

APPENDIX D

Reports

NOISE IMPACT ASSESSMENT MEMO

To:	David Kielstra, Environmental Planner	From:	Mohammed Salim, Senior Acoustic, Noise and Vibration Engineer
	Stantec Stoney Creek Office		Stantec Stoney Creek Office
File:	165001095	Date:	April 11, 2023

Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario (GWP 2331-16-00)

The Ontario Ministry of Transportation (MTO) retained Stantec Consulting Ltd. (Stantec) to complete the Detail Design and Class Environmental Assessment (EA) for Highway 400 Improvements at the Simcoe Road 88 interchange, in the Town of Bradford West Gwillimbury, County of Simcoe (GWP 2331-16-00).

MTO completed a Preliminary Design Study outlined in the Highway 400 Planning and Preliminary Design Study from the South Canal Bridge to 1.0 km South of Highway 89 Transportation Environmental Study Report (TESR), November 2003 (GWP 40-00-00) which included a Noise Assessment Report (RWDI, 2002). The report included both traffic and construction noise assessments. No noise mitigation measures were warranted at the Simcoe Road 88 bridge based on the contents and analysis of the 2002 RWDI report.

This memorandum summarizes noise impacts of the proposed Highway 400/Simcoe County Road 88 Interchange (GWP 2331-16-00) project (the Project) with the updated traffic as well as construction noise and vibration impact on noise sensitive areas (NSAs) surrounding the Project in the Town of Bradford West Gwillimbury, Ontario.

The Project consists of the replacement of the Highway 400/Simcoe Road 88 bridge, as well as the reconfiguration of the interchange and ramps to a Parclo-A4 configuration. The bridge and highway alignment will accommodate the future widening of Highway 400 for up to 10 lanes. Improvements on Simcoe Road 88 are also required to accommodate the new approaches to the bridge.

The Highway 400 lanes in the interchange will be shifted to their ultimate outside location, so that future lane additions would occur in the median. At the completion of this detail design project, Highway 400 will maintain three lanes in each direction beyond the interchange (three northbound and three southbound). Within the interchange, extra platform width for one additional auxiliary lane in the southbound direction will be constructed as part of the Project but not immediately implemented. The auxiliary lane will accommodate traffic from the East to South (E-S) ramp of the future Highway 400/Bradford Bypass Interchange to the north before terminating at the end of the speed change lane for the West to South ramp. The intersection of McKinstry Road with Simcoe Road 88 will be shifted to the east to accommodate the new bridge approaches. The new McKinstry Road alignment will also accommodate the new northbound on-ramp (East to North ramp). The

Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario (GWP 2331-16-00)

carpool lot in the southwest quadrant of the interchange will be shifted east, although it will remain in the same quadrant.

Drainage improvements will be required to accommodate the ultimate grading and stormwater management features. Culvert modifications (extensions or replacements) on Highway 400 will be required to accommodate the planned widening. The locations of these drainage improvements are described within the Highway 400/Simcoe Road 88 Drainage report, available under separate cover. The southbound off-ramp (North to East-West) will include a two-lane off-ramp design to accommodate traffic exiting from the future Highway 400/Bradford bypass interchange to be located to the north. A layout of the proposed interchange is provided as **Attachment A**.

This memo assesses traffic noise impacts due to the proposed changes to the Highway 400 Interchange at Simcoe Road 88 at the surrounding noise sensitive areas and investigates noise mitigation requirements.

Traffic Noise Assessment (Operations)

Traffic Noise Criteria and Receptors

In accordance with the Ontario Ministry of Transportation (MTO) Environmental Noise Guide (MTO Guide, 2022), the Project noise impact is assessed by making a comparison of the predicted future noise level with the Project (Future Build) and without the Project (Future No-build). Where predicted Future Build noise levels increase more than 5 dB over Future No-build, mitigation measures are to be investigated. Additionally, mitigation measures are to be investigated where Future Build noise levels equal or exceed 65 dBA. For the mitigation to be recommended, it must be administratively, technically, and economically feasible.

Administrative feasibility is assessed by determining the ability to locate the noise mitigation on lands within public ownership (e.g., provincial or municipal right-of-way), within project constraints.

For the noise mitigation measure(s) to be considered technically feasible, it must achieve a minimum 5 dB noise level reduction averaged over the first row of receptors. Once a mitigation option is technically feasible, it can then be evaluated for economic feasibility.

Economic feasibility is calculated using the total estimated cost of the noise mitigation divided by the number of benefitted receptors. A benefitted receptor is one that receives at least a 5 dB noise reduction from the investigated mitigation measure.

Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario (GWP 2331-16-00)

As per the MTO Guide, there are two types of noise sensitive areas (NSAs) considered for the noise impact assessment for this type of project: Traditional NSAs and special land use NSAs.

Traditional NSAs include the following land uses, with an outdoor living area¹ (OLA) associated with them:

- Private homes
- Townhouses
- Multiple unit buildings (e.g., as apartments with OLAs for use by all occupants)
- Hospitals, nursing homes for the aged, where there are OLAs for the patients

Special Land Use NSAs include the following land use areas:

- Educational facilities and day care centres, where there are OLAs for students
- Campgrounds that provide overnight accommodation
- Hotels/motels where there are OLAs for visitors (e.g., swimming pool area)
- Community centres with OLAs (e.g., outdoor basketball courts)
- Municipal parks (excluding golf courses and trails)
- Places of worship with OLA

Where a freeway/highway improvement is planned, Special land use NSAs are only considered if it is located next to a traditional NSA. Because the Yogi Bear campground is not next to a Traditional NSA, it is not considered a Special Land Use NSA per the MTO Guide.

This noise impact assessment considers two (2) points of reception (PORs) each representing a single NSA. A mixed use industrial and commercial subdivision proposed for the southwest quadrant of the interchange is not a noise sensitive area for noise assessment.

The receptors considered for the assessment are listed in Table 1 and are shown in Figure 1.

¹ Outdoor Living Area (OLA) means an area at ground level, adjacent to an NSA, intended and designed for the enjoyment of the outdoor environment

Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario (GWP 2331-16-00)

Table 1: Receptors

Description of Receptors	Receptor ID	UTM Coordinates (Zone 17)	
		Easting (m)	Northing (m)
Dwelling East of Intersection - South of Simcoe County Road 88	POR01	610218	4883993
Dwelling East of Intersection - North of Simcoe County Road 88	POR02	610302	4884120

Figure 1: Receptor Locations



Aerial Image Source: Google Earth

Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario (GWP 2331-16-00)

Road Traffic Data

The Annual Average Daily Traffic (AADT) for Highway 400, ramps and Simcoe County Road 88 were provided by the traffic team. The traffic data used in the assessment are summarized in **Table 2**.

Table 2: Traffic Data

Road Section	Traffic Data (AADT)		Commercial Vehicle %	Heavy/Medium Truck % Split ³	Posted Traffic Speed Limit (km/h)
	Year 2016	Year 2033 ²			
Highway 400	92,800	127,918	12	75/25	100
Ramp (S-E/W)	8,510	10,037	5	60/40	50
Ramp (N-E/W)	4,465	5,266	5	60/40	40
Ramp (E/W-N)	4,838	5,705	5	60/40	40
Ramp (E/W-S)	7,698	9,079	5	60/40	40
Simcoe County Road 88	26,000 ¹	33,772	5	60/40	80

Notes:

1. Traffic data for Simcoe County Road 88 is for year 2019.
2. Traffic data for the future horizon year 2033 was calculated based on the yearly traffic growth of 2% for the highway and Simcoe County Road 88, and 1% for the ramps.
3. Typical heavy/medium truck split as per the MTO Guide.

Traffic Noise Assessment Methodology

For the purposes of road traffic noise level predictions, the MTO accepts the Traffic Noise Model (TNM) algorithm developed by the United States Federal Highway Administration (FHWA) together with the TNM software. Alternatively, other software can be used provided it can demonstrate similar results using the TNM software. For this assessment, road traffic noise levels were predicted using CADNA/A noise modelling software (DataKustik GmbH 2021) configured to implement the TNM algorithm for road traffic noise.

The road traffic noise modelling considers the following inputs:

- Vehicle speeds
- Annual Average Daily Traffic (AADT) as provided by traffic team
- Commercial vehicle percentages including heavy and medium trucks

Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario (GWP 2331-16-00)

- Shielding from intervening ground
- Asphalt pavement for all roadways
- Elevation profiles for existing and new/modified roadways
- A ground absorption factor of 1 with reflective roads

Two modelling scenarios were completed for the future horizon year (2033) for the project: 1) No-Build future noise impact (without Project), and 2) Build future noise impact (with Project). A comparison of the predicted noise levels using TNM software (Version 3.1), and CADNA/A was completed for validation of the model. Future Build sound levels modelled using TNM 3.1 are 1-3 dB lower than those predicted with CADNA with TNM implementation. Therefore, the noise model used for this assessment is appropriate. Sample calculations are included in **Attachment B**.

Traffic Noise Assessment Results

The MTO guide stipulates that Project noise impacts are assessed in terms of either the 16-hour equivalent sound level ($L_{eq-16hr}$) for the time period between 07:00 and 23:00 for all roads other than freeways² which are assessed with 24-hour equivalent sound level ($L_{eq-24hr}$). For roadways with higher daytime traffic volumes, the $L_{eq-16 hr}$ noise impact at the receptors is expected to be greater than the corresponding $L_{eq-24hr}$ noise impact.

The assessment of the interchange noise impact was conducted by comparing future “Build” noise impact (with the Project in place) with future “No-Build” impact (without the Project). **Table 3** presents a comparison of future “Build” versus future “No-Build” sound levels.

² Freeway means controlled access median divided highway facility with grade separated crossings and interchanges (i.e., QEW and 400 series highways)

Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario (GWP 2331-16-00)

Table 3: Predicted Future Sound Levels (Year 2033)

Receptor ID	Modelling results			Assessment		
	Future “No Build” Sound Levels (dBA)	Future “Build” Sound Levels (dBA)	Increase in Sound Levels (“Build” – “No-Build”) dB	Is Future “Build” Greater than or Equal to 5 dB Above Future “No Build”?	Is Future “Build” Sound Levels Greater or Equal to 65 dBA?	Consideration of Mitigation Required (Yes/No)
POR01	60	62	2	No	No	No
POR02	60	61	1	No	No	No

Based on this assessment, consideration of noise mitigation is not required at all identified NSAs. Sample calculation is included in **Attachment B**.

Construction Noise

Construction Noise Criteria and Assessment

Construction noise impacts are temporary in nature, and largely unavoidable to a certain extent. With adequate controls, impacts can be reduced. Construction noise in Ontario is typically regulated at the municipal level by limiting the construction period time of day and at the provincial level by limiting the noise level of specific construction equipment. There are no receptor-based noise limits to assess construction noise.

MTO Construction Noise Policy

The MTO *Environmental Guide for Noise* does not provide limits for assessing construction noise impacts. The MTO Guide³ requires that:

“Construction activities will be undertaken in a manner to minimize noise levels and identify a process for dealing with public complaints during construction.”

³ Ministry of Transportation, *Environmental Guide for Noise*, February 2022

Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario (GWP 2331-16-00)

In accordance with the MTO Guide, the following elements must be considered regarding construction noise during the EA process:

- NSAs must be identified during the project planning stage
- Potential noise impacts of construction equipment on NSAs must be identified
- Potential mitigation of construction impacts must be identified
- Technical and economic feasibility of various alternatives must be evaluated in order to select the appropriate construction noise control measures

MTO is legally exempt from the requirements of municipal noise by-laws, and a municipal by-law exemption is not required for this project. MTO recognizes the potential impacts from construction noise and the importance of clear and frequent communication with local municipalities to work within the spirit of the municipal noise by-law, where possible. All reasonable attempts will be made including general public notification about the construction project and utilizing mitigation measures to reduce noise.

The MTO Guide also states that despite compliance with any noise control measures, any persistent noise complaint must be field investigated to determine noise emissions of the construction equipment. If the noise emissions of any construction equipment exceed the limits outlined in the Ministry of the Environment, Conservation and Parks (MECP) Model Municipal Noise Control By-Law (Model By-Law), the contractor shall comply with the noise limits where quieter alternative equipment is reasonably available.

MECP Construction Noise Guideline

The MECP sets out noise emission standards for various types of construction equipment in its publications NPC-115⁴ and NPC-118⁵. Equipment noise emission standards from NPC-115 and NPC-118 are presented from **Table 4**.

⁴ Ministry of Environment, Conservation and Parks (MECP) Publication NPC-115 (MECP, 1981)

⁵ Ministry of Environment, Conservation and Parks (MECP) Publication NPC-118 (MECP, 1979)

Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario (GWP 2331-16-00)

Table 4: Noise Emission Standards (NPC-115 and NPC-118)

Type of Equipment	Receptor Zone/Area	Date of Manufacture	Maximum Sound Pressure Level (dBA) ³
Excavation Equipment, Dozers, Loaders, Backhoes or Other Equipment Capable of Being Used for Similar Application ¹	Quiet Zone and Residential Area	January 1, 1979 to December 31, 1980	Less than 75 kW: 85 75 kW and Larger: 88
		January 1, 1981 and after	Less than 75 kW: 83 75 kW and Larger: 85
Pneumatic Pavement Breakers ¹	Quiet Zone	January 1, 1979 and after	85
	Residential Area	January 1, 1979 to December 31, 1980	90
		January 1, 1981 and after	85
Portable Air Compressors ¹	Quiet Zone	January 1, 1979 to December 31, 1980	76
		January 1, 1981 and after	70
	Residential Area	January 1, 1979 and after	76
Tracked Drills ¹	Quiet Zone and Residential Area	January 1, 1981 and after	100
Heavy Vehicles with Governed Diesel Engines ²	Quiet Zone and Residential Area	Prior to January 1, 1979	100
		January 1, 1979 and after	95

Notes:

1. MECP NPC-115
2. MECP NPC-118
3. Sound pressure level reference distances as per MECP NPC-103 sections 6 through 9.

Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario (GWP 2331-16-00)

Municipal By-Law Requirements

Local municipal noise control by-laws generally have some restrictions with regards to construction noise. The Town of Bradford West Gwillimbury Noise By-Law (By-Law No. 2008-083) includes provisions for construction activities. By-Law 2008-083 does not provide a construction noise limit and instead it prohibits construction period as summarized in **Table 5**.

Table 5: Town of Bradford West Gwillimbury By-Law 2008-083

Particulars of Noise	Prohibited Period by Time
The operation of any construction equipment in connection with construction, unless otherwise exempt under the provisions of the by-law	7:00 p.m. to 7:00 a.m. (to 9:00 a.m. on Saturdays) and at all times on Sundays and holidays in residential area

Construction Vibration

Construction Vibration Criteria

Municipal by-laws and guidelines typically do not address construction vibration in Ontario, except for the City of Toronto, which has set criteria and provided specific reporting requirements. The City of Toronto vibration requirements are used as guideline for this project. Typical construction vibration levels do not have the potential for major structural damage, such as causing large cracks (of several millimetres or more) in walls or structural weakening. However, construction vibration levels may have potential for cosmetic damage to structures. Other guidelines such as US Federal Transit Administration (US FTA) Manual also were reviewed, and the vibration criteria considered for structural damages are summarized in **Table 6**.

Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario (GWP 2331-16-00)

Table 6: Vibration Criteria for Structural Damage

Type of Structure and Condition	Vibration Impact Criteria (mm/s, PPV) ¹	Source
	Continuous/ Frequent/ Intermittent ²	
Historic Buildings		
Buildings Extremely Susceptible to Vibration Damage	3	US FTA (2018) ³
Residential Buildings		
Engineered Concrete and Masonry (No Plaster)	7.6	US FTA (2018) ³
Any Types of Structure	5 (Zone of Influence) 8 (less than 4 Hz) 15 (4 – 10 Hz) 25 (more than 10 Hz)	City of Toronto (514-2008) ⁴
Industrial Buildings		
Reinforced-concrete, Steel or Timber (No Plaster)	12.7	US FTA (2018) ³
Underground Structures		
Structures and Pipelines	20	Ontario Provincial Standard Specification (OPSS)
Masonry, Plastic and Drainpipes	50	DIN 4150-3 ⁵
Clay, Concrete, Reinforced Concrete, Pre-Stressed Concrete, and Metal Pipes (with or without flange)	80	
Steel (including Welded Pipes)	100	

Notes:

1. PPV measured or assessed at ground or structure.

Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario (GWP 2331-16-00)

2. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
3. US FTA Report No. 0123 (2018), Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration.
4. City of Toronto By-Law No. 514-2008 (2008), City of Toronto Municipal Code Chapter 363, Building Construction and Demolition, with Respect to Regulation of Vibrations from Construction Activity.
5. DIN 4150-3 (1999), Structural vibration - Part 3: Effects of Vibration on Structures (German Standard).

Construction Vibration Assessment

Within the construction activities surrounding the Highway 400/ Simcoe County Road 88 Interchange Improvement project, it is anticipated that operation of a vibratory roller would be the activity generating the most significant vibration that can be transmitted to nearby buildings through the ground soil.

Within the Highway 400/Simcoe Road Interchange, impact pile driving is limited to the Highway 400/Simcoe Road Overpass. No pile driving is required for the ramps.

The closest building/structure is located outside the zone of influence for impact piles. The vibration impact of pile driving will be insignificant on any nearby vibration sensitive buildings. A vibration impact assessment for the most impactful construction source was conducted using the method proposed by the US FTA Manual. The recommended setback distance from building damage (based on the City of Toronto Zone of Influence limit as a reference) is summarized in **Table 7**.

Table 7: Construction Vibration Zone of Influence

Vibration Source	Minimum Setback Distance (m)	Applied Criteria
Vibratory Roller	8	5 mm/s (PPV) – City of Toronto Zone of Influence Limit
Impact Piling	30	5 mm/s (PPV) – City of Toronto Zone of Influence Limit
Impact Piling	12	20 mm/s (PPV) – Ontario Provincial Standard Specification Limit

Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario (GWP 2331-16-00)

There are no vibration sensitive areas within the setback distance of building damage. No buildings are identified within the vibration ZOI of 8 m for vibratory roller along Simcoe County Road 88.

Sewage lagoons with clay lining are identified at Yogi Bear Campground (see Figure 1) and they are over 200 m away from the closest piling location for the bridge which is beyond the zone of influence for construction vibration for damage.

Construction Mitigation Recommendations

Noise from construction activities can be controlled in numerous ways, including operational time restrictions, source mitigation measures, as well as receptor-based mitigation measures. The following general guidance (code of practice) is provided to minimize the noise impact and the potential noise complaints:

- The Contractor should develop a complaints management process to provide residents/occupants in the vicinity of planned construction sites with the contact details (construction noise complaint process)
- Conduct construction during the daytime (7:00 am to 7:00 pm) where possible, and stage the loudest construction equipment and operations during the daytime and keep them away from the noise-sensitive areas, if possible
- Use construction equipment compliant with noise level specifications in MECP guidelines NPC-115 and NPC-118
- Keep equipment well-maintained and fitted with efficient muffling devices
- Restrict idling of equipment to the minimum necessary to perform a specified work
- Consider the use of broadband backup alarms instead of the traditional tonal backup alarms/beepers
- Take advantage of shielding from existing buildings to shield residential and other noise-sensitive locations from construction equipment where possible
- Maximize the distance between construction equipment operations and noise sensitive areas
- Minimize the concurrent use of high impact construction equipment, where possible
- Consider main roads for haulage/dump trucks routes where possible, rather than quieter residential roads

Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario (GWP 2331-16-00)

During construction work, if it is determined that there is a need to further reduce noise effects (e.g., if persistent complaints arise), the following additional mitigation measures may be considered and implemented, where appropriate:

- Coordinate 'noisy' operations such that they will not occur simultaneously, where possible
- Where possible, investigate and implement the use of alternative construction equipment or methods to reduce noise emissions from construction. Utilize alternative equipment that generates lower noise levels or optimize silencer/muffler/enclosure performance
- Use rubber linings in chutes and dumpers to reduce impact noise
- Install temporary noise barriers/solid construction hoarding on site boundary to screen affected locations
- Install acoustic enclosures, noise shrouds or noise curtains around noisy equipment

If there are any complaints due to operation of vibratory roller, it is recommended to use a non-vibratory roller in proximity to the sensitive areas, or smaller size vibratory roller such as Corniver CT48S with continuous vibration monitoring.

Closing

The potential environmental noise impacts of the proposed Highway 400 interchange at Simcoe County Road 88 have been assessed. Both operational and construction noise impacts are considered in this assessment.

Operational noise impact is assessed based on change in future sound levels with and without the Project using the traffic data for the future horizon year of 2033. The overall predicted sound level at the modelled receptors were within the MTO criteria limit, and hence noise mitigation not required.


The typical construction equipment can be operated in compliance with the MECP limits. However, once equipment and construction schedules are finalized, the equipment noise data should be reviewed to confirm that noise emissions are within the permissible limits, as provided in Table 4 of this memorandum. If they exceed the limits, noise control options may be explored. Methods to minimize construction noise impacts are included in the recommendations section of this memorandum.

A zone of influence for construction vibration was established for the Project based on the information provided for this assessment. No vibration sensitive areas are noted within the ZOIs and therefore, no vibration mitigation is required.

Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario (GWP 2331-16-00)

Should you have any questions or require further information, please contact us.

Stantec Consulting Ltd.



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Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario
(GWP 2331-16-00)

Attachment A Proposed Interchange Layout

LEGEND

- Under Construction
- Previously Constructed
- Temporary Overbuilding

NOTES:

1. ALL LINES AND RAMP CLOSURES SHALL BE IN ACCORDANCE WITH (SRP1)

METRIC
DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN

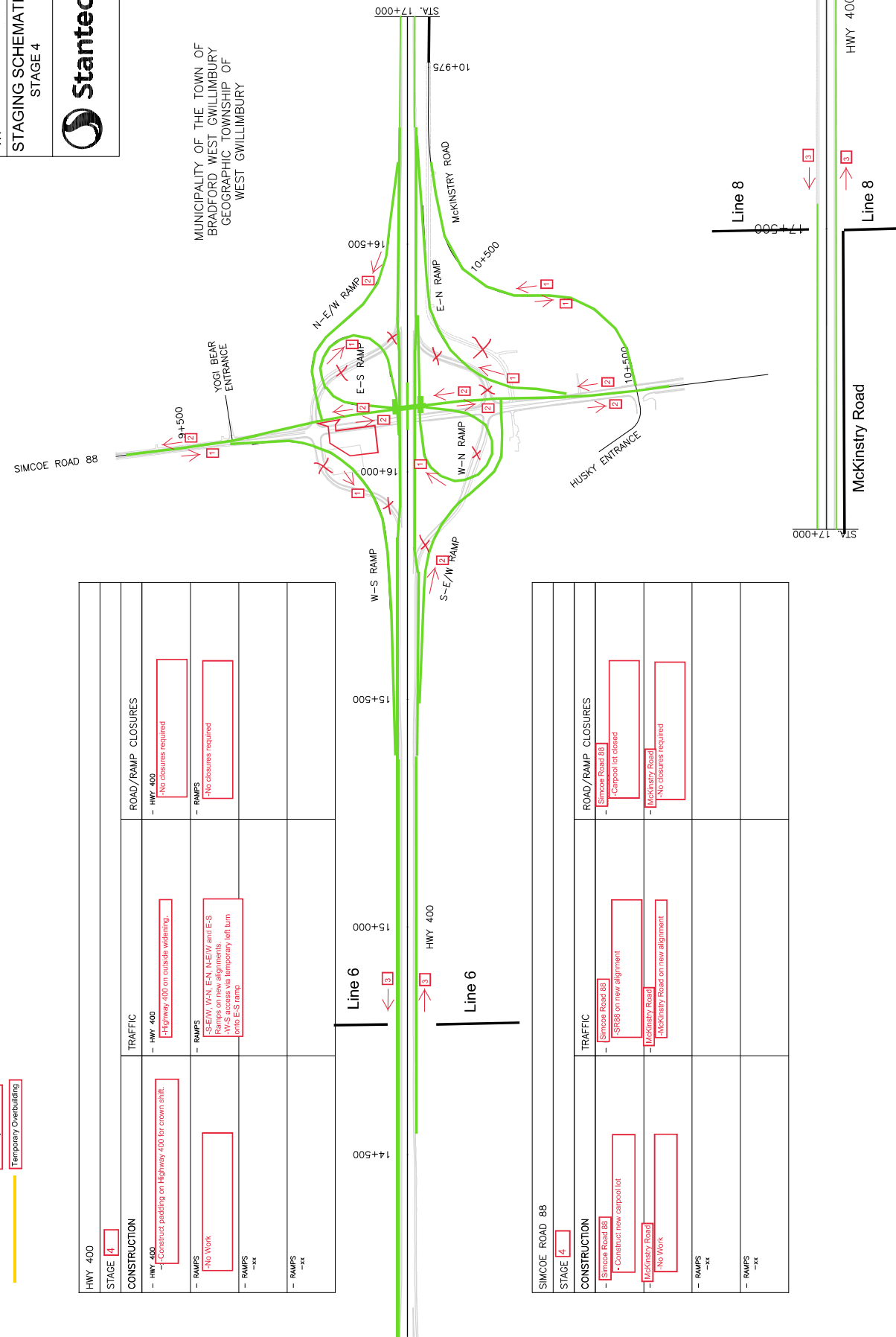
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STAGING SCHEMATIC STAGE 4



2331-16-00

Stantec

MUNICIPALITY OF THE TOWN OF BRADFORD WEST GWILLIMBURY
GEOGRAPHIC TOWNSHIP OF WEST GWILLIMBURY



CONSTRUCTION	TRAFFIC	ROAD/RAMP CLOSURES
<p>HWY 400</p> <p>STAGE 4</p> <p>CONSTRUCTION</p> <ul style="list-style-type: none"> - HWY 400 <ul style="list-style-type: none"> - Construct padding on Highway 400 for crown shift. 	<p>HWY 400</p> <ul style="list-style-type: none"> - Highway 400 on outside widening. 	<p>HWY 400</p> <ul style="list-style-type: none"> - No closures required
<p>RAMP</p> <ul style="list-style-type: none"> - No Work 	<p>RAMP</p> <ul style="list-style-type: none"> - E-W, W-N, E-N, E-W and E-S Ramps on new alignment - W-S access via temporary left turn onto E-S ramp. 	<p>RAMP</p> <ul style="list-style-type: none"> - No closures required
<p>RAMP</p> <ul style="list-style-type: none"> - 		
<p>RAMP</p> <ul style="list-style-type: none"> - 		

CONSTRUCTION	TRAFFIC	ROAD/RAMP CLOSURES
<p>SIMCOE ROAD 88</p> <p>STAGE 4</p> <p>CONSTRUCTION</p> <ul style="list-style-type: none"> - Simcoe Road 88 - Construct new caprol lot 	<p>SIMCOE ROAD 88</p> <ul style="list-style-type: none"> - SR88 on new alignment 	<p>SIMCOE ROAD 88</p> <ul style="list-style-type: none"> - Caprol lot closed
<p>McKinstry Road</p> <ul style="list-style-type: none"> - No Work 	<p>McKinstry Road</p> <ul style="list-style-type: none"> - McKinstry Road on new alignment 	<p>McKinstry Road</p> <ul style="list-style-type: none"> - No closures required
<p>RAMP</p> <ul style="list-style-type: none"> - 		
<p>RAMP</p> <ul style="list-style-type: none"> - 		

N.T.S.

Reference: Noise Impact Assessment Memo for Highway 400 Interchange at Simcoe County Road 88 Bradford, Ontario
(GWP 2331-16-00)

Attachment B Sample Calculations

*NOISE MODELLING DATA SHEETS
AVAILABLE UPON REQUEST*

CONTAMINATION OVERVIEW STUDY



**Contamination Overview Study –
Highway 400 Improvements at
Simcoe Road 88, Line 9, Line 12,
and Line 13**

Final Report

August 21, 2023

Prepared for:

Ontario Ministry of Transportation
Central Region
Engineering Program Delivery Central
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MTO Project Reference: GWP 2331-16-00

Project No.: 165001095



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Executive Summary

Stantec was retained by the Ontario Ministry of Transportation (“MTO” or “the client”) to provide excess soil services as part of the Highway 400 (GWP 2331-16-00) Project (the “Project”) at Highway 400 at Simcoe Road 88 Interchange, Bradford West Gwillimbury, Ontario. Stantec conducted a Contamination Overview Study (COS) investigation for the proposed Project to inform future planning related to excess soil management.

The Project involves the design, reconstruction, and replacement of the Highway 400/Simcoe Road 88 bridge, as well as the reconfiguration of the interchange and ramps to a Parclo-A4 configuration. The Highway 400 lanes in the interchange will be shifted to their ultimate outside location, so that future lane additions would occur in the median. At the completion of this detail design project, the Highway 400 lanes will maintain three lanes in each direction beyond the interchange (three northbound and three southbound). Within the interchange, the platform for one additional auxiliary lane will be constructed as part of this project in the southbound direction only to accommodate the heavy traffic from the future Bradford Bypass Interchange to the north. The intersection of McKinstry Road and Simcoe Road 88 will be shifted to the east to accommodate the new bridge approaches and the E-N ramp. The carpool lot in the southwest quadrant of the interchange will be shifted east, although it will remain in the same quadrant. Other works will be completed in the areas of Highway 400 and Lines 9, 12 and 13 to the north of Simcoe Road 88 within the Town of Bradford West Gwillimbury, Ontario.

The areas where the Project will be completed are herein referred to as the “Site”. Stantec has considered the “Site” to be an approximate area involving physical work (i.e., excavation, material handling) associated with the Project. The amount of excess soil generated from the construction activities that will require off-site management is currently unknown.

To fulfill the objective of the COS, historical records and documentation available for the Site and the surrounding areas were reviewed and a site reconnaissance was completed on August 15, 2022. Following the review of historical records and the site reconnaissance, potential sources of contamination (PSOC) to the Site were identified, as summarized below. PSOC were ranked as either high, moderate, or low depending on the distance of the potential source from the Site and the activity associated with the potential source. The following is a summary of the identified PSOC associated with the Site:



Summary of Potential Sources of Contamination

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminants of Potential Concern	Potential for Concern	Explanation of Potential for Concern
1	Gasoline and Associated Products	Esso/ Bradford Husky (3479 Simcoe Road 88)	On-Site	VOCs PHC F1 to F4 BTEX PAHs	High	Multiple expired and active gasoline and associated products storage in fixed tanks, and multiple years registration as a waste generator. Spill records for mostly diesel fuel released to the road.
2	Gasoline and Associated Products	Historical KOA campground, current Yogi Bear's Jellystone Park Camp Resort (RR 1, Highway 88 & 400)	On-Site	VOCs PHC F1 to F4 BTEX PAHs	Low	One fuel tank registered to historical KOA Campground, with an expiry date of January 1993.
3	Wood Manufacturing Facility	3556 Line 9 RR 2	On-Site	VOCs PHC F1 to F4 BTEX PAHs	Low	Manufacturing sawmill and wood container/pallet manufacturing facility at historical Corneau & Sons Pallet & Box Ltd. established in 1967.
4	Spills	Esso/ Bradford Husky (3479 Simcoe Road 88)	On-Site	VOCs, PHC F1 to F4, PAHs, metals and inorganics	High	Historical spill of various volumes identified at 3479 Simcoe Road 88 in 1992 and 1995. Although the exact location of the spill could not be determined, residual impacts to soil and/or water may remain.



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminants of Potential Concern	Potential for Concern	Explanation of Potential for Concern
5	Spills	Roadways within the Site (Highway 400 and Simcoe Road 88 junction), Southern portion of Site	On-Site	VOCs, PHC F1 to F4, PAHs, metals and inorganics	High	Multiple historical spills ranging from 20 L to 500 L released between 1988 and 2007, identified at various locations along Highway 400 and Simcoe Road 88 interchange. Although the exact location of the spill could not be determined, residual impacts to soil and/or water may remain.
6	Berms and Imported Fill Material	West of Highway 400, and all road alignments within the Site	On-Site	PAH, metals and inorganics	Moderate	Multiple large berms and fill piles were observed west of Highway 400. Furthermore, it is expected that fill materials were imported onto the Site for the purposes of road construction. The quality of this fill is unknown.
7	Manufacturing Facility	Boss Lubricants (3475 Simcoe Road 88)	Off-Site	VOCs, PHC F1 to F4, PAHs, metals and inorganics	Moderate	Approximately twenty apparent environmental monitoring wells were observed during site reconnaissance at the Boss Lubricants property, in the southeast quadrant of the Highway 400 and Simcoe Road 88 interchange.



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PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminants of Potential Concern	Potential for Concern	Explanation of Potential for Concern
8	Manufacturing Facility	MITek Canada (240 Stirling Crescent)	Off-Site	VOCs, PHC F1 to F4, PAHs, metals and inorganics	Low	Manufacturer of commercial and residential building supplies, recent operation with no associated waste generation or tank records, in the southwest quadrant of the Highway 400 and Simcoe Road 88 interchange.

Note(s):

Contaminants include petroleum hydrocarbons (PHCs), volatile organic compounds (VOCs), benzene, toluene, ethylbenzene, xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), various metals listed above, electrical conductivity (EC), sodium adsorption ratio (SAR)



Based on the above, the following recommendations are provided:

- Ontario Regulation (O.Reg.) 406/19 (On-Site and Excess Soil Management) and the associated document *Rules for Soil Management and Excess Soil Quality Standards* referenced by O.Reg. 406/19 should be followed for soil that is excavated and managed on-site or off-site during construction. In addition, it is understood that salt-related parameters, such as electrical conductivity (EC) and sodium adsorption ratio (SAR), may not be considered to be contaminants when related to the application of a substance to surfaces for the safety of vehicular or pedestrian traffic under snow or ice conditions (O.Reg. 153/04 s.49.1.1); however, soil or water impacted by salt should be managed according to O.Reg. 406/19 if it is to be removed from the right-of-way. Sampling programs should be developed and undertaken under the supervision of a qualified person as defined in O.Reg. 406/19 and sample selection should take into consideration the presence of anthropogenic substances such as debris/waste, and unusual odours or staining.
- A Preliminary Site Screening (PSS), Phase I ESA and Phase II ESA (if recommended as part of the PSS or Phase I ESA) should be completed for any property that will be acquired by MTO in accordance with the requirements of the MTO documents *Environmental Guide for Contaminated Property Identification and Management* (MTO, 2006) and *Environmental Reference for Highway Design* (MTO, 2013).
- Soil and groundwater that will be disturbed during construction should be sampled and analyzed for metals and inorganics (including EC and SAR), polycyclic aromatic hydrocarbons (PAHs), benzene, toluene, ethylbenzene, xylenes (BTEX), and petroleum hydrocarbon fractions 1 to 4 (PHC F1 to F4). In addition, areas within or adjacent to PSOC should be analyzed for the specific contaminants of concern as described in the Summary of Potential Sources of Contamination table above. The selection of soil for analysis should take into consideration the presence of anthropogenic substances such as debris/waste and PHC, solvent, or other unusual odours or staining.
- Stockpiling and transport of excavated soil during construction should be done in accordance with the requirements specified in O.Reg. 406/19.
- Should contaminated soil be suspected during future construction activities (e.g., staining, odours, debris/waste, petroleum hydrocarbon sheen), a qualified person should be retained to identify and collect representative soil samples for chemical analysis to determine management options and appropriate handling in accordance with O.Reg. 406/19.
- Should dewatering be required at the Site during future construction activities, water quality analyses should be conducted to determine appropriate management methods in accordance with applicable regulations. This work should be done in coordination with a QP_{ESA} as defined by O.Reg. 153/04, to maintain data quality and provide an appropriate assessment of water quality.

The statements made in this Executive Summary text are subject to the limitations included in **Section 5.0** and are to be read in conjunction with the remainder of this report.



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

Introduction
August 21, 2023

1.0 INTRODUCTION

Stantec was retained by the Ontario Ministry of Transportation (“MTO” or “the client”) to provide excess soil services as part of the Highway 400 (GWP 2331-16-00) Project (the “Project”) at Highway 400 at Simcoe Road 88 Interchange, Bradford West Gwillimbury, Ontario. Stantec conducted a Contamination Overview Study (COS) for the proposed Project to inform future planning related to excess soil management.

The Project involves the design, reconstruction, and replacement of the Highway 400/Simcoe Road 88 bridge, as well as the reconfiguration of the interchange and ramps to a Parclo-A4 configuration. The Highway 400 lanes in the interchange will be shifted to their ultimate outside location, so that future lane additions would occur in the median. At the completion of this detail design project, the Highway 400 lanes will maintain three lanes in each direction beyond the interchange (three northbound and three southbound). Within the interchange, the platform for one additional auxiliary lane will be constructed as part of this project in the southbound direction only to accommodate the heavy traffic from the future Bradford Bypass Interchange to the north. The intersection of McKinstry Road and Simcoe Road 88 will be shifted to the east to accommodate the new bridge approaches and the E-N ramp. The carpool lot in the southwest quadrant of the interchange will be shifted east, although it will remain in the same quadrant. Other works will be completed in the areas of Highway 400 and Lines 9, 12 and 13 to the north of Simcoe Road 88 within the Town of Bradford West Gwillimbury, Ontario.

The area described is herein referred to as the “Site” (**Figure 1, Appendix A**). Stantec has considered the “Site” to be an approximate area involving physical work (i.e., excavation, material handling) associated with the project. The amount of excess soil generated from the construction activities that will require off-site management is currently unknown.

To fulfill the objective of the COS, historical records and documentation available for the Site and the surrounding areas were reviewed and a site reconnaissance was completed on August 15, 2022. Following the review of historical records and the site reconnaissance, potential sources of contamination (PSOC) to the Site were identified, as summarized below. PSOC were ranked as either high, moderate, or low depending on the distance of the potential source from the Site and the activity associated with the potential source.



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Figure A: Future Hwy 400/Bradford Bypass Interchange - Key Plan

The client is understood to be the Project Leader. Contact information for the Project Leader and the Qualified Person overseeing the completion of this COS is as follows:

Ministry of Transportation:

Heather Glass, P.Eng.
Senior Project Engineer, Project Delivery, York West / Simcoe
Transportation Infrastructure Management Division
Email: heather.glass@ontario.ca
Phone: 437 925 1164



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Qualified Person:

Grace Ferguson, M.Sc., P.Eng., QP_{ESA}
Stantec Consulting Ltd.
100-300 Hagey Boulevard, Waterloo ON N2L 0A4
Email: Grace.Ferguson@stantec.com
Phone: 519 585 7456

1.1 OBJECTIVE

The objective of the COS was to identify properties or areas that represented the potential for Site contamination at the time of the investigation. The Canadian Standards Association (CSA) Standard Z768-01 for Phase I Environmental Site Assessment (ESA) defines contamination as the presence of a substance of concern, or a condition, in concentrations above appropriate pre-established criteria in soil, water, groundwater, air, or structures (CSA, R2022). Potential sources of contamination (PSOC) were qualitatively ranked as either a high, moderate, or low concern. **Section 2.0** provides a definition of each qualitative ranking.

1.2 SCOPE OF WORK

The scope of work completed to fulfill the objective of the COS entailed a modified Phase I ESA, as follows:

The COS used the following documents as guidance to conduct the investigation:

- CSA 2022 Standard Z768-01: Phase I Environmental Site Assessment. November 2001, reaffirmed 2022.
- MTO, 2013. Environmental Reference for Highway Design.
- MTO, 2006. Environmental Guide for Contaminated Property Identification and Management.

The COS is considered to be a modified Phase I ESA because site interviews were not completed with individual landowners, fire insurance plans were not ordered, city directory searches and title searches were not completed for the road alignment, well records were not reviewed, and requests were not directly made to the Ontario Ministry of the Environment, Conservation and Parks (MECP) for information they have on file for the Site and adjacent properties. Much of this information was obtained instead through a database search completed by Environmental Risk Information Services (ERIS). A buffer of 250 m around the Site was defined for the database search, which was consistent with a typical COS that focuses on the identification of PSOC directly adjacent to the areas that form the Site. The site reconnaissance comprised a windshield survey that was conducted only in areas accessible by public roadways.

Note that an excess materials management plan is not considered part of the scope of a COS.



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

Methodology
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2.0 METHODOLOGY

This section describes the methods used to complete the historical records review and the Site reconnaissance activities. A list of PSOC contributing to potential environmental concerns at the Site was developed using the information obtained from the COS.

High, Moderate, and Low potential concerns identified within the site were generally defined as follows:

- **High:** Current or former potentially contaminating activity at which soil and/or groundwater contamination is typically found (e.g., gasoline service station, dry cleaning operation, known soil and/or groundwater contamination, heavy industrial operations) adjacent to the Site or within 50 m of the Site in the inferred upgradient direction.
- **Moderate:** Current or former potentially contaminating activity at which soil and/or groundwater contamination is typically found (e.g., gasoline service station, dry cleaning operation, known soil and/or groundwater contamination, heavy industrial operations, reported spills) within 100 m of the Site in the inferred downgradient direction or within 100 m to 150 m of the Site in the inferred upgradient direction.
- **Low:** Current or former potentially contaminating activity between 100 m and 250 m from the Site in the inferred downgradient direction OR between 150 m and 250 m from the Site in the inferred upgradient direction, or a source of potential contamination where the source has likely been remediated or the contamination has likely attenuated (e.g., the potential for concern associated with a spill of a limited quantity of fuel (<50 L) to a roadway).

The results of the COS include a summary of PSOC that represent environmental concerns at the Site and provide the justification for ranking the PSOC as High, Moderate, or Low.

2.1 HISTORICAL RECORDS REVIEW

The historical records review consisted of a review of information available from government, public, and other agencies or parties, and information on file at Stantec. In addition, topographic mapping and geological reference maps were reviewed to develop a conceptual understanding of site physiography and hydrogeology. Information was reviewed from the following sources:

- Aerial/Satellite Imagery:
 - Google Earth Pro imagery (2004, 2009, 2010, 2011, 2013, 2014, 2015, 2016, 2018, 2020 and 2022).
 - Environmental Risk Information Services (ERIS) - The ERIS aerials search was conducted and aerials for the years 1946, 1954, 1969, 1975, 1981 and 1995 were provided. Aerial photographs are included in **Appendix C**.



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- Environmental Risk Information Services (ERIS) – The ERIS report documented the database search for the Site and properties within a 250 m buffer of the Site. The ERIS report, including full references for each database searched, is provided in **Appendix C**, and included searches of the following:
 - Federal Databases, including but not limited to: federal tank, spills, polychlorinated biphenyl (PCB) storage sites, and waste disposal site databases.
 - Private Databases, including but not limited to: private tank listings, waste disposal site databases, and manufacturing directories.
 - Provincial Databases, including but not limited to: provincial tank, certificates of approval/environmental compliance approvals, waste generation, waste disposal, and spill databases.

Only historical database records pertaining the project Site are discussed in this report.

- Topographic/Geologic/Physiographic Mapping:
 - Ontario Geological Survey, 1991. Quaternary Geology of Ontario, Southern Sheet; Map 2556, Scale 1: 1,000,000.
 - Ontario Geological Survey, 1991. Bedrock Geology of Ontario, Southern Sheet; Map 2544, Scale 1: 1,000,000.
 - Ontario Ministry of Natural Resources and Forestry, 2022. Make a Topographic Map.

A search of MECP Freedom of Information (FOI) files and the Technical Standards and Safety Authority (TSSA) was not completed. Information typically available through the FOI and TSSA offices was accessed by the ERIS database search.

2.2 SITE RECONNAISSANCE

Site reconnaissance activities included:

- A windshield survey (i.e., observations and photographic documentation) of the Site from publicly accessible roadways (i.e., Dale Crescent, Line 13, Line 12, Line 9, Simcoe Road 88 and McKinstry Road).
- Observation of properties adjacent to the Site to determine land use, where visible from public roadways.

Ms. Aiysha Lalva, B.Sc., EPT., of Stantec carried out the site reconnaissance on August 15, 2022. Selected photographs from the site reconnaissance are included in **Appendix B**.

2.3 INTERVIEWS

No one with knowledge of historical operations at the Project Area was available for interview for the COS. Given the other sources of information reviewed, this was not considered to significantly affect the interpretations and conclusions of the COS.



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3.0 RESULTS

3.1 HISTORICAL RECORDS REVIEW

This section presents the findings of the historical records review. The site location is presented on **Figure 1 (Appendix A)**. The ERIS report prepared for the Site is included in **Appendix C**.

3.1.1 Aerial Photographs and Satellite Imagery

Aerial photographs and satellite imagery were reviewed to determine the historical activities at the Project Area and nearby lands. The Table below provides a summary of pertinent information obtained from the aerial photographs and satellite imagery.

The table below provides a summary of pertinent information obtained from the aerial photographs and satellite imagery sources listed above. Note that aerial photographs prior to 1954 were not available, except for a 1946 aerial available for the northern portion of the Site.

Year	Summary
1946-1954	The portion of the Site intersecting Line 9 was visible and occupied by primarily agricultural land, with some residential houses, driveways, paths and Line 9. Highway 400 was not observed in the 1946 aerial photograph. The three other portions of the Site did not have aerial imagery available for this time period.
1954-1995	<p>The Site was visible and occupied by Highway 400, which was perpendicular to Simcoe Road 88 (interchange), Line 9 (overpass), Line 12 and Line 13. In addition to the roadways, the Site was occupied by residential, agricultural, and forested land in the 1954, 1969, 1975, 1981, and 1995 aerial imagery.</p> <p>Some residential properties were observed to transition from residential to apparent commercial land uses. This was observed at the portion of the Site intersecting Simcoe Road 88, where the 1975 aerial photograph indicated a disturbed area to the southeast of the interchange, and the 1981 and subsequent aerial photographs identified a commercial development at this location, which corresponds to a gasoline service station that was observed during the site reconnaissance.</p> <p>Another property to the northeast of the Line 9 overpass appeared to transition from a residential and agricultural property to commercial land use between 1955 and 1975, given the observation of additional buildings and a cleared area at this property in the later photograph. This property coincided with Corneau & Sons Pallet & Box Ltd. that was listed in the ERIS report and described below.</p> <p>A stand of trees had been planted to the southeast of Highway 400 and Line 13 between 1976 and 1981, which were observed to have matured on the 1995 aerial photograph.</p>



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Year	Summary
1995-2022	<p>The Site was generally consistent with the layout shown on the 1995 aerial photograph and observed during site reconnaissance. Some more recent development was observed, including Yogi Bear's Jellystone Park Camp Resort along Simcoe Road 88, which was observed in the 2004 and subsequent imagery. A commercial development, identified as Boss Lubricants during the site reconnaissance, was also developed between 1995 and 2004, along Simcoe Road 88, east of Highway 400.</p> <p>In the northern portion of the Site, extending from Line 13, Dale Crescent was observed in the 2004 and later imagery. Construction of a residential subdivision along this road was observed in the 2009 aerial imagery.</p> <p>An industrial manufacturing facility, identified during the site reconnaissance as MiTek Canada, was observed to the southwest of the interchange at Highway 400 and Simcoe Road 88 in the 2018 and subsequent aerial imagery.</p>

3.1.2 Physiographic Setting

According to the Quaternary Geology of Ontario map published by the Ontario Geologic Survey (Map 2556), the surficial soil in the vicinity of the Site generally consists of either silt to clay textured till with glaciofluvial and glaciolacustrine deposits of coarse textured sand and gravel, with minor silt and clay. Stratigraphy listed on records for boreholes and wells located within the Site confirmed that the surficial soils consist predominantly of silty sand, clay, gravel and brown sand to depths of up to 11.0 m below ground surface (BGS).

According to the Bedrock Geology of Ontario map published by the Ontario Geologic Survey (Map 2544), bedrock in the vicinity of the Site consists of limestone, dolostone, shale, arkose, and/or sandstone of the Shadow Lake Formation of the Ottawa Group and Simcoe Group (54a). Depth to bedrock was not indicated on the map. Well records for wells located within the Site indicated that bedrock was not encountered to a depth of approximately 11.0 m BGS.

3.1.3 Topography and Hydrogeological Setting

Highway 400 was generally observed to be at a higher elevation than the surrounding portions of the Site. The Site was generally gentle rolling hills with low lying areas. Line 13 was at a lower elevation than Line 12 and Line 9 was at a higher elevation than Simcoe Road 88. Wetlands were observed to be situated outside the Site in the northern portion of the Site, as indicated on **Figure 2-4**.

Based on a review of available topographic maps, the inferred regional groundwater flow on the Site appears to be to the southeast toward the Holland River ranging from approximately 7.1 km to 9.2 km southeast of the Site. One of these tributaries is Innisfil Creek, located on the northern portion of the Site, across Highway 400, Dale Crescent and Line 13. Lake Simcoe is located approximately 10.5 km to 14.0 km northeast of the Site. The elevation of the local ground water table can generally mimic the local topography and may not reflect the regional trend in drainage. The local shallow ground water flow pattern can also be influenced by small tributaries, nearby wetlands, constructed ponds and subsurface structures in the vicinity, such as building foundations, weeping tiles, and utility trenches.



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3.1.4 ERIS Historical Database Review

This section summarizes relevant information provided by the ERIS database review. The addresses referenced below can be observed on **Figures 2-1 to 2-4, Appendix A**. The complete ERIS report is included in **Appendix C** and additional details regarding identified PSOC are included in **Table 1** below.

3.1.4.1 Approvals and Environmental Registry

Certificates of Approval (CofA) and Environmental Compliance Approval (ECA)

Several CofAs and ECAs for municipal water and sewage were listed within the limits of the Site. These included the Husky Oil Bradford Truck Stop/ Husky Oil Operations Limited, located at 3479 Simcoe Road 88. Based on the nature of these certificates of approval, these are not expected to contribute to a PSOC at the Site; however, other operations at the Husky facility may represent a PSOC, as described below.

Environmental Registry

An instrument decision was registered to Husky Energy Operations Ltd., located at 3479 Simcoe Road 88 in 2017. This was not expected to contribute to a PSOC at the Site; however, other operations at the Husky facility may represent a PSOC, as described below.

3.1.4.2 Fuel Storage Records

Commercial Fuel Oil Tanks

One active double walled fibreglass underground storage tank (UST) was listed in this database. The UST was indicated to have a volume of 250,000 L and was registered to Husky Energy Division of Husky Oil Ltd., located at 3479 Simcoe Road 88. This UST was considered a PSOC to the Site (PSOC #1).

List of TSSA Expired Facilities

Five listings related to a fuel service facility, fuel service propane refill center, fuel service liquid fuel tank, and fuel service propane tank were registered to Kernaghans Husky O/A Pengally Enterprises Inc. and 2290511 Ontario Inc., both located at 3479 Simcoe Road 88, in 2010 and 2016. The presence of a liquid fuel tank at this property represents a PSOC to the Site (PSOC #1).

Historic and Current Fuel Storage Tanks

Two listings for 2151858 Ontario Inc. O/A Bradford Husky and Kernaghans Husky O/A Pengally Enterprises Inc., were identified at 3479 Simcoe Road 88. One record was for a renewal of tanks installed in 1978 and another record was for a series of liquid fuel double walled tank installed in 2005, encompassing five fuel tanks.

Four double walled fiberglass USTs were registered to 2290511 Ontario Inc., located at 3479 Simcoe Road 88 between 2000 and 2016, with volumes ranging from 25,000 L to 75,000 L.



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Based on the number, volume and age of USTs and tanks at this property, fuel storage was considered to represent a PSOC to the Site (PSOC #1).

Retail Fuel Storage Tanks

Husky Car & Truck Stop, located at 3479 Simcoe Road 88, was a registered retail fuel outlet with associated gasoline, oil, and/or propane storage tanks, identified at Highway 88 & 400. This retail fuel outlet was considered a PSOC to the Site (PSOC #1).

Private and Retail Fuel Storage Tanks

Two listings were provided for fuel storage tanks at properties at the interchange of Highway 400 and Simcoe Road 88. One was for Kernaghans Husky at Lot 7 Con 6, Highways 88 & 400 with an expiry date of July 1995, and the other was for the historical KOA Campground, at RR 1, Highway 88 & 400, with an expiry date of January 1993. The presence of private or retail fuel storage tanks at these properties represents PSOC to the Site (PSOC #1 and #2).

Given the expected high storage capacity, ongoing use as a fuel retail outlet and the close proximity to the Site, the presence of the fuel storage tanks located at the Husky property (PSOC #1) was determined to be a High potential for environmental concern.

Given the land use of the historical KOA Campground property, the associated fuel storage tank record (PSOC #2) was considered to be a Low potential for environmental concern. This was determined because of the expected limited capacity of the tank, the age of the record associated with this former land use (i.e., expiry in 1993) and the expected distance away from work areas within the Site.

3.1.4.3 Manufacturing and Waste Generation

Scott's Manufacturing Directory

Corneau & Sons Pallet & Box Ltd., located at 3556 Line 9, RR2 was established in 1967 as a sawmill and wood container/ pallet manufacturing facility. Based on the existence of this historical manufacturing facility within the Site, and the absence of further information concerning site operations, this property was considered to be a PSOC to the Site (PSOC #3).

Ontario Regulation 347 Waste Generators Summary

Six listings were indicated for generation of petroleum hazardous wastes for Husky Travel Center, Husky Energy and Husky Energy Refined Products, all at 3479 Simcoe Road 88, for the years between 2004 and 2018. Given the generation of these hazardous wastes at this property, it was considered a PSOC to the Site (PSOC #1).



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3.1.4.4 Spills and Incidents

Ontario Spills

Thirteen spill records at the Site, all within or near the Highway 400 and Simcoe Road 88 interchange and at the Husky Truck Stop Service Station at 3479 Simcoe Road 88, were provided in the ERIS report. The spills were mostly diesel fuel, with volumes ranging from 20 L to 400 L, occurring between 1988 and 2007. Based on the volumes of the spills and their occurrence within the Site, they were considered PSOCs to the Site PSOC (PSOC #4 and #5).

TSSA Historic Incidents

A liquid fuel release of unknown quantity was reported at a retail fuel outlet near Highways 400 & Simcoe Road 88. This was considered to be the Husky Truck Stop Services Station at 3479 Simcoe Road 88. Although no date or volume of spill were provided, this was considered to represent a PSOC to the Site (PSOC #4).

3.1.4.5 Other Records

Various unplotable listings were also noted in the ERIS report, including listings related to certificates of approval, spills, permit to take water, and historic fuel storage tanks. Based on the information provided in these listings, the nature of the records and/or the interpreted separation distances of the addresses associated with these records from the Site, and the already established PSOCs, the unplotable listings are not expected to represent any new PSOCs, with the exception of spills. Several spills of varying material and quantities (20 L to 500 L) were noted at unspecified areas at the southern portion of the Site. Given the lack of information and the uncertainty of the spill locations, the entire southern interchange portion of the Site is considered a PSOC (PSOC #5).

The remaining listings in the ERIS report were determined to not represent a PSOC to the Site based on the distance from the Site, inferred direction of groundwater flow, and/or the nature of the records. The complete ERIS report is included in **Appendix C**.



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Table 1: Summary of Historical Potential Sources of Contamination

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminants of Potential Concern	Potential for Concern	Explanation of Potential for Concern
1	Gasoline and Associated Products	Esso/ Bradford Husky (3479 Simcoe Road 88)	On-Site and within Site boundary	Volatile Organic Compounds (VOCs), Petroleum Hydrocarbons Fraction 1 to Fraction 4 (PHC F1 to F4), Benzene, Toluene, Ethylbenzene and Xylene (BTEX), Polycyclic Aromatic Hydrocarbons (PAHs)	High	Multiple expired and active gasoline and associated products storage in fixed tanks, and multiple years registration as a waste generator. Spill records for mostly diesel fuel released to the road.
2	Gasoline and Associated Products	Historical KOA campground, current Yogi Bear's Jellystone Park Camp-Resort (RR 1, Highway 88 & 400)	On-Site	VOCs PHC F1 to F4 BTEX PAHs	Low	One fuel tank registered to historical KOA Campground, with an expiry date of January 1993.
3	Wood Manufacturing Facility	3556 Line 9 RR 2	On-Site and within Site boundary	VOCs PHC F1 to F4 BTEX PAHs	Low	Manufacturing sawmill and wood container/pallet manufacturing facility at historical Corneau & Sons Pallet & Box Ltd. established in 1967.
4	Spills	Esso/ Bradford Husky (3479 Simcoe Road 88)	On-Site and within Site boundary	VOCs, PHC F1 to F4, PAHs, metals and inorganics	High	Historical spill of various volumes identified at 3479 Simcoe Road 88 in 1992 and 1995. Although the exact location of the spill could not be determined, residual impacts to soil and/or water may remain.



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

Results
August 21, 2023

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminants of Potential Concern	Potential for Concern	Explanation of Potential for Concern
5	Spills	Roadways within the Site (Highway 400 and Simcoe Road 88 junction), Southern portion of Site	On-Site and within Site boundary	VOCs, PHC F1 to F4, PAHs, metals and inorganics	High	Multiple historical spills ranging from 20 L to 500 L released between 1988 and 2007, identified at various locations along Highway 400 and Simcoe Road 88 interchange. Although the exact location of the spill could not be determined, residual impacts to soil and/or water may remain.

Note(s):

Contaminants include petroleum hydrocarbons (PHCs), volatile organic compounds (VOCs), benzene, toluene, ethylbenzene, xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), various metals listed above, electrical conductivity (EC), sodium adsorption ratio (SAR)



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

Results

August 21, 2023

3.2 SITE RECONNAISSANCE

The results of the site reconnaissance conducted on August 15, 2022, are summarized in the following sections.

Pertinent photographs of the Site are provided in **Appendix B**, and the site details are indicated on **Figures 2-1 to 2-4, Appendix A**.

3.2.1 General Site Layout and Observations

The Site consists of a six-lane roadway segment of Highway 400 from Line 13 to Simcoe Road 88. The roadway segment is approximately 9.0 km of Highway 400. The Site includes portions of Highway 400, Simcoe Road 88, Line 9, Line 12, Line 13, McKinstry Road, Sideroad 5, Stirling Crescent and Dale Crescent, in Bradford West Gwillimbury, Ontario (**Figure 1, Appendix A**). A carpool lot was also identified in the southwest quadrant of the Highway 400/ Simcoe Road 88 interchange. The observed surface features included asphalt, concrete, and gravel, as well as low-lying vegetation on the roadsides at the time of the site reconnaissance.

Adjacent surface features included cultivated fields, wooded areas, low-lying vegetation, and surface water drainage on residential, agricultural and commercial properties. At the interchange of Highway 400 and Simcoe Road 88, the observed land uses included Esso/Bradford Husky, Yogi Bear's Jellystone Park Camp Resort, MiTek Canada and Boss Lubricants. Approximately twenty apparent environmental monitoring wells were observed during site reconnaissance at the Boss Lubricants property, to the southeast of the Highway 400/ Simcoe Road 88 interchange.

Given the primary site use as a highway and roadways, it is likely that road de-icing materials have impacted the soil and/or groundwater quality along much of the Site. Salt-related parameters are not considered to be contaminants for on-site soils when substances have been applied for the safety of vehicular or pedestrian traffic under snow or ice conditions (O.Reg. 153/04 s.49.1.1); however, salt-impacted soil or water would require special management measures if being removed off-site.

3.2.2 Project Area Services

Overhead electrical lines and storm sewer catch basins were observed within the Site during the site reconnaissance. Various underground telecommunication lines, gas and water services may be present within the Site. Utility locates for future subsurface work would provide further details regarding the presence of underground utilities.

3.2.3 Storage Tanks

As the Site is mostly a roadway, no aboveground storage tanks (ASTs) were observed directly within the Site during the site reconnaissance. Multiple fill covers for underground storage tanks (USTs) were observed at Esso/ Bradford Husky retail fuel outlet. No vent or fill pipes or unidentified pipes that could be associated with other USTs were observed.



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

Results

August 21, 2023

3.2.4 Building Materials

The Site consists of a series of roadways comprising gravel and asphalt surfaced roads and concrete curb and barrier with catch basins and maintenance holes. As indicated on **Figure 2-1**, an industrial manufacturing facility identified as MiTek Canada was observed to the southwest of the interchange at Highway 400 and Simcoe Road 88. A carpool lot was also identified in the southwest quadrant of the Highway 400/ Simcoe Road 88 interchange, within the Site. The Esso/ Bradford Husky retail fuel outlet was observed to the southeast of this interchange, beyond which was a commercial property identified as Boss Lubricants. As indicated on **Figure 2-2**, at the Highway 400 overpass at Line 9, multiple residential buildings were observed. As indicated on **Figure 2-3**, one residential property was observed west of Highway 400 and south of the Line 12 alignment. As indicated on **Figure 2-4**, at the Highway 400 and Line 13 overpass, multiple residential properties were present, primarily to the east of Highway 400.

No other structures or buildings were observed during the site reconnaissance, and the observed buildings were considered to be beyond the Site limits.

3.2.5 PCBs

No observations were made during the site reconnaissance of any apparent PCBs at the Site. One pole-mounted transformer was observed along Line 13 and a pad-mounted transformer was observed along Dale Crescent between the roadway and the sidewalks along the roadway. Given the recent timeframe of construction of structures associated with Dale Crescent (i.e., after 2004 as described in the aerial photograph review above), it is considered unlikely that transformers in this area contain PCBs.

3.2.6 Chemical Storage

As the majority of the Site was a roadway and buildings were not accessible, no chemical storage was observed directly within the Site during the site reconnaissance. Drums of unknown contents were observed at the Esso/ Bradford Husky retail fuel outlet. Given the mainly rural site setting, significant chemical storage within the Site was not expected.

3.2.7 Waste Generation and Disposal

No waste generation or disposal was observed in the Project Area during the site reconnaissance, with the exception of commercial waste collection dumpsters along northern portion of Esso/ Bradford Husky property.



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

Results

August 21, 2023

3.2.8 Surficial Staining, Fill, Debris, and Vegetation Observations

Surficial staining was observed at the Esso/ Bradford Husky retail fuel outlet. No debris or stressed vegetation was observed at the Site during the site reconnaissance; however, the majority of the Site was observed at a windshield level only, so detailed ground observations were not completed. Given the likelihood that fill of unknown quality was imported during the construction of the roadway comprising the Project Area, this was considered a PSOC (PSOC #6). Some ground disturbance that was believed to be associated with new construction activities was observed along Stirling Road, southwest of Highway 400 and Simcoe Road 88.

The PSOC observed during the site reconnaissance are included in **Table 2** below.



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

Results
August 21, 2023

Table 2: Summary of Current Potential Sources of Contamination

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminants of Potential Concern	Potential for Concern	Explanation of Potential for Concern
1	Current Gasoline and Associated Products	Esso/ Bradford Husky (3479 Simcoe Road 88)	On-Site	VOCs PHC F1 to F4 BTEX PAHs	High	Multiple active gasoline and associated products storage in fixed tanks were observed during site reconnaissance.
6	Berms and Imported Fill Material	West of Highway 400, and all road alignments within the Site	On-Site	PAH, metals and inorganics	Moderate	Multiple large berms and fill piles were observed west of Highway 400. Furthermore, it is expected that fill materials were imported onto the Site for the purposes of road construction. The quality of this fill is unknown.
7	Manufacturing Facility	Boss Lubricants (3475 Simcoe Road 88)	Off-Site	VOCs, PHC F1 to F4, PAHs, metals and inorganics	Moderate	Approximately twenty apparent environmental monitoring wells were observed during site reconnaissance at the Boss Lubricants property, in the southeast quadrant of the Highway 400 and Simcoe Road 88 interchange.



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

Results
August 21, 2023

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminants of Potential Concern	Potential for Concern	Explanation of Potential for Concern
8	Manufacturing Facility	MiTek Canada (240 Stirling Crescent)	Off-Site	VOCs, PHC F1 to F4, PAHs, metals and inorganics	Low	Manufacturer of commercial and residential building supplies, recent age of operation with no known records relating to waste generation or tank records, in the southwest quadrant of the Highway 400 and Simcoe Road 88 interchange.



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

Summary of Environmental Concerns
August 21, 2023

4.0 SUMMARY OF ENVIRONMENTAL CONCERNS

4.1 POTENTIAL SOURCES OF CONTAMINATION

PSOC were identified that may contribute to environmental concerns at the Site. The PSOC are summarized in **Table 3**, along with a ranking of the likelihood (i.e., high, moderate, or low) that the soil and/or groundwater quality at the Site has been impacted. Properties or features identified as being PSOC to the Site are shown on **Figures 2-1 to 2-4** in **Appendix A**.



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

Summary of Environmental Concerns
August 21, 2023

Table 3: Summary of Potential Sources of Contamination

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminants of Potential Concern	Potential for Concern	Explanation of Potential for Concern
1	Gasoline and Associated Products	Esso/ Bradford Husky (3479 Simcoe Road 88)	On-Site	VOCs PHC F1 to F4 BTEX PAHs	High	Multiple expired and active gasoline and associated products storage in fixed tanks, and multiple years registration as a waste generator. Spill records for mostly diesel fuel released to the road.
2	Gasoline and Associated Products	Historical KOA campground, current Yogi Bear's Jellystone Park Camp-Resort (RR 1, Highway 88 & 400)	On-Site	VOCs PHC F1 to F4 BTEX PAHs	Low	One fuel tank registered to historical KOA Campground, with an expiry date of January 1993.
3	Wood Manufacturing Facility	3556 Line 9 RR 2	On-Site	VOCs PHC F1 to F4 BTEX PAHs	Low	Manufacturing sawmill and wood container/pallet manufacturing facility at historical Corneau & Sons Pallet & Box Ltd. established in 1967.
4	Spills	Esso/ Bradford Husky (3479 Simcoe Road 88)	On-Site	VOCs, PHC F1 to F4, PAHs, metals and inorganics	High	Historical spill of various volumes identified at 3479 Simcoe Road 88 in 1992 and 1995. Although the exact location of the spill could not be determined, residual impacts to soil and/or water may remain.



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

Summary of Environmental Concerns
August 21, 2023

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminants of Potential Concern	Potential for Concern	Explanation of Potential for Concern
5	Spills	Roadways within the Site (Highway 400 and Simcoe Road 88 junction), Southern portion of Site	On-Site	VOCs, PHC F1 to F4, PAHs, metals and inorganics	High	Multiple historical spills ranging from 20 L to 500 L released between 1988 and 2007, identified at various locations along Highway 400 and Simcoe Road 88 interchange. Although the exact location of the spill could not be determined, residual impacts to soil and/or water may remain.
6	Berms and Imported Fill Material	West of Highway 400, and all road alignments within the Site	On-Site	PAHs, metals and inorganics	Moderate	Multiple large berms and fill piles were observed west of Highway 400. Furthermore, it is expected that fill materials were imported onto the Site for the purposes of road construction. The quality of this fill is unknown.



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

Summary of Environmental Concerns
August 21, 2023

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminants of Potential Concern	Potential for Concern	Explanation of Potential for Concern
7	Manufacturing Facility	Boss Lubricants (3475 Simcoe Road 88)	Off-Site	VOCs, PHC F1 to F4, PAHs, metals and inorganics	Moderate	Approximately twenty apparent environmental monitoring wells were observed during site reconnaissance at the Boss Lubricants property, located in the southeast quadrant of the interchange.
8	Manufacturing Facility	MiTek Canada (240 Stirling Crescent)	Off-Site	VOCs, PHC F1 to F4, PAHs, metals and inorganics	Low	Manufacturer of commercial and residential building supplies, recent operation with no associated waste generation or tank records, in the southwest quadrant of the Highway 400 and Simcoe Road 88 interchange.



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

Summary of Environmental Concerns
August 21, 2023

4.2 SUMMARY OF PAST USES

A summary of the current and past uses of the Site identified through the historical records review and the site reconnaissance is provided in **Table 4**, below.

Table 4: Table of Current and Past Uses of the Site

Year	Name of Owner	Description of Property Use	Property Use	Other Observations
1946 - Present	Ministry of Transportation/ Various	Roadways	Community	Based on aerial images from 1946 to 2022 and a site reconnaissance completed in 2022, the Site has been used as country roadways since at least 1946, and as Highway 400 since at least 1955.

4.3 UNCERTAINTY

The past use of the Site is well understood based on historical information sources obtained and reviewed during the COS. The physical characteristics of the land area comprising the Site are inferred from available regional mapping and historical water well records. No other potential uncertainties or missing information were encountered during completion of the COS.

It was determined that some of the requirements in Schedule D of O.Reg 153/04 and CSA Z768-01 were not required to meet the objectives of the COS, including the review of historical land ownership and occupants from chain of title, city directory searches and reviews of special attention items. The information provided included sources (i.e., ERIS) and the general continuity in site observations between 1946 and 2022 in aerial imagery were sufficient to achieve the objectives of the COS.

4.4 RECOMMENDATIONS

Based on the PSOC identified in **Section 4.0**, the following recommendations are provided:

- Ontario Regulation (O.Reg.) 406/19 (On-Site and Excess Soil Management) and the associated document *Rules for Soil Management and Excess Soil Quality Standards* referenced by O.Reg. 406/19 should be followed for soil that is excavated and managed on-site or off-site during construction. In addition, it is understood that salt-related parameters, such as electrical conductivity (EC) and sodium adsorption ratio (SAR), may not be considered to be contaminants when related to the application of a substance to surfaces for the safety of vehicular or pedestrian traffic under snow or ice conditions (O.Reg. 153/04 s.49.1.1); however, soil or water impacted by salt should be managed according to O.Reg. 406/19 if it is to be removed from the right-of-way. Sampling programs should be developed and undertaken under the supervision of a qualified person as defined in O.Reg. 406/19 and sample selection should take into consideration the presence of anthropogenic substances such as debris/waste, and unusual odours or staining.



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

Summary of Environmental Concerns
August 21, 2023

- A Preliminary Site Screening (PSS), Phase I ESA and Phase II ESA (if recommended as part of the PSS or Phase I ESA) should be completed for any property that will be acquired by MTO in accordance with the requirements of the MTO documents *Environmental Guide for Contaminated Property Identification and Management* (MTO, 2006) and *Environmental Reference for Highway Design* (MTO, 2013).
- Soil and groundwater that will be disturbed during construction should be sampled and analyzed for metals and inorganics (including EC and SAR), polycyclic aromatic hydrocarbons (PAHs), benzene, toluene, ethylbenzene, xylenes (BTEX), and petroleum hydrocarbon fractions 1 to 4 (PHC F1 to F4). In addition, areas within or adjacent to PSOC should be analyzed for the specific contaminants of concern as described in the Summary of Potential Sources of Contamination table above. The selection of soil for analysis should take into consideration the presence of anthropogenic substances such as debris/waste and PHC, solvent, or other unusual odours or staining.
- Stockpiling and transport of excavated soil during construction should be done in accordance with the requirements specified in O.Reg. 406/19.
- Should contaminated soil be suspected during future construction activities (e.g., staining, odours, debris/waste, petroleum hydrocarbon sheen), a qualified person should be retained to identify and collect representative soil samples for chemical analysis to determine management options and appropriate handling in accordance with O.Reg. 406/19.
- Should dewatering be required at the Site during future construction activities, water quality analyses should be conducted to determine appropriate management methods in accordance with applicable regulations. This work should be done in coordination with a QP_{ESA} as defined by O.Reg. 153/04, to maintain data quality and provide an appropriate assessment of water quality.



