

Appendix H

Enhanced Waste Diversion Assessment

(Draft for Discussion)

Walker Environmental Group Inc.

Southwestern Landfill Proposal
Environmental Assessment

January 2020



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1. Introduction

In March, 2016, the Minister of Environment, Conservation and Parks approved the Terms of Reference (ToR) prepared by Walker Environmental Group Inc. (Walker) for an Environmental Assessment (EA) of the proposed Southwestern Landfill in Zorra Township, Ontario.

In approving the ToR, the Minister added a number of amendments that Walker is required to address in its EA. Amendment #9 to the [*Approved Amended Terms of Reference*](#) reads as follows:

9. As part of the environmental assessment, Walker shall consider and evaluate alternative methods for the separation, at source, at the landfill or by other method, of Industrial Commercial and Institutional waste such as, but not limited to, recyclables and organics that may have other end uses outside of final landfill disposal.

This report, a supporting document to the EA Report being prepared by Walker, is intended to address Minister's Amendment #9.

2. Background

Walker is an integrated waste management company offering a wide network of services across Ontario in both the diversion and disposal of waste. Although its ToR is specifically and only related to the proposed landfill site in Zorra Township, Walker did identify that the establishment of the landfill could result in other waste management business opportunities arising in the future that, if appropriate for the site and subject to obtaining necessary approvals, could eventually lead to a resource recovery and waste management campus similar to the one in Niagara.

Also in its ToR, Walker presented a thorough review of further waste diversion as a possible alternative to this proposed landfill site, and concluded that it would not replace the need for additional disposal capacity in the province¹.

In support of this conclusion, the reader is directed to Section 7.1 of the *Approved Amended Terms of Reference* and, in particular, Supporting Document No. 3, Attachment No. 1 for a comprehensive description of the significant investments that Walker has made in waste diversion businesses and programs in the province (as of 2013).

Subsequent to the receipt of the *Approved Amended Terms of Reference*, Walker provided a letter to the Ministry's Special Project Officer, dated May 11, 2016, outlining how Walker would satisfy and incorporate the Minister's Amendments into the EA. In response to Minister's Amendment #9, Walker committed to:

- *..."carry out and document a further review of the potential for additional diversion activities (which could also include information and awareness programs, workshops, etc.) for IC&I waste at the landfill or at the source and incorporate and feasible diversion activities into the EA."*

¹ A conclusion since reinforced by the province in the *Strategy for a Waste-Free Ontario*, which acknowledges the need for up to 16 new landfills in the province by 2050 in order to support the transition to its diversion goals. (February, 2017; p. 24-25).

Additionally, Walker consulted with its Project Officer to seek clarity and guidance on Minister's Amendment #9, and the Project Officer also responded to questions from the Community Liaison Committee on this matter (December, 2016). In his response, the Project Officer confirmed Walker's understanding that:

- *The amendment does not require Walker to assess alternatives such as recycling or composting facilities, since these are not necessarily subject to Environmental Assessment Act approval and, therefore, can be approved separately under the Environmental Protection Act and/or other applicable legislation if and when they are proposed.*
- *The amendment is intended for Walker to identify other diversion activities that it can implement in conjunction with the proposed Southwestern Landfill, that are supportive of the Waste-Free Ontario Act and the draft Strategy for a Waste-Free Ontario.*

3. Objectives and Scope

Based on the above, the scope of this report addresses three primary objectives intended to satisfy Minister's Amendment #9 to the *Approved Amended Terms of Reference*:

- To demonstrate that, at the current time, further diversion efforts for the types of waste to be disposed at the proposed Southwestern Landfill are best delivered through source separation rather than mixed-load processing at the landfill;
- To provide an update on Walker's substantial and successful efforts to expand its waste diversion system since its last report in 2013, along with initiatives to continue increasing diversion in the future; and
- To formalize Walker's commitments to support of the Province's waste diversion policies, strategies and objectives.

4. Further Diversion Opportunities

During the course of this EA, Walker gave further consideration to potential diversion opportunities for the types of solid, non-hazardous waste that would be disposed of at the proposed Southwestern Landfill, and concluded that in the immediate future, increased diversion is most effectively achieved at the source(s) and/or through Walker's existing waste diversion and resource recovery system, rather than at the proposed landfill site.

Walker's experience at its existing landfill site is that by the time mixed waste loads are delivered at the landfill they are too cross-contaminated to effectively and efficiently separate the various components that could be diverted. Even higher-value recyclable materials like paper and cardboard, for instance, are rarely clean enough to meet the strict requirements of the recycling end markets after they have been mixed with other wastes. Therefore, Walker has primarily focused the development of its current waste diversion system on source-separated waste streams. The major facilities that make up Walker's integrated waste management system are identified in Table 1, below.

