONS FOR NEXT STEPS

8.1 SUMMARY OF PLANNING SOLUTIONS

Going forward, solid waste will continue to be a key component of municipal servicing. Waste's role in public and private sector sustainability targets has been discussed for years. But the impacts of climate change are showing up more in day-to-day collection and in how municipalities and other operators anticipate future risks.

It is key for the municipality to have a dynamic collection system that will be able to develop and evolve with changes in policy and environmental trends. During the transition period of moving to the new Extended Producer Responsibility model between (January 2023 – December 2025), exactly how producers, collectors, municipalities, and the general public respond to these new pieces of legislation will determine how waste will be handled in the next few years. Ultimately the total amount of waste destined for landfilling should decrease, depending on the success of the program(s). One of the key concerns of the municipalities is that producers may switch packaging to compostable material thereby shifting a portion of the recycling stream back to the waste stream. This transition will have to unfold and may result in changes to EPR regulations if it evolves in a negative way.

It is anticipated that recycling should move from the historical 35% to closer to 60% and that the volume of waste generated per capita should decrease. Research by the Recycling Partnership examined EPR's impact on seven paper and packaging recycling programs around the world. The findings showed that across the board, EPR policy drove the collection and recycling of target materials to over 75% in British Columbia, Belgium, Spain, South Korea, and the Netherlands, with Portugal and Quebec at over 60%. Across all materials, U.S. state programs performed far lower.

It is also important to be able to provide input and direction in shaping future policies and solutions. As a member municipality in the Bluewater Recycling Association (BRA), Middlesex Centre will have these opportunities, as they are largest rural regional collection providers in Ontario. At this time, hopefully, the Municipality will be able to continue co-collections with the current provider, the BRA, as it is unlikely that they will be able to find a similar provider with the abilities that the BRA has currently available. The Municipality may want to support Try Recycling to adapt their current transfer station to facilitate the handling of residential waste to provide the community with multiple options. In the event the Producers do not choose to select BRA for collection of recyclables, the cost of maintaining current levels of service is most likely to rise as 2 trucks will be required per household (one for waste, one for recycling) versus the current 1 truck co-collection system.

The communities in Middlesex currently only have the option for direct disposal at the Twin Creeks landfill site owned by Waste Management Inc. Eventually a second (new or existing) landfill facility will be required and an option includes the use of the City of London's W12A site (EA approval pending for expansion). Due to the difficulties and cost in siting and permitting new landfills in the province for a variety of reasons, a number of municipalities in Ontario are contracting with 3rd parties to haul and

dispose of waste to landfills located near either Buffalo or Detroit as allowed for under the North American Free Trade Agreement. This is being used as a transitional solution to preserve existing airspace until the long-term regulatory landscape can be better defined.

In the longer term, it is most likely the County would have to incorporate a transfer station to access a more distant site. Try Recycling may be able to adapt their current transfer station to facilitate the handling of residential waste to provide the community with multiple options.

The waste and recycling industry is poised for another year of everyday service demands and evolution as new policies, sustainability goals and a shifting economy shape the sector's future.

Some of the anticipated top trends in the near future include challenges around plastics being compatible with circular economy, climate risks, biogas opportunities, fleet developments, environmental justice action, and AI. Plastic is one of the most controversial materials in recycling right now, and 2023 will be a year that could provide viability for new and emerging business ventures in the recycling area.

Many millions of dollars have been committed to landfill and anaerobic digestion projects, with industry observers seeing significant untapped potential in North America. The results of big acquisitions such as BP-Archaea and BlackRock-Vanguard Renewables will start coming into focus, while multiple projects from other companies also begin to come online. The climate benefits of capturing more methane before it gets emitted are clear, though it remains to be seen exactly if or how the current biogas boom will move the needle on organics disposal volumes. This may provide new opportunities which could make for better economics for Middlesex to begin moving towards renewable gas projects.

Disposal is still a cheaper alternative in many areas and composting remains a less capital-intensive infrastructure option for organics recycling than digestion. Outside of regions with regulatory requirements the question remains, will investment and regulatory trends encourage more diversion of organic waste via systems such as anaerobic digestion? Or will a similar amount of organic waste still end up in landfills with more advanced systems to collect and monetize the RNG being emitted? A prudent response to all of these uncertainties is to move as required by regulation and re-assess the market in 2025.

Industry players are also expected to take advantage of new or shifting regulations to build additional plastic business ventures in 2023, especially as brands continue to make pledges to use more recycled content. WM's acquisition of Avangard last year and Republic Services' investment in an integrated plastics recycling facility in Las Vegas are examples of haulers betting on the growing financial potential of recycled plastics. Others are budgeting for major equipment and facility upgrades to better separate typical plastics and future-proof against swings in plastic commodity markets.

Major waste companies continue to commit to and work on a range of sustainable fleet goals that suggest a greater tide toward compressed and renewable natural gas by the end of the decade. And announcements about pilots or orders for other alternative fuel vehicles like electric trucks by municipal or private haulers keep cropping up.