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

Limitations
August 21, 2023

5.0 LIMITATIONS

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential liabilities associated with the identified property.

This report provides an evaluation of selected environmental conditions associated with the identified portion of the property that was assessed at the time the work was conducted and is based on information obtained by and/or provided to Stantec at that time. There are no assurances regarding the accuracy and completeness of this information. All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

The opinions in this report can only be relied upon as they relate to the condition of the portion of the identified property that was assessed at the time the work was conducted. Activities at the property subsequent to Stantec's assessment may have significantly altered the property's condition. Stantec cannot comment on other areas of the property that were not assessed.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report and are based solely on the scope of work described in the report, the limited data available and the results of the work. They are not a certification of the property's environmental condition. This report should not be construed as legal advice.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities or claims, howsoever arising, from third party use of this report.

The locations of any utilities, buildings and structures, and property boundaries illustrated in or described within this report, if any, including pole lines, conduits, water mains, sewers and other surface or sub-surface utilities and structures are not guaranteed. Before starting work, the exact location of all such utilities and structures should be confirmed and Stantec assumes no liability for damage to them.

The conclusions are based on the Project Area conditions encountered by Stantec at the time the work was performed at the specific testing and/or sampling locations, and conditions may vary among sampling locations. Factors such as areas of potential concern identified in previous studies, site conditions (e.g., utilities) and cost may have constrained the sampling locations used in this assessment.



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

Limitations
August 21, 2023


In addition, analysis has been carried out for only a limited number of chemical parameters, and it should not be inferred that other chemical species are not present. Due to the nature of the investigation and the limited data available, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire site. As the purpose of this report is to identify site conditions which may pose an environmental risk; the identification of non-environmental risks to structures or people at the Project Area is beyond the scope of this assessment.

Should additional information become available which differs significantly from our understanding of conditions presented in this report, Stantec specifically disclaims any responsibility to update the conclusions in this report.

This report was prepared by Aiysha Lalva, B.Sc., EPT. and Mark de Verteuil P.Ge. (Limited), and reviewed by Grace Ferguson, M.Sc., P.Eng., QP_{ESA}.

All of which is respectfully submitted,

STANTEC CONSULTING LTD.

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Ferguson
Date: 2023.08.21
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AL/GF/jt/de



CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88, LINE 9, LINE 12, AND LINE 13

References
August 21, 2023

6.0 REFERENCES

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APPENDICES

**CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88,
LINE 9, LINE 12, AND LINE 13**

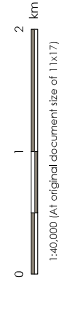
Appendix A Figures
August 21, 2023

APPENDIX A FIGURES

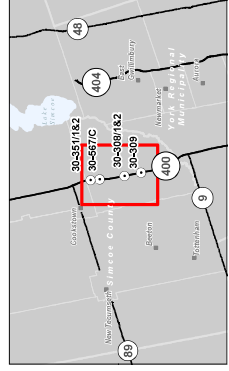




- Legend**
- MTO Structure
 - Site
 - Constricted Drain
 - Hydro Line
 - Watercourse (Intermittent)
 - Watercourse (Permanent)
 - Conservation Area (Administrative)
 - Boundary
 - Waterbody
 - Wooded Area
 - Municipal Boundary, Upper
 - Municipal Boundary, Lower



Notes
 1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry & Queen's Printer for Ontario, 2016



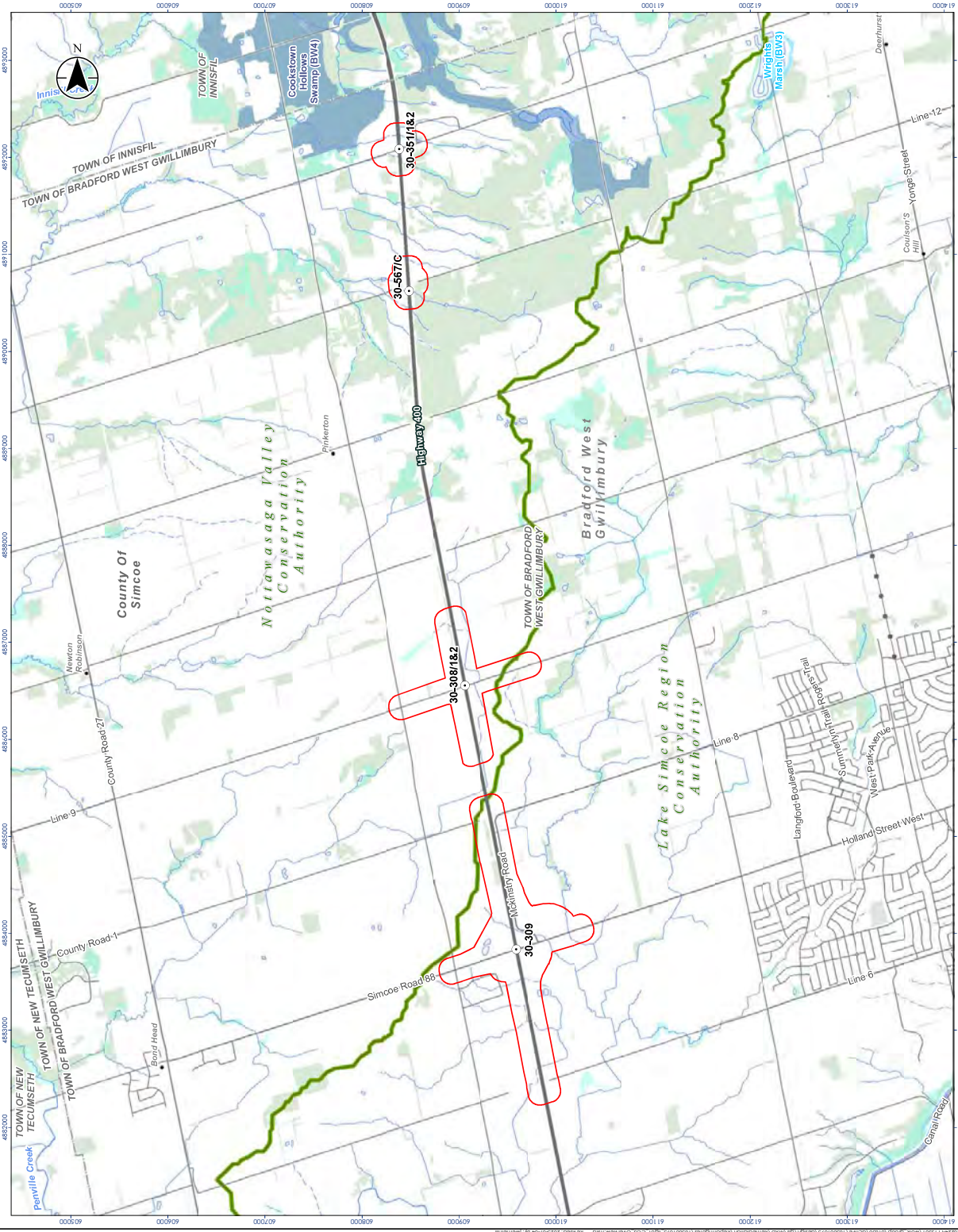
Project Location
 Town of Bradford
 West Gwillimbury

145001095 REV A
 Prepared by: JW on 2022-07-04

Client/Project
 CONTAMINATION OVERVIEW STUDY
 HIGHWAY 400 REHABILITATION FROM HIGHWAY 88
 TO LINE 13

Figure No. 1

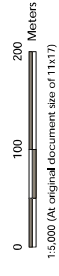
Site Location Plan



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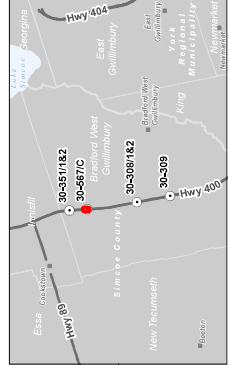


- Legend
- MTO Structure
 - Site
 - Watercourse (Intermittent)
 - Watercourse (Permanent)
 - Constructed Drain
 - Wetland, Not evaluated per OWES
 - Inferred Regional Groundwater Flow Direction
 - PSDC 6



Notes

1. Aerial Imagery, 2015, 1:25,000 Scale, 1:1
2. Potential Source of Contamination (PSDC)
3. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry (OMNR)
4. Imagery obtained from Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



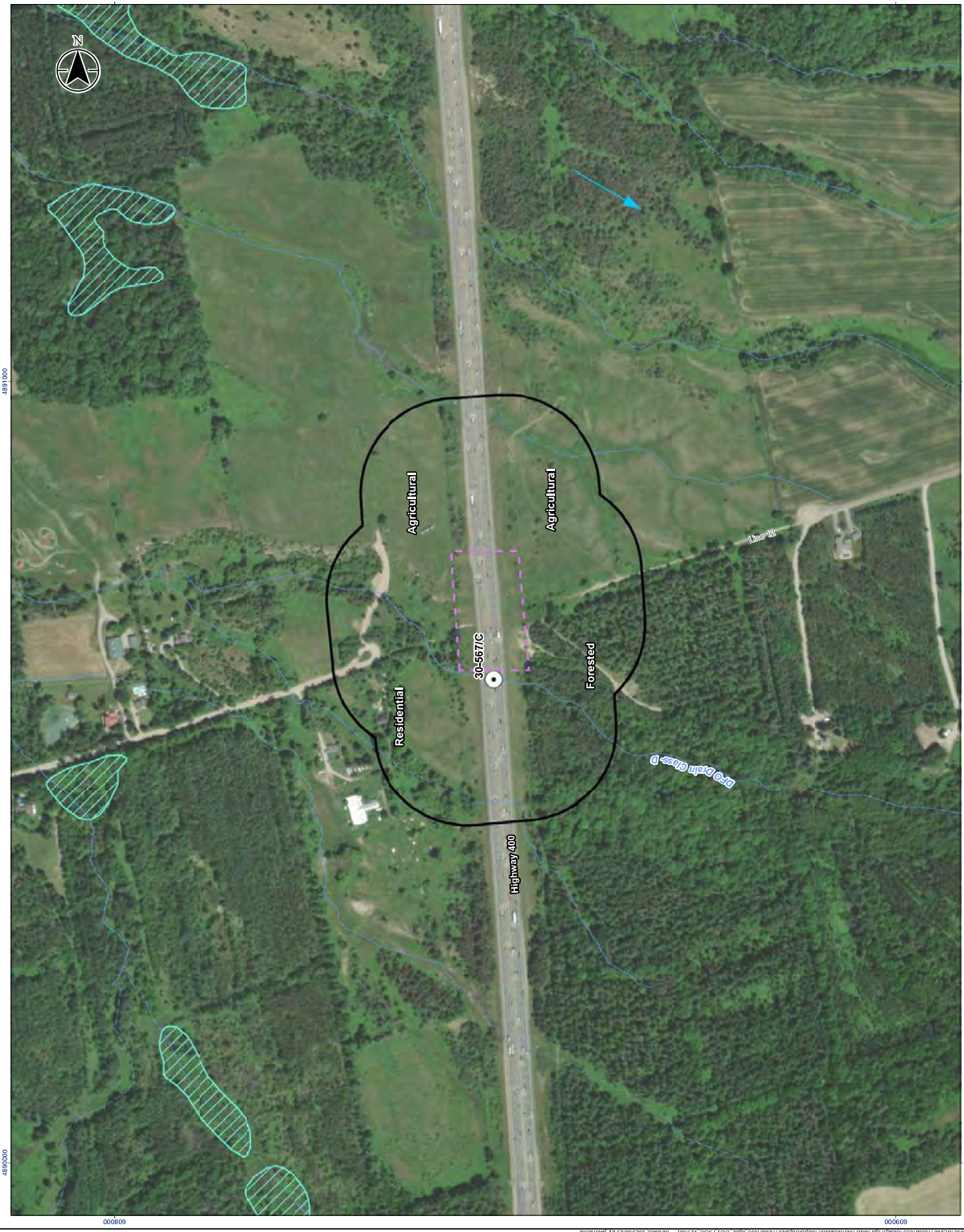
Project Location
 Bradford West Gwillimbury

Prepared by JWH on 2025-06-23

Client/Project
 CONTAMINATION OVERVIEW STUDY
 HIGHWAY 400 REHABILITATION FROM HIGHWAY 88
 TO LINE 13

Figure No.
 2-3

Title
 Site Features and Potential Sources of Contamination - Line 12 Contract 2

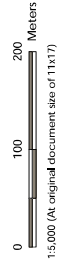


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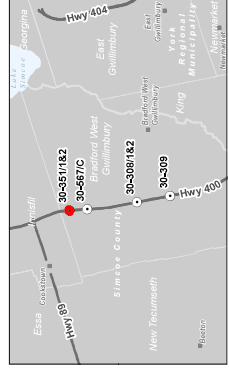


Legend
MTO Structure
Site

- Watercourse (Intermittent)
- Watercourse (Permanent)
- Wetland, Provincially Significant
- Wetland, Not evaluated per OWES
- Inferred Regional Groundwater Flow Direction
- PSOC 6



Notes
 1. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry (OMNR) using the Ontario Vector Data (OVD) dataset.
 2. Potential Source of Contamination (PSOC)
 3. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry (OMNR) using the Ontario Vector Data (OVD) dataset.
 4. Imagery obtained from Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.



Project Location
 Bradford West Gwillimbury
 16500085 REVJ
 Prepared by JWH on 2025-06-23

Client Objectives
 CONTAMINATION OVERVIEW STUDY
 HIGHWAY 400 REHABILITATION FROM HIGHWAY 88
 TO LINE 13

Figure No.
 2-4

Title
 Site Features and Potential Sources of Contamination - Line 13 Contract 2



Disclaimer: Stantec assumes no responsibility for data source or accuracy. The accuracy and completeness of the data, the inclusion of errors, omissions, and other data, from any and all data sources, is the responsibility of the client.

**CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88,
LINE 9, LINE 12, AND LINE 13**

Appendix B Photographic Record
August 21, 2023

APPENDIX B PHOTOGRAPHIC RECORD





Photo 1: View of abandoned residential properties at intersection of Dale Crescent and Line 13, facing southwest.



Photo 2: View of pad-mounted transformer along Dale Crescent, facing west.



Photo 3: View of residential property at end of Line 12, west of Highway 400, facing northwest.



Photo 4: View at the end of Line 12, facing east towards Highway 400..



Photo 5: View of agricultural fields along Line 12, followed by Highway 400, facing west.



Photo 6: View of walkable hiking trail following end of Line 12 roadway, east of Highway 400, facing west.



Photo 7: View of MiTek Canada from Stirling Crescent, facing south.



Photo 8: View of fill piles at Site from construction activities along Stirling Crescent, followed by MiTek Canada, facing east.



Photo 9: View of berms and bridge at junction of County Road 88 and Highway 400, facing west.



Photo 10: View of MckInstry Road, followed by Highway 400, facing north.



Photo 11: View of Esso/ Bradford Husky gasoline service station for both trucks and regular sized vehicles, facing west.



Photo 12: View of approximately 20 stick-up monitoring wells adjacent to the Site followed by Boss Lubricants, near junction of Highway 400 and County Road 88, facing east.



Photo 13: View of Highway 400, off County Road 88, facing west.



Photo 14: View of drums of unknown contents, located along western portion of Esso/ Bradford Husky, facing southeast..

**CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88,
LINE 9, LINE 12, AND LINE 13**

Appendix C Supporting Documents
August 21, 2023

APPENDIX C SUPPORTING DOCUMENTS





HISTORICAL AERIALS

Project Property: MTO - Highway 400 Expansion
2-3, MTO highway Expansion
East Gwillimbury ON

Project No: 165001095

Requested By: Stantec Consulting Ltd.

Order No: 22082903691

Date Completed: September 08, 2022

Decade	Year	Image Scale	Source
1920	Not Available		
1930	Not Available		
1940	Not Available		
1950	1954	10000	Hunting Survey Corporation Limited
1960	1969	40000	NAPL
1970	1975	40000	NAPL
1980	1981	50000	NAPL
1990	1995	50000	NAPL
2000	Not Available		
2010	Not Available		

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0 0.125 0.25 0.5
Kilometers

Order Number: 22082903691

Year: 1954
Source: Hunting Survey Corporation Limited
Map Scale: 1: 10000
Comments:





0 0.125 0.25 0.5
Kilometers

Order Number: 22082903691

Year: 1969
Source: NAPL
Map Scale: 1: 10000
Comments:



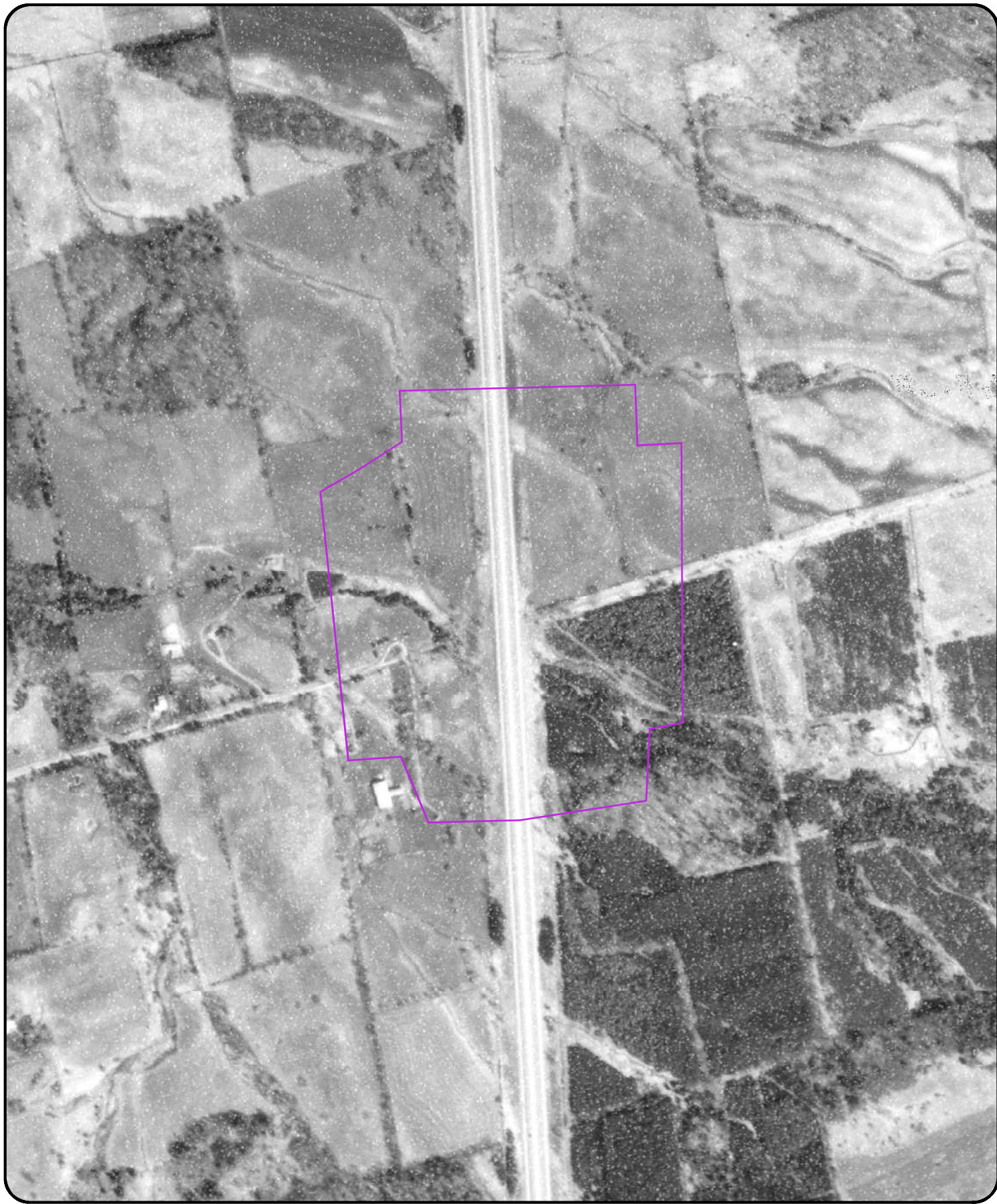


0 0.125 0.25 0.5
Kilometers

Order Number: 22082903691

Year: 1975
Source: NAPL
Map Scale: 1: 10000
Comments:





0 0.125 0.25 0.5
Kilometers

Order Number: 22082903691

Year: 1981
Source: NAPL
Map Scale: 1: 10000
Comments:





0 0.125 0.25 0.5
Kilometers

Order Number: 22082903691

Year: 1995
Source: NAPL
Map Scale: 1: 10000
Comments: Best Copy Available





HISTORICAL AERIALS

Project Property: MTO - Highway 400 Expansion
2-4, MTO site
East Gwillimbury ON

Project No: 165001095

Requested By: Stantec Consulting Ltd.

Order No: 22082903692

Date Completed: September 08, 2022

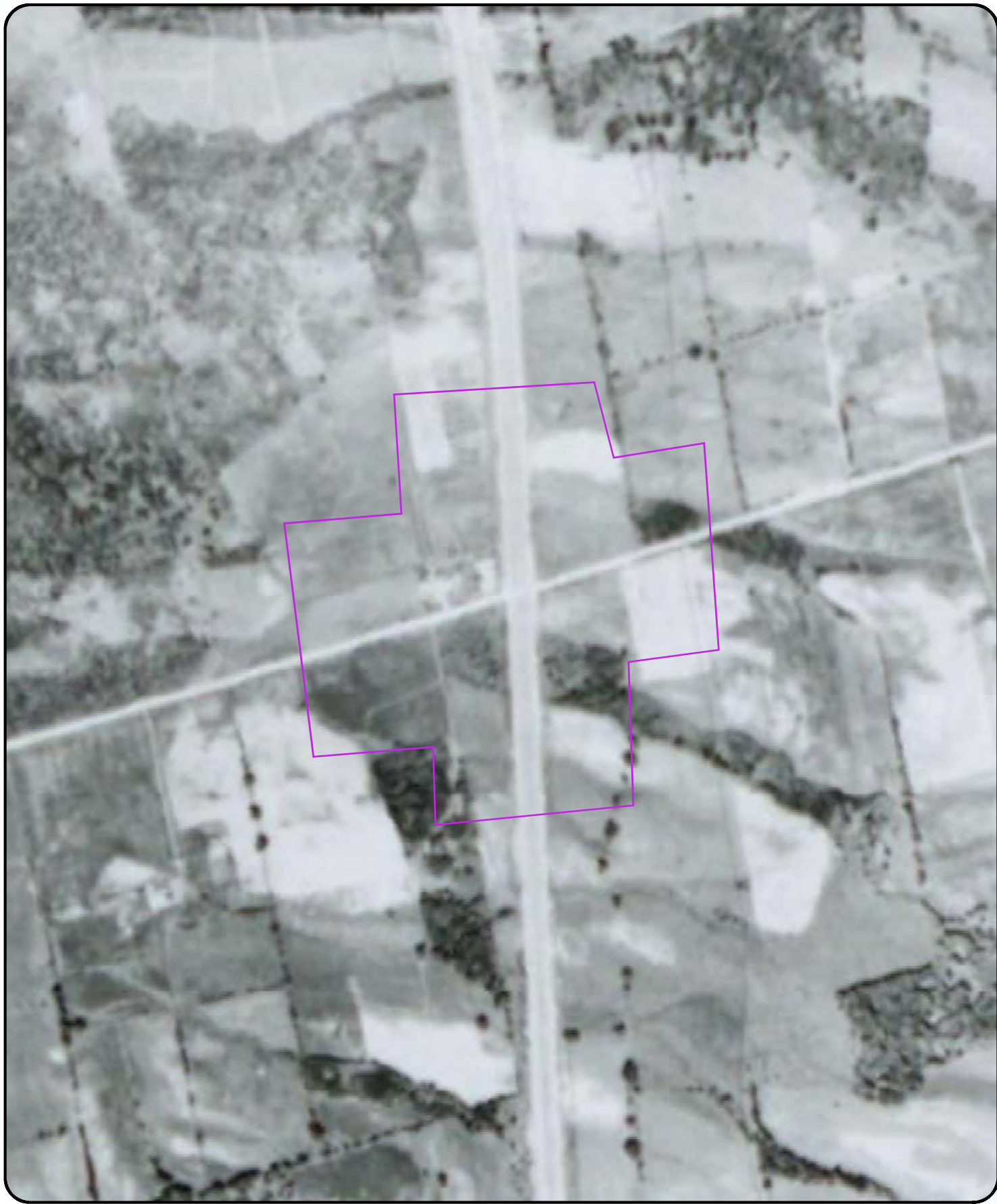
Decade	Year	Image Scale	Source
1920	Not Available		
1930	Not Available		
1940	Not Available		
1950	1954	10000	Hunting Survey Corporation Limited
1960	1969	40000	NAPL
1970	1976	50000	NAPL
1980	1981	50000	NAPL
1990	1995	50000	NAPL
2000	Not Available		
2010	Not Available		

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0 0.125 0.25 0.5
Kilometers

Order Number: 22082903692

Year: 1954
Source: Hunting Survey Corporation Limited
Map Scale: 1: 10000
Comments: Best Copy Available





0 0.125 0.25 0.5
Kilometers

Order Number: 22082903692

Year: 1969
Source: NAPL
Map Scale: 1: 10000
Comments:





0 0.125 0.25 0.5
Kilometers

Order Number: 22082903692

Year: 1976
Source: NAPL
Map Scale: 1: 10000
Comments:





0 0.125 0.25 0.5
Kilometers

Order Number: 22082903692

Year: 1981
Source: NAPL
Map Scale: 1: 10000
Comments:





0 0.125 0.25 0.5
Kilometers

Order Number: 22082903692

Year: 1995
Source: NAPL
Map Scale: 1: 10000
Comments:





HISTORICAL AERIALS

Project Property: MTO - Highway 400 Expansion
2-1, MTO site
East Gwillimbury ON

Project No: 165001095

Requested By: Stantec Consulting Ltd.

Order No: 22082903693

Date Completed: September 08, 2022

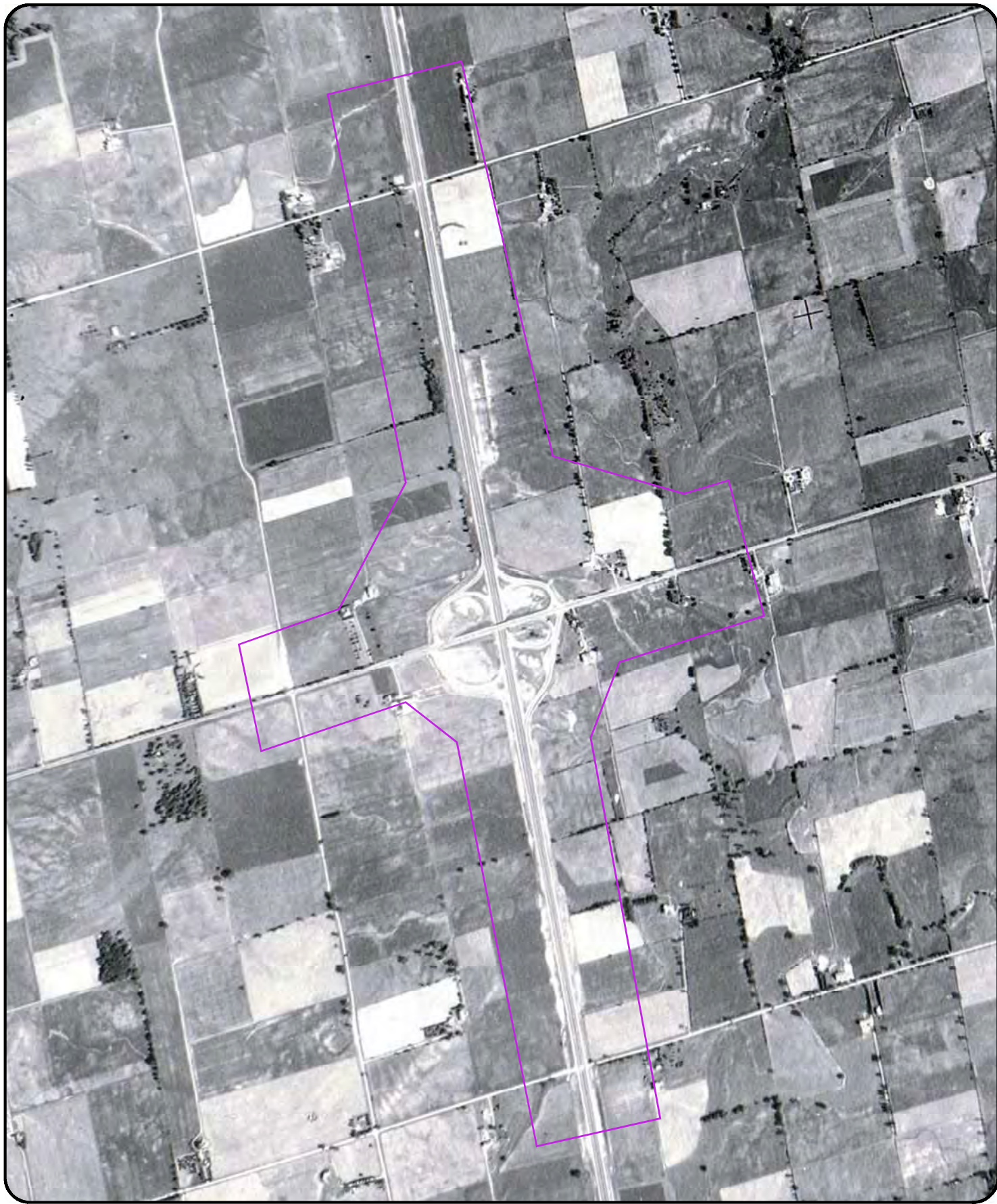
Decade	Year	Image Scale	Source
1920	Not Available		
1930	Not Available		
1940	Not Available		
1950	1955	35000	NAPL
1960	1969	40000	NAPL
1970	1975	40000	NAPL
1980	1981	50000	NAPL
1990	1995	50000	NAPL
2000	Not Available		
2010	Not Available		

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0 0.275 0.55 1.1
Kilometers

Order Number: 22082903693

Year: 1955
Source: NAPL
Map Scale: 1: 21946
Comments:





0 0.275 0.55 1.1
Kilometers

Order Number: 22082903693

Year: 1969
Source: NAPL
Map Scale: 1: 21930
Comments:





0 0.275 0.55 1.1
Kilometers

Order Number: 22082903693

Year: 1975
Source: NAPL
Map Scale: 1: 21930
Comments:





0 0.275 0.55 1.1
Kilometers

Order Number: 22082903693

Year: 1981
Source: NAPL
Map Scale: 1: 21930
Comments:





0 0.275 0.55 1.1
Kilometers

Order Number: 22082903693

Year: 1995
Source: NAPL
Map Scale: 1: 21930
Comments:





HISTORICAL AERIALS

Project Property: MTO - Highway 400 Expansion
2-2, Gwillimbury
Newmarket ON L3Y

Project No: 165001095

Requested By: Stantec Consulting Ltd.

Order No: 22082903694

Date Completed: September 08, 2022

Decade	Year	Image Scale	Source
1920	Not Available		
1930	Not Available		
1940	1946	20000	NAPL
1950	1955	35000	NAPL
1960	Not Available		
1970	1975	40000	NAPL
1980	1981	50000	NAPL
1990	Not Available		
2000	Not Available		
2010	Not Available		

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0 0.15 0.3 0.6
Kilometers

Order Number: 22082903694

Year: 1946
Source: NAPL
Map Scale: 1: 12815
Comments:





0 0.15 0.3 0.6
Kilometers

Order Number: 22082903694

Year: 1955
Source: NAPL
Map Scale: 1: 12820
Comments:





0 0.15 0.3 0.6
Kilometers

Order Number: 22082903694

Year: 1975
Source: NAPL
Map Scale: 1: 12820
Comments:





0 0.15 0.3 0.6
Kilometers

Order Number: 22082903694

Year: 1981
Source: NAPL
Map Scale: 1: 12820
Comments:





DATABASE REPORT

Project Property:	<i>Contact1 n/a Bradford West Gwillimbury ON 165001095</i>
Project No:	<i>165001095</i>
Report Type:	<i>Quote - Custom-Build Your Own Report</i>
Order No:	<i>20190405041</i>
Requested by:	<i>Stantec Consulting Ltd.</i>
Date Completed:	<i>April 11, 2019</i>

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Executive Summary

Property Information:

Project Property: *Contact1
n/a Bradford West Gwillimbury ON*

Project No: *165001095*

Order Information:

Order No: *20190405041*

Date Requested: *April 5, 2019*

Requested by: *Stantec Consulting Ltd.*

Report Type: *Quote - Custom-Build Your Own Report*

Historical/Products:

Executive Summary: Report Summary

Database	Name	Searched	Project Property
AAGR	<i>Abandoned Aggregate Inventory</i>	Y	0
AGR	<i>Aggregate Inventory</i>	Y	0
AMIS	<i>Abandoned Mine Information System</i>	Y	0
ANDR	<i>Anderson's Waste Disposal Sites</i>	Y	0
AUWR	<i>Automobile Wrecking & Supplies</i>	Y	0
BORE	<i>Borehole</i>	Y	3
CA	<i>Certificates of Approval</i>	Y	4
CFOT	<i>Commercial Fuel Oil Tanks</i>	Y	1
CHEM	<i>Chemical Register</i>	Y	0
CNG	<i>Compressed Natural Gas Stations</i>	Y	0
COAL	<i>Inventory of Coal Gasification Plants and Coal Tar Sites</i>	Y	0
CONV	<i>Compliance and Convictions</i>	Y	0
CPU	<i>Certificates of Property Use</i>	Y	0
DRL	<i>Drill Hole Database</i>	Y	0
DRYCLEANERS	<i>Dry Cleaning Facilities</i>	Y	0
EASR	<i>Environmental Activity and Sector Registry</i>	Y	0
EBR	<i>Environmental Registry</i>	Y	1
ECA	<i>Environmental Compliance Approval</i>	Y	2
EEM	<i>Environmental Effects Monitoring</i>	Y	0
EHS	<i>ERIS Historical Searches</i>	Y	6
EIIS	<i>Environmental Issues Inventory System</i>	Y	0
EMHE	<i>Emergency Management Historical Event</i>	Y	0
EXP	<i>List of TSSA Expired Facilities</i>	Y	6
FCON	<i>Federal Convictions</i>	Y	0
FCS	<i>Contaminated Sites on Federal Land</i>	Y	0
FOFT	<i>Fisheries & Oceans Fuel Tanks</i>	Y	0
FST	<i>Fuel Storage Tank</i>	Y	4
FSTH	<i>Fuel Storage Tank - Historic</i>	Y	2
GEN	<i>Ontario Regulation 347 Waste Generators Summary</i>	Y	6
GHG	<i>Greenhouse Gas Emissions from Large Facilities</i>	Y	0
HINC	<i>TSSA Historic Incidents</i>	Y	1
IAFT	<i>Indian & Northern Affairs Fuel Tanks</i>	Y	0
INC	<i>TSSA Incidents</i>	Y	0
LIMO	<i>Landfill Inventory Management Ontario</i>	Y	0
MINE	<i>Canadian Mine Locations</i>	Y	0
MISA PENALTY	<i>Environmental Penalty Annual Report</i>	Y	0

Database	Name	Searched	Project Property
MNR	<i>Mineral Occurrences</i>	Y	0
NATE	<i>National Analysis of Trends in Emergencies System (NATES)</i>	Y	0
NCPL	<i>Non-Compliance Reports</i>	Y	0
NDFT	<i>National Defense & Canadian Forces Fuel Tanks</i>	Y	0
NDSP	<i>National Defense & Canadian Forces Spills</i>	Y	0
NDWD	<i>National Defence & Canadian Forces Waste Disposal Sites</i>	Y	0
NEBI	<i>National Energy Board Pipeline Incidents</i>	Y	0
NEBW	<i>National Energy Board Wells</i>	Y	0
NEES	<i>National Environmental Emergencies System (NEES)</i>	Y	0
NPCB	<i>National PCB Inventory</i>	Y	0
NPRI	<i>National Pollutant Release Inventory</i>	Y	0
OGW	<i>Oil and Gas Wells</i>	Y	0
OOGW	<i>Ontario Oil and Gas Wells</i>	Y	0
OPCB	<i>Inventory of PCB Storage Sites</i>	Y	0
ORD	<i>Orders</i>	Y	0
PAP	<i>Canadian Pulp and Paper</i>	Y	0
PCFT	<i>Parks Canada Fuel Storage Tanks</i>	Y	0
PES	<i>Pesticide Register</i>	Y	0
PINC	<i>TSSA Pipeline Incidents</i>	Y	0
PRT	<i>Private and Retail Fuel Storage Tanks</i>	Y	2
PTTW	<i>Permit to Take Water</i>	Y	0
REC	<i>Ontario Regulation 347 Waste Receivers Summary</i>	Y	0
RSC	<i>Record of Site Condition</i>	Y	0
RST	<i>Retail Fuel Storage Tanks</i>	Y	1
SCT	<i>Scott's Manufacturing Directory</i>	Y	1
SPL	<i>Ontario Spills</i>	Y	13
SRDS	<i>Wastewater Discharger Registration Database</i>	Y	0
TANK	<i>Anderson's Storage Tanks</i>	Y	0
TCFT	<i>Transport Canada Fuel Storage Tanks</i>	Y	0
VAR	<i>TSSA Variances for Abandonment of Underground Storage Tanks</i>	Y	0
WDS	<i>Waste Disposal Sites - MOE CA Inventory</i>	Y	0
WDSH	<i>Waste Disposal Sites - MOE 1991 Historical Approval Inventory</i>	Y	0
WWIS	<i>Water Well Information System</i>	N	-
Total:			53

Executive Summary: Site Report Summary - Project Property

<i>Map Key</i>	<i>DB</i>	<i>Company/Site Name</i>	<i>Address</i>	<i>Page Number</i>
1	BORE		ON	23
2	SPL		Highway 400 Southbound Lanes, 1/4 mile north of Highway 88<UNOFFICIAL> Bradford West Gwillimbury ON	23
3	EHS		2781 Mckinstry Road West Gwillimbury ON	23
4	SPL	Powerade Express Inc<UNOFFICIAL>	Hwy 400 SB, S of Cnty Rd 88 Bradford West Gwillimbury ON	24
4	SPL		HWY 400 SB and HWY 88 Bradford West Gwillimbury ON	24
5	CA	METRO NORTH MARKET PARK-LOT 6, CONC. 7	N.W. CORNER OF HWY.#400 & 88 BRADFORD TOWN ON	25
5	CA	METRO NORTH MARKET PARK	HWY. 400 AND HWY. 88 WEST GWILLIMBURY TWP. ON	25
5	CA	METRO NORTH MARKET PARK	HWY. 400 AND HWY. 88 WEST GWILLIMBURY TWP. ON	25
5	PRT	KERNAGHANS HUSKY	LOT 7 CON 6 HWYS 88 & 400 BRADFORD SIMCOE ON	26

Map Key	DB	Company/Site Name	Address	Page Number
<u>5</u>	RST	HUSKY CAR & TRUCK STOP	HWY 88 & 400 BRADFORD ON L0G 1C0	<u>26</u>
<u>5</u>	SPL	PRIVATE OWNER	HWY 400 && COUNTY RD 88 TRANSPORT TRUCK (CARGO) BRADFORD-WEST GWILLIMBURY ON	<u>26</u>
<u>5</u>	SPL	TRANSPORT TRUCK	HWY 400 SOUTHBOUND SOUTH OF HWY 88 MOTOR VEHICLE (OPERATING FLUID) BRADFORD-WEST GWILLIMBURY TOWN ON	<u>26</u>
<u>5</u>	SPL	HUSKY OIL MARKETING CO.	HWY 400 & HWY 88 AT HUSKY TRUCK STOP SERVICE STATION BRADFORD-WEST GWILLIMBURY TOWN ON	<u>27</u>
<u>5</u>	SPL		Highways 400 and 88 Bradford West Gwillimbury ON	<u>27</u>
<u>5</u>	SPL	TRANSPORT TRUCK	HWY 400 N. OF HWY 88 MOTOR VEHICLE (OPERATING FLUID) SIMCOE COUNTY ON	<u>28</u>
<u>5</u>	SPL	TST Overland Express, A Division of TST Solutions LP	Hwy 400 NB & Hwy 88 Bradford West Gwillimbury ON	<u>28</u>
<u>5</u>	SPL	TRANSPORT TRUCK	HWY 400 SOUTHBOUND SOUTH OF HWY 88 MOTOR VEHICLE (OPERATING FLUID) BRADFORD-WEST GWILLIMBURY TOWN ON	<u>29</u>
<u>5</u>	SPL	TRANSPORT TRUCK	HWY # 400 SOUTBOUND JUST SOUTH OF HWY # 88. MOTOR VEHICLE (OPERATING FLUID) BRADFORD-WEST GWILLIMBURY TOWN ON	<u>29</u>

Map Key	DB	Company/Site Name	Address	Page Number
<u>6</u>	HINC		HIGHWAYS 400 & 88 BRADFORD WEST GWILLIMBURY ON	<u>30</u>
<u>7</u>	EHS		3510 City Road 88 Bradford ON	<u>30</u>
<u>8</u>	PRT	KOA CAMP GROUNDS	UNKNOWN - RR 1 HWY 88 & 400 BRADFORD ON L3Z2A4	<u>30</u>
<u>9</u>	CA	Husky Oil Bradford Truck Stop	3479 Highway 88, Lot 7, Concession 6 Bradford West Gwillimbury ON	<u>31</u>
<u>9</u>	CFOT	HUSKY ENERGY DIVISION OF HUSKY OIL LTD	3479 HWY 88 BRADFORD ON L3Z 2B2	<u>31</u>
<u>9</u>	EBR	Husky Energy Operations Ltd	3479 Simcoe County Rd 88 (Hwy 88), Bradford TOWN OF BRADFORD-WEST GWILLIMBURY ON	<u>31</u>
<u>9</u>	ECA	Husky Oil Operations Limited	3479 Highway 88 Lot 7, Concession 6 Bradford West Gwillimbury ON T2P 3G7	<u>32</u>
<u>9</u>	ECA	Husky Oil Operations Limited	3479 Highway 88 Lot 7, Concession 6 Bradford West Gwillimbury ON T2P 1H5	<u>32</u>
<u>9</u>	EHS		3479 County Road 88 Bradford ON L3Z2A4	<u>32</u>
<u>9</u>	EXP	KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC	3479 HWY 88 BRADFORD ON	<u>32</u>

Map Key	DB	Company/Site Name	Address	Page Number
<u>9</u>	EXP	KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC	3479 HWY 88 BRADFORD ON	<u>33</u>
<u>9</u>	EXP	2290511 ONTARIO INC	3479 HWY 88 BRADFORD ON L3Z 2B2	<u>33</u>
<u>9</u>	EXP	KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC	3479 HWY 88 BRADFORD ON L3Z 2B2	<u>33</u>
<u>9</u>	EXP	KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC	3479 HWY 88 BRADFORD ON	<u>33</u>
<u>9</u>	EXP	KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC	3479 HWY 88 BRADFORD ON	<u>34</u>
<u>9</u>	FST	2290511 ONTARIO INC	3479 HWY 88 BRADFORD ON L3Z 2B2	<u>34</u>
<u>9</u>	FST	2290511 ONTARIO INC	3479 HWY 88 BRADFORD ON L3Z 2B2	<u>34</u>
<u>9</u>	FST	2290511 ONTARIO INC	3479 HWY 88 BRADFORD ON L3Z 2B2	<u>34</u>
<u>9</u>	FST	2290511 ONTARIO INC	3479 HWY 88 BRADFORD ON L3Z 2B2	<u>35</u>

Map Key	DB	Company/Site Name	Address	Page Number
<u>9</u>	FSTH	KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC	3479 HWY 88 BRADFORD ON	<u>35</u>
<u>9</u>	FSTH	2151858 ONTARIO INC O/A BRADFORD HUSKY	3479 HWY 88 BRADFORD ON	<u>36</u>
<u>9</u>	GEN	Husky Energy Refined Products	3479 Highway 88 Bradford ON L3Z2B2	<u>36</u>
<u>9</u>	GEN	Husky Energy	3479 Highway 88 Bradford ON L3Z 2B2	<u>36</u>
<u>9</u>	GEN	Husky Travel Center	3479 Simcoe Road #88 Bradford West Gwillimbury ON L3Z2B2	<u>36</u>
<u>9</u>	GEN	Husky Energy	3479 Highway 88 Bradford ON L3Z2B2	<u>37</u>
<u>9</u>	GEN	Husky Travel Center	3479 Simcoe Road #88 Bradford West Gwillimbury ON L3Z2B2	<u>37</u>
<u>9</u>	GEN	Husky Travel Center	3479 Simcoe Road #88 Bradford West Gwillimbury ON L3Z2B2	<u>37</u>
<u>10</u>	SPL	HUSKY OIL MARKETING CO.	HUSKY TRUCK STOP, EAST OF HWY#400 & SOUTH OF HWY #88 SERVICE STATION BRADFORD-WEST GWILLIMBURY TOWN ON	<u>38</u>
<u>11</u>	EHS		Husky Travel Center 1-3479 Hwy 88 ON L3Z 2B2	<u>38</u>

Map Key	DB	Company/Site Name	Address	Page Number
<u>12</u>	EHS		n/a Bradford ON	<u>38</u>
<u>13</u>	SCT	Corneau & Sons Pallet & Box Ltd.	3556 Line 9 RR 2 Bradford ON L3Z 2A5	<u>39</u>
<u>14</u>	BORE		ON	<u>39</u>
<u>15</u>	BORE		ON	<u>39</u>
<u>16</u>	SPL	Penner International Inc.	Hwy 400 Northbound, 1 mi south of Husky Truck Stop Bradford West Gwillimbury ON	<u>40</u>
<u>17</u>	EHS		3543 6th Line (Pt lot 7, Conc 5) Bradford ON	<u>40</u>

Executive Summary: Summary By Data Source

BORE - Borehole

A search of the BORE database, dated 1875-Jul 2014 has found that there are 3 BORE site(s) within approximately 0.00 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
	ON	0.0	<u>1</u>
	ON	0.0	<u>14</u>
	ON	0.0	<u>15</u>

CA - Certificates of Approval

A search of the CA database, dated 1985-Oct 30, 2011* has found that there are 4 CA site(s) within approximately 0.00 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
METRO NORTH MARKET PARK	HWY. 400 AND HWY. 88 WEST GWILLIMBURY TWP. ON	0.0	<u>5</u>
METRO NORTH MARKET PARK-LOT 6, CONC. 7	N.W. CORNER OF HWY.#400 & 88 BRADFORD TOWN ON	0.0	<u>5</u>
METRO NORTH MARKET PARK	HWY. 400 AND HWY. 88 WEST GWILLIMBURY TWP. ON	0.0	<u>5</u>
Husky Oil Bradford Truck Stop	3479 Highway 88, Lot 7, Concession 6 Bradford West Gwillimbury ON	0.0	<u>9</u>

CFOT - Commercial Fuel Oil Tanks

A search of the CFOT database, dated Feb 28, 2017 has found that there are 1 CFOT site(s) within approximately 0.00 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
HUSKY ENERGY DIVISION OF HUSKY OIL LTD	3479 HWY 88 BRADFORD ON L3Z 2B2	0.0	<u>9</u>

EBR - Environmental Registry

A search of the EBR database, dated 1994-Feb 28, 2019 has found that there are 1 EBR site(s) within approximately 0.00 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
Husky Energy Operations Ltd	3479 Simcoe County Rd 88 (Hwy 88), Bradford TOWN OF BRADFORD-WEST GWILLIMBURY ON	0.0	<u>9</u>

ECA - Environmental Compliance Approval

A search of the ECA database, dated Oct 2011-Feb 28, 2019 has found that there are 2 ECA site(s) within approximately 0.00 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
Husky Oil Operations Limited	3479 Highway 88 Lot 7, Concession 6 Bradford West Gwillimbury ON T2P 1H5	0.0	<u>9</u>
Husky Oil Operations Limited	3479 Highway 88 Lot 7, Concession 6 Bradford West Gwillimbury ON T2P 3G7	0.0	<u>9</u>

EHS - ERIS Historical Searches

A search of the EHS database, dated 1999-Jan 31, 2019 has found that there are 6 EHS site(s) within approximately 0.00 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
	2781 Mckinstry Road West Gwillimbury ON	0.0	<u>3</u>

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
	3510 City Road 88 Bradford ON	0.0	<u>7</u>
	3479 County Road 88 Bradford ON L3Z2A4	0.0	<u>9</u>
	Husky Travel Center 1-3479 Hwy 88 ON L3Z 2B2	0.0	<u>11</u>
	n/a Bradford ON	0.0	<u>12</u>
	3543 6th Line (Pt lot 7, Conc 5) Bradford ON	0.0	<u>17</u>

EXP - List of TSSA Expired Facilities

A search of the EXP database, dated Feb 28, 2017 has found that there are 6 EXP site(s) within approximately 0.00 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC	3479 HWY 88 BRADFORD ON	0.0	<u>9</u>
KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC	3479 HWY 88 BRADFORD ON	0.0	<u>9</u>
KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC	3479 HWY 88 BRADFORD ON	0.0	<u>9</u>
KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC	3479 HWY 88 BRADFORD ON L3Z 2B2	0.0	<u>9</u>
2290511 ONTARIO INC	3479 HWY 88 BRADFORD ON L3Z 2B2	0.0	<u>9</u>

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC	3479 HWY 88 BRADFORD ON	0.0	<u>9</u>

FST - Fuel Storage Tank

A search of the FST database, dated Feb 28, 2017 has found that there are 4 FST site(s) within approximately 0.00 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
2290511 ONTARIO INC	3479 HWY 88 BRADFORD ON L3Z 2B2	0.0	<u>9</u>
2290511 ONTARIO INC	3479 HWY 88 BRADFORD ON L3Z 2B2	0.0	<u>9</u>
2290511 ONTARIO INC	3479 HWY 88 BRADFORD ON L3Z 2B2	0.0	<u>9</u>
2290511 ONTARIO INC	3479 HWY 88 BRADFORD ON L3Z 2B2	0.0	<u>9</u>

FSTH - Fuel Storage Tank - Historic

A search of the FSTH database, dated Pre-Jan 2010* has found that there are 2 FSTH site(s) within approximately 0.00 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
2151858 ONTARIO INC O/A BRADFORD HUSKY	3479 HWY 88 BRADFORD ON	0.0	<u>9</u>
KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC	3479 HWY 88 BRADFORD ON	0.0	<u>9</u>

GEN - Ontario Regulation 347 Waste Generators Summary

A search of the GEN database, dated 1986-Dec 31, 2018 has found that there are 6 GEN site(s) within approximately 0.00 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
Husky Travel Center	3479 Simcoe Road #88 Bradford West Gwillimbury ON L3Z2B2	0.0	<u>9</u>
Husky Travel Center	3479 Simcoe Road #88 Bradford West Gwillimbury ON L3Z2B2	0.0	<u>9</u>
Husky Energy	3479 Highway 88 Bradford ON L3Z2B2	0.0	<u>9</u>
Husky Travel Center	3479 Simcoe Road #88 Bradford West Gwillimbury ON L3Z2B2	0.0	<u>9</u>
Husky Energy Refined Products	3479 Highway 88 Bradford ON L3Z2B2	0.0	<u>9</u>
Husky Energy	3479 Highway 88 Bradford ON L3Z 2B2	0.0	<u>9</u>

HINC - TSSA Historic Incidents

A search of the HINC database, dated 2006-June 2009* has found that there are 1 HINC site(s) within approximately 0.00 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
	HIGHWAYS 400 & 88 BRADFORD WEST GWILLIMBURY ON	0.0	<u>6</u>

PRT - Private and Retail Fuel Storage Tanks

A search of the PRT database, dated 1989-1996* has found that there are 2 PRT site(s) within approximately 0.00 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
KERNAGHANS HUSKY	LOT 7 CON 6 HWYS 88 & 400 BRADFORD SIMCOE ON	0.0	5
KOA CAMP GROUNDS	UNKNOWN - RR 1 HWY 88 & 400 BRADFORD ON L3Z2A4	0.0	8

RST - Retail Fuel Storage Tanks

A search of the RST database, dated 1999-Jan 31, 2019 has found that there are 1 RST site(s) within approximately 0.00 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
HUSKY CAR & TRUCK STOP	HWY 88 & 400 BRADFORD ON L0G 1C0	0.0	5

SCT - Scott's Manufacturing Directory

A search of the SCT database, dated 1992-Mar 2011* has found that there are 1 SCT site(s) within approximately 0.00 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
Corneau & Sons Pallet & Box Ltd.	3556 Line 9 RR 2 Bradford ON L3Z 2A5	0.0	13

SPL - Ontario Spills

A search of the SPL database, dated 1988-Dec 2018 has found that there are 13 SPL site(s) within approximately 0.00 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
	Highway 400 Southbound Lanes, 1/4 mile north of Highway 88<UNOFFICIAL> Bradford West Gwillimbury ON	0.0	2
	HWY 400 SB and HWY 88 Bradford West Gwillimbury ON	0.0	4

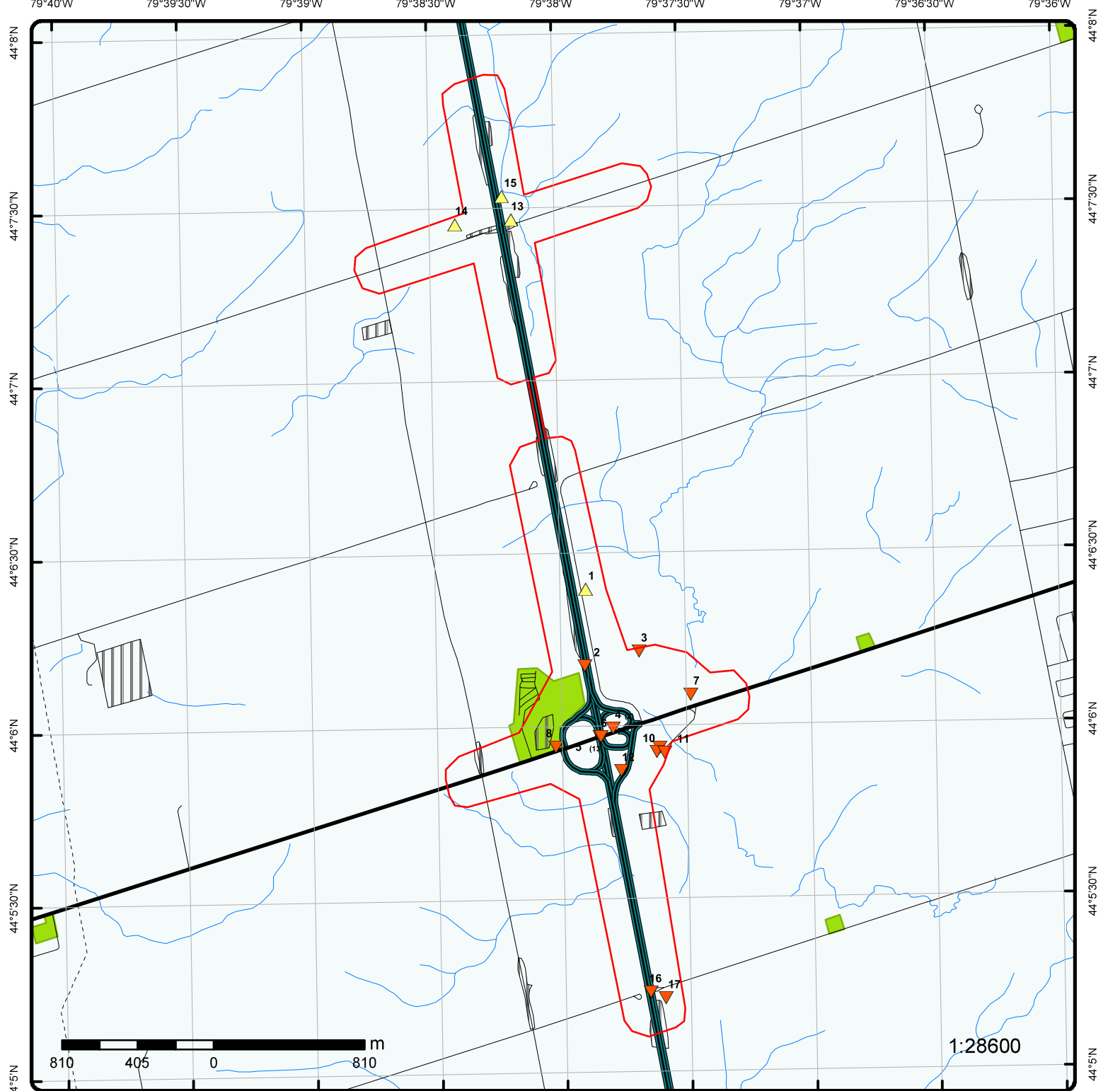
Site	Address	Distance (m)	Map Key
Powerade Express Inc<UNOFFICIAL>	Hwy 400 SB, S of Cnty Rd 88 Bradford West Gwillimbury ON	0.0	<u>4</u>
TRANSPORT TRUCK	HWY # 400 SOUTBOUND JUST SOUTH OF HWY # 88. MOTOR VEHICLE (OPERATING FLUID) BRADFORD-WEST GWILLIMBURY TOWN ON	0.0	<u>5</u>
TRANSPORT TRUCK	HWY 400 SOUTHBOUND SOUTH OF HWY 88 MOTOR VEHICLE (OPERATING FLUID) BRADFORD-WEST GWILLIMBURY TOWN ON	0.0	<u>5</u>
TST Overland Express, A Division of TST Solutions LP	Hwy 400 NB & Hwy 88 Bradford West Gwillimbury ON	0.0	<u>5</u>
TRANSPORT TRUCK	HWY 400 N. OF HWY 88 MOTOR VEHICLE (OPERATING FLUID) SIMCOE COUNTY ON	0.0	<u>5</u>
	Highways 400 and 88 Bradford West Gwillimbury ON	0.0	<u>5</u>
HUSKY OIL MARKETING CO.	HWY 400 & HWY 88 AT HUSKY TRUCK STOP SERVICE STATION BRADFORD-WEST GWILLIMBURY TOWN ON	0.0	<u>5</u>
TRANSPORT TRUCK	HWY 400 SOUTHBOUND SOUTH OF HWY 88 MOTOR VEHICLE (OPERATING FLUID) BRADFORD-WEST GWILLIMBURY TOWN ON	0.0	<u>5</u>
PRIVATE OWNER	HWY 400 && COUNTY RD 88 TRANSPORT TRUCK (CARGO) BRADFORD-WEST GWILLIMBURY ON	0.0	<u>5</u>
HUSKY OIL MARKETING CO.	HUSKY TRUCK STOP, EAST OF HWY#400 & SOUTH OF HWY #88 SERVICE STATION BRADFORD-WEST GWILLIMBURY TOWN ON	0.0	<u>10</u>
Penner International Inc.	Hwy 400 Northbound, 1 mi south of Husky Truck Stop Bradford West Gwillimbury ON	0.0	<u>16</u>

Site

Address

Distance (m)

Map Key



Map : 0 Kilometer Radius

Order No: 20190405041
 Address: n/a, Bradford West Gwillimbury, ON



Project Property	Expressway	Industrial and Resource - Regions	National Park
Buffer Outline	Principal Highway	Main Line	Provincial or Territorial Park
Eris Sites with Higher Elevation	Secondary Highway	Sidetrack	Other Park
Eris Sites with Same Elevation	Major Road	Transit Line	Golf Course or Driving Range
Eris Sites with Lower Elevation	Local road	Abandoned Line	Park or Sports Field
Eris Sites with Unknown Elevation	Trail	Proposed Road	Other Recreation Area
	Proposed Road		
	Ferry Route/Ice Road		

79°39'W

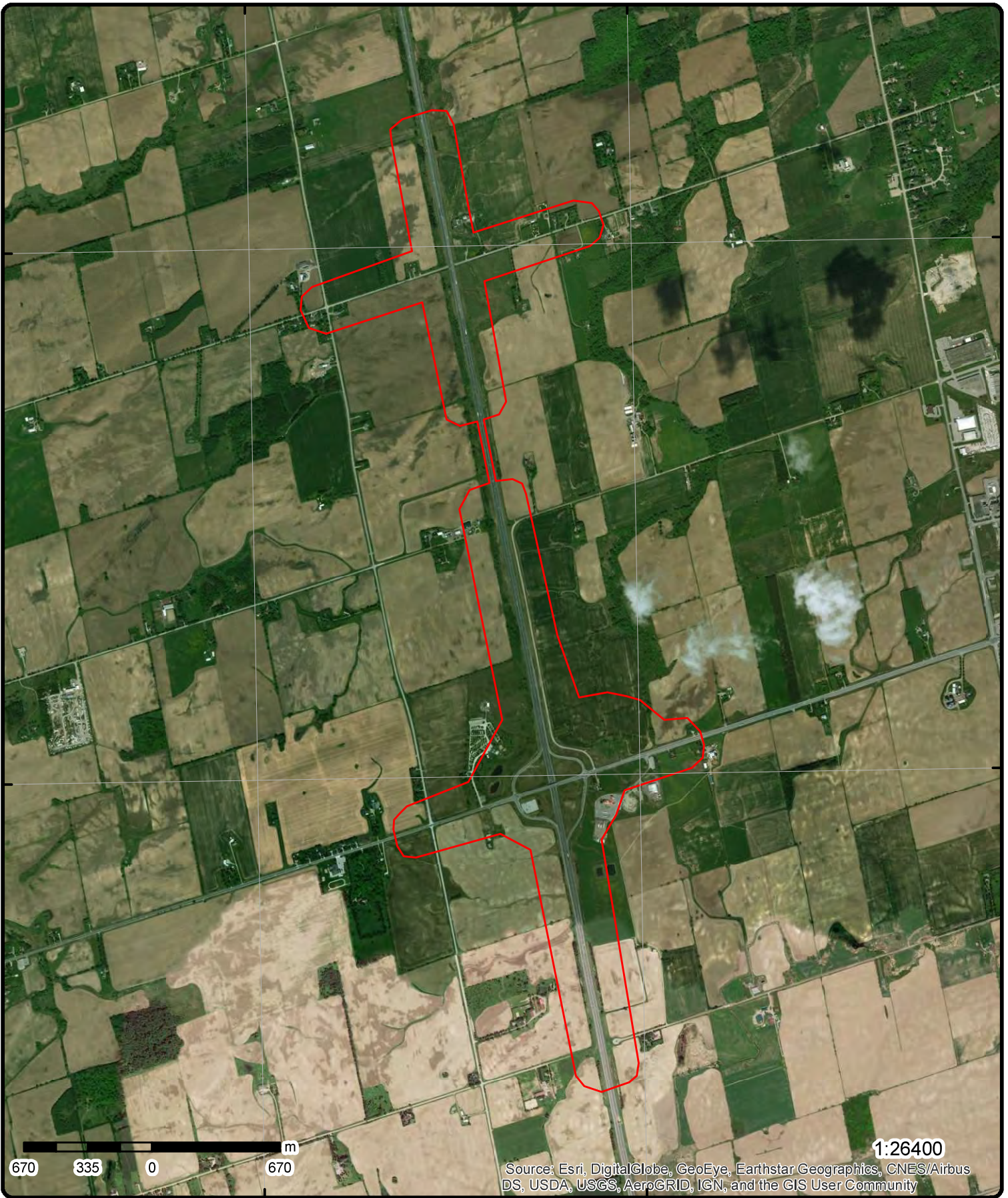
79°37'30"W

44°7'30"N

44°7'30"N

44°6'N

44°6'N



670 335 0 670 m

1:26400
 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Aerial (2014)

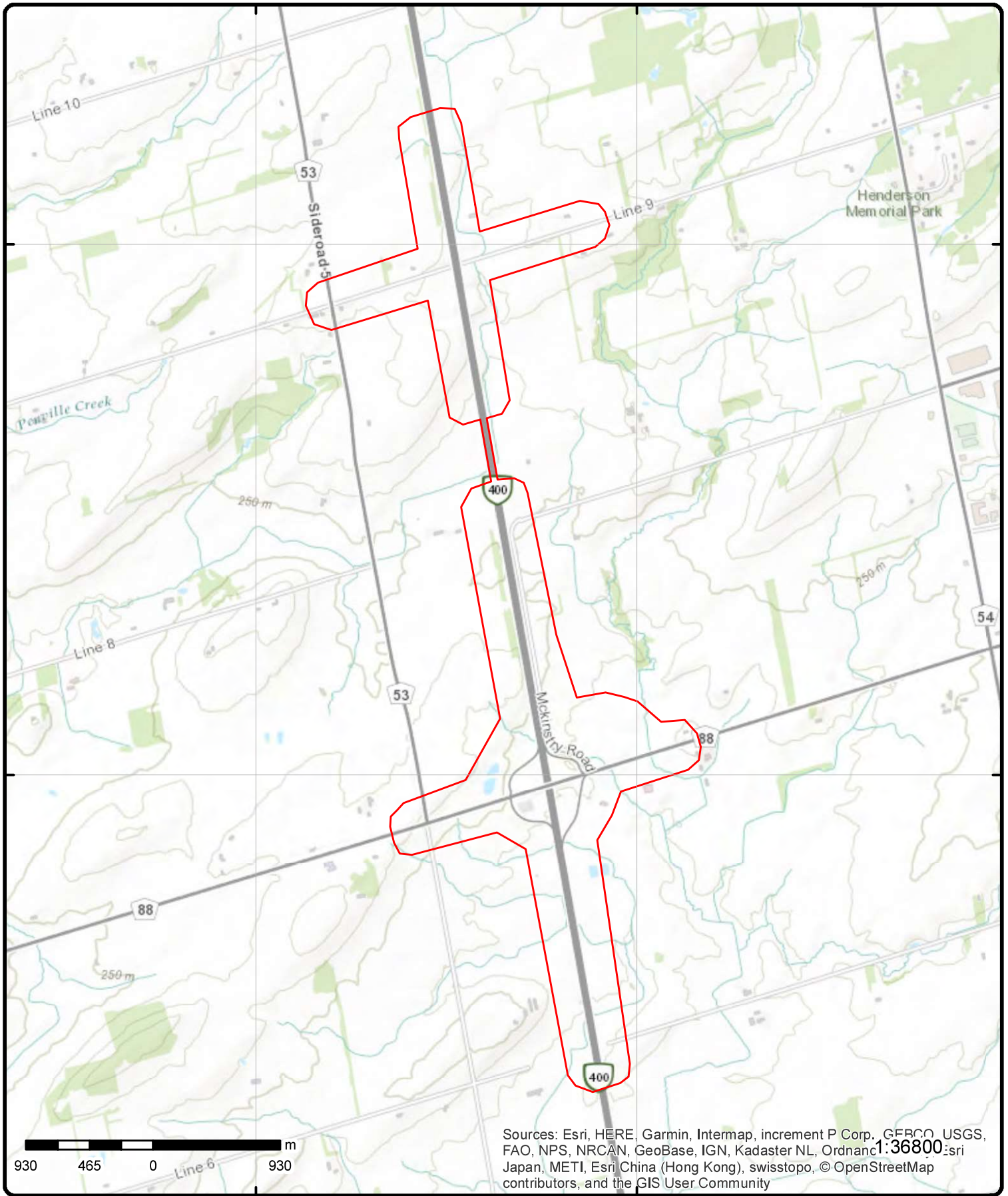
Address: n/a, Bradford West Gwillimbury, ON

Source: ESRI World Imagery

Order No: 20190405041



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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Topographic Map

Address: n/a, Bradford West Gwillimbury, ON

Source: ESRI World Topographic Map

Order No: 20190405041



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Detail Report

Map Key	Number of Records	Elevation (m)	Site	DB						
<u>1</u>	1 of 1	255.2	ON	BORE						
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> Borehole ID: 589520 Use: Drill Method: Easting: 609512 Location Accuracy: Elev. Reliability Note: Total Depth m: 2.4 Township: Lot: Completion Date: Primary Water Use: </td> <td style="width: 50%; vertical-align: top;"> Type: Outcrop Status: Unknown UTM Zone: 17 Northing: 4884623 Orig. Ground Elev m: 255 DEM Ground Elev m: 256 Primary Name: OGS-GWA-72-004 Concession: Municipality: Static Water Level: -999.9 Sec. Water Use: </td> </tr> <tr> <td colspan="2" style="padding-top: 10px;">--Details--</td> </tr> <tr> <td style="vertical-align: top;"> Stratum ID: 218338123 Bottom Depth(m): 2.4 </td> <td style="vertical-align: top;"> Top Depth(m): 0.0 Stratum Desc: Till si sa </td> </tr> </table>					Borehole ID: 589520 Use: Drill Method: Easting: 609512 Location Accuracy: Elev. Reliability Note: Total Depth m: 2.4 Township: Lot: Completion Date: Primary Water Use:	Type: Outcrop Status: Unknown UTM Zone: 17 Northing: 4884623 Orig. Ground Elev m: 255 DEM Ground Elev m: 256 Primary Name: OGS-GWA-72-004 Concession: Municipality: Static Water Level: -999.9 Sec. Water Use:	--Details--		Stratum ID: 218338123 Bottom Depth(m): 2.4	Top Depth(m): 0.0 Stratum Desc: Till si sa
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--Details--										
Stratum ID: 218338123 Bottom Depth(m): 2.4	Top Depth(m): 0.0 Stratum Desc: Till si sa									
<u>2</u>	1 of 1	252.0	Highway 400 Southbound Lanes, 1/4 mile north of Highway 88<UNOFFICIAL> Bradford West Gwillimbury ON	SPL						
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> Ref No: 4108-6C9QN5 Site No: Incident Dt: 5/10/2005 Year: Incident Cause: Other Transport Accident Incident Event: Contaminant Code: Contaminant Name: DIESEL FUEL Contaminant Limit 1: Contam Limit Freq 1: Contaminant UN No 1: Environment Impact: Not Anticipated Nature of Impact: Receiving Medium: Land Receiving Env: MOE Response: Dt MOE Arvl on Scn: MOE Reported Dt: 5/10/2005 Dt Document Closed: Incident Reason: Spill Site Name: Highway 400 Southbound Lanes, 1/4 mile north of Highway 88<UNOFFICIAL> Site County/District: Site Geo Ref Meth: Incident Summary: Hwy 400 Accident Diesel to Hwy Contaminant Qty: 45.5 L </td> <td style="width: 50%; vertical-align: top;"> Discharger Report: 0 Material Group: Oil Health/Env Conseq: Client Type: Sector Type: Transport Truck Agency Involved: Nearest Watercourse: Site Address: Site District Office: Barrie Site Postal Code: Site Region: Site Municipality: Bradford West Gwillimbury Site Lot: Site Conc: Northing: Easting: Site Geo Ref Accu: Site Map Datum: SAC Action Class: Spill to Highway (Accident) Source Type: </td> </tr> </table>					Ref No: 4108-6C9QN5 Site No: Incident Dt: 5/10/2005 Year: Incident Cause: Other Transport Accident Incident Event: Contaminant Code: Contaminant Name: DIESEL FUEL Contaminant Limit 1: Contam Limit Freq 1: Contaminant UN No 1: Environment Impact: Not Anticipated Nature of Impact: Receiving Medium: Land Receiving Env: MOE Response: Dt MOE Arvl on Scn: MOE Reported Dt: 5/10/2005 Dt Document Closed: Incident Reason: Spill Site Name: Highway 400 Southbound Lanes, 1/4 mile north of Highway 88<UNOFFICIAL> Site County/District: Site Geo Ref Meth: Incident Summary: Hwy 400 Accident Diesel to Hwy Contaminant Qty: 45.5 L	Discharger Report: 0 Material Group: Oil Health/Env Conseq: Client Type: Sector Type: Transport Truck Agency Involved: Nearest Watercourse: Site Address: Site District Office: Barrie Site Postal Code: Site Region: Site Municipality: Bradford West Gwillimbury Site Lot: Site Conc: Northing: Easting: Site Geo Ref Accu: Site Map Datum: SAC Action Class: Spill to Highway (Accident) Source Type:				
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<u>3</u>	1 of 1	241.0	2781 Mckinstry Road West Gwillimbury ON	EHS						