Table 1: Walker Integrated Waste Management System - Ontario

Facility	Location	Waste Stream(s)
N-Viro® Biosolids Plant	Thorold	Municipal Sewage Residue and Alkaline Admixture (a cement manufacturing waste product)
N-Viro® Biosolids Plant	Sudbury	Municipal Sewage Residue and Alkaline Admixture (a cement manufacturing waste product)
N-Viro® Biosolids Plant	Leamington	Municipal Sewage Residue and Alkaline Admixture (a cement manufacturing waste product)
N-Viro® Biosolids Plant	Sarnia	Municipal Sewage Residue and Alkaline Admixture (a cement manufacturing waste product)
All Treat Farms GORE® Compost Plant	Arthur	Leaf & Yard Waste, Food Waste, Curbside Organics, Digestate, Compostable Products
Gro-Bark	Caledon	Soil & Wood
Gro-Bark	Bird's Creek	Soil & Wood
Gro-Bark	Dundalk	Soil & Wood
Gro-Bark	Georgetown	Soil & Wood
Gro-Bark	Kenabeek	Soil & Wood
Gro-Bark	Milton	Soil & Wood
Grease Trap UCO & Organic Recycling	Toronto	Used Cooking Oil, Grease, Food Waste
Grease Trap UCO & Organic Recycling	Woodstock	Used Cooking Oil, Grease, Food Waste
Grease Trap UCO & Organic Recycling	Ottawa	Used Cooking Oil, Grease, Food Waste
Waste & Recycling Drop-Off Depot	Thorold	Solid Non-Hazardous Waste & Recyclables
Walker Resource Recovery Area	Thorold	Wood Waste, Railway Ties, Asphalt Shingles, Excess Soils
WEG GORE® Compost Plant	Thorold	Leaf & Yard Waste, Food Waste, Curbside Organics
Renewable Energy Plant	Thorold	Landfill Gas
Renewable Energy Plant	Mississauga	Landfill Gas
Renewable Energy Plant	Ottawa	Landfill Gas
Renewable Energy Plant	Moose Creek	Landfill Gas
Landfill Gas Collection and Destruction Facility	Essex	Landfill Gas
Waste Transfer Station	Burlington	Solid Non-Hazardous Waste & Recyclables
South Landfill	Thorold	Solid Non-Hazardous Waste
Atlas Landfill	Welland	Excess & Contaminated Soils

Note that while some of these waste diversion facilities are co-located at the same site as Walker's landfills in the Niagara Region (the "resource recovery/waste management campus"), and benefit from shared infrastructure, they actually divert source-separated waste streams rather than mixed loads delivered for final disposal at the landfill. They are ancillary waste diversion facilities developed around and supported by the waste disposal facility (i.e. landfill). They have been developed over time as community, municipality and local businesses needs arise. Walker intends to take a similar approach

with the Southwestern Landfill. That is, as business opportunities arise and Walker continues to expand its overall waste diversion system, it may make sense at some point in the future for Walker to co-locate one or more of these facilities at the Southwestern Landfill.

The Province's recent report [*Ontario's Food and Organic Waste Framework: Action Plan*](#) addressing the diversion of food and organic waste also places a priority on source separation. About one-third of the province's solid, non-hazardous waste is food and organic waste, totaling about 3.7 million tonnes *per* year. Therefore, in recognition that recovering organic waste and diverting this waste stream from landfill represents the most significant opportunity to increase Ontario's waste diversion rate and reduce the need for new or expanded landfills, Walker has built much of its waste diversion system around source-separated organic waste servicing municipalities, retail establishments & complexes, office buildings, restaurants, hotels & motels, and large manufacturing complexes.

Based on Walker's considerable experience as a landfill operator and leading organic waste processor, the recovery of organic waste is most efficiently and economically achieved 'upstream' of receipt of mixed waste at the landfill. In other words, by the time organics in the waste stream is received at the landfill, the organics have been significantly cross-contaminated with other waste materials making separation and recovery technically and financially challenging as recycled material markets have very strict contamination thresholds. Organic waste inter-mixed in the general waste stream has such high cross-contamination that producing a safe, valuable, cost-competitive and saleable end-product (i.e., compost) is not viable. It is Walker's experience that organic waste separated upstream, or at the source, referred to as "source separated organic waste" is the only viable way to ensure it is processed into the highest quality end products.

5. Update – New/Expanded Waste Diversion Initiatives (Since 2013)

As noted previously, Walker's extensive waste diversion programs (as of 2013) were previously detailed in the *Approved Amended Terms of Reference*. Since that time, Walker has continued to invest in technology, infrastructure and services in order to enhance waste diversion in Ontario, in line with its overall strategy (described above) and in support of the Province's diversion goals. This section describes those continuing efforts, along with a number of initiatives that are expected to be implemented in the future.

