



Ridge Landfill Expansion Environmental Assessment

Surface Water Assessment Work Plan (Final)

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1.0

Project and Work Plan Overview

This Surface Water Assessment work plan has been prepared to support the environmental assessment (EA) for the Ridge Landfill expansion and is based on the commitments made in the final amended Terms of Reference (ToR) for the EA that was approved by the Ministry of the Environment, Conservation and Parks (MOECP, formerly the Ministry of the Environment and Climate Change) in May of 2018.

Waste Connections of Canada (Waste Connections) is proposing an expansion of the Ridge Landfill in order to continue to provide long-term residual disposal capacity for the company's large IC&I customer base and as a regional and inter-regional waste management facility to serve the projected increase in population and economic growth in southern and central Ontario.

The Ridge Landfill has been in operation since 1966 and was previously expanded in 1999. Waste Connections owns 340 hectares (ha) of land at the Ridge Landfill. The existing Landfill Site Area, which is permitted by an ECA from the MOECP for waste management and environmental work purposes, is 262 ha. The area within which waste disposal is permitted, called the Waste Fill Area, is 131 ha or half of the Landfill Site Area. As of December 2017, it is estimated that the existing Waste Fill Area at the Ridge Landfill site will provide waste disposal capacity until approximately 2021 at the current fill rate.

The current approved capacity for the Ridge Landfill is 21 million cubic metres (m³). The site is approved to accept a maximum of 1,300,000 tonnes of waste per year (the MOECP approved annual waste disposal rate). The EA does not propose to increase the maximum annual fill rate (this would remain as-is); however, Waste Connections is seeking the EA to increase the life of the facility for a 20 year planning period, from 2022-2041.

The waste being landfilled is approximately 98% IC&I waste and 2% residential waste. As part of the EA approval, Waste Connections would agree to reduce their IC&I service area from all of Ontario to just southern and central Ontario, and their residential service area from Chatham-Kent and the neighbouring counties of Essex, Lambton, Middlesex and Elgin, to only the Municipality of Chatham-Kent.

This Surface Water Assessment work plan outlines the tasks to support the evaluation of alternative methods, and to undertake an impact assessment once the preferred alternative method is determined. The following paragraphs provide a brief summary of the scope of the Surface Water Assessment work, including protocols and/or standards to be adhered to while work is undertaken.

The Surface Water Assessment will seek to identify potential surface water impacts related to the proposed landfill expansion. The objectives of the surface water assessment are as follows:

- Establish the baseline conditions at the proposed site with respect to surface water resources;
- Carry out an assessment of potential surface water impacts for each of the proposed landfill expansion site development alternatives (i.e., alternative methods); and

- Prepare a surface water management plan for the purpose of mitigating potential impacts.

The scope of the Surface Water Assessment will include a careful review of background information together with a comprehensive field investigation program, followed by an examination of potential impacts for the proposed landfill expansion alternatives (i.e., alternative methods). The criteria and indicators that will be applied for the purpose of the assessment will include:

1. Changes in surface water quality (chemistry, benthics, and fish habitat).
2. Changes in surface water quantity (peak flows, flood conditions, streambank erosion, base flows).

A comparative evaluation and ranking of the proposed landfill expansion alternatives will be undertaken based on the results of the impact assessment with the objective of predicting the potential net effects associated with each alternative.

Following the selection of the preferred landfill expansion alternative, a surface water management plan will be developed with the goal of maintaining and preserving the overall health of the Howard Drain subwatershed and downstream surface water resources.

A summary of additional commitments for the Surface Water assessment is provided below.