Order No:	20180117203	Nearest Intersection:	
Status:	C	Municipality:	
Report Type:	Custom Report	Client Prov/State:	ON
Report Date:	25-JAN-18	Search Radius (km):	.25
Date Received:	17-JAN-18	X:	-79.628145
Previous Site Name:		Y:	44.103583
Lot/Building Size:			
Additional Info Ordered:			

<u>4</u>	1 of 2	244.6	Powerade Express Inc<UNOFFICIAL> Hwy 400 SB, S of Cnty Rd 88 Bradford West Gwillimbury ON	SPL
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Ref No:	8707-9YKHJC	Discharger Report:	
Site No:	NA	Material Group:	
Incident Dt:	7/19/2015	Health/Env Conseq:	
Year:		Client Type:	Miscellaneous Industrial
Incident Cause:		Sector Type:	Miscellaneous Industrial
Incident Event:		Agency Involved:	
Contaminant Code:	13	Nearest Watercourse:	
Contaminant Name:	DIESEL FUEL	Site Address:	Hwy 400 SB, S of Cnty Rd 88
Contaminant Limit 1:		Site District Office:	
Contam Limit Freq 1:		Site Postal Code:	
Contaminant UN No 1:		Site Region:	Bradford West Gwillimbury
Environment Impact:		Site Municipality:	Bradford West Gwillimbury
Nature of Impact:		Site Lot:	
Receiving Medium:		Site Conc:	
Receiving Env:		Northing:	
MOE Response:	No	Easting:	
Dt MOE Arvl on Scn:		Site Geo Ref Accu:	
MOE Reported Dt:	7/19/2015	Site Map Datum:	
Dt Document Closed:	8/29/2015	SAC Action Class:	Highway Spills (usually highway accidents)
Incident Reason:	Road Conditions	Source Type:	
Site Name:	diesel 400 sb 1 km s of cnty rd 88<UNOFFICIAL>		
Site County/District:			
Site Geo Ref Meth:			
Incident Summary:	powerade - 200 L diesel to asphalt and sod. 400 SB		
Contaminant Qty:	200 L		

<u>4</u>	2 of 2	244.6	HWY 400 SB and HWY 88 Bradford West Gwillimbury ON	SPL
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Ref No:	6415-A53SP3	Discharger Report:	
Site No:	NA	Material Group:	
Incident Dt:	12/10/2015	Health/Env Conseq:	
Year:		Client Type:	Miscellaneous Industrial
Incident Cause:		Sector Type:	Miscellaneous Industrial
Incident Event:		Agency Involved:	
Contaminant Code:	13	Nearest Watercourse:	
Contaminant Name:	DIESEL FUEL	Site Address:	HWY 400 SB and HWY 88
Contaminant Limit 1:		Site District Office:	
Contam Limit Freq 1:		Site Postal Code:	
Contaminant UN No 1:		Site Region:	Bradford West Gwillimbury
Environment Impact:		Site Municipality:	Bradford West Gwillimbury
Nature of Impact:		Site Lot:	
Receiving Medium:		Site Conc:	
Receiving Env:		Northing:	4883813
MOE Response:	No	Easting:	609387
Dt MOE Arvl on Scn:		Site Geo Ref Accu:	
MOE Reported Dt:	12/10/2015	Site Map Datum:	
Dt Document Closed:	1/5/2016	SAC Action Class:	Highway Spills (usually highway accidents)

Map Key	Number of Records	Elevation (m)	Site	DB
Incident Reason: Operator/Human Error Source Type: Site Name: HWY 400<UNOFFICIAL> Site County/District: Site Geo Ref Meth: Incident Summary: Truck rollover- 100L diesel and hydraulic oil to ditch/culvert Contaminant Qty: 250 L				
5	1 of 13	244.6	METRO NORTH MARKET PARK-LOT 6, CONC. 7 N.W. CORNER OF HWY.#400 & 88 BRADFORD TOWN ON	CA
Certificate #: 7-1447-90-926 Application Year: 90 Issue Date: 4/23/92 Approval Type: Municipal water Status: Received in 1991, Issued in 1992 Application Type: Client Name: Client Address: Client City: Client Postal Code: Project Description: Contaminants: Emission Control:				
5	2 of 13	244.6	METRO NORTH MARKET PARK HWY. 400 AND HWY. 88 WEST GWILLIMBURY TWP. ON	CA
Certificate #: 3-1773-90- Application Year: 90 Issue Date: 3/28/1991 Approval Type: Municipal sewage Status: Cancelled Application Type: Client Name: Client Address: Client City: Client Postal Code: Project Description: Contaminants: Emission Control:				
5	3 of 13	244.6	METRO NORTH MARKET PARK HWY. 400 AND HWY. 88 WEST GWILLIMBURY TWP. ON	CA
Certificate #: 7-1447-90- Application Year: 90 Issue Date: 7/31/1991 Approval Type: Municipal water Status: Cancelled Application Type: Client Name: Client Address: Client City: Client Postal Code: Project Description: Contaminants: Emission Control:				

Map Key	Number of Records	Elevation (m)	Site	DB
5	4 of 13	244.6	KERNAGHANS HUSKY LOT 7 CON 6 HWYS 88 & 400 BRADFORD SIMCOE ON	PRT
Location ID: 18449 Type: retail Expiry Date: 1995-07-31 Capacity (L): 2000 Licence #: 0060087001				
5	5 of 13	244.6	HUSKY CAR & TRUCK STOP HWY 88 & 400 BRADFORD ON LOG 1C0	RST
Headcode: 1186800 Headcode Desc: Service Stations-Gasoline, Oil & Natural Gas Phone: 9057753831 List Name: Description:				
5	6 of 13	244.6	PRIVATE OWNER HWY 400 && COUNTY RD 88 TRANSPORT TRUCK (CARGO) BRADFORD-WEST GWILLIMBURY ON	SPL
Ref No: 185988 Site No: Incident Dt: 9/3/2000 Year: Incident Cause: UNKNOWN Incident Event: Contaminant Code: Contaminant Name: Contaminant Limit 1: Contam Limit Freq 1: Contaminant UN No 1: Environment Impact: POSSIBLE Nature of Impact: Soil contamination Receiving Medium: LAND Receiving Env: MOE Response: Dt MOE Arvl on Scn: MOE Reported Dt: 9/3/2000 Dt Document Closed: Incident Reason: UNKNOWN Site Name: Site County/District: Site Geo Ref Meth: Incident Summary: TRUCKING CO: SPILL OF SODIUM HYDROXIDE TO PARK LOT, POLICE, FD Contaminant Qty:				
Discharger Report: Material Group: Health/Env Conseq: Client Type: Sector Type: Agency Involved: Nearest Watercourse: Site Address: Site District Office: Site Postal Code: Site Region: Site Municipality: 70410 Site Lot: Site Conc: Northing: Easting: Site Geo Ref Accu: Site Map Datum: SAC Action Class: Source Type:				
5	7 of 13	244.6	TRANSPORT TRUCK HWY 400 SOUTHBOUND SOUTH OF HWY 88 MOTOR VEHICLE (OPERATING FLUID) BRADFORD-WEST GWILLIMBURY TOWN ON	SPL
Ref No: 75573 Site No: Discharger Report: Material Group:				

Map Key	Number of Records	Elevation (m)	Site	DB
Incident Dt:	9/1/1992			
Year:				
Incident Cause:	OTHER TRANSPORTATION ACCIDENT			
Incident Event:				
Contaminant Code:				
Contaminant Name:				
Contaminant Limit 1:				
Contam Limit Freq 1:				
Contaminant UN No 1:				
Environment Impact:	NOT ANTICIPATED			
Nature of Impact:				
Receiving Medium:	LAND			
Receiving Env:				
MOE Response:				
Dt MOE Arvl on Scn:				
MOE Reported Dt:	9/1/1992			
Dt Document Closed:				
Incident Reason:	ERROR			
Site Name:				
Site County/District:				
Site Geo Ref Meth:				
Incident Summary:	MOTOR VEHICLE ACCIDENT: 250L DIESEL FUEL LEAK FROM SADDLE TANKS			
Contaminant Qty:				

<u>5</u>	8 of 13	244.6	HUSKY OIL MARKETING CO. HWY 400 & HWY 88 AT HUSKY TRUCK STOP SERVICE STATION BRADFORD-WEST GWILLIMBURY TOWN ON	SPL
Ref No:	113322			
Site No:				
Incident Dt:	5/17/1995			
Year:				
Incident Cause:	VALVE/FITTING LEAK OR FAILURE			
Incident Event:				
Contaminant Code:				
Contaminant Name:				
Contaminant Limit 1:				
Contam Limit Freq 1:				
Contaminant UN No 1:				
Environment Impact:	NOT ANTICIPATED			
Nature of Impact:				
Receiving Medium:	LAND			
Receiving Env:				
MOE Response:				
Dt MOE Arvl on Scn:				
MOE Reported Dt:	5/18/1995			
Dt Document Closed:				
Incident Reason:	EQUIPMENT FAILURE			
Site Name:				
Site County/District:				
Site Geo Ref Meth:				
Incident Summary:	HUSKY SERVICE STN: 50 L DIESEL TO ASPHALT; CONTAINED & CLEANED UP			
Contaminant Qty:				

<u>5</u>	9 of 13	244.6	Highways 400 and 88 Bradford West Gwillimbury ON	SPL
Ref No:	5727-797MB7			
Site No:				
Incident Dt:				
Year:				
Incident Cause:	Pipe Or Hose Leak			
Discharger Report:				
Material Group:			Oil	
Health/Env Conseq:				
Client Type:				
Sector Type:			Service Station	

Map Key	Number of Records	Elevation (m)	Site	DB
Incident Event:				
Contaminant Code:	13			
Contaminant Name:	DIESEL FUEL			
Contaminant Limit 1:				
Contam Limit Freq 1:				
Contaminant UN No 1:				
Environment Impact:	Confirmed			
Nature of Impact:	Soil Contamination			
Receiving Medium:	Land			
Receiving Env:				
MOE Response:	No Field Response			
Dt MOE Arvl on Scn:				
MOE Reported Dt:	11/22/2007			
Dt Document Closed:	11/26/2007			
Incident Reason:				
Site Name:	Husky Truck Stop<UNOFFICIAL>			
Site County/District:				
Site Geo Ref Meth:				
Incident Summary:	Husky Truck Stop: spills from defective nozzle			
Contaminant Qty:	20 L			

<u>5</u>	10 of 13	244.6	TRANSPORT TRUCK HWY 400 N. OF HWY 88 MOTOR VEHICLE (OPERATING FLUID) SIMCOE COUNTY ON	SPL
Ref No:	7120			
Site No:				
Incident Dt:	7/25/1988			
Year:				
Incident Cause:	OTHER TRANSPORTATION ACCIDENT			
Incident Event:				
Contaminant Code:				
Contaminant Name:				
Contaminant Limit 1:				
Contam Limit Freq 1:				
Contaminant UN No 1:				
Environment Impact:				
Nature of Impact:				
Receiving Medium:	LAND			
Receiving Env:				
MOE Response:				
Dt MOE Arvl on Scn:				
MOE Reported Dt:	7/25/1988			
Dt Document Closed:				
Incident Reason:	UNKNOWN			
Site Name:				
Site County/District:				
Site Geo Ref Meth:				
Incident Summary:	DIESEL FUEL TO HWY. FROM TRUCK SADDLE TANKS.			
Contaminant Qty:				

<u>5</u>	11 of 13	244.6	TST Overland Express, A Division of TST Solutions LP Hwy 400 NB & Hwy 88 Bradford West Gwillimbury ON	SPL
Ref No:	8564-88NKSQ			
Site No:				
Incident Dt:				
Year:				
Incident Cause:				
Incident Event:				
Contaminant Code:	13			
Discharger Report:				
Material Group:				
Health/Env Conseq:				
Client Type:				
Sector Type:			Transport Truck	
Agency Involved:				
Nearest Watercourse:				

Map Key	Number of Records	Elevation (m)	Site	DB	
			Contaminant Name: DIESEL FUEL Contaminant Limit 1: Contam Limit Freq 1: Contaminant UN No 1: Environment Impact: Confirmed Nature of Impact: Soil Contamination Receiving Medium: Receiving Env: MOE Response: No Field Response Dt MOE Arvl on Scn: MOE Reported Dt: 8/25/2010 Dt Document Closed: 10/1/2010 Incident Reason: Site Name: Hwy 400 NB<UNOFFICIAL> Site County/District: Site Geo Ref Meth: Incident Summary: TST Overland: TT ruptured fuel tank, 400L to ditch Contaminant Qty: 400 L	Site Address: Site District Office: Site Postal Code: Site Region: Site Municipality: Site Lot: Site Conc: Northing: Easting: Site Geo Ref Accu: Site Map Datum: SAC Action Class: Highway Spills (usually highway accidents) Source Type:	

<u>5</u>	12 of 13	244.6	TRANSPORT TRUCK HWY 400 SOUTHBOUND SOUTH OF HWY 88 MOTOR VEHICLE (OPERATING FLUID) BRADFORD-WEST GWILLIMBURY TOWN ON	SPL	
			Ref No: 81854 Site No: Incident Dt: 2/12/1993 Year: Incident Cause: OTHER CONTAINER LEAK Incident Event: Contaminant Code: Contaminant Name: Contaminant Limit 1: Contam Limit Freq 1: Contaminant UN No 1: Environment Impact: POSSIBLE Nature of Impact: Soil contamination Receiving Medium: LAND Receiving Env: MOE Response: Dt MOE Arvl on Scn: MOE Reported Dt: 2/14/1993 Dt Document Closed: Incident Reason: UNKNOWN Site Name: Site County/District: Site Geo Ref Meth: Incident Summary: TRANSPORT TRUCK: SADDLE TANK LEAK 225L DIESEL FUEL TO DITCH Contaminant Qty:	Discharger Report: Material Group: Health/Env Conseq: Client Type: Sector Type: Agency Involved: Nearest Watercourse: Site Address: Site District Office: Site Postal Code: Site Region: Site Municipality: 70410 Site Lot: Site Conc: Northing: Easting: OPP MTO Site Geo Ref Accu: Site Map Datum: SAC Action Class: Source Type:	

<u>5</u>	13 of 13	244.6	TRANSPORT TRUCK HWY # 400 SOUTHBOUND JUST SOUTH OF HWY # 88. MOTOR VEHICLE (OPERATING FLUID) BRADFORD-WEST GWILLIMBURY TOWN ON	SPL	
			Ref No: 196454 Site No: Incident Dt: 3/14/2001 Year: Incident Cause: OTHER TRANSPORTATION ACCIDENT Incident Event: Contaminant Code:	Discharger Report: Material Group: Health/Env Conseq: Client Type: Sector Type: Agency Involved: FD Nearest Watercourse:	

Map Key	Number of Records	Elevation (m)	Site	DB
Contaminant Name: Contaminant Limit 1: Contam Limit Freq 1: Contaminant UN No 1: Environment Impact: Possible Nature of Impact: Soil contamination Receiving Medium: Land Receiving Env: MOE Response: Dt MOE Arvl on Scn: MOE Reported Dt: 3/14/2001 Dt Document Closed: Incident Reason: UNKNOWN Site Name: Site County/District: Site Geo Ref Meth: Incident Summary: TRANSPORT TRUCK-OVERTURN,400 L DIESEL ONTO HWY,FD CONTAINED, MTO ON SITE. Contaminant Qty:		Site Address: Site District Office: Site Postal Code: Site Region: Site Municipality: 70410 Site Lot: Site Conc: Northing: Easting: Site Geo Ref Accu: Site Map Datum: SAC Action Class: Source Type:		

<u>6</u>	1 of 1	244.6	HIGHWAYS 400 & 88 BRADFORD WEST GWILLIMBURY ON	HINC
External File Num: FS INC 0711-07088 Fuel Occurrence Type: Leak Date of Occurrence: 11/21/2007 Fuel Type Involved: Diesel Status Desc: Completed - Causal Analysis(End) Job Type Desc: Incident/Near-Miss Occurrence (FS) Oper. Type Involved: Retail Fuel Station (FS, SS, Multifunctional) Service Interruptions: No Property Damage: No Fuel Life Cycle Stage: Storage and Dispensing Root Cause: Root Cause: Equipment/Material/Component:Yes Procedures:N/A Maintenance:No Design:No Training:No Management:No Human Factors:No Reported Details: Husky Truck Stop Fuel Category: Liquid Fuel Occurrence Type: Near-miss Affiliation: Member of the General Public County Name: Simcoe Approx. Quant. Rel: Nearby body of water: Enter Drainage Syst.: Approx. Quant. Unit: Environmental Impact:				

<u>7</u>	1 of 1	235.1	3510 City Road 88 Bradford ON	EHS
Order No: 20050406004 Status: C Report Type: Report Date: 4/14/2005 Date Received: 4/6/2005 Previous Site Name: Lot/Building Size: Additional Info Ordered:		Nearest Intersection: Municipality: Client Prov/State: ON Search Radius (km): 0.5 X: -79.624714 Y: 44.101472		

<u>8</u>	1 of 1	249.9	KOA CAMP GROUNDS UNKNOWN - RR 1 HWY 88 & 400 BRADFORD ON L3Z2A4	PRT
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Map Key	Number of Records	Elevation (m)	Site	DB
Location ID: Type: Expiry Date: Capacity (L): Licence #:		19082 retail 1993-01-31 1000 0076351956		
9	1 of 24	235.2	Husky Oil Bradford Truck Stop 3479 Highway 88, Lot 7, Concession 6 Bradford West Gwillimbury ON	CA
Certificate #: Application Year: Issue Date: Approval Type: Status: Application Type: Client Name: Client Address: Client City: Client Postal Code: Project Description: Contaminants: Emission Control:		0911-5BBMM8 02 9/26/02 Municipal & Private sewage Approved Amended CofA Husky Oil Operations Limited 8th Avenue S.W., Floor 39, Unit 707 Calgary T2P 1H5 Sewage treatment system for Husky Oil Bradford Truck Stop		
9	2 of 24	235.2	HUSKY ENERGY DIVISION OF HUSKY OIL LTD 3479 HWY 88 BRADFORD ON L3Z 2B2	CFOT
Licence No: Registration No: Posse File No: Posse Reg No: Tank Type: Instance Number: Facility Type: Instance Type: Status Name: Fuel Type: Distributor: Tank Material: Tank Age (as of 05/1992): Tank Size:		Double Wall UST 38203194 FS Fuel Oil Tank FS Fuel Oil Tank Active Fuel Oil Fiberglass (FRP) 250000	Letter Sent: Corrosion Protection: Province: Nbr: Contact Name: Contact Address: Contact Address2: Contact Suite: Contact City: Contact Prov: Contact Postal: Tank Address: Comments:	ON 80 3479 HWY 88
9	3 of 24	235.2	Husky Energy Operations Ltd 3479 Simcoe County Rd 88 (Hwy 88), Bradford TOWN OF BRADFORD-WEST GWILLIMBURY ON	EBR
EBR Registry No: Ministry Ref. No: Notice Type: Company Name: Proponent Name: Proponent Address: Instrument Type: Location Other: URL:		013-0862 2095706 Instrument Decision Husky Energy Operations Ltd 707 8th Avenue, Calgary Ontario, Canada T2P 3G7 (Liquid Fuels Handling Code) - Liquid Fuels Handling Code Section	Proposal Date: Notice Pub Date: Year:	June 15, 2017 July 19, 2017 2017

Map Key	Number of Records	Elevation (m)	Site	DB
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Location:

3479 Simcoe County Rd 88 (Hwy 88), Bradford TOWN OF BRADFORD-WEST GWILLIMBURY

9	4 of 24	235.2	Husky Oil Operations Limited 3479 Highway 88 Lot 7, Concession 6 Bradford West Gwillimbury ON T2P 3G7	ECA
Approval No:	3725-9R8PNZ	MOE District:	Barrie	
Approval Date:	2015-01-06	City:	Bradford West Gwillimbury	
Status:	Approved	Longitude:	-79.62467	
Record Type:	ECA	Latitude:	44.10091	
Link Source:	IDS	Geometry X:		
SWP Area Name:	Lakes Simcoe and Couchiching/Black River	Geometry Y:		
Approval Type:	ECA-MUNICIPAL AND PRIVATE SEWAGE WORKS			
Project Type:	MUNICIPAL AND PRIVATE SEWAGE WORKS			
Address:	3479 Highway 88 Lot 7, Concession 6			
Full Address:				
Full PDF Link:	https://www.accessenvironment.ene.gov.on.ca/instruments/5491-9LZPCD-14.pdf			

9	5 of 24	235.2	Husky Oil Operations Limited 3479 Highway 88 Lot 7, Concession 6 Bradford West Gwillimbury ON T2P 1H5	ECA
Approval No:	0911-5BBMM8	MOE District:	Barrie	
Approval Date:	2002-09-26	City:	Bradford West Gwillimbury	
Status:	Revoked and/or Replaced	Longitude:	-79.62467	
Record Type:	ECA	Latitude:	44.10091	
Link Source:	IDS	Geometry X:		
SWP Area Name:	Lakes Simcoe and Couchiching/Black River	Geometry Y:		
Approval Type:	ECA-MUNICIPAL AND PRIVATE SEWAGE WORKS			
Project Type:	MUNICIPAL AND PRIVATE SEWAGE WORKS			
Address:	3479 Highway 88 Lot 7, Concession 6			
Full Address:				
Full PDF Link:	https://www.accessenvironment.ene.gov.on.ca/instruments/5398-57JQ5U-14.pdf			

9	6 of 24	235.2	3479 County Road 88 Bradford ON L3Z2A4	EHS
Order No:	20071205008	Nearest Intersection:	County Road 88/10th Sideroad	
Status:	C	Municipality:	Simcoe	
Report Type:	CAN - Complete Report	Client Prov/State:		
Report Date:	12/13/2007	Search Radius (km):	0.25	
Date Received:	12/5/2007	X:	-79.627249	
Previous Site Name:		Y:	44.099793	
Lot/Building Size:				
Additional Info Ordered:	Fire Insur. Maps And /or Site Plans			

9	7 of 24	235.2	KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC 3479 HWY 88 BRADFORD ON	EXP
Instance No:	11083379			
Instance ID:	67752			
Instance Type:	FS Propane Tank			
Description:	FS Propane Tank			
Status:	EXPIRED			

Map Key	Number of Records	Elevation (m)	Site	DB
TSSA Program Area: Maximum Hazard Rank: Facility Type: Expired Date:				
9	8 of 24	235.2	KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC 3479 HWY 88 BRADFORD ON	EXP
Instance No: 9859100 Instance ID: 397083 Instance Type: FS Facility Description: FS Propane Refill Cntr - Cylr Fill Status: EXPIRED TSSA Program Area: Maximum Hazard Rank: Facility Type: Expired Date:				
9	9 of 24	235.2	2290511 ONTARIO INC 3479 HWY 88 BRADFORD ON L3Z 2B2	EXP
Instance No: 11083448 Instance ID: Instance Type: FS Liquid Fuel Tank Description: FS Gasoline Station - Card/Keylock Status: EXPIRED TSSA Program Area: Maximum Hazard Rank: Facility Type: FS Liquid Fuel Tank Expired Date: 4/28/2016 2:28:43 PM				
9	10 of 24	235.2	KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC 3479 HWY 88 BRADFORD ON L3Z 2B2	EXP
Instance No: 9864401 Instance ID: Instance Type: FS Facility Description: Status: EXPIRED TSSA Program Area: Maximum Hazard Rank: Facility Type: Expired Date: 3/4/2010 9:35				
9	11 of 24	235.2	KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC 3479 HWY 88 BRADFORD ON	EXP
Instance No: 35716020 Instance ID: 300279 Instance Type: FS Facility Description: FS Cylinder Exchange Status: EXPIRED TSSA Program Area: Maximum Hazard Rank:				

Map Key	Number of Records	Elevation (m)	Site	DB
<i>Facility Type:</i> <i>Expired Date:</i>				
<u>9</u>	12 of 24	235.2	KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC 3479 HWY 88 BRADFORD ON	EXP
<i>Instance No:</i> 11530608 <i>Instance ID:</i> 88711 <i>Instance Type:</i> FS Propane Tank <i>Description:</i> FS Propane Tank <i>Status:</i> EXPIRED <i>TSSA Program Area:</i> <i>Maximum Hazard Rank:</i> <i>Facility Type:</i> <i>Expired Date:</i>				
<u>9</u>	13 of 24	235.2	2290511 ONTARIO INC 3479 HWY 88 BRADFORD ON L3Z 2B2	FST
<i>Instance No:</i> 64725872 <i>Cont Name:</i> <i>Instance Type:</i> FS Liquid Fuel Tank <i>Fuel Type:</i> Diesel <i>Status:</i> Active <i>Capacity:</i> 75000 <i>Tank Material:</i> NULL <i>Corrosion Protection:</i> Fiberglass <i>Tank Type:</i> Double Wall UST <i>Install Year:</i> 2016 <i>Parent Facility Type:</i> FS Gasoline Station - Card/Keylock <i>Facility Type:</i> FS Liquid Fuel Tank				
<u>9</u>	14 of 24	235.2	2290511 ONTARIO INC 3479 HWY 88 BRADFORD ON L3Z 2B2	FST
<i>Instance No:</i> 11349744 <i>Cont Name:</i> <i>Instance Type:</i> FS Liquid Fuel Tank <i>Fuel Type:</i> Gasoline <i>Status:</i> Active <i>Capacity:</i> 75000 <i>Tank Material:</i> Fiberglass (FRP) <i>Corrosion Protection:</i> Fiberglass <i>Tank Type:</i> Double Wall UST <i>Install Year:</i> 2000 <i>Parent Facility Type:</i> FS Gasoline Station - Card/Keylock <i>Facility Type:</i> FS Liquid Fuel Tank				
<u>9</u>	15 of 24	235.2	2290511 ONTARIO INC 3479 HWY 88 BRADFORD ON L3Z 2B2	FST
<i>Instance No:</i> 11083425 <i>Cont Name:</i> <i>Instance Type:</i> FS Liquid Fuel Tank				

Map Key	Number of Records	Elevation (m)	Site	DB
Fuel Type: Gasoline Status: Active Capacity: 25000 Tank Material: Fiberglass (FRP) Corrosion Protection: Fiberglass Tank Type: Double Wall UST Install Year: 2000 Parent Facility Type: FS Gasoline Station - Card/Keylock Facility Type: FS Liquid Fuel Tank				

<u>9</u>	16 of 24	235.2	2290511 ONTARIO INC 3479 HWY 88 BRADFORD ON L3Z 2B2	FST
Instance No: 37893522 Cont Name: Instance Type: FS Liquid Fuel Tank Fuel Type: Diesel Status: Active Capacity: 75000 Tank Material: Fiberglass (FRP) Corrosion Protection: Fiberglass Tank Type: Double Wall UST Install Year: 2000 Parent Facility Type: FS Gasoline Station - Card/Keylock Facility Type: FS Liquid Fuel Tank				

<u>9</u>	17 of 24	235.2	KERNAGHANS HUSKY O/A PENGALLY ENTERPRISES INC 3479 HWY 88 BRADFORD ON	FSTH
License Issue Date: 8/30/2002 Tank Status: Pending Renewal Tank Status As Of: August 2007 Operation Type: Retail Fuel Outlet Facility Type: Gasoline Station - Split Serve				
--Details--				
Status: Active Year of Installation: 1978 Corrosion Protection: Capacity: 45400 Tank Fuel Type: Liquid Fuel Single Wall UST - Gasoline				
Status: Active Year of Installation: 1978 Corrosion Protection: Capacity: 35000 Tank Fuel Type: Liquid Fuel Single Wall UST - Gasoline				
Status: Active Year of Installation: 1978 Corrosion Protection: Capacity: 45400 Tank Fuel Type: Liquid Fuel Single Wall UST - Diesel				
Status: Active Year of Installation: 1978 Corrosion Protection: Capacity: 45400 Tank Fuel Type: Liquid Fuel Single Wall UST - Diesel				

Map Key	Number of Records	Elevation (m)	Site	DB
9	18 of 24	235.2	2151858 ONTARIO INC O/A BRADFORD HUSKY 3479 HWY 88 BRADFORD ON	FSTH
License Issue Date:		11/10/2008 11:41:00 AM		
Tank Status:		Licensed		
Tank Status As Of:		December 2008		
Operation Type:		Retail Fuel Outlet		
Facility Type:		Gasoline Station - Card/Keylock		
--Details--				
Status:		Active		
Year of Installation:		2005		
Corrosion Protection:				
Capacity:		75000		
Tank Fuel Type:		Liquid Fuel Double Wall UST - Gasoline		
9	19 of 24	235.2	Husky Energy Refined Products 3479 Highway 88 Bradford ON L3Z2B2	GEN
Generator No:		ON3715460		PO Box No:
Status:		Registered		Country: Canada
Approval Years:		As of Dec 2018		Choice of Contact:
Contam. Facility:				Co Admin:
MHSW Facility:				Phone No Admin:
SIC Code:				
SIC Description:				
--Details--				
Waste Code:		122 C		
Waste Description:		Alkaline slutions - containing other metals and non-metals (not cyanide)		
Waste Code:		251 L		
Waste Description:		Waste oils/sludges (petroleum based)		
9	20 of 24	235.2	Husky Energy 3479 Highway 88 Bradford ON L3Z 2B2	GEN
Generator No:		ON3715460		PO Box No:
Status:				Country:
Approval Years:		04,05		Choice of Contact:
Contam. Facility:				Co Admin:
MHSW Facility:				Phone No Admin:
SIC Code:		454310		
SIC Description:		Fuel Dealers		
--Details--				
Waste Code:		251		
Waste Description:		OIL SKIMMINGS & SLUDGES		
9	21 of 24	235.2	Husky Travel Center 3479 Simcoe Road #88	GEN

Map Key	Number of Records	Elevation (m)	Site	DB
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Bradford West Gwillimbury ON L3Z2B2

Generator No: ON4093973
Status:
Approval Years: 2016
Contam. Facility: No
MHSW Facility: No
SIC Code: 447110
SIC Description: 447110

PO Box No:
Country: Canada
Choice of Contact: CO_ADMIN
Co Admin: Karina Kenigsberg
Phone No Admin: 9056141978 Ext.

--Details--

Waste Code: 221
Waste Description: LIGHT FUELS

Waste Code: 251
Waste Description: OIL SKIMMINGS & SLUDGES

<u>9</u>	22 of 24	235.2	Husky Energy 3479 Highway 88 Bradford ON L3Z2B2	GEN
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Generator No: ON3715460
Status:
Approval Years: 2016
Contam. Facility: No
MHSW Facility: No
SIC Code: 454310
SIC Description: 454310

PO Box No:
Country: Canada
Choice of Contact: CO_ADMIN
Co Admin: Kim Tan
Phone No Admin: 905 614 1978 Ext.

--Details--

Waste Code: 251
Waste Description: OIL SKIMMINGS & SLUDGES

<u>9</u>	23 of 24	235.2	Husky Travel Center 3479 Simcoe Road #88 Bradford West Gwillimbury ON L3Z2B2	GEN
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Generator No: ON4093973
Status:
Approval Years: 2014
Contam. Facility: No
MHSW Facility: No
SIC Code: 447110
SIC Description: 447110

PO Box No:
Country: Canada
Choice of Contact: CO_ADMIN
Co Admin: Anita Langley
Phone No Admin: 905-794-0168 Ext.23

--Details--

Waste Code: 251
Waste Description: OIL SKIMMINGS & SLUDGES

Waste Code: 221
Waste Description: LIGHT FUELS

<u>9</u>	24 of 24	235.2	Husky Travel Center 3479 Simcoe Road #88 Bradford West Gwillimbury ON L3Z2B2	GEN
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Generator No: ON4093973
PO Box No:

Map Key	Number of Records	Elevation (m)	Site	DB
Status:				
Approval Years:	2015		Country: Canada	
Contam. Facility:	No		Choice of Contact: CO_ADMIN	
MHSW Facility:	No		Co Admin: Anita Langley	
SIC Code:	447110		Phone No Admin: 905-794-0168 Ext.23	
SIC Description:		447110		
--Details--				
Waste Code:		251		
Waste Description:		OIL SKIMMINGS & SLUDGES		
Waste Code:		221		
Waste Description:		LIGHT FUELS		
<u>10</u>	1 of 1	236.9	HUSKY OIL MARKETING CO. HUSKY TRUCK STOP, EAST OF HWY#400 & SOUTH OF HWY #88 SERVICE STATION BRADFORD-WEST GWILLIMBURY TOWN ON	SPL
Ref No:	74959		Discharger Report:	
Site No:			Material Group:	
Incident Dt:	8/19/1992		Health/Env Conseq:	
Year:			Client Type:	
Incident Cause:	OTHER CAUSE (N.O.S.)		Sector Type:	
Incident Event:			Agency Involved:	
Contaminant Code:			Nearest Watercourse:	
Contaminant Name:			Site Address:	
Contaminant Limit 1:			Site District Office:	
Contam Limit Freq 1:			Site Postal Code:	
Contaminant UN No 1:			Site Region:	
Environment Impact:	NOT ANTICIPATED		Site Municipality:	70410
Nature of Impact:	Water course or lake		Site Lot:	
Receiving Medium:	LAND		Site Conc:	
Receiving Env:			Northing:	
MOE Response:			Easting:	WORKS
Dt MOE Arvl on Scn:			Site Geo Ref Accu:	
MOE Reported Dt:	8/19/1992		Site Map Datum:	
Dt Document Closed:			SAC Action Class:	
Incident Reason:	OTHER		Source Type:	
Site Name:				
Site County/District:				
Site Geo Ref Meth:				
Incident Summary:	HUSKY -SEWAGE OVERFLOWINGFROM MANHOLE AT TRUCK STOP CENTER.			
Contaminant Qty:				
<u>11</u>	1 of 1	235.2	Husky Travel Center 1-3479 Hwy 88 ON L3Z 2B2	EHS
Order No:	20180815252		Nearest Intersection:	
Status:	C		Municipality:	
Report Type:	Standard Report		Client Prov/State:	ON
Report Date:	22-AUG-18		Search Radius (km):	.25
Date Received:	15-AUG-18		X:	-79.62655
Previous Site Name:			Y:	44.098691
Lot/Building Size:				
Additional Info Ordered:	Fire Insur. Maps and/or Site Plans; Title Searches			
<u>12</u>	1 of 1	237.9	n/a Bradford ON	EHS

Map Key	Number of Records	Elevation (m)	Site	DB
Order No: 20131025078 Status: C Report Type: Standard Report Report Date: 29-OCT-13 Date Received: 25-OCT-13 Previous Site Name: Lot/Building Size: Additional Info Ordered:				
Nearest Intersection: Municipality: Client Prov/State: ON Search Radius (km): .25 X: -79.629427 Y: 44.097836				
13	1 of 1	271.7	Corneau & Sons Pallet & Box Ltd. 3556 Line 9 RR 2 Bradford ON L3Z 2A5	SCT
Established: 1967 Plant Size (ft²): 20000 Employment: 15				
--Details--				
Description: Sawmills (except Shingle and Shake Mills) SIC/NAICS Code: 321111				
Description: Wood Container and Pallet Manufacturing SIC/NAICS Code: 321920				
14	1 of 1	283.1	ON	BORE
Borehole ID: 589462 Use: Drill Method: Easting: 608812 Location Accuracy: Elev. Reliability Note: Total Depth m: 4 Township: Lot: Completion Date: Primary Water Use:				
Type: Outcrop Status: Unknown UTM Zone: 17 Northing: 4886573 Orig. Ground Elev m: 283 DEM Ground Elev m: 283 Primary Name: OGS-GWA-72-006 Concession: Municipality: Static Water Level: -999.9 Sec. Water Use:				
--Details--				
Stratum ID: 218338125 Bottom Depth(m): 4.0 Top Depth(m): 0.0 Stratum Desc: msa				
15	1 of 1	274.0	ON	BORE
Borehole ID: 589546 Use: Drill Method: Easting: 609062 Location Accuracy: Elev. Reliability Note: Total Depth m: 3 Township: Lot: Completion Date: Primary Water Use:				
Type: Outcrop Status: Unknown UTM Zone: 17 Northing: 4886723 Orig. Ground Elev m: 274 DEM Ground Elev m: 274 Primary Name: OGS-GWA-72-005 Concession: Municipality: Static Water Level: -999.9 Sec. Water Use:				

Map Key	Number of Records	Elevation (m)	Site	DB
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--Details--

Stratum ID:	218338124	Top Depth(m):	0.0
Bottom Depth(m):	3.0	Stratum Desc:	Till sa

<u>16</u>	1 of 1	229.9	Penner International Inc. Hwy 400 Northbound, 1 mi south of Husky Truck Stop Bradford West Gwillimbury ON	SPL
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Ref No:	7746-APFQFM	Discharger Report:	
Site No:	NA	Material Group:	
Incident Dt:	7/20/2017	Health/Env Conseq:	2 - Minor Environment Corporation
Year:		Client Type:	Unknown / N/A
Incident Cause:		Sector Type:	
Incident Event:	Collision/Accident	Agency Involved:	
Contaminant Code:	27	Nearest Watercourse:	
Contaminant Name:	FLAMMABLE LIQUIDS, N.O.S.	Site Address:	Hwy 400 Northbound, 1 mi south of Husky Truck Stop Barrie
Contaminant Limit 1:		Site District Office:	
Contam Limit Freq 1:		Site Postal Code:	
Contaminant UN No 1:	1993	Site Region:	Central
Environment Impact:		Site Municipality:	Bradford West Gwillimbury
Nature of Impact:		Site Lot:	
Receiving Medium:		Site Conc:	
Receiving Env:	Land	Northing:	4882469
MOE Response:	Yes	Easting:	609860
Dt MOE Arvl on Scn:	7/20/2017	Site Geo Ref Accu:	
MOE Reported Dt:	7/20/2017	Site Map Datum:	
Dt Document Closed:		SAC Action Class:	Land Spills
Incident Reason:	Unknown / N/A	Source Type:	Unknown / N/A
Site Name:	HWY 400 NB <UNOFFICIAL>		
Site County/District:	County of Simcoe		
Site Geo Ref Meth:	Lot Centroid		
Incident Summary:	Penner International: UN1993 leak in trailer and road/ditch		
Contaminant Qty:	0 other - see incident description		

<u>17</u>	1 of 1	229.9	3543 6th Line (Pt lot 7, Conc 5) Bradford ON	EHS
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Order No:	20050624026	Nearest Intersection:	Hwy 400 & 5th Line
Status:	C	Municipality:	
Report Type:		Client Prov/State:	ON
Report Date:	7/5/2005	Search Radius (km):	0.3
Date Received:	6/24/2005	X:	-79.62671
Previous Site Name:		Y:	44.086869
Lot/Building Size:			
Additional Info Ordered:			

Unplottable Summary

Total: **13** Unplottable sites

DB	Company Name/Site Name	Address	City	Postal
CA	P.U.C. BRADFORD WEST GWILLIMBURY	8TH LINE WELL PUMPHOUSE	BRADFORD WEST GWILLIMBURY TOWN ON	
CA	P.U.C. BRADFORD WEST GWILLIMBURY	8TH LINE WELL PUMPHOUSE	BRADFORD WEST GWILLIMBURY TOWN ON	
CA	The Corporation of the Town of Bradford West Gwillimbury	6th Line from Melbourne Dr. to 400 metres west of West Park	Bradford West Gwillimbury ON	
EXP	TORONTO CAMPGROUNDS 313330 ONTARIO LTD	LOT 6 CON 7	WEST GWILLIMBURY TWP ON	
FSTH	HAROLD ADAMS & SON TRANSPORT LTD	LOT 6 CON 9 VESPRA TWP	SIMCOE CO MINESING ON	
PRT	NORFOLK COOPERATIVE CO LTD	LOT 7 CON 5 NORFOLK WOODHOUSE	SIMCOE ON	
PRT	HAROLD ADAMS & SON TRANSPORT LTD	LOT 6 CON 9 VESPRA TWP	SIMCOE CO MINESING ON	
PTTW	James Brian Knack	Lot 7, Concession 5, Township of Delhi, County of Norfolk Simcoe	ON	
SPL		east ditch of Hwy 400 N between Hwy 88 and Hwy 89<UNOFFICIAL>	Bradford West Gwillimbury ON	
SPL	ONTARIO HYDRO	LOT 7, CON. 6, AT ENTRANCE OF HUSKY REST. HIGHWAY 400 AT HIGHWAY 88 TRANSFORMER	BRADFORD-WEST GWILLIMBURY TOWN ON	
SPL	ONTARIO HYDRO	LOT 7, CON 5(ONT.HYDRO TRANSFER STN.) CAPACITOR	SIMCOE TOWN ON	
SPL		Hwy 400 Southbound at Hwy 88 Exit	Bradford West Gwillimbury ON	
SPL		Highway #400 North & south, between Line 11 & 12	Bradford West Gwillimbury ON	

Unplottable Report

Site: *P.U.C. BRADFORD WEST GWILLIMBURY
8TH LINE WELL PUMPHOUSE BRADFORD WEST GWILLIMBURY TOWN ON*

Database:
CA

Certificate #: 7-0360-96-
Application Year: 96
Issue Date: 6/19/1996
Approval Type: Municipal water
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: *P.U.C. BRADFORD WEST GWILLIMBURY
8TH LINE WELL PUMPHOUSE BRADFORD WEST GWILLIMBURY TOWN ON*

Database:
CA

Certificate #: 8-5044-96-
Application Year: 96
Issue Date: 6/10/1996
Approval Type: Industrial air
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description: FORCED DRAFT AERATOR
Contaminants:
Emission Control:

Site: *The Corporation of the Town of Bradford West Gwillimbury
6th Line from Melbourne Dr. to 400 metres west of West Park Bradford West Gwillimbury ON*

Database:
CA

Certificate #: 0906-7FWM9V
Application Year: 2008
Issue Date: 6/27/2008
Approval Type: Municipal and Private Sewage Works
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: *TORONTO CAMPGROUNDS 313330 ONTARIO LTD
LOT 6 CON 7 WEST GWILLIMBURY TWP ON*

Database:
EXP

Instance No: 9617869

Instance ID: 386573
Instance Type: FS Facility
Description: FS Propane Refill Cntr - Cylr Fill
Status: EXPIRED
TSSA Program Area:
Maximum Hazard Rank:
Facility Type:
Expired Date:

Site: HAROLD ADAMS & SON TRANSPORT LTD
LOT 6 CON 9 VESPRA TWP SIMCOE CO MINESING ON

Database:
FSTH

License Issue Date: 6/4/1990
Tank Status: Licensed
Tank Status As Of: December 2008
Operation Type: Private Fuel Outlet
Facility Type: Gasoline Station - Self Serve

--Details--

Status: Active
Year of Installation: 1979
Corrosion Protection:
Capacity: 4546
Tank Fuel Type: Liquid Fuel Single Wall UST - Diesel

Status: Active
Year of Installation: 1979
Corrosion Protection:
Capacity: 4546
Tank Fuel Type: Liquid Fuel Single Wall UST - Gasoline

Site: NORFOLK COOPERATIVE CO LTD
LOT 7 CON 5 NORFOLK WOODHOUSE SIMCOE ON

Database:
PRT

Location ID: 13445
Type: private
Expiry Date:
Capacity (L): 1000.00
Licence #: 0001002096

Site: HAROLD ADAMS & SON TRANSPORT LTD
LOT 6 CON 9 VESPRA TWP SIMCOE CO MINESING ON

Database:
PRT

Location ID: 13403
Type: private
Expiry Date:
Capacity (L): 9092.00
Licence #: 0001003251

Site: James Brian Knack
Lot 7, Concession 5, Township of Delhi, County of Norfolk Simcoe ON

Database:
PTTW

EBR Registry No: IA03E0008
Ministry Ref. No: 23017129
Notice Type: Instrument Decision
Company Name: James Brian Knack
Proponent Name:
Proponent Address: R.R. #2, Simcoe Ontario, N3Y 4K1
Instrument Type: (OWRA s. 34) - Permit to Take Water
Location Other:
URL:

Proposal Date: January 02, 2003
Notice Date: April 29, 2003
Year: 2003

Location:

Lot 7, Concession 5, Township of Delhi, County of Norfolk Simcoe

Site: east ditch of Hwy 400 N between Hwy 88 and Hwy 89<UNOFFICIAL> Bradford West Gwillimbury ON **Database:** SPL

Ref No: 8155-74ANPB **Discharger Report:**
Site No: **Material Group:** Oil
Incident Dt: **Health/Env Conseq:**
Year: **Client Type:**
Incident Cause: Other Transport Accident **Sector Type:** Other Motor Vehicle
Incident Event: **Agency Involved:**
Contaminant Code: 13 **Nearest Watercourse:**
Contaminant Name: DIESEL FUEL **Site Address:**
Contaminant Limit 1: **Site District Office:**
Contam Limit Freq 1: **Site Postal Code:**
Contaminant UN No 1: **Site Region:**
Environment Impact: Confirmed **Site Municipality:** Bradford West Gwillimbury
Nature of Impact: Soil Contamination; Surface Water Pollution **Site Lot:**
Receiving Medium: Land & Water **Site Conc:**
Receiving Env: **Northing:**
MOE Response: No Field Response **Easting:**
Dt MOE Arvl on Scn: **Site Geo Ref Accu:**
MOE Reported Dt: 6/18/2007 **Site Map Datum:**
Dt Document Closed: 10/22/2007 **SAC Action Class:**
Incident Reason: **Source Type:**
Site Name: east ditch of Hwy 400 N between Hwy 88 and Hwy 89<UNOFFICIAL>
Site County/District:
Site Geo Ref Meth:
Incident Summary: Hwy 400 N - MVA - 25-75 gal diesel to ditch
Contaminant Qty: 136 L

Site: ONTARIO HYDRO **Database:** SPL
LOT 7, CON. 6, AT ENTRANCE OF HUSKY REST. HIGHWAY 400 AT HIGHWAY 88 TRANSFORMER BRADFORD-
WEST GWILLIMBURY TOWN ON

Ref No: 76467 **Discharger Report:**
Site No: **Material Group:**
Incident Dt: 9/18/1992 **Health/Env Conseq:**
Year: **Client Type:**
Incident Cause: COOLING SYSTEM LEAK **Sector Type:**
Incident Event: **Agency Involved:**
Contaminant Code: **Nearest Watercourse:**
Contaminant Name: **Site Address:**
Contaminant Limit 1: **Site District Office:**
Contam Limit Freq 1: **Site Postal Code:**
Contaminant UN No 1: **Site Region:**
Environment Impact: POSSIBLE **Site Municipality:** 70410
Nature of Impact: Soil contamination **Site Lot:**
Receiving Medium: LAND **Site Conc:**
Receiving Env: **Northing:**
MOE Response: **Easting:**
Dt MOE Arvl on Scn: **Site Geo Ref Accu:**
MOE Reported Dt: 9/18/1992 **Site Map Datum:**
Dt Document Closed: **SAC Action Class:**
Incident Reason: DAMAGE BY MOVING EQUIPMENT **Source Type:**
Site Name:
Site County/District:
Site Geo Ref Meth:
Incident Summary: ONTARIO HYDRO - 20L NON-PCB OIL TO GROUND FROM TRANSFORMER.
Contaminant Qty:

Site: ONTARIO HYDRO
LOT 7, CON 5(ONT.HYDRO TRANSFER STN.) CAPACITOR SIMCOE TOWN ON

Database:
SPL

Ref No: 101298
Site No:
Incident Dt: 6/16/1994
Year:
Incident Cause: VALVE/FITTING LEAK OR FAILURE
Incident Event:
Contaminant Code:
Contaminant Name:
Contaminant Limit 1:
Contam Limit Freq 1:
Contaminant UN No 1:
Environment Impact: NOT ANTICIPATED
Nature of Impact:
Receiving Medium: LAND
Receiving Env:
MOE Response:
Dt MOE Arvl on Scn:
MOE Reported Dt: 6/16/1994
Dt Document Closed:
Incident Reason: MATERIAL FAILURE
Site Name:
Site County/District:
Site Geo Ref Meth:
Incident Summary: ONT.HYDRO: 1 L INSULATINGOIL TO GROUND, CLEANED UP
Contaminant Qty:

Discharger Report:
Material Group:
Health/Env Conseq:
Client Type:
Sector Type:
Agency Involved:
Nearest Watercourse:
Site Address:
Site District Office:
Site Postal Code:
Site Region:
Site Municipality: 12403
Site Lot:
Site Conc:
Northing:
Easting:
Site Geo Ref Accu:
Site Map Datum:
SAC Action Class:
Source Type:

Site: Hwy 400 Southbound at Hwy 88 Exit Bradford West Gwillimbury ON

Database:
SPL

Ref No: 5781-6JE92F
Site No:
Incident Dt: 11/22/2005
Year:
Incident Cause: Other Transport Accident
Incident Event:
Contaminant Code:
Contaminant Name: DIESEL FUEL
Contaminant Limit 1:
Contam Limit Freq 1:
Contaminant UN No 1:
Environment Impact: Possible
Nature of Impact: Other Impact(s)
Receiving Medium: Land & Water
Receiving Env:
MOE Response:
Dt MOE Arvl on Scn:
MOE Reported Dt: 11/22/2005
Dt Document Closed:
Incident Reason: Unknown - Reason not determined
Site Name: Laidlaw TT MVA<UNOFFICIAL>
Site County/District:
Site Geo Ref Meth:
Incident Summary: Laidlaw TT MVA: 500 L diesel to Hwy 400 and CB
Contaminant Qty: 40 L

Discharger Report: 0
Material Group: Oil
Health/Env Conseq:
Client Type:
Sector Type: Transport Truck
Agency Involved:
Nearest Watercourse:
Site Address:
Site District Office: Barrie
Site Postal Code:
Site Region:
Site Municipality: Bradford West Gwillimbury
Site Lot:
Site Conc:
Northing:
Easting:
Site Geo Ref Accu:
Site Map Datum:
SAC Action Class: Land Spills
Source Type:

Site: Highway #400 North & south, between Line 11 & 12 Bradford West Gwillimbury ON

Database:
SPL

Ref No: 7550-6Z22QS
Site No:
Incident Dt:
Year:
Incident Cause: Other Transport Accident

Discharger Report:
Material Group: Gases/Particulate
Health/Env Conseq:
Client Type:
Sector Type: Other Motor Vehicle

Incident Event:		Agency Involved:	
Contaminant Code:	36	Nearest Watercourse:	
Contaminant Name:	PROPANE	Site Address:	
Contaminant Limit 1:		Site District Office:	
Contam Limit Freq 1:		Site Postal Code:	
Contaminant UN No 1:		Site Region:	
Environment Impact:	confirmed	Site Municipality:	Bradford West Gwillimbury
Nature of Impact:	Soil Contamination	Site Lot:	
Receiving Medium:	Land	Site Conc:	
Receiving Env:		Northing:	
MOE Response:	No Field Response	Easting:	
Dt MOE Arvl on Scn:		Site Geo Ref Accu:	
MOE Reported Dt:	3/5/2007	Site Map Datum:	
Dt Document Closed:	3/28/2007	SAC Action Class:	
Incident Reason:	Weather	Source Type:	
Site Name:	MVA<UNOFFICIAL>		
Site County/District:			
Site Geo Ref Meth:			
Incident Summary:	Bradford, Hwy 400, MVA, propane trailer leak, diesel to grnd		
Contaminant Qty:	Unknown other - see incident description		

Appendix: Database Descriptions

*Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. **Note:** Databases denoted with " * " indicates that the database will no longer be updated. See the individual database description for more information.*

Abandoned Aggregate Inventory:

Provincial [AAGR](#)

The MAAP Program maintains a database of abandoned pits and quarries. Please note that the database is only referenced by lot and concession and city/town location. The database provides information regarding the location, type, size, land use, status and general comments.*

Government Publication Date: Sept 2002*

Aggregate Inventory:

Provincial [AGR](#)

The Ontario Ministry of Natural Resources maintains a database of all active pits and quarries. The database provides information regarding the registered owner/operator, location name, operation type, approval type, and maximum annual tonnage.

Government Publication Date: Up to Sep 2018

Abandoned Mine Information System:

Provincial [AMIS](#)

The Abandoned Mines Information System contains data on known abandoned and inactive mines located on both Crown and privately held lands. The information was provided by the Ministry of Northern Development and Mines (MNDM), with the following disclaimer: "the database provided has been compiled from various sources, and the Ministry of Northern Development and Mines makes no representation and takes no responsibility that such information is accurate, current or complete". Reported information includes official mine name, status, background information, mine start/end date, primary commodity, mine features, hazards and remediation.

Government Publication Date: 1800-Oct 2018

Anderson's Waste Disposal Sites:

Private [ANDR](#)

The information provided in this database was collected by examining various historical documents which aimed to characterize the likely position of former waste disposal sites from 1860 to present. The research initiative behind the creation of this database was to identify those sites that are missing from the Ontario MOE Waste Disposal Site Inventory, as well as to provide revisions and corrections to the positions and descriptions of sites currently listed in the MOE inventory. In addition to historic waste disposal facilities, the database also identifies certain auto wreckers and scrap yards that have been extrapolated from documentary sources. Please note that the data is not warranted to be complete, exhaustive or authoritative. The information was collected for research purposes only.

Government Publication Date: 1860s-Present

Automobile Wrecking & Supplies:

Private [AUWR](#)

This database provides an inventory of known locations that are involved in the scrap metal, automobile wrecking/recycling, and automobile parts & supplies industry. Information is provided on the company name, location and business type.

Government Publication Date: 1999-Jan 31, 2019

Borehole:

Provincial [BORE](#)

A borehole is the generalized term for any narrow shaft drilled in the ground, either vertically or horizontally. The information here includes geotechnical investigations or environmental site assessments, mineral exploration, or as a pilot hole for installing piers or underground utilities. Information is from many sources such as the Ministry of Transportation (MTO) boreholes from engineering reports and projects from the 1950 to 1990's in Southern Ontario. Boreholes from the Ontario Geological Survey (OGS) including The Urban Geology Analysis Information System (UGAIS) and the York Peel Durham Toronto (YPDT) database of the Conservation Authority Moraine Coalition. This database will include fields such as location, stratigraphy, depth, elevation, year drilled, etc. For all water well data or oil and gas well data for Ontario please refer to WWIS and OOGW.

Government Publication Date: 1875-Jul 2014

Certificates of Approval:

Provincial [CA](#)

This database contains the following types of approvals: Air & Noise, Industrial Sewage, Municipal & Private Sewage, Waste Management Systems and Renewable Energy Approvals. The MOE in Ontario states that any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste, must have a Certificate of Approval before it can operate lawfully. Fields include approval number, business name, address, approval date, approval type and status. This database will no longer be updated, as CofA's have been replaced by either Environmental Activity and Sector Registry (EASR) or Environmental Compliance Approval (ECA). Please refer to those individual databases for any information after Oct.31, 2011.

Government Publication Date: 1985-Oct 30, 2011*

Commercial Fuel Oil Tanks:Provincial **CFOT**

List of commercial underground fuel oil tanks made available by the Fuels Safety Program of the Technical Standards & Safety Authority (TSSA). Ontario Regulation 213/01 of the Technical Standards and Safety Act (2000) requires that all underground tanks be registered with the TSSA. Note: the Fuels Safety Division does not register waste oil tanks in apartments, office buildings, residences, etc., or aboveground gas or diesel tanks. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of commercial fuel tanks in the province. The TSSA updates information in its system on an ongoing basis; this listing is a copy of the data captured at one moment in time and is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017**Chemical Register:**Private **CHEM**

This database includes information from both a one time study conducted in 1992 and private source and is a listing of facilities that manufacture or distribute chemicals. The production of these chemical substances may involve one or more chemical reactions and/or chemical separation processes (i.e. fractionation, solvent extraction, crystallization, etc.).

Government Publication Date: 1999-Jan 31, 2019**Compressed Natural Gas Stations:**Private **CNG**

Canada has a network of public access compressed natural gas (CNG) refuelling stations. These stations dispense natural gas in compressed form at 3,000 pounds per square inch (psi), the pressure which is allowed within the current Canadian codes and standards. The majority of natural gas refuelling is located at existing retail gasoline that have a separate refuelling island for natural gas. This list of stations is made available by the Canadian Natural Gas Vehicle Alliance.

Government Publication Date: Dec 2012 - Dec 2018**Inventory of Coal Gasification Plants and Coal Tar Sites:**Provincial **COAL**

This inventory includes both the "Inventory of Coal Gasification Plant Waste Sites in Ontario-April 1987" and the Inventory of Industrial Sites Producing or Using Coal Tar and Related Tars in Ontario-November 1988) collected by the MOE. It identifies industrial sites that produced and continue to produce or use coal tar and other related tars. Detailed information is available and includes: facility type, size, land use, information on adjoining properties, soil condition, site operators/occupants, site description, potential environmental impacts and historic maps available. This was a one-time inventory.*

Government Publication Date: Apr 1987 and Nov 1988***Compliance and Convictions:**Provincial **CONV**

This database summarizes the fines and convictions handed down by the Ontario courts beginning in 1989. Companies and individuals named here have been found guilty of environmental offenses in Ontario courts of law.

Government Publication Date: 1989-Jan 2019**Certificates of Property Use:**Provincial **CPU**

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include all CPU's on the registry such as (EPA s. 168.6) - Certificate of Property Use.

Government Publication Date: 1994-Feb 28, 2019**Drill Hole Database:**Provincial **DRL**

The Ontario Drill Hole Database contains information on more than 113,000 percussion, overburden, sonic and diamond drill holes from assessment files on record with the department of Mines and Minerals. Please note that limited data is available for southern Ontario, as it was the last area to be completed. The database was created when surveys submitted to the Ministry were converted in the Assessment File Research Image Database (AFRI) project. However, the degree of accuracy (coordinates) as to the exact location of drill holes is dependent upon the source document submitted to the MNDM. Levels of accuracy used to locate holes are: centering on the mining claim; a sketch of the mining claim; a 1:50,000 map; a detailed company map; or from submitted a "Report of Work".

Government Publication Date: 1886 - Oct 2018**Dry Cleaning Facilities:**Federal **DRYCLEANERS**

List of dry cleaning facilities made available by Environment and Climate Change Canada. Environment and Climate Change Canada's Tetrachloroethylene (Use in Dry Cleaning and Reporting Requirements) Regulations (SOR/2003-79) are intended to reduce releases of tetrachloroethylene to the environment from dry cleaning facilities.

Government Publication Date: Jan 2004-Dec 2017**Environmental Activity and Sector Registry:**Provincial **EASR**

On October 31, 2011, a smarter, faster environmental approvals system came into effect in Ontario. The EASR allows businesses to register certain activities with the ministry, rather than apply for an approval. The registry is available for common systems and processes, to which preset rules of operation can be applied. The EASR is currently available for: heating systems, standby power systems and automotive refinishing. Businesses whose activities aren't subject to the EASR may apply for an ECA (Environmental Compliance Approval), Please see our ECA database.

Government Publication Date: Oct 2011-Feb 28, 2019

Environmental Registry:Provincial **EBR**

The Environmental Registry lists proposals, decisions and exceptions regarding policies, Acts, instruments, or regulations that could significantly affect the environment. Through the Registry, thirteen provincial ministries notify the public of upcoming proposals and invite their comments. For example, if a local business is requesting a permit, license, or certificate of approval to release substances into the air or water; these are notified on the registry. Data includes: Approval for discharge into the natural environment other than water (i.e. Air) - EPA s. 9, Approval for sewage works - OWRA s. 53(1), and EPA s. 27 - Approval for a waste disposal site. For information regarding Permit to Take Water (PTTW), Certificate of Property Use (CPU) and (ORD) Orders please refer to those individual databases.

Government Publication Date: 1994-Feb 28, 2019**Environmental Compliance Approval:**Provincial **ECA**

On October 31, 2011, a smarter, faster environmental approvals system came into effect in Ontario. In the past, a business had to apply for multiple approvals (known as certificates of approval) for individual processes and pieces of equipment. Today, a business either registers itself, or applies for a single approval, depending on the types of activities it conducts. Businesses whose activities aren't subject to the EASR may apply for an ECA. A single ECA addresses all of a business's emissions, discharges and wastes. Separate approvals for air, noise and waste are no longer required. This database will also include Renewable Energy Approvals. For certificates of approval prior to Nov 1st, 2011, please refer to the CA database. For all Waste Disposal Sites please refer to the WDS database.

Government Publication Date: Oct 2011-Feb 28, 2019**Environmental Effects Monitoring:**Federal **EEM**

The Environmental Effects Monitoring program assesses the effects of effluent from industrial or other sources on fish, fish habitat and human usage of fisheries resources. Since 1992, pulp and paper mills have been required to conduct EEM studies under the Pulp and Paper Effluent Regulations. This database provides information on the mill name, geographical location and sub-lethal toxicity data.

Government Publication Date: 1992-2007***ERIS Historical Searches:**Private **EHS**

ERIS has compiled a database of all environmental risk reports completed since March 1999. Available fields for this database include: site location, date of report, type of report, and search radius. As per all other databases, the ERIS database can be referenced on both the map and "Statistical Profile" page.

Government Publication Date: 1999-Jan 31, 2019**Environmental Issues Inventory System:**Federal **EIIS**

The Environmental Issues Inventory System was developed through the implementation of the Environmental Issues and Remediation Plan. This plan was established to determine the location and severity of contaminated sites on inhabited First Nation reserves, and where necessary, to remediate those that posed a risk to health and safety; and to prevent future environmental problems. The EIIS provides information on the reserve under investigation, inventory number, name of site, environmental issue, site action (Remediation, Site Assessment), and date investigation completed.

Government Publication Date: 1992-2001***Emergency Management Historical Event:**Provincial **EMHE**

List of locations of historical occurrences of emergency events, including those assigned to the Ministry of Natural Resources by Order-In-Council (OIC) under the Emergency Management and Civil Protection Act, as well as events where MNR provided requested emergency response assistance. Many of these events will have involved community evacuations, significant structural loss, and/or involvement of MNR emergency response staff. These events fall into one of ten (10) type categories: Dam Failure; Drought / Low Water; Erosion; Flood; Forest Fire; Soil and Bedrock Instability; Petroleum Resource Center Event, EMO Requested Assistance, Continuity of Operations Event, Other Requested Assistance. EMHE record details are reproduced by ERIS under License with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2017.

Government Publication Date: Dec 31, 2016**List of TSSA Expired Facilities:**Provincial **EXP**

List of facilities and tanks - for which there was once a registration - no longer registered with the Fuels Safety Program of the Technical Standards and Safety Authority (TSSA). Includes private fuel outlets, bulk plants, fuel oil tanks, gasoline stations, marinas, propane filling stations, liquid fuel tanks, piping systems, etc. Tanks which have been removed from the ground are included in the expired facilities inventory held by the TSSA. Notes: the Fuels Safety Division did not register private fuel underground/aboveground storage tanks prior to January of 1990, or furnace oil tanks prior to May 1, 2002; nor does the Division register waste oil tanks in apartments, office buildings, residences, etc., or aboveground gas or diesel tanks. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of expired tanks/tank facilities in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017**Federal Convictions:**Federal **FCON**

Environment Canada maintains a database referred to as the "Environmental Registry" that details prosecutions under the Canadian Environmental Protection Act (CEPA) and the Fisheries Act (FA). Information is provided on the company name, location, charge date, offence and penalty.

Government Publication Date: 1988-Jun 2007*

Contaminated Sites on Federal Land:

Federal

FCS

The Federal Contaminated Sites Inventory includes information on known federal contaminated sites under the custodianship of departments, agencies and consolidated Crown corporations as well as those that are being or have been investigated to determine whether they have contamination arising from past use that could pose a risk to human health or the environment. The inventory also includes non-federal contaminated sites for which the Government of Canada has accepted some or all financial responsibility. It does not include sites where contamination has been caused by, and which are under the control of, enterprise Crown corporations, private individuals, firms or other levels of government.

Government Publication Date: Jun 2000-Oct 2018

Fisheries & Oceans Fuel Tanks:

Federal

FOFT

Fisheries & Oceans Canada maintains an inventory of aboveground & underground fuel storage tanks located on Fisheries & Oceans property or controlled by DFO. Our inventory provides information on the site name, location, tank owner, tank operator, facility type, storage tank location, tank contents & capacity, and date of tank installation.

Government Publication Date: 1964-Sep 2018

Fuel Storage Tank:

Provincial

FST

List of registered private and retail fuel storage tanks made available by the Fuels Safety Program of the Technical Standards & Safety Authority (TSSA). Ontario Regulation 213/01 of the Technical Standards and Safety Act (2000) requires that all underground tanks be registered with the TSSA. Notes: the Fuels Safety Division did not register private fuel underground/aboveground storage tanks prior to January of 1990, or furnace oil tanks prior to May 1, 2002; nor does the Division register waste oil tanks in apartments, office buildings, residences, etc., or aboveground gas or diesel tanks. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of fuel storage tanks/tank facilities in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Fuel Storage Tank - Historic:

Provincial

FSTH

The Fuels Safety Branch of the Ontario Ministry of Consumer and Commercial Relations maintained a database of all registered private fuel storage tanks. Public records of private fuel storage tanks are only available since the registration became effective in September 1989. This information is now collected by the Technical Standards and Safety Authority.

Government Publication Date: Pre-Jan 2010*

Ontario Regulation 347 Waste Generators Summary:

Provincial

GEN

Regulation 347 of the Ontario EPA defines a waste generation site as any site, equipment and/or operation involved in the production, collection, handling and/or storage of regulated wastes. A generator of regulated waste is required to register the waste generation site and each waste produced, collected, handled, or stored at the site. This database contains the registration number, company name and address of registered generators including the types of hazardous wastes generated. It includes data on waste generating facilities such as: drycleaners, waste treatment and disposal facilities, machine shops, electric power distribution etc. This information is a summary of all years from 1986 including the most currently available data. Some records may contain, within the company name, the phrase "See & Use..." followed by a series of letters and numbers. This occurs when one company is amalgamated with or taken over by another registered company. The number listed as "See & Use", refers to the new ownership and the other identification number refers to the original ownership. This phrase serves as a link between the 2 companies until operations have been fully transferred.

Government Publication Date: 1986-Dec 31, 2018

Greenhouse Gas Emissions from Large Facilities:

Federal

GHG

List of greenhouse gas emissions from large facilities made available by Environment Canada. Greenhouse gas emissions in kilotonnes of carbon dioxide equivalents (kt CO₂ eq).

Government Publication Date: 2013-Dec 2016

TSSA Historic Incidents:

Provincial

HINC

List of historic incidences of spills and leaks of diesel, fuel oil, gasoline, natural gas, propane, and hydrogen recorded by the TSSA in their previous incident tracking system. The TSSA's Fuels Safety Program administers the Technical Standards & Safety Act 2000, providing fuel-related safety services associated with the safe transportation, storage, handling and use of fuels such as gasoline, diesel, propane, natural gas and hydrogen. Under this Act, the TSSA regulates fuel suppliers, storage facilities, transport trucks, pipelines, contractors and equipment or appliances that use fuels. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of historical fuel spills and leaks in the province. This listing is a copy of the data captured at one moment in time and is hence limited by the record date provided here.

Government Publication Date: 2006-June 2009*

Indian & Northern Affairs Fuel Tanks:

Federal

IAFT

The Department of Indian & Northern Affairs Canada (INAC) maintains an inventory of aboveground & underground fuel storage tanks located on both federal and crown land. Our inventory provides information on the reserve name, location, facility type, site/facility name, tank type, material & ID number, tank contents & capacity, and date of tank installation.

Government Publication Date: 1950-Aug 2003*

TSSA Incidents:

Provincial [INC](#)

List of spills and leaks of diesel, fuel oil, gasoline, natural gas, propane, and hydrogen reported to the Spills Action Centre (SAC) and made available by the Technical Standards and Safety Authority (TSSA). Under the Technical Standards & Safety Act (2000), the TSSA regulates fuel suppliers, storage facilities, transport trucks, pipelines, contractors, and equipment or appliances that use fuels. Includes incidents from fuel-related hazards such as spills, fires, and explosions. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of fuel-related leaks, spills, and incidents in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Landfill Inventory Management Ontario:

Provincial [LIMO](#)

The Landfill Inventory Management Ontario (LIMO) database is updated every year, as the ministry compiles new and updated information. The inventory will include small and large landfills. Additionally, each year the ministry will request operators of the larger landfills complete a landfill data collection form that will be used to update LIMO and will include the following information from the previous operating year. This will include additional information such as estimated amount of total waste received, landfill capacity, estimated total remaining landfill capacity, fill rates, engineering designs, reporting and monitoring details, size of location, service area, approved waste types, leachate of site treatment, contaminant attenuation zone and more. The small landfills will include information such as site owner, site location and certificate of approval # and status.

Government Publication Date: Sep 30, 2017

Canadian Mine Locations:

Private [MINE](#)

This information is collected from the Canadian & American Mines Handbook. The Mines database is a national database that provides over 290 listings on mines (listed as public companies) dealing primarily with precious metals and hard rocks. Listed are mines that are currently in operation, closed, suspended, or are still being developed (advanced projects). Their locations are provided as geographic coordinates (x, y and/or longitude, latitude). As of 2002, data pertaining to Canadian smelters and refineries has been appended to this database.

Government Publication Date: 1998-2009*

Environmental Penalty Annual Report:

Provincial [MISA PENALTY](#)

This database contains data from Ontario's annual environmental penalty report published by the Ministry of the Environment and Climate Change. These reports provide information on environmental penalties for land or water violations issued to companies in one of the nine industrial sectors covered by the Municipal Industrial Strategy for Abatement (MISA) regulations.