5.1 Overview

Walker is Ontario's leading resource recovery² company. Its business is focused on waste diversion, resource recovery and a circular economy. Grounded by an imbedded corporate environmental management program ([Earth 1st](#)), Walker's values and objectives align with Ontario's waste management hierarchy which sets out an order of preference for action to reduce, divert and manage waste. Walker's diversified resource recovery businesses include: food waste composting, liquid organics collection and processing, municipal biosolids stabilization, waste wood processing, low-carbon alternative fuels and landfill utilization.

² The terms waste diversion and resource recovery are used interchangeably throughout this document and refer to the diversion of resources/materials from landfill and the processing of these materials into new, valuable, sustainable end-products.

In total, Walker currently diverts over 725,000 tonnes of waste from landfill per year and produces sustainable end-products that are reintroduced to the market.

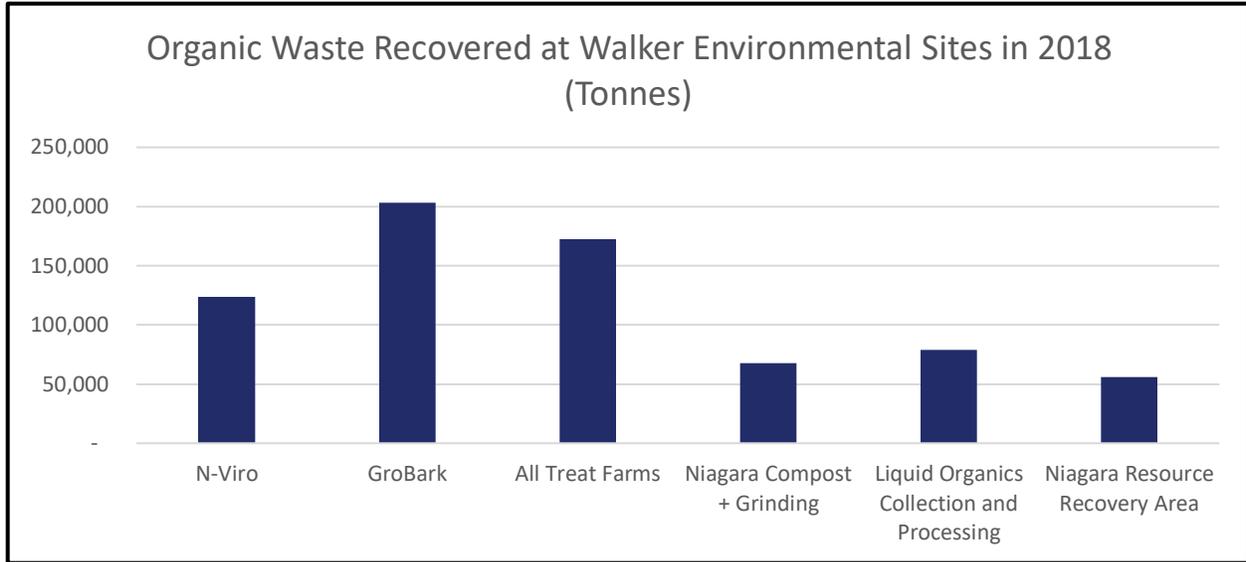
Figure 1 below illustrates the rapidly increasing quantity of resources that Walker has diverted annually over the past five years, which represents a substantial investment in resource recovery infrastructure and capacity.

Figure 1: Walker Environmental - Total Waste Diversion/Resource Recovery (2013-2018)



Note that approximately 95% of the resources recovered by Walker is organic waste including source separated organics, wood waste, and biosolids. This represents a significant contribution by Walker to the organic waste diversion and recovery objectives set out in the Province’s *Food and Organic Waste Policy Statement*. In fact, this growth and investment in Ontario’s organics diversion infrastructure makes Walker the largest organic waste processor in the province. **Figure 2** summarizes the amount of materials processed at Walker’s various organic waste resource recovery facilities in Ontario.

Figure 2: Organic Waste Recovered at Walker Environmental Major Facilities



5.2 New Diversion Initiatives (Since 2013)

The following sections describe a number of the key initiatives that Walker has taken since the previous report in 2013 that have resulted in the substantial increase in waste diversion noted above.

5.2.1 All Treat Farms

In 2016 Walker Environmental purchased [All Treat Farms Limited](#) of Arthur, Ontario. The All Treat Farms facility is one of Ontario’s largest and most successful source separated organics composting, soil blending and packaging facilities, utilizing the GORE® cover technology. All Treat is the preeminent company in Ontario in blending and bagging soils, mulches and other garden center products. Its products are sold in many large retail stores and garden centres across Ontario. All Treat maintains Walker’s values through community engagement and education with local schools, church groups and historical societies. The facility also provides compost and mulch as well as employee volunteer days to help clean up local parks and community gardens.

