WASTE MANAGEMENT

Waste Management of Canada Corporation

Environmental Assessment for a New Landfill Footprint at the West Carleton Environmental Centre

SURFACE WATER DETAILED IMPACT ASSESSMENT

Prepared by:
AECOM

Project Number:
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Date:
August, 2012

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1. Introduction

This report documents the Surface Water impact assessment of the Preferred Alternative Landfill Footprint for the Environmental Assessment (EA) for a new landfill footprint at the West Carleton Environmental Centre (WCEC). In the preceding Alternative Methods phase of the EA, a net effects analysis as well as a comparative evaluation of the four alternative landfill footprint options were carried out in order to identify a Preferred Alternative Landfill Footprint. The Preferred Alternative Landfill Footprint was determined to be Option #2 – the North Footprint Option. The potential environmental effects, mitigation or compensation measures to address the potential adverse environmental effects, and the remaining net effects following the application of the mitigation or compensation measures were identified for the Preferred Alternative Landfill Footprint.

The Preferred Alternative Landfill Footprint was refined based on stakeholder comments received and in order to further avoid or mitigate potential adverse environmental effects, and is illustrated in **Figure 1**.

A Facilities Characteristics Report (FCR) as well as a description of the ancillary facilities associated with the WCEC have been prepared so that potential environmental effects and mitigation or compensation measures identified for the Preferred Alternative Landfill Footprint during the Alternative Methods phase of the EA could be more accurately defined, along with enhancement opportunities and approval requirements.

The discipline-specific work plans developed during the ToR outlined how impacts associated with the Preferred Alternative Landfill Footprint would be assessed. The results of these assessments have been documented in the following 10 standalone Detailed Impact Assessment Reports:

- Atmospheric (Air Quality, Noise, Odour, and Landfill Gas)
- Geology and Hydrogeology
- Surface Water
- Biology
- Archaeology
- Cultural Heritage
- Transportation
- Land Use
- Agriculture
- Socio-Economic (including Visual)

Despite being standalone documents, there are; however, interrelationships between some of the reports, where the information discussed overlaps between similar disciplines. Examples of this include the following:

- Geology and Hydrogeology, Surface Water, and Biology (Aquatic Environment); and
- Land Use, Agricultural, and Socio-Economic.