Government Publication Date: Jan 1, 2011 - Dec 31, 2017

Mineral Occurrences:

Provincial [MNR](#)

In the early 70's, the Ministry of Northern Development and Mines created an inventory of approximately 19,000 mineral occurrences in Ontario, in regard to metallic and industrial minerals, as well as some information on building stones and aggregate deposits. Please note that the "Horizontal Positional Accuracy" is approximately +/- 200 m. Many reference elements for each record were derived from field sketches using pace or chain/tape measurements against claim posts or topographic features in the area. The primary limiting factor for the level of positional accuracy is the scale of the source material. The testing of horizontal accuracy of the source materials was accomplished by comparing the plan metric (X and Y) coordinates of that point with the coordinates of the same point as defined from a source of higher accuracy.

Government Publication Date: 1846-Jan 2018

National Analysis of Trends in Emergencies System (NATES):

Federal [NATE](#)

In 1974 Environment Canada established the National Analysis of Trends in Emergencies System (NATES) database, for the voluntary reporting of significant spill incidents. The data was to be used to assist in directing the work of the emergencies program. NATES ran from 1974 to 1994. Extensive information is available within this database including company names, place where the spill occurred, date of spill, cause, reason and source of spill, damage incurred, and amount, concentration, and volume of materials released.

Government Publication Date: 1974-1994*

Non-Compliance Reports:

Provincial [NCPL](#)

The Ministry of the Environment provides information about non-compliant discharges of contaminants to air and water that exceed legal allowable limits, from regulated industrial and municipal facilities. A reported non-compliance failure may be in regard to a Control Order, Certificate of Approval, Sectoral Regulation or specific regulation/act.

Government Publication Date: Dec 31, 2016

National Defense & Canadian Forces Fuel Tanks:

Federal [NDFT](#)

The Department of National Defense and the Canadian Forces maintains an inventory of all aboveground & underground fuel storage tanks located on DND lands. Our inventory provides information on the base name, location, tank type & capacity, tank contents, tank class, date of tank installation, date tank last used, and status of tank as of May 2001. This database will no longer be updated due to the new National Security protocols which have prohibited any release of this database.

Government Publication Date: Up to May 2001*

National Defense & Canadian Forces Spills:

Federal

[NDSP](#)

The Department of National Defense and the Canadian Forces maintains an inventory of spills to land and water. All spill sites have been classified under the "Transportation of Dangerous Goods Act - 1992". Our inventory provides information on the facility name, location, spill ID #, spill date, type of spill, as well as the quantity of substance spilled & recovered.

Government Publication Date: Mar 1999-Apr 2018

National Defence & Canadian Forces Waste Disposal Sites:

Federal

[NDWD](#)

The Department of National Defence and the Canadian Forces maintains an inventory of waste disposal sites located on DND lands. Where available, our inventory provides information on the base name, location, type of waste received, area of site, depth of site, year site opened/closed and status.

Government Publication Date: 2001-Apr 2007*

National Energy Board Pipeline Incidents:

Federal

[NEBI](#)

Locations of pipeline incidents from 2008 to present, made available by the National Energy Board (NEB). Includes incidents reported under the Onshore Pipeline Regulations and the Processing Plant Regulations related to pipelines under federal jurisdiction, does not include incident data related to pipelines under provincial or territorial jurisdiction.

Government Publication Date: 2008-Sep 30, 2018

National Energy Board Wells:

Federal

[NEBW](#)

The NEBW database contains information on onshore & offshore oil and gas wells that are outside provincial jurisdiction(s) and are thereby regulated by the National Energy Board. Data is provided regarding the operator, well name, well ID No./UWI, status, classification, well depth, spud and release date.

Government Publication Date: 1920-Feb 2003*

National Environmental Emergencies System (NEES):

Federal

[NEES](#)

In 2000, the Emergencies program implemented NEES, a reporting system for spills of hazardous substances. For the most part, this system only captured data from the Atlantic Provinces, some from Quebec and Ontario and a portion from British Columbia. Data for Alberta, Saskatchewan, Manitoba and the Territories was not captured. However, NEES is also a repository for previous Environment Canada spill datasets. NEES is composed of the historic datasets ' or Trends ' which dates from approximately 1974 to present. NEES Trends is a compilation of historic databases, which were merged and includes data from NATES (National Analysis of Trends in Emergencies System), ARTS (Atlantic Regional Trends System), and NEES. In 2001, the Emergencies Program determined that variations in reporting regimes and requirements between federal and provincial agencies made national spill reporting and trend analysis difficult to achieve. As a consequence, the department has focused efforts on capturing data on spills of substances which fall under its legislative authority only (CEPA and FA). As such, the NEES database will be decommissioned in December 2004.

Government Publication Date: 1974-2003*

National PCB Inventory:

Federal

[NPCB](#)

Environment Canada's National PCB inventory includes information on in-use PCB containing equipment in Canada including federal, provincial and private facilities. Federal out-of-service PCB containing equipment and PCB waste owned by the federal government or by federally regulated industries such as airlines, railway companies, broadcasting companies, telephone and telecommunications companies, pipeline companies, etc. are also listed. Although it is not Environment Canada's mandate to collect data on non-federal PCB waste, the National PCB inventory includes some information on provincial and private PCB waste and storage sites. Some addresses provided may be Head Office addresses and are not necessarily the location of where the waste is being used or stored.

Government Publication Date: 1988-2008*

National Pollutant Release Inventory:

Federal

[NPRI](#)

Environment Canada has defined the National Pollutant Release Inventory ("NPRI") as a federal government initiative designed to collect comprehensive national data regarding releases to air, water, or land, and waste transfers for recycling for more than 300 listed substances.

Government Publication Date: 1993-May 2017

Oil and Gas Wells:

Private

[OGW](#)

The Nickle's Energy Group (publisher of the Daily Oil Bulletin) collects information on drilling activity including operator and well statistics. The well information database includes name, location, class, status and depth. The main Nickle's database is updated on a daily basis, however, this database is updated on a monthly basis. More information is available at www.nickles.com.

Government Publication Date: 1988-Feb 28, 2019

Ontario Oil and Gas Wells:

Provincial

[OOGW](#)

In 1998, the MNR handed over to the Ontario Oil, Gas and Salt Resources Corporation, the responsibility of maintaining a database of oil and gas wells drilled in Ontario. The OGSR Library has over 20,000+ wells in their database. Information available for all wells in the ERIS database include well owner/operator, location, permit issue date, and well cap date, license No., status, depth and the primary target (rock unit) of the well being drilled. All geology/stratigraphy table information, plus all water table information is also provide for each well record.

Government Publication Date: 1800-May 2018

Inventory of PCB Storage Sites:

Provincial [OPCB](#)

The Ontario Ministry of Environment, Waste Management Branch, maintains an inventory of PCB storage sites within the province. Ontario Regulation 11/82 (Waste Management - PCB) and Regulation 347 (Generator Waste Management) under the Ontario EPA requires the registration of inactive PCB storage equipment and/or disposal sites of PCB waste with the Ontario Ministry of Environment. This database contains information on: 1) waste quantities; 2) major and minor sites storing liquid or solid waste; and 3) a waste storage inventory.

Government Publication Date: 1987-Oct 2004; 2012-Dec 2013

Orders:

Provincial [ORD](#)

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include all Orders on the registry such as (EPA s. 17) - Order for remedial work, (EPA s. 18) - Order for preventative measures, (EPA s. 43) - Order for removal of waste and restoration of site, (EPA s. 44) - Order for conformity with Act for waste disposal sites, (EPA s. 136) - Order for performance of environmental measures.

Government Publication Date: 1994-Feb 28, 2019

Canadian Pulp and Paper:

Private [PAP](#)

This information is part of the Pulp and Paper Canada Directory. The Directory provides a comprehensive listing of the locations of pulp and paper mills and the products that they produce.

Government Publication Date: 1999, 2002, 2004, 2005, 2009-2014

Parks Canada Fuel Storage Tanks:

Federal [PCFT](#)

Canadian Heritage maintains an inventory of known fuel storage tanks operated by Parks Canada, in both National Parks and at National Historic Sites. The database details information on site name, location, tank install/removal date, capacity, fuel type, facility type, tank design and owner/operator.

Government Publication Date: 1920-Jan 2005*

Pesticide Register:

Provincial [PES](#)

The Ontario Ministry of the Environment and Climate Change maintains a database of licensed operators and vendors of registered pesticides.

Government Publication Date: 1988-Sep 2018

TSSA Pipeline Incidents:

Provincial [PINC](#)

List of pipeline incidents (strikes, leaks, spills) made available by the Technical Standards and Safety Authority (TSSA). Under the Technical Standards & Safety Act (2000), the TSSA regulates fuel suppliers, storage facilities, transport trucks, pipelines, contractors, and equipment or appliances that use fuels. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of pipeline incidents in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Private and Retail Fuel Storage Tanks:

Provincial [PRT](#)

The Fuels Safety Branch of the Ontario Ministry of Consumer and Commercial Relations maintained a database of all registered private fuel storage tanks and licensed retail fuel outlets. This database includes an inventory of locations that have gasoline, oil, waste oil, natural gas and/or propane storage tanks on their property. The MCCR no longer collects this information. This information is now collected by the Technical Standards and Safety Authority (TSSA).

Government Publication Date: 1989-1996*

Permit to Take Water:

Provincial [PTTW](#)

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include all PTTW's on the registry such as OWRA s. 34 - Permit to take water.

Government Publication Date: 1994-Feb 28, 2019

Ontario Regulation 347 Waste Receivers Summary:

Provincial [REC](#)

Part V of the Ontario Environmental Protection Act ("EPA") regulates the disposal of regulated waste through an operating waste management system or a waste disposal site operated or used pursuant to the terms and conditions of a Certificate of Approval or a Provisional Certificate of Approval. Regulation 347 of the Ontario EPA defines a waste receiving site as any site or facility to which waste is transferred by a waste carrier. A receiver of regulated waste is required to register the waste receiving facility. This database represents registered receivers of regulated wastes, identified by registration number, company name and address, and includes receivers of waste such as: landfills, incinerators, transfer stations, PCB storage sites, sludge farms and water pollution control plants. This information is a summary of all years from 1986 including the most currently available data.

Government Publication Date: 1986-2016

Record of Site Condition:

Provincial **RSC**

The Record of Site Condition (RSC) is part of the Ministry of the Environment's Brownfields Environmental Site Registry. Protection from environmental cleanup orders for property owners is contingent upon documentation known as a record of site condition (RSC) being filed in the Environmental Site Registry. In order to file an RSC, the property must have been properly assessed and shown to meet the soil, sediment and groundwater standards appropriate for the use (such as residential) proposed to take place on the property. The Record of Site Condition Regulation (O. Reg. 153/04) details requirements related to site assessment and clean up.

RSCs filed after July 1, 2011 will also be included as part of the new (O.Reg. 511/09).

Government Publication Date: 1997-Sept 2001, Oct 2004-Jan 2019

Retail Fuel Storage Tanks:

Private **RST**

This database includes an inventory of retail fuel outlet locations (including marinas) that have on their property gasoline, oil, waste oil, natural gas and / or propane storage tanks.

Government Publication Date: 1999-Jan 31, 2019

Scott's Manufacturing Directory:

Private **SCT**

Scott's Directories is a data bank containing information on over 200,000 manufacturers across Canada. Even though Scott's listings are voluntary, it is the most comprehensive database of Canadian manufacturers available. Information concerning a company's address, plant size, and main products are included in this database.

Government Publication Date: 1992-Mar 2011*

Ontario Spills:

Provincial **SPL**

This database identifies information such as location (approximate), type and quantity of contaminant, date of spill, environmental impact, cause, nature of impact, etc. Information from 1988-2002 was part of the ORIS (Occurrence Reporting Information System). The SAC (Spills Action Centre) handles all spills reported in Ontario. Regulations for spills in Ontario are part of the MOE's Environmental Protection Act, Part X.

Government Publication Date: 1988-Dec 2018

Wastewater Discharger Registration Database:

Provincial **SRDS**

Information under this heading is combination of the following 2 programs. The Municipal/Industrial Strategy for Abatement (MISA) division of the Ontario Ministry of Environment maintained a database of all direct dischargers of toxic pollutants within nine sectors including: Electric Power Generation; Mining; Petroleum Refining; Organic Chemicals; Inorganic Chemicals; Pulp & Paper; Metal Casting; Iron & Steel; and Quarries. All sampling information is now collected and stored within the Sample Result Data Store (SRDS).

Government Publication Date: 1990-Dec 31, 2016

Anderson's Storage Tanks:

Private **TANK**

The information provided in this database was collected by examining various historical documents, which identified the location of former storage tanks, containing substances such as fuel, water, gas, oil, and other various types of miscellaneous products. Information is available in regard to business operating at tank site, tank location, permit year, permit & installation type, no. of tanks installed & configuration and tank capacity. Data contained within this database pertains only to the city of Toronto and is not warranted to be complete, exhaustive or authoritative. The information was collected for research purposes only.

Government Publication Date: 1915-1953*

Transport Canada Fuel Storage Tanks:

Federal **TCFT**

List of fuel storage tanks currently or previously owned or operated by Transport Canada. This inventory also includes tanks on The Pickering Lands, which refers to 7,530 hectares (18,600 acres) of land in Pickering, Markham, and Uxbridge owned by the Government of Canada since 1972; properties on this land has been leased by the government since 1975, and falls under the Site Management Policy of Transport Canada, but is administered by Public Works and Government Services Canada. This inventory provides information on the site name, location, tank age, capacity and fuel type.

Government Publication Date: 1970-Aug 2018

TSSA Variances for Abandonment of Underground Storage Tanks:

Provincial **VAR**

List of variances granted for abandoned tanks. Under the Technical Standards and Safety Authority (TSSA) Liquid Fuels Handling Code and Fuel Oil Code, all underground storage tanks must be removed within two years of disuse. If removal of a tank is not feasible, an application may be sought for a variance from this code requirement.

Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of tank variances in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Waste Disposal Sites - MOE CA Inventory:

Provincial

[WDS](#)

The Ontario Ministry of Environment, Waste Management Branch, maintains an inventory of known open (active or inactive) and closed disposal sites in the Province of Ontario. Active sites maintain a Certificate of Approval, are approved to receive and are receiving waste. Inactive sites maintain Certificate(s) of Approval but are not receiving waste. Closed sites are not receiving waste. The data contained within this database was compiled from the MOE's Certificate of Approval database. Locations of these sites may be cross-referenced to the Anderson database described under ERIS's Private Source Database section, by the CA number. All new Environmental Compliance Approvals handed out after Oct 31, 2011 for Waste Disposal Sites will still be found in this database.

Government Publication Date: Oct 2011-Feb 28, 2019

Waste Disposal Sites - MOE 1991 Historical Approval Inventory:

Provincial

[WDSH](#)

In June 1991, the Ontario Ministry of Environment, Waste Management Branch, published the "June 1991 Waste Disposal Site Inventory", of all known active and closed waste disposal sites as of October 30st, 1990. For each "active" site as of October 31st 1990, information is provided on site location, site/CA number, waste type, site status and site classification. For each "closed" site as of October 31st 1990, information is provided on site location, site/CA number, closure date and site classification. Locations of these sites may be cross-referenced to the Anderson database described under ERIS's Private Source Database section, by the CA number.

Government Publication Date: Up to Oct 1990*

Water Well Information System:

Provincial

[WWIS](#)

This database describes locations and characteristics of water wells found within Ontario in accordance with Regulation 903. It includes such information as coordinates, construction date, well depth, primary and secondary use, pump rate, static water level, well status, etc. Also included are detailed stratigraphy information, approximate depth to bedrock and the approximate depth to the water table.

Government Publication Date: Dec 31, 2017

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



DATABASE **REPORT**

Project Property:	<i>Contact2 n/a Bradford West Gwillimbury ON 165001095</i>
Project No:	
Report Type:	<i>Quote - Custom-Build Your Own Report</i>
Order No:	<i>20190405040</i>
Requested by:	<i>Stantec Consulting Ltd.</i>
Date Completed:	<i>April 11, 2019</i>

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Executive Summary

Property Information:

Project Property: *Contact2
n/a Bradford West Gwillimbury ON*

Project No: *165001095*

Order Information:

Order No: *20190405040*

Date Requested: *April 5, 2019*

Requested by: *Stantec Consulting Ltd.*

Report Type: *Quote - Custom-Build Your Own Report*

Historical/Products:

Executive Summary: Report Summary

Database	Name	Searched	Project Property
AAGR	<i>Abandoned Aggregate Inventory</i>	Y	0
AGR	<i>Aggregate Inventory</i>	Y	0
AMIS	<i>Abandoned Mine Information System</i>	Y	0
ANDR	<i>Anderson's Waste Disposal Sites</i>	Y	0
AUWR	<i>Automobile Wrecking & Supplies</i>	Y	0
BORE	<i>Borehole</i>	Y	5
CA	<i>Certificates of Approval</i>	Y	0
CFOT	<i>Commercial Fuel Oil Tanks</i>	Y	0
CHEM	<i>Chemical Register</i>	Y	0
CNG	<i>Compressed Natural Gas Stations</i>	Y	0
COAL	<i>Inventory of Coal Gasification Plants and Coal Tar Sites</i>	Y	0
CONV	<i>Compliance and Convictions</i>	Y	0
CPU	<i>Certificates of Property Use</i>	Y	0
DRL	<i>Drill Hole Database</i>	Y	0
DRYCLEANERS	<i>Dry Cleaning Facilities</i>	Y	0
EASR	<i>Environmental Activity and Sector Registry</i>	Y	0
EBR	<i>Environmental Registry</i>	Y	0
ECA	<i>Environmental Compliance Approval</i>	Y	0
EEM	<i>Environmental Effects Monitoring</i>	Y	0
EHS	<i>ERIS Historical Searches</i>	Y	0
EIIS	<i>Environmental Issues Inventory System</i>	Y	0
EMHE	<i>Emergency Management Historical Event</i>	Y	0
EXP	<i>List of TSSA Expired Facilities</i>	Y	0
FCON	<i>Federal Convictions</i>	Y	0
FCS	<i>Contaminated Sites on Federal Land</i>	Y	0
FOFT	<i>Fisheries & Oceans Fuel Tanks</i>	Y	0
FST	<i>Fuel Storage Tank</i>	Y	0
FSTH	<i>Fuel Storage Tank - Historic</i>	Y	0
GEN	<i>Ontario Regulation 347 Waste Generators Summary</i>	Y	0
GHG	<i>Greenhouse Gas Emissions from Large Facilities</i>	Y	0
HINC	<i>TSSA Historic Incidents</i>	Y	0
IAFT	<i>Indian & Northern Affairs Fuel Tanks</i>	Y	0
INC	<i>TSSA Incidents</i>	Y	0
LIMO	<i>Landfill Inventory Management Ontario</i>	Y	0
MINE	<i>Canadian Mine Locations</i>	Y	0
MISA PENALTY	<i>Environmental Penalty Annual Report</i>	Y	0

Database	Name	Searched	Project Property
MNR	<i>Mineral Occurrences</i>	Y	0
NATE	<i>National Analysis of Trends in Emergencies System (NATES)</i>	Y	0
NCPL	<i>Non-Compliance Reports</i>	Y	0
NDFT	<i>National Defense & Canadian Forces Fuel Tanks</i>	Y	0
NDSP	<i>National Defense & Canadian Forces Spills</i>	Y	0
NDWD	<i>National Defence & Canadian Forces Waste Disposal Sites</i>	Y	0
NEBI	<i>National Energy Board Pipeline Incidents</i>	Y	0
NEBW	<i>National Energy Board Wells</i>	Y	0
NEES	<i>National Environmental Emergencies System (NEES)</i>	Y	0
NPCB	<i>National PCB Inventory</i>	Y	0
NPRI	<i>National Pollutant Release Inventory</i>	Y	0
OGW	<i>Oil and Gas Wells</i>	Y	0
OOGW	<i>Ontario Oil and Gas Wells</i>	Y	0
OPCB	<i>Inventory of PCB Storage Sites</i>	Y	0
ORD	<i>Orders</i>	Y	0
PAP	<i>Canadian Pulp and Paper</i>	Y	0
PCFT	<i>Parks Canada Fuel Storage Tanks</i>	Y	0
PES	<i>Pesticide Register</i>	Y	0
PINC	<i>TSSA Pipeline Incidents</i>	Y	0
PRT	<i>Private and Retail Fuel Storage Tanks</i>	Y	0
PTTW	<i>Permit to Take Water</i>	Y	0
REC	<i>Ontario Regulation 347 Waste Receivers Summary</i>	Y	0
RSC	<i>Record of Site Condition</i>	Y	0
RST	<i>Retail Fuel Storage Tanks</i>	Y	0
SCT	<i>Scott's Manufacturing Directory</i>	Y	0
SPL	<i>Ontario Spills</i>	Y	0
SRDS	<i>Wastewater Discharger Registration Database</i>	Y	0
TANK	<i>Anderson's Storage Tanks</i>	Y	0
TCFT	<i>Transport Canada Fuel Storage Tanks</i>	Y	0
VAR	<i>TSSA Variances for Abandonment of Underground Storage Tanks</i>	Y	0
WDS	<i>Waste Disposal Sites - MOE CA Inventory</i>	Y	0
WDSH	<i>Waste Disposal Sites - MOE 1991 Historical Approval Inventory</i>	Y	0
WWIS	<i>Water Well Information System</i>	N	-
Total:			5

Executive Summary: Site Report Summary - Project Property

<i>Map Key</i>	<i>DB</i>	<i>Company/Site Name</i>	<i>Address</i>	<i>Page Number</i>
<u>1</u>	BORE		ON	<u>11</u>
<u>2</u>	BORE		ON	<u>11</u>
<u>3</u>	BORE		ON	<u>12</u>
<u>4</u>	BORE		ON	<u>12</u>
<u>5</u>	BORE		ON	<u>13</u>

Executive Summary: Summary By Data Source

BORE - Borehole

A search of the BORE database, dated 1875-Jul 2014 has found that there are 5 BORE site(s) within approximately 0.00 kilometers of the project property.

<u>Site</u>	<u>Address</u>	<u>Distance (m)</u>	<u>Map Key</u>
	ON	0.0	<u>1</u>
	ON	0.0	<u>2</u>
	ON	0.0	<u>3</u>
	ON	0.0	<u>4</u>
	ON	0.0	<u>5</u>

79°39'W

79°38'30"W

79°38'W

44°10'30"N

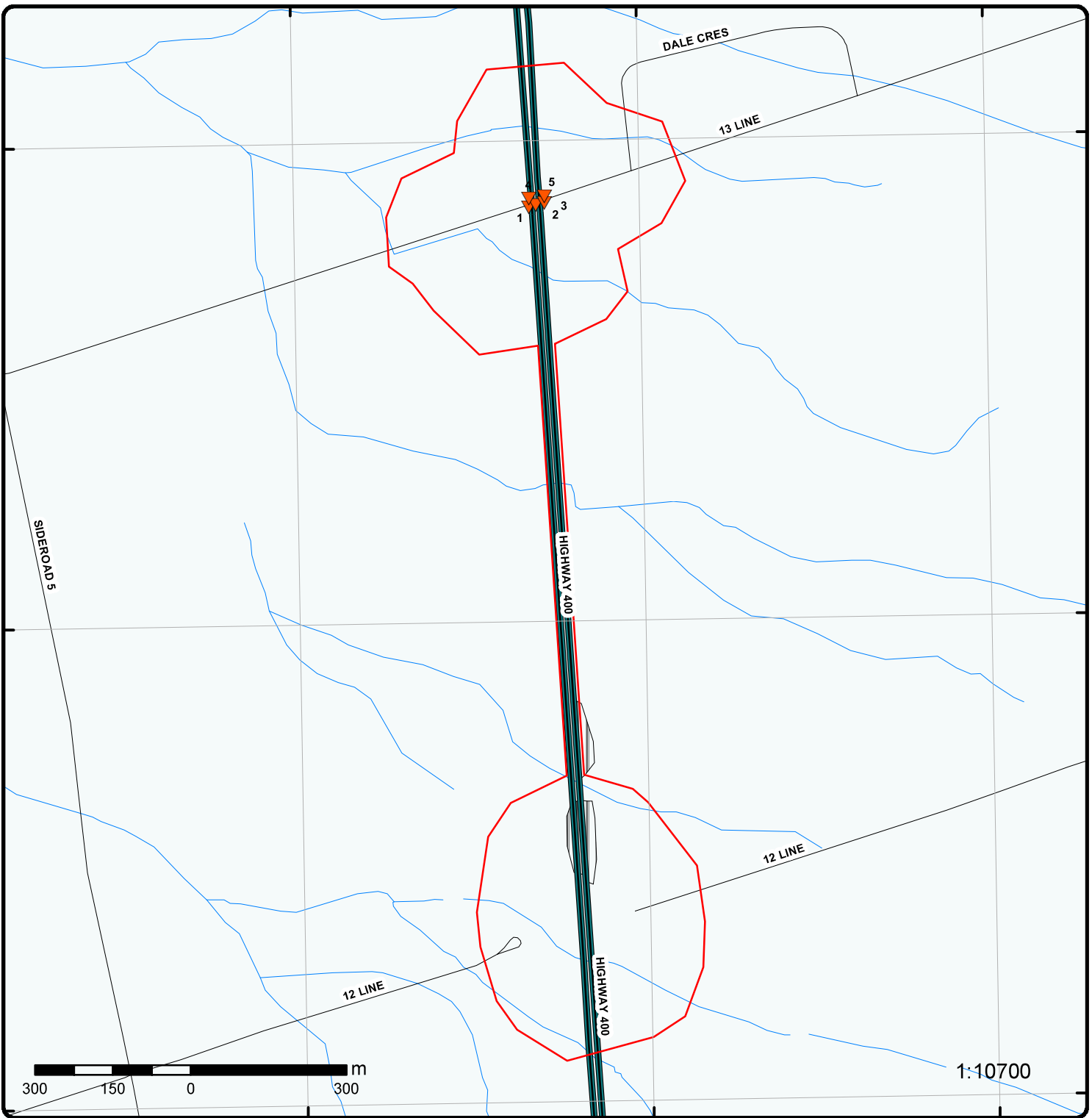
44°10'30"N

44°10'N

44°10'N

44°9'30"N

44°9'30"N

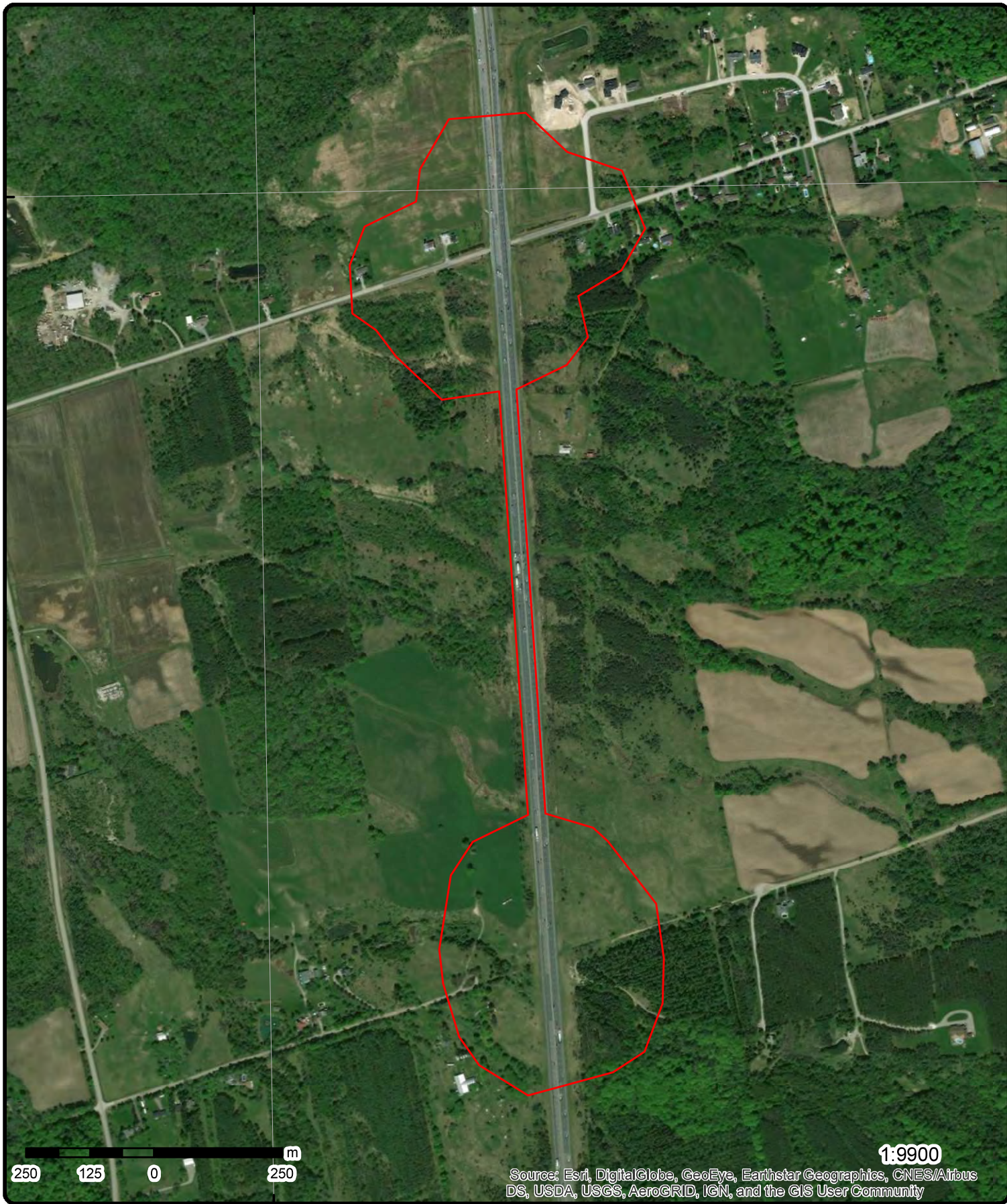


Map : 0 Kilometer Radius

Order No: 20190405040
 Address: n/a, Bradford West Gwillimbury, ON



Project Property	Expressway	Industrial and Resource - Regions	National Park
Buffer Outline	Principal Highway	Main Line	Provincial or Territorial Park
Eris Sites with Higher Elevation	Secondary Highway	Sidetrack	Other Park
Eris Sites with Same Elevation	Major Road	Transit Line	Golf Course or Driving Range
Eris Sites with Lower Elevation	Local road	Abandoned Line	Park or Sports Field
Eris Sites with Unknown Elevation	Trail	Ferry Route/Ice Road	Other Recreation Area
	Proposed Road		



Aerial (2014)

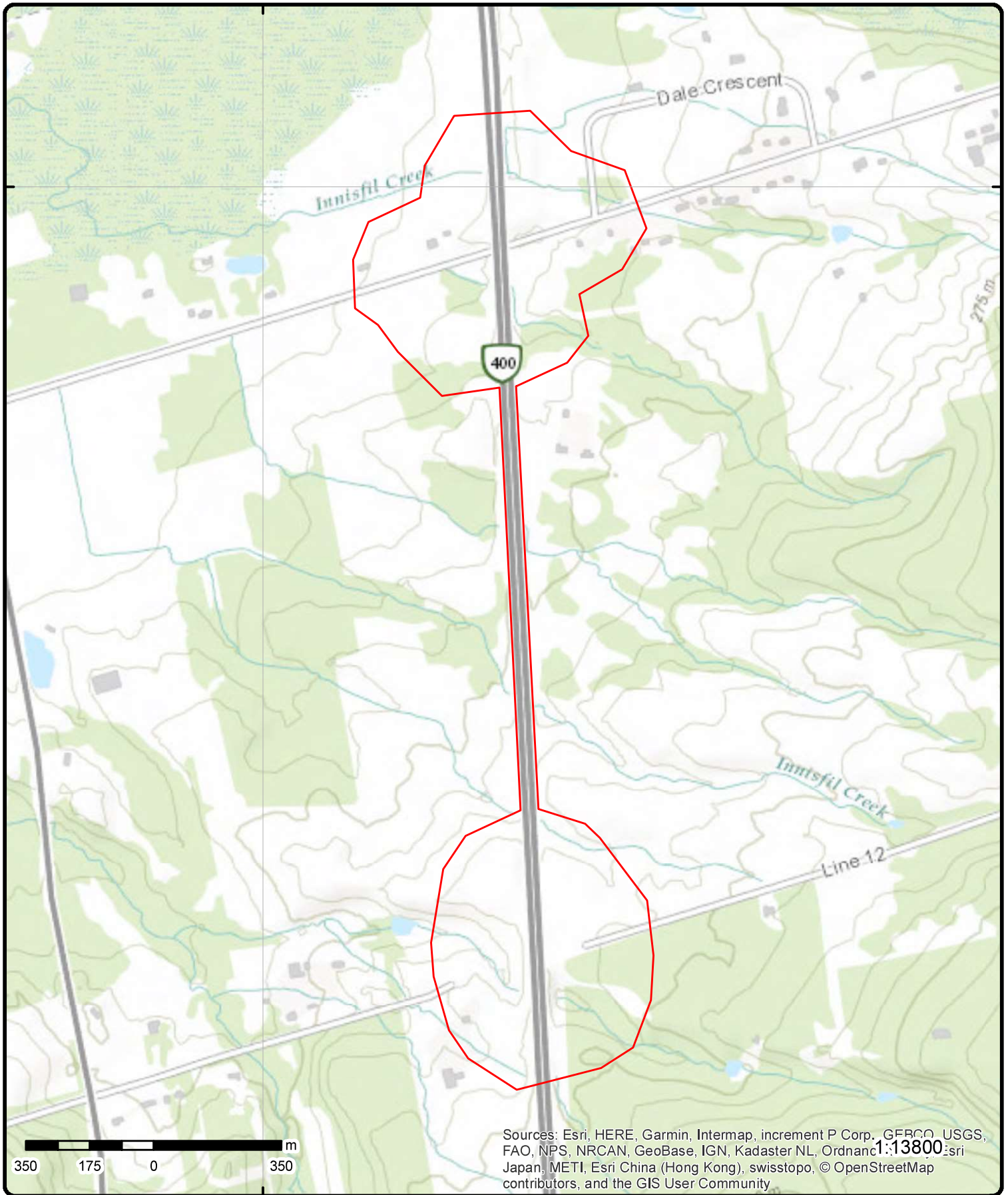
Address: n/a, Bradford West Gwillimbury, ON

Source: ESRI World Imagery

Order No: 20190405040



© ERIS Information Limited Partnership



Topographic Map

Address: n/a, Bradford West Gwillimbury, ON

Source: ESRI World Topographic Map

Order No: 20190405040



© ERIS Information Limited Partnership

Detail Report

Map Key	Number of Records	Elevation (m)	Site	DB																																												
<u>1</u>	1 of 1	234.9	ON	BORE																																												
<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">Borehole ID:</td> <td style="width: 25%;">870141</td> <td style="width: 25%;">Type:</td> <td style="width: 25%;">Borehole</td> </tr> <tr> <td>Use:</td> <td>Geotechnical/Geological Investigation</td> <td>Status:</td> <td>Decommissioned</td> </tr> <tr> <td>Drill Method:</td> <td>Diamond Drill</td> <td>UTM Zone:</td> <td>17</td> </tr> <tr> <td>Easting:</td> <td>608371</td> <td>Northing:</td> <td>4892076</td> </tr> <tr> <td>Location Accuracy:</td> <td></td> <td>Orig. Ground Elev m:</td> <td>237</td> </tr> <tr> <td>Elev. Reliability Note:</td> <td></td> <td>DEM Ground Elev m:</td> <td>235</td> </tr> <tr> <td>Total Depth m:</td> <td>7.6</td> <td>Primary Name:</td> <td></td> </tr> <tr> <td>Township:</td> <td>WEST GWILLIMBURY</td> <td>Concession:</td> <td></td> </tr> <tr> <td>Lot:</td> <td></td> <td>Municipality:</td> <td></td> </tr> <tr> <td>Completion Date:</td> <td>20-APR-1960</td> <td>Static Water Level:</td> <td>1.5</td> </tr> <tr> <td>Primary Water Use:</td> <td></td> <td>Sec. Water Use:</td> <td></td> </tr> </table>					Borehole ID:	870141	Type:	Borehole	Use:	Geotechnical/Geological Investigation	Status:	Decommissioned	Drill Method:	Diamond Drill	UTM Zone:	17	Easting:	608371	Northing:	4892076	Location Accuracy:		Orig. Ground Elev m:	237	Elev. Reliability Note:		DEM Ground Elev m:	235	Total Depth m:	7.6	Primary Name:		Township:	WEST GWILLIMBURY	Concession:		Lot:		Municipality:		Completion Date:	20-APR-1960	Static Water Level:	1.5	Primary Water Use:		Sec. Water Use:	
Borehole ID:	870141	Type:	Borehole																																													
Use:	Geotechnical/Geological Investigation	Status:	Decommissioned																																													
Drill Method:	Diamond Drill	UTM Zone:	17																																													
Easting:	608371	Northing:	4892076																																													
Location Accuracy:		Orig. Ground Elev m:	237																																													
Elev. Reliability Note:		DEM Ground Elev m:	235																																													
Total Depth m:	7.6	Primary Name:																																														
Township:	WEST GWILLIMBURY	Concession:																																														
Lot:		Municipality:																																														
Completion Date:	20-APR-1960	Static Water Level:	1.5																																													
Primary Water Use:		Sec. Water Use:																																														
--Details--																																																
Stratum ID:	7026565	Top Depth(m):	0.0																																													
Bottom Depth(m):	3.0	Stratum Desc:	Firm brown sand and gravel. Fill. Firm light brown clayey silty sand with fine to medium subangular gravel. Damp High dry strength																																													
Stratum ID:	7026566	Top Depth(m):	3.0																																													
Bottom Depth(m):	6.1	Stratum Desc:	Loose to firm grey clayey silty sand with fine to medium subangular gravel. Damp																																													
Stratum ID:	7026567	Top Depth(m):	6.1																																													
Bottom Depth(m):	7.6	Stratum Desc:	Firm. Dense grey clayey silty sand with fine to medium subangular gravel. Includes sand pockets. Damp																																													

<u>2</u>	1 of 1	234.9	ON	BORE																																												
<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">Borehole ID:</td> <td style="width: 25%;">870142</td> <td style="width: 25%;">Type:</td> <td style="width: 25%;">Borehole</td> </tr> <tr> <td>Use:</td> <td>Geotechnical/Geological Investigation</td> <td>Status:</td> <td>Decommissioned</td> </tr> <tr> <td>Drill Method:</td> <td>Diamond Drill</td> <td>UTM Zone:</td> <td>17</td> </tr> <tr> <td>Easting:</td> <td>608384</td> <td>Northing:</td> <td>4892080</td> </tr> <tr> <td>Location Accuracy:</td> <td></td> <td>Orig. Ground Elev m:</td> <td>237</td> </tr> <tr> <td>Elev. Reliability Note:</td> <td></td> <td>DEM Ground Elev m:</td> <td>236</td> </tr> <tr> <td>Total Depth m:</td> <td>8.9</td> <td>Primary Name:</td> <td></td> </tr> <tr> <td>Township:</td> <td>WEST GWILLIMBURY</td> <td>Concession:</td> <td></td> </tr> <tr> <td>Lot:</td> <td></td> <td>Municipality:</td> <td></td> </tr> <tr> <td>Completion Date:</td> <td>20-APR-1960</td> <td>Static Water Level:</td> <td>1.4</td> </tr> <tr> <td>Primary Water Use:</td> <td></td> <td>Sec. Water Use:</td> <td></td> </tr> </table>					Borehole ID:	870142	Type:	Borehole	Use:	Geotechnical/Geological Investigation	Status:	Decommissioned	Drill Method:	Diamond Drill	UTM Zone:	17	Easting:	608384	Northing:	4892080	Location Accuracy:		Orig. Ground Elev m:	237	Elev. Reliability Note:		DEM Ground Elev m:	236	Total Depth m:	8.9	Primary Name:		Township:	WEST GWILLIMBURY	Concession:		Lot:		Municipality:		Completion Date:	20-APR-1960	Static Water Level:	1.4	Primary Water Use:		Sec. Water Use:	
Borehole ID:	870142	Type:	Borehole																																													
Use:	Geotechnical/Geological Investigation	Status:	Decommissioned																																													
Drill Method:	Diamond Drill	UTM Zone:	17																																													
Easting:	608384	Northing:	4892080																																													
Location Accuracy:		Orig. Ground Elev m:	237																																													
Elev. Reliability Note:		DEM Ground Elev m:	236																																													
Total Depth m:	8.9	Primary Name:																																														
Township:	WEST GWILLIMBURY	Concession:																																														
Lot:		Municipality:																																														
Completion Date:	20-APR-1960	Static Water Level:	1.4																																													
Primary Water Use:		Sec. Water Use:																																														
--Details--																																																
Stratum ID:	7026568	Top Depth(m):	0.0																																													
Bottom Depth(m):	1.4	Stratum Desc:	Firm brown sand with some gravel, iron stained. Fill																																													
Stratum ID:	7026569	Top Depth(m):	1.4																																													
Bottom Depth(m):	2.8	Stratum Desc:	Firm light brown clayey silty sand with gravel. Firm light brown clayey silty sand with fine to																																													

Map Key	Number of Records	Elevation (m)	Site	DB
				medium subangular gravel. Damp - moist
Stratum ID:	7026570		Top Depth(m):	2.8
Bottom Depth(m):	8.9		Stratum Desc:	Dense, dense grey clayey silty sand with fine to medium subangular gravel. Moist
3	1 of 1	234.9	ON	BORE
Borehole ID:	870143		Type:	Borehole
Use:	Geotechnical/Geological Investigation		Status:	Decommissioned
Drill Method:	Diamond Drill		UTM Zone:	17
Easting:	608400		Northing:	4892084
Location Accuracy:			Orig. Ground Elev m:	237
Elev. Reliability Note:			DEM Ground Elev m:	235
Total Depth m:	11		Primary Name:	
Township:	WEST GWILLIMBURY		Concession:	
Lot:			Municipality:	
Completion Date:	20-APR-1960		Static Water Level:	-999.9
Primary Water Use:			Sec. Water Use:	
--Details--				
Stratum ID:	7026571		Top Depth(m):	0.0
Bottom Depth(m):	0.6		Stratum Desc:	Brown sand with occasional gravel. Fill. Firm brown sand with clay and dark organic concentrations. Fill.
Stratum ID:	7026572		Top Depth(m):	0.6
Bottom Depth(m):	4.5		Stratum Desc:	firm light brown somewhat clayey silty sand with fine to medium subangular gravel. Includes sand pockets, and moist.
Stratum ID:	7026573		Top Depth(m):	4.5
Bottom Depth(m):	11.0		Stratum Desc:	firm grey clayey silty sand with fine to medium subangular gravel. Damp high dry strength
4	1 of 1	234.9	ON	BORE
Borehole ID:	870140		Type:	Borehole
Use:	Geotechnical/Geological Investigation		Status:	Decommissioned
Drill Method:	Diamond Drill		UTM Zone:	17
Easting:	608371		Northing:	4892092
Location Accuracy:			Orig. Ground Elev m:	237
Elev. Reliability Note:			DEM Ground Elev m:	236
Total Depth m:	9.1		Primary Name:	
Township:	WEST GWILLIMBURY		Concession:	
Lot:			Municipality:	
Completion Date:	20-APR-1960		Static Water Level:	-999.9
Primary Water Use:			Sec. Water Use:	
--Details--				
Stratum ID:	7026563		Top Depth(m):	0.0
Bottom Depth(m):	5.5		Stratum Desc:	Firm brown sand, gravel and clay. Fill. Firm light brown clayey silty sand with fine to medium subangular gravel. Damp to moist. High
Stratum ID:	7026564		Top Depth(m):	5.5
Bottom Depth(m):	9.1		Stratum Desc:	Dense grey clayey silty sand with fine to medium subangular gravel. Includes sand

Map Key	Number of Records	Elevation (m)	Site	DB
				pockets. Damp High dry strength

<u>5</u>	1 of 1	234.9	ON	BORE
Borehole ID:	870144			Type: Borehole
Use:	Geotechnical/Geological Investigation			Status: Decommissioned
Drill Method:	Diamond Drill			UTM Zone: 17
Easting:	608400			Northing: 4892098
Location Accuracy:				Orig. Ground Elev m: 237
Elev. Reliability Note:				DEM Ground Elev m: 235
Total Depth m:	9.8			Primary Name:
Township:	WEST GWILLIMBURY			Concession:
Lot:				Municipality:
Completion Date:	20-APR-1960			Static Water Level: .9
Primary Water Use:				Sec. Water Use:
--Details--				
Stratum ID:	7026574			Top Depth(m): 0.0
Bottom Depth(m):	4.2			Stratum Desc: Brown sand and gravel. Fill firm brown sand, gravel and clay. Fill. Firm light brown clayey silty sand with fine to medium subangular gravel. Damp to moist
Stratum ID:	7026575			Top Depth(m): 4.2
Bottom Depth(m):	9.8			Stratum Desc: firm grey clayey silty sand with fine to medium subangular gravel. Dense. Moist.

Unplottable Summary

Total: 4 Unplottable sites

DB	Company Name/Site Name	Address	City	Postal
CA	CANADIAN IMPERIAL BANK OF COMMERCE	ANGLE STREET LYNNDALE SUBD.	SIMCOE TOWN ON	
CA	CANADIAN IMPERIAL BANK OF COMMERCE	ANGLE STREET LYNNDALE SUBD.	SIMCOE TOWN ON	
PES	ROBERT EVANS, JR O/A EVANS CONTRACTING LIMITED	RR 2, 12TH LINE, LOT 1848	BRADFORD, W GWILLIMBURY ON	L3Z2A5
SPL	The Corporation of the County of Simcoe	2980 Line 12 Lot 12 Concession 12	Bradford West Gwillimbury ON	L3Z 2M4

Unplottable Report

Site: CANADIAN IMPERIAL BANK OF COMMERCE
ANGLE STREET LYNNDALE SUBD. SIMCOE TOWN ON

Database:
CA

Certificate #: 3-1520-86-
Application Year: 86
Issue Date: 10/10/1986
Approval Type: Municipal sewage
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: CANADIAN IMPERIAL BANK OF COMMERCE
ANGLE STREET LYNNDALE SUBD. SIMCOE TOWN ON

Database:
CA

Certificate #: 7-1201-86-
Application Year: 86
Issue Date: 10/10/1986
Approval Type: Municipal water
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: ROBERT EVANS, JR O/A EVANS CONTRACTING LIMITED
RR 2, 12TH LINE, LOT 1848 BRADFORD, W GWILLIMBURY ON L3Z2A5

Database:
PES

Billing No:	053526	Op Municipality:	
Trade Name:		Operator Region:	2
Licence No:	05609	Operator District:	
Detail Licence No:	02-01-05609-0	Operator County:	57
Licence Type Code:	02	Oper Area Code:	905
Licence Type:	Operator	Oper Phone No:	7754410
Licence Class:	01	Operator Ext:	
Licence Control:	0	Region:	2
Operator No:		County:	57
Operator Class:		District:	
Operator Type:		Lot:	
Operator Lot:		Concession:	
Oper Concession:		Post Office Box:	
Operator Box:		Report Source:	Legacy Licenses (Excluding TS)

Site: The Corporation of the County of Simcoe
2980 Line 12 Lot 12 Concession 12 Bradford West Gwillimbury ON L3Z 2M4

Database:
SPL

Ref No: 4127-A7JSBZ
Site No: 6716-4GKQSZ
Incident Dt: 2016/02/27
Year:
Incident Cause:
Incident Event: Leak/Break
Contaminant Code: 27
Contaminant Name: SEALANT (N.O.S.)
Contaminant Limit 1:
Contam Limit Freq 1:
Contaminant UN No 1:
Environment Impact:
Nature of Impact:
Receiving Medium:
Receiving Env: Land
MOE Response: No
Dt MOE Arvl on Scn:
MOE Reported Dt: 2016/02/27
Dt Document Closed: 2016/03/12
Incident Reason: Operator/Human Error
Site Name: Simcoe County Landfill #16 (West Gwillimbury)
Site County/District:
Site Geo Ref Meth: 10-30 metres eg. Medium Quality GPS
Incident Summary: 20 L driveway sealant to land, cntd & clnd
Contaminant Qty: 20 L

Discharger Report:
Material Group:
Health/Env Conseq:
Client Type:
Sector Type: Miscellaneous Communal
Agency Involved:
Nearest Watercourse:
Site Address: 2980 Line 12 Lot 12 Concession 12
Site District Office:
Site Postal Code: L3Z 2M4
Site Region:
Site Municipality: Bradford West Gwillimbury
Site Lot:
Site Conc:
Northing: 4891720
Easting: 611231
Site Geo Ref Accu: GIS Software
Site Map Datum: NAD83
SAC Action Class: Land Spills
Source Type:

Appendix: Database Descriptions

*Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. **Note:** Databases denoted with " * " indicates that the database will no longer be updated. See the individual database description for more information.*

Abandoned Aggregate Inventory:

Provincial [AAGR](#)

The MAAP Program maintains a database of abandoned pits and quarries. Please note that the database is only referenced by lot and concession and city/town location. The database provides information regarding the location, type, size, land use, status and general comments.*

Government Publication Date: Sept 2002*

Aggregate Inventory:

Provincial [AGR](#)

The Ontario Ministry of Natural Resources maintains a database of all active pits and quarries. The database provides information regarding the registered owner/operator, location name, operation type, approval type, and maximum annual tonnage.

Government Publication Date: Up to Sep 2018

Abandoned Mine Information System:

Provincial [AMIS](#)

The Abandoned Mines Information System contains data on known abandoned and inactive mines located on both Crown and privately held lands. The information was provided by the Ministry of Northern Development and Mines (MNDM), with the following disclaimer: "the database provided has been compiled from various sources, and the Ministry of Northern Development and Mines makes no representation and takes no responsibility that such information is accurate, current or complete". Reported information includes official mine name, status, background information, mine start/end date, primary commodity, mine features, hazards and remediation.

Government Publication Date: 1800-Oct 2018

Anderson's Waste Disposal Sites:

Private [ANDR](#)

The information provided in this database was collected by examining various historical documents which aimed to characterize the likely position of former waste disposal sites from 1860 to present. The research initiative behind the creation of this database was to identify those sites that are missing from the Ontario MOE Waste Disposal Site Inventory, as well as to provide revisions and corrections to the positions and descriptions of sites currently listed in the MOE inventory. In addition to historic waste disposal facilities, the database also identifies certain auto wreckers and scrap yards that have been extrapolated from documentary sources. Please note that the data is not warranted to be complete, exhaustive or authoritative. The information was collected for research purposes only.

Government Publication Date: 1860s-Present

Automobile Wrecking & Supplies:

Private [AUWR](#)

This database provides an inventory of known locations that are involved in the scrap metal, automobile wrecking/recycling, and automobile parts & supplies industry. Information is provided on the company name, location and business type.

Government Publication Date: 1999-Jan 31, 2019

Borehole:

Provincial [BORE](#)

A borehole is the generalized term for any narrow shaft drilled in the ground, either vertically or horizontally. The information here includes geotechnical investigations or environmental site assessments, mineral exploration, or as a pilot hole for installing piers or underground utilities. Information is from many sources such as the Ministry of Transportation (MTO) boreholes from engineering reports and projects from the 1950 to 1990's in Southern Ontario. Boreholes from the Ontario Geological Survey (OGS) including The Urban Geology Analysis Information System (UGAIS) and the York Peel Durham Toronto (YPDT) database of the Conservation Authority Moraine Coalition. This database will include fields such as location, stratigraphy, depth, elevation, year drilled, etc. For all water well data or oil and gas well data for Ontario please refer to WWIS and OOGW.

Government Publication Date: 1875-Jul 2014

Certificates of Approval:

Provincial [CA](#)

This database contains the following types of approvals: Air & Noise, Industrial Sewage, Municipal & Private Sewage, Waste Management Systems and Renewable Energy Approvals. The MOE in Ontario states that any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste, must have a Certificate of Approval before it can operate lawfully. Fields include approval number, business name, address, approval date, approval type and status. This database will no longer be updated, as CofA's have been replaced by either Environmental Activity and Sector Registry (EASR) or Environmental Compliance Approval (ECA). Please refer to those individual databases for any information after Oct.31, 2011.

Government Publication Date: 1985-Oct 30, 2011*

Commercial Fuel Oil Tanks:

Provincial **CFOT**

List of commercial underground fuel oil tanks made available by the Fuels Safety Program of the Technical Standards & Safety Authority (TSSA). Ontario Regulation 213/01 of the Technical Standards and Safety Act (2000) requires that all underground tanks be registered with the TSSA. Note: the Fuels Safety Division does not register waste oil tanks in apartments, office buildings, residences, etc., or aboveground gas or diesel tanks. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of commercial fuel tanks in the province. The TSSA updates information in its system on an ongoing basis; this listing is a copy of the data captured at one moment in time and is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Chemical Register:

Private **CHEM**

This database includes information from both a one time study conducted in 1992 and private source and is a listing of facilities that manufacture or distribute chemicals. The production of these chemical substances may involve one or more chemical reactions and/or chemical separation processes (i.e. fractionation, solvent extraction, crystallization, etc.).

Government Publication Date: 1999-Jan 31, 2019

Compressed Natural Gas Stations:

Private **CNG**

Canada has a network of public access compressed natural gas (CNG) refuelling stations. These stations dispense natural gas in compressed form at 3,000 pounds per square inch (psi), the pressure which is allowed within the current Canadian codes and standards. The majority of natural gas refuelling is located at existing retail gasoline that have a separate refuelling island for natural gas. This list of stations is made available by the Canadian Natural Gas Vehicle Alliance.

Government Publication Date: Dec 2012 - Dec 2018

Inventory of Coal Gasification Plants and Coal Tar Sites:

Provincial **COAL**

This inventory includes both the "Inventory of Coal Gasification Plant Waste Sites in Ontario-April 1987" and the Inventory of Industrial Sites Producing or Using Coal Tar and Related Tars in Ontario-November 1988) collected by the MOE. It identifies industrial sites that produced and continue to produce or use coal tar and other related tars. Detailed information is available and includes: facility type, size, land use, information on adjoining properties, soil condition, site operators/occupants, site description, potential environmental impacts and historic maps available. This was a one-time inventory.*

Government Publication Date: Apr 1987 and Nov 1988*

Compliance and Convictions:

Provincial **CONV**

This database summarizes the fines and convictions handed down by the Ontario courts beginning in 1989. Companies and individuals named here have been found guilty of environmental offenses in Ontario courts of law.

Government Publication Date: 1989-Jan 2019

Certificates of Property Use:

Provincial **CPU**

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include all CPU's on the registry such as (EPA s. 168.6) - Certificate of Property Use.

Government Publication Date: 1994-Feb 28, 2019

Drill Hole Database:

Provincial **DRL**

The Ontario Drill Hole Database contains information on more than 113,000 percussion, overburden, sonic and diamond drill holes from assessment files on record with the department of Mines and Minerals. Please note that limited data is available for southern Ontario, as it was the last area to be completed. The database was created when surveys submitted to the Ministry were converted in the Assessment File Research Image Database (AFRI) project. However, the degree of accuracy (coordinates) as to the exact location of drill holes is dependent upon the source document submitted to the MNDM. Levels of accuracy used to locate holes are: centering on the mining claim; a sketch of the mining claim; a 1:50,000 map; a detailed company map; or from submitted a "Report of Work".

Government Publication Date: 1886 - Oct 2018

Dry Cleaning Facilities:

Federal **DRYCLEANERS**

List of dry cleaning facilities made available by Environment and Climate Change Canada. Environment and Climate Change Canada's Tetrachloroethylene (Use in Dry Cleaning and Reporting Requirements) Regulations (SOR/2003-79) are intended to reduce releases of tetrachloroethylene to the environment from dry cleaning facilities.

Government Publication Date: Jan 2004-Dec 2017

Environmental Activity and Sector Registry:

Provincial **EASR**

On October 31, 2011, a smarter, faster environmental approvals system came into effect in Ontario. The EASR allows businesses to register certain activities with the ministry, rather than apply for an approval. The registry is available for common systems and processes, to which preset rules of operation can be applied. The EASR is currently available for: heating systems, standby power systems and automotive refinishing. Businesses whose activities aren't subject to the EASR may apply for an ECA (Environmental Compliance Approval), Please see our ECA database.

Government Publication Date: Oct 2011-Feb 28, 2019

Environmental Registry:Provincial **EBR**

The Environmental Registry lists proposals, decisions and exceptions regarding policies, Acts, instruments, or regulations that could significantly affect the environment. Through the Registry, thirteen provincial ministries notify the public of upcoming proposals and invite their comments. For example, if a local business is requesting a permit, license, or certificate of approval to release substances into the air or water; these are notified on the registry. Data includes: Approval for discharge into the natural environment other than water (i.e. Air) - EPA s. 9, Approval for sewage works - OWRA s. 53(1), and EPA s. 27 - Approval for a waste disposal site. For information regarding Permit to Take Water (PTTW), Certificate of Property Use (CPU) and (ORD) Orders please refer to those individual databases.

Government Publication Date: 1994-Feb 28, 2019**Environmental Compliance Approval:**Provincial **ECA**

On October 31, 2011, a smarter, faster environmental approvals system came into effect in Ontario. In the past, a business had to apply for multiple approvals (known as certificates of approval) for individual processes and pieces of equipment. Today, a business either registers itself, or applies for a single approval, depending on the types of activities it conducts. Businesses whose activities aren't subject to the EASR may apply for an ECA. A single ECA addresses all of a business's emissions, discharges and wastes. Separate approvals for air, noise and waste are no longer required. This database will also include Renewable Energy Approvals. For certificates of approval prior to Nov 1st, 2011, please refer to the CA database. For all Waste Disposal Sites please refer to the WDS database.

Government Publication Date: Oct 2011-Feb 28, 2019**Environmental Effects Monitoring:**Federal **EEM**

The Environmental Effects Monitoring program assesses the effects of effluent from industrial or other sources on fish, fish habitat and human usage of fisheries resources. Since 1992, pulp and paper mills have been required to conduct EEM studies under the Pulp and Paper Effluent Regulations. This database provides information on the mill name, geographical location and sub-lethal toxicity data.

Government Publication Date: 1992-2007***ERIS Historical Searches:**Private **EHS**

ERIS has compiled a database of all environmental risk reports completed since March 1999. Available fields for this database include: site location, date of report, type of report, and search radius. As per all other databases, the ERIS database can be referenced on both the map and "Statistical Profile" page.

Government Publication Date: 1999-Jan 31, 2019**Environmental Issues Inventory System:**Federal **EIIS**

The Environmental Issues Inventory System was developed through the implementation of the Environmental Issues and Remediation Plan. This plan was established to determine the location and severity of contaminated sites on inhabited First Nation reserves, and where necessary, to remediate those that posed a risk to health and safety; and to prevent future environmental problems. The EIIS provides information on the reserve under investigation, inventory number, name of site, environmental issue, site action (Remediation, Site Assessment), and date investigation completed.

Government Publication Date: 1992-2001***Emergency Management Historical Event:**Provincial **EMHE**

List of locations of historical occurrences of emergency events, including those assigned to the Ministry of Natural Resources by Order-In-Council (OIC) under the Emergency Management and Civil Protection Act, as well as events where MNR provided requested emergency response assistance. Many of these events will have involved community evacuations, significant structural loss, and/or involvement of MNR emergency response staff. These events fall into one of ten (10) type categories: Dam Failure; Drought / Low Water; Erosion; Flood; Forest Fire; Soil and Bedrock Instability; Petroleum Resource Center Event, EMO Requested Assistance, Continuity of Operations Event, Other Requested Assistance. EMHE record details are reproduced by ERIS under License with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2017.

Government Publication Date: Dec 31, 2016**List of TSSA Expired Facilities:**Provincial **EXP**

List of facilities and tanks - for which there was once a registration - no longer registered with the Fuels Safety Program of the Technical Standards and Safety Authority (TSSA). Includes private fuel outlets, bulk plants, fuel oil tanks, gasoline stations, marinas, propane filling stations, liquid fuel tanks, piping systems, etc. Tanks which have been removed from the ground are included in the expired facilities inventory held by the TSSA. Notes: the Fuels Safety Division did not register private fuel underground/aboveground storage tanks prior to January of 1990, or furnace oil tanks prior to May 1, 2002; nor does the Division register waste oil tanks in apartments, office buildings, residences, etc., or aboveground gas or diesel tanks. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of expired tanks/tank facilities in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017**Federal Convictions:**Federal **FCON**

Environment Canada maintains a database referred to as the "Environmental Registry" that details prosecutions under the Canadian Environmental Protection Act (CEPA) and the Fisheries Act (FA). Information is provided on the company name, location, charge date, offence and penalty.

Government Publication Date: 1988-Jun 2007*

Contaminated Sites on Federal Land:

Federal

FCS

The Federal Contaminated Sites Inventory includes information on known federal contaminated sites under the custodianship of departments, agencies and consolidated Crown corporations as well as those that are being or have been investigated to determine whether they have contamination arising from past use that could pose a risk to human health or the environment. The inventory also includes non-federal contaminated sites for which the Government of Canada has accepted some or all financial responsibility. It does not include sites where contamination has been caused by, and which are under the control of, enterprise Crown corporations, private individuals, firms or other levels of government.

Government Publication Date: Jun 2000-Oct 2018

Fisheries & Oceans Fuel Tanks:

Federal

FOFT

Fisheries & Oceans Canada maintains an inventory of aboveground & underground fuel storage tanks located on Fisheries & Oceans property or controlled by DFO. Our inventory provides information on the site name, location, tank owner, tank operator, facility type, storage tank location, tank contents & capacity, and date of tank installation.

Government Publication Date: 1964-Sep 2018

Fuel Storage Tank:

Provincial

FST

List of registered private and retail fuel storage tanks made available by the Fuels Safety Program of the Technical Standards & Safety Authority (TSSA). Ontario Regulation 213/01 of the Technical Standards and Safety Act (2000) requires that all underground tanks be registered with the TSSA. Notes: the Fuels Safety Division did not register private fuel underground/aboveground storage tanks prior to January of 1990, or furnace oil tanks prior to May 1, 2002; nor does the Division register waste oil tanks in apartments, office buildings, residences, etc., or aboveground gas or diesel tanks. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of fuel storage tanks/tank facilities in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Fuel Storage Tank - Historic:

Provincial

FSTH

The Fuels Safety Branch of the Ontario Ministry of Consumer and Commercial Relations maintained a database of all registered private fuel storage tanks. Public records of private fuel storage tanks are only available since the registration became effective in September 1989. This information is now collected by the Technical Standards and Safety Authority.

Government Publication Date: Pre-Jan 2010*

Ontario Regulation 347 Waste Generators Summary:

Provincial

GEN

Regulation 347 of the Ontario EPA defines a waste generation site as any site, equipment and/or operation involved in the production, collection, handling and/or storage of regulated wastes. A generator of regulated waste is required to register the waste generation site and each waste produced, collected, handled, or stored at the site. This database contains the registration number, company name and address of registered generators including the types of hazardous wastes generated. It includes data on waste generating facilities such as: drycleaners, waste treatment and disposal facilities, machine shops, electric power distribution etc. This information is a summary of all years from 1986 including the most currently available data. Some records may contain, within the company name, the phrase "See & Use..." followed by a series of letters and numbers. This occurs when one company is amalgamated with or taken over by another registered company. The number listed as "See & Use", refers to the new ownership and the other identification number refers to the original ownership. This phrase serves as a link between the 2 companies until operations have been fully transferred.

Government Publication Date: 1986-Dec 31, 2018

Greenhouse Gas Emissions from Large Facilities:

Federal

GHG

List of greenhouse gas emissions from large facilities made available by Environment Canada. Greenhouse gas emissions in kilotonnes of carbon dioxide equivalents (kt CO₂ eq).

Government Publication Date: 2013-Dec 2016

TSSA Historic Incidents:

Provincial

HINC

List of historic incidences of spills and leaks of diesel, fuel oil, gasoline, natural gas, propane, and hydrogen recorded by the TSSA in their previous incident tracking system. The TSSA's Fuels Safety Program administers the Technical Standards & Safety Act 2000, providing fuel-related safety services associated with the safe transportation, storage, handling and use of fuels such as gasoline, diesel, propane, natural gas and hydrogen. Under this Act, the TSSA regulates fuel suppliers, storage facilities, transport trucks, pipelines, contractors and equipment or appliances that use fuels. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of historical fuel spills and leaks in the province. This listing is a copy of the data captured at one moment in time and is hence limited by the record date provided here.

Government Publication Date: 2006-June 2009*

Indian & Northern Affairs Fuel Tanks:

Federal

IAFT

The Department of Indian & Northern Affairs Canada (INAC) maintains an inventory of aboveground & underground fuel storage tanks located on both federal and crown land. Our inventory provides information on the reserve name, location, facility type, site/facility name, tank type, material & ID number, tank contents & capacity, and date of tank installation.

Government Publication Date: 1950-Aug 2003*

TSSA Incidents:

Provincial [INC](#)

List of spills and leaks of diesel, fuel oil, gasoline, natural gas, propane, and hydrogen reported to the Spills Action Centre (SAC) and made available by the Technical Standards and Safety Authority (TSSA). Under the Technical Standards & Safety Act (2000), the TSSA regulates fuel suppliers, storage facilities, transport trucks, pipelines, contractors, and equipment or appliances that use fuels. Includes incidents from fuel-related hazards such as spills, fires, and explosions. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of fuel-related leaks, spills, and incidents in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Landfill Inventory Management Ontario:

Provincial [LIMO](#)

The Landfill Inventory Management Ontario (LIMO) database is updated every year, as the ministry compiles new and updated information. The inventory will include small and large landfills. Additionally, each year the ministry will request operators of the larger landfills complete a landfill data collection form that will be used to update LIMO and will include the following information from the previous operating year. This will include additional information such as estimated amount of total waste received, landfill capacity, estimated total remaining landfill capacity, fill rates, engineering designs, reporting and monitoring details, size of location, service area, approved waste types, leachate of site treatment, contaminant attenuation zone and more. The small landfills will include information such as site owner, site location and certificate of approval # and status.

Government Publication Date: Sep 30, 2017

Canadian Mine Locations:

Private [MINE](#)

This information is collected from the Canadian & American Mines Handbook. The Mines database is a national database that provides over 290 listings on mines (listed as public companies) dealing primarily with precious metals and hard rocks. Listed are mines that are currently in operation, closed, suspended, or are still being developed (advanced projects). Their locations are provided as geographic coordinates (x, y and/or longitude, latitude). As of 2002, data pertaining to Canadian smelters and refineries has been appended to this database.

Government Publication Date: 1998-2009*

Environmental Penalty Annual Report:

Provincial [MISA PENALTY](#)

This database contains data from Ontario's annual environmental penalty report published by the Ministry of the Environment and Climate Change. These reports provide information on environmental penalties for land or water violations issued to companies in one of the nine industrial sectors covered by the Municipal Industrial Strategy for Abatement (MISA) regulations.

Government Publication Date: Jan 1, 2011 - Dec 31, 2017

Mineral Occurrences:

Provincial [MNR](#)

In the early 70's, the Ministry of Northern Development and Mines created an inventory of approximately 19,000 mineral occurrences in Ontario, in regard to metallic and industrial minerals, as well as some information on building stones and aggregate deposits. Please note that the "Horizontal Positional Accuracy" is approximately +/- 200 m. Many reference elements for each record were derived from field sketches using pace or chain/tape measurements against claim posts or topographic features in the area. The primary limiting factor for the level of positional accuracy is the scale of the source material. The testing of horizontal accuracy of the source materials was accomplished by comparing the plan metric (X and Y) coordinates of that point with the coordinates of the same point as defined from a source of higher accuracy.

Government Publication Date: 1846-Jan 2018

National Analysis of Trends in Emergencies System (NATES):

Federal [NATE](#)

In 1974 Environment Canada established the National Analysis of Trends in Emergencies System (NATES) database, for the voluntary reporting of significant spill incidents. The data was to be used to assist in directing the work of the emergencies program. NATES ran from 1974 to 1994. Extensive information is available within this database including company names, place where the spill occurred, date of spill, cause, reason and source of spill, damage incurred, and amount, concentration, and volume of materials released.

Government Publication Date: 1974-1994*

Non-Compliance Reports:

Provincial [NCPL](#)

The Ministry of the Environment provides information about non-compliant discharges of contaminants to air and water that exceed legal allowable limits, from regulated industrial and municipal facilities. A reported non-compliance failure may be in regard to a Control Order, Certificate of Approval, Sectoral Regulation or specific regulation/act.

Government Publication Date: Dec 31, 2016

National Defense & Canadian Forces Fuel Tanks:

Federal [NDFT](#)

The Department of National Defense and the Canadian Forces maintains an inventory of all aboveground & underground fuel storage tanks located on DND lands. Our inventory provides information on the base name, location, tank type & capacity, tank contents, tank class, date of tank installation, date tank last used, and status of tank as of May 2001. This database will no longer be updated due to the new National Security protocols which have prohibited any release of this database.

Government Publication Date: Up to May 2001*

National Defense & Canadian Forces Spills:

Federal

[NDSP](#)

The Department of National Defense and the Canadian Forces maintains an inventory of spills to land and water. All spill sites have been classified under the "Transportation of Dangerous Goods Act - 1992". Our inventory provides information on the facility name, location, spill ID #, spill date, type of spill, as well as the quantity of substance spilled & recovered.

Government Publication Date: Mar 1999-Apr 2018

National Defence & Canadian Forces Waste Disposal Sites:

Federal

[NDWD](#)

The Department of National Defence and the Canadian Forces maintains an inventory of waste disposal sites located on DND lands. Where available, our inventory provides information on the base name, location, type of waste received, area of site, depth of site, year site opened/closed and status.

Government Publication Date: 2001-Apr 2007*

National Energy Board Pipeline Incidents:

Federal

[NEBI](#)

Locations of pipeline incidents from 2008 to present, made available by the National Energy Board (NEB). Includes incidents reported under the Onshore Pipeline Regulations and the Processing Plant Regulations related to pipelines under federal jurisdiction, does not include incident data related to pipelines under provincial or territorial jurisdiction.

Government Publication Date: 2008-Sep 30, 2018

National Energy Board Wells:

Federal

[NEBW](#)

The NEBW database contains information on onshore & offshore oil and gas wells that are outside provincial jurisdiction(s) and are thereby regulated by the National Energy Board. Data is provided regarding the operator, well name, well ID No./UWI, status, classification, well depth, spud and release date.

Government Publication Date: 1920-Feb 2003*

National Environmental Emergencies System (NEES):

Federal

[NEES](#)

In 2000, the Emergencies program implemented NEES, a reporting system for spills of hazardous substances. For the most part, this system only captured data from the Atlantic Provinces, some from Quebec and Ontario and a portion from British Columbia. Data for Alberta, Saskatchewan, Manitoba and the Territories was not captured. However, NEES is also a repository for previous Environment Canada spill datasets. NEES is composed of the historic datasets ' or Trends ' which dates from approximately 1974 to present. NEES Trends is a compilation of historic databases, which were merged and includes data from NATES (National Analysis of Trends in Emergencies System), ARTS (Atlantic Regional Trends System), and NEES. In 2001, the Emergencies Program determined that variations in reporting regimes and requirements between federal and provincial agencies made national spill reporting and trend analysis difficult to achieve. As a consequence, the department has focused efforts on capturing data on spills of substances which fall under its legislative authority only (CEPA and FA). As such, the NEES database will be decommissioned in December 2004.

