APPENDIX G

Background Reports

Environmental Impact Study

Glenelg Phase 3

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1.0 Introduction

SLR Consulting (Canada) was retained by Flato Developments Inc. (Flato) to undertake environmental investigations on two parcels of land, Lot 225 Concession 1 W and part lots 225 and 226 Concession 2 W located in Dundalk, Ontario in support of proposals for residential development within the westernmost portion of these properties ("site", Figure 1). The southeast half of the subject lands fall under the jurisdiction of the Grand River Conservation Authority (GRCA) and the northwest half is under the jurisdiction of Saugeen Conservation (SVCA).

These lands fall within a larger area currently subject to an approved Ministerial Zoning Order (MZO). The development of these subject lands will be phased.

1.1 Goals and Objectives

The purpose of the EIS is to demonstrate that the proposed development has regard for the policies, guidelines and regulations that apply to these lands in the Official Plans of the Township of Southgate and Grey County, the Planning Act and Provincial Policy Statement 2020 and Policies of both the Grand Region Conservation Authority (GRCA) and the Saugeen Valley Conservation Authority (SVCA). The objectives of this study include the following:

- Characterize existing conditions
- Identify significant natural heritage features, functions, and sensitivities
- Assess potential effects associated with the proposed development
- Apply mitigation strategies and techniques to minimize potential effects and show consistency with the natural heritage policy and legislative framework that applies to these lands
- Recommend whether the proposed Draft Plan of Subdivision (DPOS) can proceed with appropriate mitigation and/or compensation if required

1.2 Planning context

Development on the site is subject to federal, provincial, and local environmental Acts, regulations, and policies. These documents provide direction and guidance regarding proposed changes in land use and the protection of natural heritage features and functions.

The applicable natural heritage regulatory and policy framework that applies to the site includes:

- Provincial Policy Statement, 2020
- Federal Fisheries Act, 2019
- Migratory Birds Convention Act, 1994
- Endangered Species Act, 2007
- Federal Species at Risk Act, 2002
- O. Regs. 150/06 and 169/06
- GRCA Planning and Permitting Policies, including GRCA (2015) Policies for the Administration of O. Reg. 150/06
- SVCA (2017) Environmental Planning and Regulations Policies Manual

- Township of Southgate Official Plan (2022)
- Grey County Official Plan (2019)
- GRCA (2005) Environmental Impact Study Guidelines and Submission Standards for Wetlands
- Evaluation, Classification and Management of Headwater Drainage Features Guidelines (Toronto and Region Conservation Authority and Credit Valley Conservation, 2014)

A Terms of Reference (ToR) for the EIS was developed with input from the GRCA (see Appendix A).

1.3 Site Location and Description

The site is approximately 35 ha and located immediately east of the Grey County CP Rail Trail, west of Highway 10 and north of Todd Crescent. Natural features on and adjacent to the site include:

- Three tributaries to the Saugeen River and Grand River (headwater drainage features [HDF]) and their associated floodplains; the single on-site tributary to be assessed occurs within the jurisdiction of the Saugeen Valley Conservation Authority
- Three unevaluated wetlands.

Development is proposed on approximately 26 ha of the western portion of the site, with connections planned to a development under construction to the south and another to the Carriage House Phase 2 development currently under construction west of the Grey County Rail Trail. Please refer to Figure 1.

Low, medium, and high-density residential development is proposed east of an environmental protection area consisting of significant woodlands and unevaluated wetlands.

2.0 Methodology

This EIS includes a summary of the existing conditions based on a review of secondary source material and preliminary field inventories including vegetation mapping, aquatic resource investigations, targeted wildlife surveys and feature staking exercises with representatives from the GRCA (scheduled for September) and Township of Southgate. Existing conditions within the site were evaluated through a review of secondary source material and site investigations by qualified SLR Ecologists between November 2021 and August 2022. Recent aerial photographs of the site were obtained and used to assist in field verification. Data collected were integrated to review the natural environment features and functions and identify environmental constraints to the Draft Plan for Subdivision application.

2.1 Desktop Analysis

A secondary source review was performed to characterize the natural environment of the site and identify known natural heritage features and functions within and adjacent to the site. The information presented in Table 1 was reviewed and used to inform the need for additional field studies and avoid duplication of effort.

Table 1: Information Source Summary and Description

Information Source	Data Description
Aerial Imagery	Google, MNDMNRF imagery from 1954 to 2021
Ontario Geological Survey Mapping (OGS)	Physiography, topography and soil characteristics of the site
Grand River Conservation Authority, Map your Property Application. Accessed on-line for Ontario Regulation 150/06 policies and Watershed Development Guidelines (August 2022) https://maps.grandriver.ca/web-gis/public/?theme=MYP	Policies in accordance with Ontario Regulation 150/06 and GRCA regulation limits
Saugeen Valley Conservation Authority mapping tool. Accessed on-line for Ontario Regulation 169/06 policies and watershed development guidelines (August 2022) https://www.saugeenconservation.ca/en/permits-and-planning/maps-and-gis.aspx	Policies in accordance with Ontario Regulation 169/06 and SVCA regulation limits
Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry, Natural Heritage Information Centre (NHIC), *Element Occurrences* © Queen's Printer for Ontario, 2020, Accessed August 2022	Evaluated and unevaluated wetlands, watercourses, woodlands, Greenlands, ANSIs, rare species occurrences, plant communities, wetlands, and natural areas information
Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry, Land Information Ontario (LIO), *Wetlands, ANSI, Natural Features* © Queen's Printer for Ontario, 2020, Downloaded July 2022	Evaluated and unevaluated wetlands, ANSIs, natural feature and topography
Ontario Breeding Bird Atlas Online. Accessed on-line November 8, 2021 https://www.birdsontario.org/atlas/index.jsp?lang=en	General Avian species and potential Species at Risk
Fisheries and Oceans Canada Distribution Maps for Fish and Mussel Species at Risk (on-line accessed August 22, 2022; modified 2022-08-11	Online mapping resource to identify potential species at risk occurrences and critical habitat
Ontario Species at Risk List (O. Reg. 230/08)	Species at Risk list and current status ratings
Southgate Township Official Plan (2022)	Environmental protection areas, Greenbelt, natural heritage system and schedules
Grey County Official Plan (2019)	Environmental protection areas, Greenbelt, natural heritage system and schedules.

2.2 Field Studies

The following sections outline the field studies that have been completed along with what is proposed for future site characterization (see the TOR for additional studies in Appendix E).

2.2.1 Terrain and Surficial Geology

To complement the review of Ontario Geological Survey (OGS) mapping, SLR is also completing hydrogeological investigations in support of the proposed project. These investigations are on-going, and findings will be reported under a separate cover upon completion.

2.2.2 Natural Environment

Additional information with respect to fisheries, wildlife, and Species at Risk (SAR) were obtained through preliminary field reconnaissance and targeted field surveys. This information was used to develop the description of the natural environment and to identify potential impacts related to proposed land use changes. The following table (Table 2) provides a summary of site visits and field tasks completed to date.

Table 2: Summary of Field Surveys

Date/Time	Task	Personnel	Weather
November 10, 2021 11:45-14:00	Site Reconnaissance and preliminary vegetation inventory	Gord Wichert Matthew Ross	Sky: partly cloudy; Beaufort wind: 3; Temperature: 10°C
April 20, 2022 14:15-17:20	Headwater Drainage Feature Assessment	Diane Francis	Sky: Clear, Beaufort wind: N/A [1]; Temperature: 5°C
April 24, 2022 23:30-24:00	Amphibian Surveys	Joelle Pecora Megan Olson	Sky: Cloudy, Beaufort wind: 1; Temperature: 13°C
April 25, 2022 13:45-14:05	Headwater Drainage Feature Assessment	Diane Francis	Sky: Rain, Beaufort Wind: 2-3; Temperature: 13°C
May 2, 2022 21:30-21:33	Amphibian Surveys	Diane Francis Megan Olson	Sky: Cloudy, Beaufort Wind: 2; Temperature: 9°C
May 17, 2022 3 hrs	Vegetation Survey	Kim Laframboise Fiona Shi	Sky: Clear, Beaufort Wind: 0; Temperature: 13°
May 25, 2022 9:00-13:35	Headwater Drainage Feature Assessment	Diane Francis	Sky: Cloudy, Beaufort Wind: 3-5; Temperature: 13°C
May 30, 2022 21:35-21:38	Amphibian Surveys	Danielle Bourque Fiona Shi	Sky: Partly cloudy, Beaufort Wind: 1; Temperature: 25°C
June 1, 2022 22:57-23:01	Amphibian Surveys	Joelle Pecora Fiona Shi	Sky: Clear; Beaufort Wind: 2; Air temperature 12°C;

Date/Time	Task	Personnel	Weather
June 14, 2022 ~6:00-10:00	Breeding Bird Surveys	Jeremy Bensette	N/A
June 28, 2022 11:15-11:18	Amphibian Surveys	Ed Poropat Jeremy Bensette	Sky: Partly cloudy; Beaufort Wind: 2; Air Temperature 20°C;
June 30, 2022 ~6:00-10:00	Breeding Bird Surveys	Jeremy Bensette	N/A
August 9, 2022 10:28-17:05	Headwater Drainage Feature Assessment	Danielle Bourque	Sky: Rain, Beaufort Wind: 1; Temperature: N/A
August 10, 2022	Natural Feature Boundary Pre-staking and Ecological Land Classification	Joelle Pecora Megan Olson	Sky: partly cloudy, Beaufort Wind: 3; Temperature: 25°C
August 11, 2022 12:30-13:30	Natural Feature Boundary Pre-staking and Ecological Land Classification	Matthew Ross Fiona Shi	Sky: partly cloudy, Beaufort Wind: 3; Temperature: 25°C
September 21, 2022 9:30-4:30	Natural Feature Boundary Verification with GRCA	Joelle Pecora Fiona Shi	Sky: partly cloudy, Beaufort Wind: 4; Temperature: 28°C
[1]The Beaufort Wind Scale is a tool used to estimate wind conditions. [0] Air calm, smoke rises vertically [1] Light air movement, smoke drifts, [2] Wind felt on face, leaves rustle [3] Leaves and small twigs in continual motion, wind extends light flags [4] Wind raises dust, loose paper, moves small branches [5] Small trees begin to sway, white crested wavelets form on inland waters [6] Large branches in motion			

2.2.2.1 Fish and Aquatic Habitat

The objective of field investigations was to identify, map, and describe the existing aquatic habitat present on the subject lands.