Commitment	Reference to applicable section in EA or supporting document
Waste Connections commits to developing the EA Surface Water work plan with the MOECP's Southwest Region Surface Water Specialist. This will include a discussion of surface water sampling locations.	Surface Water work plan (all). Sampling locations are discussed in Section 4.1.3. This will also be incorporated into the EA (Section TBD).
Impact assessment criteria for surface water will include water chemistry, fish and benthics.	Surface Water work plan Section 3.0.
Waste Connections' approach to surface water management is to mitigate surface water quantity/quality impacts to meeting pre-development conditions at the surface water release point to the Howard Drain. As such, each alternative method will be evaluated on its ability to release pre-development flows downstream, i.e., baseline conditions.	Surface Water work plan Section 3.0 and 4.2.2. This will also be incorporated into the EA (Section TBD).
The conceptual design/locations for stormwater management will be incorporated into the site development and the impact assessment of the preferred alternative.	Surface Water work plan Section 4.0. Design and Operations Report (Section TBD). This will also be incorporated into the EA (Section TBD).
The surface water technical studies will include the assessment of on-site drains and requirements under the <i>Drainage Act</i> , as needed. Waste Connections will also consult with the Municipality of Chatham-Kent for <i>Drainage Act</i> requirements as they pertain to planning approvals.	Surface Water work plan Section 4.1.6.

2.0

Study Purpose and Objectives

The purpose of the study is to complete a surface water assessment for the **Ridge Landfill Expansion Environmental Assessment** (EA) proposed by Waste Connections of Canada (Waste Connections). The surface water assessment involves both water quality (contamination, riparian rights) and water quantity considerations (flows, flooding, bank erosion).

In accordance with the *Environmental Assessment Act*, the objectives of the study are as follows:

- i) Describe the **environment potentially affected** by the proposed undertaking, including both the existing environment as well as the environment that would otherwise be likely to exist in the future without the proposed undertaking.
- ii) Carry out an evaluation of the **environmental effects** of the proposed undertaking, using the environmental assessment criteria and studies that have been established through the development of the Terms of Reference (ToR).
- iii) Undertake an evaluation of any additional actions that may be necessary to **prevent, change or mitigate environmental effects**.
- iv) Provide a description and evaluation of the **environmental advantages and disadvantages** of the proposed undertaking, based on the net environmental effects that will result following mitigation.
- v) Prepare monitoring, contingency and impact management plans to **mitigate the environmental effects** of the proposed undertaking.

The surface water assessment will be undertaken in accordance with the amended ToR (May 2018), including the additional commitments made by Waste Connections throughout the stakeholder consultation process.

3.0

Study Area

For the purposes of the EA, three impact study areas include the following (as shown on **Figure 1**):

- **On-Site Study Area** ("on-site") – includes the property on which the current Ridge Landfill and proposed expansion is situated;
- **Off-Site Study Area** ("off-site") – encompasses the area within one kilometre of the proposed fill area limits; and
- **Haul Route Study Area** ("haul route") – encompasses lands immediately adjacent to Communication Road, Drury Line and Erieau Road which are identified as the designated haul routes for the site.