5.2.2 Gro-Bark

In 2017, Walker Environmental acquired [Gro-Bark®](#), the leading mulch and potting soil manufacturer in Ontario. Based in Caledon, Gro-Bark® services the Ontario and US Great Lakes region horticultural industry with high quality, sustainable and innovative materials that help plants grow. In addition to the soil blending facility in Caledon, through Gro-Bark® Walker operates composting, mulch production and several aged bark reclamation sites throughout Ontario.

5.2.3 Walker Environmental Grease & Used Cooking Oil Recovery

Through recent acquisitions and investment, Walker Environmental has become Canada's largest provider of regularly scheduled industrial and commercial [grease trap and used cooking oil recovery](#), servicing thousands of customers across the country. These recovered organics (i.e. fats, oils and grease) are processed and converted into feedstocks that are used throughout rural Ontario by farm-based anaerobic digesters to produce renewable energy while reducing greenhouse gases and waste to landfill.

5.2.4 N-Viro® Biosolids Management

After a longstanding and successful partnership with N-Viro® Systems Canada through the Niagara Biosolids Limited Partnership, Walker Environmental acquired [N-Viro](#) in 2014 along with all of its resources, assets and patent rights for alkaline stabilization of municipal biosolids in Canada. Walker now operates plants in Niagara and Sudbury, as well as in Halifax and Banff. Walker also provides service to the City of Sarnia, the Municipality of Leamington and the City of Summerside to support the operation of their own N-Viro® facilities.

The value of municipal biosolids recovered by mixing the biosolids with an alkaline additive, cement kiln dust which is a waste from the cement production process, to create N-Rich®, a Canadian Food Inspection Agency (CFIA) registered Schedule 1 fertilizer. N-Rich® is a nutrient rich fertilizer that is used to nourish soils and enhance vegetative growth and yield in agriculture and land reclamation. Farmers across rural Ontario recognize the nutrient value of N-Rich® and Walker's agronomists work closely with them to help maximize crop yields using this sustainable fertilizer.

In 2015 a \$63.1 million Sudbury biosolids plant was commissioned by The City of Greater Sudbury and Walker Environmental. This state-of-the-art, award-winning, facility is a centralized wastewater sludge dewatering and stabilization facility producing Class A biosolids at the Sudbury Wastewater treatment plant. The project has resulted in reduced odours, and provides the City with a more permanent and sustainable method of managing biosolids. The project began in 2007 as a way to improve biosolids disposal practices in Greater Sudbury. In 2012, the City entered into an agreement with N-Viro Systems Canada LP, now part of the Walker Environmental Group, for the Design, Build, Finance, Operation and Maintenance (DBFOM) of a City-owned biosolids management facility, with N-Viro committing to a financing plan over the full 20-year term of the contract.

5.2.5 Recycled Asphalt Shingles Pavement

Recycled Asphalt Shingles Pavement (RASP) is a new and innovative product Walker has developed and been trialing as a road base product in different applications since 2016. The recycled asphalt shingles are blended with Recycled Asphalt Pavement (RAP) at an approximate 1:1 ratio. Walker has worked with the Region of Niagara and other customers to source separate asphalt shingles, keep the material stream clean, and deliver them to Walker's Niagara site for recovery. Walker has engaged a third party consultant to evaluate the performance of RASP and ultimately determine the best blend ratios and uses for the product as a sustainable substitute to traditional pavement, while diverting a significant amount of used shingles from landfill.

5.2.6 Soil Blending

Nutrient rich topsoil is becoming increasingly rare and expensive. Walker is working with local landscape supply companies to create soil blends for them to sell with a mixture of clean top soil, and compost produced at Walker's Niagara compost facility. Walker also creates soil blends that are used as topsoil for landfill capping at both the South Landfill and Atlas Landfill in Niagara Region that meets the requirements of landfill cap design while supporting regionally native plant growth for pollinator habitats.

5.2.7 Bio-carbon/Alternative Low Carbon Fuel Production

Walker Environmental is partnered with some of Ontario's largest carbon emitters in the steel and cement industry, including greenhouses, to transform wood waste, spent railway ties, shingles, waste plastics, and other materials that cannot be recycled or are residuals from recycling/composting processes into replacements for non-renewable fossil carbon products such as coal, petroleum coke and natural gas in large industrial operations. Most notably, Walker is undergoing a three-year demonstration project with a large steel manufacturer to process spent railway ties that were destined for landfill, into bio-carbon as a replacement for coal in the coking process. Walker Environmental is also evaluating pyrolysis and gasification technologies as well as pelletization processes to carbonize wastes that have a higher energy content.