A review of current and historical aerial imagery of the subject lands identified the potential presence of Headwater Drainage Features (HDF). Drainage features have undergone evaluation in April, May, and August 2022 using the Rapid Method provided in the Evaluation, Classification and Management of Headwater Drainage Features Guideline (TRCA and CVC, 2014). This approach is appropriate for low sensitivity sites and documents the HDF form and flow conditions, riparian vegetation and site features that are important components of habitat. Recommended management options for drainage features derive from information collected according to the HDF guidelines.

2.2.2.2 Vegetation Communities

Aerial photography, and Land Information Ontario data were used to delineate vegetation communities according to principles of the Ecological Land Classification (ELC) for Southern Ontario: First

Approximation and its Application (Lee et. al., 1998). Preliminary site investigations were undertaken in November 2021 with confirmatory mapping completed throughout 2022 to collect vegetation data at the community level. A split-spoon soil auger was used to sample soil profiles to determine at what point they exhibit hydric properties, i.e., sufficiently saturated to support greater than 50% wetland species. Wetlands on and adjacent to site that may be subject to potential impacts from the proposed development will be assessed using the guidance of the Ontario Wetland Evaluation System.

2.2.2.3 Feature Staking

The pre-staking of features to delineate the boundaries of wetland features and tree dripline of woodland features within the Study Area was undertaken on August 9, 10 and 11, 2022. Feature Staking verification with GRCA occurred on September 21, 2022. A survey of the verified boundaries will be undertaken in 2023 as a condition of draft plan approval. The wetland boundary was determined where wetland vegetation dominates the community and the soils exhibit characteristics of at least seasonal saturation as per the definition of wetland in the PPS, 2020.

2.2.2.4 Tree Inventory

An inventory of trees that could be injured or destroyed by the proposed DPOS is planned to assess trees that may be impacted. Trees not protected by a buffer but within 6 m of the property boundary will be included. An arborist report and Tree Inventory and Protection Plan (TIPP) will be prepared under separate cover.

2.2.2.5 Breeding Bird Surveys

The Ontario Breeding Bird Atlas (OBBA) (BSC 2006) was reviewed to compile a master list of potential birds breeding at the site, which was subsequently analyzed against known available suitable supporting habitat to tailor findings specifically to the existing site conditions.

Breeding bird surveys were undertaken within the recognized surveying window in Ontario for breeding birds (typically June and early July) on June 14 and 30, 2022. Surveys followed standard methodologies and conditions established by the OBBA (BSC 2001) (i.e., between 05:30 and 10:00, low winds, no precipitation, and suitable temperatures). Breeding evidence was recorded and classified as possible, probable, or confirmed (e.g., singing male, pair observed or adult carrying food) in accordance with the standard protocols. Where SAR birds were observed, information including sex, behaviour and interaction with other SAR and non-SAR birds were also recorded.

2.2.2.6 Reptile and Amphibian Surveys

Secondary source literature was reviewed to identify known records of reptiles, amphibians, or both, potentially found within the site, including the NHIC database. Amphibian surveys were undertaken to understand the potential presence of breeding amphibians and presence of SAR (e.g., Western Chorus Frog (*Pseudacris triseriata*)). Targeted surveys for reptiles were not undertaken by SLR as no preliminary triggers were identified.

Calling surveys were undertaken on April 24, May 2 and 30, June 1 and 28, 2022 and followed the general methodology of the Marsh Monitoring Program (MMP) (adapted to site conditions), during appropriate seasons and weather conditions. Established methods sponsored by Environment and Climate Change Canada (2017) for detecting Western Chorus Frog were also used. These methods involved daytime surveys where calls of the Western Chorus Frog are more detectable and not drowned out by the loud calls of the Spring Peeper (*Pseudacris crucifer*) which typically call at night.

Survey times were coordinated with several other ecologists throughout Southern Ontario via email circulation to assist surveyors in targeting the prime breeding window for early and late breeders targeting Western Chorus Frog (*Pseudacris triseriata*). As climate change has the potential to shift the incidence of calling amphibians, it is increasingly important to coordinate surveys based on weather conditions and seasonal trends. The Beaufort Wind Scale was used to determine whether wind levels were too strong to hear an accurate representation of amphibians occupying the site. A reference site was used to ensure calling was conducted during appropriate weather conditions and served as a benchmark for amphibian activity (i.e. increase confidence in negative results if calls are not detected at test sites). Calling evidence was recorded on a scale of L0-L3 and interpreted as follows:

- L0 – No calling
- L1 – Individuals can be accurately counted; calls do not overlap
- L2 – Some calls simultaneous, number of individuals can be estimated
- L3 – Full chorus, calls overlap, individuals cannot be estimated

2.2.2.7 Incidental Wildlife

All incidental observations were recorded while ecologists were onsite. Evidence of presence was recorded during various field investigations from direct sightings and indirectly from such indicators as calls, nests, tracks, scats, browse and burrows.

2.2.2.8 Species of Conservation Concern

Aquatic and terrestrial species that are designated federally or provincially and are of regional or local interest (e.g. rare to the watershed or municipality) are collectively identified as Species of Conservation Concern. This category also includes species protected under the ESA, 2007. The Natural Heritage Information Centre (NHIC) (on-line accessed November 2021) and the Fisheries and Oceans Canada Distribution Maps for Fish and Mussel Species at Risk (on-line accessed November 2021) were consulted for element occurrences. A habitat-based approach was used to evaluate the potential for Species of Conservation Concern to occur within the site.

With the recent addition of several bat species to the ESA list, a cursory review of site conditions was completed to determine potential habitat. This review was scoped to provide information on possible use and presence within the general context of the site.

2.2.2.9 Significant Wildlife Habitat

Using the criteria outlined in the Significant Wildlife Habitat (SWH) Technical Guide and Ecoregion Criterion Schedules 6E (Ministry of Natural Resources and Forestry 2015), SWH was evaluated as part of the field investigations to evaluate the potential to occur on or adjacent to the site. Under the SWH Criteria, constructed habitat is not to be considered as SWH.

2.2.2.10 Wetland Assessment and Evaluation

An assessment of the wetlands on and adjacent to the site shall be undertaken following the guidance of the Ontario Wetland Evaluation System. This will include the gathering of data on the habitat types, species of flora and fauna present within the features. Data collected will be incorporated with the results of a hydrologic study to provide a detailed assessment of the sensitivity of the wetlands.

3.0 Existing Conditions

The subject properties are characterized by a predominately agricultural landscape containing cultivated lands, with woodland, wetland, and hedgerow features. Three watercourses (HDFs) occur within the boundaries of the subject parcels, while one is present within the Study Area of the proposed DPOS (Figure 1). The following sections describe geological, aquatic, and terrestrial site characteristics.

3.1 Terrain and Surficial Geology

Based on a review of surficial geology maps from the Ontario Geological Survey (OGS), the overburden of the area is composed of the Elma Till which consists of sandy silt to silt deposits that are imperfectly drained.

The underlying bedrock is of the Guelph Formation which consists of Silurian fine to medium crystalline, medium to thick-bedded, porous dolostone of a thickness ranging from 4 to 100 m. The Guelph formation is mainly located in the subsurface of southwestern Ontario but is exposed south and west of the Niagara Escarpment from the Niagara River through the Bruce Peninsula (Jagger Hims Limited and Rowell, 2009). SLR is completing hydrogeological investigations in support of the proposed project, under a separate cover.

3.2 Fish and Aquatic Habitat

Agricultural lands predominate on the subject properties. Three drainage features occur within the vicinity of the study area identified as permanent features by Land Information Ontario; site observations show that the features flow intermittently. Data supporting the Headwater Drainage Feature evaluation were completed in the spring and summer of 2022.