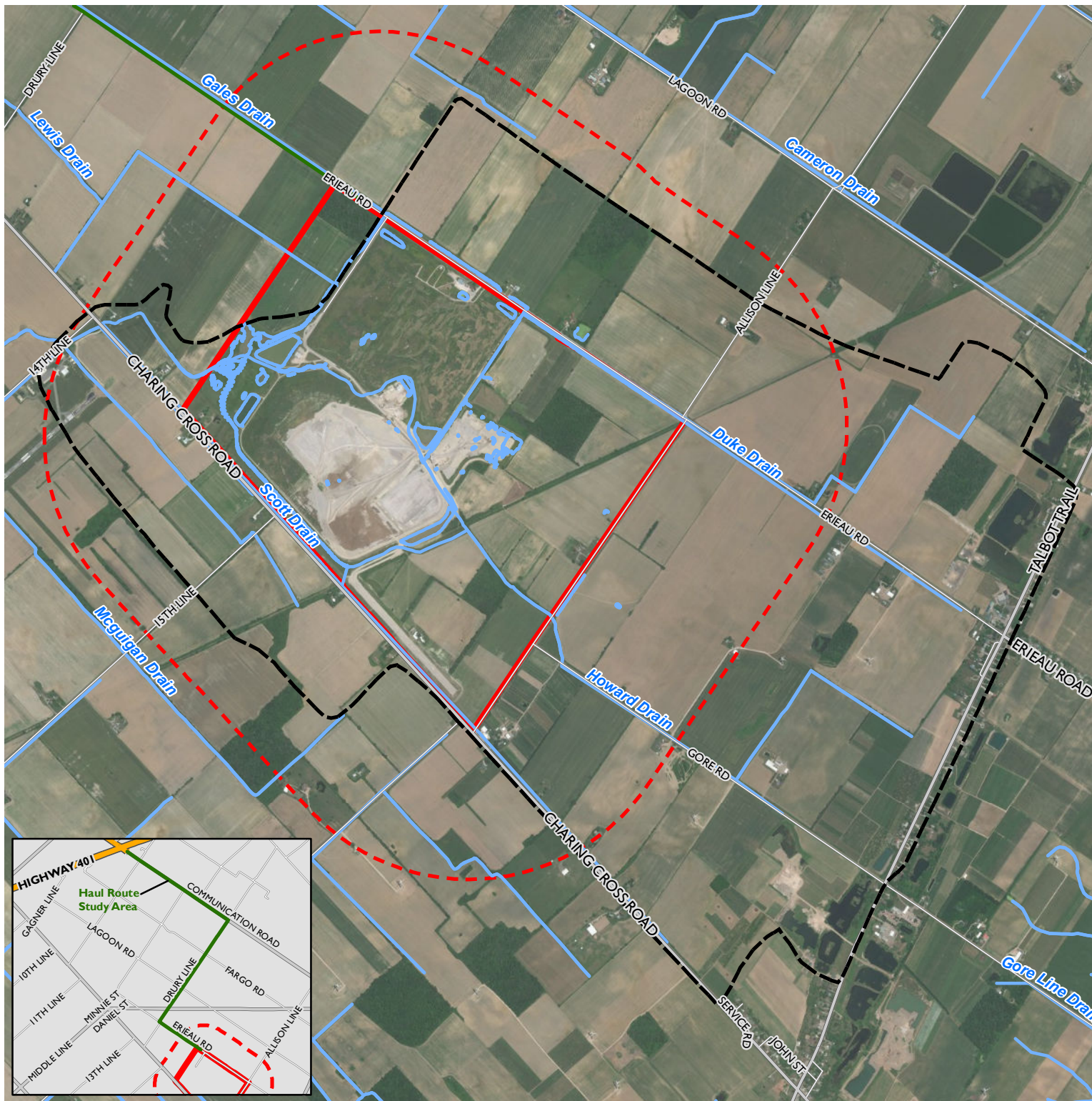
For the purpose of the surface water assessment, the Study Area will extend to the limits of the watershed boundary of the Howard, Scott, Duke and McDowell Drains. This will enable a more comprehensive characterization of baseline conditions and assessment of potential surface water impacts at a watershed scale for the watercourses that transect the off-site Study Area (1 km from maximum fill area). The Study Area for the surface water assessment will not include the haul route.

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Ridge Landfill Expansion Environmental Assessment - Surface Water Assessment Work Plan (Final)

September 2018 – 15-2456-1200





RIDGE LANDFILL

Ridge Landfill Expansion EA
Surface Water Impact Assessment

FIGURE 1: STUDY AREAS

- Subwatershed Boundary
- On-Site Study Area
- Off-Site Study Area
- Haul Route
- Watercourse / Constructed Drain



MAP DRAWING INFORMATION:
IMAGERY PROVIDED BY DIGITAL GLOBE/
DATA OBTAINED FROM MNRF

MAP CREATED BY: GM
MAP CHECKED BY: MB
MAP PROJECTION: NAD 1983 UTM Zone 17N



PROJECT: 15-2456
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ATE: 2018-05-29

4.0

Surface Water Assessment Criteria

The primary environmental assessment criteria, indicators and data sources for the surface water assessment are provided in **Table 1**. The assessment criteria, indicators, and data sources will be utilized for the evaluation of alternative methods and the assessment of net effects.

Table 1: Surface Water Assessment Criteria, Indicators, and Data Sources

Assessment Criteria	Indicators	Data Sources
Changes in surface water quality	<ul style="list-style-type: none"> • Temperature • Water quality (i.e., suspended solids, metals, inorganics) • Benthos • Fish* 	<ul style="list-style-type: none"> • MOECP published water quality data • Water quality monitoring data • Surface water quality program • Benthic community inventory • Fish habitat survey
Changes in surface water quantity	<ul style="list-style-type: none"> • Upstream flood levels • Downstream flood levels • Hydrograph timing/duration • Changes in baseflows • Streambank erosion potential • Ability to release post-development peak flows to downstream watercourses at or below pre-development conditions 	<ul style="list-style-type: none"> • Topographic mapping and aerial imagery • Climate data • Soils and land use mapping • Previous drainage studies • Existing and proposed facility characteristics • Field work and results from other disciplines (e.g., Design and Operations). • Aerial photography & GIS mapping. • Past monitoring reports

*Aquatic investigations are proposed as part of the Biology work plan, which involves a detailed fish habitat assessment in Duke Drain and Howard Drain where they occur in close proximity to the proposed expansion works.