5.2.8 Agricultural Crop Production & Pollinator Habitat

As a result of a 2009, four-year research partnership with the University of Guelph, which included testing of crop performance and viability, completed areas of Walker's East Landfill are now recognized for use as a productive agricultural area by the MECP. Walker Environmental partnered with a local farming family business that practices 100% insecticide-free farming, to prepare the area, plant and manage cash crops. Adjacent to this crop is a pollinator habitat, where a seed mix of various flowering species have been planted to pollinate from early spring to early fall, providing a food source for pollinators throughout the entire season. Walker has continued to work with University of Guelph, and Niagara College to monitor the diversity and population of pollinators in this area to ensure it is a viable habitat.

5.2.9 Renewable Energy from Landfill Gas

Walker utilizes landfill gas as a sustainable alternative fuel that simultaneously reduces the demand for energy generated by fossil-based fuels and manages emissions from landfills. The program started with the landfill operations in Niagara and now includes seven facilities across Ontario and Manitoba where Walker supports both municipally and privately owned landfills in utilizing their landfill gas.

Since 2013, through its subsidiary company and in partnership with Energy Ottawa, Walker developed and commissioned the Moose Creek Energy facility at the Lafleche Environmental landfill in Moose Creek, ON. This facility captures landfill gas from the site and converts it into 4.6 MW of renewable electricity.

Walker's landfill gas utilization businesses generate an equivalent of 14 MW of power through electrical generation projects.

5.2.10 Niagara Residential Waste Drop-Off Depot Enhancements

Walker operates the Niagara Residential Waste Drop-Off Depot at its Niagara waste management campus on behalf of the Region of Niagara. The public drop-off facility has been further enhanced since 2013 with two significant diversion initiatives.

From 2014 to 2016 Walker partnered with Dr. D's Toy Doctor to divert used toys from landfill. Dr. D weekly picks up toys that have been set aside by the drop-off employees. The toys are inspected and a decision is made as to how to manage them. Unacceptable toys are disassembled and recycled. The other toys are then repaired, sanitized and re-packaged in recycled packaging (where possible the original boxes are reused).

In 2016 the Niagara Residential Waste Drop-Off began a partnership with The Broken Spoke Bike program. A total of 468 bikes were diverted from landfill, recovered and donated in 2018 (and 334 in 2017). The Broken Spoke Bike program was established at Port Colborne High School in 2015. Their mission is to engage students in the understanding and benefits of refurbishing bicycles to provide enjoyment and transportation for themselves and those less fortunate. Students are also taught mechanical skills while repairing the used bikes.

5.3 In-Progress Initiatives

There are several additional resource recovery-related projects that are nearing implementation, as follows.

5.3.1 Renewable Energy from Landfill Gas

Walker utilizes landfill gas as a sustainable alternative fuel that simultaneously reduces the demand for energy generated by fossil-based fuels and manages emissions from landfills. The program started with the landfill operations in Niagara and now includes seven facilities across Ontario and Manitoba where Walker supports both municipally and privately owned landfills in utilizing their landfill gas.

Since 2013, through its subsidiary company and in partnership with Energy Ottawa, Walker developed and commissioned the Moose Creek Energy facility at the Lafleche Environmental landfill in Moose Creek, ON. This facility captures landfill gas from the site and converts it into 4.6 MW of renewable electricity.

Walker's landfill gas utilization businesses generate an equivalent of 14 MW of power through electrical generation projects.

5.3.1.1 General Motors Landfill Gas Supply

Through its partnership company Integrated Gas Recovery Services (IGRS), Walker is working with General Motors of Canada to construct a landfill gas pipeline that will supply a 6.4 megawatt co-generation plant. The project will send landfill gas down a 4 km pipeline where it will be used to generate electricity and recover thermal energy to power and heat GM's St. Catharines Propulsion Plant.

The proposed project will reduce the facility's net greenhouse gas emissions by an estimated 77% and lower energy electrical costs, improving its long-term competitiveness.

5.3.1.2 Renewable Natural Gas

IGRS is also in the process of developing Ontario's first Landfill Gas to Renewable Natural Gas project where gas from Walker's Niagara landfills (East & South) will be cleaned and injected in the Natural Gas distribution network. This initiative will fully displace 1 Million GJ of energy that would otherwise be acquired from fossil-based Natural Gas. This innovative project will help Ontario reduce its greenhouse gas emissions.

5.3.2 Depackaging Trials

Walker has been working to address contamination issues in source separated organics by trialing state-of-the-art equipment that is designed to pre-process organic material and remove contaminants such as plastic and glass prior to the organic waste being introduced into the composting process. This project will allow Walker to increase organic recovery while maintaining a high-quality end product for its customers.