Observations made in April, May, and August 2022 to characterize potential headwater drainage feature associated with the proposed DPOS are summarized in Table 3. Surface water was observed at the feature during the April visit, while the feature was dry during subsequent visits. Standing water was present in the feature off site to the north during April and May visits and was dry in August. Based on these observations the assessment of the headwater drainage feature on the site of the proposed DPOS was classified as No Management Required, while the segment occurring immediately off site to the north was classified as Protection (Figure 3) according to the Headwater Features Guidelines (CVC and TRCA 2014). Management can range from replication of functions through enhanced lot level conveyance measures such as vegetated swales, to mimic online wet vegetation pockets, to constructed wetlands connected to downstream features as appropriate.

Table 3: Headwater Drainage Feature Observations

Drainage Feature Segment	Hydrology	Hydrology Modifiers	Riparian	Fish Habitat	Terrestrial Habitat	HDF Management Recommendations	Photos
1	Limited or recharge April: Standing Water May: Dry August: Dry	Swale (tilled through)	Limited Function Cropped land	Contributing function allochthonous transport	Limited Function Cropped land	No Management Required	
2	Limited or recharge April: Standing Water May: Dry August: Dry	Swale (tilled through)	Limited Function Cropped land	Contributing function allochthonous transport	Limited Function Cropped land	No Management Required	
3	Limited or recharge April: Standing Water May: Dry August: Dry	Swale (tilled through)	Limited Function Cropped land	Contributing function allochthonous transport	Limited Function Cropped land	No Management Required	

Drainage Feature Segment	Hydrology	Hydrology Modifiers	Riparian	Fish Habitat	Terrestrial Habitat	HDF Management Recommendations	Photos
4	Limited or recharge April: Standing Water May: Dry August: Dry	Swale (tilled through)	Limited Function Cropped land	Contributing function allochthonous transport	Limited Function Cropped land	No Management Required	
5	Limited or recharge April: Standing Water May: Dry August: Dry	Swale (tilled through)	Limited Function Cropped land	Contributing function allochthonous transport	Limited Function Cropped land	No Management Required	
6	Limited or recharge April: Standing Water May: Dry August: Dry	Swale (tilled through)	Limited Function Cropped land	Contributing function allochthonous transport	Limited Function Cropped land	No Management Required	

Drainage Feature Segment	Hydrology	Hydrology Modifiers	Riparian	Fish Habitat	Terrestrial Habitat	HDF Management Recommendations	Photos
7	Limited or recharge April: Standing Water May: Dry August: Dry	No defined channel	Limited Function Cropped land	Contributing function allochthonous transport	Limited Function Cropped land	No Management Required	
8	Limited or recharge April: Standing water May: Damp ground August: Dry	No defined channel	Limited Function Cropped land	Contributing function allochthonous transport	Limited Function Cropped land	No Management Required	
9	Valued or Contributing April: Standing water May: Standing water August: Dry	No defined channel, tile drain outlet	Important function Riparian wetland	Contributing function allochthonous transport	Important Function Wetland with breeding amphibians	Protection	

3.3 Vegetation Communities

Preliminary mapping of the vegetation communities is provided on (Figure 4) classified using Ecological Land Classification (ELC) (Lee et al., 1998). Each unit is named according to the soil and plant attributes and a code is assigned (e.g. Cultural Woodland, CUW). Wetland is delineated by the survey limit staked in the field as determined by the dominance of wetland vegetation and hydric soils. The site is largely agricultural, and wetland and woodland forest communities separate the eastern and western portions. Wetland communities contiguous with those on the site extend north and south of the site. Wetland associated with a watercourse on site occurs in the eastern portion of the site, immediately southwest of Highway 10 along with a farmhouse and associated outbuildings and landscape trees. Deciduous hedgerows occur along some field and site boundaries A botanical inventory is provided in Appendix B.

In addition to the agricultural fields, farm, and residence, the communities dominated by natural vegetation on and immediately surrounding the Study Area include:

- Dry-Fresh Sugar Maple-Beech Deciduous Forest (FOD5-2)
- White Cedar – Hardwood Mineral Mixed Swamp (SWM1-1)
- Red Maple Mineral Deciduous Swamp with Reed Canary Grass Mineral Meadow Marsh inclusion (SWD3-1/MAM2-2)
- Mineral Shallow Marsh Ecosite (MAS2)
- White Cedar Mineral Coniferous Swamp (SWC1-1)
- Reed Canary Grass Mineral Meadow Marsh with Willow Mineral Thicket Swamp inclusion (MAM2-2/SWT2-2)
- Willow Mineral Thicket Swamp (SWT2-2)
- Cultural Meadow (CUM1-1)
- Hedgerow (HR)

3.3.1 Dry-Fresh Sugar Maple-Beech Deciduous Forest (FOD5-2)

This community abuts the eastern side of the wetland communities in the center of the site. Species include Sugar Maple (*Acer saccharum*), American Beech (*Fagus grandifolia*), White Ash (*Fraxinus americana*), Choke Cherry (*Prunus virginiana*), with some White Birch (*Betula papyrifera*), Eastern White Cedar (*Thuja occidentalis*) and Balsam Fir (*Abies balsamea*).

3.3.2 White Cedar – Hardwood Mineral Mixed Swamp (SWM1-1)

This swamp community is situated at the center of the site, bisecting the eastern and western portions of agricultural land. Limits were verified with the GRCA. The canopy layer consists of Eastern White Cedar, (Green Ash (*Fraxinus pennsylvanica*), Balsam Poplar (*Populus balsamifera*), American Elm (*Ulmus americana*), White Birch, Balsam Fir, and Black Cherry (*Prunus serotina*), with Balsam Poplar, Green Ash, American Elm, and Black ash in the sub canopy. Ground cover includes Sensitive Fern (*Onoclea sensibilis*), Spinulose Wood Fern (*Dryopteris carthusiana*), Greater Bladder Sedge (*Carex intumescens*), Common Lady Fern (*Athyrium filix-femina*), Ostrich Fern (*Matteuccia struthiopteris*) and Bittersweet Nightshade (*Solanum dulcamara*).

3.3.3 Red Maple Mineral Deciduous Swamp with Reed Canary Grass Mineral Meadow Marsh inclusion (SWD3-1/MAM2-2)

This community is in the center of the site near the southern edge of the property boundary. The canopy layer is comprised primarily of Red Maple (*Acer rubrum*), with White Birch and Trembling Aspen, and some Eastern White cedar in the sub canopy. The shrub layer contains Reed Canary Grass, Red-osier Dogwood, Spotted Joe Pye Weed and Woolgrass (*Scirpus cyperinus*), while ground cover consists of Sensitive Fern, Spotted Jewelweed, with some Fox Sedge (*Carex vulpinoidea*) and Retrorse Sedge (*Carex retrorsa*). A small inclusion of Reed Canary Grass Meadow Marsh is present at the northeast of this community. The limits of this wetland were verified with the GRCA.

3.3.4 Mineral Shallow Marsh (MAS2)

This wetland community type occurs over large areas in and adjacent to the north end of the site. The predominate species present are Broad-leaved Cattail (*Typha latifolia*), Reed Canary Grass (), with scattered occurrences of Eastern White Cedar, American Elm, Tamarack, White Birch, Pussy Willow (*Salix discolor*), Bebb's Willow (*Salix bebbiana*). The largest of this community type, at the northernmost end of the site, contains inclusions of White Cedar Mineral Coniferous Swamp (SWC1-1).

3.3.5 White Cedar Mineral Coniferous Swamp (SWC1-1)

This community occurs adjacent to, as well as an inclusion within the large shallow marsh communities in the north end of the site. The limits were verified with the GRCA. The canopy is dominated by Eastern White Cedar, with some Balsam Fir (*Abies balsamea*), Tamarack, Balsam Poplar, and White Birch. Ground cover is minimal and includes mosses and forbs.

3.3.6 Reed Canary Grass Mineral Meadow Marsh with Willow Mineral Thicket Swamp inclusion (MAM2-2/SWT2-2)

This community occurs in in the eastern portion of the site, in association with the easternmost watercourse feature and the other to the west of this feature. The GRCA verified the boundaries of this feature. The species present include Reed Canary Grass, Spotted Joe Pye Weed, Broad-leaved Cattail, Field Horsetail (*Equisetum arvense*), Dark-green Bulrush (*Scirpus atrovirens*), Purple Loosestrife (*Lythrum salicaria*), Panicled Aster (*Symphyotrichum lanceolatum*), and Swamp Aster (*Symphyotrichum puniceum*). Inclusions of thicket swamp consisting of Pussy Willow and Bebb's Willow are present within these communities.

3.3.7 Willow Mineral Thicket Swamp (SWT2-2)

This community is located in the eastern portion of the site, east of the FOD5-2 community. The predominate species here are Pussy Willow and Bebb's Willow. The GRCA verified the feature limits.

3.3.8 Cultural Meadow (CUM1-1)

This community type occurs at several locations on the subject lands, primarily in the upland areas situated adjacent to meadow marsh wetlands in the eastern half of the site. The species present are typical of this community type and include Tall Goldenrod (*Solidago altissima*), Reed Canary Grass, Wild Carrot (*Daucus carota*), Tall Meadow Rue (*Thalictrum pubescens*), Stinging Nettle (*Urtica dioica*), Oxeye Daisy (*Leucanthemum vulgare*), Colts-foot (*Tussilago farfara*), and Common Dandelion (*Taraxacum officinale*).