8.2 RECOMMENDATIONS FOR NEXT STEPS

The following are recommendations for the Municipality to consider implementing.

- Future predictions of waste volumes and diversion rates for the Municipality are best revisited in about 3-5 years once the transition has occurred. At the Municipality's convenience, regular assessments of the systems function could be completed.
- Continue with the status quo as the transition to EPR occurs and monitor changes. This includes continuing using the services offered by BRA.
- Evaluate using savings from the blue bin program to evaluate the effectiveness of a source separated organics program. It will be important to have either a compost or an anerobic digestor facility willing to enter into a long-term contract prior to implementing SSO. This could be accomplished by using a third-party.
- Continue to monitor both the landfill and biogas capacities that could be used and develop strategies to be able to effectively use these facilities.
- Continue to monitor the effect of new landfill standards in Ontario with respect to siting new facilities and/or expanding existing facilities. If these continue to be extremely difficult to achieve, consider sending some of the waste stream to other regions willing to accept the waste (i.e. United States).
- Determine the effectiveness of a waste transfer facility for multiple streams.

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O. Reg 84/03 Used Tires

O. Reg 393/04 Waste Electrical and Electronic Equipment

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O. Reg 104/94 Packaging Audits and Packaging Reduction Work Plans

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APPENDIX A
IMPLEMENTATION OF THE SOIL REGISTRY

Stantec

APPENDIX A: IMPLEMENTATION OF THE SOIL REGISTRY

1 Implementation of the Soil Registry

As of January 1, 2023, several parties are required to file notices to the soil registry about how they reuse and dispose of excess soil.
Specific parties include:

- Construction and development Project Leaders.
- Operators/Owners of soil reuse sites and residential development soil depot sites.

As part of filing a notice to the Soil Registry, the following documentation is required prior to the removal of soil:

- A general project description.
- Description of the project area, including geographic coordinates (UTM).
- Contact information of the project leader, operator of the project area, persons filing on behalf of a project leader or corporation, qualified persons that prepared or oversaw preparation of documents, and person responsible for the transportation of the excess soil.
- Estimate of soil volume to be removed.
- Location and operator contact information of any temporary management sites.
- Location, property use, and intended reuse of final placement of excess soil.
- Declaration of compliance by the Project Leader.

Within 30 days of all soil being removed from a project area or management site, the registry must be updated with the following:

- Final volumes of soil deposited at any of the following sites:
    - Class 1 soil management site (soil storage or processing).
    - Class 2 soil management site (any temporary soil storage site, other than Class 1).
    - Reuse site.
    - Local waste transfer facility.

    - Landfill.

- Date on which the last load of soil was removed from the project area or any Class 2 soil management site.

2 Documentation and Tracking

As of January 1, 2023, the following documentation is required for any project filing a notice to the Soil Registry:

- Assessment of Past Uses: This is very similar to a Phase One Environmental Site Assessment (ESA) under O.Reg. 153/04 and involves a records review, interviews, site reconnaissance, and a report identifying Potentially Contaminating Activities (PCAs) and resulting Areas of Environmental Concern (APECs). A new assessment is not required if a Phase One ESA compliant with O.Reg. 153/04 has already been prepared for the property.

- Sampling and Analysis Plan: If the Assessment of Past Uses or Phase One ESA report identifies APECs at the project area, a Sampling and Analysis Plan (SAP) is required. The SAP must be prepared by a qualified person and include appropriate sampling for all areas where soil is to be excavated. A SAP is not required if soil is to be deposited at a Class 1 soil management site.

- Soil Characterization Report: Based on the results of the SAP, a Soil Characterization Report must be prepared which includes:

    - The results of the sampling program, including descriptions of sampling locations.

    - Identification of where soil may be deposited based on the results, including reuse within the project area, disposal at a Class 1 soil management site or landfill, and potential reuse sites.

- Excess Soil Destination Report: This report outlines which type of site excess soil is to be deposited including specific locations and volumes of soil:

    - Each Class 1 soil management site.

    - Each reuse site.

    - Each landfill.

    - Any alternate sites in the event excess cannot be deposited at the expected site.

3 Operation of a Reuse Site

As of January 1, 2023, any owner/operator of a reuse site where a soil volume of 10,000 m^3 or more is expected to be deposited, other than an infrastructure project, must comply with the following:

- File a notice in the Soil Registry with the information below:
    - Location of the reuse site with UTM coordinates.
    - Description of undertaking for which the final placement of soil will be used (i.e. cover, fill, etc.);
    - Contact information of operator.
    - Estimate of soil volume.
    - Applicable excess soil quality standards for the reuse site.
    - Timing estimate for first and final loads.
    - Declaration of compliance by owner/operator.
- Develop procedures for the soil to be deposited for final placement, and that such placement does not result in an adverse effect. The owner/operator must ensure that these procedures are being following for each load of soil deposited.
- File an update to the Soil Registry within 30 days of placing the final load confirming that all soil was deposited, the total volume of soil, and the date of the final load received.