Government Publication Date: 1974-2003*

National PCB Inventory:

Federal

[NPCB](#)

Environment Canada's National PCB inventory includes information on in-use PCB containing equipment in Canada including federal, provincial and private facilities. Federal out-of-service PCB containing equipment and PCB waste owned by the federal government or by federally regulated industries such as airlines, railway companies, broadcasting companies, telephone and telecommunications companies, pipeline companies, etc. are also listed. Although it is not Environment Canada's mandate to collect data on non-federal PCB waste, the National PCB inventory includes some information on provincial and private PCB waste and storage sites. Some addresses provided may be Head Office addresses and are not necessarily the location of where the waste is being used or stored.

Government Publication Date: 1988-2008*

National Pollutant Release Inventory:

Federal

[NPRI](#)

Environment Canada has defined the National Pollutant Release Inventory ("NPRI") as a federal government initiative designed to collect comprehensive national data regarding releases to air, water, or land, and waste transfers for recycling for more than 300 listed substances.

Government Publication Date: 1993-May 2017

Oil and Gas Wells:

Private

[OGW](#)

The Nickle's Energy Group (publisher of the Daily Oil Bulletin) collects information on drilling activity including operator and well statistics. The well information database includes name, location, class, status and depth. The main Nickle's database is updated on a daily basis, however, this database is updated on a monthly basis. More information is available at www.nickles.com.

Government Publication Date: 1988-Feb 28, 2019

Ontario Oil and Gas Wells:

Provincial

[OOGW](#)

In 1998, the MNR handed over to the Ontario Oil, Gas and Salt Resources Corporation, the responsibility of maintaining a database of oil and gas wells drilled in Ontario. The OGSR Library has over 20,000+ wells in their database. Information available for all wells in the ERIS database include well owner/operator, location, permit issue date, and well cap date, license No., status, depth and the primary target (rock unit) of the well being drilled. All geology/stratigraphy table information, plus all water table information is also provide for each well record.

Government Publication Date: 1800-May 2018

Inventory of PCB Storage Sites:

Provincial [OPCB](#)

The Ontario Ministry of Environment, Waste Management Branch, maintains an inventory of PCB storage sites within the province. Ontario Regulation 11/82 (Waste Management - PCB) and Regulation 347 (Generator Waste Management) under the Ontario EPA requires the registration of inactive PCB storage equipment and/or disposal sites of PCB waste with the Ontario Ministry of Environment. This database contains information on: 1) waste quantities; 2) major and minor sites storing liquid or solid waste; and 3) a waste storage inventory.

Government Publication Date: 1987-Oct 2004; 2012-Dec 2013

Orders:

Provincial [ORD](#)

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include all Orders on the registry such as (EPA s. 17) - Order for remedial work, (EPA s. 18) - Order for preventative measures, (EPA s. 43) - Order for removal of waste and restoration of site, (EPA s. 44) - Order for conformity with Act for waste disposal sites, (EPA s. 136) - Order for performance of environmental measures.

Government Publication Date: 1994-Feb 28, 2019

Canadian Pulp and Paper:

Private [PAP](#)

This information is part of the Pulp and Paper Canada Directory. The Directory provides a comprehensive listing of the locations of pulp and paper mills and the products that they produce.

Government Publication Date: 1999, 2002, 2004, 2005, 2009-2014

Parks Canada Fuel Storage Tanks:

Federal [PCFT](#)

Canadian Heritage maintains an inventory of known fuel storage tanks operated by Parks Canada, in both National Parks and at National Historic Sites. The database details information on site name, location, tank install/removal date, capacity, fuel type, facility type, tank design and owner/operator.

Government Publication Date: 1920-Jan 2005*

Pesticide Register:

Provincial [PES](#)

The Ontario Ministry of the Environment and Climate Change maintains a database of licensed operators and vendors of registered pesticides.

Government Publication Date: 1988-Sep 2018

TSSA Pipeline Incidents:

Provincial [PINC](#)

List of pipeline incidents (strikes, leaks, spills) made available by the Technical Standards and Safety Authority (TSSA). Under the Technical Standards & Safety Act (2000), the TSSA regulates fuel suppliers, storage facilities, transport trucks, pipelines, contractors, and equipment or appliances that use fuels. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of pipeline incidents in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Private and Retail Fuel Storage Tanks:

Provincial [PRT](#)

The Fuels Safety Branch of the Ontario Ministry of Consumer and Commercial Relations maintained a database of all registered private fuel storage tanks and licensed retail fuel outlets. This database includes an inventory of locations that have gasoline, oil, waste oil, natural gas and/or propane storage tanks on their property. The MCCR no longer collects this information. This information is now collected by the Technical Standards and Safety Authority (TSSA).

Government Publication Date: 1989-1996*

Permit to Take Water:

Provincial [PTTW](#)

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include all PTTW's on the registry such as OWRA s. 34 - Permit to take water.

Government Publication Date: 1994-Feb 28, 2019

Ontario Regulation 347 Waste Receivers Summary:

Provincial [REC](#)

Part V of the Ontario Environmental Protection Act ("EPA") regulates the disposal of regulated waste through an operating waste management system or a waste disposal site operated or used pursuant to the terms and conditions of a Certificate of Approval or a Provisional Certificate of Approval. Regulation 347 of the Ontario EPA defines a waste receiving site as any site or facility to which waste is transferred by a waste carrier. A receiver of regulated waste is required to register the waste receiving facility. This database represents registered receivers of regulated wastes, identified by registration number, company name and address, and includes receivers of waste such as: landfills, incinerators, transfer stations, PCB storage sites, sludge farms and water pollution control plants. This information is a summary of all years from 1986 including the most currently available data.

Government Publication Date: 1986-2016

Record of Site Condition:

Provincial **RSC**

The Record of Site Condition (RSC) is part of the Ministry of the Environment's Brownfields Environmental Site Registry. Protection from environmental cleanup orders for property owners is contingent upon documentation known as a record of site condition (RSC) being filed in the Environmental Site Registry. In order to file an RSC, the property must have been properly assessed and shown to meet the soil, sediment and groundwater standards appropriate for the use (such as residential) proposed to take place on the property. The Record of Site Condition Regulation (O. Reg. 153/04) details requirements related to site assessment and clean up.

RSCs filed after July 1, 2011 will also be included as part of the new (O.Reg. 511/09).

Government Publication Date: 1997-Sept 2001, Oct 2004-Jan 2019

Retail Fuel Storage Tanks:

Private **RST**

This database includes an inventory of retail fuel outlet locations (including marinas) that have on their property gasoline, oil, waste oil, natural gas and / or propane storage tanks.

Government Publication Date: 1999-Jan 31, 2019

Scott's Manufacturing Directory:

Private **SCT**

Scott's Directories is a data bank containing information on over 200,000 manufacturers across Canada. Even though Scott's listings are voluntary, it is the most comprehensive database of Canadian manufacturers available. Information concerning a company's address, plant size, and main products are included in this database.

Government Publication Date: 1992-Mar 2011*

Ontario Spills:

Provincial **SPL**

This database identifies information such as location (approximate), type and quantity of contaminant, date of spill, environmental impact, cause, nature of impact, etc. Information from 1988-2002 was part of the ORIS (Occurrence Reporting Information System). The SAC (Spills Action Centre) handles all spills reported in Ontario. Regulations for spills in Ontario are part of the MOE's Environmental Protection Act, Part X.

Government Publication Date: 1988-Dec 2018

Wastewater Discharger Registration Database:

Provincial **SRDS**

Information under this heading is combination of the following 2 programs. The Municipal/Industrial Strategy for Abatement (MISA) division of the Ontario Ministry of Environment maintained a database of all direct dischargers of toxic pollutants within nine sectors including: Electric Power Generation; Mining; Petroleum Refining; Organic Chemicals; Inorganic Chemicals; Pulp & Paper; Metal Casting; Iron & Steel; and Quarries. All sampling information is now collected and stored within the Sample Result Data Store (SRDS).

Government Publication Date: 1990-Dec 31, 2016

Anderson's Storage Tanks:

Private **TANK**

The information provided in this database was collected by examining various historical documents, which identified the location of former storage tanks, containing substances such as fuel, water, gas, oil, and other various types of miscellaneous products. Information is available in regard to business operating at tank site, tank location, permit year, permit & installation type, no. of tanks installed & configuration and tank capacity. Data contained within this database pertains only to the city of Toronto and is not warranted to be complete, exhaustive or authoritative. The information was collected for research purposes only.

Government Publication Date: 1915-1953*

Transport Canada Fuel Storage Tanks:

Federal **TCFT**

List of fuel storage tanks currently or previously owned or operated by Transport Canada. This inventory also includes tanks on The Pickering Lands, which refers to 7,530 hectares (18,600 acres) of land in Pickering, Markham, and Uxbridge owned by the Government of Canada since 1972; properties on this land has been leased by the government since 1975, and falls under the Site Management Policy of Transport Canada, but is administered by Public Works and Government Services Canada. This inventory provides information on the site name, location, tank age, capacity and fuel type.

Government Publication Date: 1970-Aug 2018

TSSA Variances for Abandonment of Underground Storage Tanks:

Provincial **VAR**

List of variances granted for abandoned tanks. Under the Technical Standards and Safety Authority (TSSA) Liquid Fuels Handling Code and Fuel Oil Code, all underground storage tanks must be removed within two years of disuse. If removal of a tank is not feasible, an application may be sought for a variance from this code requirement.

Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of tank variances in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Waste Disposal Sites - MOE CA Inventory:

Provincial

[WDS](#)

The Ontario Ministry of Environment, Waste Management Branch, maintains an inventory of known open (active or inactive) and closed disposal sites in the Province of Ontario. Active sites maintain a Certificate of Approval, are approved to receive and are receiving waste. Inactive sites maintain Certificate(s) of Approval but are not receiving waste. Closed sites are not receiving waste. The data contained within this database was compiled from the MOE's Certificate of Approval database. Locations of these sites may be cross-referenced to the Anderson database described under ERIS's Private Source Database section, by the CA number. All new Environmental Compliance Approvals handed out after Oct 31, 2011 for Waste Disposal Sites will still be found in this database.

Government Publication Date: Oct 2011-Feb 28, 2019

Waste Disposal Sites - MOE 1991 Historical Approval Inventory:

Provincial

[WDSH](#)

In June 1991, the Ontario Ministry of Environment, Waste Management Branch, published the "June 1991 Waste Disposal Site Inventory", of all known active and closed waste disposal sites as of October 30st, 1990. For each "active" site as of October 31st 1990, information is provided on site location, site/CA number, waste type, site status and site classification. For each "closed" site as of October 31st 1990, information is provided on site location, site/CA number, closure date and site classification. Locations of these sites may be cross-referenced to the Anderson database described under ERIS's Private Source Database section, by the CA number.

Government Publication Date: Up to Oct 1990*

Water Well Information System:

Provincial

[WWIS](#)

This database describes locations and characteristics of water wells found within Ontario in accordance with Regulation 903. It includes such information as coordinates, construction date, well depth, primary and secondary use, pump rate, static water level, well status, etc. Also included are detailed stratigraphy information, approximate depth to bedrock and the approximate depth to the water table.

Government Publication Date: Dec 31, 2017

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

**CONTAMINATION OVERVIEW STUDY – HIGHWAY 400 IMPROVEMENTS AT SIMCOE ROAD 88,
LINE 9, LINE 12, AND LINE 13**

Appendix D Qualifications of COS Project Team
August 21, 2023

APPENDIX D QUALIFICATIONS OF COS PROJECT TEAM



Grace Ferguson M.Sc., P.Eng.

Senior Hydrogeologist
28 years of experience · Waterloo, Ontario

Grace is a senior hydrogeologist in Stantec's Environmental Services group with more than 25 years' experience in contaminated site management. She offers clients the benefit of her technical knowledge and experience in solving a variety of environmental challenges. She has managed environmental site assessment, monitoring, and remediation projects for a wide cross-section of service sectors, including road and rail transportation, commercial real estate, the petroleum industry, insurance, land development, municipal, provincial, and federal governments, the Canadian Forces, industry, and waste management. This wide range of experience provides her the vision to see complex projects through from planning to closure.

Grace is a licensed Professional Engineer in the Province of Ontario and is recognized by the Ontario Ministry of the Environment, Conservation and Parks as a Qualified Person for Environmental Site Assessment under Ontario Regulation (O.Reg.)153/04. She is also listed as a contaminant/waste specialist with the Ontario Ministry of Transportation.

EDUCATION

M.Sc., University of Waterloo / Hydrogeology, Waterloo, Ontario, 2001

B.A.Sc., University of Waterloo / Geological Engineering, Waterloo, Ontario, 1993

CERTIFICATIONS & TRAINING

eRailSafe Field Contractor Training, CN and CP, Waterloo, Ontario, 2018

40 Hour OSHA Training Safety at Hazardous Materials Sites, New York, New York, 1994

Petroleum Oriented Safety Training - Behaviour Based Safety Level 2, Waterloo, Ontario, 2022

REGISTRATIONS

Professional Engineer #90427949, Professional Engineers Ontario, Feb 9/96

PROJECT EXPERIENCE

ENVIRONMENTAL SITE ASSESSMENTS PHASE I, II, III

Contamination Overview Studies, Preliminary Site Screenings and Excess Materials Management Plans | Ontario Ministry of Transportation | Ontario | 2005-present | Environmental Specialist

Completed or reviewed COS, PSS, and/or EMMPs for more than 35 existing and proposed MTO roadways and interchanges to support preliminary and detailed design transportation projects.

Phase One and Two ESAs and RSC Filings | Various Developers | Ottawa, Hamilton, Brantford, Elmira, Cambridge, Greely, Ontario | 2017-Present | Project Manager/Qualified Person

Conducted Phase One and/or Two ESAs of commercial and industrial properties according to (O.Reg.) 153/04 in support of filing a Record of Site Condition (RSC) for eventual site redevelopment to residential land use. Where necessary, provided delineation of soil and/or groundwater impacts, and presented options for management so as to meet the RSC requirements.

Contamination Overview Studies, Proposed Pipeline Alignments | Confidential | Southern Ontario | 2019-2021 | Senior Technical Reviewer

Provided oversight and quality review for three contamination overview studies along proposed pipeline alignments ranging in length from approximately 4 km to 60 km in Southern Ontario.

Contamination Overview Study and Phase I ESAs, Franklin Boulevard | Region of Waterloo | Cambridge, Ontario | 2011-2018 | Project Manager

Project manager and senior reviewer for an assessment of potential sources of contamination along an 8 km roadway and completion of 30 Phase I ESAs adjacent to the roadway, as part of detailed design for road improvements. Provided subsequent environmental expertise for dewatering management during construction phase.

Phase I ESAs, Commercial and Industrial Properties | Confidential | Kitchener, Ontario | 2017 | Project Manager

Senior technical support and review for assessments at 10 properties for due diligence purposes.

Review of Environmental Conditions | Municipal Confidential | 2019-2021 | Senior Technical Reviewer

Provided environmental review services and summarized environmental conditions and soil management implications for a municipality that was planning to rehabilitate an urbanized creek.

Contamination Overview Studies and Phase II Environmental Site Assessment, Peel Watermain Projects | Region of Peel | Mississauga, Ontario | 2013-2017 | Environmental Specialist

Completion of contamination overview studies and environmental sampling to assess the potential for generation of contaminated soil during watermain replacement work along three existing and future roadways in Mississauga. Provided fill management options for consideration in construction tendering.

Environmental Retainer, Various Sites | Ontario Ministry of Transportation | Greater Toronto Area, Ontario | 2014-2016, 2021-present | Project Manager

Managed numerous environmental site assessments and monitoring projects at client-owned properties in advance of site redevelopment for transportation systems as part of a two-year retainer assignment. Managed Phase II ESAs, co-ordinated designated substance surveys and geophysical surveys, and recommended and implemented remedial excavation programs. Also managed on-going monitoring program at a client-owned landfill site. Retainer renewed in 2021.

Environmental Site Assessment and RSC Filing | Developer - Confidential | Cambridge, Ontario | 2017 | Reviewer, QP_{ESA}

Quality reviewer and QP_{ESA} for assessment of several adjacent properties to be redeveloped into a residential complex. Completed Phase One and Two ESAs and limited remediation and filed an RSC in accordance with O.Reg. 153/04 for one property that had experienced commercial use.

Contamination Overview Study, King and Fountain Street Improvements | Region of Waterloo | Cambridge, Ontario | 2011-2012 | Environmental Specialist

Managed and reviewed a contamination overview study of several roadways in advance of road improvements in an urbanized area.

Phase I ESAs Commercial Portfolio | Confidential | Southern Ontario | 2013 | Project Manager and Senior Reviewer

Oversight of 10 Phase I ESAs as part of a Canada-Wide due diligence portfolio for a large commercial client. Also provided senior review of Phase I ESA reports for several of the portfolio sites.

Environmental Investigation, Rail Yards | Confidential | Northern Ontario | 2014-Present | Project Manager

Senior technical reviewer for quarterly and annual groundwater monitoring at a railyard with petroleum impacts to soil and groundwater. Previously project manager for hydrogeological investigations at the yard from 2000 to 2005. Completed a remedial options/feasibility study and developed a remedial action plan to address both on-site and off-site impacts. Co-ordinated drilling and initial sampling of private domestic wells at several off-site and on-site locations.

Phase I and II Environmental Site Assessment, Commercial/Industrial facility | Confidential | Mississauga, Ontario | 2016-Present | Project Manager/Senior Reviewer

Project management and senior technical support for a comprehensive Phase I and II ESA at a former petrochemical research and development facility in an urbanized area. Developed a conceptual site model of subsurface conditions and facilitated an understanding of potential environmental liabilities associated with the property. Reviewed annual environmental sampling reports including treated groundwater discharge to a municipal sewer to confirm compliance with municipal Sewer Use Bylaw.

Environmental Investigation, International Airport | Transport Canada | London, Ontario | 2018 | Senior Reviewer

Provided senior technical review for an assessment of soil, groundwater, sediment, and surface water quality associated with a closed industrial landfill site associated with an airport facility in London, ON.

Pre-Development ESAs | Grand River Hospital | Kitchener, Ontario | 2017-2021 | Senior Technical Reviewer

Provided senior technical review of Phase 1 and 2 ESAs at hospital facilities to investigate areas for potential future development. Provided recommendations for future management of excavated soil.

Environmental Site Investigation, Proposed HONI Development | Peterborough, Ontario, Canada | 2018-2019 | Senior Environmental Specialist

Provided expertise and senior quality review of a soil and groundwater investigation of existing conditions for a proposed Hydro One Networks Inc. development in Peterborough, Ontario.

Environmental Investigation, Petrochemical Terminal Facility | Confidential | Oakville, Ontario | 2014-present | Senior Technical Reviewer

Senior hydrogeological technical support to an ongoing groundwater investigation at a large petrochemical terminal site. Work was done to fulfill ECA obligations associated with phytoremediation of former landfarm areas and to assess the distribution of impacts across the property.

Peer Review Services for Municipal Development Applications | Various Municipal | Lanark, Peterborough, Ontario | 2017-2020 | Environmental Specialist

Provided environmental peer review services for ESA-related development submissions to two counties. Reports reviewed included Phase One and Two ESAs completed to the (O.Reg.) 153/04 standards, and remediation reports.

Phase I ESA, Wind Farm Development | Confidential | Grand Valley, Ontario | 2015-2016 | Senior Technical Reviewer

Provided senior review support to a Phase I ESA of a large network of proposed wind turbines, distribution lines, transformer station, and storage areas forming part of a wind farm that was under development. Identified potential environmental concerns and provided guidance to the client to manage them.

Environmental Review, Proposed Development Site | Region of Waterloo | Kitchener, Ontario | 2013 | Senior Reviewer

Completed a review of historical environmental work done at a property and assessed the level of effort and cost to complete the necessary work to support the filing of a Record of Site Condition with the Ontario Ministry of the Environment. This was done to determine the feasibility of site re-use options.

Environmental Site Assessments, Parkway West Compressor Station | Union Gas | Milton, Ontario | 2012-2013 | Environmental Specialist

Phase One and Phase Two Environmental Site Assessments for development approvals for land being acquired to develop a natural gas compressor station.

Phase One Environmental Site Assessment, Former Golf Course, Southern Ontario | Confidential | Southern Ontario | 2010 | Senior Reviewer

Senior reviewer of a Phase One ESA completed for due diligence in advance of a potential sale of the property. The Phase One ESA was completed to the regulation standards prescribed by O.Reg. 153/04, as amended.

Phase One and Two ESAs, Risk Assessment and Record of Site Condition | Confidential | Northern Ontario | 2010-2012 | Senior Reviewer, QP_{ESA}

As a QP_{ESA}, provided senior level review for assessments of two former gasoline service stations. Phase One and Two ESAs were completed to the revised regulatory standards prescribed by O. Reg. 153/04 to support a Risk Assessment (RA) and Record of Site Condition (RSC). She developed a risk management plan for the RA at one site and filed a RSC.

Phase One and Two Environmental Site Assessments, Commercial Property | Kitchener, Ontario | 2012-2013 | Project Manager

Managed and reviewed ESAs of a used car lot and former industrial site for due diligence in advance of potential purchase and redevelopment of the Kitchener downtown core.

Contamination Overview Study and Environmental Sampling, Windsor-Detroit Tunnel Plaza | Ontario Ministry of Transportation | Windsor, Ontario | 2011-2012 | Environmental Project Lead

Managed the completion of an assessment of potential environmental concerns that could affect redevelopment of a border crossing facility as part of detailed design.

Phase One and Two Environmental Site Assessment, Scrap Metal Facility | 2229812 Ontario Ltd. | Kitchener, Ontario | 2010-2011 | Project Manager

Project Manager and Senior Reviewer for Phase One and Two ESAs of a brownfield site to support potential sale and / or redevelopment. ESAs were completed to the regulatory standards prescribed by O.Reg. 153/04, as amended.

Environmental Assessments, Redevelopment Site | Riverbank Estates Ltd. | Kitchener, Ontario | 2007-2009 | Project Manager

Phase I Environmental Site Assessment of a construction maintenance yard and surrounding undeveloped land. Development of recommendations for assessment work to support redevelopment approvals. Completion of environmental monitoring following limited removal of impacted soil, and environmental observation and verification sampling during removal of fuel storage facilities.

Contamination Overview Study and Phase I/II Environmental Site Assessment, Weber Street Redevelopment | Region of Waterloo | Kitchener, Ontario | 2009-2011 | Environmental Specialist

Managed and reviewed a contamination overview study and Phase II Environmental Site Assessment to identify and assess potential environmental concerns along a 1.2 km section of Weber Street in Kitchener, as part of preliminary and detailed design for road reconstruction.

Phase I and II Environmental Site Assessments, 104 Retail Service Stations | Suncor Energy | Southern Ontario | 2009 | Project Manager

Key Project Manager for 25 of 104 retail gasoline service station sites assessed during a 60 day due diligence period. Responsible for project management and senior review of Phase I and Phase II ESAs.

Phase I and II Environmental Site Assessment, Detroit-Windsor Truck Ferry | Ontario Ministry of Transportation | Windsor, Ontario | 2007-2008 | Project Manager

Completion of Phase I and II ESA and development of waste management options at a truck ferry terminal, in preparation for infrastructure improvements.

Phase I ESA, Industrial Facilities | Ontario | 2004-2007 | Project Manager

Environmental site assessments, including historical review and site reconnaissance, of an industrial plastics manufacturer and a food packaging plant.

Environmental Assessment, Redevelopment Site | Milton, Ontario | 2005 | Project Manager

Completed a Phase I/II ESA at a vacant site and filed a Record of Site Condition to support redevelopment as a commercial facility.

Environmental Investigation, Industrial Facility | Walkerton, Ontario | 2002-Present | Project Manager

Project manager for the assessment, monitoring and development of remedial options for VOC impacts to groundwater at an active industrial facility.

Environmental Site Assessment of Fisherman's Pier Lands | Hamilton Port Authority | Hamilton and Burlington, Ontario | 2002 | Project Hydrogeologist

Completed an Environmental Site Assessment (ESA) as part of a planning study to examine potential redevelopment options for lands known as Fisherman's Pier. Identified current and historical land uses of potential environmental concern.

Environmental Investigations, Redevelopment Site | York Major Holdings | Vaughan, Ontario | 2001-2005 | Project Manager

Project manager for several environmental investigations relating to the redevelopment of Secondary Buffer lands surrounding a recently closed landfill site. These included Phase 1 and Phase 2 environmental site assessments, development of a groundwater monitoring program for a new golf course, and remediation of environmental impacts along a future road realignment. The project involved extensive consultation with MOE and municipal and private stakeholders.

Phase I and II Environmental Site Assessment (ESA), Former Industrial Facility | London, Ontario | 2002 | Project Manager

Project manager for a Phase I/II ESA to assess soil and groundwater conditions prior to purchase of a portion of vacant land formerly used as an industrial facility.

Environmental Site Assessment, Rail Yard | Confidential | Woodstock, Ontario | 2000-01,2014 | Project Manager

Completion of a hydrogeological assessment of a rail yard facility, including test pit excavation, borehole drilling, monitoring well and drive point piezometer installation, soil and groundwater sampling, and hydraulic conductivity testing. Provided senior technical review of on-going groundwater monitoring activities.

Phase I ESA, Various Properties | Ontario | 2001-present | Project Manager

Historical reviews, site reconnaissance, reporting and senior review of commercial, institutional and vacant properties for financial institutions and land developers.

Phase 1 and 2 ESAs, Former Rail Facility | CP Rail | Cambridge, Ontario | 2016-2017 | Project Manager

Managed a Phase I and II ESA of a former rail facility in an urbanized area and developed a plan for remedial activities to facilitate future development.

Environmental and Historical Review, Mixed Land Use Area | Hamilton, Ontario | 2002 | Project Hydrogeologist

Environmental review of several industrial, commercial and vacant properties in the Hamilton West Harbour area as part of redevelopment planning.

Phase I and II ESAs, Highway Maintenance Patrol Yards | Ontario Ministry of Transportation | Lambton and Simcoe Counties, Ontario | 1995, 1997 | Project Manager

Project manager and primary field personnel for soil and groundwater investigations at 11 maintenance patrol yards, using borehole drilling, well sampling and geophysical methods.

Environmental Evaluations, Federally Owned Properties | PWGSC | Pickering, Ontario | 1996 | Project Manager

Completion of environmental evaluations of more than 70 rural residential, commercial, vacant and agricultural properties within the proposed Pickering Airport lands, Pickering, Ontario. Evaluations included a site reconnaissance, testing of building materials for suspected designated substances, and potable water sampling.

Phase I ESAs, Various Properties | Ontario and Manitoba | 1993-1997 | Project Hydrogeologist

Environmental assessments, including historical review and site reconnaissance of more than 80 residential, institutional, commercial, industrial and vacant properties in Ontario and Manitoba for various financial institutions, developers, individuals and government agencies. Institutional properties included approximately 20 nursing homes and retirement facilities.

Phase I and II ESAs, Various Facilities | Toronto and Owen Sound, Ontario | 1994-1996 | Project Hydrogeologist

Assessment of environmental conditions, including potential soil and groundwater impacts, at a former auto repair facility, a commercial property, an inactive industrial site and a former landfill site.

Mark de Verteuil P.Geo. (Limited)

Project Manager

18 years of experience · Stoney Creek, Ontario

Mark de Verteuil is a project manager in Stantec Consulting Ltd.'s Environmental Services practice area in Stoney Creek. Mr. de Verteuil has over twelve years of experience in the assessment and remediation of industrial, commercial and undeveloped properties for a variety of clients including federal, provincial and municipal governments, petrochemical companies, financial institutions, developers, and property managers. Responsibilities within these projects have included project management, proposal writing and project scoping, site supervision, sample collection, data analysis, and report writing. Project work has also included the collection of historical information, peer reviewing environmental reports completed by others, site reconnaissance, and identification of potential environmental concerns. Mr. de Verteuil is familiar with the necessary procedures and methodologies used to evaluate contaminated sites in Ontario and is experienced managing Phase I, Phase II Environmental Site Assessments, and remediation programs.

EDUCATION

Bachelor of Science, Honors, Brock University, Earth Sciences, St. Catharines, Ontario, Canada, 2003

CERTIFICATIONS & TRAINING

Petroleum Oriented Safety Training (POST), Petroleum Contractors Association, Stoney Creek, Ontario, 2015

Shell's Life-Saving Rules Training, Stantec Consulting Ltd., Stoney Creek, Ontario, 2015

CN & CP eRailsafe Contractor Training, Stoney Creek, Ontario, 2013

St. John Ambulance First Aid, Burlington, Ontario, 2011

Fall Arrest Awareness Training Course, Burlington, Ontario, 2007

40 Hour OSHA Training, Waterloo, Ontario, 2007

Workplace Hazardous Material Information System (WHMIS), Burlington, Ontario, 2005

Traffic Control Technician Course, ATSSA, Markham, Ontario, 2005

PROJECT EXPERIENCE

ENVIRONMENTAL SITE ASSESSMENTS PHASE I, II, III

Environmental Investigation, Refrigeration Brine Leak | City of Waterloo | Waterloo, Ontario | 2010 | Project Scientist

Assessment of soil and groundwater impacts from an ice rink refrigeration brine release at a community centre. The Assessment results were documented in a factual report and submitted to the MOE for review.

Liquid Petroleum Hydrocarbon and Groundwater Assessment | Canadian Pacific | Woodstock, Ontario | 2013 | Project Manager

Completed an Environmental Assessment to determine groundwater quality and the extent and thickness of liquid petroleum hydrocarbons throughout a rail yard site and on a neighbouring third party property.

Canada Post, Various Sites, Southwestern Ontario | Canada Post Corporation | Ontario | 2009 to 2013 | Project Manager / Project Scientist

Project Manager and Project Scientist for work on various Canada Post Corporation (CPC) sites in Southwestern Ontario; responsibilities on these sites has included providing technical work plans and costing; completing structured reports for Phase I/II/III ESAs outlining historical and subsurface conditions, identifying and delineating areas of potential or actual environmental concern, determining effluent quality of groundwater for potential discharge to storm water systems, and determining waste classification for soil material to be potentially removed from the sites; advising on future risk management, remedial actions and/or monitoring requirements; conducting site meetings to review project objectives and completing site reconnaissance activities; completing health and safety plans including the coordination of underground services clearances; evaluation of soil and groundwater analytical results and comparing these results to pertinent federal and provincial standards/guidelines; and completing written technical reports.

Chlorinated Solvent Assessment | CREIT Management LP | Oakville, Ontario | 2011 | Project Manager

Phase II Environmental Assessment and subsequent horizontal and vertical delineation within fractured bedrock of chlorinated solvent (DNAPL) impacts at a multi-unit commercial building. The dissolved and residual phase solvent impacts (tetrachloroethylene and daughter products, including vinyl chloride) associated with a former leaking underground storage tank and associated infrastructure had migrated beyond property boundaries.

Preparation of Contaminant Management Plans, Various Sites | Shell Canada Products | Ontario | 2009 to 2013 | Project Manager / Project Scientist

Preparation of Contaminant Management Plans (CMP) for various petroleum impacted sites in Ontario in Table 2 and Table 3 Site Condition Scenarios. Project Coordination for necessary monitoring and sampling to comply with the developed CMP.

Contamination Overview Study - MTO | Ministry of Transportation of Ontario | Sudbury, Ontario | 2013 | Project Manager

Completed a Contamination Overview Study to support preliminary design services activities associated with the realignment of a 40 km section of Highway 17, west of Sudbury, Ontario. The COS was comprised of a modified Phase I Environmental Site Assessment (ESA), which included a review of publicly available historical records pertaining to potential environmental concerns, the completion of a windshield survey to verify information gathered in the review of historical records, and the preparation of a report which documented the findings.

Industrial Facility Environmental Site Assessment | Husky Injection Molding Systems, LTD. | Bolton, Ontario | 2012-Present | Project Manager

The purpose of the Phase II ESA was to characterize the environmental condition of the soil and groundwater at the Site in response to a suspected loss of coolant and hydraulic oil within a manufacturing facility. Both interior and exterior boreholes and monitoring wells were completed to adequately delineate the impacts.

Storm Water Management Pond Testing | Ontario | 2013 | Project Scientist

Project Scientist for the environmental testing of SWM pond sediment to determine potential management options for material removed during cleanup.

Contamination Overview Study - Reinforcement Pipeline | Union Gas | Sarnia, Ontario | 2014 | Environmental Scientist

Managed the completion of an assessment of potential environmental concerns that could affect the installation of a natural gas reinforcement pipeline.

Excess Soil Management | Aurora, Ontario | 2013 | Project Scientist

Developed a sampling plan to address environmental quality and appropriate management of excess soil during the redevelopment of an elementary school in Aurora, Ontario.

Excess Materials Management Plan for GWP 3091-12-00 Highway 401 Reconstruction, Part A, Chatham-Kent and the County of Essex | Ontario Ministry of Transportation | Ontario | 2014-2016 | Project Manager

Project Manager for a soil sampling program designed to support the development of an Excess Materials Management Plan (EMMP) to determine suitable management protocols for excess materials that may be generated at the Site during road improvements.

GWP 3065-11-00 -Highway 24, County of Brant | Ontario Ministry of Transportation | Ontario | 2014 | Project Manager

Project Manager for environmental investigation services to support detailed design activities associated with the Highway 24 lane and shoulder widening, pavement rehabilitation, drainage improvements, and access management. The investigation was designed to identify the presence of contaminated soil that may be encountered during construction activities in the study area.

GWP 3040-11-00 Mega Culvert Soil Characterization Program, various locations | Ontario Ministry of Transportation | Ontario | 2014 | Environmental Scientist

Environmental Scientist for a soil sampling program designed to support the development of a materials management plan to determine suitable management protocols for excess materials that may be generated at the Site during construction.

ENVIRONMENTAL RISK ASSESSMENTS

Former Aviation Fuel Outlet, Timmins Airport | Shell Canada Products | Timmins, Ontario | 2013 | Project Manager

The Site was formerly operated as a petroleum aviation fuel outlet and was used for the storage and transfer of various types of petroleum fuels including jet fuel, aviation gas and regular unleaded gasoline. Numerous on-site and off-site subsurface investigations were conducted between 2002 and 2012 which identified soils and dissolved concentrations of Petroleum Hydrocarbons in groundwater exceeding the applicable Standards. As a result, a soil vapour assessment and risk assessment was conducted in 2013 at the site to evaluate whether the impacts pose unacceptable risks to human and ecological receptors at the site.

ENVIRONMENTAL SITE REMEDIATION

Soil Assessment and Remediation Program for a Furnace Oil Spill | Economical Insurance | Toronto, Ontario | 2007 | Project Scientist

Petroleum hydrocarbon impacts at a multi-unit residential property were identified at interior and exterior locations on the property following a suspected fuel oil loss from an above-ground storage tank. Impacts were also identified on a third party property. Remediation activities consisted of underpinning the building to permit the excavation and disposal of impacted soil from the Site.

Chlorinated Solvent Assessment and Remediation | Chubb Insurance | Mississauga, Ontario | 2010 | Project Scientist

Field supervision for site assessment and remediation of a multi-unit commercial property that was impacted by dissolved phase VOCs (tetrachloroethylene and daughter products, including vinyl chloride) associated with a former dry cleaning operation. Supervised the installation of a zero-valent iron permeable reactive barrier (PRB) for in-situ treatment of chlorinated solvents in groundwater.

**Emergency Spill Response, Control and Mitigation |
Trimac Transportation | Simcoe, Ontario | 2009 | Project
Scientist**

Responded to a tanker truck petroleum spill in an agricultural plot adjacent to a rural highway. Activities included emergency response and abatement/control, environmental site assessment, mitigation and remediation, and regulator liaison.

**Soil Investigation, Underground Storage Tank Removal
and Remedial Soil Excavation | Ontario Ministry of
Transportation | Hamilton, Ontario | 2015 | Project
Manager**

Project Manager for the environmental program designed to assess the extent of impacts at the Site and determine necessary mitigation and/or remediation measures that should be undertaken by MTO. The objectives were to remediate areas of environmental concern by removal and off-site disposal of USTs and impacted soils, to support site development as part of the future Highway 5 and Highway 6 intersection improvements.

**Soil Investigation, Underground Storage Tank Removal
and Remedial Soil Excavation | Ontario Ministry of
Transportation | Clarington, Ontario | 2015 | Project
Manager**

Project Manager for the environmental program designed to assess the extent of impacts at the Site and determine necessary mitigation and/or remediation measures that should be undertaken by MTO. The objectives were to remediate areas of environmental concern by removal and off-site disposal of USTs and impacted soils, to support site development as part of the future Highway 407 and associated improvements.

LANDFILLS / SOLID WASTE

**Former Sherway Landfill | Ontario Ministry of
Transportation | Etobicoke, Ontario | 2014-2015 | Project
Manager**

Project Management of environmental monitoring activities including; site supervision of drilling contractors, landfill gas monitoring, and groundwater monitoring and sampling. Groundwater monitoring wells were installed to delineate the light non-aqueous phase liquid (LNAPL) previously observed at the Site.

Aiysha Lalva B.Sc., EPt.

Environmental Site Assessor
5 years of experience · Waterloo, Ontario

Aiysha brings approximately four years of environmental consulting experience to the team, previously holding titles of Environmental Scientist and Project Environmental Assistant. She most recently worked at Golder conducting Phase I, II ESA's (CSA/O.Reg. 153/04) (groundwater, soil and indoor air sampling across southern Ontario), excess soil report (SCRs and APUs), waste audits, ISO 14001 audits for manufacturing clients. Aiysha continues to build on her technical skills through the completion of various reporting deliverables for public and private clients.

EDUCATION

Bachelor of Science, University of Guelph, Guelph, Ontario, Canada, 2016

Environmental Control, Sheridan College, Brampton, Ontario, Canada, 2018

CERTIFICATIONS & TRAINING

Standard First Aid & CPR/AED Level HCP, Canadian Red Cross, Mississauga, Ontario, Canada, 2019

MEMBERSHIPS

Member, Environmental Professional-in-Training (EPt), Environmental Careers Organization of Canada (ECO Canada)

PROJECT EXPERIENCE

ENVIRONMENTAL HEALTH & SAFETY

CBRE Legal Register Update* | CBRE Group, Inc. | Canada | 2018 | Environmental Scientist

Legal register update for up to 30 major Canadian cities.

Confidential Project* | Confidential Client | 2019 | Environmental Scientist

Supported cross-Canada ISO 14001 audit for a multinational oil and gas client. Created audit protocols for senior auditors to conduct audits at oil and gas facilities in AB, ON, BC, QC, NFLD, and MB.

PHASE I & II ENVIRONMENTAL SITE ASSESSMENTS

Groundwater Monitoring and Sampling at Various Sites * | Ontario | 2018-2019 | Field Technician, Environmental Scientist

Aiysha participated in regular field events at various sites in southern Ontario, ranging from Port Colborne, London, Cambridge, Kitchener, Hamilton, Mississauga, Waterloo, Sudbury, and Toronto, as part of an on-going groundwater monitoring and sampling program. The program involved the collection of groundwater samples using both low-flow and inertial sampling methods. Contaminants of concern included benzene, toluene, ethylbenzene and xylenes (collectively known as BTEX), petroleum hydrocarbon fractions 1 to 4 (PHC F1 to F4), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), organochlorinated pesticides (OC-pesticides), pesticides and herbicides and/or metals.

Port Lands Flood Protection Project* | Portland Toronto | Toronto, Ontario, Canada | 2018-2019 | Environmental Site Assessor

Support in cement mix creation in order to reduce contamination of NAPL industrial soils.

Phase Two Environmental Site Assessment * | RioCan REIT | Toronto, Ontario, Canada | 2019 | Field Technician

Lead groundwater monitoring and sampling program in high traffic Toronto commercial parking lot, adjacent to Eglinton Crosstown LRT public works construction.

Kieswetter Mazda Phase I & Phase II Environmental Site Assessment | Kieswetter Mazda | Kitchener, Ontario, Canada | 2020 | Environmental Site Assessor, Report Author

As part of an ongoing investigation into contaminant delineation and migration, Aiysha's responsibilities included groundwater monitoring and sampling, review of public and private locates, drilling which included soil sampling and the installation of monitoring wells, and the supervision of sub-contractors.

Phase One Environmental Site Assessment | Wellings of Renfrew c/o Nautical Lands General Contractors Inc | Renfrew, Ontario | 2020 | Environmental Site Assessor, Report Author

Aiysha conducted a Phase One Environmental Site Assessment and completed the technical reporting of the property located northwest of Gibbons Road in Renfrew, Ontario, a historical munitions plant for future acquisition purposes.

**Assessment of Past Use | Enbridge | 2021 |
Environmental Site Assessor and Report Author**

Aiysha conducted a site visit, background information request/ review, and technical reporting for Enbridge in support of Dawn Corunna pipeline.

Phase I & II Environmental Site Assessment | Grand River Hospital | Kitchener, Ontario, Canada | 2021 | Field Technician, Environmental Site Assessor

Project coordination with field staff and Phase I ESA report writing according to CSA Z-768/01 guidelines for 18 and 27 Pine Street, Kitchener, Ontario. Phase II ESA support provided, ie. borehole location determination and private locates completion.

Phase I/ One Environmental Site Assessments at Various Sites | 2020-Present | Environmental Site Assessor, Report Author

Aiysha has conducted site visits, background information ordering/ review and technical reporting for several sites which have included agricultural, residential and industrial/commercial properties throughout Southern Ontario according to both O.Reg. 153/04 and CSA Z768-01 standards. The Phase I/ One ESAs were conducted to support Stantec client's potential divesture or acquisition of property or infrastructure at the Site.

Phase Two ESA - Lower Scarborough East | Metrolinx | Toronto, Ontario, Canada | 2021-Present | Report Author, Project Coordinator

Aiysha is responsible for organizing the Phase Two Environmental Site Assessment according to client needs; this included organizing two phases of a drilling program, completing public and private locates, one groundwater monitoring and sampling program, attaining city permitting, attaining Metrolinx flagging and completing technical reporting.

4th Canadian Division Training Groundwater Monitoring and Sampling Program | Public Services and Procurement Canada and Department of National Defence | Meaford, Ontario, Canada | 2020-Present | Field Technician, Environmental Site Assessor

Stantec was retained by Public Services and Procurement Canada (PSPC) on behalf of Department of National Defence (DND) to conduct the annual groundwater monitoring and sampling program of the Range and Training Area and Garrison Landfill located at the 4th Canadian Division Training Centre (4th CDTC) in Meaford, Ontario. The 4 CDTC has been in continuous use by the Department of National Defence as an active training facility since 1942 and the ranges have been exposed to a wide range of the Canadian Forces' weapons inventory. As part of an ongoing investigation into contaminant delineation and migration, Aiysha's responsibilities included groundwater monitoring and sampling at the Meaford DND site' including accessing restricted area with supervision of UXO personnel. The primary contaminants of concern at the site were polyfluoroalkyl substances (PFAS), energetics and perchlorate, metals and inorganics, benzene, toluene, ethylbenzene and xylenes (collectively known as BTEX), volatile organic compounds (VOCs), and polycyclic aromatic hydrocarbons (PAHs).

Phase I Environmental Site Assessments | FedEx Ground Package System, Inc. | Ottawa and Gravenhurst, Ontario | 2021-Present | Environmental Site Assessor, Report Author, Project Coordinator

Aiysha completed Phase I site visits and reporting for two properties, storage facilities in Ottawa and Gravenhurst, Ontario. The Phase I ESAs were used to identify the presence of areas of potential environmental concern and provide recommendations for any required future environmental investigation at the Site.

Multiple Phase I Environmental Site Assessments | Crombie REIT | 2022 | Report Author

Aiysha completed the historical ordering/review and technical report writing for multiple Crombie REIT properties (Grimsby, Nepean, and Burlington).

ENVIRONMENTAL ASSESSMENTS – HIGHWAYS AND INFRASTRUCTURE

Ontario Line TA | Metrolinx | Toronto, Ontario | 2020 | Data Analysis, Environmental Site Assessor

Complete data analysis of boreholes and soil sampled across all Ontario Line properties of concern. Record of Site Condition and CPU database searches along Ontario Line.

Ontario Line TA | Metrolinx | Toronto, Ontario, Canada | 2020-present | Field Technician, Environmental Site Assessor

Complete data analysis of boreholes and soil sampled across all Ontario Line properties of concern. Record of Site Condition (RSC) and Certificate of Property Use (CPU) database searches along Ontario Line. Support Phase One and Two initiatives across various sites across Ontario Line, including but not limited to Exhibition Station, Queen and Spadina Station, Overlea-Thorndiffe Station, IO Landswap, and 20 Overlea Boulevard.

ENVIRONMENTAL COMPLIANCE AUDITS

Environmental Aspects Register Review, 5th Canadian Division Support Group Gagetown | DCC on behalf of DND | Eastern Canada | 2020-Present | Environmental Site Assessor, Report Author

At the request of Defence Construction Canada (DCC) on behalf of the Department of National Defence (DND), Aiysha completed a review and update of the Environmental Aspects Register for 5th Canadian Division Support Group (5 CDSG) Gagetown Environmental Services Branch at 5 Canadian Division Support Base (5 CDSB) in Gagetown, NB. Complete interviews to determine base activities, then review, consolidate and standardize wording used in Activities, Environmental Aspects and Impacts headings using DND directive.

ENVIRONMENTAL SITE MANAGEMENT

Excess Soil Management | Various | Ontario | 2021-Present | Environmental Site Assessor, Report Author

Support projects for number of clients to provide guidance related to the management of excess soil in accordance with the recent Excess Soil Regulation in Ontario (O.Reg. 406/19). This includes the preparation various reporting: assessment of past uses (APU) report, sampling and analysis plan (SAP), and soil characterization report (SCR), as well as liaison with clients of regarding requirements under the new regulation.

CULTURAL HERITAGE EVALUATION REPORT



**Cultural Heritage Evaluation
Report—3533 County Road 88:
Highway 400/Simcoe Road 88
Interchange Reconstruction
and Underpass Replacement
(GWP 2331-16-00)**

FINAL REPORT

September 25, 2023

Prepared for:
Ministry of Transportation
159 Sir William Hearst Avenue
Building D, 4th Floor
Downsview, Ontario M3M 0B7

Prepared by:
Stantec Consulting Ltd.
600-171 Queens Avenue
London, Ontario N6A 5J7

Project Number:
165001095

Cultural Heritage Evaluation Report—3533 County Road 88: Highway 400/Simcoe Road 88 Interchange Reconstruction and Underpass Replacement (GWP 2331-16-00)


September 25, 2023

Limitations and Sign-off

The conclusions in the Report titled Cultural Heritage Evaluation Report—3533 County Road 88: Highway 400/Simcoe Road 88 Interchange Reconstruction and Underpass Replacement (GWP 2331-16-00) are Stantec’s professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient’s own risk.

Stantec has assumed all information received from Ministry of Transportation Ontario (the “Client”) and third parties in the preparation of the Report to be correct. While Stantec has exercised a customary level of judgment or due diligence in the use of such information, Stantec assumes no responsibility for the consequences of any error or omission contained therein.

This Report is intended solely for use by the Client in accordance with Stantec’s contract with the Client. While the Report may be provided to applicable authorities having jurisdiction and others for whom the Client is responsible, Stantec does not warrant the services to any third party. The report may not be relied upon by any other party without the express written consent of Stantec, which may be withheld at Stantec’s discretion.

Prepared by  Digitally signed by Smith, Frank
Date: 2023.09.25 13:54:00 -04'00'

Frank Smith, MA, CAHP

Reviewed by  Digitally signed by Jones, Lashia
Date: 2023.09.25 14:52:18 -04'00'

Lashia Jones, MA, CAHP

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Date: 2023.09.25 14:13:18 -04'00'

Meaghan Rivard, MA, CAHP



Cultural Heritage Evaluation Report—3533 County Road 88: Highway 400/Simcoe Road 88 Interchange Reconstruction and Underpass Replacement (GWP 2331-16-00)

September 25, 2023

Executive Summary

Stantec Consulting Ltd. (Stantec) was retained by the Ministry of Transportation Ontario (MTO) to prepare a Cultural Heritage Evaluation Report (CHER) for the property at 3533 County Road 88 in the Town of Bradford West Gwillimbury as part of the Detailed Design and Class Environmental Study for the Highway 400/ Simcoe Road 88 Interchange (GWP 2331-16-00) (the Project). The property is a listed resource on the *Town of Bradford West Gwillimbury Municipal Heritage Register* and was added to the register on June 16, 2015 (Town of Bradford West Gwillimbury 2020). The property is presently owned by MTO to facilitate the future widening of Highway 400.

Heritage fieldwork completed in 2000 and the Transportation Environmental Study Report (TESR) prepared for the project in 2003 identified the property as having potential CHVI but did not anticipate direct adverse impacts to the property as it was located outside the anticipated right of way for the project. In the intervening time the design changed and there are now direct adverse impacts anticipated to the property. To determine whether the property has cultural heritage value or interest (CHVI) a Cultural Heritage Evaluation Report was drafted in 2011 by Golder Associates, however the research was incomplete and CVHI was not adequately assessed. This CHER is a revision of the previous evaluation and has been completed to meet the requirements of MTO's cultural heritage conservation policy and process and in accordance with the *Standards and Guidelines for Conservation of Provincial Heritage Properties*, issued under section 25.2 of the Ontario Heritage Act (OHA).

Given the date of the Golder CHER, MTO requested that an updated CHER be completed to:

- Reflect present-day conditions
- Provide additional analysis and community engagement
- Include a comparative analysis
- Update the evaluation of the property according to *Ontario Regulation 9/06* as amended by O. Reg. 569/22 (O. Reg. 9/06) and *10/06* (O. Reg. 10/06)

To achieve this, Stantec completed an updated assessment of the current condition of the property, additional community engagement, a comparative analysis of similar properties located within the Town of Bradford West Gwillimbury, additional research to confirm the findings of the Golder Associates CHER, and revised the analysis and evaluation of CHVI.

This CHER has been completed in accordance with MTO's cultural heritage conservation policy and process and the *Standards and Guidelines for Conservation of Provincial Heritage Properties* issued under the authority of section 25.2 of the Ontario



**Cultural Heritage Evaluation Report—3533 County Road 88: Highway
400/Simcoe Road 88 Interchange Reconstruction and Underpass Replacement
(GWP 2331-16-00)**

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Heritage Act. Following an evaluation of the property according to O. Reg. 9/06 and O. Reg. 10/06, it was found to meet criterion 1 of O. Reg. 9/06 as it contains a representative example of an Ontario vernacular Four Square residence with Edwardian influence. Therefore, this CHER supports the findings of the Golder Associates CHER that the property is a representative example of a Four Square residence. However, this CHER did not determine that the property exhibited a high degree of craftsmanship or demonstrated the work of a noted local architect.

In August 2023, this CHER was reviewed by the MTO Cultural Heritage Review Committee. The committee determined the property did not meet any criteria of O. Reg. 9/06. Therefore, 3533 County Road 88 is not a provincial heritage property or provincial heritage property of provincial significance.

The Executive Summary highlights key points from the report only; for complete information and findings the reader should examine the complete report.



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Appendix A Project Personnel Biographies



**Cultural Heritage Evaluation Report—3533 County Road 88: Highway
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(GWP 2331-16-00)**

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Project Personnel

Project Manager:	Adam Barg, P. Eng.
Environmental Planner:	David Kielstra MA, MCIP, RPP, EP
Heritage Consultant:	Meaghan Rivard, MA, CAHP
Report Writer:	Frank Smith, MA, CAHP
Fieldwork Technicians:	Frank Smith, MA, CAHP Jenn Como, BA
GIS Specialist:	Josh Sa
Administrative Assistant:	Sarah Hilker
Quality Reviewer:	Lashia Jones, MA, CAHP
Independent Reviewer:	Meaghan Rivard, MA, CAHP

Biographies of heritage project personnel are contained in Appendix A



**Cultural Heritage Evaluation Report—3533 County Road 88: Highway
400/Simcoe Road 88 Interchange Reconstruction and Underpass Replacement
(GWP 2331-16-00)**

September 25, 2023

Abbreviations

CHER	Cultural Heritage Evaluation Report
CHVI	Cultural Heritage Value or Interest
Class EA	Class Environmental Assessment
HIA	Heritage Impact Assessment
MCM	Ministry of Citizenship and Multiculturalism
MTO	Ministry of Transportation Ontario
OHA	Ontario Heritage Act
O. Reg.	Ontario Regulation
PHP	Provincial Heritage Property
PHPPPS	Provincial Heritage Property of Provincial Significance
TESR	Transportation Environmental Study Report



Cultural Heritage Evaluation Report—3533 County Road 88: Highway 400/Simcoe Road 88 Interchange Reconstruction and Underpass Replacement (GWP 2331-16-00)

1 Introduction

September 25, 2023

1 Introduction

1.1 Study Purpose

Stantec Consulting Ltd. (Stantec) was retained by the Ministry of Transportation Ontario (MTO) to prepare a Cultural Heritage Evaluation Report (CHER) for the property at 3533 County Road 88 in the Town of Bradford West Gwillimbury as part of the Detailed Design and Class Environmental Study for the Highway 400/ Simcoe Road 88 Interchange (GWP 2331-16-00) (the Project). The project is currently in Detail Design stage, at the 30% to 60% design phase, and has identified a previously unanticipated potential adverse direct impact to the potential cultural heritage value or interest (CHVI) of the property at 3533 County Rd 88."

The property at 3533 County Road 88 contains an early 20th century residence, two outbuildings, and grounds landscaped with a gravel driveway, intermediate and mature trees, and a lawn which is reverting to meadow. In 2015, the property was added to the Town of Bradford West Gwillimbury Municipal Heritage Register (Town of West Gwillimbury 2020). The property is presently owned by the MTO.

Heritage fieldwork completed in 2000 and the Transportation Environmental Study Report (TESR) prepared for the project in 2003 identified the property as having potential CHVI but did not anticipate direct adverse impacts to the property as it was located outside the anticipated right of way for the project. In the intervening time the design changed and there are now direct adverse impacts anticipated to the property. To determine whether the property has CHVI a Cultural Heritage Evaluation Report was drafted in 2011 by Golder Associates, however the research was incomplete and CVHI was not adequately assessed. This CHER is a revision of the previous evaluation and has been completed to meet the requirements of MTO's cultural heritage conservation policy and process and in accordance with the *Standards and Guidelines for Conservation of Provincial Heritage Properties*, issued under section 25.2 of the Ontario Heritage Act (OHA).

In 2023, MTO requested that an updated CHER be completed to:

- Reflect present-day conditions
- Provide additional analysis and community engagement
- Include a comparative analysis
- Update the evaluation of the property according to *Ontario Regulation 9/06* as amended by O. Reg. 569/22 (O. Reg. 9/06) and *10/06* (O. Reg. 10/06)



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1 Introduction

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To achieve this, Stantec completed an updated assessment of the current condition of the property, additional community engagement, a comparative analysis of similar properties located within the Town of Bradford West Gwillimbury, additional research to confirm the findings of the Golder Associates CHER, and revised analysis and evaluation of CHVI. While this new CHER was completed to update the findings of the Golder Associates CHER, it is a stand-alone and comprehensive document that does not rely on the previous CHER.

1.2 Methodology

The CHER has been completed in accordance with MTO's cultural heritage conservation policy and process and the *Standards and Guidelines for Conservation of Provincial Heritage Properties*, issued under section 25.2 of the OHA. The CHER included a program of historical research, community engagement, a site assessment, and an evaluation of CHVI. To familiarize the study team with the subject property, primary sources, such as land registry records and census records were consulted. Secondary sources relating to the general development of Bradford West Gwillimbury were also consulted. Community engagement included community input from relevant historical societies and archives undertaken in April 2023.

A site assessment was undertaken on April 4, 2023, by Frank Smith, Cultural Heritage Specialist, and Jenn Como, Cultural Heritage Specialist. The weather conditions were overcast and seasonably cool. Photographs during the site visit were taken on a Nikon D5300 at a resolution of 300 dots per inch and 6000 by 4000 pixels. The site visit consisted only of exterior access. Interior conditions were recorded in the 2011 CHER. As such, Stantec reviewed interior photography from that CHER (Golder Associates 2011).

The property is evaluated against O. Reg. 9/06 as amended by O. Reg. 569/22 and O. Reg. 10/06. Where CHVI was identified, a statement of cultural heritage value of interest was prepared. MTO may identify the property as “not a provincial heritage property”, a “provincial heritage property” or a “provincial heritage property of provincial significance”.



Cultural Heritage Evaluation Report—3533 County Road 88: Highway 400/Simcoe Road 88 Interchange Reconstruction and Underpass Replacement (GWP 2331-16-00)

2 Description of the Property

September 25, 2023

2 Description of the Property

The Subject Property is located at 3533 County Road 88, in the Town of Bradford West Gwillimbury, County of Simcoe. This property is a single parcel of land and contains the Roll Number 431202000514200 (Figure 1 and Figure 2). Historically, the property is situated on part of Lot 7, Concession 6 in the former Township of West Gwillimbury. The Subject Property is a listed resource on the *Town of Bradford West Gwillimbury Municipal Heritage Register*.

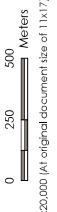
The property at 3533 County Road 88 contains a residence, two outbuildings, and grounds landscaped with a gravel driveway, intermediate and mature trees, and a lawn which is reverting to meadow. It is situated just east of the interchange of Highway 400 and County Road 88 and just south of the intersection of County Road 88 and McKinstry Road. County Road 88 is a three-lane asphalt paved road with dedicated turning lanes.

A site visit was undertaken on April 4, 2023, by Frank Smith and Jenn Como, Cultural Heritage Specialists with Stantec. Weather conditions were overcast and seasonably cool.

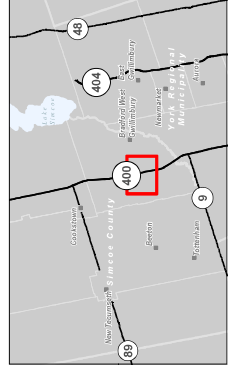




- Legend**
- Subject Property
 - Constructed Drain
 - Watercourse (Intermittent)
 - Watercourse (Permanent)
 - Waterbody
 - Wooded Area



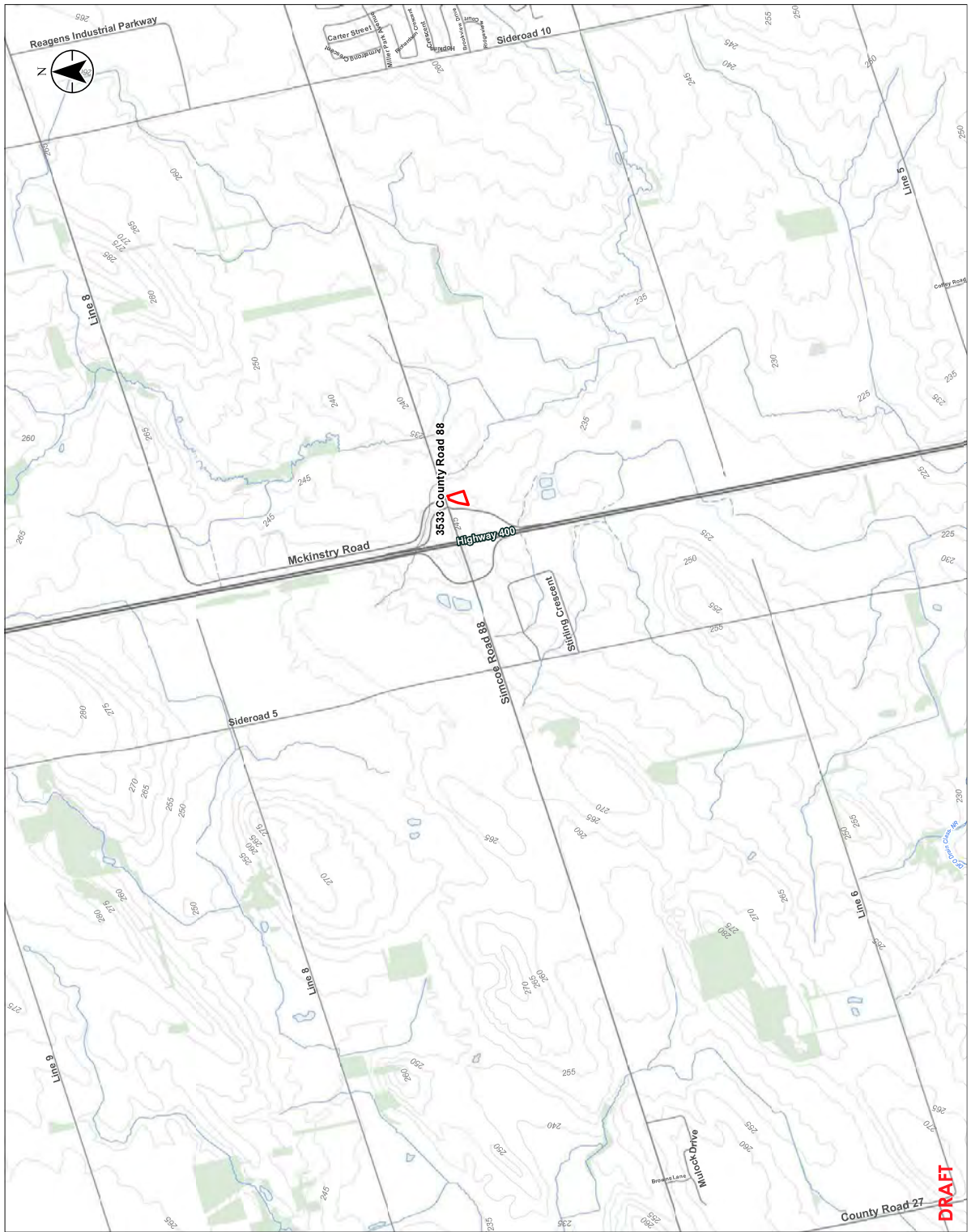
Notes
 1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry & Queen's Printer for Ontario, 2018.



Project Location
 Town of Bradford
 West Gwillimbury
 145001095 REV.4
 Prepared by JWH on 2022-09-06

Client/Project
 MINISTRY OF TRANSPORTATION
 HIGHWAY 400 / SIMCOE ROAD 88 RECONSTRUCTION
 (GWP 233-1-16-00)

Figure No. 1
 Title
Location of the Subject Property

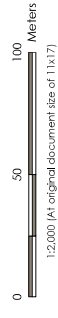


Disclaimer: Client assumes no responsibility for data used in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims, actions and demands, from now and all claims arising in any way, from the creation or reception of the data.

DRAFT



Legend Subject Property



Notes
1. Coordinate system: NAD 1983 UTM Zone 17N
2. Client: Ministry of Natural Resources and Forestry, Ontario, 2018
3. Orthomosaic obtained from Earth Base Solutions, Simcoe County, 2022.

Project Location
Town of Bradford
West Gwillimbury
14500795 REV 2
Prepared by: J.Sa on 2022-09-06

Client/Project
MINISTRY OF TRANSPORTATION
HIGHWAY 400 / SIMCOE ROAD 88 RECONSTRUCTION
(GWP 233-16-00)

Figure No.
2
Title
Subject Property



DRAFT

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3 Research

3.1 Physiography

The Subject Property is situated within the Schomberg Clay Plains physiographic region of southern Ontario. This region consists of three separate basins along the northern slope of the Oak Ridge Moraine. The Subject Property is located in the westernmost section of the Schomberg Clay Plain. Together, the three sections are about 475 square miles in size. Drumlins are located under the clay soil of this region and some larger drumlins are not entirely buried. The majority of the soil in the section of the Schomberg Clay Plain containing the Subject Property is well drained. Much of this region was well suited for agriculture, including growing wheat and corn and raising beef cattle and dairy cows (Chapman and Putnam 1984: 176-177).

3.2 Township of West Gwillimbury

3.2.1 Survey and Settlement

The Town of Bradford West Gwillimbury is located on the traditional territories of the Anishinaabe, Huron-Wendat, and Haudenosaunee Indigenous peoples (Town of Bradford West Gwillimbury 2021). The Subject Property falls within the limits of Treaty 18, also known as the Nottawasaga Purchase or the Lake Simcoe-Nottawasaga Treaty. This treaty was signed in 1818 between representatives of the Crown and certain Anishinaabe peoples (Ministry of Indigenous Affairs 2023).

Shortly after the signing of Treaty 18 in 1818, the colonial government began plans to settle the area. In 1819, the contract to survey the Township of West Gwillimbury was awarded to Gabriel Lount. However, most of the work was executed by his sons George and Samuel (Hunter 1948: 41-42). The township was surveyed using the double front survey system (Plate 1). This survey system was widely used in Upper Canada between 1815 and 1829. These surveys typically divided a township into 200 acres lots that could easily be divided in half. Road allowances were located along each concession line and every five to six lots (Weaver 1968: 15-16). While the Township of West Gwillimbury is located in Simcoe County, the Townships of North and East Gwillimbury were located in the adjacent York County. These townships are named in honour of Elizabeth Posthuma Simcoe (née Gwillim). She was the wife of John Graves Simcoe, the first Lieutenant Governor of Upper Canada. Her detailed diary and illustrations of her time in Upper Canada are highly regarded into the present-day (Marsh 2017).



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3 Research

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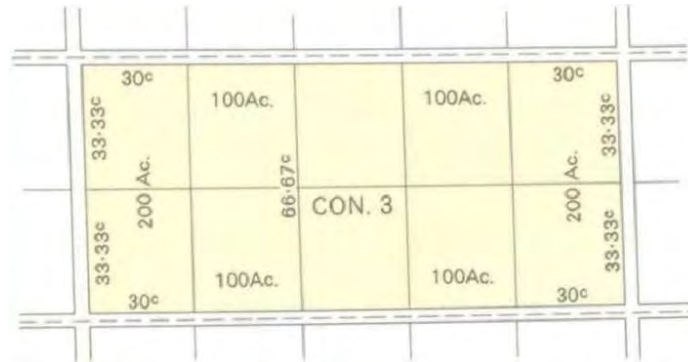


Plate 1: Double Front Survey System (Dean 1969)

In 1820, Gabriel Lount was awarded 1,900 acres of land in the township following the completion of the survey (Hunter 1948: 41). The early development of the township was impeded by land speculation and absentee ownership. While 186 location tickets in West Gwillimbury Township were issued by 1821, the actual rate of settlement was about ten percent (Hunter 1948: 52). The township's first recorded settlers were the Irish immigrants James Wallace, Lewis Algeo, and Robert Armstrong. They settled near the Holland River on Concessions Six and Seven (Hunter 1948: 13). Other early settlers in the township consisted of Scottish immigrants originally connected with Lord Selkirk's Red River Colony (further discussed in Section 2.4) and settlers primarily from northern England (Hunter 1948: 65). Settlement within the Township and much of Simcoe County began to accelerate in the 1830s as the British government encouraged emigration and settlement of the colony progressed to the north of Lake Ontario and Lake Erie (Craig 1963: 127-128).

3.2.2 19th Century Development

In 1842, West Gwillimbury's population was recorded as 2,702. In 1846, a total of 40,224 acres of land had been occupied and 14,269 of those acres placed into cultivation. *Smith's Canadian Gazetteer* described the soil of the township as varying in quality, remarking "...some of it is very good; other parts again are poor" and noted that the west of the township was more thickly settled (Smith 1846: 73). Smith also noted the use of boats along the north parts of the Holland River north of Bradford, which connected the township with lake Simcoe (Smith 1846: 73).

Bradford, which was founded in the 1830s, was the principal settlement of the township (Hunter 1948: 13). During the 1840s and 1850s, the community was regularly serviced by stagecoach service between Toronto and Barrie (Smith 1846: 144). An important roadway between Bradford and the nearby hamlet of Bond Head was the Old Plank Road, which is present-day County Road 88 (Town of Bradford West Gwillimbury 2023). In June 1853, railway service began in West Gwillimbury Township when the Ontario,



Cultural Heritage Evaluation Report—3533 County Road 88: Highway 400/Simcoe Road 88 Interchange Reconstruction and Underpass Replacement (GWP 2331-16-00)

3 Research

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Simcoe, and Huron Union Railroad was built through the township with a stop at Bradford. This railway was the first steam powered rail line to be built in present-day Ontario and provided an important link between Toronto and Lake Huron. In 1858, the railway was reorganized as the Northern Railway of Canada (Toronto Railway Historical Association 2023).

The Census of 1861 recorded West Gwillimbury's population as 3,603. This number excluded Bradford, which was incorporated as a village in 1857 and contained a population of 961 in 1861. Bradford was one of three incorporated settlements in Simcoe County in 1861. The other incorporated settlements were the Town of Collingwood and Town of Barrie (Census of Canada 1861a). The Census of 1861 recorded 335 farmsteads in the township on 37,276 acres of land. This land included 19,929 acres of crops, 3,649 acres of pasture, and 286 acres of gardens or orchards. Like much of Ontario, wheat was an important crop in West Gwillimbury and over 8,000 acres of fall and spring wheat were grown in the township (Census of Canada 1861b).

By 1871, the township's population entered into a period of decline that persisted until the mid-20th century. Between 1871 and 1891 the population of the township declined from 3,036 to 2,525 (Dominion Bureau of Statistics 1953a). This population decline was part of a broader trend of urbanization in the late 19th and early 20th centuries. The emergence of industrialization and urbanization increased the number of wage workers required in cities and towns. At the same time, improvements in farm equipment and the mechanization of farming meant that less labour was required on a farm (Samson 2012). This encouraged out-migration from rural areas to the burgeoning towns and cities of Ontario (Drummond 1987: 30). This trend is reflected in the overall population of Simcoe County, which steadily increased for the remainder of the 19th century due to the continued growth of the towns of Collingwood, Barrie, Midland, Orillia, and Penetanguishene (Dominion Bureau of Statistics 1953a).

3.2.3 20th Century Development

The decline of the population of West Gwillimbury persisted in the first decades of the 20th century. Between 1901 and 1911, the township's population decreased from 2,342 to 2,252 (Dominion Bureau of Statistics 1953a). Despite this population contraction, the agricultural productivity of the township remained high due to mechanization. In 1911, West Gwillimbury contained 527 farmsteads on 45,602 acres of land. This land included 35,360 acres of improved land, indicating that 78% of the occupied land in the township was under cultivation (Census of Canada 1911).