3.3.9 Deciduous Hedgerow (HR-D)

These features are generally present at the borders of agricultural fields or along field access laneways and are comprised of a mix of deciduous and coniferous species including...

3.4 Tree inventory

A tree inventory is planned to assess trees that may be impacted by the proposed DPOS. An arborist report and Tree Inventory and Protection Plan (TIPP) will be prepared under separate cover at a later stage of the application process.

3.5 Breeding Birds

A review of the OBBA map square 17NJ49 yielded 93 results of birds potentially breeding in the area: the map squares measure 10 km by 10 km, with many of the results unlikely to be present within the site due to a lack of suitable supporting habitat. Review of the NHIC online database yielded potential occurrences for seven provincially rare species:

- Eastern Meadowlark (*Sturnella magna*) (Threatened)
- Bobolink (*Dolichonyx oryzivorus*)(Threatened)
- Bank Swallow (*Riparia riparia*) (Special Concern)
- Barn Swallow (*Hirundo rustica*) (Special Concern)
- Eastern Wood-pewee (*Contopus virens*) (Special Concern)
- Grasshopper Sparrow (*Ammodramus savannarum*) (Special Concern)
- Canada Warbler (*Cardellina canadensis*) (Special Concern)

Two breeding bird surveys were completed by SLR on June 14 and 30, 2022, within the designated window (Figure 5). The inventory of wildlife observed on the site is provided in Appendix C. Most of the species recorded are rural/urban tolerant species, typical of cultural and agricultural landscapes and will breed in a variety of disturbed habitats. Observed species include Song Sparrow (*Melospiza melodia*), Red-winged Blackbird (*Agelaius phoeniceus*), and American Robin (*Turdus migratorius*).

Eastern Wood-pewee were observed exhibiting probable breeding evidence within the Mixed Swamp and Sugar Maple-Beech Deciduous Forest communities.

Barn Swallow fledglings were observed near the barn in the northeast portion of the site. A used Barn Swallow nest was also found in the barn, indicating that the species was breeding here, however, it could not be confirmed that the fledglings seen were hatched in the nest observed. This species is known to use old buildings to support nesting behaviour, whereas foraging habitat is typically associated with meadows, marshes, and open spaces. Barn Swallow are provincially designated as Special Concern. Although it is not subject to provisions under the ESA, its habitat is protected as SWH under the PPS, 2020.

3.6 Reptiles and Amphibians

Review of the NHIC online database yielded records of two species of concern: Midland Painted Turtle (*Chrysemys picta marginata*) and Snapping Turtle (*Chelydra serpentina*).

Suitable habitat for amphibians is present on the subject lands, within wooded wetlands and marsh communities.

Amphibian surveys were conducted April 24, May 2 and 30, June 1 and 28, 2022 at strategic locations on the site to provide suitable coverage for detection of calling individuals (Figure 5). SLR conducted separate surveys to capture potential Western Chorus Frog populations as well as a generalized survey to capture all amphibians active during the early and late spring timing windows.

Western Chorus Frog surveys completed detected the presence of populations within or around the property, particularly in association with the large wetland complex that bisects the site and occurs both to the north and south of the site. Species detected during surveys included Spring Peeper (*Pseudacris crucifer*), American Toad (*Anaxyrus americanus*), Gray Tree Frog (*Dryophytes versicolor*) and Green Frog (*Lithobates clamitans*), among others presented in Table 4.

Amphibian observations were also made incidentally and included numerous (19) Green Frogs as well as Western Chorus Frogs associated with the large wetlands situated in the center of the site.

Table 4: 2021 Amphibian Survey Results

Common Name	Call Level		
Survey Date	April 2021	May 2021	June 2021
Spring Peeper	3	-	-
American Toad	3	-	-
Gray Tree Frog	-	2	-
Green Frog	-	-	1
Wood Frog	3	-	-
Northern Leopard Frog	2	-	-
Western Chorus Frog	2	-	-

3.7 Other Wildlife

Wildlife observed on site by SLR during the 2020 and 2021 field visits were typical of locations in semi-urban environments and agricultural settings (Appendix C). Evidence of Coyote (*Canis latrans*) and White-tailed Deer (*Odocoileus virginianus*) was observed within the site. At least three Muskrat (*Ondatra zibethicus*) push-ups were observed within the wetland immediately south of Highway 10 associated with the watercourse (HDF).

Evidence of chimney crayfish (i.e., burrows) were observed at several low-lying areas of the site, including at the edges of wetlands and the agricultural fields.

Other species of mammals and birds tolerant of urban environments are expected to occur as suitable habitats are present.

3.8 Species of Conservation Concern and Significant Wildlife Habitat

The MNRF website provided the following Element Occurrence (EO) records* for 1km Squares (17NJ4792, 17NJ4892) in the vicinity of the site:

- Eastern Meadowlark (*Sturnella magna*) provincially designated as Threatened
- Snapping Turtle (*Chelydra serpentina*) provincially designated as Special Concern

Department of Fisheries and Oceans' (DFO) interactive Aquatic Habitat Mapping did not identify the presence of Species at Risk or Critical Habitat within or adjacent to the site.

While no additional element occurrences were recorded for the broad area search there are Species of Conservation Concern that may occur if suitable habitat is present. The species in Table 5 have been identified as having potential habitat affinities within the site.

*Note: Species at Risk Information is accurate and up to date as of this report (May 2023). New species designations under Ontario Regulation 230/08 (Species at Risk in Ontario List) occur periodically. The owner is responsible to ensure that species and habitats regulated under Endangered Species Act (2007) or those described under other policies (i.e. the Migratory Bird Convention Act, Fish and Wildlife Conservation Act) are protected.

Table 5: Species of Conservation Concern Screening Results

Common Name[1]	Scientific Name	Designation	Potential for Habitat Affinities to Occur within or Adjacent to the site
Mammals			
[1] Tri-colored Bat	*Perimyotis subflavus*	Endangered	Yes, suitable habitat in large, open canopied trees exhibiting decay. Potential roosting and foraging (woodland features / hedgerows, trees generally).
[1] Little Brown Myotis	*Myotis lucifugus*	Endangered	Yes, suitable habitat in large, open canopied trees exhibiting decay. Potential roosting and foraging (anthropogenic features, woodland features / hedgerows, trees generally).
[1] Northern Myotis	*Myotis septentrionalis*	Endangered	Yes, suitable habitat in large, open canopied trees exhibiting decay. Potential roosting and foraging (woodland features).
Avifauna			

Common Name[1]	Scientific Name	Designation	Potential for Habitat Affinities to Occur within or Adjacent to the site
[1] Canada Warbler	*Cardellina canadensis*	Special Concern	Potential habitat in wooded wetland on and adjacent to the site. Species not observed on site.
[1] Eastern Wood-pewee	*Contopus virens*	Special Concern	Yes, suitable habitat present in woodland features. Species observed in deciduous forest and mixed swamp on site
[1] Bobolink	*Dolichonyx oryzivorus*	Threatened	Unlikely to breed on site as fields are under cultivation and existing meadow habitat is too small. Species not observed on site
[1, 2] Eastern Meadowlark	*Sturnella magna*	Threatened	Unlikely to breed on site as fields are under cultivation and existing meadow habitat is too small. Species not observed on site
[1] Barn Swallow	*Hirundo rustica*	Special Concern	Suitable foraging habitat on site. Anthropogenic structures (nesting) also located on the site. Species confirmed nesting on site.
[1] Grasshopper Sparrow	*Ammodramus savannarum*	Special Concern	Unlikely to breed on site as fields are under cultivation and existing meadow habitat is too small. Species not observed on site
Herptofauna			
[1, 2] Snapping Turtle	*Chelydra serpentina*	Special Concern	Wetlands on and adjacent to the site provide potential habitat and movement corridors. Species not observed on site

Common Name[1]	Scientific Name	Designation	Potential for Habitat Affinities to Occur within or Adjacent to the site
[1] Midland Painted Turtle	*Chrysemys picta marginata*	*Designated in 2018 by COSEWIC, not legally listed Provincially	Wetlands on and adjacent to the site provide potential habitat and movement corridors. Species not observed on site
Vegetation			
[1] Butternut	*Juglans cinerea*	Endangered	Potential habitat present in wooded features, hedgerows Species not observed on site.
Other			
[1] Rusty-patched Bumble Bee (*Bombus affinis*) [1] Gypsy Cuckoo Bumble Bee *(Bombus bohemicus*) [1] Nine-spotted Lady Beetle (*Coccinella novemnotata*) [1] Transverse Lady Beetle (*Coccinella transversoguttata*)		Endangered	Possible however degree of habitat alteration and ploughing makes occurrence unlikely. Habitat generalists. Often overlooked. A range of habitats (meadow successional fields, forests, riparian areas, parks)
[1] Yellow-banded Bumble Bee (*Bombus terricola*)		Special Concern	
[1] Monarch	*Danaus plexippus*	Special Concern	Habitat present – meadows suitable for foraging Species not observed on site.