Furthermore, the surface water assessment is also intended to provide key input information/data to criteria that will be addressed through other impact assessment studies. Most notably, these include the following:

- Effects on any stream baseflow quantity/quality.
- Loss/disturbance of terrestrial resources.
- Loss/disturbance of aquatic ecosystems.

For each of the primary criteria to be addressed in this study, two periods will be considered in which potential environmental effects can occur:

1. **Operational Period** – the timeframe during which the waste disposal facility is constructed, filled with waste, capped and closed.
2. **Post-Closure Period** – the period following closure of the site to receive any waste (typically limited to operation of control systems, routine property maintenance and monitoring).

5.0 Surface Water Assessment

The assessment will seek to identify potential surface water impacts related to the proposed landfill expansion by completing the tasks described below.

1. Establish the baseline conditions at the proposed site and along receiving drainage system with respect to physical attributes (i.e., watercourses, hydraulic structures), hydrologic characteristics, water quality, and biologic integrity (benthic community).
2. Undertake an assessment of potential surface water impacts for each of the proposed landfill expansion site development alternatives (i.e., alternative methods).
3. Prepare a surface water management plan for the purpose of mitigating potential impacts to surface water resources, which will incorporate best practices for managing stormwater, together with monitoring and contingency planning.

The scope of the surface water assessment has been developed in accordance with Regulation 232/98 and is based on the applicable requirements and criteria prescribed in the *Landfill Standards: A Guideline on the Regulatory and Approval Requirements for New or Expanding Landfilling Sites* (January 2012).

The scope of work for the surface water assessment is based on the following understanding and assumptions:

- i) Information related to the design and operation of the landfill under 'existing' and 'expanded' site conditions will be furnished to the study team, including site layout, landfill configuration, drainage system, SWM pond configuration and outlet rating curves, and historical surface water quality monitoring results.
- ii) Additional surface water quality sampling and analysis will be required for the purpose of characterizing baseline conditions.

5.1 Baseline Assessment

5.1.1 Background Data Collection & Review

The background review will involve a desktop exercise completed at a broad spatial and temporal scale to gain a comprehensive understanding of the recently completed studies and relevant supporting information.

The initial phase of the background review will involve a review of the surface water assessment that was completed as part of the 1997 EA. The focus of this review will be to identify pertinent sources of background information that was available at the time of that assessment, which will be followed by the compilation and review of current sources of background information, including:

- Topographic mapping;
- Aerial photography;
- Local climate data (temperature, rainfall, snow);
- Hydrometric stream flow data;
- Watershed/subwatershed reports and SWM studies;
- Surface water drainage mapping;
- Artificial drainage system mapping (i.e., tile drainage);
- Surficial soils mapping;
- Annual monitoring reports;
- Design and operations reports;
- Ministry of the Environment, Conservation and Parks (MOECP) water well records (WWRs) and permits to take water (PTTWs); and
- Historical data and reports on the quantity and quality of local surface and groundwater resources.

5.1.2 Proposed Field Program

Following the background review, field investigations will be undertaken to address data gaps and needs for the current EA. The field reconnaissance and inventory work will assist with the characterization of existing conditions, and will include the collection of the following information:

- Confirmation of overland flow routes, drainage boundaries, and outlet locations through field observations;
- Inventory of existing hydraulic structures (i.e., location, size, material) through field measurements and GPS data;
- Survey measurements of typical stream channel geometry (i.e., bottom width, side slopes, depth);
- Verification of land uses and surface cover through field observations;
- Confirmation of stream channel and floodplain characteristics through field observations;
- Water quality sampling (refer to *Section 5.3* for additional information); and
- Benthic community inventory (refer to *Section 5.4* for additional information).