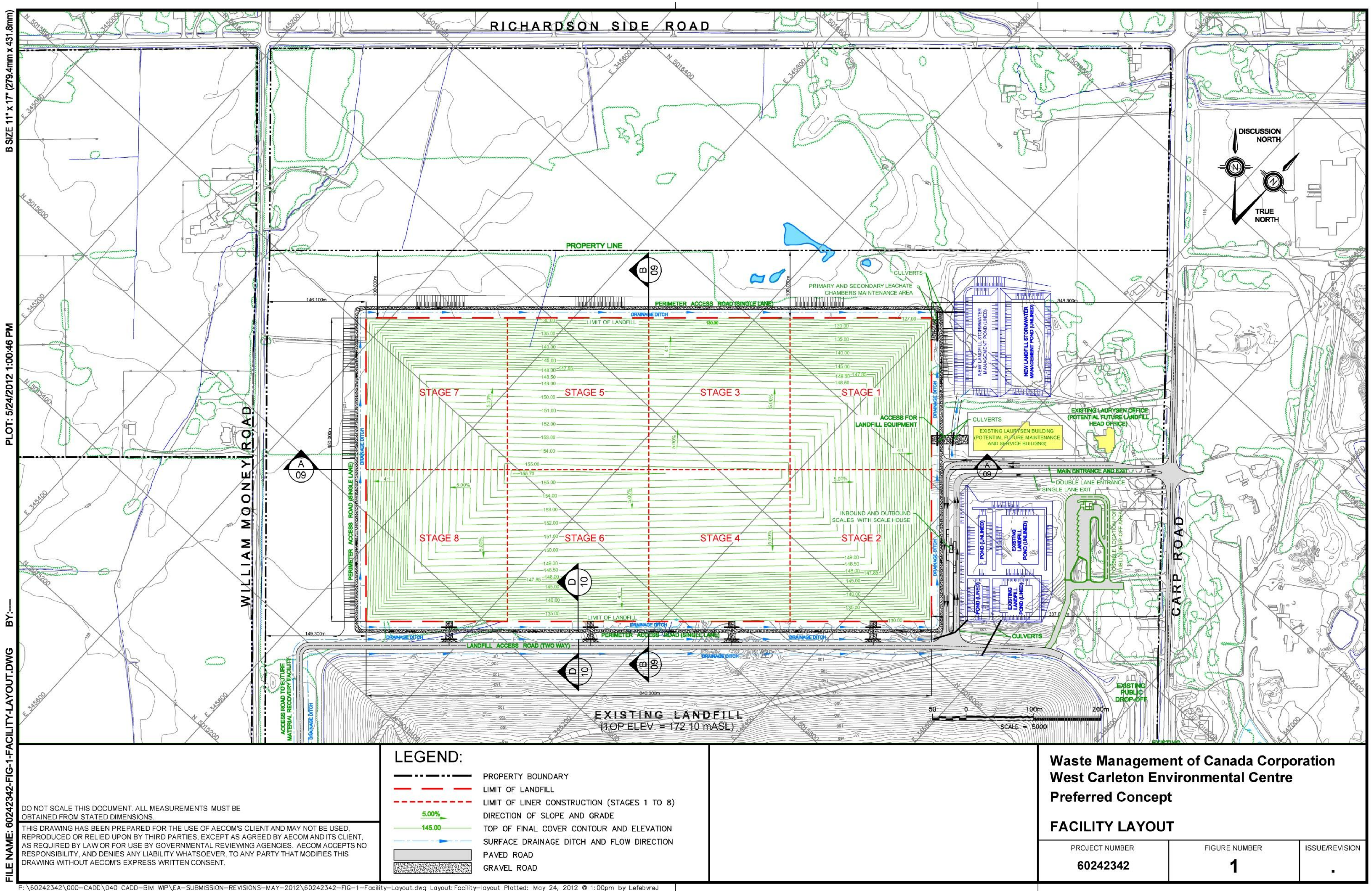


Figure 1. Preferred Alternative Landfill Footprint

1.1 Description of the Preferred Alternative Landfill Footprint

The southern half of the Preferred Alternative Landfill Footprint is on Waste Management (WM)-owned lands and the northern half is on lands that WM has options to purchase. A 100 m buffer is maintained between the north limit of the Preferred Footprint and the private lands to the north (e.g., lands which front onto Richardson Side Road) in accordance with Ontario Regulation 232/98, and an approximate 350 m buffer is maintained between the east limit of the footprint and Carp Road. A light industrial building (e.g., the Laurysen building) is situated in the eastern portion of WM optioned lands, which WM anticipates using for equipment storage/maintenance or waste diversion activities in the future. An approximate 45 to 50 m buffer is maintained between the toe of slope of the existing and new landfill footprint, thus allowing sufficient area for a new waste haul road to the new landfill footprint, and for maintenance and monitoring access. The location of the west limit of the Preferred Alternative Landfill Footprint was determined by maintaining the noted buffers and providing the required 6,500,000 m^3 of disposal capacity, while maintaining landfill elevation below 158 mASL (as reported in the CDR) and maintaining side slopes required by Ontario Regulation 232/98 (e.g., varying from 4H to 1V to 5%). This results in an approximate 146 m buffer between the west limit of the Preferred Footprint and William Mooney Road. This buffer preserves a portion of the existing woodlot within the west part of the WM-owned lands.

The final contours of the landfill are shown in **Figure 1** and reflect a rectangular landform with a maximum elevation (top of final cover) of 155.7 mASL. This elevation is approximately 30.7 m above the surrounding existing grade. By comparison, the maximum elevation of the existing Ottawa WMF landfill is approximately 172 mASL or approximately 47 m above the surrounding existing grade. The contours reflect maximum side slopes of 4H to 1V, and a minimum slope of 5%. The total footprint area of the new landfill is 37.8 ha.

1.2 Facilities Characteristics Report

The FCR presents preliminary design and operations information for the Preferred Alternative Landfill Footprint (Option #2) and provides information on all main aspects of landfill design and operations including:

- site layout design;
- surface water management
- leachate management;
- gas management; and,
- landfill development sequence and daily operations.

The FCR also provides estimates of parameters relevant to the detailed impact assessment including estimates of leachate generation, contaminant flux through the liner system, landfill gas generation, and traffic levels associated with waste and construction materials haulage.

1.3 Other WCEC Facilities

In addition to the new landfill footprint, the WCEC will also include other facilities not subject to EA approval. These include:

- A material recycling facility;
- A construction and demolition material recycling facility;
- An organics processing facility;
- Residential diversion facility;
- Community lands for parks and recreation;
- A landfill-gas-to-energy facility; and
- Greenhouses.

Although these facilities do not require EA approval, it is important to consider environmental impacts from all potential activities at the WCEC, not just the new landfill footprint. As such, the synergistic impacts of these facilities in relation to the Preferred Alternative Landfill Footprint will also be assessed in the EA.

1.4 Surface Water Study Team

The Surface Water study team consisted of AECOM staff. The actual individuals and their specific roles are provided as follows:

- Paul Frigon, P.Eng. – Senior Project Engineer
- Chris O'Donnell, EIT – Junior Project Engineer
- Joe Puopolo, P.Eng. – QA/QC

2. Study Area

The specific On-Site, Site-Vicinity, and Regional study areas for the Preferred Alternative Landfill Footprint at the WCEC are listed below:

On-Site .... the lands required for the Preferred Alternative Landfill Footprint; as presented in **Figure 2 –** Existing Conditions;

Site-Vicinity...... the lands in the vicinity of the Preferred Alternative Landfill Footprint, extending about 500 metres in all directions; as presented in **Figure 3 –** Current Monitoring Locations; and

Regional .... the lands within approximately 1 to 5 kilometres of the Preferred Alternative Landfill Footprint for those disciplines that require a larger analysis area (i.e., socio-economic, odour, etc.); as presented in **Figure 4 –** Regional Context.

3. Methodology

The assessment of impacts associated with the Preferred Alternative Landfill Footprint was undertaken through a series of steps that were based, in part, on a number of previously prepared reports (Surface Water Existing Conditions Report, Surface Water Comparative Evaluation Technical Memo). The net effects associated with the four Alternative Landfill Footprint Options identified during the Alternative Methods phase of the EA were based on Conceptual Designs. These effects were reviewed within the context of the preliminary design plans developed for the Preferred Alternative Landfill Footprint, as identified in the FCR. The preferred leachate treatment system for the new landfill, as identified in the FCR, consists of disposal of leachate through discharge to the City of Ottawa sanitary sewer system, in tandem with disposal through irrigation of trees and, as detailed, will not have an impact on surface water.

With a more detailed understanding of the surface water environment developed, the previously identified potential effects and recommended mitigation or compensation measures associated with the Preferred Alternative Landfill Footprint (documented in the Surface Water Comparative Evaluation Technical Memo, September 2011) were reviewed to ensure their accuracy in the context of the preliminary design. Based on this review, the potential effects, mitigation or compensation measures, and net effects associated with the Preferred Alternative Landfill Footprint were confirmed and documented. In addition to identifying mitigation or compensation measures, potential enhancement opportunities associated with the preliminary design for the Preferred Alternative Landfill Footprint were also identified, where possible.