Source: (1) MNRF, SARO List, SLR expertise; (2) NHIC (2022)
Designation Status
Provincial Status - Species at Risk in Ontario list maintained by the Ontario Ministry of Natural Resources and Forestry, O.Reg. 230/08. Endangered Species Act Regulation OMNR S.O. 2007, Chapter 6. Schedules 1 thru 5.4. O. Reg. 242/08.
Regional or Local

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC). S3 [Vulnerable] Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

3.9 Significant Wildlife Habitat

The significance of an area as wildlife habitat is often difficult to determine at the site-specific level, as the assessment must incorporate information from a wide geographic area and consider other factors such as

regional resource patterns and landscape effects. Therefore, under the PPS, the planning authorities have the responsibility to identify and designate Significant Wildlife Habitat (SWH). Wildlife habitat significance includes:

- Seasonal concentration areas (e.g. conifer forests for deer wintering)
- Rare vegetation communities or specialized habitats for wildlife
- Habitats of species of conservation interest, excluding the habitats of endangered and threatened species which are protected under the 2020 PPS and 2007 ESA
- Animal movement corridors

The Township of Southgate does not identify SWH within their Official Plan Schedules although it is within their responsibility under the PPS, 2020 to do so. To address this habitat function, criteria for evaluating significant wildlife habitat for Eco-region 6E have been provided by MNRF (2015). An assessment of SWH is provided in Appendix D. Field investigations completed to date identified confirmed habitat for:

- Special Concern and Rare Wildlife Species for Eastern Wood-pewee
- Woodland Area -Sensitive Bird Breeding Habitat
- Amphibian Breeding Habitat (Wetlands)
- Terrestrial Crayfish

Candidate SWH was identified for:

- Bat Maternity Colonies

SWH for the Site and immediately adjacent natural features is identified on Figure 6.

4.0 Description of Development

The proposed DPOS consists of single detached (291 units), semi-detached (24 units), townhouses (74 units), as well as a school, parkland, open space, and stormwater management facilities (SWMF), all planned within the western portion of the site bounded on the east by wetlands and on the west by the Grey County CP Rail Trail. A future road right-of-way is planned to connect the west and east portions of the site. The proposed SWMF abutting the north edge of the site and the adjacent wetland is planned to have an area of 1.56 ha and outlet directly to the wetland. A Functional Servicing Report (FSR) has been prepared by Crozier (2023) under separate cover.

5.0 Impact Assessment

5.1 Direct Impacts

Direct impacts include those that have an immediate effect on natural features and are generally associated with site preparation and construction activities, such as vegetation clearing and grubbing, grading, excavation, paving and building of structures.

5.1.1 Environmental Constraints

The DPOS was overlaid on the features and constraints mapping to determine whether residual impacts remain (Figure 7). The figure presents natural features and the wetland boundaries have been verified by GRCA in the field but have not been surveyed (to be completed as a condition of Draft Plan Approval in

2023). Following the receipt of the survey of wetland boundary limits, mapping will be updated with the surveyed linework, and the application of buffers required through applicable municipal, GRCA and SVCA policy frameworks will occur, with updates to be provided at the next stage of the application process (if required redlines will be made to the plan as per conditions of Draft Plan Approval). These features and recommended buffers are presented in Table 6.

Table 6: Recommended Buffers to Natural Features and Structures

Policy	Woodland	Wetland	Watercourse	Top of Bank	Floodplain[1]	Hedgerow Trees
Grey County OP	Not specified	30 m	30 m (less with rationale/no negative impacts)	30 m (less with rationale/no negative impacts)	Not identified in the OP	Not identified in the OP
Township of Southgate OP	Not identified in the OP	Not identified in the OP	15 m, or 30 m for coldwater stream	Defers to Conservation Authority (CA)	Not identified in the OP	Not identified in the OP
GRCA	Not specified	30 m (less with rationale/no negative impacts)	15 m (Superseded by floodplain)	15 m	15 m	GRCA does not regulate individual trees except within the regulatory limit
SVCA	Not specified	30 m (less with rationale/no negative impacts)	15 m (Superseded by floodplain)	15 m	15 m	SVCA does not regulate individual trees except within the regulatory limit
Buffers recommended	10 m	30 m (less with rationale/no negative impacts)	Not represented because other buffers extend further	15 m	15 m	Estimate 3 m but could change with detailed tree preservation report

[1] *A buffer would also be applied to the watercourse however the floodplain and wetland plus buffers far exceeds that constraint therefore it is not illustrated.*

Note: grading is generally not allowed within the buffers unless approved. Development is expected to meet existing grades at the limit of the buffer.

5.1.2 Fish and Aquatic Habitat

The watercourses identified on site were assessed using the Evaluation, Classification and Management of Headwater Drainage Features Guidelines (CVC and TRCA, 2014). No fish were observed during field investigations and all the features were found to be dry during the August 2022 assessment. Due to either their contribution to downstream fish habitat through allochthonous transport, or their association with important riparian or terrestrial habitat (e.g. wetlands), appropriate management recommendations are applied to each feature to allow their primary functions to be maintained (see Figure 3). The proposed DPOS would remove a portion of the HDF to accommodate development. This feature was not identified as a watercourse and instead as a shallow, non vegetated swale providing overland flow to offsite wetlands to the north. As flow to these features is to be maintained through the outlet of the proposed SWMF, which would implement appropriate quality control measures, impacts to fish, and fish habitat are not expected.

5.1.3 Terrestrial Habitat

The DPOS is situated in agricultural lands and is generally set back from natural feature constraints. The plan overlies the HDF located in the center of the agricultural field that provides flow to offsite wetlands. The SWMF for the DPOS is planned for the northernmost portion of this HDF and will outlet to the same wetlands. Therefore, as water flow to the wetlands will be maintained, it is anticipated that wetland functions will also be maintained, provided appropriate pre and post quality controls are implemented. As the outflow from the SWMF to the wetlands is proposed to be greater than current, pre-development volume (as per current calculations), a detailed hydrologic study is underway to assess the capacity of the downstream wetland features. The results of this study, along with the assessment of wetland sensitivity will guide the application of mitigation measures to maintain wetland features and functions. This assessment is proposed as a condition of Draft Plan Approval and the proposed ToR for this study is included in Appendix E.

The proposed future road right-of-way that will connect the western and eastern portions of the site will bisect the wetlands located in the center of the site. Selection of a preferred alignment will occur via an assessment of alternative options that considers planning, engineering, and environmental factors as well as relevant policies. This assessment will be provided at a later stage of the application process and could be considered a condition of Draft Plan Approval or as a component of the next phase of development (DPA).

The DPOS also overlies portions of hedgerows that occur along the northern and southern boundaries of the site. These proposed removals are to be addressed under the applicable by-law. A tree preservation plan will be prepared at the detailed design stage to the satisfaction of the appropriate authority to support the Site Plan Application.

Small portions of the planned residential lots appear to encroach within the southwestern edge of the wetland natural features as they are currently delineated. Following the receipt of the survey of wetland boundary limits, applicable municipal, GRCA and SVCA setbacks will be applied with subsequent updates to the setbacks and plan. These updates will be provided at the next stage of the application process.

Generally, impacts to features on and adjacent to the site can be minimized through the implementation of appropriate erosion and sediment control measures, and the avoidance of sensitive timing windows for birds and bats following current guidance from Environment Canada and the MECP (April 1st-September 30th). Tree removals required for construction will occur in accordance with the *Grey County Forestry Management By-law #4341-06*, and restoration of disturbed areas and buffers are to be planted and seeded as per a future landscape restoration plan to be provided under separate cover.

To assist with further assessment of impacts and the application of appropriate mitigation measures, the wetlands on site and downstream of the proposed SWMF will be assessed following the guidance of the Ontario Wetland Evaluation System and utilize the information available from observations made on the project site. These assessments are planned to occur in 2023 and should be considered a condition of Draft Plan Approval. The proposed ToR for this assessment is located in Appendix E.

5.1.4 Species of Conservation Concern

To date, three SAR (Eastern Wood-pewee, Barn Swallow, and Western Chorus Frog) have been detected on site, and there is the likelihood for SAR bats to occur as well. Foraging habitat for Monarch is present in meadow and meadow marsh communities on site and any removals can be restored within the setbacks of protected natural features. For the current DPOS, the plan is, for the most part, set back from wetland habitat for Western Chorus frog as well as habitat for Eastern Wood-pewee, and removal of the outbuilding providing Barn Swallow nesting habitat is not proposed, therefore, impacts to these species or their habitat are not anticipated. The verification of feature boundaries with review agencies, and subsequent updates to setbacks (if required) will ensure adequate protection for these species and their habitat. To avoid potential impacts to bats that may be utilizing trees on site, removal of trees should occur outside of the active season for bats which typically occurs between April 1st and September 30th.

5.2 Indirect Impacts

Indirect impacts may occur from the residential occupation of the development and could include the dumping of refuse, encroachment of yards into natural features, and unsanctioned use of natural features for recreation (e.g., trails, parties, etc.). Off-leash or unconfined household pets may disturb the natural features and impact the natural function through disrupting sensitive breeding behaviours or predation of native fauna (e.g., cats hunting wild birds). Stormwater runoff from built-up impermeable areas including roads may contain sediments and pollutants such as oils and hydrocarbons. Overall, these indirect impacts could result in damage to the ecological functions of the natural features through the removal of native species, the introduction and spread of non-native or invasive flora or fauna, and degradation due to pollution.