The above-listed information will be supplemented with data collected as part of the ongoing climate and stream flow monitoring program that was initiated in the fall of 2015, which is comprised of:

1. Collection of local rainfall data and ambient temperature data at the site using climate station equipped with a tipping-bucket rain gauge, which is located near the site office;
2. Continuous measurements of temperature and water levels at 3 locations within the onsite drainage system, including:
 - Along the Howard Drain upstream of the flood control facility;
 - Along the Duke Drain upstream of the flood control facility;
 - At the outlet of the flood control facility; and
3. Stream gauging at the above locations.

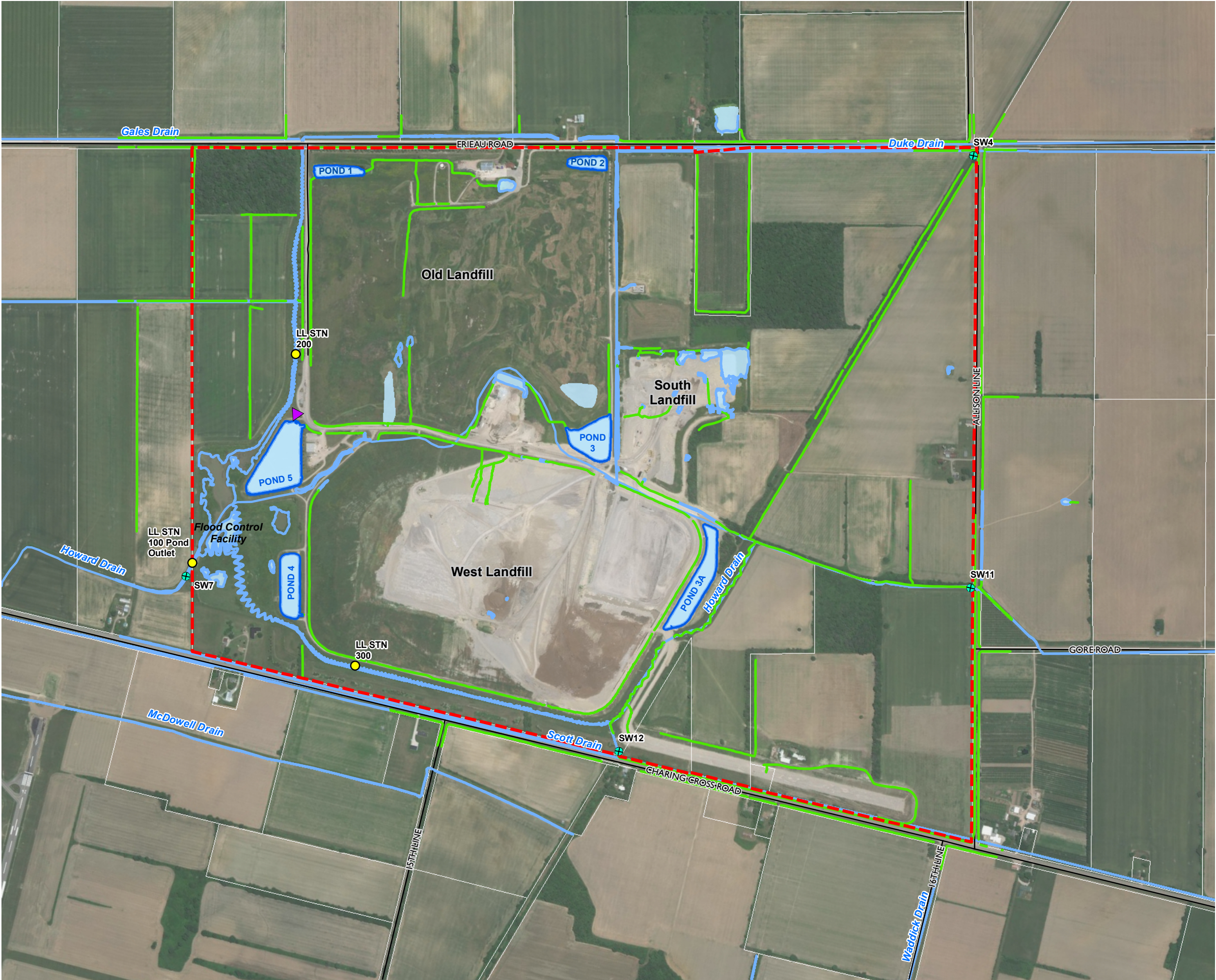
5.1.3 Surface Water Quality

An assessment of surface water quality will be undertaken to determine whether any impacts are anticipated for the indicator parameters (i.e., temperature, suspended sediment, nutrients, pesticides and herbicides) as a result of the proposed landfill expansion. The objective of the surface water quality assessment is to establish existing (baseline) conditions, which will ultimately assist with the identification potential impacts related to the proposed landfill expansion and mitigation strategies to address these impacts.

The assessment will involve a detailed review and interpretation of water quality data collected as part of the ongoing monitoring program at the Ridge Landfill. In addition, it is proposed that further surface water sampling is conducted to characterize baseline conditions. The proposed monitoring program involves surface water quality field measurements and sampling during suitable flow conditions at four (4) locations, including SW4, SW7, SW11, and SW12. A duplicate sample will be collected at location SW7 (identified as SW7A).

The surface water sampling program will involve up to eight (8) sampling events over a 12 month assessment period.

Information regarding the surface water quality sampling stations selected for the site assessment is provided in **Table 2**. The sampling locations are shown on **Figure 2**.



FILENAME: G:\GIS\2014\141382 Ridge Landfill\MXD\141382 Sampling Monitoring Locations.mxd

RIDGE LANDFILL

Ridge Landfill Expansion Environmental Assessment
Surface Water Impact Assessment

FIGURE 2: Sampling and Monitoring Locations

LEGEND

- Stream Gauge Location
- Benthic Invertebrate and Water Quality Sampling Location
- Climate Station