5.3.3 Greenhouse Growing Medium Trials

Walker Environmental is working with Ontario greenhouses to develop a recycling process for growing medium that, once used, is typically disposed of in landfills. In 2018 Walker started receiving used growing medium waste material from Ontario greenhouses to determine most adequate and efficient recycling process. Walker has trialed equipment that will separate plastic from growing medium with minimal plastic contamination, screen it to appropriate particle size, and process the material so it can be re-used for horticultural mixes and other purposes. In 2019 Walker is partnering with Niagara College's horticultural program to test the final product as an amendment to a growing medium. If successful, this project will divert 20,000 tonnes of used growing medium from landfill annually.

5.4 Potential Future Initiatives

Below are high-level overviews of projects that are in various early stages of development; however, certain details regarding these projects remain confidential at this time.

5.4.1 Additional Organics Processing Capacity

Walker Environmental believes that there is insufficient processing capacity for source separated organic waste within the Province and is working to develop an additional 40,000 tonnes *per* year of processing capacity within Ontario to better service its municipalities that are seeking to implement new or expand existing source separation (food waste) programs.

5.5 Education, Awareness & Research Initiatives

Increasing waste diversion to the extent necessary to meet Ontario's goals requires significant changes in behaviour throughout society, and the Province has placed a recent emphasis on preventing and

reducing organic and food waste. Walker has undertaken a number of related education and awareness initiatives in the last several years, as well as participating in several research projects.

5.5.1 Walker's Niagara Resource Recovery Campus Tours

Walker provides approximately 2-5 per tours per month to various industry groups, schools, and organizations. These tours are requested and arranged on an ad hoc basis, and are designed to teach participants about our waste management systems including compost, landfill operations, landfill gas collection and utilization and other resource recovery opportunities.

5.5.2 Recycling & Composting at First Nations Events

Walker has been supporting resource recovery initiatives in Indigenous communities since 2014, providing recycling and composting bins for three First Nations on nine separate occasions, including pow-wows and other community events. In addition, Walker and community volunteers are trained to help event participants sort their waste correctly, both educating and ensuring the waste can actually be recycled due to low contamination rates. Walker has also recently started classroom composting programs, teaching pre-school and school-age children both the importance of composting but also how to compost through on-site education and composting programs, including vermicomposting and backyard composting. Walker will continue to collaborate with Indigenous Communities to share knowledge and support waste diversion initiatives.

5.5.3 Presentations for Schools and Universities

Walker employees are encouraged to give back to the communities where it has operations by donating, volunteering and supporting. Through both individual employee and corporate efforts, Walker provides hands-on waste management education at schools. This includes presentations on the composting process, information about what goes into the green bin program, how waste is managed once it is collected from home or work and the importance of waste diversion. Walker also sends representatives to Earth Day Eco Fairs at schools in Niagara, and sponsors vermicomposting projects in schools. Walker employees have spoken at various colleges and universities to provide students with first-hand experience about the waste management industry and related careers.

5.5.4 Employee Engagement

In addition to litter clean ups and educating students, Walker employees are encouraged to be involved in the community and challenged to lower their environmental footprint on a personal basis. Walker hosts an annual "Week of Giving" challenge where employees across Canada are teamed up and encouraged to spend their time volunteering within the community for organizations and causes that matter to them. The corporate EARTH 1st program has annual competitions where employees are encouraged to reduce the temperature in their homes, use reusable mugs, and tackle other small initiatives that will reduce their carbon and waste footprints.

5.5.5 Industry Knowledge Sharing

Walker works to enhance industry knowledge by attending industry events as well as providing speakers and sponsorships to organizations such as the Ontario Waste Management Association, Ontario

Environment Industry Association, Compost Council of Canada, Canadian Biogas Association and Solid Waste Association of North America (SWANA). Walker has provided tours of its facilities for groups such as the SWANA Young Professionals to educate and supporting networking for the next generation of leaders within the industry. Through various sponsorships Walker has made several events Carbon Neutral to offset the footprint of event space and delegate travel.

5.5.6 Policy Support

Walker has been continuously engaged with the government on key policy files related to waste diversion, carbon pricing, and low carbon fuel standards. Using first-hand industry experience in resource recovery, residuals management, and carbon trading, Walker provides evidence-based input to assist the government in developing policies that support its goals.

5.5.7 Compostable Product Trials

Through compost operations in Arthur, Ontario and Niagara, Ontario, Walker has been conducting trials with compostable product manufacturers since 2013. As the Provincial and Federal government work to find solutions to plastic waste, Walker understands that there will be an increase in biodegradable/ compostable/ all-natural products available in the marketplace and works with manufacturers by trialing products in municipal scale facilities and processes.