In order to minimize the potential for these indirect impacts, mitigations can be implemented to provide physical barriers (i.e. fences), create awareness (education through interpretive signage), provide appropriate avenues for recreation (sanctioned trail system) and enforcement of applicable by-laws. Setbacks identified in the EIS should be restored to provide a buffer to the existing natural features and ultimately result in an increase in natural area. The use of low impact developments (LID) in the design of the proposed development would aid in the reduction of stormwater runoff and appropriately pre-treat any runoff prior to entry into the stormwater management facility.

5.3 Monitoring

Monitoring of environmental conditions both during and post construction are important components to determine the effectiveness of implemented mitigation and restoration measures. The details specifying the types of monitoring required, their locations and timing are to be provided at the detailed design stage of site plan application.

6.0 Policy Review and Conformity

The following section describes policies relevant to the natural environment and describes how the natural heritage features identified within this EIS have been addressed. Policy conformity is summarized in Table 7.

Table 7: Summary of Policy Conformity

POLICY	CONFORMITY	RATIONALE
Provincial Policy Statement (PPS, 2020)	In compliance	• No features of provincial interest identified on the site (significant woodlands, significant wildlife habitat) or adjacent lands will be negatively affected should mitigation recommendations be implemented (avoidance/setbacks) • Wetlands on site and downstream of proposed SWMF to be assessed using the guidance of the Ontario Wetland Evaluation System during the 2023 field season as a condition of Draft Plan Approval
Grey County Official Plan (2019)	In compliance with natural heritage policies	• EIS describes the features and functions of the subject lands and confirms there are no significant/natural heritage features that will be negatively affected by the proposed DPOS
Township of Southgate Official Plan (2022)	In compliance with natural heritage policies	• DPOS is set back from features identified in OP section 6 such that negative impacts are not anticipated should mitigation recommendations be implemented • Tree removals will be subject to the appropriate municipal by-law
Ontario Regulation 150/06 (GRCA)	Permit for development in a regulated area required	• Minor encroachment into wetland features • Survey of conservation authority verified feature boundary limits required in order to determine appropriate setbacks and mitigation (to be completed in 2023) • Wetlands on site and downstream of proposed SWMF to be assessed using the guidance of the Ontario Wetland Evaluation System during the 2023 field season as a condition of Draft Plan Approval
Ontario Regulation 169/06 (SVCA)	Permit for development in a regulated area required	• Alteration to a mapped watercourse and regulated area is proposed to accommodate the DPOS • Minor encroachment into wetland features • Survey of conservation authority verified feature boundary limits required to determine appropriate setbacks and mitigation (to be completed in 2023) • Wetlands on site and downstream of proposed SWMF to be assessed using the guidance of the Ontario Wetland Evaluation System during the 2023 field season as a condition of Draft Plan Approval
Endangered Species Act (ESA, 2007)	Compliant with the implementation of recommended mitigation	• Potential for SAR bats to occur • Should it be deemed necessary, consultation with MECP regarding these impacts will be coordinated during subsequent phase of development

POLICY	CONFORMITY	RATIONALE
Migratory Birds Convention Act (MBCA, 1994)	Compliance with the implementation of recommendation	• Vegetation clearing will not occur within the breeding bird period provided under Environment Canada guidance for periods of highest nesting probability (i.e. cannot occur generally between April 1st and August 31st) and may be extended to September 30th in consultation with MECP for mitigation of interference with SAR bats
Fisheries Act (2019)	Conforms	• No fish habitat identified on site of proposed DPOS • Flow input to downstream habitat to be maintained

7.0 Conclusions and Recommendations

To date, field investigations and analysis have determined that the site of the proposed DPOS is primarily agricultural lands, with principal constraints consisting of large areas of wetland present within the northeast portion of the site as well as adjacent to the north boundary of the site. A headwater drainage feature located in the center of the proposed plan will be removed to accommodate the development, although flow input to downstream features will be maintained through stormwater outlet.

We recommend that best management practices are implemented with respect to sediment and erosion control, excess soil and fill, vegetation clearing, construction timing windows, and stabilization of disturbed soils. The analysis of the natural heritage features and functions associated with proposed Draft Plan of Subdivision is ongoing to determine their sensitivity and appropriate mitigation measures. As such, in addition to the recommendations below, it is recommended that the following be considered as conditions of draft plan approval:

- Survey of verified natural feature boundaries
- Completion of the hydrologic study
- Completion of wetland assessments
- Alternatives assessment for proposed east-west arterial road alignment
- Provision of mitigation recommendations based on the results of the above (e.g., SWM controls, buffers, etc.)

Details pertaining to the application of mitigation measures (e.g., location, type, plans, etc.) will be provided at the detailed design stage of the application process. A Terms of Reference (ToR) for the ongoing and proposed studies required is provided in Appendix E. If the conditions of Draft Plan Approval determine an increase in sensitivity and enhanced mitigation is required, then a redline of the Draft Plan can be provided where applicable.

7.1 Recommendations

The following operational constraints and mitigation strategies are recommended as a minimum for use during the construction phase of this project for the protection of natural heritage features and functions on and adjacent to the subject lands (updates will be provided if applicable following the clearance of Draft Plan Approval conditions):

- A Tree inventory and Protection Plan is to be completed for trees that may be impacted by the proposed development.
- Recommendations as outlined in the accompanying application documents (i.e. geotechnical Investigation reports and or hydrogeology reports) are to be implemented where applicable.
- Permanent post and page wire or chain-link fence is recommended along the limits of proposed buffers. This fencing should be sturdy beyond the typical rebar and sediment fabric fence. Prior to the commencement of construction, the limits of protection areas (buffers) are to be delineated and fenced to avoid inadvertent intrusion of machinery or other activities such as

stockpiling of materials. Temporary sediment control fencing can be attached to the fencing and must be maintained and remain in place until final grading and landscaping has been completed.

- Where possible, grading limits are to respect minimum root protection zones for trees along the woodland and in tree protection zones for trees to be retained beyond the buffers, to be determined in the TPP. Minimum protection of the root zone is measured from the base of the tree to the tree's dripline. Earthworks/ grading, stockpiling of material etc. is to be directed away from protection areas. Final site grading and design is to ensure these areas are not encroached upon unless approved by the municipality and/or CA where minor grading intrusions may be necessary (e.g. to match grades).
- Vegetation removals associated with construction related activities are to be minimized. Additional tree hording/ fencing may be required in consultation with the CA to prevent intrusion and stockpiling of materials into adjacent forests and wetland.
- Stockpiling of materials should be kept away from adjacent natural features; no fill should be placed in and around the wetland communities.
- Exposed soils should be re-vegetated as soon as possible with native seed mixes to reduce erosion. If stabilization is not possible by plantings, then other appropriate erosion controls (e.g. coir mats) should be applied in the interim.
- A risk management plan should be prepared which outlines the best management practices and appropriate measures regarding the storage of chemicals (such as oils, degreasers and salt) on site, including spill response kits, secondary containment, a spill response plan and training.
- It is the responsibility of the proponent to ensure that the works are in conformity with the Migratory Bird Convention Act and Endangered Species Act, 2007 in that no migratory bird(s) or SAR species will be harassed, harmed, killed or nests / habitats destroyed by the proposed work. The recommended avoidance window (where vegetation removal should be avoided) is from April 1st to August 31st but may be extended to September 30th in consultation with MECP. No avoidance window absolves the proponent or their contractors from contravening the MBCA or ESA. If a nest, egg, fledging or SAR species is encountered work must stop and the appropriate agency (e.g. Environment Canada) be consulted for advice.
- Consultation with the DFO will be undertaken to determine appropriate mitigation and/or permit requirements pertaining to work within or adjacent to aquatic habitat.
- Restoration of the buffer is proposed. A restoration landscape plan is to be prepared under separate cover. Native Milkweed (*Asclepias* sp.) should be incorporated into any buffer planting seed mix and where possible other natural areas on the property. The proposed restoration plan should also include construction areas not being developed by structures or hardscaped (i.e., servicing infrastructure).
- Fencing and signage should be installed to prevent unwanted access or encroachment to natural areas and their buffers and provide awareness regarding the importance and sensitivity of the natural features and functions.
- LID measures can be utilized where appropriate in the design to reduce stormwater runoff and associated environmental pollutants.

- To protect wildlife in general, no animals are to be knowingly harmed. If wildlife is encountered during construction, work must stop, and animals be allowed to disperse on their own. If necessary, the CA or MNRF should be contacted for advice.
- Construction monitoring by an ecologist/arborist and certified inspector of sediment and erosion control (CISEC) is recommended as a part of a monitoring program to be developed. This may include (but not limited to): photographic records, periodic SEC inspection reports and inspection of protected limits to ensure no encroachment and other mitigation measures are implemented.
- All outdoor lighting (including any new street lighting and external lighting on buildings) should have cut-off optics and be directed towards the ground and away from the natural areas.
- Compensation for the removal of potential habitat for SAR bats, if required, will be determined through consultation with the MECP in accordance with ESA policies.
- All Greenway System lands should be conveyed to public ownership through the development process.