During the early 20th century, several provincial highways were built through West Gwillimbury Township as part of a wider provincial highway network. The earliest highway built through the township was King's Highway 11, which was established between Toronto and Barrie in 1920. Within West Gwillimbury the highway entered



Cultural Heritage Evaluation Report—3533 County Road 88: Highway 400/Simcoe Road 88 Interchange Reconstruction and Underpass Replacement (GWP 2331-16-00)

3 Research

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Bradford and then continued north within the road allowance between Lots 15 and 16. The stretch of King's Highway 11 was downloaded to municipal ownership in the 1990s (Bever 2023a). In 1927, King's Highway 27 was established between Toronto and Penetanguishene. Within West Gwillimbury, the highway ran along the western boundary of the township with the Township of Tecumseth. In the 1990s, the entirety of King's Highway 27 was downloaded to municipal ownership (Bever 2023b). King's Highway 88 was a short provincial highway established in 1938 that connected Bond Head and Bradford. The Subject Property is situated along the former route of this provincial highway. In 1998, King's Highway 88 was downloaded to Simcoe County and is today known as County Road 88 (Bever 2023c).

Beginning in 1941, the population of West Gwillimbury once again began to grow. Between 1941 and 1951, the population of the township increased from 1,842 to 2,294. During this same period the population of Bradford increased from 1,033 to 1,483 (Dominion Bureau of Statistics 1953a). The Census of 1951 recorded 547 farmsteads within the township on 43,983 acres of land. This acreage included 25,169 acres of crops and 5,873 acres of pasture. Much of this pasture acreage would have been used to raise dairy cows, as the township contained 2,322 milk cows in 1951 (Dominion Bureau of Statistics 1952b). Most of this milk was shipped to Toronto (Chapman and Putnam 1984: 176-177).

The most significant transportation development within West Gwillimbury Township in the 20th century was the completion of King's Highway 400 within the township. The highway was built between 1951 and 1952 between Barrie and Toronto. Within West Gwillimbury, the highway is mostly located on the west part of Lots Seven. The highway was important in improving access to the cottage and recreational areas north of Barrie and served the commuters of York County and Simcoe County (Bever 2023d). The Subject Property is located just east of the interchange of County Road 88 and Highway 400.

The opening of Highway 400 supported the continued growth of West Gwillimbury and Bradford. Between 1961 and 1981, the population of West Gwillimbury increased from 2,642 to 4,158 and the population of Bradford increased from 2,432 to 7,370 (Dominion Bureau of Statistics 1962; Statistics Canada 1982). In 1991, the Township of West Gwillimbury and Town of Bradford were amalgamated to create the Town of Bradford West Gwillimbury (Town of Bradford West Gwillimbury 2023). The population of the newly amalgamated community was recorded as 17,702 in 1991 (Statistics Canada 1991). By 2016, the population had grown to 35,325, driven primarily by the growth of Bradford (Statistics Canada 2021). Although the population has grown steadily since the 1940s, the overall character of the town outside of Bradford remains rural and agricultural into the present-day.



Cultural Heritage Evaluation Report—3533 County Road 88: Highway 400/Simcoe Road 88 Interchange Reconstruction and Underpass Replacement (GWP 2331-16-00)

3 Research

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3.3 Property History

The Subject Property is situated on the north half of Lot 7, Concession 6. The Crown granted this parcel of land, containing 100 acres, to Thomas George in 1822. Land registry records indicate that George resided in Whitchurch, indicating he was likely a land speculator. In 1823, he sold the north half of the lot for £50 to James McKay (OnLand 2023). James McKay was originally one of the Scottish settlers enticed to the Red River Colony by Lord Selkirk. The Red River Colony was founded in present-day Manitoba by Selkirk in 1811 when he received a land grant from the Hudson's Bay Company. James McKay arrived at the colony in 1813 and was soon joined by his mother, father, brother, and sister. However, conditions at the Red River Colony were notoriously harsh and in 1815 James McKay relocated to Upper Canada. Much of his family later joined him in 1820 when a group of settlers left the colony for West Gwillimbury Township (Burnsted 2013; Lord Selkirk Association of Rupert's Land 2023). As discussed in Section 2.3.1, these were some of the earliest settlers in West Gwillimbury Township.

In 1857, James McKay briefly sold the parcel containing the Subject Property to George McKay. In 1858, it was resold for the same price back to James McKay (OnLand 2023). The Census of 1861 listed James McKay as a 67-year-old farmer residing in a one and one half storey frame dwelling. He lived with his wife Christina McKay, age 65; Hannah McKay, age 8; and Wellington McKay, age 19 (Library and Archives Canada 1861). The Census of 1861 listed George McKay as a 35-year-old farmer residing in a one storey log dwelling. He lived with his wife Frances, age 31; son Donald, age 11; son John, age 9; son James, age 7; son Robert, age 5; son Thomas, age 2; Catherine, age 76; and Adam, a 35-year-old schoolteacher (Library and Archives Canada 1861).

While land registry records indicate that the property was owned by James McKay between 1858 and 1879, historical mapping from 1871 lists George McKay as the occupant of both halves of Lot 7, Concession 6. No structures are depicted within the lot (Figure 3). However, it is likely that James McKay continued to occupy the north half of the lot. According to land registry records, James McKay died in 1880 and the property was willed to George McKay. Despite this, historical mapping from 1881 lists James McKay as the occupant of the north half of the lot, containing the Subject Property, and George McKay as the occupant of the south half of the lot. Within the Subject Property a structure and orchard are depicted to the south of the present-day residence (Figure 4). The James McKay depicted as the occupant in the historical mapping from 1881 is likely the son of George McKay enumerated in the Census of 1861. However, no James McKay of a similar age is enumerated in the Census of 1881 in West Gwillimbury. In 1885, James McKay formally received title to the north half of Lot 7, Concession 6 (OnLand 2023). By 1888, McKay had relocated to Toronto and that same year, he sold the parcel containing the Subject Property to Robinson Whiteside (also spelled Whitesides) (OnLand 2023). Based on land registry records and census records,



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Robinson Whiteside previously resided in the nearby Township of Essa. The Census of 1891 indicates that he remained in Essa. By 1900, Whiteside had relocated to the Subject Property (OnLand 2023). The Census of 1901 listed Robinson Whiteside as a 48-year-old farmer. He lived with his wife May, age 37; son William, age 9; son Franklin, age 5; and son Thomas, age 7 (Library and Archives Canada 1901).

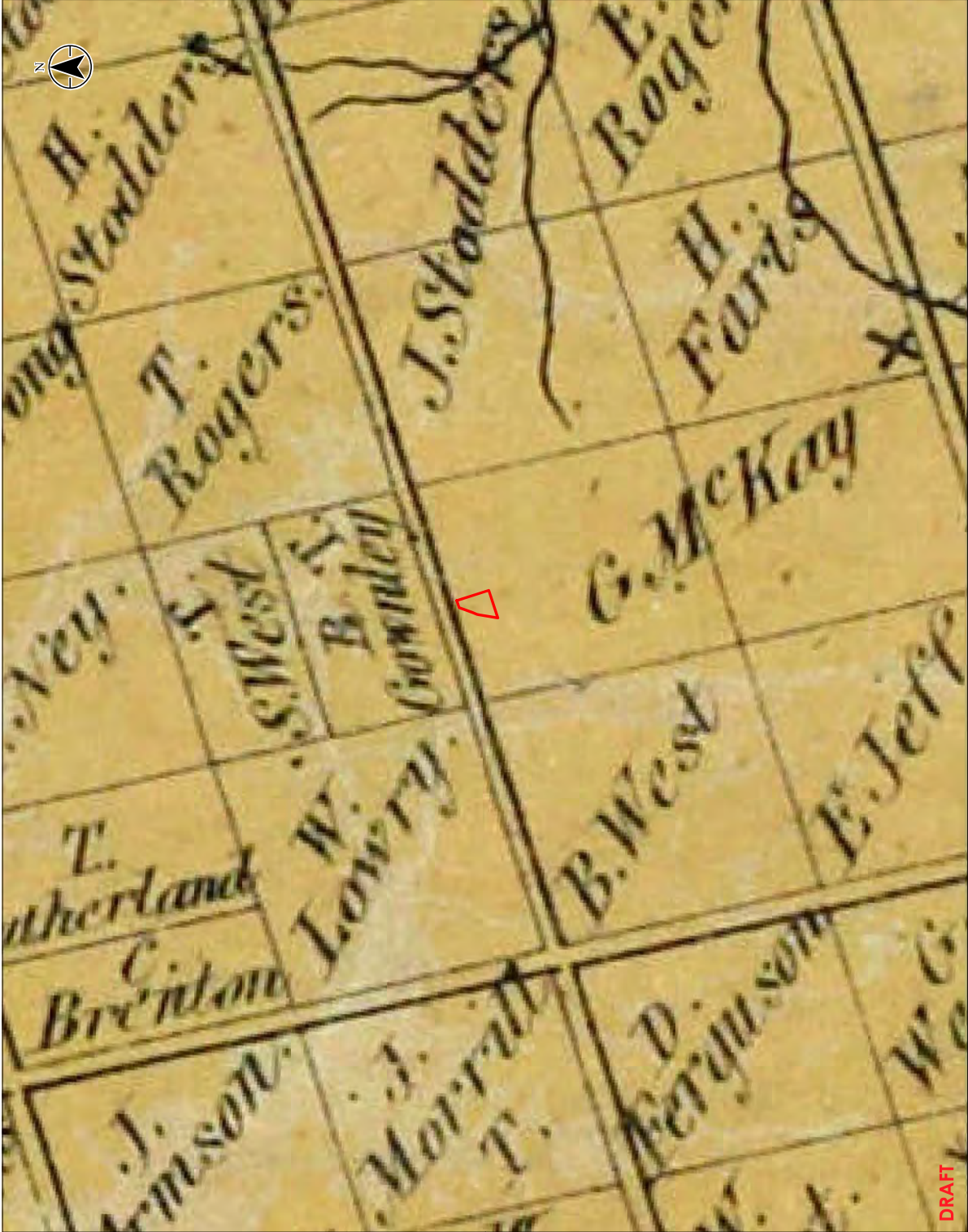
All three of the Whiteside brothers remained unmarried into the early 20th century. Franklin and William primarily farmed the property while Tom became a self taught carpenter and draftsman. According to the Bradford West Gwillimbury Historical Association, he “built many houses and barns in the South Simcoe area” (Bradford West Gwillimbury Local History Association 2006: 793). A review of additional primary sources, secondary sources, and community input did not result in clarifying the role Tom Whiteside played in barn and residence building in the area. Based on this, it is likely he was one of many builders who operated in the area using similar construction techniques. The three brothers also operated a machine shop on the property to fabricate and repair farm equipment. Their generosity in the community was well known and the brothers “were usually behind with their farming operation because they always helped others first” (Bradford West Gwillimbury Local History Association 2006: 793). In 1921, the three brothers constructed the present-day residence at 3533 County Road (Culbert 2023). The Census of 1921 lists Mary Whiteside as the head of the household. She was recorded as 57-year-old farmer. She lived with William, age 29; Thomas, age 27; and Frank, age 25. All three Whiteside brothers were listed as farmers (Library and Archives Canada 1921). Topographic mapping from 1928 shows a structure at the approximate location of the residence at present-day 3533 County Road 88 (Figure 5).

Between 1946 and 1956, the Department of Highways Ontario acquired land within part of the lot owned by the Whiteside family to build King’s Highway 400 (OnLand 2023). Aerial photography from 1954 shows the Subject Property and the newly constructed highway (Figure 6). In 1959, Thomas and Franklin Whiteside sold the property containing the Subject Property to James Bateman. In 1969, Bateman sold land to British Petroleum, which built the gas station located just south of the Subject Property. The Bateman family sold the Subject Property to James Culbert in 1973 (OnLand 2023). Culbert operated an upholstery refinishing business on the property in an outbuilding (Culbert 2023). Culbert sold the property in 1981 (OnLand 2023). The property was acquired by MTO in April 2021 and at the time of MTO’s acquisition the property was vacant.





Legend  Approximate Location of Subject Property



Notes
1. Historic image not to scale
2. Historic image from 1871, Hogg's Map of the County of Simcoe - Calligraphed
John Hogg
Project Location
Town of Bradford
West Gwillimbury
145001095 REV 4
Prepared by JSA on 2022-09-06

Client/Project
MINISTRY OF TRANSPORTATION
HIGHWAY 400 / SIMCOE ROAD 88 RECONSTRUCTION
(GWP 2331-16-00)

Figure No. **3**

Title
CHER- 3533 County Road 88
Historical Mapping, 1871

DRAFT

Disclaimer: Client assumes no responsibility for data quality or completeness of the data. The recipient accepts full responsibility for data quality and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims, actions and demands, in any way, from the content or execution of the data.



Legend Approximate Location of Subject Property



DRAFT

Notes
1. Historic images not to scale
2. Illustrations of Historical Aerials of the County of Simcoe, Ont.
Toronto: D. A. Macdonald
Project Location
Town of Bradford
West Gwillimbury
145001095, REV. 2
Prepared by: J.Sa on 2022-09-06

Client/Project
MINISTRY OF TRANSPORTATION
HIGHWAY 400/ SIMCOE ROAD 88 RECONSTRUCTION
(GWP 2331-16-00)
Figure No. **4**

Title
**CHER- 3533 County Road 88
Historical Mapping, 1881**

Disclaimer: Client assumes no responsibility for data verified in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims, actions and causes, from now and all claims arising in any way, from the content or execution of the said.



Legend Approximate Location of Subject Property

Notes
1. Historic image not to scale
2. Source: Department of Natural Resources, 1928 Topographic Map Ontario, Alton Sheet.

Project Location
Town of Bradford
West Gwillimbury

Client/Project
MINISTRY OF TRANSPORTATION
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Figure No.
5

Title
CHER- 3533 County Road 88
Topographic Mapping, 1928



DRAFT

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Legend Approximate Location of Subject Property



Notes
1. Historic image not to scale.
2. Source: Manning Survey Corporation, 1954. Air Photo of Southern Ontario.

Project Location
Town of Bradford
West Gwillimbury

Client/Project
MINISTRY OF TRANSPORTATION
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Figure No.
6

Title
CHER- 3533 County Road 88
Aerial Photograph, 1954

DRAFT

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3.5 Physical Evidence

3.5.1 Landscape Context

The Subject Property is located at 3533 County Road 88, just east of the interchange of Highway 400 and County Road 88 and just south of the intersection of County Road 88 and McKinstry Road. County Road 88 in front of the Subject Property includes three through lanes, and one right turn lane. To the immediate east of the Subject Property, County Road 88 contains no sidewalks, no curbs, and gravel shoulders. To the west of the Subject Property, County Road 88 contains concrete curbs and raised asphalt shoulder at the interchange of County Road 88 and Highway 400. The north side of the roadway contains timber utility poles and the south side of the roadway near the highway interchange contains municipal street lighting and traffic signals affixed to freestanding metal poles (Photo 1 and Photo 2).

McKinstry Drive is a two-lane gravel roadway which terminates at County Road 88 just north of the Subject Property (Photo 3). An offramp for Highway 400 is located just west of the Subject Property (Photo 4). The general character of the area consists of gently rolling topography and is predominantly rural and agricultural (Photo 5 and Photo 6). However, a gas station is located just south of the Subject Property and the increasing development associated with the community of Bradford is visible in the distance when looking east along County Road 88 (Photo 7 and Photo 8).

The Subject Property is accessed from County Road 88 by a gravel driveway. The driveway continues south past the residence and ends near an outbuilding (Photo 9). Along County Road 88, the driveway is flanked by a split rail fence. Just east of the driveway, adjacent to County Road 88, a farm implement is displayed. The remainder of the property is delineated by a post and wire fence (Photo 10). The property is landscaped with intermediate and mature deciduous and coniferous trees, foundation plantings, and a lawn which is reverting to meadow (Photo 11 and Photo 12).



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Photo 1: County Road 88, looking east



Photo 2: County Road 88, looking west



Photo 3: Intersection of County Road 88 and McKinstry Drive, looking north



Photo 4: Highway 400 offramp, looking west



Photo 5: Rural and agricultural character, looking east



Photo 6: Rural and agricultural character, looking north



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Photo 7: Gas station, looking south



Photo 8: Mid-rise development in Bradford (denoted by arrow), looking east



Photo 9: Gravel driveway, looking south



Photo 10: Fencing and farm implement (denoted by arrow), looking south



Photo 11: Trees, looking west



Photo 12: Meadow, looking west



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3.5.2 Residence

The residence at 3533 County Road 88 is a two and one half storey structure with a medium-pitched pyramidal roof with a flat deck. The roof is clad in asphalt shingles with lightening rods and wood soffits (Photo 13 and Photo 14). The exterior of the residence is blue painted red brick with a stretcher bond and the foundation is poured concrete (Photo 15). The front (north) and east façades contain a wrap-around porch. The residence has a square plan and a low-pitched hip roof addition clad in vinyl siding attached to the south façade.

The front façade of the residence is asymmetrical in composition (Photo 16). The roof contains a hip roof dormer with a wood sash horizontal sliding window. The second storey contains two wood sash 1/1 windows with concrete lintels, concrete sills, and wood shutters. To the east of the windows is a balcony accessed by a wood and glass door with a concrete lintel. The balcony is located above the north section of the porch and contains a timber railing (Photo 17 and Photo 18).

The first storey of the front façade contains two window openings and the main entrance. The window openings have been boarded up and contain concrete lintels and concrete sills. Based on the Golder Associates CHER, these boarded windows are wood sash windows. The larger window opening towards the west contains wood shutters but the smaller opening to the east of the main entrance does not. The main entrance has been boarded and a concrete lintel is located above the door opening. The main entrance is accessed via the north section of the wrap-around porch. Based on the Golder Associates CHER, the main door is a timber and glass door (Photo 19). The wrap-around porch contains brick porch support columns, a wood ceiling, a wood railing, and wood decking. An incandescent light fixture is located on the ceiling adjacent to the main entrance (Photo 20). The basement level contains a boarded window opening with a concrete lintel (Photo 21).

The east façade of the residence is asymmetrical in composition and consists of the main section of the residence and the east façade of the addition (Photo 22). The roof contains a hip roof dormer with vinyl sash horizontal sliding windows (Photo 23). The second storey contains two window openings. The southerly window is a wood sash 1/1 window with concrete lintel, concrete sill, and wood shutters. The northerly window is a wood sash single pane window with a concrete lintel, concrete sill, and wood shutters (Photo 24).

The first storey of the east façade contains a boarded up window opening with concrete lintel, concrete sill, and wood shutters. To the south of the window opening is a boarded up secondary entrance with a concrete lintel above the doorway (Photo 25). Based on the Golder Associates CHER, the boarded window is a wood sash window. The secondary entrance is accessed from the east section of the wrap-around porch. The



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wrap-around porch contains brick porch support columns, a wood ceiling, a wood railing, and wood decking. An incandescent light fixture is located on the ceiling adjacent to the secondary entrance (Photo 26). The east façade of the addition is clad in vinyl siding and contains a boarded window opening (Photo 27). Based on the Golder Associates CHER, the boarded window is a wood sash window

The west façade is symmetrical in composition (Photo 28). The second storey contains two window openings. The northerly window opening contains a 2/2 wood sash storm window and 1/1 wood sash window with a concrete lintel and concrete sill. The southerly window opening contains a 1/1 wood sash window with concrete lintel and concrete sill (Photo 29).

The first storey of the west façade contains two boarded up window openings with concrete lintels, concrete sills, and wood shutters. Based on the Golder Associates CHER, the boarded window is a wood sash window. The basement level contains two boarded up window openings with concrete lintels (Photo 30). The west façade of the addition is clad in vinyl siding and contains a secondary entrance with a wood and glass doors and a boarded up window opening (Photo 31). Based on the Golder Associates CHER, the boarded window is a wood sash window.

The south façade is asymmetrical in composition (Photo 32). The second storey contains three window openings. The centre window opening contains a 1/1 wood sash window with concrete lintel and sill. To the west and east of this window opening are two 1/1 wood sash windows with concrete lintels, concrete sills, and wood shutters (Photo 33). The Golder Associates CHER reported a water cistern on the south façade, this was not visually verified during the field visit due to vegetation.

The first storey of the south façade contains a boarded up picture window opening with a concrete lintel. To the east of this window opening is a smaller window opening that has been partially blocked by the addition (Photo 34). The basement level is surrounded by a wood deck (Photo 35). The south façade of the addition is clad in vinyl siding and contains a boarded up window opening (Photo 36).

The interior contains an unfinished basement, first storey, second storey, and attic (Plate 2 and Plate 3).

The interior consists of a first storey with a front entrance hall, living room, dining room, and kitchen. In 2011, the front entrance hall was clad in wallpaper, contained a naturally finished wood staircase, wood flooring, and a wood main entrance door. Wood and glass French Doors lead to the living room (Photo 37). The living room contains walls clad in wallpaper and paint, a fireplace with a brick and wood mantle, and wood flooring (Photo 38). The dining room contains upholstered walls (Photo 39). According to the Golder Associates CHER, this was completed by the former owner James Culbert, which is consistent with the findings of the historical research. Between the dining room



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and kitchen are wood pocket doors. The kitchen contains wood cabinetry typical to the early to mid-20th century and contains access to a secondary staircase (Photo 40). The finish, trim, and detailing of the first storey woodwork is typical to middle class dwellings built in the early 20th century and follows typical patterns and designs.

The second stor^{ey} contains three bedrooms and a bathroom connected by a hallway. The hallway is L-shaped and is connected to the first storey by the staircase and contains a wood floor (Photo 41). The three bedrooms contain walk in closets and the primary bedroom contains access to the balcony. All the flooring is wood (Photo 42). The bathroom has finishings that date to approximately the 1970s (Photo 43). The finish, trim, and detailing of the second storey woodwork is typical to middle class dwellings built in the early 20th century and follows typical patterns and designs.

The attic contains two rooms, a walk-in closet, and bathroom. According to the Golder Associates CHER, the attic was previously unfinished and converted to a living space in the late 20th or early 21st century.



Photo 13: General view of residence, looking southwest



Photo 14: Representative photo of roof soffit



Photo 16: Front façade, looking south



Photo 15: Brick exterior and concrete foundation, looking east



Photo 17: Dormer and second storey windows, looking south

Photo 18: Balcony railing and door, looking south



Photo 19: First storey windows and entrance, looking south

Photo 20: North section of porch, looking west



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Photo 21: Basement window opening, looking south



Photo 22: East façade, general view, looking west



Photo 23: Hip roof dormer, looking west



Photo 24: Second storey windows, looking west



Photo 25: Door and window opening, looking south



Photo 26: East section of porch, looking north



Photo 28: West façade, looking east



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Photo 27: East façade of addition, looking west



Photo 29: Second storey windows, looking east

Photo 30: First storey and basement windows, looking east



Photo 31: West façade of addition, looking east

Photo 32: South façade, looking north



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**Photo 33: Second storey windows,
looking north**



Photo 35: Deck, looking west

**Photo 34: First storey windows,
looking north**



**Photo 36: South façade of addition,
looking north**



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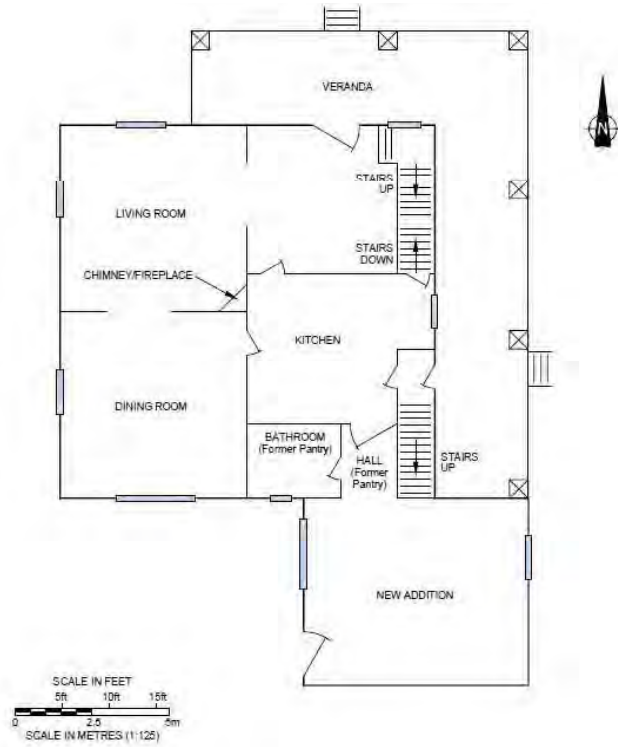


Plate 2: First Storey (Golder Associates 2011)



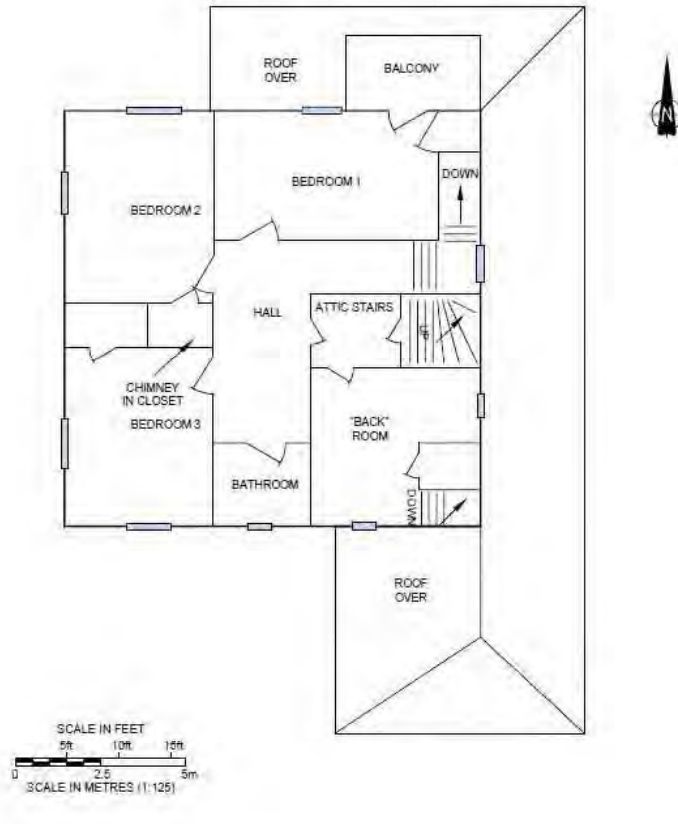


Plate 3: Second Storey (Golder Associates 2011)



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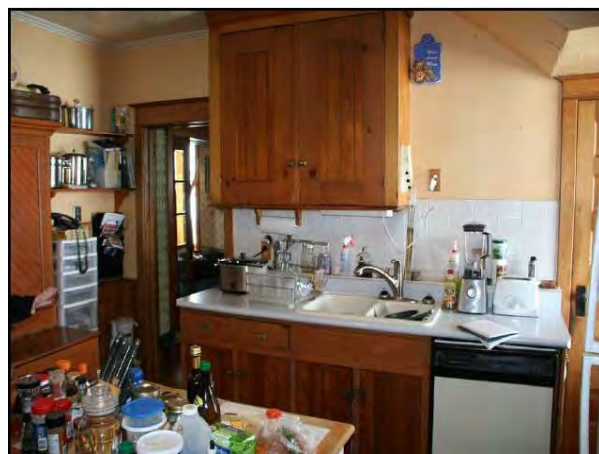
**Photo 37: Front entrance and stairs
(Golder Associates 2011)**



**Photo 38: Living room fireplace
(Golder Associates 2011)**



**Photo 39: Dining Room, showing
pocket doors (Golder
Associates 2011)**



**Photo 40: Kitchen, showing cabinetry
(Golder Associates 2011)**



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Photo 41: Hallway (Golder Associates 2011)



Photo 42: Representative bedroom photo (Golder Associates 2011)



Photo 43: Bathroom (Golder Associates 2011)

3.5.3 Outbuildings

The south outbuilding is a gable roof structure with a metal clad roof, a metal chimney, a concrete block chimney, and poured concrete foundation. The south façade of the outbuilding contains a gable roof addition and shed roof addition. The east façade of the main section is clad in board and batten siding and the addition is clad in plywood and wood boards (Photo 37). The window openings are boarded up.



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The main entrance consists of a composite door flanked by decorative hand hewn beams (Photo 38). To the south are two secondary entrances, one on the main section and one on the addition (Photo 39). The north façade is clad in board and batten siding and contains three boarded window openings, utility meters, and decorative hand hewn beams running just below the gable and at the corners (Photo 40). The west façade is clad in board and batten and horizontal timber boards. The west façade contains four boarded up window openings (Photo 41). The south façade contains two boarded up window openings and is clad in metal (Photo 42). The gable and shed roof addition is attached to the south façade and is clad in plywood and accessed by two composite doors (Photo 43).

The second outbuilding is located southwest of the residence. This building contains a gable roof and shed roof clad in asphalt shingles. This outbuilding contains no foundation. The outbuilding is clad board and batten siding and plywood. The window openings and door openings have been boarded up (Photo 44).



Photo 44: East façade of outbuilding, looking west



Photo 45: Entrance with hand hewn beams, looking west



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Photo 46: Secondary entrances, looking north



Photo 47: North façade, looking south



Photo 48: West façade, looking east



Photo 49: South façade, looking east



Photo 50: Shed roof addition, looking east



Photo 51: Southwest outbuilding, looking east



4 Comparative Analysis

The residence is an example of a Four Square vernacular structure with Edwardian design influence. These types of residences were commonly constructed in Canada and the United States between about 1905 and 1930. These types of structures were commonly referred to as “Four Square Houses” and were common in both rural and urban areas. These residences commonly contained classically inspired detailing but many also contained few architectural embellishments. As inherently vernacular structures, variation exists between Four Square residences. However, Four Square residences typically were two storeys in height and contained a hip or pyramidal roof. The roof pitch and placement of porches is variable. Other elements popular in Four Square architecture included symmetrical front facades and the use of dormers (McAlester 2013: 146; 551). While the front façade of the residence is asymmetrical, the residence contains a form, materials, and massing that is overall consistent with vernacular Four Square early 20th century architecture.

The Town of Bradford West Gwillimbury heritage register does not contain examples of Four Square properties that are designated under the OHA and listed properties do not contain photographs or information regarding architectural styles. Therefore, to ascertain the occurrence of Four Square architecture in the Town of Bradford West Gwillimbury, several rural roadways within approximately two to three kilometres of the Subject Property were driven and examples of Four Square style structures were noted.

At least two other Four Square structures were found, including 3664 Line 8 (Photo 45) and 4289 County Road 88 (Photo 46). The property at 4289 County Road 88 is listed on the Bradford West Gwillimbury Heritage Register and the property at 3664 Line 8 has no municipal heritage status. Based on the occurrence of at least two other Four Square houses within a few kilometres of the Subject Property and a wider understanding of the prevalence of these types of structures in the early 20th century, the residence at 3533 County Road 88 is likely one of many Four Square structures in the surrounding area or municipality. Based on the above discussion, the residence is neither rare nor unique in a local or provincial context.



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Photo 52: 3664 Line 8



Photo 53: 3533 County Road 88



5 Community Engagement

To determine provincial, municipal, and community interest in the property, input was requested from the Ontario Heritage Trust (OHT), MCM, the municipality, and relevant historical societies and archives. The purpose of input from OHT and MCM was to verify that the property was not subject to previous provincial recognition, including as an OHT owned property, OHT easement property, provincial heritage property, or provincial heritage property of provincial significance. The Town of Bradford-West Gwillimbury, the Tecumseth & West Gwillimbury Historical Society, and Simcoe County Archives were contacted to determine local interest in the property and locate primary or secondary source material.

The results of the community engagement requests are contained in Table 1.

Table 1: Community Engagement Summary

Organization	Contact Information	Date of Response(s)	Result
OHT	Kevin Baksh, Provincial Heritage Registrar	April 4, 2023	No OHT easements or Trust owned properties within or adjacent to the Subject Property
MCM	Karla Barboza, Team Lead, Heritage	March 31, 2023	No provincial heritage properties within or adjacent to the Subject Property
Town of Bradford-West Gwillimbury	Thomas Dysart, Planner	March 30, 2023 and September 5, 2023	The municipality confirmed the property is listed. Mr. Dysart noted in a follow-up conversation that the property was likely added to the heritage register due to its age. Mr. Dysart further noted that many homes built before the 1930s have been added to the town's register.
Tecumseth & West	Janine Harris Wheatly	April 18, 2023	Cemetery transcriptions of the Whiteside family were



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Gwillimbury Historical Society			provided and the request for information was forwarded to historical researchers. The historical society followed up with a newspaper article about a former property owner.
Simcoe County Archives	Jenna Kondo, Archives Research Coordinator	April 3, 2023	A top level search by staff of the archives did not find information specific to Thomas Whiteside and his architectural career



6 Cultural Heritage Value or Interest

6.1 Introduction

Evaluation of 3533 County Road 88 is based on the OHA *Standards and Guidelines for Conservation of Provincial Heritage Properties* (MCM 2014). The property was evaluated against O. Reg. 9/06 and O. Reg. 10/06 under the OHA (Government of Ontario 2006 and 2023).

6.2 Ontario Regulation 9/06

6.2.1 Design or Physical Value

The residence is an example of a Four Square vernacular structure with Edwardian design influence built in 1921. These types of residences were commonly constructed in Canada and the United States between about 1905 and 1930. Two-storey structures with square plans were commonly built with pyramidal roofs, which were less expensive to construct than gable roof houses. These types of structures were commonly referred to as “Four Square Houses” and were common in both rural and urban areas. The name Four Square is derived from their square plan, which typically included interiors that were two rooms wide and two rooms deep. Four square houses were often embellished with elements of popular early 20th century architectural styles, such as Edwardian, Craftsman, and Colonial Revival (McAlester 2013: 146; Mikel 2004: 116). As inherently vernacular structures, variation exists between Four Square residences. However, Four Square residences typically were two storeys in height and contained a hip or pyramidal roof. The roof pitch and placement of porches is variable. Other elements popular in Four Square architecture included symmetrical front facades and the use of dormers (McAlester 2013: 146; 551).

The residence at 3533 County Road 88 contains design elements common to modest and vernacular examples of Four Square residences in Ontario with Edwardian design elements. These design elements include the hip roof, plain roof eaves with no ornamentation, dormers, the use of lintels, and a main entrance accessed via a porch (Blumenson 1990: 174). While the front façade is asymmetrical in composition, this is the only design element of the residence that is inconsistent with Four Square architecture. Despite its vacancy and the boarding of some windows and doors, the integrity of the residence remains relatively high and the brick exterior, wood sash windows, lintels, sills, and square plan remain readily evident. While the residence has been painted, this is likely a reversible alteration that does not permanently detract from its integrity. Therefore, the residence is a representative example of an Ontario vernacular Four Square structure with modest Edwardian influences. The exterior of the



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residence serves as a representative portrayal of early 20th century Four Square architecture with Edwardian design influence.

The interior of the residence contains a layout and detailing, such as cabinetry, wood trim, and fireplace which is typical to middle class dwellings built in the early 20th century and follows typical patterns and designs. The interior has also been modified with new wall finishings, a finished attic, and new bathroom fixtures. The interior does not contain design or physical value.

The residence was built by Thomas Whiteside and his brothers in in 1921. Thomas Whiteside was a self-taught carpenter and was known to have built residences and barns in the southern part of Simcoe County. The balancing and general massing of the residence are decidedly vernacular, and the window patterns and window spacing do not generally follow Edwardian patterns. This shows a degree of craftsmanship and artistic merit typical of a farmer turned self-taught builder. The materials and construction techniques are typical to the early 20th century, including concrete, brick, and the use of a pyramidal roof.

The outbuildings are typical utilitarian structures that do not demonstrate a particular style, type, or construction method. Their materials and construction methods are typical to early to mid-20th century construction and therefore hold no design or physical value.

6.2.2 Historic or Associative Value

The property is historically associated with James McKay and the Whiteside family. James McKay and his family were early settlers to West Gwillimbury Township and were associated with the wave of settlers originally from Lord Selkirk's Red River Colony. While this group of settlers was significant to the development of the township, no structures or landscapes dating to this early period of settlement remain on the property.

Between 1888 and 1959, the property was occupied by the Whiteside family, who were originally from the neighbouring Township of Essa. While the brothers Thomas, Franklin, and William were well known in the community due to their role in repairing farm implements and building barns and houses, these activities would have been typical of farmers in rural Ontario. Historical research and community input did not indicate the Whiteside family made a contribution to the development of West Gwillimbury Township through their building, farming, or implement repair that was particularly strong or notable to the overall evolution or pattern of settlement in the community.



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6.2.3 Contextual Value

The property is set in an agricultural landscape that is beginning to transition to suburban land use towards the east. The Subject Property is also visually influenced by its proximity to Highway 400. This type of land use and adjacency to a highway is not unique or particularly definable within the wider context of Bradford West Gwillimbury or southern Ontario.

The property is part of a former farmstead. The property parcel has been severed from this former land use and retains no physical, functional, visual, or historical link to its surroundings. The residence is set back from the roadway and views of the Highway 400 interchange dominate the area surrounding the property. Therefore, the property is not a landmark.

6.2.4 Summary of Evaluation

Table 2: O. Reg. 9/06 Evaluation Summary

Criteria of O. Reg. 9/06 (amended by O. Reg. 569/22)	Yes/ No	Comments
1. The property has design value or physical value because it is a rare, unique, representative or early example of a style, type, expression, material or construction method	Yes	The residence at 3533 County Road 88 contains design elements common to modest and vernacular examples of Four Square residences in Ontario with Edwardian design elements. These design elements include plain roof eaves with no ornamentation, the use of lintels, and a main entrance accessed via a porch. Therefore, the residence is a representative example of an Ontario vernacular Four Square structure with modest Edwardian influences.
2. The property has design value or physical value because it displays a high degree of craftsmanship or artistic merit.	No	The balancing and general massing of the residence are decidedly vernacular, and the window patterns and window spacing do not generally follow Edwardian patterns. This shows a degree of craftsmanship and artistic merit typical of a farmer turned to self taught builder.



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Criteria of O. Reg. 9/06 (amended by O. Reg. 569/22)	Yes/ No	Comments
3. The property has design value or physical value because it demonstrates a high degree of technical or scientific achievement.	No	The materials and construction techniques are typical to the early 20 th century, including concrete, brick, and the use of a pyramidal roof.
4. The property has historical value or associative value because it has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community.	No	The property is historically associated with the McKay and Whiteside families. The property contains no structures or landscapes directly connected to the McKay family. Historical research and community input did not indicate the Whiteside family made a contribution to the development of West Gwillimbury Township through their building, farming, or implement repair that was particularly strong or notable to the overall evolution or pattern of settlement in the community
5. The property has historical value or associative value because it yields, or has the potential to yield, information that contributes to an understanding of a community or culture.	No	The property contains a former farmstead and vacant residence. It does not offer new knowledge or a greater understanding of the community or a culture of the community.
6. The property has historical value or associative value because it demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.	No	While Thomas Whiteside was a local builder, there is no evidence his buildings were particularly notable or significant to the community.
7. The property has contextual value because it is important in defining, maintaining or supporting the character of an area.	No	The character of the area is agricultural and heavily visually and audibly influenced by Highway 400. This character is not unique or particularly definable.



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Criteria of O. Reg. 9/06 (amended by O. Reg. 569/22)	Yes/ No	Comments
8. The property has contextual value because it is physically, functionally, visually or historically linked to its surroundings.	No	The property is a former farmstead that has been severed from its original land use.
9. The property has contextual value because it is a landmark.	No	The context of the area is dominated by the interchange of Highway 400 and County Road 88 and as a result the residence is not particularly notable.

6.2.5 Golder Associates Evaluation

Table 3 contains the results of the evaluation of the Subject Property by Golder Associates in 2011 and Stantec’s response to the findings.

Table 3: Golder CHER Results and Stantec Response

Criteria of O. Reg. 9/06 (amended by O. Reg. 569/22)	Yes/ No (Golder)	Comments
1. The property has design value or physical value because it is a rare, unique, representative or early example of a style, type, expression, material or construction method	Yes	Stantec agrees the property contains design value as a representative early 20 th century “Four Square” house.
2. The property has design value or physical value because it displays a high degree of craftsmanship or artistic merit.	Yes	Golder Associates described the structure as a “well built brick structure”. The quality of craftsmanship and artistic merit of the structure are typical to the early 20 th century and Stantec disagrees with these findings.



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Criteria of O. Reg. 9/06 (amended by O. Reg. 569/22)	Yes/ No (Golder)	Comments
3. The property has design value or physical value because it demonstrates a high degree of technical or scientific achievement.	No	Golder Associates and Stantec agree on this criterion.
4. The property has historical value or associative value because it has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community.	No	Golder Associates and Stantec agree on this criterion.
5. The property has historical value or associative value because it yields, or has the potential to yield, information that contributes to an understanding of a community or culture.	No	Golder Associates and Stantec agree on this criterion.
6. The property has historical value or associative value because it demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.	Yes	Golder Associates described Whiteside as a “locally well-known builder.” Aside from a single reference to his building career in a secondary source, there is no evidence his buildings were particularly notable or significant to the community. While Whiteside’s work may have been “well known”, there is no evidence his contributions to the community as a builder are particularly influential. Stantec disagrees with the findings of Golder Associates on this criterion.
7. The property has contextual value because it is important in defining, maintaining or supporting the character of an area.	No	Golder Associates and Stantec agree on this criterion.



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Criteria of O. Reg. 9/06 (amended by O. Reg. 569/22)	Yes/ No (Golder)	Comments
8. The property has contextual value because it is physically, functionally, visually or historically linked to its surroundings.	Yes	Golder Associates noted the residence “contributes to the built heritage and rural character of the agricultural land between Highway 400 and Bradford” Since 2011, this area has been increasingly suburbanized. Stantec disagrees with the findings of Golder Associates on this criterion based on changes to the overall area.
9. The property has contextual value because it is a landmark.	No	Golder Associates and Stantec agree on this criterion.

6.3 Ontario Regulation 10/06

6.3.1 Discussion

Evaluation according to O. Reg. 10/06 generally looks to measure the significance of a site in a provincial context. As such, an evaluation was undertaken to measure the significance of 3533 County Road 88 against an understanding of the provincial threshold of significance.

Based on an understanding of the larger history of Ontario it was determined that 3533 County Road 88 does not hold significance to the province as a whole. The current structure is a typical early 20th century Ontario vernacular structure. Its design and construction follow common residential construction practices during the early 20th century. There are no visual or aesthetic qualities that distinguish it from other Ontario vernacular residences built in Ontario, nor does it exhibit technical or scientific achievements. It has no connection to a theme, person, group, organization, or event of provincial significance. It is located in a municipality, not an unorganized territory, and the minister therefore does not have to determine whether there is provincial interest in protecting the property.



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6.3.2 Summary of Evaluation

Table 4: O. Reg. 10/06 Evaluation Summary

Criteria	Yes/ No	Comment
1. The property represents or demonstrates a theme or pattern in Ontario’s history.	No	The property contains an early 20 th century residence and outbuildings. It is not connected with a theme or pattern that has made a strong or notable influence to the evolution or development of the province.
2. The property yields, or has the potential to yield, information that contributes to an understanding of Ontario’s history.	No	The property contains an early 20 th century residence and outbuildings. This property does not offer a new or greater understanding of Ontario’s history.
3. The property demonstrates an uncommon, rare, or unique aspect of Ontario’s cultural heritage.	No	The property contains an early 20 th century residence and outbuildings. It does not demonstrate a way of life, phenomenon, process, function, land use, or design that is provincially significant.
4. The property is of aesthetic, visual, or contextual importance to the province.	No	The property contains no natural qualities that can be considered particularly picturesque, evocative, or symbolic.
5. The property demonstrates a high degree of excellence or creative, technical, or scientific achievement at a provincial level in a given period.	No	The property contains no influential breakthroughs, advances, or innovations that are significant to the province.
6. The property has a strong or special association with the entire province or with a community that is found in more than one part of the province. The association exists for historic, social, or cultural reasons or because of traditional use.	No	The property does not have a special association that is symbolic or spiritual. The property has no important historical, social, or political attachments and does not evoke a strong or special collective response.



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Criteria	Yes/ No	Comment
7. The property has a strong or special association with the life or work of a person, group, or organization of importance to the province or with an event of importance to the province.	No	The property contains no links associated with a person, group, or organization that is important to the history of Ontario.
8. The property is located in unorganized territory and the Minister determines that there is a provincial interest in the protection of the property.	No	The property is located in the Town of Bradford West Gwillimbury, County of Simcoe.

6.3.3 Golder Associates Evaluation

Stantec and Golder Associates concur on this evaluation. Therefore, no further discussion is required.

6.4 Statement of Cultural Heritage Value or Interest

Description of Property

The property at 3533 County Road 88 is located in the Town of Bradford West Gwillimbury on the south side of County Road 88, just east of the interchange of Highway 400 and County Road 88. The property contains a residence built in 1921 and two outbuildings. Between 1888 and 1959, the property was occupied by the Whiteside family. Thomas Whiteside was a local builder and built the residence with his brothers in 1921.

Cultural Heritage Value

The residence at 3533 County Road 88 contains design value as a representative example of an Ontario vernacular Four Square residence with modest Edwardian influences. These types of residences were commonly constructed in Canada and the United States between about 1905 and 1930. Four Square architecture refers to two-storey structures with square plans. These were commonly built with pyramidal roofs, which were less expensive to construct than gable roofs. The residence at 3533 County Road 88 contains design elements common to modest and vernacular examples of Four Square residences in Ontario with Edwardian design elements. These design



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elements include plain roof eaves with no ornamentation, the use of lintels, and a main entrance accessed by a porch.

Heritage Attributes

- Representative Ontario vernacular Four Square structure with Edwardian influence
 - Two and one half storey detached structure with square plan
 - Medium pitched pyramidal roof with flat deck and two hip roof dormers
 - Brick exterior and poured concrete foundation
 - Wrap-around porch on north and east facades
 - Balcony located on north façade
 - Location of principal and secondary entrance accessed from wrap-around porch
 - Window openings with wood sash windows, concrete lintels and concrete sills
 - Window openings with concrete lintels and sills

Note: The outbuildings and addition are not considered heritage attributes. The blue paint on the brick exterior is not considered a heritage attribute.



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7 Recommendations

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7 Recommendations

Following an evaluation of the Subject Property according to O. Reg. 9/06 and O. Reg. 10/06, the property was found to contain CHVI. The property was found to meet criterion 1 of O. Reg. 9/06 as it contains a representative example of an Ontario vernacular Four Square residence with Edwardian influence.

This CHER agrees with the Golder Associates CHER that the property is a representative example of a Four Square residence. However, Stantec did not determine that the property exhibited a high degree of craftsmanship or demonstrated the work of a noted local architect.

In August 2023, this CHER was reviewed by the MTO Cultural Heritage Review Committee. The committee determined the property did not meet any criteria of O. Reg. 9/06. Therefore, 3533 County Road 88 is not a provincial heritage property or provincial heritage property of provincial significance.



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Appendix A Project Personnel Biographies

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Appendix A Project Personnel Biographies

Jenn Como, BA: Jenn Como is a Cultural Heritage Specialist with Stantec specializing in the archaeology of Euro-Canadian and Indigenous sites in Ontario. She has five years of experience with Stantec including four years performing both lab and fieldwork for archaeological investigations in Ontario and one year focusing on historical research, evaluation of cultural heritage resources, and impact assessments for built heritage projects. She received a bachelor's degree with an Honors Specialization in Anthropology from Western University in London, Ontario. Jenn's work experience has included municipal, provincial, and federal projects as well as private enterprise projects in such sectors as renewable energy, power transmission, nuclear energy, transportation (including rail, highway, and waterways), housing development, and aggregate projects. Throughout these projects she has positively engaged and liaised with Indigenous groups and community members, co-authored archaeological and cultural heritage assessment reports, completed background research, inventoried and evaluated impacts to cultural heritage resources, processed and analyzed material culture resources from both Euro-Canadian and Indigenous sites, and provided project support.

Lashia Jones, MA, CAHP: Lashia Jones is a Senior Cultural Heritage Specialist and member of Stantec's Environmental Services Team, with experience in identifying, evaluating and planning for cultural heritage resources. Ms. Jones is a member of the Canadian Association of Heritage Professionals, and has a master's degree in Canadian Studies from Carleton University, specializing in Heritage Conservation. Ms. Jones has worked for both public and private sector clients, providing a variety of cultural heritage services including heritage impact assessments, cultural heritage evaluations, inventories of cultural heritage resources, heritage conservation districts, heritage master plans, conservation plans and cultural heritage bridge evaluations. Ms. Jones is well versed with local, provincial and national tools for the identification, evaluation and planning best practices for cultural heritage resources, including the Ontario Heritage Act, Provincial Policy Statement, Planning Act, Environmental Assessment Act, Ontario Heritage Tool Kit, Standards and Guidelines for the Conservation of Provincial Heritage Properties and the Standards and Guidelines for the Conservation of Historic Places in Canada. Lashia's role on various project types has given her experience in public engagement and consultation, constructive dialogue with clients, heritage committees, local councils and multi-disciplinary project teams.

Meaghan Rivard, MA, CAHP: Meaghan Rivard is Stantec's Senior Heritage Consultant and Associate with over 13 years of experience in the identification, research, evaluation, and documentation of heritage resources as well as expertise in the environmental assessment process as it pertains to heritage resources. Ms. Rivard attained her Bachelor of Arts degree with honours and distinction in history from Brock University in St. Catharines, Ontario and her Master of Arts degree in history (public



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history stream) from Western University in London, Ontario. Ms. Rivard is a member of the Canadian Association of Heritage Professionals.

Ms. Rivard has experience managing and executing all aspects of Cultural Heritage Evaluation Reports, Heritage Impact Assessments, Photographic Documentations, and Heritage Conservation Plans. She has assessed more than 2,500 properties as part of windshield surveys and worked under various classed environmental assessments. In addition to environmental assessment related work, Meaghan continues to be actively involved in the assessment of individual properties. Here she utilizes knowledge in the identification, evaluation, and documentation of heritage resources alongside expertise in the assessment of proposed change and preparation of options to mitigate negative impacts on heritage resources. Meaghan is focused on regulatory satisfaction balanced with an admiration for the heritage of our province.

Through her specialization in the Environmental Assessment process, over the past 14 years Meaghan has reviewed, authored, and contributed in various capacities to hundreds of cultural heritage reports under a wide variety of reporting requirements for municipal, provincial, and federal clients. Meaghan has completed work directly for Ontario's Ministry of Transportation, Hydro One Networks Inc., Metrolinx, Ontario Power Generation, and Infrastructure Ontario. She has also been listed as the lead heritage consultant on retainer assignments for the Ministry of Transportation and Infrastructure Ontario.

Frank Smith, MA, CAHP: Frank Smith is a Cultural Heritage Specialist with over eight years of experience in detailed historical research, interpretation, and conservation of cultural heritage resources. Frank attained his Bachelor of Arts degree *magna cum laude* in history from Adelphi University in Garden City, New York and his Master of Arts degree in history (public history stream) from Western University in London, Ontario. Before joining Stantec, he was the Curator of the John P. Metras Sports Museum and Research Assistant for the Census of Canada 1891 project. Since joining Stantec, Frank has assisted in the completion of dozens of environmental assessment reports, including reports for Metrolinx, Canadian National Railways, and Canadian Pacific Railways. Frank has evaluated dozens of railway corridors and evaluated thousands of properties adjacent to railway corridors. Frank is a member of the Canadian Association of Heritage Professionals.



**TERRESTRIAL ECOSYSTEMS
EXISTING CONDITIONS AND IMPACT ASSESSMENT**



**Terrestrial Ecosystems Existing
Conditions and Impact Assessment
– Highway 400 Improvements,
Project 1: Simcoe Road 88
Interchange Improvements (G.W.P.
2331-16-00)**

Final Report

December 5, 2023

File: 165001095

Prepared for:

Ontario Ministry of Transportation,
Central Region
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Sign-off Sheet

The conclusions in the Report titled Terrestrial Ecosystems Existing Conditions and Impact Assessment – Highway 400 Improvements, Project 1: Simcoe Road 88 Interchange Improvements (G.W.P. 2331-16-00) are Stantec’s professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient’s own risk.

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**Terrestrial Ecosystems Existing Conditions and Impact Assessment Report –
Highway 400 Improvements, Project 1: Simcoe Road 88 Interchange
Improvements (G.W.P. 2331-16-00)**

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1.0 Introduction

The Ontario Ministry of Transportation (MTO) retained Stantec Consulting Ltd. to complete the Detail Design and Class Environmental Assessment (EA) for Highway 400 Improvements, in the Town of Bradford West Gwillimbury, County of Simcoe (G.W.P. 2331-16-00, G.W.P. 2190-20-00, and G.W.P. 2077-18-00). This assignment involves the Detail Design for three structures and one culvert. The work has been divided into three projects:

Project 1 (G.W.P. 2331-16-00):

- Replacement of the Simcoe Road 88 Underpass (Site 30X-0309)
- Reconstruction of the Highway 400/Simcoe Road 88 Interchange
- Realignment of McKinstry Road
- Relocation of the Simcoe Road 88 Carpool Lot

Project 2 (G.W.P. 2190-20-00):

- Replacement of the Line 9 Overpasses [Northbound Lanes (NBL) and Southbound Lanes (SBL)] (Site 30X-0308/1&2) – pending completion of further preliminary design.

Project 3 (G.W.P. 2077-18-00):

- Rehabilitation of Line 12 Structural Culvert (Site 30X-0567/C)
- Rehabilitation of Line 13 Overpasses (NBL & SBL) (Site 30X-0351/1&2)

This *Terrestrial Ecosystems Existing Conditions and Impact Assessment Report* provides supporting documentation for the Study Area associated with Project 1 (G.W.P. 2331-16-00) - Simcoe Road 88/Highway 400 Interchange improvements. The proposed improvements include the replacement of the Simcoe Road 88 Underpass, reconstruction of the Highway 400/Simcoe Road 88 Interchange, realignment of McKinstry Road, and the reconstruction of the Simcoe Road 88 carpool lot.

Project 2 (G.W.P. 2190-20-00) Line 9 Overpass Replacement and Project 3 (G.W.P. 2077-18-00) Line 12 and Line 13 Rehabilitation will be documented in a separate report available under a separate cover.



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MTO completed a Preliminary Design Study outlined in the *Highway 400 Planning and Preliminary Design Study from the South Canal Bridge to 1.0 km South of Highway 89 Transportation Environmental Study Report (TESR)*, November 2003. The Study Area for the TERS included the Simcoe Road 88 interchange, as well as the structures and culvert that are the subject of these other assignments.

The structures are located in the Town of Bradford West Gwillimbury, in the County of Simcoe. The study is being carried out in accordance with the approved planning process under the MTO *Class Environmental Assessment for Provincial Transportation Facilities* (Class EA), 1999, as amended 2000.

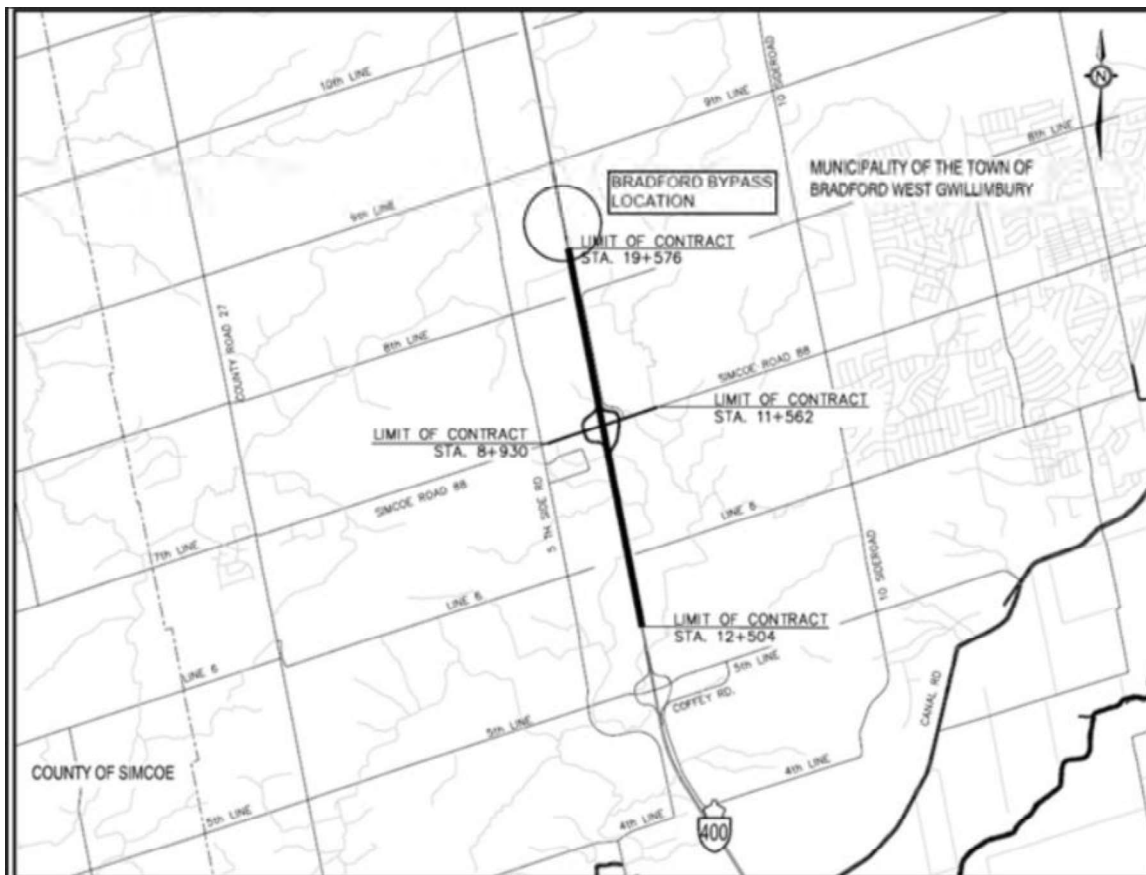


Figure 1: Location of the Simcoe Road 88 Interchange Study Area



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This report was completed using guidance from Section 3.2 – Terrestrial Ecosystems of the Environmental Reference for Highway Design (MTO 2013) and Section 4 – Wildlife and Wildlife Management of the *Environmental Reference for Contract Preparation* (MTO 2007). Fish and fish habitat features for this project are described in a separate report (Stantec 2023).

The objectives of this report are to:

- Document existing vegetation communities and wildlife habitat
- Identify sensitive natural features, species at risk (SAR) and species of conservation concern (SOCC)
- Assess impacts to the terrestrial environment, including sensitive natural features, SAR and SOCC
- Recommend standard mitigation measures and site-specific environmental management options
- Identify requirements for SAR approvals

For this report, the Study Area as shown in **Figure 1**, is the 120 meter (m) “zone of investigation”, which is a 120 m buffer around the work areas at the Simcoe Road 88 Interchange and along Highway 400. The proposed work area where disturbance may occur is referred to as the Work Zone. Except for **Figure 1**, all figures referenced in this report are provided in **Appendix A**.

2.0 Methods

2.1 Background Review

The Study Area is located within the Midhurst District of the Ministry of Natural Resources and Forestry (MNR). An information request was submitted to the Midhurst District MNR on April 8, 2019 (**Appendix B**). A response was received from MNR on April 17, 2019 (**Appendix B**).

A variety of background documents and information sources were reviewed to identify known natural heritage features within or near the Study Area, including Designated Natural Areas and other natural features, and records of SAR and SOCC. These data sources included:

- Highway 400 Planning and Preliminary Design Study from the South Canal Bridge to 1 km South of Highway 89. Class Environmental Assessment (Group B). Transportation Environmental Study Report (URS 2003)



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- Natural Heritage Information Centre (NHIC) database (MNRF 2023a)
- MNRF Land Information Ontario (LIO) digital mapping of significant natural heritage features (MNRF 2023b)
- Species at Risk in Ontario (SARO) List (MNRF 2023c)
- Species at Risk Act (SARA), Schedule 1 (Government of Canada 2023)
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2020)
- 2nd Ontario Breeding Bird Atlas (Cadman et al. 2007)
- Atlas of Mammals of Ontario (Dobbyn 1994)
- Great Lakes Conservation Blueprint for Terrestrial Biodiversity Volumes 1 and 2 (Henson and Brodribb 2005).

The results of these searches were used to guide field investigations, and to identify potential SAR and SOCC that have the potential to overlap with the Study Area. These resources generally do not disclose the exact locations of a species occurrence, with accuracy ranging from 1 km² (NHIC) to 10 km² (wildlife atlases), to municipal boundaries or watersheds. As such they are used as an indicator of potential occurrence in the Study Area.

2.1.1 Species at Risk

For the purpose of this assessment, SAR are species classified as threatened (THR) or endangered (END) by the Committee on the Status of Species at Risk in Ontario (COSSARO). The Ontario *Endangered Species Act, 2007* (ESA) prohibits harm or harassment to threatened or endangered species, and damage or disturbance to their habitat. The ESA applies on all private and Crown owned lands in Ontario. Habitat protection under the ESA typically includes all habitats that directly or indirectly support SAR. Federally protected endangered, threatened, and special concern (SC) species are classified by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and listed in Schedule 1 of the *Species at Risk Act, 2002* (SARA) and apply only to federally owned lands.

SAR occurrences were obtained from the NHIC (MNRF 2023a) and other online databases. These databases were used to determine if there were any occurrences of significant floral or faunal species near the Study Area.



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2.1.2 Species of Conservation Concern

SOCC are considered at a number of levels, including globally, nationally, and provincially. For this report, SOCC includes species that are provincially rare (with a Provincial S-rank of S1 to S3), listed as Special Concern (SC) on the SARO or listed on Schedule 1 of SARA but not included on the SARO list.

Provincial ranks (S-ranks) are used by the NHIC to set protection priorities for rare species and vegetation communities. They are based on the number of factors such as abundance, distribution, population trends and threats in Ontario and are not legal designations. By comparing the global and provincial ranks, the status, rarity, and the urgency of conservation needs can be determined. Species with provincial ranks of S1 to S3, and those tracked by the MNRF, are considered SOCC. Provincial S-ranks are defined as follows:

- S1: Critically imperiled; usually fewer than 5 occurrences
- S2: Imperiled; usually fewer than 20 occurrences
- S3: Vulnerable; usually fewer than 100 occurrences
- S4: Apparently secure; uncommon but not rare, usually more than 100 occurrences
- S5: Secure, common, widespread and abundant

S-rank followed by a “?” indicates the rank is still uncertain

2.2 Field Data Collection Methods

Field investigations were completed in 2019 (June 5) and in 2023 (April 25, June 19, and July 6). Surveys in 2019 included vegetation communities, vegetation species, wildlife habitat assessments, SAR habitat assessments, incidental wildlife observation, and migratory bird nest surveys. Surveys in 2023 included a butternut search, leaf-off bat habitat assessment, and bat acoustic monitoring. The Study Area encompassed 120 m around the structures, but due to property access restrictions, field investigations were performed from within the highway right-of-way (ROW).

2.2.1 Vegetation Community Assessment

Vegetation community mapping for the Study Area was conducted according to the Ecological Land Classification (ELC) system for southern Ontario (Lee et al. 1998) and where appropriate, the updated ELC Catalogue (2008). Vegetation communities were delineated on satellite photographs and verified in the field. Provincial significance of vegetation communities was based on the rankings assigned by the NHIC (MNRF 2023).



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2.2.2 Butternut Search

A search for butternut trees was completed in areas of impact (i.e., the Work Zone) and within 50 m adjacent to the impact areas. If butternut trees were present within the Study Area, a Butternut Health Assessment (BHA) would need to be completed during leaf-on conditions and guidance within the *Butternut Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the Endangered Species Act, 2007* (MECP 2021) to be followed.

2.2.3 Wildlife and Wildlife Habitat

2.2.3.1 Significant Wildlife Habitat Assessment

The MNR's *Significant Wildlife Habitat Technical Guide* (SWHTG) (MNR 2000) describes Significant Wildlife Habitat (SWH) in four categories:

1. Seasonal concentrations of wildlife
2. Rare vegetation communities or specialized habitat for wildlife
3. Habitat for SOCC
4. Wildlife movement corridors

Field assessments identified candidate SWH using guidance from the SWHTG and the SWH Criteria Schedules for Ecoregion 6E (MNR 2015). Results of the SWH assessment are discussed in **Section 3.2.3**.

2.2.3.2 Migratory Bird Nest Surveys

Migratory birds and their nests are protected under the *Migratory Bird Convention Act, 1994* (MBCA), and are afforded protection on all lands. All culverts in the Study Area were searched for the presence of migratory bird nests. These structures have the potential to provide nesting habitat for Barn Swallow (*Hirundo rustica*), Cliff Swallow (*Petrochelidon pyrrhonota*), and Eastern Phoebe (*Sayornis phoebe*), all of which are species that are protected under the MBCA. Culvert details were recorded for each structure, including dimensions and the presence/absence of potential nesting ledges and presence of water in the culvert.

Under the new 2022 updates to the Migratory Bird Regulations (MBR) within the MBCA, nests for 18 bird species (seven of which occur in Ontario) receive year-round protection for a prescribed length of time ranging from 24-36 months (on Schedule 1) (Migratory Bird Regulations 2022). Pileated Woodpecker (*Dryocopus pileatus*) was the only species that was identified as potentially present in the Study Area. If a Pileated



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Woodpecker nest is determined to be empty of live birds or viable eggs, then the nest must be registered under Environment and Climate Change Canada's (ECCC) Abandoned Nest Registry. At which point the prescribed period of inactivity can begin to be counted (36-months) before any action can be taken towards the nest. If a Pileated Woodpecker nesting cavity tree must be removed prior to the 36-month waiting period, consultation with ECCC will be needed to identify authorization requirements and mitigation measures.

2.2.3.3 Bat Habitat Assessment

Trees within or adjacent to the ROW were assessed on April 25, 2023, to identify trees that meet the criteria to support potential maternal roosts of SAR bats (e.g., cavities and peeling bark). The bat habitat assessment was completed following the guidance in the *Treed Habitats – Maternity Roost Surveys* (MECP 2022), *Survey Protocol for Species at Risk Bats within Treed Habitats: Little Brown Myotis, Northern Myotis, and Tri-colored Bat* (MNR 2017), and *Bats and Bat Habitats: Guidelines for Wind Power Projects* (MNR 2011).

As outlined in the MECP's 2022 survey protocol, any tree with a diameter at breast height (DBH) of 10 cm or greater is considered to provide potential bat maternity roost habitat. However, trees ≥ 25 cm DBH and with a large amount of loose, peeling bark, cavities, or crevices at least 10 m high, and exhibiting the early stages of decay are considered to have higher suitability for maternal bat roosting (MNR 2011).

Stantec biologists traversed the edge of the ROW (or where access was permitted) to identify and record potential bat maternity roost using ArcGIS Field Maps. Best candidate roost trees were identified using the following criteria:

- tree is one of the tallest snag/cavity trees in the survey area
- tree exhibits cavities/crevices
- tree has the largest DBH
- tree is within the highest density of snags/cavity trees
- tree has a large amount of loose, peeling bark
- cavity/crevice is located high in the snag/tree (i.e., ≥ 10 m high on tree trunk)
- tree canopy cover is relatively open
- tree exhibits early stages of decay (i.e., decay Class 1 to 3)



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2.2.3.4 Bat Acoustic Monitoring

Bat Acoustic Monitoring was completed using Autonomous Recording Units (ARUs), specifically Wildlife Acoustic Mini Bat Detectors, which were deployed throughout the Project footprint on June 19, 2023, and collected on July 6, 2023. Nine (9) ARUs were attached to trees with cable ties and were deployed within areas that were identified as suitable bat maternity roost habitat that may be impacted (**Figure 3-1 to 3-6**).

Site selection of the ARUs and recording parameters followed guidance within *Treed Habitats – Maternity Roost Surveys* (MECP 2022), which references the *Bats and Bat Habitats: Guidelines for Wind Power Projects* (MNR 2011) as well as the *Survey Protocol for Species at Risk Bats within Treed Habitats: Little Brown Myotis, Northern Myotis & Tri-colored Bat* (MNR 2017). Recordings commenced 30 minutes before sunset and continued for five hours after sunset. The ARUs then remained on site for at least 10 nights in June and early-July during optimal weather conditions of warm/mild nights (i.e., ambient temperature >10°C) with low winds and no precipitation.

Once the ARUs were retrieved, recordings were then screened using *Wildlife Acoustic’s Kaleidoscope Pro Automatic ID* and were visually assessed (i.e., via spectrograph) by qualified professionals with bat identification and monitoring experience and training to confirm identification of the bat species.

Table 2.1 provides a summary of survey dates and environmental conditions during Stantec’s bat acoustic monitoring surveys.

Table 2.1: Survey Dates and Weather Conditions

Survey Date	Weather Conditions	Suitable Weather Night (Y/N)
June 19, 2023	Temperature: 18°C Wind (Beaufort scale): 7 Precipitation: None	Y
June 20, 2023	Temperature: 17°C Wind (Beaufort scale): 3 Precipitation: None	Y
June 21, 2023	Temperature: 19°C Wind (Beaufort scale): 7 Precipitation: None	Y



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Survey Date	Weather Conditions	Suitable Weather Night (Y/N)
June 22, 2023	Temperature: 18°C Wind (Beaufort scale): 5 Precipitation: None	Y
June 23, 2023	Temperature: 18°C Wind (Beaufort scale): 2 Precipitation: 0.1 mm	Y
June 24, 2023	Temperature: 19°C Wind (Beaufort scale): 5 Precipitation: None	Y
June 25, 2023	Temperature: 19°C Wind (Beaufort scale): 10 Precipitation: 5 mm	N
June 26, 2023	Temperature: 18°C Wind (Beaufort scale): 11 Precipitation: 2 mm	N
June 27, 2023	Temperature: 14°C Wind (Beaufort scale): 11 Precipitation: None	N
June 28, 2023	Temperature: 13°C Wind (Beaufort scale): 5 Precipitation: None	Y
June 29, 2023	Temperature: 18°C Wind (Beaufort scale): 3 Precipitation: None	Y
June 30, 2023	Temperature: 18°C Wind (Beaufort scale): 4 Precipitation: None	Y
July 1, 2023	Temperature: 21°C Wind (Beaufort scale): 2 Precipitation: None	Y



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Survey Date	Weather Conditions	Suitable Weather Night (Y/N)
July 2, 2023	Temperature: 18°C Wind (Beaufort scale): 2 Precipitation: None	Y
July 3, 2023	Temperature: 19°C Wind (Beaufort scale): 3 Precipitation: None	Y
July 4, 2023	Temperature: 21°C Wind (Beaufort scale): 3 Precipitation: None	Y
July 5, 2023	Temperature: 22°C Wind (Beaufort scale): 4 Precipitation: None	Y
Total # of suitable nights		14

2.2.3.5 Habitat for Species at Risk

As described in **Section 2.1** a list of species with potential to occur in the Study Area was created using results of the background review. Habitat assessments were conducted in the field to determine the habitat potential for SAR in the Study Area (**Table 3.1, Section 3.1.3**). Field investigations were supplemented with data obtained through satellite photo interpretation and background information on species' habitat preferences. SAR with suitable habitat and at least one recent record (within the last 20 years) with an overlapping range in the Study Area were considered to have a reasonable probability of occurring. Species with no preferred habitat in the Study Area are assumed to be absent.