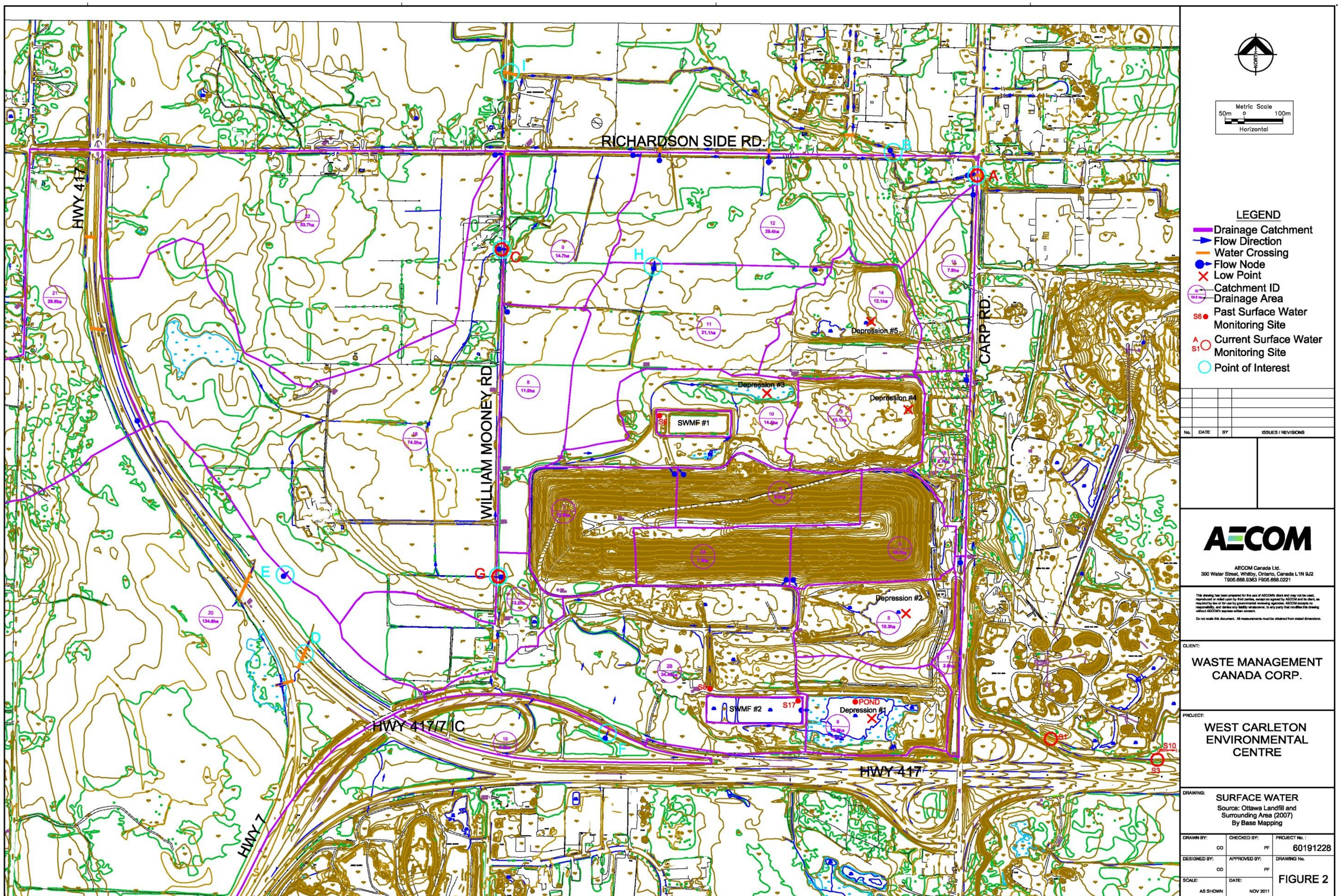


Figure 2. Existing Conditions

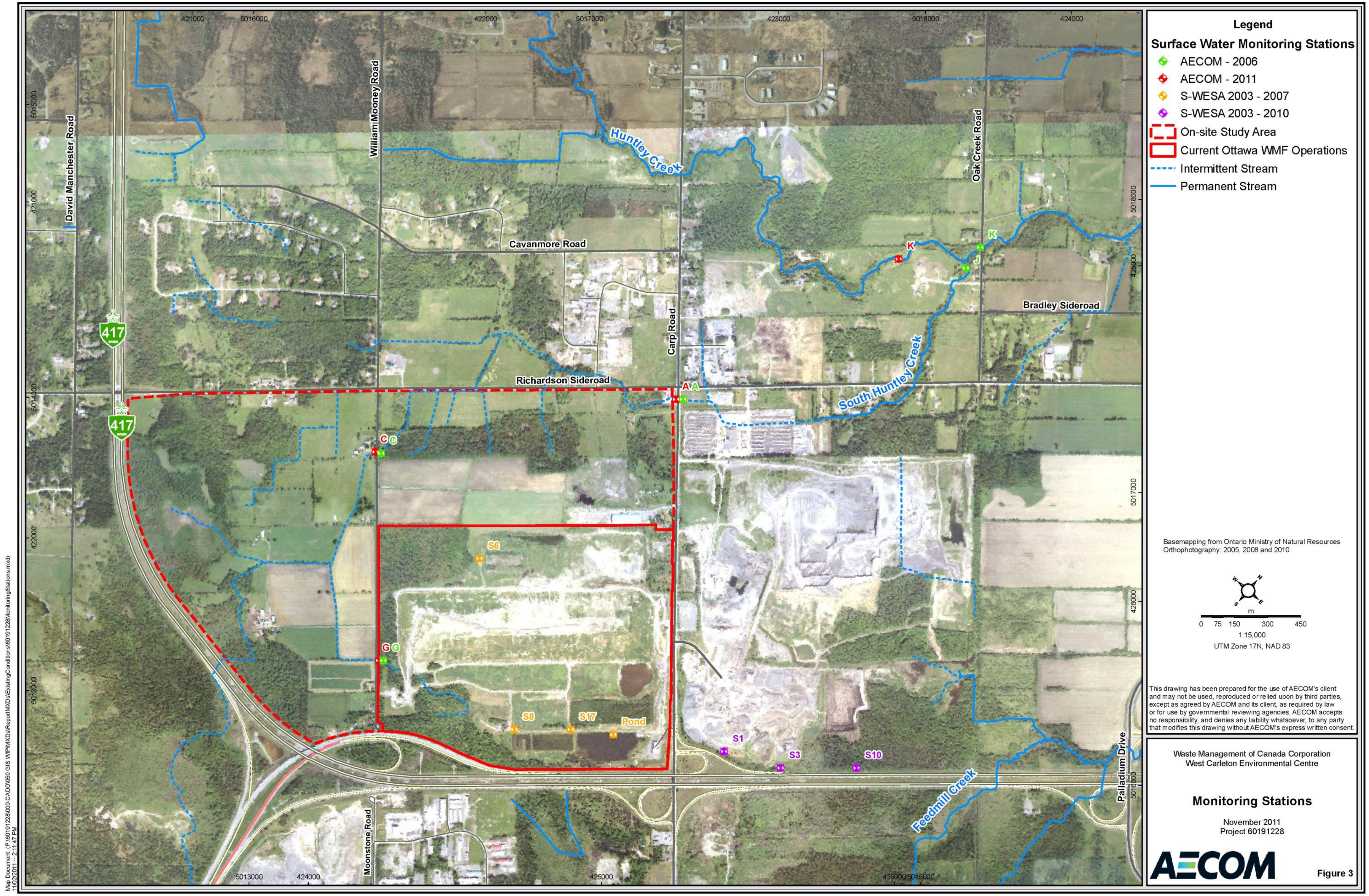


Figure 3. Current Monitoring Locations

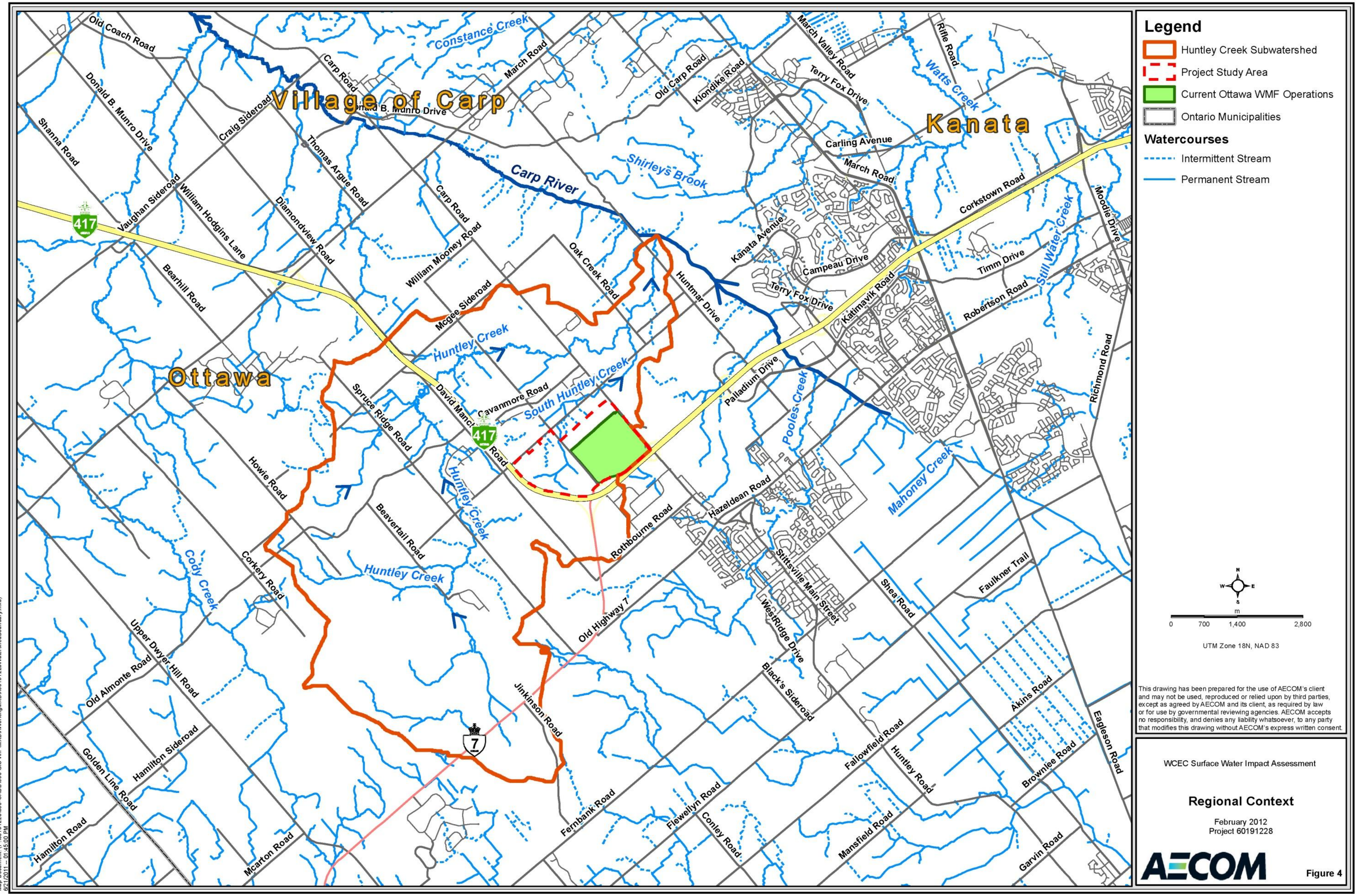


Figure 4. Regional Context

Following this confirmatory exercise, the requirement for monitoring in relation to net effects was identified, where appropriate. Finally, any Surface Water approvals required as part of the implementation of the Preferred Alternative Landfill Footprint were identified.

4. Additional Investigations

Additional flow and water quality monitoring was undertaken in the late Summer and Fall of 2011. The results suggest that there is typically little or no flow at the William Mooney Road culvert in the southwest corner of the existing site, and at the Carp Road culvert to the northwest of the site: except during Springmelt, there is little to no flow in South Huntley Creek for most of the year. Baseline surface water quality samples from Huntley Creek, South Huntley Creek and its tributaries were also collected and added to the existing baseline data.

As well, there are ongoing investigations involving remedial actions as they relate to the southwest corner of the site. These include addressing the impacts of additional runoff from MTO lands (Highway 417) south of the site and re-establishing existing site drainage patterns to William Mooney Road and South Huntley Creek. These will be addressed at the detailed design phase of the project.

5. Detailed Description of the Environment Potentially Affected

The existing landfill site and proposed landfill expansion area are situated adjacent to the south tributary of the Huntley Creek subwatershed of Carp River, the locations of which are illustrated in **Figure 1** and **Figure 2**. The subwatershed area is relatively flat with a significant amount of wetland and scattered agricultural use as well as ongoing estate-lot residential development.