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Ontario Nature. 2019. Ontario Reptile and Amphibian Atlas: a citizen science project to map the distribution of Ontario's reptiles and amphibians. Ontario Nature, Ontario. Available: https://www.ontarioinsects.org/herp/index.html

Toronto Region Conservation Authority and Credit Valley Conservation Authority. 2014. Evaluation, Classification and Management of Headwater Drainage Features Guidelines. 27 pp. Accessed at: http://www.trca.on.ca/dotAsset/180724.pdf

9.0 Statement of Limitations

This report has been prepared and the work referred to in this report has been undertaken by SLR Consulting (Canada) Ltd. (SLR) for Flato Developments Inc., hereafter referred to as the "Client". The report has been prepared in accordance with the Scope of Work and agreement between SLR and the Client. It is intended for the sole and exclusive use of Client. Other than by the Client and as set out herein, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted unless payment for the work has been made in full and express written permission has been obtained from SLR.

This report has been prepared for specific application to this site and site conditions existing at the time work for the report was completed. Any conclusions or recommendations made in this report reflect SLR's professional opinion.

Information contained within this report may have been provided to SLR from third party sources. This information may not have been verified by a third party and/or updated since the date of issuance of the external report and cannot be warranted by SLR. SLR is entitled to rely on the accuracy and completeness of the information provided from third party sources and no obligation to update such information.

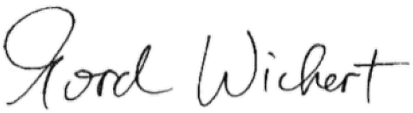
Nothing in this report is intended to constitute or provide a legal opinion. SLR makes no representation as to the requirements of compliance with environmental laws, rules, regulations or policies established by federal, provincial or local government bodies. Revisions to the regulatory standards referred to in this report may be expected over time. As a result, modifications to the findings, conclusions and recommendations in this report may be necessary.

The Client may submit this report to the appropriate environmental regulatory authorities or persons for review and comment purposes.

10.0 Closure

Prepared and Reviewed By:

SLR Consulting (Canada) Ltd.



Gord Wichert, Ph.D., P.Bio
Technical Director – Ecology

Matthew Ross, B.Sc
Terrestrial Ecologist

Kim Logan, B.Sc., P.Geo. (Limited). P. Biol.
Senior Ecologist

Distribution: 1 electronic copy –Flato Developments,

1 electronic copy – SLR Consulting (Canada) Ltd.

Figures

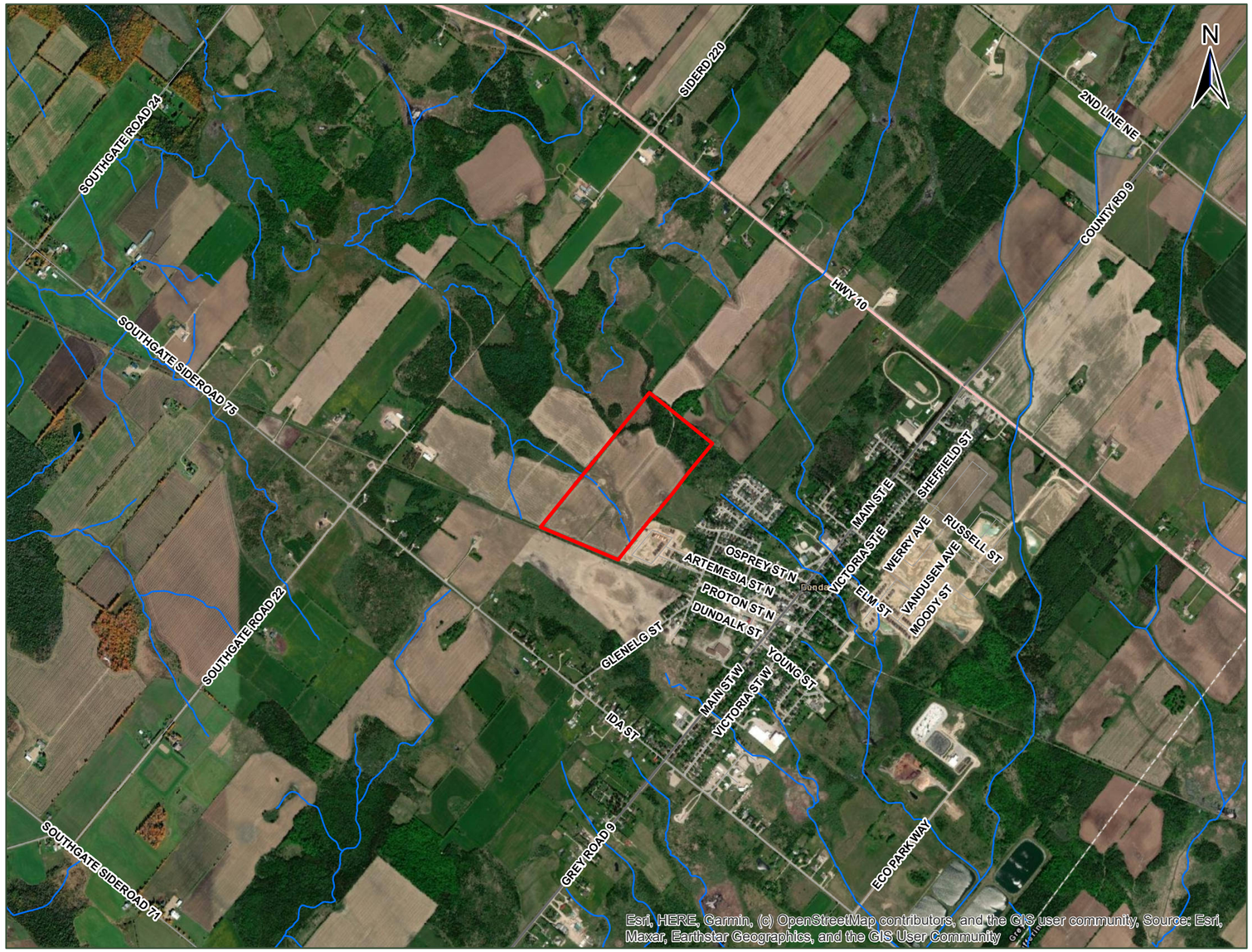
Environmental Impact Study

Glenelg Phase 3

Flato Developments Inc.

SLR Project No. 209.30125.00003

May 24, 2023



NOTES:
SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022

LEGEND
SITE BOUNDARY

0 250 500 1,000 1,500 m

SCALE 1:25,000
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N
THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY
AND SHOULD NOT BE USED FOR NAVIGATION

MHBC PLANNING, URBAN DESIGN & LANDSCAPE ARCHITECTURE
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

ENVIRONMENTAL IMPACT STUDY

SITE LOCATION

SLR

FIGURE NO:
1

DATE: May 10, 2023
PROJECT NO: 209.V30125.00003

547220 547720 548220

4891532

LEGEND

- SITE BOUNDARY
- MONITORING WELL
- MINI-PIEZOMETER
- PERMANENT WATERCOURSE
- DRAINAGE DIVIDE

NOTES:

BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 25 50 100 150 m

SCALE 1:3,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY
AND SHOULD NOT BE USED FOR NAVIGATION

MHBC PLANNING, URBAN DESIGN & LANDSCAPE ARCHITECTURE
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

ENVIRONMENTAL IMPACT STUDY

HYDROGEOLOGICAL INVESTIGATIONS

SLR

FIGURE NO:
2

DATE: May 10, 2023

PROJECT NO: 209.V30125.00003

547220 547720 548220

4891532

4891032

547220 547720 548220

LEGEND

- SITE BOUNDARY
- OBSERVATION LOCATION

HEADWATER DRAINAGE FEATURE

- NO MANAGEMENT
- PROTECTION
- CARTOGRAPHIC WETLAND
- WATERBODIES
- PERMANENT WATERCOURSE

NOTES:

BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 25 50 100 150 m

SCALE 1:3,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY
AND SHOULD NOT BE USED FOR NAVIGATION

MHBC PLANNING, URBAN DESIGN & LANDSCAPE ARCHITECTURE
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

ENVIRONMENTAL IMPACT STUDY

HEADWATER DRAINAGE FEATURES

SLR

FIGURE NO:
3

DATE: May 10, 2023 PROJECT NO: 209.V30125.00003

LEGEND

- SITE BOUNDARY
- ECOLOGICAL LAND CLASSIFICATION (SLR CONSULTING, 2022)
- WATERBODIES
- PERMANENT WATERCOURSE
- RAILWAY

ELC Code	ELC Description
Ag	Agriculture
CUM1-1	Cultural Meadow
FOD5-2	Dry-Fresh Sugar Maple-Beech Deciduous Forest
HR	Hedgerow
MAM2-2/SWT2-	Reed Canary Grass Mineral Meadow Marsh with Willow Thicket Swamp inclusion
MAS2	Mineral Shallow Marsh Ecosite
MAS2/SWC1-1	Mineral Shallow Marsh with White Cedar Coniferous Swamp inclusion
SWC1-1	White Cedar Mineral Coniferous Swamp
SWD	Mineral Deciduous Swamp
SWD3-1/MAM2-2	Red Maple Mineral Deciduous Swamp with Reed Canary Grass Mineral Meadow Marsh inclusion
SWM1-1	White Cedar - Hardwood Mineral Mixed Swamp
SWT2-2	Willow Mineral Thicket Swamp