5.5.8 University of Waterloo Renewable Natural Gas Research Project

Walker has partnered with the University of Waterloo through the NSERC Engage and OCE VIP-I programs for a project titled: *Developing a methanization system for upgrading landfill gas into pipeline quality renewable natural gas by thermocatalytic conversion of CO₂*. In addition to funding agencies, Walker provided a \$5,000 cash contribution and a \$15,000 in-kind contribution, and the University of Waterloo contributed time and research by a Professor and three students. As a result of the project a highly selective, stable, commercially available and low cost catalyst has been successfully tested. Walker and the University of Waterloo are continuing their relationship to optimize the reactor and system configuration with a lab-scale proof of concept system demonstration.

5.5.9 BCR/Fleming College Integrated Treatment Technology Research Project

Walker partnered with Fleming College to investigate a new and innovative integrated treatment technology that utilizes a pre-treatment chemical process coupled with alkaline sludge stabilization to process wastewater biosolids and produce a Class "A" fertilizer. The project received funding from the Southern Ontario Water Consortium (SOWC), with private contributions from Walker Environmental and BCR Environmental.

5.5.10 Niagara College Beekeeping Program

In 2017, Walker Environmental teamed up with Niagara College to support the inaugural year of its Commercial Beekeeping Program on top of Walker's East Landfill in Niagara. The college reached out to Walker to place hives on its site, as they required more space for the hands-on learning component of the program and wanted to give students exposure to the different environments they may work in as commercial beekeepers. In addition to using Walker as an outdoor classroom for aspiring beekeepers,

one of the students followed a specific protocol on a bi-weekly basis, which included capturing a wide variety of insects on the site. The purpose of the project was to monitor and track the abundance and diversity of native pollinators in the area.

5.5.11 University of Guelph Cooking Oil Recycling Project

Walker Industries partnered with the University of Guelph through the NSERC Engage and OCE VIP-I programs for a project titled: *Improved treatment of used cooking oil as feedstock for biodiesel production*. Walker provided both a cash and in-kind contribution, while the University of Guelph contributed research by an Assistant Professor and two students. The study investigated the formation of benzene and toluene during the heating and processing of used cooking oil and methods to improve the treatment of the material to obtain a feedstock for biodiesel production with high market value. As a result of this study, the data suggest that the heating method (lower, uniform heating as opposed to high localized temperatures) mitigates the formation of toxic compounds. In addition, to improve the quality of the feedstock, it was concluded that moderate mixing leading to the formation of larger water droplets is the most effective option to scavenge food particulate from the material while ensuring the separation of water in a short time period. An extension to this project has been requested to further confirm these findings and quantify all relevant compounds and radical scavengers which appear in the feedstock during processing.

5.5.12 Ohio State University/University of Guelph Compost Improvement Project

Walker's All Treat Farms site has partnered with professors that have specialized knowledge in soils and compost from Ohio State University and University of Guelph to develop continuous improvements to the composting process including:

- Enhanced odour control;
- Leaf composting;
- Composting nitrogen rich materials that may produce odours;
- Reducing the use of peat moss in golf course green growing media;
- Using compost for disease suppression in turf;
- Erosion control with compost oversize fraction and filter soaks.

6. Support for Provincial Diversion Policies, Strategies & Objectives

6.1 Ontario's Environment Plan

In November, 2018 the Province released the report titled: [*Ontario's Environment Plan – Preserving and Protecting our Environment for Future Generations*](#). Walker's businesses support the objectives and actions of this plan in a wide variety of ways, but for the purposes of this report there is a focus on those specifically related to waste diversion, as expressed in Section 5 [*Reducing Litter and Waste in Our Communities & Keeping our Land and Soil Clean*](#).

In that document, the Province identifies five specific objectives:

- Reduce the amount of waste going to landfills or becoming litter
- Increase opportunities for Ontarians to participate in efforts to reduce waste
- Increase opportunities to use technologies, such as thermal treatment, to recover valuable resources in waste
- Manage excess soil and hauled sewage
- Redevelop brownfield sites to better protect human health and the environment

In terms of the first three objectives, the previous sections of this report (along with the 2013 report) describe the wide range of facilities and technologies that make up Walker's integrated waste diversion system, and how it contributes to reducing the amount of waste going to landfills or becoming litter, and increases the opportunities for Ontarians to reduce, reuse or recycle their waste.

Walker also contributes significantly to the management of excess soil and facilitates the clean-up of brownfield sites by providing substantial capacity at its landfills for the safe and secure disposal of contaminated soils that cannot be remediated. Furthermore, by using contaminated soil within the landfill for daily or intermediate cover, clean soil is conserved for other uses.

Walker's biosolids processing facilities reduce the need for the disposal of biosolids in landfill while providing additional options for the beneficial reuse of these materials.

6.2 The Waste-Free Ontario Strategy

The [Strategy for a Waste-Free Ontario](#) (February 2017) set out a series of *Actions* aimed at increasing the province's waste diversion rates. Table 2 summarizes how Walker is prepared to support the relevant provincial *Actions* in conjunction with the approval of the proposed Southwestern Landfill.