The south tributary has a limited drainage area with a headwater area generally defined to the west and south by Highway 417, to the north by Cavanmore Road, and to the east by Carp Road. Local drainage patterns are somewhat undefined and are characterized by large wetland areas that have significant storage potential, especially in the vicinity of the landfill site. Depending on the magnitude of rainfall and the storage-discharge characteristics of the various wetland areas, flow from these locations may or may not be realized on adjacent lands and at the landfill site. However, flow estimates were developed that reflected minimal storage to provide a conservative estimate of peak flows.

A portion of the existing landfill site was a former gravel pit and has relatively permeable, silty-sandy soils. Municipal water supply in adjacent built-up areas to the south (Ottawa – Stittsville) and east (Ottawa - Kanata) is from the Ottawa River at the Britannia intake, while water supply for the built up area to the north (Ottawa-Carp) is from local municipal wells. Water supply for the rural areas is from private wells.

The Regional surface water context is provided in **Figure 4** as derived from supporting documentation provided as part of the Carp River Restoration EA. It illustrates the WM site location within the context of the Huntley Creek subwatershed and its relationship to the Carp River.

The On-Site Study Area for surface water is indicated on **Figure 2** and illustrates the preferred landfill footprint. The Site-Vicinity Study Area is also illustrated on **Figure 2** and **Figure 3** and includes all lands within 500 metres of the Preferred Alternative Landfill Footprint.

6. Surface Water Net Effects

As mentioned, the previously identified potential effects and recommended mitigation or compensation measures associated with the Preferred Alternative Landfill Footprint were reviewed to ensure their accuracy in the context of the preliminary design of the Preferred Alternative Landfill Footprint. With this in mind, the confirmed potential effects, mitigation or compensation measures, and net effects are summarized in **Table 1** and described in further detail in the sections below.

Table 1. Potential Effects, Proposed Mitigation and Compensation Measures, and Resulting Net Effects

ID Number	Potential Effect	Mitigation/ Compensation	Net Effect
1	• Water quality impact from leachate seeps, spills and TSS from roadways	• A two stage Stormwater Management (SWM) facility to provide TSS removals and emergency leachate seep storage in Stage 1 and full runoff retention in Stage 2 using recharge to groundwater as a control mechanism (similar to SWM practice in existing landfill) • Emergency response	• No increase in TSS and other related parameter concentrations. Therefore, o changes to surface water quality
2	• Water quantity impact – increased flows	• Two stage SWM Ponds with discharge to groundwater	• No increase in flows
3	• Water quantity impact – reduced flow to South Huntley Creek	• No mitigation required	• Reduction is negligible (<5%) ; potential for reduced flooding

6.1 Potential Effects on Surface Water

Without mitigation, flow would outlet to South Huntley Creek upstream of Carp Road either by flow north to South Huntley Creek in an existing swale across private lands or west to the Carp Road west ditch.

During construction, and with no permanent mitigation, surface water runoff from the landfill would have to be contained by in-line or offline temporary SWM ponds so that water quality impacts from construction related equipment and vehicles would be minimised and any sediments from erosion would be contained.

During site operation, surface water impact potentials are as follows.

From a water quality perspective, this will mean potential water quality impacts due to accidental leachate seeps to the surface and/or increases in Total Suspended Solids (TSS) concentration due to runoff from the internal gravelled access roadways.

From a water quantity perspective, there are two main impacts. The first is the effect on local drainage patterns since surface water runoff from the landfill would likely have to be diverted away from private lands to the north, and the swale that runs through it conveying surface water, north, to South Huntley Creek. This diversion would:

- Reduce flows to the swale, which would then be maintained only by adjacent surface and groundwater flow. This impact would not be mitigated.
- Reduce flows (by less than 5%) to South Huntley Creek tributary along Richardson Side Road. This impact would not be mitigated.
- Increase flows along the west ditch of Carp Road. This could be mitigated.
- Require the re-location of existing Stormwater Management Facility (SWMF) #1 as a new two stage SWMF to the east.

The second is changes in local topography provided by the relatively steep-sloped (from a hydrologic perspective) landfill configuration and a resulting reduction in travel time (as a result of increased flow velocities) that would create increased peak flows with potential to increase downstream water levels and flood damage.

6.2 Mitigation and/or Compensation Measures

During construction activities, the SWM ponds managing all of the surface water runoff from the expanded site, would be constructed first and, as such, would provide the necessary quantity and quality control during the remaining construction period and the operational lifetime of the site.

Other items for consideration during construction should include:

- Appropriate Best Management Practices for protecting aquatic habitat and for limiting soil mobilization and trapping sediment as close to the source as possible. The sedimentation and erosion protection measures are to reflect these principles: minimize the duration of soil exposure, retain existing vegetation where feasible, encourage re-vegetation, divert runoff away from exposed soil, and keep runoff velocities low.
- Maintain the integrity of all sediment trapping devices through regular monitoring. In the event that it is determined that that controls are unacceptable, WM shall cease those operations. Such structures should be removed only after the soils from the construction areas have been stabilized and then only after the trapped sediments have been removed.
- Direct runoff and overland flow away from working areas and areas of exposed soils and maximize length of overland flow through to points where stormwater is collected;
- Swales and culverts will be installed, as required, to allow for surface flow to pass under the on-site roads;
- Any accidents or malfunctions (i.e. spills to surface water) will be limited in their spatial and temporal extent, such that they will not result in the loss of any component of the aquatic system.