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3.0 Terrestrial Ecosystems Existing Conditions

3.1 Background Data

3.1.1 Physical Geography

The Study Area is in Ecoregion 6E (Lake Simcoe-Rideau Ecoregion), and more specifically the Ecodistrict of 6E-6 (Barrie). This Ecodistrict acts as a transition zone between the Canadian Shield to the north and the Niagara Escarpment to the south, consisting of sand and beveled till plains of the Simcoe Lowlands, Simcoe Uplands, the Schomberg Clay Plains, and outliers of the Peterborough Drumlin Field. The land use in this Ecodistrict is predominately agriculture with cropland constituting a large portion of the land cover (40%). Other land uses include gravel pits, quarries, and settlement areas. Forty-seven percent (47%) of the Ecodistrict remains as natural cover, half of which is forested, followed by wetlands (18%), with alvars and prairie-savannah remnants comprising the remaining cover (Henson and Brodribb 2005).

The Study Area is located within the Huron-Ontario section of the Great Lakes – St. Lawrence Forest Region (Rowe 1972). This section covers much of southwestern Ontario, the northern boundary of which is generally coincident with the Precambrian Shield. Sugar maple and beech are common over the entire section, with associates such as basswood, white and red ash, yellow birch, red maple, red, white, black and bur oaks, aspen species, butternut, bitternut hickory, hop-hornbeam, black cherry, sycamore and black walnut. In lowlands, other hardwood species can be found, such as blue-beech, silver maple, red and rock elm, and black ash. Coniferous species including eastern red cedar, eastern white cedar, eastern white pine, eastern hemlock and balsam fir can be found amongst hardwood species where appropriate conditions are present.

3.1.2 Designated Natural Areas

There were no designated natural areas identified in the Study Area.

3.1.3 Species at Risk and Species of Conservation Concern

A review of the background databases identified 10 SAR and 12 SOCC with records that overlap with the Study Area (**Table 3.1**).



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Table 3.1: Review of Potential Species at Risk and Species of Conservation Concern in the Study Area Based on Background Review

Common Name	Latin Name	Provincial S-rank	SARO Status	SARA Schedule 1
Species at Risk				
Bank Swallow	<i>Riparia riparia</i>	S4B	THR	THR
Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	THR	THR
Butternut	<i>Juglans cinerea</i>	S2?	END	END
Chimney Swift	<i>Chaetura pelagica</i>	S4B, S4N	THR	THR
Eastern Meadowlark	<i>Sturnella magna</i>	S4B	THR	THR
Eastern Whip-poor-will	<i>Antrostomus vociferous</i>	S4B	THR	THR
Eastern Small-footed Myotis	<i>Myotis leibii</i>	S2S3	END	-
Little Brown Myotis	<i>Myotis lucifugus</i>	S4	END	END
Northern Myotis	<i>Myotis septentrionalis</i>	S3?	END	END
Tri-colored Bat	<i>Perimyotis subflavus</i>	S3?	END	END
Species of Conservation Concern				
Barn Swallow	<i>Hirundo rustica</i>	S4B	SC	THR
Monarch	<i>Danaus plexippus</i>	S4B, S2N	SC	SC
Western Chorus Frog	<i>Pseudacris triseriata</i>	S3	NAR	THR
Eastern Milksnake	<i>Lampropeltis Triangulum</i>	S3	NAR	SC
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	S5	NAR	SC
Snapping Turtle	<i>Chelydra serpentine</i>	S3	SC	SC
Canada Warbler	<i>Cardellina canadensis</i>	S4B	SC	THR
Common Nighthawk	<i>Chordeiles minor</i>	S4B	SC	THR
Eastern Wood-Pewee	<i>Contopus virens</i>	S4B	SC	SC



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Common Name	Latin Name	Provincial S-rank	SARO Status	SARA Schedule 1
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	S4B	SC	THR
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	S4B	SC	SC
Wood Thrush	<i>Hylocichla mustelina</i>	S4B	SC	THR

Note: Acronyms can be found in **Sections 2.1.1** and **2.1.2**.

3.2 Field Investigation

3.2.1 Vegetation Communities

The Study Area associated with Simcoe Road 88 was comprised mainly of agricultural crops and occasional meadows. Occasional shallow marshes associated with watercourses were also present. Deciduous and coniferous hedgerows of varying widths and maturity were common in the ROW, which was mainly comprised of meadow.

Residential properties were sparsely dispersed throughout the Study Area. New construction was occurring on the southwest corner of the Simcoe Road 88 and Highway 400 interchange, and commercial properties were present in the southeast corner.

Vegetation community descriptions are provided in **Table 3.2** below. Community mapping is provided on **Figure 2, Appendix A**.

Table 3.2: Vegetation Community (ELC) Descriptions

ELC Type	Community Description
Meadow Communities	
MEGM3 Dry-Fresh Graminoid Meadow	The MEGM3 communities represent dry grassland habitat. There was one large MEGM3 community in the southeast quadrant of the Simcoe Road 88/Highway 400 interchange.
MEGM3/THD Dry-Fresh Graminoid Meadow/Deciduous Thicket	The MEGM3/THD community represents a successional area of meadow along the ROW at the north end of the Simcoe Road 88 Study Area on the west side of Highway 400.



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ELC Type	Community Description
Forest Communities	
FOCM5 Naturalized Coniferous Hedgerow	The FOCM5 communities represent coniferous hedgerows that have become naturalized, most of which are present in or directly adjacent to the Highway 400 ROW. Coniferous species within these communities included Norway spruce, Scot's pine, white spruce and white pine.
FODM11 Naturalized Deciduous Hedgerow	The FODM11 communities represent deciduous hedgerows that have become naturalized, most of which are present in or directly adjacent to the Highway 400 ROW.
Plantations	
OAGM1 Annual Row Crops	The OAGM1 communities represent agricultural fields that were mostly comprised of winter wheat and corn. There were no hay fields observed.
OAGM4 Open Pasture	The OAGM4 pasture represents a 1.8 ha pasture located east of Highway 400 on the south side of Simcoe Road 88.
TAGM1 Coniferous Plantation	The TAGM1 community represents a large area of young, planted spruce trees on the northwest corner of the Simcoe Road 88/Highway 400 interchange.
TAGM5 Fencerow	The TAGM5 community represents a young to mid-aged hedgerow that consisted of both deciduous and coniferous species.
Marsh Communities	
MASM1 Graminoid Mineral Shallow Marsh	The MASM1 communities represented shallow marshes dominated by graminoids (sedges, cattails, grasses) that did not have an apparent dominant species to further classify the community. There were two MASM1 communities associated with permanent watercourses located on the east side of Highway 400.



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ELC Type	Community Description
MASM1-14 Reed Canary Grass Mineral Shallow Marsh	The MASM1-14 community represented a small shallow marsh community dominated by reed canary grass on the west side of Highway 400, south of Simcoe Road 88. There were several other smaller areas of <i>Phragmites</i> east of the Simcoe Road 88/Highway 400 interchange, on both the north and south sides.
Aquatic Communities	
SA Shallow Water	The SA communities represented small stormwater management ponds in the northwest and southeast corners of the Simcoe Road 88/Highway 400 interchange.
Constructed Communities	
CGL_2 Parkland	The CGL_2 community represents the Yogi Bear Jellystone Park Camp-Resort at the northwest corner of the Simcoe Road 88/Highway 400 interchange.
CVC_1 Business	The CVC_1 community represents a gas station on the southeast corner of the Simcoe Road 88/Highway 400 interchange.
CVC_2 Light Industry	The CVC_2 community represents a light industrial commercial property on Simcoe Road 88 west of Highway 400.
CVI_1 Transportation	The CVI_1 community represent roads, highways and a carpool lot in the Study Area.
CVR_4 Rural Property	The CVR_4 community represents rural residential properties that were located throughout the Study Area.

All vegetation communities observed were common and widespread throughout Ontario (MNR 2023c).

Highly invasive common reed, also known as *Phragmites*, was observed in several roadside locations throughout the Study Area (occurred throughout MASM1-14 vegetation communities, as shown in **Figure 2, Appendix A**).

3.2.2 Butternut Search

A butternut search was completed on April 25 and June 19, 2023. There were no butternut trees observed within the Work Zone or within 50 m.



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3.2.3 Significant Wildlife Habitat

The presence of the four categories of SWH (briefly described below) was assessed for the Study Area. A summary of the results of the SWH assessment is provided in **Table 3.3**.

Seasonal Concentration Areas

Seasonal concentration areas are those sites where large numbers of a species congregate at one time of the year, or where several species congregate. There were no seasonal concentration areas identified in the Study Area.

Rare or Specialized Habitat

Rare or specialized habitats are two separate components of SWH. Rare habitats are those with vegetation communities that are considered rare in the province. It is assumed that these habitats are at risk and that they are also likely to support additional wildlife species that are considered significant. There were no rare vegetation communities identified in the Study Area.

Specialized habitats are microhabitats that are critical to some wildlife species. The SWHTG (MNR 2000) identifies habitats that could be considered specialized habitats, such as habitat for area sensitive species, forests providing a high diversity of habitats, amphibian woodland breeding ponds, turtle nesting habitat, highly diverse sites, seeps, and springs. Candidate amphibian breeding habitat (wetland) was identified to occur within the Study Area in the form of marsh communities (i.e., MASM1, MASM1-14).

Habitat for Species of Conservation Concern

Habitat for SOCC includes habitat for those species that are not covered under the ESA including species ranked as special concern and provincially ranked as S1-S3. Data from field surveys in the Study Area were used to assess the potential for habitat of SOCC to occur within the Study Area. Habitat assessments for these species were completed through a combination of satellite photo interpretation and field investigations to determine whether suitable habitat may be present in the ROW. Results are provided in **Appendix C** and summarized in **Table 3.3.3** below.



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Animal Movement Corridors

Migration corridors are areas that are traditionally used by wildlife to move to one habitat from another. This is usually in response to different seasonal habitat requirements. There are two types of animal movement corridors in Ecoregion 6E: amphibian and deer movement corridors. These corridors are identified after amphibian breeding habitat (woodlands) and/or deer wintering/yarding areas are confirmed. Amphibian breeding habitat can be identified by conducting amphibian surveys to target potential breeding features. There were no animal movement corridors identified in the Study Area.

Table 3.3: Significant Wildlife Habitat Assessment

Habitat Type (MNRF 2015)	Habitat Description	Candidate SWH in Study Area and Work Zone?
Seasonal Concentration Areas		
Bat hibernacula	Abandoned mine shafts, underground foundations, caves, and crevices	Absent.
Deer wintering congregation areas and deer yards	Deer yards are mapped by MNRF	Absent: No deer yards are mapped by MNRF in the Study Area (MNRF 2023a).
Colonially – nesting bird breeding habitat (bank and cliff)	Eroding banks, sandy hills, steep slopes, rock faces or piles. Cliff faces. Does not include disturbed soil areas such as berms, embankments, oil, or aggregate stockpiles.	Absent.
Colonially – nesting bird breeding habitat (trees/shrubs)	Dead trees in large marshes and lakes, flooded timber, and shrubs, with nests of Great Blue Heron, Great Egret, Green Heron, or Black-crowned Night-Heron	Absent.



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Habitat Type (MNRF 2015)	Habitat Description	Candidate SWH in Study Area and Work Zone?
Colonially – nesting bird breeding habitat (ground)	Rock islands and peninsulas in a lake or large river	Absent.
Waterfowl stopover and staging areas	Fields with evidence of annual spring flooding from meltwater or runoff; aquatic habitats such as ponds, marshes, lakes, bays, and watercourses used during migration, including large marshy wetlands	Absent: No large wetlands present in the Study Area to support waterfowl stopover and staging areas.
Shorebird migratory stopover area	Muddy and unvegetated shorelines, beach areas, bars	Absent.
Raptor wintering areas	Combination of fields and woodland (>20 ha)	Absent: The Study Area does not have the combination of forest and meadow communities to support raptor wintering areas.
Bat maternity colonies (non-SAR bats)	Mixed and deciduous forests and swamps with large diameter dead or dying trees with cavities	Present: Forest communities in the Study Area are likely to support bat maternity colonies. Big Brown Bat and Silver-haired Bat calls were recorded throughout the Work Zone, and it is likely that this habitat type is significant due to the abundance of calls recorded. SAR bats are discussed in Section 3.2.6 and 3.2.7.



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Habitat Type (MNR 2015)	Habitat Description	Candidate SWH in Study Area and Work Zone?
Reptile hibernacula	Rock piles or slopes, stone fences, crumbling foundations	Absent.
Turtle wintering area	Permanent waterbodies and large wetlands with sufficient dissolved oxygen; man-made ponds are not considered SWH.	Absent: Only small stormwater ponds in Study Area.
Migratory butterfly stopover area	Fields and forests that are a minimum of 10 ha and are located within 5 km of Lake Erie or Lake Ontario	Absent: Study Area is > 5 km from Lake Erie and Lake Ontario.
Landbird migratory stopover area	Woodlands of a minimum size located within 5 km of Lake Erie or Lake Ontario	Absent: Study Area is > 5 km from Lake Erie and Lake Ontario.
Rare Habitats		
Sand barren, alvar, cliffs and talus slopes	Sand barren, Alvar, Cliff and Talus ELC Community Classes, and other areas of exposed bed rock and patchy soil development, near vertical exposed bedrock and slopes of rock rubble	Absent.
Prairie and savannah	Open canopy habitats (tree cover < 60%) dominated by prairie species	Absent.
Old growth forest	Relatively undisturbed, structurally complex; dominant trees > 100 years' old	Absent.
Other rare vegetation communities	Vegetation communities ranked S1-S3 by the NHIC.	Absent.



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Habitat Type (MNRF 2015)	Habitat Description	Candidate SWH in Study Area and Work Zone?
Specialized Habitat for Wildlife		
Waterfowl nesting areas	Upland habitats adjacent to wetlands	Absent: No large wetlands present in the Study Area to support waterfowl nesting areas.
Bald Eagle and Osprey nesting, foraging and perching habitat	Treed communities adjacent to rivers, lakes, ponds, and other wetlands with stick nests of Bald Eagle or Osprey	Absent: No stick nests were observed.
Woodland raptor nesting habitat	Stick nests in forested ELC communities >30 ha with 10 ha of interior habitat	Absent: No stick nests were observed.
Turtle nesting areas	Exposed soil, including sand and gravel in open sunny areas in proximity to wetlands	Absent: No natural turtle nesting habitat was observed in the Study Area.
Seeps and springs	Any forested area with groundwater at surface within the headwaters of a stream or river system	Undetermined. Surveys were not conducted outside of the highway ROW.
Amphibian breeding habitat (woodland and wetland)	Treed uplands with vernal pools, and wetland ecosites	Present: Marsh communities in the Study Area have the potential to support breeding amphibians. Marsh communities are present in the Work Zone.
Woodland area sensitive breeding bird habitat	Large mature forest stands, woodlots >30 ha with interior forest habitat (i.e., at least 200 m from edge)	Absent.



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Habitat Type (MNR 2015)	Habitat Description	Candidate SWH in Study Area and Work Zone?
Habitat for Species of Conservation Concern		
Open country bird breeding habitat	Large grasslands and fields (>30 ha) with two or more of the following species: Upland Sandpiper, Grasshopper Sparrow, Vesper Sparrow, Northern Harrier, Savannah Sparrow OR with nesting Short-eared Owls	Absent: Meadows in the Study Area are not large enough to suppose SWH for open country breeding birds.
Shrub/early successional bird breeding habitat	Large shrub and thicket habitats (>10 ha) with: -At least one Brown Thrasher or Clay-colored Sparrow breeding, OR -At least two of Field Sparrow, Black-billed Cuckoo, Eastern Towhee and Willow Flycatcher OR -Nesting Yellow-breasted Chat or Golden-winged Warbler.	Absent.
Marsh bird breeding habitat	Wetlands with shallow water with emergent aquatic vegetation with American Bittern, Virginia Rail, Sora, Common Moorhen, American Coot, Pied-billed Grebe, Marsh Wren, Sedge Wren, Common Loon, Sandhill Crane, Green Heron, Trumpeter Swan, Black Tern, and/or Yellow Rail	Absent: The Study Area does not contain large enough wetlands to support SWH for marsh breeding birds.



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Habitat Type (MNRF 2015)	Habitat Description	Candidate SWH in Study Area and Work Zone?
Terrestrial Crayfish	Wet meadows and edges of shallow marshes with burrows or chimneys	Present: Marshes in the Study Area have the potential to support Terrestrial Crayfish and Terrestrial Crayfish chimneys were observed within the Work Zone in a marsh/meadow community.
Special Concern and provincially rare (S1-S3) wildlife	An assessment of habitat for special concern and provincially rare wildlife is included in Appendix C.	Present: Potential suitable habitat for Monarch, Midland Painted Turtle, Snapping Turtle, Eastern Milksnake, Western Chorus Frog, Barn Swallow, Grasshopper Sparrow, and Common Nighthawk is present in the Study Area. Suitable habitat for Monarch and Eastern Milksnake is present in the Work Zone.



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Habitat Type (MNRF 2015)	Habitat Description	Candidate SWH in Study Area and Work Zone?
Animal Movement Corridors		
Amphibian movement corridors	Associated with confirmed amphibian breeding habitat	Presumed absent: There was very little natural vegetation cover adjacent to wetlands and watercourses to support amphibian movement corridors; however, amphibian surveys were not conducted to confirm that SWH for breeding amphibians is absent.
Deer movement corridors	Associated with confirmed deer wintering habitat	Absent: No deer wintering habitat was identified by the MNRF; therefore, there is no candidate habitat for deer movement corridors in the Study Area.

3.2.4 Migratory Bird Nests

None of the structures examined in the Study Area provided suitable habitat for species protected under the MBCA or MBR (2022).

Although no suitable nesting habitat/nests were observed in any of the culverts or bridge structures, migratory bird nests have been carried forward to the Impact Assessment because construction has the potential to impact birds nesting in roadside vegetation.

3.2.5 Bat Habitat Assessment

Thirty-seven (37) suitable bat maternity roost trees were identified within the Study Area during the leaf-off period on April 25, 2023. Please see **Figures 3-1 to 3-6**, for locations of trees.



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3.2.6 Bat Acoustic Monitoring

Five bat species were recorded during the acoustic surveys, including one SAR - Little Brown Myotis (**Table 3.4**). A total of 16 Little Brown Myotis calls were recorded on six ARUs: MB-32, SM4-20, SM4-F, SM4-G, SM4-I, and SM4-L (**Figures 3-1 to 3-6**). The 16 Little Brown Myotis calls were distributed over eleven (11) survey evenings. The other four species recorded were Big Brown Bat, Hoary Bat, Silver-haired Bat, and Eastern Red Bat. Big Brown Bat, Hoary Bat, and Silver-haired Bat were recorded at the nine locations, whereas the Eastern Red Bat was recorded at only two locations.

A total of 37 potential bat maternity roost trees were identified in the Study Area during leaf-off surveys. Five of these trees (BT32, BT34-37) are not considered bat SAR habitat because no SAR were detected in the ELC polygons during acoustic surveys. Of the remaining 32 trees that may support bat SAR, 25 are proposed for removal to facilitate construction.

ARU locations where SAR bats were absent, were deemed no longer suitable habitat for SAR bats, as shown in **Figures 3-1 to 3-6**.

Table 3.4: Number of Bat Recorded Calls by Species and ARU

Detector	Big Brown Bat	Little Brown Myotis (SAR)	Hoary Bat	Silver-haired Bat	Eastern Red Bat	Total ¹
MB-31/ ARU3	2149	0	608	91	0	3698
MB-32/ ARU2	375	3	373	66	0	1078
MB-33/ ARU1	58	0	273	108	0	641
SM4-20/ARU8	1131	4	390	125	9	2006
SM4-F/ ARU5	1167	3	78	48	6	1410
SM4-G/ARU9	329	3	369	143	0	1226
SM4-I/ ARU4	291	2	100	32	0	504
SM4-J/ ARU7	466	0	351	116	0	1630
SM4-L/ ARU6	489	1	260	108	0	1457
Total	6455	16	2802	837	15	13650

1. Total includes calls that could not be identified to species.



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3.2.7 Species at Risk

Habitat assessments completed for this study and documented in **Appendix C** determined that eight (8) endangered or threatened SAR have the potential to occur in the Study Area (SOCC are discussed in **Section 3.1.3**). Of these species, bat SAR and Bank Swallow [observed in a stockpile approximately 1 km south of the Study Area and associated with the Highway 400/5th Line interchange construction (MTO pers. comm 2023)] have the potential to be present in the ROW based on availability of suitable habitat or the species' behavior or movement patterns.

3.3 Summary of Natural Heritage Features

The following natural heritage features were identified in or adjacent to the Work Zone and will be carried forward to the Impact Assessment in **Section 0** where general and site-specific protection measures will be provided:

- Wetlands:
 - MASM1 wetlands identified during ELC survey
- Candidate SWH:
 - Bat Maternity Colonies (Big Brown Bat and Silver-haired Bat detected in wooded areas)
 - Amphibian breeding habitat (wetlands) in the wetland communities (i.e., MASM1)
- Confirmed SWH:
 - Terrestrial Crayfish (chimneys observed in the Work Zone within a MEGM3 meadow/marsh community)
 - SOCC:
 - Potential Monarch foraging habitat in meadows throughout the Work Zone
 - Potential habitat for Eastern Milksnake throughout the Work Zone
- Although no migratory bird nests were observed, birds may nest throughout the Study Area
- SAR:
 - Little Brown Myotis confirmed present within the Work Zone



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- Bank Swallow has potential to occur in stockpile materials if present, as a result of Project construction activities

4.0 Description of Proposed Work

The Highway 400/Simcoe Road 88 Interchange (GWP 2331-16-00) project consists of the replacement of the Highway 400/Simcoe Road 88 underpass bridge, as well as the reconfiguration of the interchange and ramps to a Parclo-A4 configuration. The bridge and highway alignment will accommodate the widening of Highway 400 to 12 lanes. Improvements on Simcoe Road 88 are also required to accommodate the new approaches to the bridge.

As part of the project, Highway 400 in the vicinity of the interchange will be widened to its ultimate 10-lane cross-section along with one southbound auxiliary lane. The Highway 400 lanes in the vicinity of the interchange will be shifted to their ultimate outside location with the extra platform width blocked off behind temporary concrete barrier in the median. At the completion of this detail design project, the Highway 400 lanes will maintain three lanes in each direction (three northbound and three southbound). Within the interchange, one southbound auxiliary lane will be constructed to accommodate traffic from the future Highway 400/Bradford Bypass Interchange to the north who wish to travel southbound on Highway 400.

The intersection of McKinstry Road and Simcoe Road 88 will be shifted to the east. A portion of McKinstry Road will be realigned to accommodate the new on-ramp to northbound Highway 400 (East to North ramp).

The carpool lot in the southwest quadrant of the interchange will be reconstructed, although it will remain in the same quadrant.

Drainage improvements will be required to accommodate the ultimate grading and stormwater management features. Culvert modifications (extensions or replacements) on Highway 400 will be required to accommodate the future widening. The locations of these drainage improvement are described within the Highway 400/Simcoe Road 88 Drainage report, available under separate cover.

The southbound off-ramp (North to East-West) will include a two-lane off-ramp design to accommodate traffic from the future Highway 400/Bradford Bypass Interchange to be located to the north.



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5.0 Impact Assessment

The proposed works in all quadrants of the Simcoe Road 88 Interchange, along Simcoe Road 88 and along Highway 400 will require tree removal and the loss of terrestrial habitat to accommodate construction. Direct impacts on these communities include cut/fill and permanent vegetation removal to accommodate new road surfaces. There will be approximately 9.4 hectares (ha) of permanent loss of terrestrial habitat to accommodate the intersection improvements and road widening.

Other potential impacts associated with the proposed improvements include soil compaction, siltation of onsite natural communities, vegetation disturbance, spills of deleterious substances into natural communities, noise disturbance and encounters with wildlife. These impacts are considered short term, localized to the construction area during construction activities, and will be mitigated through the application of appropriate construction techniques and mitigation measures. Standard environmental protection and site-specific mitigation measures are discussed in separate sections below.

5.1 Loss of Terrestrial Habitat

The proposed improvements will require earth clearing and grading, which will result in vegetation removal and permanent loss of terrestrial habitat (approximately 9.44 ha). There will be 2.96 ha removed from forest hedgerow and plantation communities, 0.43 ha removed from graminoid shallow marsh communities, and 6.05 ha removed from meadow communities (most of which is roadside meadow).

Temporary disturbance will consist of approximately 9.6 ha of roadside meadow communities and 1.43 ha of shallow marsh communities associated with drainage ditches within the ROW. The temporarily disturbed area will also include 8.07 ha of treed communities including forested hedgerows (FOCM5 and FODM11) and plantations (TAGM1 and TAGM5); the disturbance will result in long term alternation of the treed communities.

All temporarily disturbed areas will be reseeded and replanted following construction. The following ELC communities will experience a permanent loss of vegetation (**Table 5.1 and Figure 2, Appendix A**):



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Table 5.1: Terrestrial Habitat to be Permanently Removed from the Study Area

Vegetation Community	Area to be removed (ha)
Forest Hedgerow Communities	
FOCM5	0.82
FODM11	0.39
Marsh Communities	
MASM1	0.20
MASM1-14	0.23
Meadow Communities	
MEGM3	5.59
MEGM3/THD	0.46
Plantation	
TAGM1	1.73
TAGM5	0.02

5.2 Potential Disturbance to Wetlands

Portions of shallow marsh communities (MASM1 and MASM1-14) located on the east side of Highway 400 and north side of Simcoe Road 88 (**Figure 2-4, Appendix A**) will be impacted by grading and new construction (approximately 0.43 ha loss). These small wetland features are low quality and are unlikely to support wildlife habitat (i.e., unlikely to be SWH for amphibians).

However, to reduce the likelihood of sedimentation, standard mitigation for Sediment and Erosion Control (**Section 6.2.1**) and Vegetation Removal (**Section 6.2.2**) is recommended along the boundary of the Work Zone.

5.3 Potential Interference with Nesting Birds

No active bird nests were observed during the field investigations but vegetation within the proposed Work Zone may support nesting birds. Any work near active bird nests has the potential to disturb nesting behavior or damage/destroy the nests, particularly if vegetation clearing occurs during the active breeding bird window (i.e., April 1 - August 31).



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Under the updated MBR (2022), the only species listed on Schedule 1 that has potential to occur is Pileated Woodpecker. However, this species or its nest were not detected at the time of field investigations, and it is unlikely for this species to establish new nests in the Work Zone in future seasons as they prefer to re-use nests each breeding season.

Measures to mitigate impacts to protected bird nests will be implemented as outlined in **Section 6.2.3**.

5.4 Potential Disturbance to Significant Wildlife Habitat

SWH was confirmed in the Work Zone for Terrestrial Crayfish within the MEGM3 community (**Figure 2-1, Appendix A**). There is also candidate SWH for Bat Maternity Colonies present within the Work Zone. There were a large volume of Big Brown Bat and Silver-haired Bat calls detected on ARUs, which suggests that this type is likely to be considered significant, but the presence of maternity colonies cannot be confirmed with ARUs. Candidate Amphibian Breeding Habitat is also present within roadside marsh habitat (MASM1, MASM1-14) as discussed in **Section 5.2**. A permanent loss of 5.6 ha of Terrestrial Crayfish habitat and 30 suitable bat maternity roost trees is anticipated.

Construction phase disturbance to SWH can be mitigated through standard environmental protection measures for sediment and erosion control and vegetation protection, as discussed in **Section Error! Reference source not found.** and **6.2.2**. Measures to mitigate impacts to protected bird nests is outlined in **Section Error! Reference source not found.**. Standard mitigation to avoid harm to wildlife is provided in **Section 6.2.4** Site-specific mitigation for Terrestrial Crayfish and non-SAR bats/bat maternity colonies is provided in **Section 6.3**.

5.5 Potential Disturbance to Species at Risk and Species of Conservation Concern

Potential adverse effects are discussed for SAR or SOCC that were either observed in the Study Area or that have the potential to be present (based on existing records and suitable habitat) in the proposed Study Area. Little Brown Myotis was documented to occur within the Work Zone, whereas Bank Swallow, Monarch and Eastern Milksnake were identified as having potential to occur based on records of occurrence and/or suitable habitat. Potential direct impacts to SAR and SOCC that were present or have potential to be present in the ROW and interact with construction are identified as follows:



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- **Little Brown Myotis** – Bat maternity roost habitat is present in the Work Zone. A permanent loss of 25 suitable SAR bat roost trees is anticipated. With the implementation of mitigation, including timing windows (**Section 6.3.1**), impacts to this species can be reduced. Site-specific mitigation measures for Little Brown Myotis are discussed in **Section 6.3.1**.
- **Bank Swallow** – This species may occur if stockpile materials become present within the Study Area as a result of construction activities. The Bank Swallow breeds on a variety of sites with vertical banks, including stockpiles of sand and soil (COSEWIC 2013). Site-specific mitigation measures for Bank Swallow are discussed in **Section 6.3.2**
- **Monarch** – In southern Ontario, the Monarch is found primarily wherever milkweed and wildflowers (including goldenrods, asters, and purple loosestrife) exist (COSEWIC 2010). The larvae occur only where milkweed exists; adults are more generalized, feeding on a variety of wildflower nectar (COSEWIC 2010). Monarch habitat may be present in roadside meadows, where it was observed during 2019 field investigations. A permanent loss of 6.1 ha of meadow habitat is anticipated. Site-specific mitigation measures for Monarch are discussed in **Section 6.3.4**.
- **Eastern Milksnake** - Eastern Milksnake has potential to enter the Work Zone. Construction activities can result in direct mortality to snakes. Snakes may be vulnerable during emergence from a hibernaculum, re-entrance and basking periods, and may preferentially seek out construction materials to bask under. Peak activity for Eastern Milksnake is typically between late April and late June. Roadside meadows and ditches may provide habitat for Eastern Milksnake. With the implementation of site-specific mitigation measures for snakes at the Simcoe Road 88 interchange Study Area (**Section 6.3.5**), no direct impacts are expected.

6.0 Environmental Protection Measures

Mitigation will be implemented to reduce the likelihood of impacts to the natural environment. **Section 6.2** describes standard measures that may be applicable for the Work Zone. Site-specific recommendations are discussed in **Section 6.3**.

6.1 Ontario Provincial Standard Specifications

The following Ontario Provincial Standard Specifications (OPSS) are applicable to the project:

- OPSS 180 - General Specification for the Management of Excess Materials
- OPSS 801 - Construction Specification for the Protection of Trees



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- OPSS 803 - Construction Specification for Vegetative Cover
- OPSS 804 - Construction Specification for Temporary Erosion Control
- OPSS 805 - Construction Specification for Temporary Sediment Control

The OPSSs are applicable to the following general activities:

- **Equipment Use** - Use of equipment shall be in accordance with OPSS 182.
- **Erosion and Sediment Control** - The installation, monitoring, maintenance, and removal of temporary erosion and sediment control measures shall be according to OPSS 182, OPSS 801, OPSS 804 and OPSS 805.
- **Vegetation Removal and Restoration of Disturbed Areas** - Vegetation protection and rehabilitation shall be in accordance with OPSS 182, OPSS 81, OPSS 803 and OPSS 804. West Region Seed Mix will be used to reseed disturbed areas.
- **Management of Excess Materials** - Excess material shall be managed in accordance with OPSS 180 and O. Reg. 406/19.

6.2 Standard Environmental Protection Measures

The following sections describe standard measures that will be applied to all Work Zones.

6.2.1 Erosion and Sedimentation Control

Mitigation measures for sedimentation, erosion, and dust control should be implemented to prevent sediment and dust from entering sensitive natural features. The primary principles associated with sedimentation and erosion protection measures are to:

1. reduce the duration of soil exposure
2. retain existing vegetation, where feasible
3. encourage re-vegetation
4. divert runoff away from exposed soils
5. keep runoff velocities low
6. trap sediment as close to the source as possible



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To address these principles, the following mitigation measures are recommended:

- Stabilize exposed soil areas (native seed mixes; sourced locally if possible) and revegetate through the placement of seed and matrix or seed and an erosion control blanket, promptly upon completion of construction activities.
- Install sediment fencing and/or barriers along Work Zones where there is potential for sedimentation of watercourses or wetlands, or inadvertent encroachment of construction vehicles into natural areas.
- Avoid entering any natural areas beyond the barrier fencing with equipment and avoid excess vegetation removal.
- Re-fuel equipment 30 m away from watercourses to reduce potential impacts if an accidental spill occurs.
- In addition to any specified requirements, make additional silt fence available on site, prior to grading operations, to provide a contingency supply in the event of an emergency.
- Monitor all sediment and erosion controls regularly and properly maintain, as required. Remove controls only after the soils of the construction area have been stabilized and adequately protected or until cover is re-established.
- Monitor limits of construction adjacent to natural features during construction (along with sediment and erosion control measures) to make sure that the limits are maintained with respect to vehicular traffic and soil or equipment stockpiling.
- Avoid stockpiling excess materials on site.
- Restore any disturbed natural areas to pre-construction conditions.

6.2.2 Vegetation Removal

During construction adjacent to vegetated areas, heavy equipment could damage peripheral vegetation from contact, excavation, and/or soil compaction. In areas where trees are present adjacent to construction activities that are not required to be removed for grading, tree protection is recommended to avoid encroachment.

Post-construction seeding of the disturbed ROW should be done with a suitable native seed mix. Seed mixes should include fast-growing, short-lived perennial cover crop to stabilize soil and reduce competition from weedy exotics. It is recommended that new seed be introduced to disturbed substrates as soon as feasible following construction and sediment fencing remain in place until vegetation cover is re-established.



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Vegetation removal should be undertaken outside of the migratory bird nesting period (April 1 to August 31) as discussed in **Section 6.2.3**.

6.2.3 Protection of Migratory Birds

The MBCA protects nests of migratory birds from damage while they are active, including nests in vegetation and on structures. For all migratory birds, the core nesting period is identified as April 1 to August 31 (Government of Canada 2018). Vegetation clearing during nesting periods in migratory bird breeding habitat can destroy active nests and contravene the MBCA. Vegetation clearing is recommended to occur outside the core nesting period to eliminate the need for migratory bird nest searches. If work must take place during the core nesting period and the area is small enough to be effectively searched for nesting birds, then a breeding bird survey can be completed by a Qualified Biologist. The area where vegetation is to be removed must be searched within five days prior to the work commencing. If breeding pairs are located with active nests of eggs or young, then they will be protected with a buffer until the nest is no longer active.

If an active nest is observed during construction, a designated buffer will be delineated within which no activity will be allowed to occur while the nest is active (i.e., with eggs or young). The radius of the buffer will be determined by a Qualified Professional. Once the nest is determined to be inactive (e.g., the young have fledged the nest), clearing and other activities in the area may proceed.

6.2.4 Wildlife Protection

The following environmental mitigation and protective measures for wildlife and wildlife habitat are recommended:

- Construction equipment and vehicles are to yield to wildlife.
- Inform construction personnel not to threaten, harass or injure wildlife.
- If wildlife are encountered during construction, personnel are required to move away from the animal and wait for the animal to move off the construction site. If slow-moving wildlife (e.g., turtles, snakes) are observed on the road and are in danger, and if safe to do so, they should be moved off the road by gently guiding the individual in the direction it was traveling.



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6.3 Site-Specific Protection Measures

Site-specific protection measures are required for specific sensitive species or habitats that may be present within the Study Area. Generally, the proposed works can either avoid the identified sensitive habitat or species, or specific pre- and post-construction activities can be implemented. These are discussed below for Bat Maternity Colonies and Little Brown Myotis, Bank Swallow, Terrestrial Crayfish, Monarch, and Eastern Milksnake.

6.3.1 Bat Maternity Colonies and Little Brown Myotis

Bat maternity roost habitat is present in forested communities where impacts and tree clearing are anticipated. Thirty (30) trees that have potential to be used as maternity habitat by bats, are present within the areas proposed for vegetation removal.

Section 5.5 identified that Little Brown Myotis (SAR) may be present. A permanent loss of 25 suitable SAR bat roost trees is anticipated, but with the implementation of mitigation, including timing windows, impacts can be reduced.

Consultation with MECP has been initiated through the submission of an Information Gathering Form (IGF) to request guidance on appropriate mitigation measures and next steps to remain compliant under the ESA. However, in the absence of feedback from MECP, the following mitigation measures are recommended based on recent MECP guidance on other projects.

Removal of the 30 roost trees is recommended to take place outside the period when bats use trees for maternity roosts (i.e., October to March). Myotis species typically give birth in late-May to early-June, and females fly with newborn young until they become too heavy. Young begin to fly in mid- to late-June, at age three to four weeks. Rearing is completed in August when the bats move to hibernacula (Broders et al. 2006, Cagle and Cockrum 1943, Gerson 1984). Therefore, tree removal should not occur between April 1 to September 30 of any given year. Advanced clearing of non-SAR bat habitat for the project is planned to commence in early December 2023 and be completed by the end of January 2024.

Of the 30 trees impacted, the 25 trees that were identified as potential bat SAR maternity trees will be protected from harm during tree clearing and trees will be clearly marked with a suitable buffer zone using tree protection fencing (OPSD 220.010 Barrier for Tree Protection). The 25 trees will not be removed until approval from MECP has been received.



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Other recommended mitigation measures to compensate for loss of habitat include:

- In consultation with MECP and Lake Simcoe Region Conservation Authority, consider actively managing (i.e., watering, tending, and replacing trees and shrubs) newly planted forested habitat within Lake Simcoe Region Conservation Authority lands until the newly forested area is well established.
- Install anthropogenic roosting structures (e.g., bat boxes) both offsite within Lake Simcoe Region Conservation Authority lands and within the project area.

6.3.2 Bank Swallow

Bank Swallow have potential to occur if stockpile materials become present within the Study Area at time of construction activities. If stockpiles are anticipated to occur within the Study Area, the following mitigation measures are recommended prior to and during the breeding season (i.e., April 1 to August 31):

- Contour stockpiles to have a slope less than 70 degrees.
- Flatten vertical faces at the end of each construction day to prevent Bank Swallows from digging burrows in them overnight or on weekends.
- In the event a colony is formed in stockpile materials, a minimum buffer zone of 50 m should be installed around the colony.
 - Stop excavation work if nests appear and operations are not to resume until birds leave at the end of the breeding period.

6.3.3 Terrestrial Crayfish

Terrestrial Crayfish chimneys/burrows were observed within a MEGM3 meadow vegetation community (**Figure 2-1, Appendix A**), adjacent to the Highway 400. Habitat is present in the Work Zone and is anticipated to be impacted by the proposed construction activities. As such, to reduce the impact on Terrestrial Crayfish and their habitat the following mitigation measures are recommended:

- Vegetation removal should be scheduled during periods when crayfish are less likely to be present, such as early spring (i.e., March to April), when adults are found in streams, lakes, and rivers.
- Vegetation should be retained adjacent to crayfish habitat as this is important for foraging.
- Avoid spraying pesticides to control roadside vegetation near crayfish habitat (**Figure 2-1, Appendix A**) as this can impact food supply. It is recommended to use other de-icing compounds other than salt near crayfish habitat.



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- Direct surface water runoff away from crayfish habitat to avoid sedimentation and contamination (see crayfish chimney location on **Figure 2-1, Appendix A**).

6.3.4 Monarch

If possible, avoid construction activities that have the potential to harm monarch eggs, caterpillar or pupae (e.g., vegetation clearing in meadow areas) during the larval period, which is approximately May 1 to September 30 (Mission-Monarch 2018).

If vegetation clearing will proceed when Monarch larvae may be present (May 1 to September 30), inspection of milkweed plants is recommended to locate Monarch larvae. If larvae are present, they may be moved to a location that is suitable and safe under the direction of a qualified professional. Monarch caterpillars may be moved to other milkweed plants; for other larval stages (i.e., eggs and chrysalis), entire milkweed plants should be transplanted.

Milkweed and nectar producing plants should be included in seed mixes for areas restored to meadow to provide habitat for Monarch.

6.3.5 Eastern Milksnake

There are records of Eastern Milksnake in the Study Area and potential habitat is present in open fields, meadows, thickets and within the ROW. The following mitigation measures are recommended to address potential interaction with Eastern Milksnake:

- A thorough visual search of the Work Zone by construction contractors is recommended before work commences each day. Visual searches should include inspection of machinery and equipment, prior to starting equipment, particularly during the peak reptile activity period from April 1 to November 1.
- If reptiles or amphibians are encountered during construction, they will be permitted reasonable time to leave the area. Individuals will not be handled, chased, or harassed. If reptiles do not leave the work area on their own, contact should be made with the appropriate agency to obtain information about the species and direction on how to proceed. A Qualified Biologist may need to be retained to relocate the individuals.
- Disturbance to brush piles/logs will be avoided wherever possible. If a brush/log pile must be moved or disturbed, it will be inspected for reptiles and relocated within a few metres, to the extent possible, to retain the habitat feature.



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6.3.6 Invasive Phragmites Control

The invasive European Common Reed (Phragmites) is a 'restricted' plant species regulated by the *Ontario Invasive Species Act* (2015), and under the Act, it is illegal to import, deposit, release, grow, buy, sell, lease, or trade this species. Phragmites was identified throughout the Study Area, typically in roadside ditches and other drainage features and low-lying areas. A total of 33 patches of varying sizes and density were identified, representing a total area of 9,657.87m². These locations are expected to be impacted by construction and will require appropriate removal and disposal prior to clearing and grubbing activities. A Phragmites Management Plan is provided in **Appendix D** which includes a map showing the locations of the Phragmites patches, Best Management Practices and the following site-specific measures that shall be followed by the Contractor.

- Develop a site-specific Invasive Species Management Plan that will outline procedures for management, removal and disposal of invasive Phragmites.
- The Contractor shall adhere to the requirements of special provision No. ENVR0011 - Requirements for Herbicide Spraying and Mechanical Cutting of Invasive and Noxious Vegetation Species (MTO, 2019).
- Herbicide spraying shall not occur in areas with standing water. All locations identified in Figure 1 shall be inspected for standing water prior to spraying in accordance with section 7.02 of special provision no. ENVR0011. Spraying can only commence when water is no longer present.
- Locations to be treated by cutting shall be cut to a height of 30 cm or less unless otherwise specified or directed by the Contract Administrator per section 7.04 of special provision no. ENVR0011.
- The Contractor shall implement the Clean Equipment Protocol for Industry (Halloran et al., 2013) to minimize the introduction and spread of invasive species.
- Designated areas for equipment cleaning and invasive species stockpiles may be temporarily required during construction. If designated areas are required, they will be identified and demarcated in the field. The designated areas will not be located in or near watercourses, environmentally sensitive features, or areas where invasive species are not currently present.
- Soil contaminated with invasive species will not be re-used for restoration activities.



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7.0 Consideration of the Endangered Species Act, 2007

The provincial ESA prohibits the killing, harming, harassing, capturing, or taking of a living member of a species listed as Threatened, Endangered, or Extirpated by the SARO list (*O. Reg 230/08*) (S. 9). Damage to habitat (S. 10) is also prohibited except where a permit is issued under S. 17(2) of the same Act or the Activity is registered under the Species at Risk Registry. Based on data obtained during field surveys and subsequent analysis, there is potential harm to bat SAR (specifically Little Brown Myotis). Consultation with the MECP has been initiated through the submission of an IGF to request guidance on appropriate mitigation measures and whether an Overall Benefit Permit is required under the ESA before the onset of construction activities.

8.0 Summary

This *Terrestrial Ecosystems Existing Conditions and Impact Assessment Report* evaluated the potential for sensitive natural heritage features, SAR and SOCC within the Highway 400/Simcoe Road 88 Interchange Study Area using guidance from the *Environmental Reference for Highway Design* (MTO 2013).

The Study Area is comprised mainly of agricultural crops and occasional meadows. Occasional shallow marshes associated with watercourses were also present. Deciduous and coniferous hedgerows of varying widths and maturity were common in the ROW.

Potential habitat for SAR and SOCC was present in the Study Area and Work Zone. Sensitive features and species that were either observed or could potentially be present within the Study Area are listed in **Table 8.1**.

Table 8.1: Sensitive Species and Features within the Study Areas

Type	Species	Presence in Study Area
Features	Unevaluated Wetlands	Present
Crustaceans	Terrestrial Crayfish	Present
Birds	Migratory Bird Nests	Potentially present – nests not observed during field investigations
Birds	Bank Swallow	Potentially present – nests not observed during field investigations but could become present in stockpiles as a result of construction activities.



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Type	Species	Presence in Study Area
Insects	Monarch	Potentially present – species not observed during field investigations; however, Milkweed host plant was present. Monarch may forage in Study Area or lay eggs if Milkweed is present
Reptiles	Eastern Milksnake	Potentially present – species not observed during field investigations, but based on proximity of Work Zone to confirmed records of the species, it may travel into the Study Area
Mammals	Little Brown Myotis	Present – species and habitat are present in trees within Study Area and Work Zone.

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Appendix A: Figures



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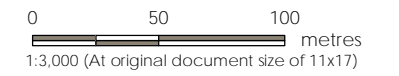


Legend

- Terrestrial Crayfish
- New Construction - Edge of Pavement, Edge of Shoulder
- Grading and Vegetation Removal, Permanent
- Grading and Vegetation Removal, Temporary
- Grading, Permanent
- Grading, Temporary
- Vegetation Removal, Temporary
- ELC Community Boundary

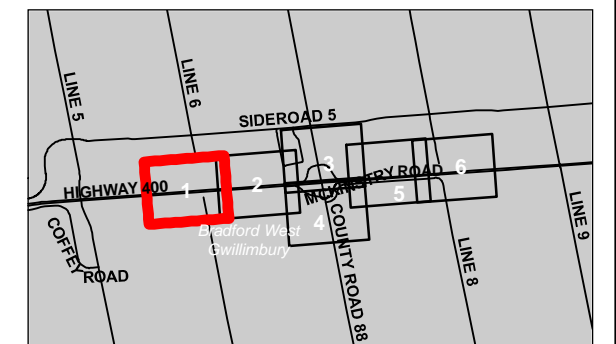
ELC Communities

- CVI_1 - Transportation
- Construction Access -
- FOCM5 - Naturalized Coniferous Hedgerow
- FODM11 - Naturalized Deciduous Hedgerow
- MEGM3 - Dry - Fresh Graminoid Meadow
- OAGM1 - Annual Row Crops



Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2022.
3. Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



Project Location: County of Simcoe
 Prepared by: JWH on 2023-10-18
 165001095 REVA

Client/Project:
 MINISTRY OF TRANSPORTATION
 DETAIL DESIGN, HIGHWAY 400 STRUCTURES
 GWP 2331-16-00

Figure No.

2-1

Title

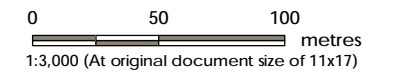
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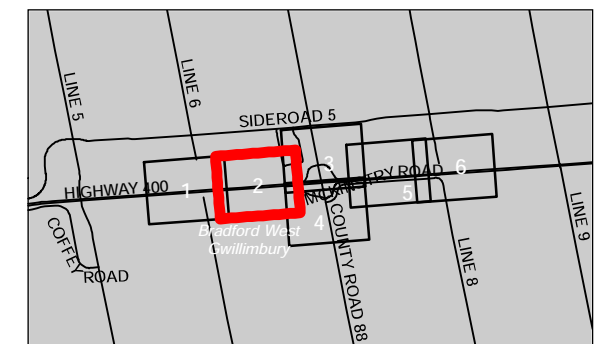


Legend

- Terrestrial Crayfish
 - New Construction - Edge of Pavement, Edge of Shoulder
 - Grading and Vegetation Removal, Permanent
 - Grading and Vegetation Removal, Temporary
 - Grading, Permanent
 - Grading, Temporary
 - Vegetation Removal, Temporary
 - ELC Community Boundary
- ELC Communities
- CVC_1 - Business
 - CVI_1 - Transportation
 - FOCM5 - Naturalized Coniferous Hedgerow
 - MASM1-14 - Reed Canary Grass Mineral Shallow Marsh
 - MASM1 - Graminoid Mineral Shallow Marsh
 - MEGM3 - Dry - Fresh Graminoid Meadow
 - New Construction -
 - OAGM1 - Annual Row Crops
 - SA - Shallow Water
 - TAGM5 - Fencerow



- Notes**
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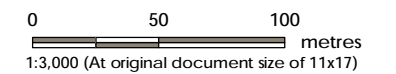
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Figure No.
2-2

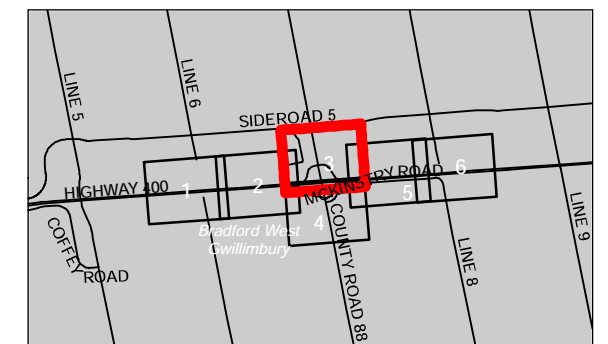
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ELC

Legend

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 - Grading and Vegetation Removal, Permanent
 - Grading and Vegetation Removal, Temporary
 - Grading, Permanent
 - Grading, Temporary
 - Vegetation Removal, Temporary
 - ELC Community Boundary
- ELC Communities**
- CGL_2 - Parkland
 - CVL_1 - Transportation
 - CVR_4 - Rural Property
 - FOCM5 - Naturalized Coniferous Hedgerow
 - MASM1-14 - Reed Canary Grass Mineral Shallow Marsh
 - MASM1 - Graminoid Mineral Shallow Marsh
 - MEGM3 - Dry - Fresh Graminoid Meadow
 - New Construction -
 - OAGM1 - Annual Row Crops
 - SA - Shallow Water
 - TAGM1 - Coniferous Plantation
 - TAGM5 - Fencerow



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Figure No.: 2-3

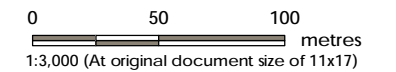
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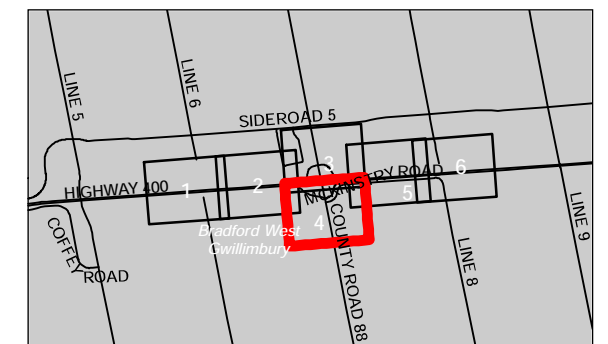
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Legend

- New Construction - Edge of Pavement, Edge of Shoulder
 - Grading and Vegetation Removal, Permanent
 - Grading and Vegetation Removal, Temporary
 - Grading, Permanent
 - Grading, Temporary
 - Vegetation Removal, Temporary
 - ELC Community Boundary
- ELC Communities**
- CVC_1 - Business
 - CVC_2 - Light Industry
 - CVI_1 - Transportation
 - CVR_4 - Rural Property
 - FOCM5 - Naturalized Coniferous Hedgerow
 - MASM1-14 - Reed Canary Grass Mineral Shallow Marsh
 - MASM1 - Graminoid Mineral Shallow Marsh
 - MEGM3 - Dry - Fresh Graminoid Meadow
 - New Construction -
 - OAGM1 - Annual Row Crops
 - OAGM4 - Open Pasture
 - TAGM5 - Fencerow



- Notes**
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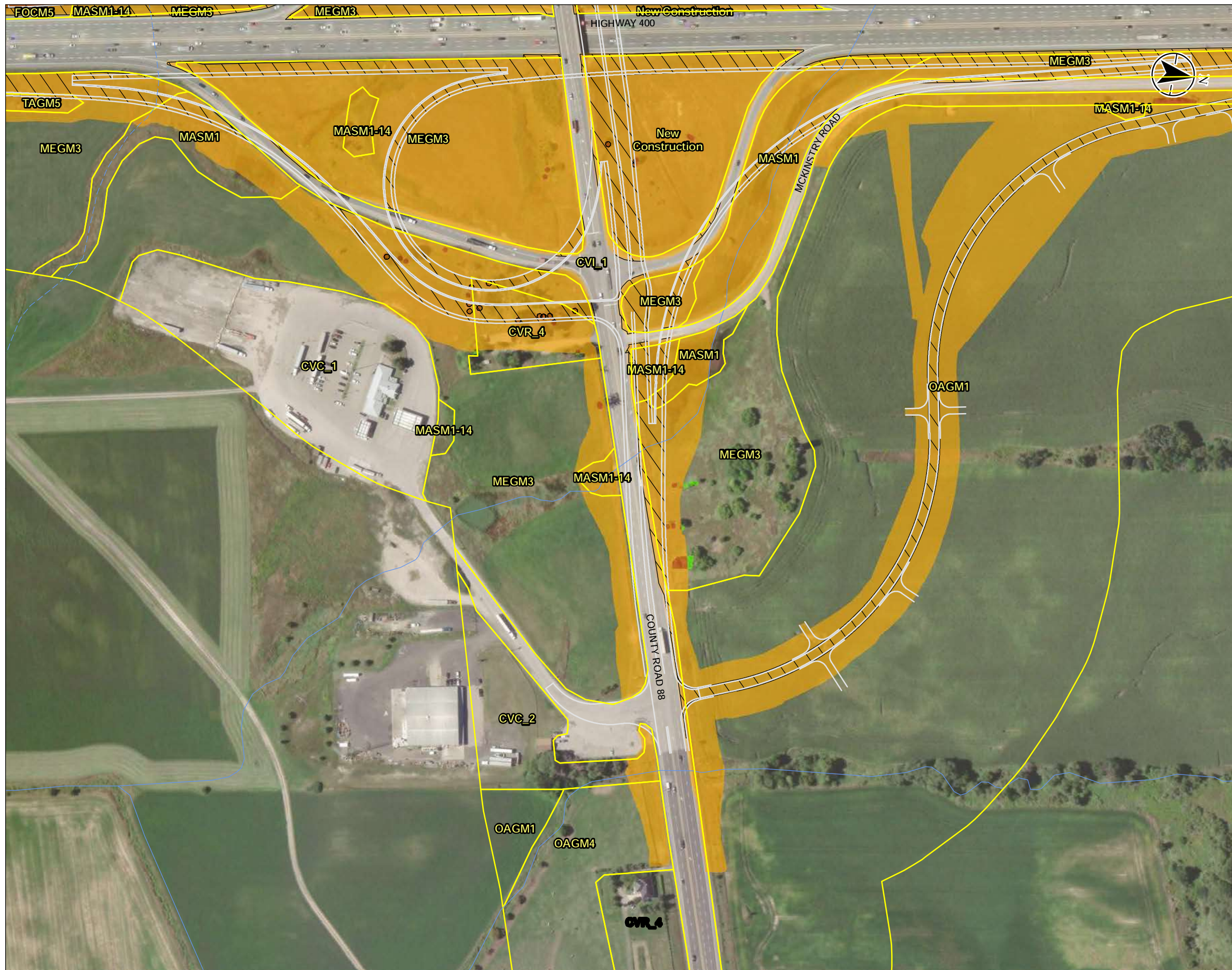


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MINISTRY OF TRANSPORTATION
DETAIL DESIGN, HIGHWAY 400 STRUCTURES
GWP 2331-16-00

Figure No.
2-4

Title
ELC

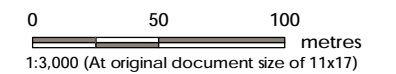


Legend

- New Construction - Edge of Pavement, Edge of Shoulder
- Grading and Vegetation Removal, Permanent
- Grading and Vegetation Removal, Temporary
- Grading, Permanent
- Grading, Temporary
- Vegetation Removal, Temporary
- ELC Community Boundary

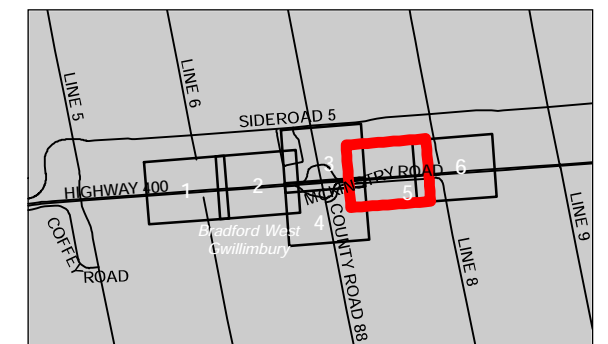
ELC Communities

- CGL_2 - Parkland
- CVL_1 - Transportation
- FODM11 - Naturalized Deciduous Hedgerow
- MASM1-14 - Reed Canary Grass Mineral Shallow Marsh
- MEGM3/THD - Dry - Fresh Graminoid Meadow/Deciduous Thicket
- MEGM3 - Dry - Fresh Graminoid Meadow
- OAGM1 - Annual Row Crops
- TAGM1 - Coniferous Plantation



Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2022.
3. Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

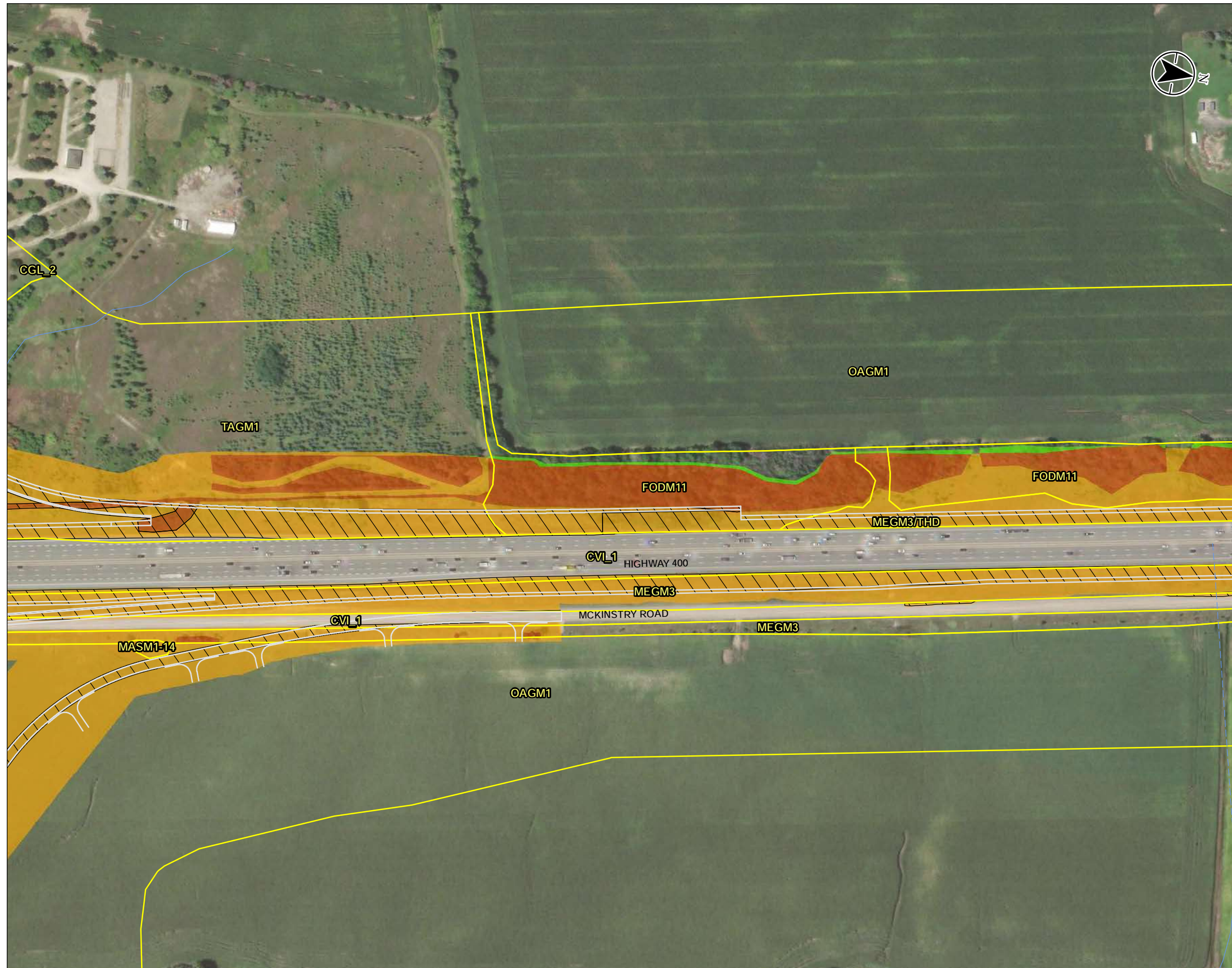


Project Location: County of Simcoe
 165001095 REVA
 Prepared by JWH on 2023-10-18

Client/Project:
MINISTRY OF TRANSPORTATION
 DETAIL DESIGN, HIGHWAY 400 STRUCTURES
 GWP 2331-16-00

Figure No.
2-5

Title
ELC



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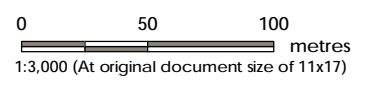
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 Revised: 2023-10-18 By: jia



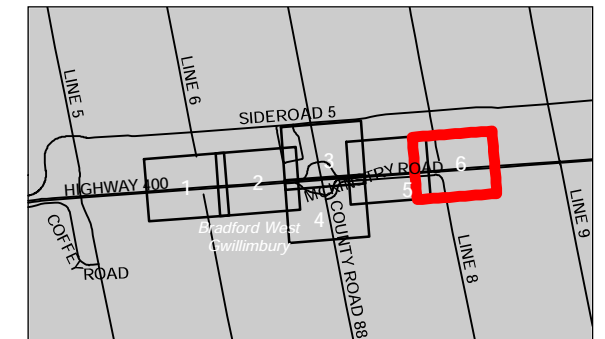
Legend

- New Construction - Edge of Pavement, Edge of Shoulder
- Grading and Vegetation Removal, Permanent
- Grading and Vegetation Removal, Temporary
- Grading, Permanent
- Grading, Temporary
- Vegetation Removal, Temporary
- ELC Community Boundary

- ELC Communities**
- CVL_1 - Transportation
 - CVR_4 - Rural Property
 - FODM11 - Naturalized Deciduous Hedgerow
 - MEGM3/THD - Dry - Fresh Graminoid Meadow/Deciduous Thicket
 - MEGM3 - Dry - Fresh Graminoid Meadow
 - OAGM1 - Annual Row Crops



- Notes**
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 3. Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



Project Location: County of Simcoe
 Prepared by JWH on 2023-10-18
 165001095 REVA

Client/Project:
MINISTRY OF TRANSPORTATION
DETAIL DESIGN, HIGHWAY 400 STRUCTURES
GWP 2331-16-00

Figure No.
2-6

Title
ELC

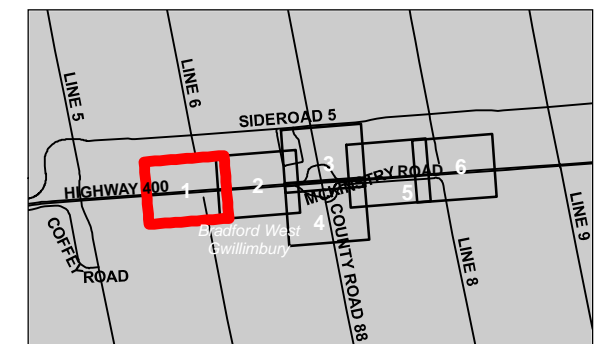
Legend

- Bat Maternity Tree
- MTO ROW
- New Construction - Edge of Pavement, Edge of Shoulder
- Not Bat SAR Habitat
- Grading and Vegetation Removal, Temporary
- Grading, Permanent
- Grading, Temporary
- Vegetation Removal, Temporary



Notes

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Project Location: County of Simcoe
 165001095 REVA
 Prepared by JSA on 2023-08-24

Client/Project:
 MINISTRY OF TRANSPORTATION
 HIGHWAY 400 IMPROVEMENTS, PROJECT 1: SIMCOE
 ROAD 88 IMPROVEMENTS GWP 2331-16-00

Figure No.

3-1

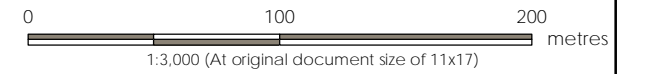
Title

**Bat Autonomous Recording Unit (ARU)
 Locations**



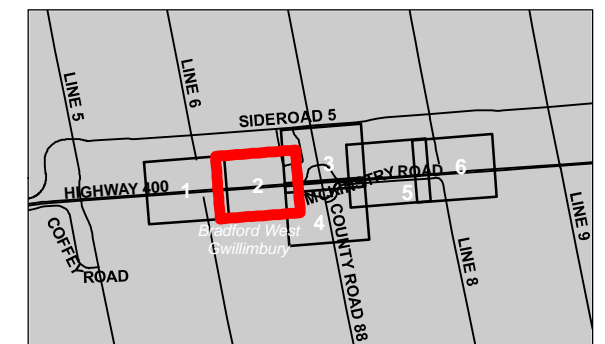
Legend

- Bat Maternity Tree
- Bat Autonomous Recording Unit (ARU)
- MTO ROW
- New Construction - Edge of Pavement, Edge of Shoulder
- Not Bat SAR Habitat
- Grading and Vegetation Removal, Permanent
- Grading and Vegetation Removal, Temporary
- Grading, Permanent
- Grading, Temporary
- Vegetation Removal, Temporary



Notes

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Project Location: 165001095 REVA
 County of Simcoe Prepared by JSA on 2023-08-24

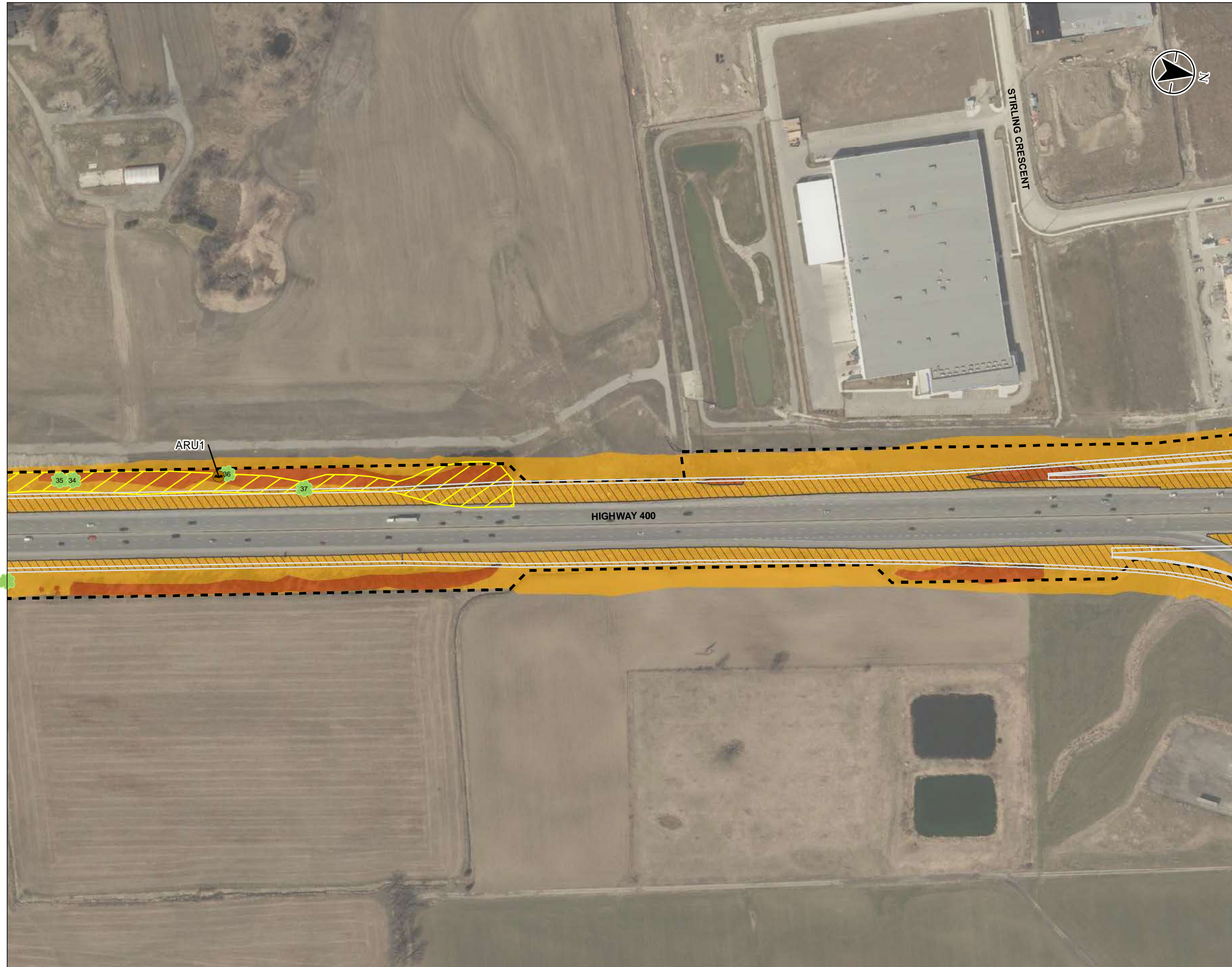
Client/Project: MINISTRY OF TRANSPORTATION
 HIGHWAY 400 IMPROVEMENTS, PROJECT 1: SIMCOE ROAD 88 IMPROVEMENTS GWP 2331-16-00

Figure No.