- Property Boundary
- Road
- Watercourse / Constructed Drain
- Ditch
- Waterbody
- Stormwater Management Pond
- Parcel

0 200 400 METERS
SCALE 1:10000



MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR, ESRI BASEMAPS,
DILLON CONSULTING LTD

MAP CREATED BY: NR
MAP CHECKED BY: JW
MAP PROJECTION: NAD 1983 UTM Zone 17N



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Table 2: Surface Water Sampling Locations

ID	Watercourse	Location	Rationale
SW4	Duke Drain	Allison Line and Concession Road 4	Location is representative of surface water quality in the Duke Drain upstream of the proposed expansion site
SW7/SW7A	Howard Drain	Downstream of Site boundary	Location is representative of surface water quality in the Howard Drain downstream of the proposed landfill expansion area.
SW11	Howard Drain	Downstream of Allison Line culvert	Location is representative of surface water quality in the Howard Drain upstream of the proposed expansion site
SW12	Scott Drain	Upstream of outlet to Howard Drain	Location is representative of surface water quality in the Scott Drain at its confluence with the Howard Drain.

The sampling parameters for the proposed surface water sampling program are listed in **Table 3**. The analysis results will be compared to the *Provincial Water Quality Objectives* (MOEE, 1994) or the Canadian Water Quality Guidelines, where applicable (e.g., chloride).

Table 3: Surface Water Quality Parameters

Laboratory Analysis Parameters		Field Parameters
<ul style="list-style-type: none"> • Alkalinity (as CaCO₃) • Total Ammonia (as N) • Unionized ammonia (calculated) • Arsenic • Barium • Boron • Cadmium • Chloride • Chromium • Conductivity • Copper • Hardness (calculated) • Iron • Lead • Magnesium • Mercury 	<ul style="list-style-type: none"> • Nitrate (as N) • Nitrite (as N) • Nitrate + Nitrite (as N) • Total Kjeldhal Nitrogen (TKN) • pH • Potassium • Sodium • Total Phosphorus • Total Suspended Solids • Total Dissolved Solids • Sulphate • Zinc • Biological Oxygen Demand • Chemical Oxygen Demand • Phenols A 	<ul style="list-style-type: none"> • pH • Temperature • Dissolved Oxygen • Conductivity

The water quality program for the surface water assessment will be carried out in conjunction with the annual monitoring activities to avoid duplication of sampling activities. The results of the surface water quality assessment completed for the EA will include the compiled data from all sampling activities conducted over the course of the EA.