A sediment and erosion control plan will be developed as part of the Environmental Compliance Approval to mitigate effects associated with construction of the project to prevent suspended sediment, mud, debris, fill, rock dust, etc., from entering adjacent lands and the stormwater system. The following activities will be incorporated as part of the sediment and erosion control plan:

- Limit the zone of construction impacts to minimize disturbance of existing vegetated areas where grading is required;
- Minimize exposure time of un-vegetated soils;
- Store and stabilize any stockpiled materials away from open water through the installation of sediment and erosion control fencing such as silt fences/curtains, sediment traps and check dams as appropriate;
- Install silt fences, blankets, and/or berms around construction areas, including the laydown area, and across sloping terrain/areas to prevent surface runoff from carrying sediment offsite;

- Properly site and contain all materials and equipment used for site preparation and completion of work to prevent any deleterious substance from entering the water;
- Conduct refuelling and handling of potential hazardous substances away from the stormwater management system;
- Leave sediment and erosion control measures in place until all disturbed areas have been stabilized;
- Implement vehicle and timely equipment cleaning procedures of tracked mud, dirt and debris along the access routes and areas outside of the immediate work area where sediment and control measures are not in place;
- Suspend work if excessive flows of sediment discharge occur and capture and adequately filter drainage from any unstabilized surface to reduce sediment loading;
- Install temporary security fence to surround and secure the site prior to commencement of any site excavation, filling or grading works and maintain on regular basis prior to and after runoff events. Clean out any accumulated materials during maintenance and prior to removal;
- Restoration of all disturbed areas on land to natural conditions and re-vegetation as soon as conditions allow to prevent erosion and restore habitat functions;
- Land based measures will not be removed until vegetation has been re-established to a sufficient degree (or surface soils stabilized using other measures) so as to provide adequate erosion protection to disturbed work areas;

During site operations, surface water impact mitigation is as follows:

Water quality impacts would be mitigated by a two-staged SWMF to remove larger particle size TSS loading and provide for emergency leachate/spill containment in a Stage 1 sediment forebay with a Stage 2 providing extended control for additional TSS removal. SWMF outflow would be as groundwater discharge (infiltration), with the SWMF incorporating existing local excavation as previously practised at the existing site.

The water quantity impacts would be mitigated by Stage 1 and Stage 2 of the SWMF providing attenuation of post-development flows to pre-development levels. SWMF outflow would be as groundwater discharge (infiltration), with the SWMF incorporating existing local excavation that would contain the 1:100 year runoff.

In more detail, stormwater management (SWM) for the expanded site will be achieved through integration of the existing and proposed system of ditches, culverts, stormsewers and SWM ponds that have been designed to mitigate the impacts of stormwater runoff on water quantity and water quality before discharge to South Huntley Creek. The SWM criteria, as identified by the MOE in Ontario Regulation 232/98 and related Landfill Standards Guidelines (1998), include:

- ditching designed to accommodate runoff from a 1:25 year rainfall event;
- detention of runoff from a 4-hour 25 mm rainfall event; and
- attenuation of peak flows to pre-development levels for all rainfall events up to and including the 1:100 year Return Period event.

The existing site and proposed new landfill footprint area is founded on relatively permeable soils and there is currently no direct discharge to South Huntley Creek from the landfill proper or its servicing roads and operational areas. Rather, discharge is to three defined recharge areas, two of which have sedimentation forebays, the recharge areas eventually discharging through groundwater, to South Huntley Creek. The proposed SWM system for the expansion is planned in a similar manner and will account for the relocation of one of the existing recharge areas that will be removed to accommodate the new landfill footprint.

The three existing SWM areas are located in **Figure 2** and are identified as SWMF #1/Depression #3; SWMF #2/Depression #1; and Depression #2. As well, the three proposed SWM ponds, including the relocated facility, are located in **Figure 5** with one pond to the Southwest accommodating flow from the Landfill Access Road; one to the Southeast, replacing existing SWMF #1 and Depression #3; and one to the North accommodating flow from the proposed landfill and perimeter access road.

The three new SWM ponds are will be designed as two-stage facilities with an emergency flow control system in-between the two stages. A typical two-stage facility is illustrated in cross-section in **Figure 6**.

The first stage will function not only as a sedimentation cell but also as an emergency response cell where runoff can be stored in case of surface water contamination by leachate or onsite spills. Discharge can be shut-off in case of an emergency in which leachate has been found to be contaminating the surface water runoff. There will be regular inflow monitoring of indicator parameters (possibly including Oil and Grease, Conductivity, pH and TDS) to trigger a shutdown response using either a control valve or gate. This pond will be lined and designed to retain runoff from the 1:100 year rainfall until appropriate treatment can be applied and the runoff either treated and discharged to the second stage or pumped and hauled for treatment elsewhere.