Table 2: Support for the Waste-Free Ontario Action Items

Provincial Action Item	Walker Supporting Activities
<i>Establish a registry and build data capacity to provide for evidence-based decisions.</i>	<ul style="list-style-type: none"> • If requested, Walker will support the province on the design of the proposed waste registry and, specifically, advise on the types of data that can be collected from the IC&I waste sector. • Track and submit all data related to the Southwestern Landfill that is required for the proposed registry, and make the same data available and accessible to the public³.
<i>Amend the 3Rs regulations to increase resource recovery across all sectors.</i>	<ul style="list-style-type: none"> • If asked, support the Province in the proposed IC&I waste sector diversion working group.

³ Except where specific information may have to be withheld or aggregated for legal, security or privacy reasons.

Provincial Action Item	Walker Supporting Activities
<i>Ensure landfills are well planned and managed to minimize the need for them and reduce greenhouse gas emissions.</i>	<ul style="list-style-type: none"> • Convert from landfill gas flaring to gas utilization at the proposed Southwestern Landfill as soon as it is technically and economically feasible, giving consideration to utilization methods that maximize the overall reduction of greenhouse gas emissions.
<i>Establish promotion and education requirements to support public participation in resource recovery.</i>	<ul style="list-style-type: none"> • Maintain membership in one or more local Chambers of Commerce in Oxford County and offer an annual update to its members on IC&I resource recovery requirements, opportunities and best practices. • Maintain membership in one or more regional or provincial waste management industry organizations and participate, where asked, in committees, meetings and conferences dealing with IC&I resource recovery requirements, opportunities and best practices. • Develop and maintain a website with specific information about IC&I resource recovery requirements, opportunities and best practices, with an emphasis on waste reduction and source separation, and actively promote this resource to its IC&I waste disposal customers. • If asked, participate in any committees established by the County of Oxford or its constituent municipalities regarding waste diversion. • Offer public tours of its various waste diversion and management businesses for educational purposes, as requested.
<i>Implement an action plan to reduce the volume of food and organic waste going to landfill.</i>	<ul style="list-style-type: none"> • If asked, participate in the provincial stakeholder working group on organic waste disposal reduction. • Continue to assess opportunities for further investment in organics recovery infrastructure in Ontario to help build the required processing capacity to support increased diversion of organics from landfill.
<i>Implement an Excess Soil Management Framework to increase the reuse of excess soil, while protecting human health and the environment.</i>	<ul style="list-style-type: none"> • Actively seek sources of contaminated soil requiring landfill disposal for use as daily or interim cover, in order to minimize the application of clean soils that can be preserved for other beneficial purposes.
<i>Use green procurement practices to build market demands for recovered materials.</i>	<ul style="list-style-type: none"> • Adapt and apply its existing Sustainable Procurement Policy to products and services acquired for the construction, operation and management of the proposed Southwestern Landfill, and continue to make the policy available to the public through its website.

Provincial Action Item	Walker Supporting Activities
<i>Implement disposal bans to direct materials to end-markets.</i>	<ul style="list-style-type: none"> • If and as the province institutes bans on landfilling specific materials, communicate these bans to its customers as soon as reasonably possible. • Prior to any implementation of a ban, continue to work with customers to identify opportunities for waste diversion/resource recovery opportunities. • Support product producers in developing materials that are more easily recovered at waste diversion (i.e. compostable packaging) facilities.

6.3 Food and Organic Waste Policy Statement

In April 2018, the Province issued the [Food and Organic Waste Policy Statement](#) under Section 11 of the *Resource Recovery and Circular Economy Act, 2016*. Section 6.8 of the Policy requires that: *Proponents of new or expanded waste management systems for disposal should consider resource recovery opportunities for food and organic waste.*

Section 1.1 of the Policy also sets out the *Ontario Food Recovery Hierarchy* consisting of the following steps (in order of importance):

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

Section 5.5 of this report describes a number of initiatives that Walker has taken in an effort to prevent or **reduce** food and organic waste at the source, including education programs at community events, Indigenous events, schools and in its workplaces.

Also in this report, and in the previous 2013 report, Walker detailed the extensive organic **resource recovery** system that it has developed and operates, which has made Walker the largest organic waste processor in the province, processing approximately 700,000 tonnes in 2018. This system produces a range of products for beneficial use, including: compost, mulches, soil mixes, N-Rich® fertilizer, low-carbon and bio-carbon alternative fuels, and greenhouse growing medium. Continued research and investments are planned to expand the system to further increase organic resource recovery.

As a result, Walker believes that its organic waste recovery system is fully supportive of Ontario's *Food and Organic Waste Policy*.