Please note that a 12 month water quality sampling program for the Surface Water Assessment was commenced in May 2017 and ended in May 2018. The program was advanced in the early stages of the EA to facilitate an assessment of baseline conditions prior to examining potential surface water impacts associated with the proposed landfill expansion alternatives. DOC was included in the list of parameters analyzed for three (3) of the sampling events over the monitoring period (in December 2017, March 2018, and May 2018). Notably, BOD was analyzed for all sampling events, which is an appropriate indicator that measures the presence of organic matter.

5.1.4 Benthic Community Inventory

Benthic community monitoring will be conducted to identify and inventory invertebrates within the watercourses that could potentially be impacted by the proposed landfill expansion. This task will involve taxonomic sorting and identification of the benthic macro-invertebrate composition to the genus level.

It is proposed that benthic samples should be collected at up to four (4) locations within the watercourses that transect the landfill site (Duke, Scott and Howard Drains). The benthic samples will be collected near the surface water sampling locations, including SW-4, SW-11, SW-12 (upstream of landfill site) and SW-7 (downstream of site). Three replicates will be collected at each location. Benthic sampling and analysis will follow the *Ontario Benthos Biomonitoring Network: Protocol Manual* (January 2007).

The sampling locations and sampling methods will be established based on channel characteristics and flow conditions at the time of the field investigations. Sampling activities will be conducted during the fall season.

5.1.5 Surface Water Flow Conditions

The assessment of surface water flow conditions will involve a combination of technical analyses to determine the baseline conditions relative to each of the easement indicators (i.e., upstream/downstream flood levels, hydrograph timing/duration, changes in baseflow, and streambank erosion potential). A description of the tasks that will be completed as part of the flow condition assessment is provided in the following sections.

5.1.5.1 Hydrologic Modelling

The surface water assessment will include hydrologic modelling for the purpose of addressing flood hazards, riparian flow and erosion considerations. This will involve the development of a hydrologic model of the site and surrounding area to a reasonable point downstream of the discharge point, including the watershed areas for the Howard, Scott, Duke and McDowell Drains. The modelling exercise will be undertaken to determine peak flows and runoff volumes generated by existing land use conditions (existing site), based on topographic mapping, land use, surface cover, and drainage system details, and will include all existing SWM ponds.

5.1.5.2 Water Balance Assessment

A water balance is an annual water budget of which the main components are precipitation, surface runoff, infiltration and evapotranspiration. The objective of the analysis is to determine the potential changes to the natural balance of the hydrologic cycle, which could require mitigation to avoid/minimize offsite effects.

A monthly water balance model will be developed for the 'existing site' and 'expanded site' scenarios using the Thornthwaite method. Model inputs include long-term climate data (temperature and precipitation), soil water holding capacity, and latitude of location. The results of the water balance calculations will provide the monthly soil water surplus/deficit.

5.1.5.3 Hydraulic Analyses and Flood Hazard Delineation

Hydraulic analyses will be undertaken for the purpose of assessing flood conditions upstream and downstream of the site. To this end, hydraulic modelling will be completed using HEC-RAS, which is a river analysis computer program developed by the Hydrologic Engineering Centre for the US Army Corps of Engineers. The program computes a water surface profile (i.e., hydraulic grade line) along the length of the subject watercourse.

The hydraulic model for the 'existing site' (i.e., baseline conditions) will be created using the hydraulic model developed during the 1997 EA to reflect the post-closure scenario. Similar to the 1997 EA, the model will assess the Howard, Duke and Scott Drains – extending from upstream of Allison Line to downstream of Concession Road 14. The model will be reviewed and updated as necessary to represent 'existing site' conditions, with respect to stream channel geometry, roughness values, and boundary conditions.

To assess the potential impacts related to flooding effects within the study area, the model will be modified to account for hydraulic conditions under the 'expanded site' (i.e., post-closure) scenario, including the re-alignment of the Howard Drain.

The 'existing site' and 'expanded site' models will be simulated for a series of flow conditions (i.e., 2, 5, 10, 25, 50, 100 year return periods) for the purpose of establishing the design requirements for the proposed re-alignment of the Howard Drain, in addition to calculating the water levels and floodplain limits associated with the Regional Storm (250 year event) flow scenario.