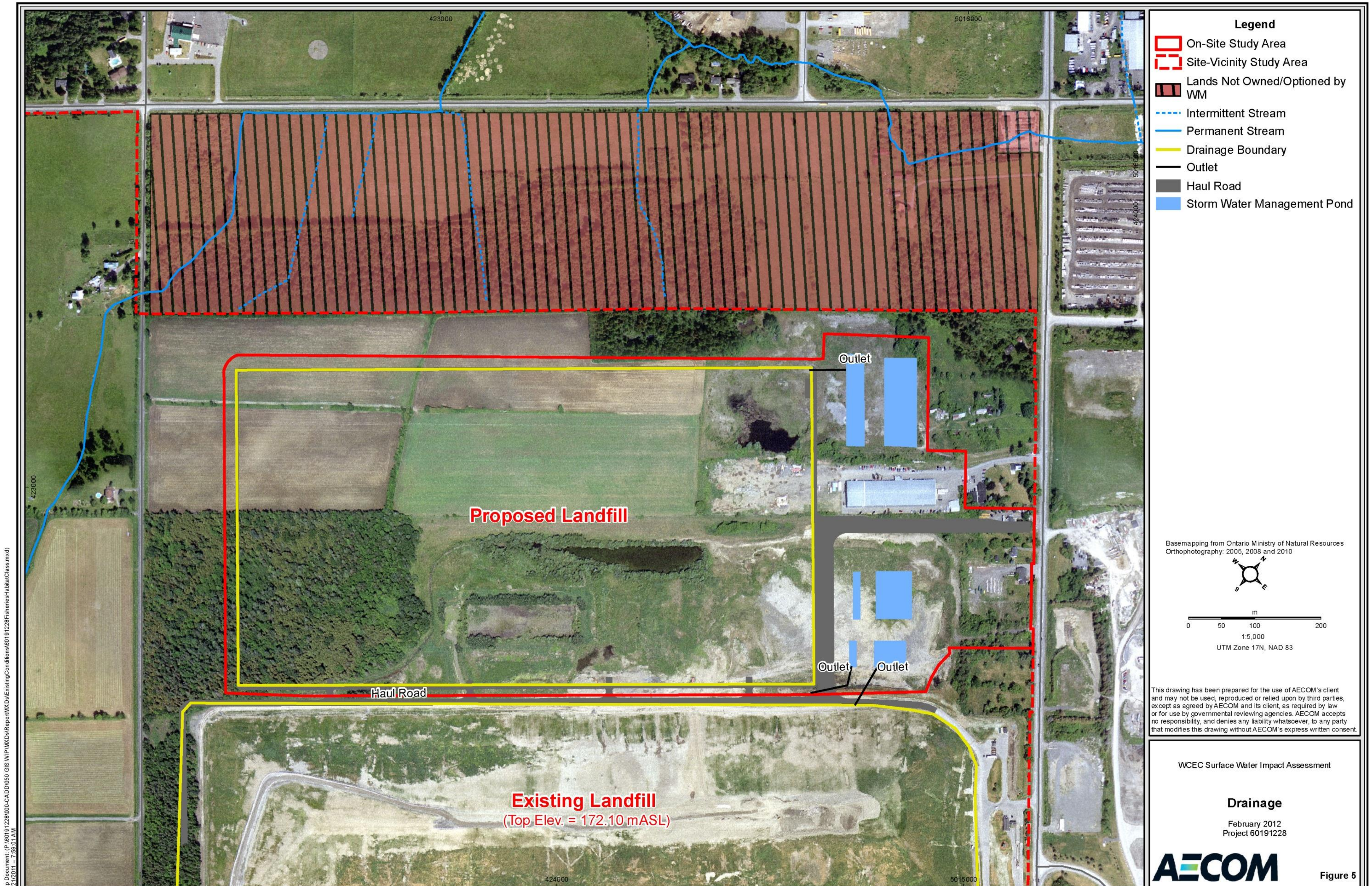
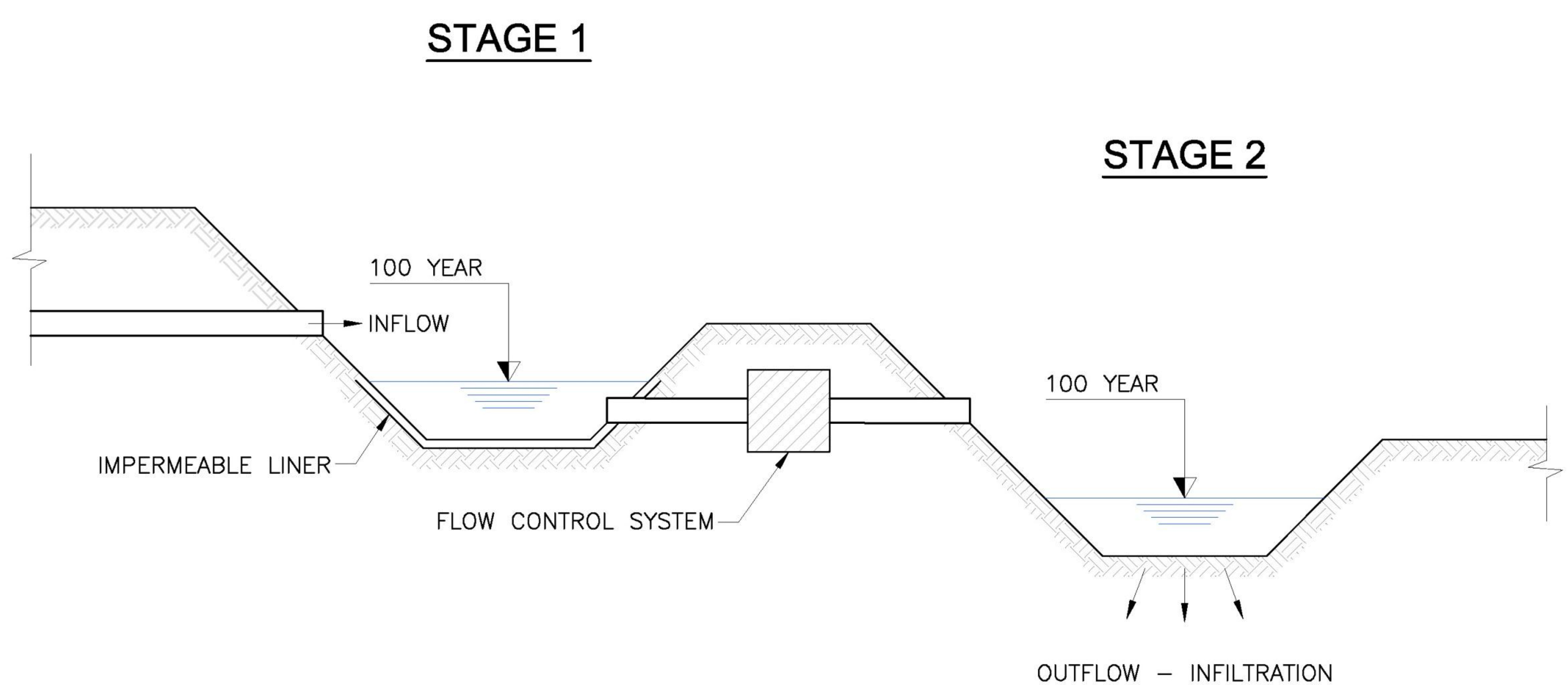


Figure 5. Drainage



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No.	DATE	BY	ISSUES / REVISIONS
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DRAWING:
FIGURE 6
CONCEPTUAL CROSS SECTION
TWO STAGE STORMWATER FACILITY

DRAWN BY: SAE	CHECKED BY: PF	PROJECT No.: 60242342
DESIGNED BY:	APPROVED BY:	DRAWING No.: FIG 6
SCALE: NTS	DATE: FEB 2012	

Figure 6. Conceptual Cross Section – Two Stage Stormwater Facility

The second stage will be an unlined pond for recharge purposes and is sized to accommodate the volume from the 1:100 year runoff from respective catchment areas. Other design features will include:

- First stage invert higher than the invert of the second stage and likely higher than the design water level to ensure positive drainage.
- Design water level for the volume of runoff from the 1:100 year rainfall event since the SWMF would likely have no natural positive outlet given the adjacent topography.
- Design water levels not higher than adjacent service roads.
- Emergency overflow routes to be defined once the facility characteristics are more clearly understood. With no positive outflow, the recharge rate governs the rate of water level reduction and available capacity for the next rainfall event.