3-2

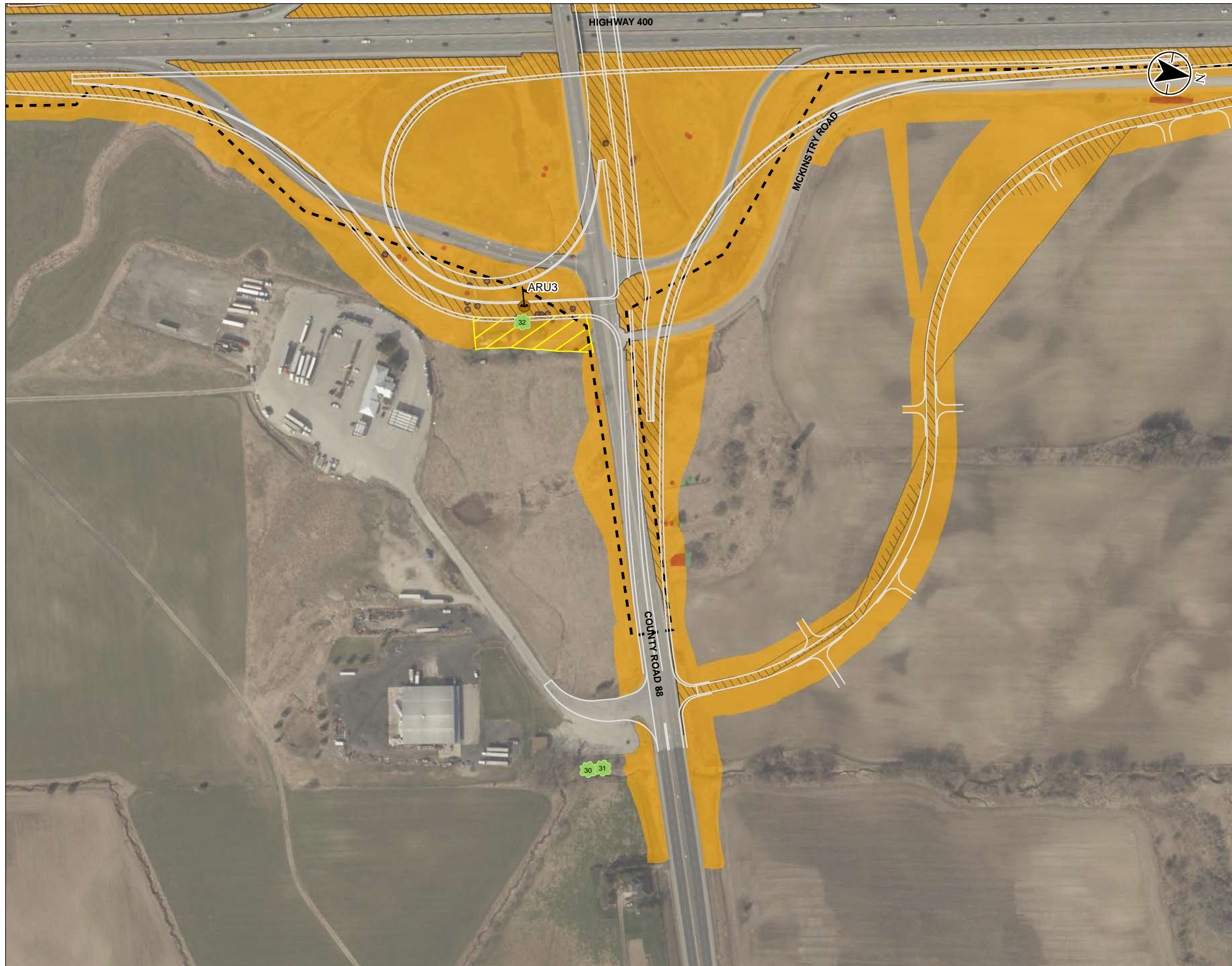
Title

Bat Autonomous Recording Unit (ARU) Locations



\\c0224epf60\work_group\165001095\active\165001095\desig\165001095\165001095_165001095_165001095_Bat_ARU.mxd Reviewed: 2023-08-24 By: JSA

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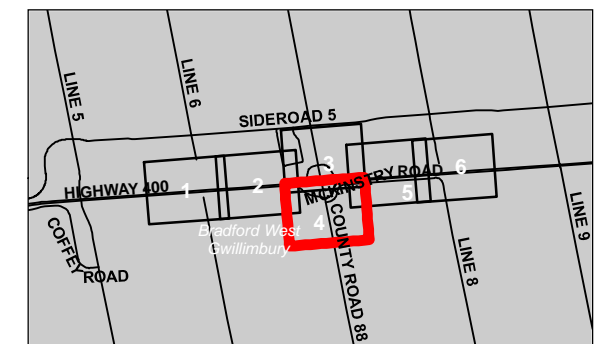
Legend

- Bat Maternity Tree
- Bat Autonomous Recording Unit (ARU)
- MTO ROW
- New Construction - Edge of Pavement, Edge of Shoulder
- Not Bat SAR Habitat
- Grading and Vegetation Removal, Permanent
- Grading and Vegetation Removal, Temporary
- Grading, Permanent
- Grading, Temporary
- Vegetation Removal, Temporary



Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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Project Location: County of Simcoe
165001095 REVA
Prepared by JSA on 2023-08-24

Client/Project: MINISTRY OF TRANSPORTATION
HIGHWAY 400 IMPROVEMENTS, PROJECT 1: SIMCOE ROAD 88 IMPROVEMENTS GWP 2331-16-00

Figure No.

3-4

Title

Bat Autonomous Recording Unit (ARU) Locations

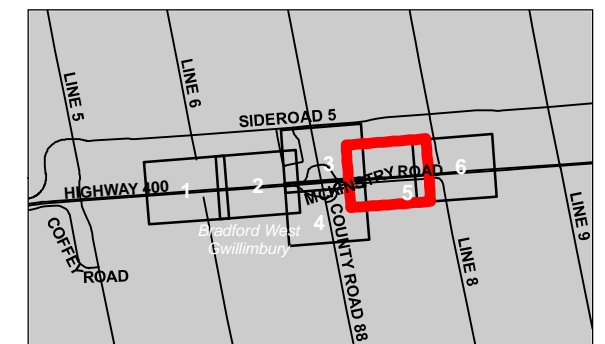
Legend

- Bat Maternity Tree
- Bat Autonomous Recording Unit (ARU)
- Bat Autonomous Recording Unit (ARU) SAR (Little Brown Myotis)
- MTO ROW
- New Construction - Edge of Pavement, Edge of Shoulder
- Grading and Vegetation Removal, Permanent
- Grading and Vegetation Removal, Temporary
- Grading, Permanent
- Grading, Temporary
- Vegetation Removal, Temporary



Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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Project Location: County of Simcoe
 Project Number: 165001095 REVA
 Prepared by: JSA on 2023-08-24

Client/Project: MINISTRY OF TRANSPORTATION
 HIGHWAY 400 IMPROVEMENTS, PROJECT 1: SIMCOE ROAD 88 IMPROVEMENTS GWP 2331-16-00

Figure No.

3-5

Title

Bat Autonomous Recording Unit (ARU) Locations

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 Reviewer: 2023-08-24 By: JSA

Appendix B: Agency Correspondence





Stantec Consulting Ltd.
100-300 Hagey Boulevard, Waterloo, ON N2L 0A4

April 8, 2019
File: 165001095

Attention: Graham Findlay, Management Biologist
2284 Nursery Road
Midhurst, ON L9X 1N8
Sent by email: graham.findlay@ontario.ca

Dear Mr. Findlay,

Reference: Natural Heritage Information Request for Ministry of Transportation Highway 400 Improvements, Town of Bradford West Gwillimbury, County of Simcoe; G.W.P. 2331-16-00 and G.W.P. 2077-18-00

The Ontario Ministry of Transportation (MTO) has retained Stantec Consulting Ltd. to complete the Detail Design and Class Environmental Assessment (EA) for Highway 400 Improvements, Town of Bradford West Gwillimbury, County of Simcoe, G.W.P. 2331-16-00 and G.W.P. 2077-18-00. This assignment involves the Detail Design for two projects:

Project 1 (G.W.P. 2331-16-00):

- Replacement of the Simcoe Road 88 Underpass (Site 30-309)
- Reconstruction of the Highway 400/ Simcoe Road 88 Interchange
- Realignment of McKinsty Road
- Relocation of the Simcoe Road 88 Carpool Lot
- Replacement of the Line 9 Overpasses (Northbound Lanes [NBL] and Southbound Lanes [SBL]) (Site 30-308/1&2)

Project 2 (G.W.P. 2077-18-00):

- Rehabilitation of Line 12 Structural Culvert (Site 30-567/C)
- Rehabilitation of Line 13 Overpasses (NBL and SBL) (Site 30-351/ 1&2)

For the purposes of this information request, the Project 1 and Project 2 work areas will be referred to as the Study Area (**Figure 1**).

The purpose of this letter is to request your input with respect to existing conditions within the Study Area, and to identify issues, concerns, or approval requirements that the Ministry of Natural Resources and Forestry (MNRF) may have. Stantec has conducted a search of the Natural Heritage Information Center (NHIC) Database, natural heritage data on MNRF's Land Information Ontario (LIO) mapping website and the Ontario Reptile and Amphibian Atlas, but we would like to request updates and/or corrections to the information, as available. This information is required to complete our natural heritage review for the project.

Reference: Natural Heritage Information Request for Ministry of Transportation Highway 400 Improvements, Town of Bradford West Gwillimbury, County of Simcoe; G.W.P. 2331-16-00 and G.W.P. 2077-18-00

FISH AND FISH HABITAT

According to LIO¹, there are eleven watercourses in the Study Area. The LIO database includes lists of baitfish species for some of the watercourses. Previous studies completed for Highway 400 were summarized in other reports^{2,3} and the reports include some information for watercourses in the current Study Area (Table 1).

There are no records of aquatic species at risk (SAR) in the Study Area^{2,4,5}.

As per the Step 2 of the Department of Fisheries and Oceans (DFO)/MTO/ MNR Fisheries Protocol, we are requesting the following information related to fish and fish habitat in the Study Area:

- Species/community information from locations within 1 km upstream or downstream of the Study Area (**Figure 1 to Figure 3**)
- Watercourse thermal regime(s) and flow regime(s)
- Special habitat features
- Construction timing window(s)
- Important/exceptional fish habitat (e.g. groundwater upwelling, spawning areas, refugia, migratory routes)
- MNR fisheries management objectives, if applicable

We request confirmation of the accuracy of the information provided in Table 1 and any additional information you may be able to provide.

TERRESTRIAL RESOURCES

The Natural Heritage Information Centre (NHIC) database and the Ontario Reptile and Amphibian Atlas have records of Bobolink (*Dolichonyx oryzivorus*) and Snapping Turtle (*Chelydra serpentina*) at each of the four work areas in the Study Area.

The work area associated with the Line 13 Overpass is located approximately 400 m east of a Provincially Significant Wetland, the Cookstown Hollows Swamp. The Cookstown Hollows Swamp is not within the Study Area.

¹ LIO. 2018. Ontario Ministry of Natural Resources and Forestry. Queen's Printer for Ontario.

² URS 2003. Highway 400 Planning and Preliminary Design Study from the South Canal Bridge to 1.0 km South of Highway 89 – Transportation Environmental Study Report. GWP 40-00-00.

³ Morrison Hershfield (MH) 2010. Fish and Fish Habitat Existing Conditions Report. Highway 400, From Canal Bank road to the Highway 400/11 Split. W.O.2007-E-0022 (7).

⁴ Fisheries and Oceans Canada (DFO) 2018. Aquatic Species at Risk Maps. Available at: <http://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html> Accessed: March 25, 2019

⁵ Ministry of Natural Resources and Forestry (MNR) 2018. Natural Heritage Information Centre (NHIC) database. Available at: <http://nhic.mnr.gov.on.ca> Accessed: March 25, 2019

April 8, 2019
Graham Findlay
Page 3 of 3

Reference: Natural Heritage Information Request for Ministry of Transportation Highway 400 Improvements, Town of Bradford West Gwillimbury, County of Simcoe; G.W.P. 2331-16-00 and G.W.P. 2077-18-00

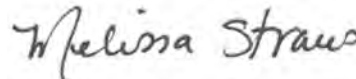
We respectfully request confirmation of the above findings and the identification of any additional natural heritage resources information you may have for the Study Area. Please contact the undersigned if you have any questions regarding this information request.

Regards,

Stantec Consulting Ltd.



Nancy Harttrup, B.Sc.
Senior Fisheries Biologist
Phone: 519 585-7329
Fax: 519 579-6733
Nancy.harttrup@stantec.com



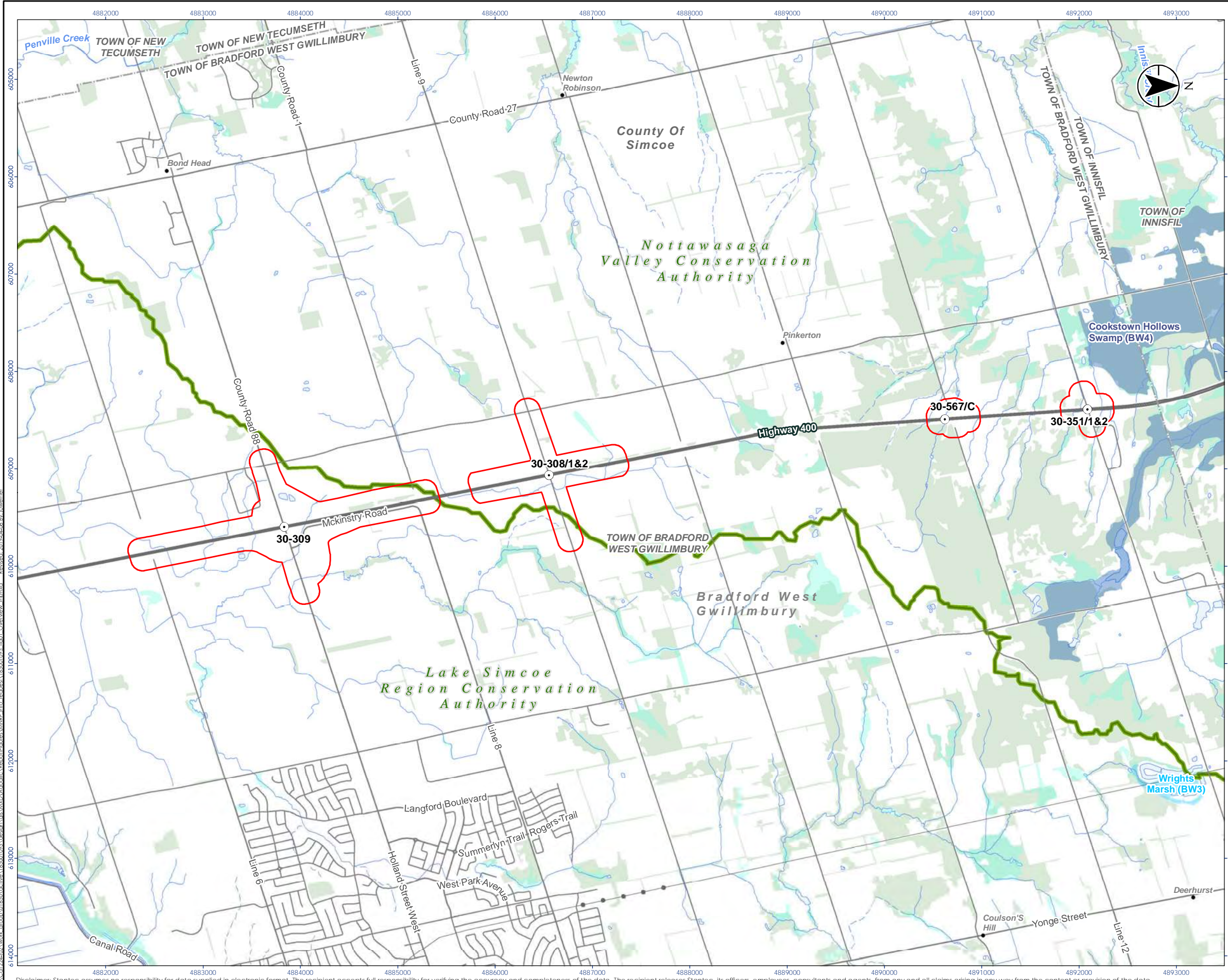
Melissa Straus M.Sc.
Terrestrial Ecologist
Phone: 519 780 8103
Fax: 519 836 2493
Melissa.Straus@stantec.com

Attachment: Attachment 1: Figure1 to Figure 3
Attachment 2: Table 1

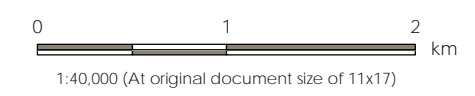
c. F. Tam, R. Gribbon, Ministry of Transportation
A. Barg, D. Madden – Stantec Consulting Ltd.
midhurstinfo@ontario.ca

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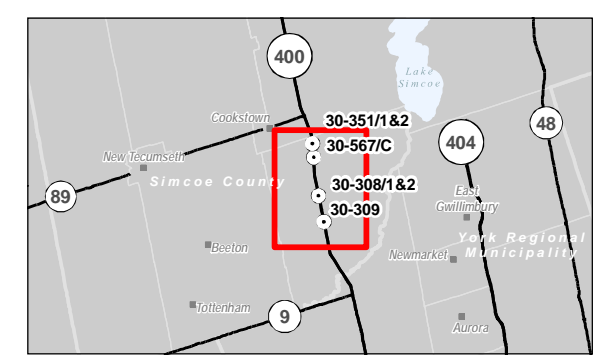
ATTACHMENT 1:
Figures 1 - 3



- Legend
- Project Point
 - ▭ Study Area
 - Constructed Drain
 - Hydro Line
 - - - Watercourse (Intermittent)
 - Watercourse (Permanent)
 - ▭ Conservation Area
 - ▭ Administrative Boundary
 - ▭ Waterbody
 - ▭ Wooded Area
 - ▭ Municipal Boundary, Upper
 - ▭ Municipal Boundary, Lower



- Notes
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 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2018.



Project Location: Town of Bradford West Gwillimbury
 165001095 REVA
 Prepared by JW on 2019-04-08

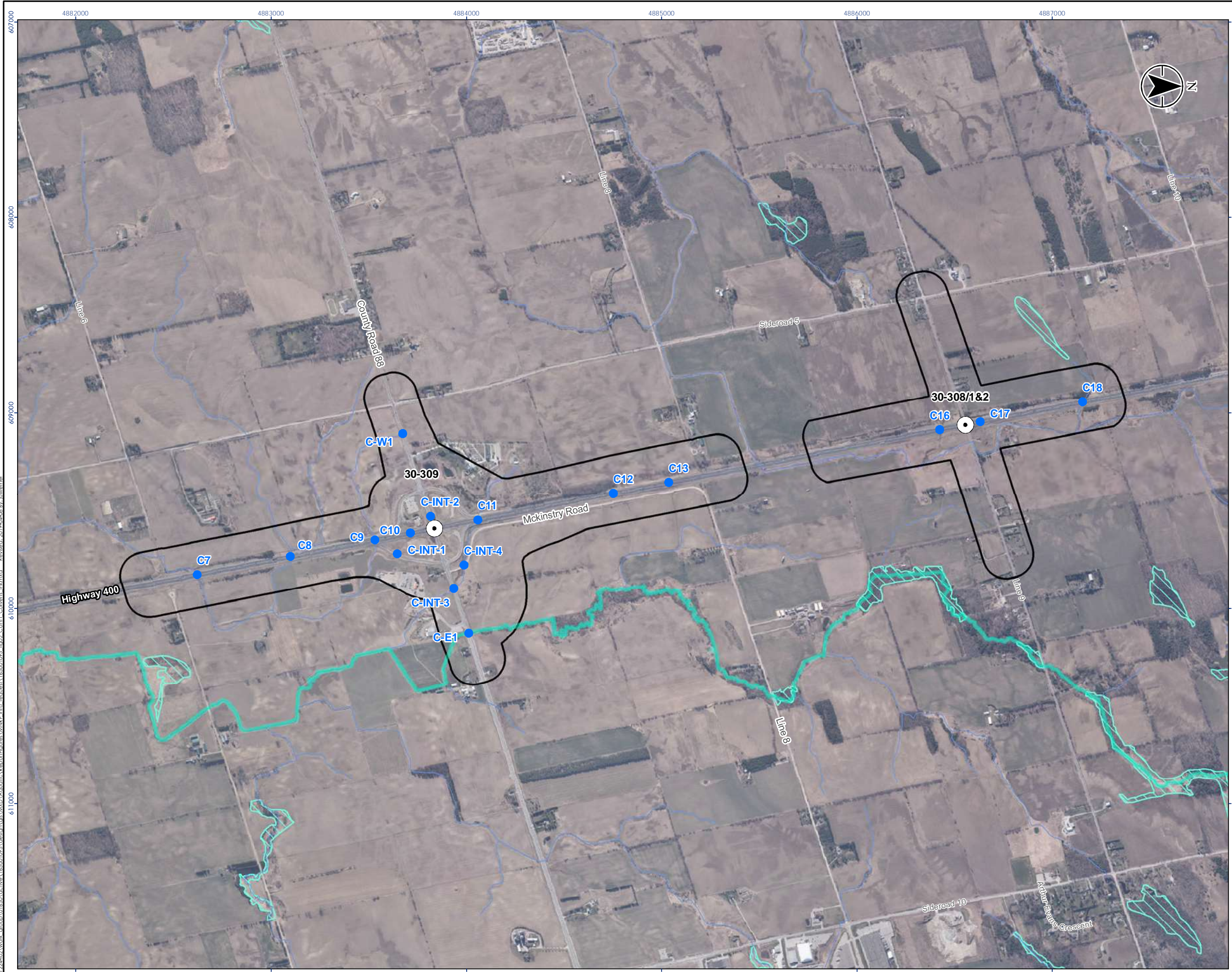
Client/Project: MINISTRY OF TRANSPORTATION
 DETAIL DESIGN, HIGHWAY 400 STRUCTURES
 GWP 2331-16-00 & GWP 2077-18-00

Figure No. 1

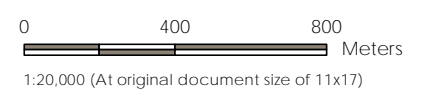
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 Revised: 2019-04-08 By: J. L. J.

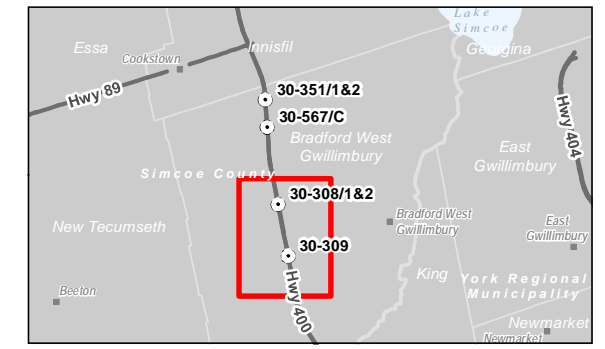
Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.



- Legend
- Culvert Location
 - Project Point
 - ▭ Study Area
 - - - Watercourse (Intermittent)
 - Watercourse (Permanent)
 - Thermal Regime, Cool
 - Thermal Regime, Cool
 - Wetland, Not evaluated per OWES



- Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2018.
 3. Culvert locations obtained from previous reports. Locations to be verified in the field.
 3. Imagery obtained from © First Base Solutions, Simcoe County, 2016.



Project Location: Bradford West Gwillimbury
 Prepared by JW on 2019-04-08
 Technical Review by ME on 2019-04-08
 165001095 REVA

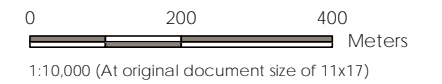
Client/Project: MINISTRY OF TRANSPORTATION
 DETAIL DESIGN, HIGHWAY 400 STRUCTURES
 GWP 2331-16-00

Figure No.: 2
 Title: Culvert Locations - Project 1

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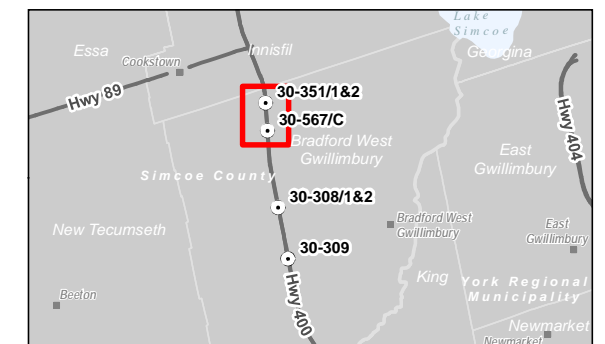
Legend

- Culvert Location
- Project Point
- Study Area
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Constructed Drain
- Thermal Regime, Cold
- Thermal Regime, Cold
- Wetland, Provincially Significant
- Wetland, Not evaluated per OWES



Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2018.
3. Culvert locations obtained from previous reports. Locations to be verified in the field.
3. Imagery obtained from © First Base Solutions, Simcoe County, 2016.



Project Location: Bradford West Gwillimbury
 165001095 REVA
 Prepared by JW on 2019-04-08
 Technical Review by ME on 2019-04-08

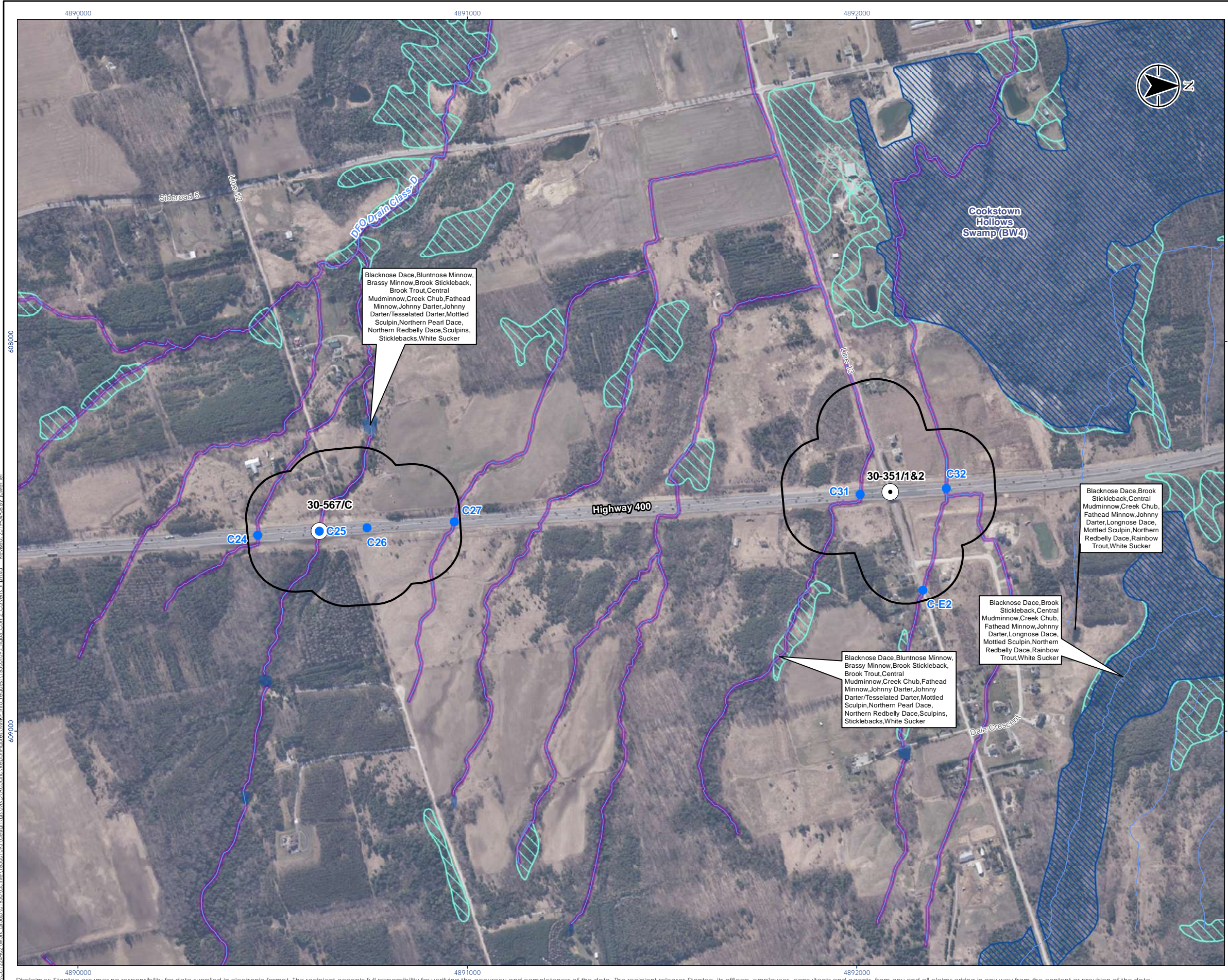
Client/Project: MINISTRY OF TRANSPORTATION
 DETAIL DESIGN, HIGHWAY 400 STRUCTURES
 GWP 2077-18-00

Figure No.

3

Title

Culvert Locations - Project 2



ATTACHMENT 2:
Table 1

Table 1: Highway 400 Improvements (G.W.P. 2331-16-00 and G.W.P 2077-18-00); Available Fish and Fish Habitat Data

Work Area/Site	Culvert and Waterbody ID	Easting (UTM 17T)	Northing (UTM 17T)	Flow Regime	Thermal Regime	Fish Habitat	Fish Species Records*	Substrate (to be determined)	Vegetation (to be determined)	Constraints and Opportunity*	Important, Exceptional Fish Habitat*	Species at Risk / Critical Habitat Present*	In-water Works Timing Window*
Simcoe Road 88 Underpass – Site 30-309 (Figure 1, Figure 2)													
	C7 Fraser Creek Tributary 1	609828	4882621	Permanent (URS 2003) Intermittent (MH 2010)	Warmwater (URS 2003)		Yes (MH 2010, URS 2003)						
	C8 Fraser Creek Tributary 2	609735	4883099	Permanent (URS 2003) Intermittent (MH 2010)	Warmwater (URS 2003)		Yes (MH 2010, URS 2003)						
	C9 Fraser Creek Tributary 3	609651	4883530	Intermittent (URS 2003) Ephemeral (MH 2010)	Unknown		No (MH 2010)						

Table 1: Highway 400 Improvements (G.W.P. 2331-16-00 and G.W.P 2077-18-00); Available Fish and Fish Habitat Data

Work Area/Site	Culvert and Waterbody ID	Easting (UTM 17T)	Northing (UTM 17T)	Flow Regime	Thermal Regime	Fish Habitat	Fish Species Records*	Substrate (to be determined)	Vegetation (to be determined)	Constraints and Opportunity*	Important, Exceptional Fish Habitat*	Species at Risk / Critical Habitat Present*	In-water Works Timing Window*
	C11, C-INT-4, C-INT-3 Fraser Creek Tributary 4	609548	4884058	Permanent (URS 2003)	Warmwater (URS 2003)	Yes (URS 2003) No (MH 2010)	Baitfish (URS 2003)						
	C-E1 Fraser Creek Tributary 5	610128	4884011	Permanent (MNRF 2018)	Coldwater (MNRF 2018)	Unknown							
Line 9 Overpass – Site 30-308 (Figure 1, Figure 2)													
	C18 Penville Creek Tributary	608943	4887153	Intermittent (URS 2003) Ephemeral (MH 2010)	Unknown	No (MH 2010)							
Line 12 - Site 30 567/C (Figure 1, Figure 3)													
	C24 Innisfil Creek Tributary 1	608497	4890461	Intermittent (URS 2003) Permanent (MNRF 2018)	Coldwater (MNRF 2018, URS 2003)	Yes (URS 2003)							
	C25 Innisfil Creek Tributary 2	608486	4890620	Permanent (URS 2003) Intermittent at Highway, permanent downstream (MH 2010)	Coldwater (MNRF 2018, URS 2003)	Yes (URS 2003) Yes (MNRF 2018)	Brook Trout (URS 2003) Blacknose Dace, Bluntnose Minnow, Brassy Minnow, Brook Stickleback, Brook Trout, Central Mudminnow, Creek Chub, Fathead, Johnny Darter/Tesselated Darter, Mottled Sculpin, Northern Pearl Dace, Northern Redbelly Dace, White Sucker (MNRF 2018)						
	C27 Innisfil Creek Tributary 3	608462	4890966	Permanent (MNRF 2018) Intermittent (URS 2003)	Coldwater (MNRF 2018, URS 2003)	Yes (URS 2003) No (MH 2010)							

Table 1: Highway 400 Improvements (G.W.P. 2331-16-00 and G.W.P 2077-18-00); Available Fish and Fish Habitat Data

Work Area/Site	Culvert and Waterbody ID	Easting (UTM 17T)	Northing (UTM 17T)	Flow Regime	Thermal Regime	Fish Habitat	Fish Species Records*	Substrate (to be determined)	Vegetation (to be determined)	Constraints and Opportunity*	Important, Exceptional Fish Habitat*	Species at Risk / Critical Habitat Present*	In-water Works Timing Window*
				Ephemeral (MH 2010)									
Line 13 – Site 30-351 (Figure 1, Figure 3)													
	C31 Innisfil Creek Tributary 4	608392	4892009	Permanent (URS 2003) (MNRF 2018) Intermittent (MH 2010)	Coldwater (MNRF 2018) Warmwater (URS 2003)		Yes (MNRF 2018, URS 2003)						
	C32, C-E2 Innisfil Creek Tributary 5	608377	4892230	Intermittent (URS 2003) Ephemeral (MH 2010)	Coldwater (MNRF 2018) Warmwater (URS 2003)		Yes (URS 2003) No (MH 2010)	Baitfish (URS 2003)					

Notes/References:

*Highlighted cells represent data gaps where MNRF input is requested

MNRF 2018. Land Information Ontario database. Ontario Ministry of Natural Resources and Forestry. Queen’s Printer for Ontario.

MH [Morrison Hershfield]. 2010. Fish and Fish Habitat Existing Conditions Report. Highway 400, from Canal Bank Road to the Highway 400/11 Split. W.O. 2007-E-0022 (7)

URS. 2003. Highway 400 Planning and Preliminary Design Study from the South Canal Bridge to 1.0 km South of Highway 89. G.W.P. 40-00-00

From: [Findlay, Graham \(MNRF\)](#)
To: [Harttrup, Nancy](#)
Cc: [Madden, Donna](#); [Straus, Melissa](#)
Subject: RE: MTO Highway 400 Improvements_Background Information Request
Date: Wednesday, April 17, 2019 2:22:12 PM
Attachments: [image001.jpg](#)
[2019-04-17 FishValuesTable MTO HWY400-88-Lines9-12-13.docx](#)

Hi Nancy attached for your attention is the edited fish community data summary table updated in accordance to fish community sampling data more focused to the local landscape of the subject water crossings.

We are not aware of other natural heritage values on concern; however consulting the Ministry of the Environment, Conservation and Parks may be warranted with respect to species at risk information available for your study areas.

Do call with any further questions.

Regards,

Graham Findlay
Management Biologist
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Subject: MTO Highway 400 Improvements_Background Information Request

Hello Graham

Please see the attached information request for a project in the Midhurst District and let me know if you have any questions.

Thank you

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Appendix C: SAR and SOCC Background Review



Appendix C: 165001095 SAR and SOCC Habitat Assessment

Group	Common Name	Scientific Name	COSSARO	COSEWIC	S-Rank	Source(s)	Habitat Description	Potential Presence in the Study Area (Y/N)	Potential Presence in the Work Zone (Y/N)
Amphibians	Western Chorus Frog (GLSL Pop.)	<i>Pseudacris triseriata</i>	NAR	THR-THR	S3	Ontario Nature 2018	The Western Chorus Frog prefers small, ephemeral wetlands disconnected from other water sources for breeding (Environment Canada 2015; COSEWIC 2008d). The temporary nature of these wetlands leads to a reduction in predation pressure, but also makes entire populations susceptible to seasonal events such as premature drying due to climate conditions (Environment Canada 2015). The vegetation composition in breeding ponds is typically herbaceous with the presence of occasional shrubs or partially submerged trees forming a discontinuous or open canopy (Environment Canada 2015). Some populations may breed at the edges of closed-canopy habitats (Environment Canada 2015).	Y: Potential habitat present in the wetland communities in the Study Area.	N: Swamp communities do not extend into the ROW.
Birds	Bank Swallow	<i>Riparia riparia</i>	THR	THR-NS	S4B	Cadman et al 2007	The Bank Swallow breeds on a variety of sites with vertical banks, including riverbanks, bluffs, aggregate pits and stock piles of sand and soil (COSEWIC 2013a). Sand-silt substrates are preferred (COSEWIC 2013a). Nesting sites are often near open habitats used for aerial foraging (COSEWIC 2013a). Large wetlands are used as communal roosts during post-breeding, migration, and wintering periods (COSEWIC 2013a).	Y: Potential habitat if stockpile materials are present on site as a result of construction activities. No exposed sandy banks were present in the Study Area; however, this species was observed breeding in stockpiles approximately 1 km south of Project Study Area (pers. Comm MTO).	N: There were no exposed sandy banks present in the ROW.

Appendix C: 165001095 SAR and SOCC Habitat Assessment

Group	Common Name	Scientific Name	COSSARO	COSEWIC	S-Rank	Source(s)	Habitat Description	Potential Presence in the Study Area (Y/N)	Potential Presence in the Work Zone (Y/N)
Birds	Barn Swallow	<i>Hirundo rustica</i>	SC	THR-NS	S4B	Cadman et al 2007	The Barn Swallow commonly nests on walls or ledges of barns, bridges, culverts or other man-made structures (Cadman et al. 2007). Where suitable nesting structures occur, Barn Swallow often form small colonies, sometimes mixed with other swallow species (COSEWIC 2011a). The Barn Swallow feeds on aerial insects while foraging over a variety of open habitats such as pastures, lawns, meadows and fields (COSEWIC 2011a). It will also frequently forage in woodland clearings, over wetland habitats or open water where insect prey are abundant (Cadman et al. 2007).	Y: Potential habitat in old barns and buildings in the Study Area.	N: There is no suitable habitat within the Work Zone.
Birds	Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR-NS	S4B	Cadman et al 2007; MNRF 2019a	The Bobolink is generally referred to as a “grassland species”. It nests primarily in forage crops with a mixture of grasses and broad-leaved forbs, predominantly hayfields and pastures. Preferred ground cover species include grasses such as Timothy and Kentucky bluegrass and forbs such as clover and dandelion (COSEWIC 2010b). Bobolink is an area-sensitive species, with reported lower reproductive success in small habitat fragments (COSEWIC 2010b).	Y: Potential habitat present in the large meadows in the Study Area.	N: Bobolink is unlikely to occur in meadows within the heavily disturbed ROW.
Birds	Canada Warbler	<i>Cardellina canadensis</i>	SC	THR-THR	S4B	Cadman et al 2007	The Canada Warbler is found in wet deciduous, coniferous and mixed forests with a dense shrub layer and complex forest floor (MNRF 2016; COSEWIC 2008a), in riparian shrub forests, regenerating stands and in old-growth forest (COSEWIC 2008a). It nests on the ground or on mossy logs or roots near stream banks or on hummocks (MNRF 2016).	N: No forest communities present in the Study Area.	N: Forest communities do not extend into the ROW.
Birds	Chimney Swift	<i>Chaetura pelagica</i>	THR	THR-THR	S4B, S4N	Cadman et al 2007	Chimney Swift uses chimneys for roosting and breeding, and less commonly, nest in large hollow trees (Cadman et al. 2007). Nesting sites typically have a constant ambient temperature (COSEWIC 2007). It is an aerial insectivore, and often forages near water (COSEWIC 2007a).	N: No chimneys or forests in the Study Area.	N: No chimneys in the ROW, and forest and swamp communities do not extend into the ROW.

Appendix C: 165001095 SAR and SOCC Habitat Assessment

Group	Common Name	Scientific Name	COSSARO	COSEWIC	S-Rank	Source(s)	Habitat Description	Potential Presence in the Study Area (Y/N)	Potential Presence in the Work Zone (Y/N)
Birds	Common Nighthawk	<i>Chordeiles minor</i>	SC	THR-THR	S4B	Cadman et al 2007	The Common Nighthawk is an aerial insectivore and forages at dawn and dusk. This species nests on the ground in open habitats with rocky or graveled substrate, and will even nest on gravel roofs in the city (Cadman et al. 2007). The regeneration or succession of forest clearings and the destruction of grassland habitats appear to play a major role in this species' decline along with the non-selective spraying for mosquitoes (Cadman et al. 2007).	Y: Potential habitat present in the meadows in the Study Area.	N: Common Nighthawk is unlikely to occur in meadows within the heavily disturbed ROW.
Birds	Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR-NS	S4B	Cadman et al 2007	The Eastern Meadowlark is typically found in fields, meadows, golf courses, pastures, alfalfa fields, roadsides and other open areas (MNR 2016). Older sites with moderately tall grass, a substantial litter layer, low forb and shrub cover and dense grass are preferred (COSEWIC 2011b). Larger patch sizes (>5 ha) are also generally preferred (COSEWIC 2011b).	Y: Potential habitat present in the large meadows in the Study Area.	N: Eastern Meadowlark was not present during field investigations and is unlikely to occur in the heavily disturbed ROW.
Birds	Eastern Whip-poor-will	<i>Antrostomus vociferus</i>	THR	THR-THR	S4B	Cadman et al 2007	The Eastern Whip-poor-will is typically found in areas with a mixture of open and forested habitats such as savannahs, open woodlands or openings in mature forests (MNR 2016). Common tree associations are pine and oak (COSEWIC 2009a). Semi-open and patchy forests are preferred, as are areas with little ground cover such as rock barrens (COSEWIC 2009a). Nests are usually found on the ground in forested areas (MNR 2016).	N: No forest communities present in the Study Area.	N: Forest communities do not extend into the ROW.
Birds	Eastern Wood-Pewee	<i>Contopus virens</i>	SC	SC-NS	S4B	Cadman et al 2007	The Eastern Wood-Pewee is found in the mid-canopy layer of deciduous and mixedwood forests with open understories, and is commonly associated with edges and clearings (MNR 2016).	N: No forest communities present in the Study Area.	N: Forest communities do not extend into the ROW.
Birds	Golden-winged Warbler	<i>Vermivora chrysoptera</i>	SC	THR-THR	S4B	Cadman et al 2007	The Golden-winged Warbler is found in early-successional shrubby areas surrounded by mature forest, including field edges, hydro or utility Right-of-Ways or logged areas (MNR 2016; COSEWIC 2006a). It can also be found in dry uplands, swamp forests and marshes (COSEWIC 2006a).	N: No early successional or forest communities present in the Study Area.	N: No successional communities present in the ROW.

Appendix C: 165001095 SAR and SOCC Habitat Assessment

Group	Common Name	Scientific Name	COSSARO	COSEWIC	S-Rank	Source(s)	Habitat Description	Potential Presence in the Study Area (Y/N)	Potential Presence in the Work Zone (Y/N)
Birds	Wood Thrush	<i>Hylocichla mustelina</i>	SC	THR-NS	S4B	Cadman et al 2007	The Wood Thrush is found in deciduous and mixed forests with a developed understory and tall trees (MNRF 2016). While it prefers large forest tracts, it will utilize smaller forest fragments (MNRF 2016). Nests are constructed in shrubs or saplings, typically Sugar Maple or American Beech (MNRF 2016).	N: No forest communities present in the Study Area.	N: Forest communities do not extend into the ROW.
Invertebrates	Monarch	<i>Danaus plexippus</i>	SC	SC	S4B, S2N	MNRF 2019a	Found primarily wherever milkweed and wildflowers (including goldenrods, asters and purple loosestrife) exist (COSEWIC, 2010f). The Larvae occur only where milkweed exists; adults are more generalized, feeding on a variety of wildflower nectar (MNR, 2014). This includes abandoned farmland, along roadsides, and other open spaces where these plants grow (COSEWIC, 2010f).	Y: Potential habitat present in the meadows in the Study Area.	Y: Potential habitat present in the meadows in the Work Zone.

Appendix C: 165001095 SAR and SOCC Habitat Assessment

Group	Common Name	Scientific Name	COSSARO	COSEWIC	S-Rank	Source(s)	Habitat Description	Potential Presence in the Study Area (Y/N)	Potential Presence in the Work Zone (Y/N)
Mammals	Eastern Small-footed Myotis	<i>Myotis leibii</i>	END	Not listed	S2S3	Dobbyn 1994	The Eastern Small-footed Myotis roosts in a variety of habitats, including hollow trees, under rocks or in rock outcrops, in buildings, caves, mines and under bridges (MNR 2016). Different roosting sites may be selected each day (MNR 2016). Hibernation occurs in abandoned mines and caves (MNR 2016).	Y: Trees within the Study Area may support roosting bats.	Y: Trees within the Work Zone may support roosting bats.
Mammals	Little Brown Myotis	<i>Myotis lucifugus</i>	END	END-END	S4	Dobbyn 1994	The Little Brown Myotis roosts in tree cavities and abandoned buildings, and often forms roosting colonies in barns, attics and abandoned buildings (MNR 2016; COSEWIC 2013b). They have been found in a wide variety of deciduous and coniferous tree stands (COSEWIC 2013b). Hibernation typically occurs in caves and mines (MNR 2016).	Y: Trees within the Study Area support roosting bats.	Y: Trees within the Work Zone support roosting bats.
Mammals	Northern Myotis	<i>Myotis septentrionalis</i>	END	END-END	S3?	Dobbyn 1994	The Northern Myotis roosts in colonies in tree cavities (COSEWIC 2013b) in a wide variety of deciduous and coniferous forest stands. Little is known about the effect of tree density on maternity roost selection for this species, but bats tend to avoid large open areas (COSEWIC 2013b). Small forest gaps, such as over streams or ponds, are used for foraging (COSEWIC 2013b).	Y: Trees within the Study Area may support roosting bats.	Y: Trees within the Work Zone may support roosting bats.
Mammals	Tri-colored Bat	<i>Perimyotis subflavus</i>	END	END-END	S3?	Dobbyn 1994	The Tri-colored Bat roosts in colonies in tree cavities (COSEWIC 2013b) in a wide variety of deciduous and coniferous forest stands. Little is known about the effect of stand composition on maternity roost selection for this species, but it is strongly associated with forest watercourses and streamside vegetation (COSEWIC 2013b).	Y: Trees within the Study Area may support roosting bats.	Y: Trees within the Work Zone may support roosting bats.
Reptiles	Milksnake	<i>Lampropeltis triangulum</i>	NAR	SC	S3	Ontario Nature 2018	Hibernation sites are often damp or water-saturated, suggesting that moisture content is important for a successful hibernation. Females are ovoviparous, giving birth to live young in late summer (COSEWIC 2002).	Y: Suitable habitat occurs throughout the Study Area, especially near wetlands.	Y: Suitable habitat is present within the Work Zone.

Appendix C: 165001095 SAR and SOCC Habitat Assessment

Group	Common Name	Scientific Name	COSSARO	COSEWIC	S-Rank	Source(s)	Habitat Description	Potential Presence in the Study Area (Y/N)	Potential Presence in the Work Zone (Y/N)
Reptiles	Snapping Turtle	<i>Chelydra serpentina</i>	SC	SC-SC	S3	Ontario Nature 2018	The Snapping Turtle inhabits ponds, sloughs, streams, rivers, and shallow bays that are characterized by slow moving water, aquatic vegetation, and soft bottoms (COSEWIC 2008b).	Y: Suitable habitat occurs in shallow water features in the Study Area.	N: No suitable aquatic habitat within or adjacent to Work Zone.
Reptiles	Midland Painted Turtle	<i>Chrysemys picta marginata</i>	NAR	SC	S5	Ontario Nature 2018	Inhabit waterbodies, such as ponds, marshes, lakes and slow-moving creeks, that have a soft bottom and provide abundant basking sites and aquatic vegetation. These turtles often bask on shorelines or on logs and rocks that protrude from the water. The midland painted turtle hibernates on the bottom of waterbodies (Ontario Nature 2018).	Y: Suitable habitat occurs in shallow water features in the Study Area.	N: No suitable aquatic habitat within or adjacent to Work Zone.
Vascular Plant	Butternut	<i>Juglans cinerea</i>	END	END-END	S2?	None (species has range overlap)	Rich, moist, but well-drained, and relatively mature deciduous woods dominated by Sugar Maple, White Ash, and American Basswood. Deep, nutrient rich soil over limestone or marble bedrock (COSEWIC 2003b).	Y: May grow in deciduous forests/woodlands within the Study Area	N: None observed at time of field investigations

Bird Studies Canada, Environment Canada's Canadian Wildlife Service, Ontario Nature, Ontario Field Ornithologists and Ontario Ministry of Natural Resources. 2006. Ontario Breeding Bird Atlas

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COSEWIC 2002a. COSEWIC assessment and update status report on the Milksnake *Lampropeltis tirangulum* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. . vi + 29 pp.

COSEWIC 2003b. COSEWIC assessment and status report on the butternut *Juglans cinerea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp.

COSEWIC. 2006a. COSEWIC assessment and status report on the Golden-winged Warbler *Vermivora chrysoptera* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 30 pp.

COSEWIC. 2007a. COSEWIC assessment and status report on the Chimney Swift *Chaetura pelagica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 49 pp.

COSEWIC. 2008a. COSEWIC assessment and status report on the Canada Warbler *Wilsonia Canadensis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp.

COSEWIC. 2008b. COSEWIC assessment and status report on the Snapping Turtle *Chelydra serpentina* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.

COSEWIC. 2008d. COSEWIC assessment and update status report on the Western Chorus Frog *Pseudacris triseriata* Carolinian population and Great Lakes/St. Lawrence – Canadian Shield population in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.

COSEWIC. 2009a. COSEWIC assessment and status report on the Whip-poor-will *Caprimulgus vociferus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp.

COSEWIC. 2010b. COSEWIC assessment and status report on the Bobolink *Dolichonyx oryzivorus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 42 pp.

COSEWIC. 2010f. COSEWIC assessment and status report on the Monarch *Danaus plexippus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp

COSEWIC. 2011a. COSEWIC assessment and status report on the Barn Swallow *Hirundo rustica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.

COSEWIC. 2011b. COSEWIC assessment and status report on the Eastern Meadowlark *Sturnella magna* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.

COSEWIC. 2013a. COSEWIC assessment and status report on the Bank Swallow *Riparia riparia* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.

COSEWIC. 2013b. COSEWIC assessment and status report on the Little Brown Myotis *Myotis lucifugus*, Northern Myotis *Myotis septentrionalis* and Tri-colored Bat *Perimyotis subflavus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp.

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Appendix D: Phragmites Management Plan



Appendix D: Invasive Phragmites Management Plan

European Common Reed (invasive Phragmites or *Phragmites australis subsp. australis*) is a 'restricted' plant species regulated by the Ontario Invasive Species Act (2015), and under the Act it is illegal to import, deposit, release, grow, buy, sell, lease or trade this species. The following sections include site-specific requirements and general Best Management Practices that shall be considered for the Project.

MTO's Special Provision (No. ENVR 0011) addresses control of invasive and noxious vegetation species and includes the following specific objective (7.01.02): "*The spread of invasive and noxious vegetation species to, from and within the Working Area must be minimized to the greatest extent possible.*" This Management Plan includes two methods to control the spread of invasive Phragmites: (1) prevention of the spread to new areas; and (2) control of existing colonies.

The following documents were reviewed during preparation of this Management Plan:

- Ministry of Transportation, 2019. Construction Requirements for Herbicide Spraying and Mechanical Cutting of Invasive and Noxious Vegetation Species. Special Provision No. ENVR 0011. January 8, 2019.
- Ontario Ministry of Natural Resources, 2011. Invasive *Phragmites* – Best Management Practices, Ontario Ministry of Natural Resources, Peterborough, Ontario. Version 2011. 17p.
- Halloran, Joe, Anderson, Hayley and Tassie, Danielle. 2013. Clean Equipment Protocol for Industry. Peterborough Stewardship Council and Ontario Invasive Plant Council. Peterborough, ON. Available online at https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol_June2016_D3_WEB-1.pdf

D.1 Site-Specific Requirements

Invasive Phragmites was identified throughout the Study Area, typically in roadside ditches and other drainage features (**Figure 1**). A total of 33 patches of varying sizes and density were identified, representing a total area of 9,657.87m². These locations are expected to be impacted by construction and will require appropriate removal and disposal prior to clearing and grubbing activities. The Contractor shall complete the following:

- Develop a site-specific Invasive Species Management Plan that will outline procedures for management, removal and disposal of invasive Phragmites.
- The Contractor shall adhere to the requirements of special provision No. ENVR0011 - Requirements for Herbicide Spraying and Mechanical Cutting of Invasive and Noxious Vegetation Species (MTO, 2019).
- Herbicide spraying shall not occur in areas with standing water. All locations identified in Figure 1 shall be inspected for standing water prior to spraying in accordance with section 7.02 of special provision no. ENVR0011. Spraying can only commence when water is no longer present.

- Locations to be treated by cutting shall be cut to a height of 30 cm or less unless otherwise specified or directed by the Contract Administrator per section 7.04 of special provision no. ENVR0011.
- The Contractor shall implement the Clean Equipment Protocol for Industry (Halloran et al., 2013) to minimize the introduction and spread of invasive species.
- Designated areas for equipment cleaning and invasive species stockpiles may be temporarily required during construction. If designated areas are required, they will be identified and demarcated in the field. The designated areas will not be located in or near watercourses, environmentally sensitive features, or areas where invasive species are not currently present.
- Soil contaminated with invasive species will not be re-used for restoration activities.

D.2 Best Management Practices

D.2.1 Biology

Common Reed or Phragmites (*Phragmites australis*) is a perennial, grass that can grow to 4.5 m in height. Although *Phragmites australis* is native to Ontario, an invasive, non-native, variety (*Phragmites australis subsp. australis*) has become widespread throughout the Great Lakes basin. The invasive variety of Phragmites creates tall, dense stands that degrade wetlands and other areas by excluding native plants and animals.

Both the native and invasive Phragmites typically grows in wetlands, riparian areas, roadside ditches, and other low, wet areas, although it can also be found in dry areas. It spreads rapidly due to its vigorous rhizomes (horizontal roots that produce new shoots) that can extend over 20 m in length and establish new colonies when fragmented. While the primary method of reproduction is through the extensions of rhizomes and regrowth of root fragments, invasive Phragmites produces thousands of viable seeds annually. Dispersal of root fragments and seeds occurs via natural modes of transportation such as water, air, or animal movement, and through human vectors, such as construction equipment. Invasive Phragmites is known to spread through equipment transfer in Ontario.

D.2.2 Strategies to Prevent the Spread of Invasive Phragmites

Invasive Phragmites is an opportunistic species that will colonize disturbed substrates if left unattended. If work will occur in or directly adjacent to features with Phragmites, the following measures are required to control the spread of Invasive Phragmites:

- Soil shall not be stockpiled for reuse.
- Standard construction phase mitigation measures for sediment and erosion control are required to reduce substrate disturbance to the extent possible, and to revegetate disturbed areas with desirable species as soon as possible following disturbance.

- Equipment and vehicles coming on site will be inspected inside and out prior to entering the site for debris such as mud or accumulation of dirt, plant material or snow/ice. Special Provision No. ENVR 0011 requires that equipment and vehicles are inspected as close to the site entrance as possible.
- Equipment and vehicles will also be inspected prior to leaving work areas with Invasive Phragmites.
- Equipment and vehicles with debris noted above will be cleaned in an area where risk of contamination is low, ideally on a mud free hard surface, at least 30 m away from watercourses or other drainage features, waterbodies, wetlands or other natural areas, if possible. Where risk of runoff is high, cleaning stations should be contained by sediment fence as per standard erosion and sediment control specifications.
- Large, accumulated debris may be removed using a compressed air device, high pressure hose or other device as necessary. Clean the top of equipment and vehicles first and work down, with particular attention to the undersides, wheels, wheel arches, guards, chassis, engine bays, grills, and other attachments.
- Clean inside vehicles by sweeping, vacuuming, or using a compressed air device, including the floor, foot wells, pedals, seats and under the seats.
- Cleaning is complete when no accumulations of dirt or snow/ice are visible on the vehicle exterior, radiators, and grills, and the vehicle interior is free of dirt, plant material and snow/ice.
- Avoid driving through any wastewater when exiting the cleaning site.
- Place and seal any Phragmites material removed during cleaning in a plastic bag and deposit it in a landfill.

D.2.3 Guidance to Control Existing Phragmites Colonies

There are two general methods to control existing colonies of invasive Phragmites: (1) manual or mechanical; and (2) chemical. Manual and mechanical methods are those that kill or suppress Phragmites through physical disruption, e.g., pulling, digging, disking, plowing, and mowing. Chemical (herbicide) application can provide an effective and timely method of managing Phragmites. MNR (2011) indicates that glyphosate and imazapyr herbicides are effective for Phragmites control. MTO's Special Provision (No. ENVR 0011) requires that herbicides are applied "*by qualified personnel with a valid exterminator's license of the prescribed class specified in the Pesticides Act and Regulation, and accredited by the IPM Council of Canada*" (7.03.01). An integrated approach combining chemical and nonchemical treatment options can generally be the most effective method for Phragmites.

Table D-1, below, is adapted from the MNR (2011) BMP for *Phragmites australis* var. *australis* and summarizes each method. Some invasive plant colonies have extensive underground networks of rhizomes that are difficult to control. To address this condition, MNR (2011) recommends an integrated management plan that combines two or more methods.

Table D.1: Recommended Methods of Phragmites Management

Method	Summary of Considerations
Herbicide <ul style="list-style-type: none"> • Hand-applied (wicking wand, daubing or similar) in new or small colonies OR <ul style="list-style-type: none"> • Non-selective application (controlled back-pack sprayer, carpet method) in large, dense colonies 	<ul style="list-style-type: none"> • Most effective method, especially when used in combination with other methods • Can be cost-efficient for large areas • Cannot be used in areas of standing water • Affects non-target species • May interact with wildlife • Detrimental effects often far outweigh negative effects of invasive species • Minimizes soil disturbance
Mowing	<ul style="list-style-type: none"> • Low cost • Most effective when used in combination with herbicide application • Affects non-target species • May interact with wildlife
Compression/rolling	<ul style="list-style-type: none"> • Low cost • Most effective when used in combination with herbicide application • May interact with wildlife
Mechanical removal	<ul style="list-style-type: none"> • Targets Phragmites plants • Very labor-intensive • Most effective on small, isolated stands • Not effective for large stands unless heavy equipment is used • Minimal effects on wildlife • Soil disturbance can increase colonization opportunities for weeds, monitor for colonization by weeds.

Herbicide application in combination with mowing is widely accepted as the most successful method and is the recommended approach for this project. As per MTO’s Special Provision (No. ENVR 0011) mowing shall be cut to a height of 30 cm if possible (7.04). However, this method is not a viable option when surface water is present (MNR, 2011). Under wet conditions, some flexibility of application is required, such as applying herbicide to seasonally flooded areas during the dry season. Herbicides should be applied using one of the two methods depending on the age, size and composition of the plants as described in **Table C-2**.

MTO’s Special Provision (No. ENVR 0011) requires that locations to be treated with herbicide are visually inspected for standing water and applications may only occur when standing water is not present. Herbicides will not be applied in areas that have

standing water present throughout the life of the contract (7.02). The applicator must keep records of inspections for standing water and herbicide spraying activity.

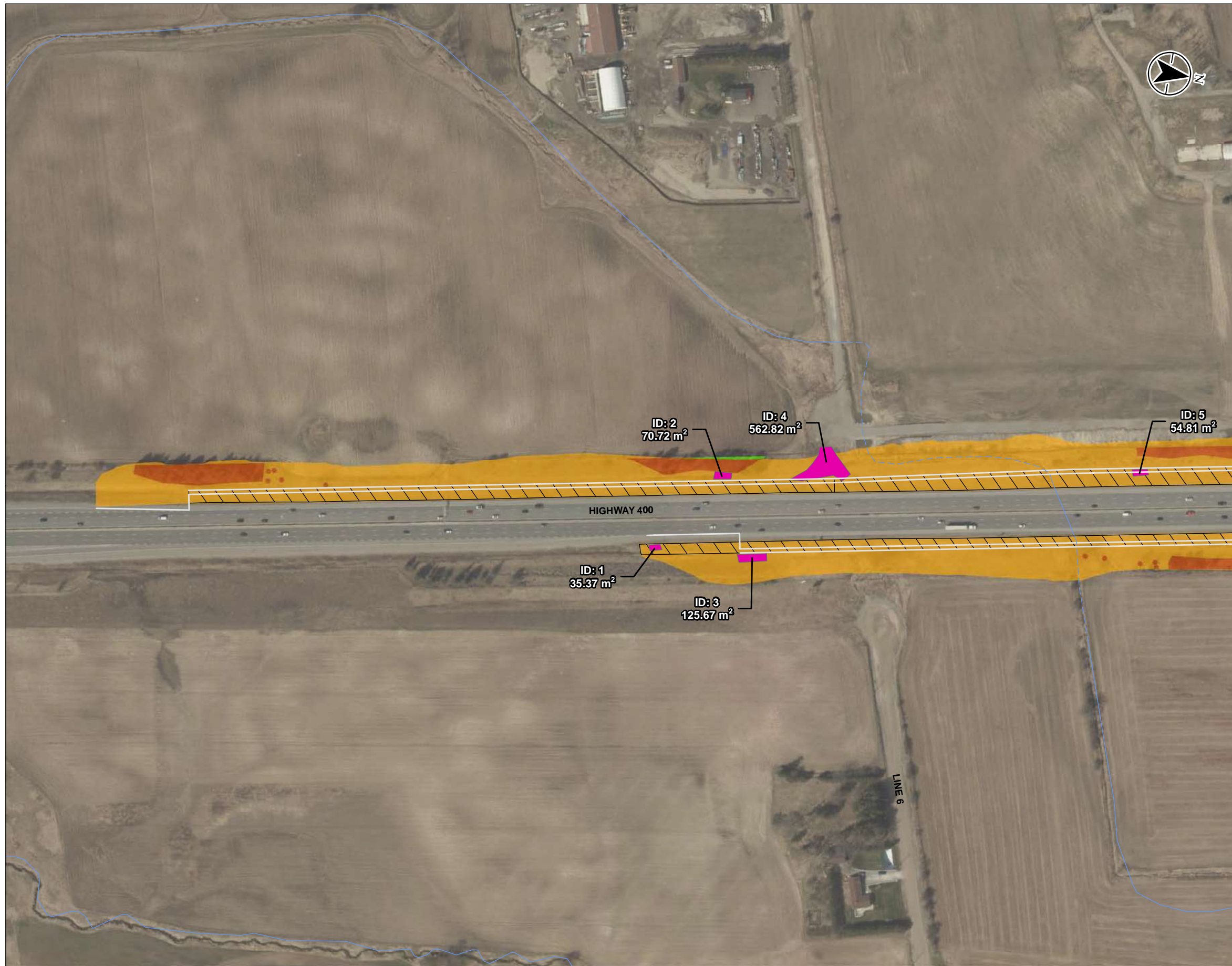
D.2.3.1 Timing of Control

Optimal timing of herbicide application is between early spring (after emergence of new growth) and fall (before the first frost). As noted above, herbicide applications should not occur when standing surface water is present. Herbicide application can occur from late spring to early fall; however, after the first frost plants become dormant and application will be less effective. The timing of application must also minimize risk to wildlife, including nesting birds that may be protected by the federal *Migratory Bird Convention Act*. The recommended timing of control is presented by task in **Table D-2**. Generally, late summer is considered ideal to minimize impact on wildlife.

Table D.2: Recommended timing and tasks for Phragmites removal

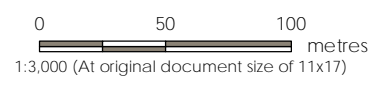
Timing	Tasks	New /Small Colonies	Established / Large Colonies	Colonies in Permanent Standing Water
July	Remove and bag flower and seed heads, including any seed heads from previous years to eliminate retained seed. Seal all removed material in plastic bags and dispose at a landfill. Care will be taken to avoid breaking live stems during this task (success of task 3 depends on the plants ability to transport herbicides to roots).	✓		✓
August	Apply herbicide via hand application (wicking or daubing).	✓		
	Apply herbicide via controlled spray applications using a backpack sprayer or other non-selective means.		✓	
September	Cut plant to height of 30cm using a string trimmer or other means to promote germination of native seeds and allow for spot treatment of new growth during subsequent herbicide applications. Cutting will not occur within 2 weeks of herbicide application to allow translocation to the roots. Cut material can be left on site to decompose. For colonies in standing water, stems will be cut below the high water line to prevent oxygen exchange with the roots.	✓	✓	✓

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Legend

- Watercourse (Intermittent)
- Watercourse (Permanent)
- New Construction - Edge of Pavement, Edge of Shoulder
- Phragmites (Stantec 2023)
- Grading and Vegetation Removal, Permanent
- Grading and Vegetation Removal, Temporary
- Grading, Permanent
- Grading, Temporary
- Vegetation Removal, Temporary



- Notes
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 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2022.
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Figure No.
1-1

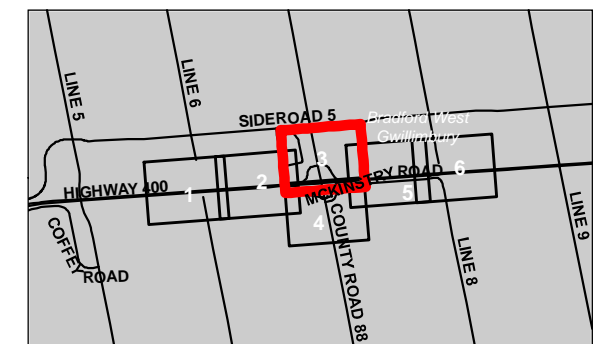
Title
Phragmites

Legend

- Watercourse (Intermittent)
- Watercourse (Permanent)
- New Construction - Edge of Pavement, Edge of Shoulder
- Phragmites (Stantec 2023)
- Grading and Vegetation Removal, Permanent
- Grading and Vegetation Removal, Temporary
- Grading, Permanent
- Grading, Temporary
- Vegetation Removal, Temporary



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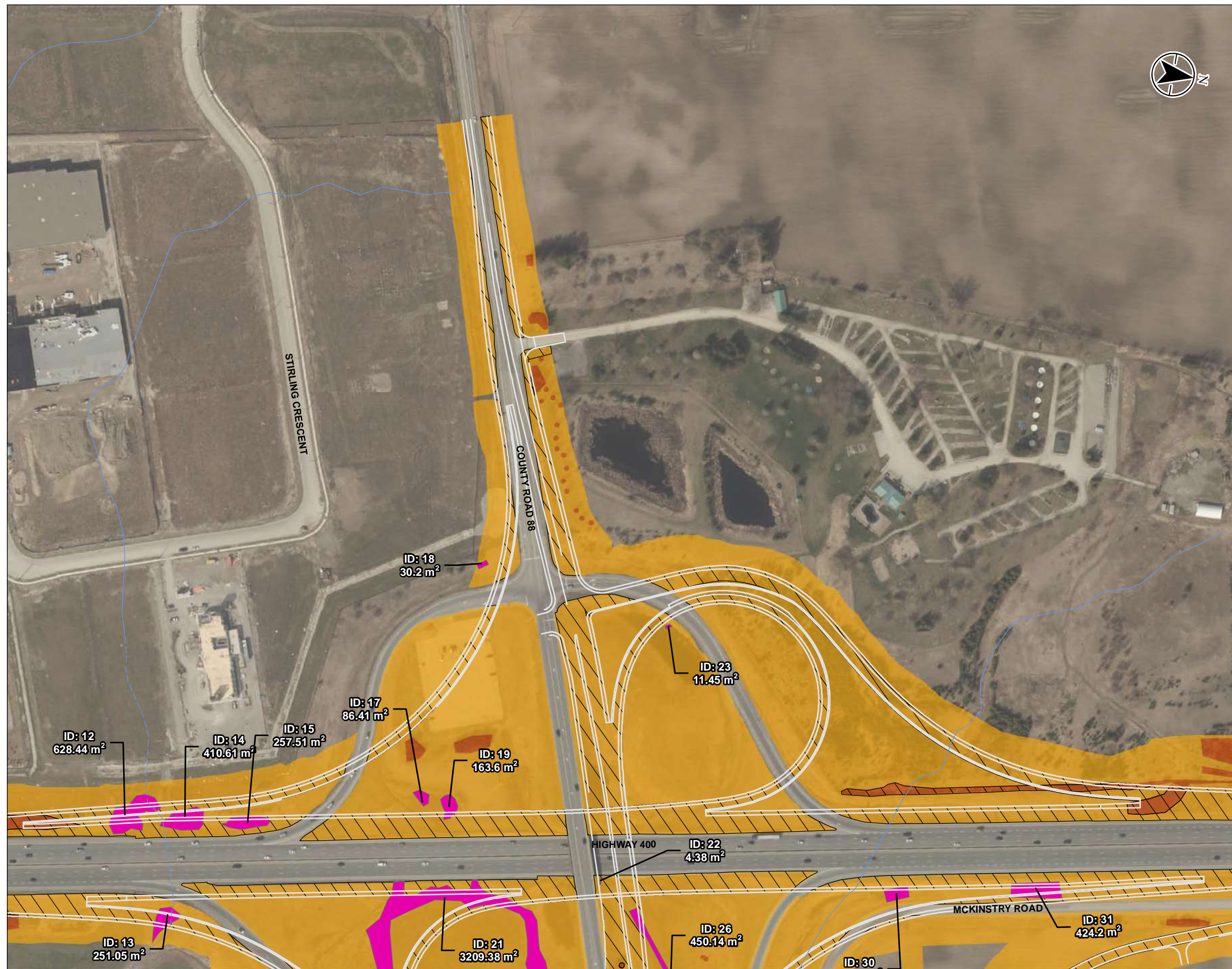
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Figure No.

1-3

Title

Phragmites



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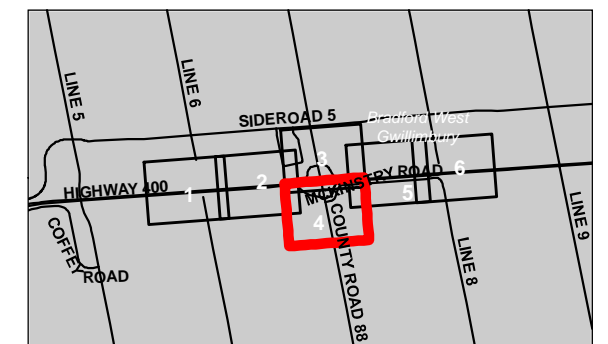
Legend

- Watercourse (Intermittent)
- Watercourse (Permanent)
- New Construction - Edge of Pavement, Edge of Shoulder
- Phragmites (Stantec 2023)
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- Grading and Vegetation Removal, Temporary
- Grading, Permanent
- Grading, Temporary
- Vegetation Removal, Temporary



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Figure No.

1-4

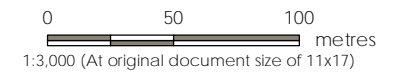
Title

Phragmites

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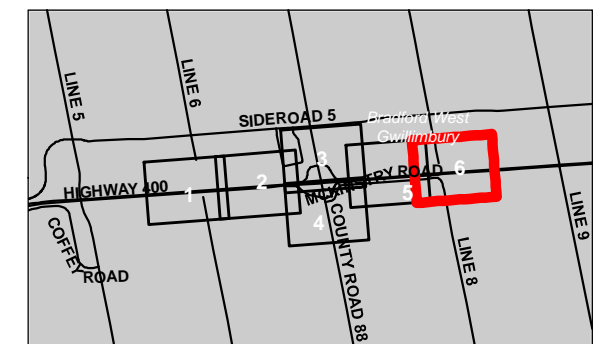
Legend

- Watercourse (Intermittent)
- Watercourse (Permanent)
- New Construction - Edge of Pavement, Edge of Shoulder
- Phragmites (Stantec 2023)
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- Grading and Vegetation Removal, Temporary
- Grading, Permanent
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- Vegetation Removal, Temporary



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Figure No.

1-6

Title

Phragmites