A comparison of the floodplain for the different conditions within the study area will demonstrate the potential effect on the flood hazard associated with the facility expansion. Appropriate mitigation and management measures will then be examined to eliminate or ameliorate any identified potential effects.

5.1.6 Municipal Drain Modifications

Modifications to the existing onsite municipal drains may be required to facilitate the proposed landfill expansion alternatives (i.e., relocation of a segment of the Howard and Scott Drains). An assessment will be undertaken to determine the required modifications for each of the alternatives and identify the associated regulatory requirements under the *Drainage Act*.

5.2 Assessment of Potential Surface Water Impacts

The assessment of potential impacts to surface water resources will involve both water quality and quantity considerations, as outlined below.

5.2.1 Water Quality

A qualitative assessment will be conducted for each of the proposed landfill expansion alternatives to determine potential impacts based on the surface water quality indicators identified in *Section 3.0*. The objective of the assessment will be to predict potential impacts related to water temperature, sediment loading, and other parameters (i.e., metals, nutrients) on downstream watercourses. The assessment will involve an examination of water chemistry, benthic invertebrates, and fish habitat.

5.2.2 Water Quantity

Further to the hydrologic and hydraulic modelling carried out under the baseline assessment, additional analyses will be conducted to assess the proposed landfill expansion alternatives, as outlined below.

- i) Develop a hydrologic model for each of the proposed landfill expansion alternatives, which will incorporate the landfill configuration and SWM system for the 3 expanded site options).
- ii) The 'existing site' and 'expanded site' models will be simulated for a series of single-event scenarios (i.e., 2, 5, 10, 25, 50, 100 year return periods) and Regional Storm (250 year event) to calculate peak flows and runoff volumes..
- iii) In addition, the models will be assessed under a continuous simulation scenario to determine streamflow characteristics resulting from the proposed landfill expansion for the purpose of assessing potential impacts related to streambank erosion.
- iv) Update the hydraulic model to incorporate proposed modifications to the onsite municipal drain system (i.e., relocation) and simulate the model using flow conditions calculated for the landfill expansion alternatives.

Each of the landfill expansion alternatives will be evaluated based on the following assessment alternatives:

- Ability to release pre-development (i.e., existing condition) flows to the receiving drainage system;
- Upstream and downstream flood levels;
- Hydrograph timing/duration;
- Changes in baseflows; and
- Streambank erosion potential

The calculated peak flows will be used to establish the design flows and sizing for the internal drainage system, including the open ditches, culverts, and SWM ponds.

5.2.2.1 Climate Change Considerations

In addition to incorporating updated intensity-duration-frequency (IDF) statistics into the hydrologic analysis, an assessment of the largest ten storms events recorded in the region over the past five years will be undertaken. The objective of this assessment will be to account for climate change through an evaluation of the performance of the proposed SWM system for the preferred landfill expansion alternative, which reflects recent extreme rainfall conditions.

The assessment will include a discussion of potential contingency plans to address extreme weather events in the future should the frequency increase and potentially impact the capacity of the proposed SWM system.

5.2.3 Net Effects Assessment

A comparative evaluation and ranking of the proposed landfill expansion alternatives will be undertaken based on the results of the impact assessment. The purpose of this task will be to predict the potential net effects associated with each alternative.

5.3 Surface Water Management Plan

A surface water management plan will be developed for the preferred landfill expansion alternative, with the goal of maintaining and preserving the overall health of the Howard Drain subwatershed and downstream surface water resources. The integrated management plan will include recommended mitigation strategies, contingency measures, and future monitoring requirements.

6.0 Reporting

The surface water assessment report will be structured to address each of the major objectives set out in *Section 1.0* of this Work Plan, and will also provide a comprehensive account of the field investigations completed, the technical analyses conducted, the methodologies employed, the results obtained, and the conclusions and recommendations of the Study.

The documentation will also include updated base maps that will identify the sensitive features within the regional Study Area. The main report will be supported with a set of appendices that will present a thorough description of all elements of the surface water assessment. The surface water assessment report will be summarized for incorporation into the main EA document