With respect to the infiltration pond potentially freezing in the winter, thereby preventing infiltration, it is anticipated that these stormwater ponds will be empty at the beginning of the winter season. It may be possible that the saturated soil layer could freeze in the winter and infiltration would be limited until spring thaw. However, the combined design volume and additional 1 m of freeboard provided within the SWM ponds can contain the runoff generated from all design storm events.

Fill or excavation will be carried out, as required, to control drainage and achieve positive grades to appropriate outlets, and culverts/stormsewers will be installed, where needed, to convey flows under travelled sections of the site.

Any accidents or malfunctions (i.e. spills to surface water) will be limited in their spatial and temporal extent, such that they will not result in the loss of any component of the aquatic system.

6.3 Net Effects

In evaluating the net effects on surface water resources, from a surface water <u>quality</u> criteria perspective, the Preferred Landfill Footprint achieved a "no net effect" rating as the two-stage SWMF design is able to mitigate the impacts of both emergency events (including leachate seepage and spills) and TSS concentrations. The Preferred Landfill Footprint uses groundwater discharge, rather than direct discharge to surface water, as an outlet mechanism and provides the highest level of water quality treatment.

In evaluating the net effects on surface water resources, from a surface water quantity criteria perspective, the Preferred Landfill Footprint reduces flows in South Huntley Creek and its tributaries slightly. The effect is negligible and the Preferred Landfill Footprint can therefore be determined to have a "low net effect."

The Preferred Landfill Footprint has the smallest footprint and the least impact on flows being directed to groundwater. From an overall surface water perspective the Preferred Landfill Footprint has the lowest net effect.

7. Impact Analysis of Other WCEC Facilities

1. A material recycling facility (MRF) – drainage and SWM for this facility, in the southwest corner of the site has been, addressed in a separate SWM technical memo dated August 9th, 2011. Drainage from waste impacted areas is directed to a lined pond that has no outlet: its contents are periodically pumped to a tanker truck and the liquid disposed of in a small existing leachate control pond in the Southeast sector of the landfill site. Otherwise, the footprint of the existing facility remains the same and runoff is currently directed either to a tributary of South Huntley Creek that flows under William Mooney Drive to the west or east to existing SWF #2
2. A construction and demolition material recycling facility – see description above for the MRF
3. An organics processing facility - located at the MRF, see description above
4. Residential diversion facility – drainage from this facility will be minimal, directed to grass swales adjacent to paved area
5. Community lands for parks and recreation –drainage requirements to be determined once the lands are planned, will rely largely on infiltration
6. A landfill-gas-to-energy facility – stormwater runoff from this building will be directed to depression #1
7. Greenhouses - stormwater runoff from this building will be directed to depression #1

8. Monitoring and Commitments for the Undertaking

To ensure that the mitigation measures identified in **Section 6** are implemented as envisioned, a strategy and schedule was developed for monitoring environmental effects. With these mitigation or compensation measures and monitoring requirements in mind, commitments have also been proposed for ensuring that they are carried out as part of the construction, operation, and maintenance of the landfill.

8.1 Monitoring Strategy and Schedule

As mentioned, a monitoring strategy and schedule was developed based on the Surface Water Impact Assessment carried out for the Preferred Alternative Landfill Footprint to ensure that (1) predicted net negative effects are not exceeded, (2) unexpected negative effects are addressed, and (3) the predicted benefits are realized.

8.1.1 Environmental Effects Monitoring

There will be regular monitoring of SWM Pond inflows for emergency response purposes. This will include monitoring for leachate and/or spill indicator parameters such as Oil and Grease, TDS, Conductivity, or pH.

Pond inflows will be monitored at three locations. This monitoring will take place twice during each of Spring (March–April), Summer (May 15 -September 15) and Fall (September 15 – November 15) with the intention of reflecting Springmelt and rainfall-runoff conditions (10 mm rain minimum) in Summer and Fall, as well as two dry weather flow periods (five days without rain). The parameters to be monitored will be developed as part of an environmental monitoring plan for the site.

Table 2. Proposed Monitoring Requirements

ID Number/ Potential Effect	Proposed Monitoring Requirement	Associated Licences, Permits or Authorizations
1	SWM Pond Inflows – periodic (twice during each of Spring, Summer, and Fall)	MOE Certificate of Approval (C of A)
3	SWM Pond Inflows - continuous	MOE C of A

8.1.2 Development of an Environmental Management Plan

An Environmental Management Plan (EMP) or Plans will be prepared following approval of the undertaking by the Minister of the Environment and prior to construction. The EMP will include a description of the proposed mitigation measures, commitments, and monitoring.

8.2 Commitments

The following commitments have been proposed for ensuring that the identified mitigation or compensation measures and monitoring requirements are carried out as part of the construction, operation, and maintenance of the undertaking:

a) Three two-stage SWM facilities will be built to address surface water runoff from the site and emergency response to accidental leachate seeps or spills.

b) Inflow to SWM ponds will be regularly monitored to identify emergency response situations including leachate seeps and onsite spills.

c) Emergency response will occur and leachate/pollutant-impacted runoff will be treated as required.

d) Annual, periodic SWM pond inflow monitoring will occur for parameters as identified by MOE in their surface water “assessment criteria” as it related to landfill sites.

9. Surface Water Approvals Required for the Undertaking

An MOE Certificate of Approval will be required for the three SWM ponds and related conveyance systems.

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Paul Frigon, P.Eng.
Senior Project Engineer, Water

Report Reviewed By:

Joe Puopolo, P.Eng.
Senior Project Manager, Water

10. References

AECOM, 2011:

Environmental Assessment for a New Landfill Footprint at the West Carleton Environmental Centre – DRAFT – Surface Water Existing Conditions Report, November 2011.

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