

Industrial, Commercial, and Institutional Organics Processing Study (CH2M HILL Project Summary)

Prepared for
The City of Calgary

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Summary

The City of Calgary (The City) is developing an industrial, commercial, and institutional (ICI) waste diversion strategy that targets the most common waste stream materials and largest generators. The priority materials and generators have been identified based on a number of studies that have been completed over the last few years.

In response to these results, City Council has provided direction for Waste & Recycling Services to develop a strategy specific to organic waste generated by the ICI sector. Previously approved, under the 2014 *ICI Waste Diversion Strategy* (UCS2014-0259), The City developed a preliminary schedule of activities that will begin in 2016 with the development of an organics source-separation bylaw, addition of organics to the designated materials list in 2017, and ultimately the implementation of a disposal ban on organics by 2019. Before program implementation, further investigation of the current situation related to organic waste generation by the ICI sector was deemed to be necessary.

To lay the groundwork for successful implementation of the policies, The City retained CH2M HILL Canada Limited (CH2M) to execute a work plan which included:

- evaluating organic waste processing methods and technologies.
- assessing the current organic waste processing capacity in Calgary area.

Evaluation of Processing Options

As part of the overall study, CH2M identified a number of processing methods and technologies that could potentially be used to manage ICI organic waste, and identified the respective advantages and disadvantages of each.

To evaluate appropriateness and sustainability, CH2M undertook a two-step evaluation process. The first step was a preliminary screening or “fatal flaw analysis”. An initial “long list” of processing methods was included within the scope of the preliminary screening. These included redirection/reuse of food waste, food waste disposers, composting and anaerobic digestion, land treatment, and thermal treatment. These organizations and facilities were specifically identified for inclusion in this study based on their role in the overall food recovery hierarchy shown in Figure 1.



Figure 1. Food Waste Hierarchy
ICI Organics Processing Study
(Source: www.epa.gov/foodrecovery)

The criteria used for the preliminary screening was established in consultation with The City staff. These criteria were applied on a pass/fail basis by CH2M based on the background research completed and professional judgment. If a processing method or technology failed to meet any one criteria, it was excluded from further consideration.

To provide a relative comparison of the processing methods, a secondary analysis was conducted using a set of criteria developed by CH2M and reviewed by The City. The secondary evaluation criteria were based on performance requirements that are common to the organic processing industry as a whole, and on specific issues of importance to The City. The secondary criteria included operational considerations, space requirements, odour control, resource consumption, leachate and surface water quality, worker health and safety, development considerations, and additional processing requirements required to meet product maturity requirements.

Results from this analysis showed the technical feasibility of these processing methods and identified the range management options that are both appropriate and sustainable in Calgary.

Current Management Capacity in Calgary Area

The ultimate goal of this task was to gather information that would allow for determination of whether the range of available options are sufficient to handle the estimated amount of ICI organic waste that is generated in Calgary. Specifically, CH2M conducted research to supplement work previously completed by City personnel and to identify the following types of organizations and facilities. These organizations and facilities were specifically identified for inclusion in this study based on their role in the overall food recovery hierarchy shown in Figure 1.

- Organizations and agencies within Calgary that **collect human-edible food for their own use, or for redistribution**. In Calgary, there are dozens of such organizations which target a range of clients in specific situations and/or with specific needs. The Calgary Food Bank handles 85% of the 8,000 tonnes of food items donated each year in Calgary.
- Organizations in the Calgary area that broker or accept nonhuman edible food for **use as animal feed, or as an ingredient in the production of animal feed**. It is estimated that in excess of 7,500 tonnes of food waste is currently being redirected into cattle feed applications each year.
- Planned and operational **organic waste processing facilities** within Calgary, Rocky View County, Wheatland County, Municipal District (MD) of Foothills, MD of Bighorn, and Mountain View County. Currently, there are 11 facilities in the study area that are capable of accepting and processing ICI food waste generated within the City of Calgary. Two additional privately owned composting facilities are also being planned for the region, and a third facility is under construction to handle organic waste generated by Calgary residents. These facilities have a combined permitted capacity to accept and process in excess of 250,000 tonnes. However, it is important to recognize that a significant portion of the existing capacity at these facilities is committed to other programs feedstocks including residential food waste, leaf and yard waste (L&YW), biosolids, and manure. CH2M's conservative estimate of the combined uncommitted capacity of these facilities is in the order of 150,000 tonnes per year which is significantly higher than the estimated quantity of ICI food waste generated in Calgary (i.e., 67,000 tonnes per year).

Assessment of Existing ICI Organic Waste Processing Infrastructure

As part of the scope of this assignment, CH2M was requested to assess the long term ability of the organic waste processing industry in the Calgary region to handle the anticipated quantities of ICI food waste generated within The City.

To complete this assessment, CH2M identified a number of non-financial assessment criteria, and developed a rating system and corresponding numerical measures that could be applied consistently to each of the existing processing facilities. The rating system was designed such that a higher numerical value indicated a preferable outcome.

Based on this evaluation and CH2M's knowledge of the industry in general, it appears that the existing and proposed facilities in the region have the capacity and capability to accept and process the ICI organic waste generated in Calgary.