NOTES:
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 25 50 100 150 m

SCALE 1:3,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N
THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

MHBC PLANNING, URBAN DESIGN & LANDSCAPE ARCHITECTURE
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

ENVIRONMENTAL IMPACT STUDY

ECOLOGICAL LAND CLASSIFICATION

SLR

FIGURE NO:
4

DATE: May 10, 2023
PROJECT NO: 209.V30125.00003

547220 547720 548220

4891532

4891032

547220 547720 548220

LEGEND

- SITE BOUNDARY
- AMPHIBIAN SURVEY LOCATION (2022)
- BREEDING BIRD SURVEY (TRANSECT; 2022)
- WATERBODIES
- PERMANENT WATERCOURSE
- RAILWAY

NOTES:

BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 25 50 100 150 m

SCALE 1:3,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY
AND SHOULD NOT BE USED FOR NAVIGATION

MHBC PLANNING, URBAN DESIGN & LANDSCAPE ARCHITECTURE
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

ENVIRONMENTAL IMPACT STUDY

SURVEY LOCATIONS

SLR

FIGURE NO:
5

DATE: May 10, 2023

PROJECT NO: 209.V30125.00003

LEGEND

- SITE BOUNDARY

CONFIRMED SWH

- AMPHIBIAN BREEDING HABITAT (WETLANDS)
- EASTERN WOOD-PEWEE
- TERRESTRIAL CRAYFISH
- WOODLAND AREA - SENSITIVE BIRD BREEDING HABITAT

CANDIDATE SWH

- BAT MATERNITY COLONIES
- WATERBODIES
- PERMANENT WATERCOURSE
- RAILWAY

NOTES:

BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 25 50 100 150 m

SCALE 1:3,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

MHBC PLANNING, URBAN DESIGN & LANDSCAPE ARCHITECTURE
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

ENVIRONMENTAL IMPACT STUDY

SIGNIFICANT WILDLIFE HABITAT

SLR

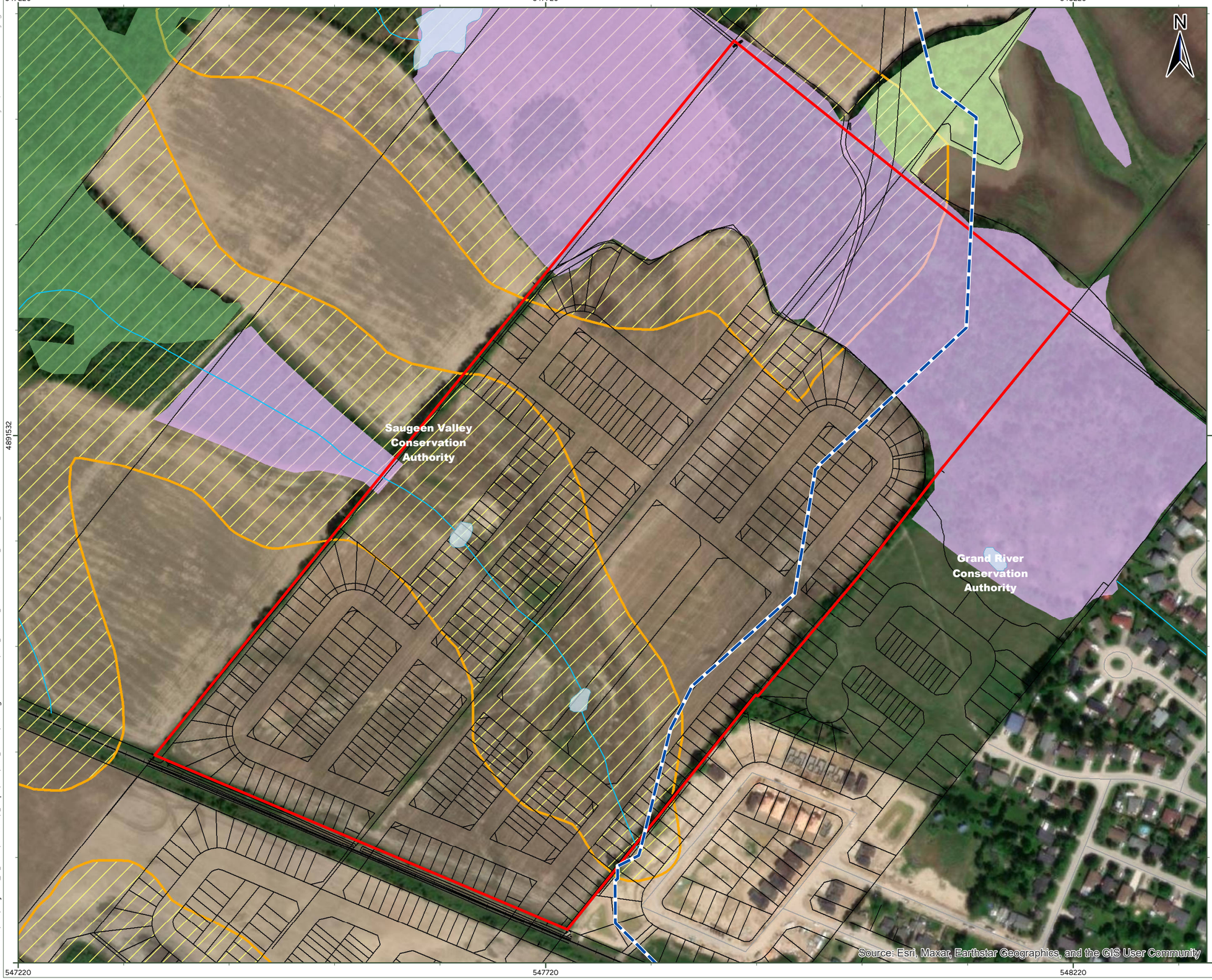
FIGURE NO: **6**

DATE: May 10, 2023

PROJECT NO: 209.V30125.00003

547220 547720 548220

4891532



4891032

547220 547720 548220

LEGEND

- SITE BOUNDARY
- SITE PLAN (MHBC, MAY 18, 2023)
- CONSERVATION AUTHORITY ADMIN AREA
- APPROXIMATE SCREENING AREA (SVCA)
- REGULATORY FLOODPLAIN (GRCA)
- SIGNIFICANT WOODLANDS (GREY COUNTY OFFICIAL PLAN (2018))
- WOODED ECOLOGICAL LAND CLASSIFICATION
- WETLAND ECOLOGICAL LAND CLASSIFICATION
- WATERBODIES
- PERMANENT WATERCOURSE
- RAILWAY

NOTES:
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 25 50 100 150 m

SCALE 1:3,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

MHBC PLANNING, URBAN DESIGN & LANDSCAPE ARCHITECTURE
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

ENVIRONMENTAL IMPACT STUDY

ENVIRONMENTAL CONSTRAINTS AND SITE PLAN

SLR

FIGURE NO: **7**

DATE: May 24, 2023 PROJECT NO: 209.V30125.00003

Appendix A EIS Terms of Reference and Correspondence

Environmental Impact Study

Glenelg Phase 3

Flato Developments Inc.

SLR Project No. 209.30125.00003

May 24, 2023

SLR Consulting (Canada) Ltd.
300 Town Centre Boulevard, Suite 200, Markham, ON L3R 5Z6

~~June 7, 2022~~July 28, 2022

~~Laura Warner~~Chris Lorenz, Resource Planner
Grand River Conservation Authority
400 Clyde Road, Box 729
Cambridge, ON N1R 5W6

Michael Oberle~~Brandi Walter~~, Environmental Planning Coordinator
Saugeen Conservation
261123 Grey Road 28 RR1
Hanover, ON N4N 3B8

SLR Project No.: 209.30125.00003

RE: Terms of Reference - Scoped Environmental Impact Study
Lots 223, 224, 225, and 226, Concessions 1 and 2 W, Dundalk, Ontario

SLR Consulting (Canada) Ltd. (SLR) is pleased to submit this Terms of Reference (ToR) on behalf of Flato Developments Inc. outlining the tasks required to complete a Scoped Environmental Impact Study (EIS) and Tree Inventory and Preservation Plan (TIPP) for Lots 223, 224, 225, and 226, Concessions 1 and 2 W in Dundalk, Ontario (Site). The southeast half of the Site falls under the jurisdiction of the Grand River Conservation Authority (GRCA) and the northwest half of the Site is under the jurisdiction of Saugeen Conservation (SVCA).

Project Understanding

SLR understands that the Site is proposed for development into a residential subdivision and is subject to a Ministerial Zoning Order (MZO). Natural features on the site include:

- Three tributaries to the Grand River (headwater drainage features [HDF]) and their associated floodplains
- Three unevaluated wetlands

Most of the Site is within GRCA or SVCA regulated lands. Features within the Site that are regulated by GRCA include unevaluated wetlands, a watercourse of unknown thermal regime, and an estimated associated floodplain. GRCA also identified the presence of two municipal drains (98- -L227C1W_A [tiled/closed] and 98- -L227C1W_B [open]). Permits under *Ontario Regulations (O. Reg.) 150/06 (GRCA) and 169/06 (SVCA): Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* are required for any development within regulated areas.

The GRCA (2015) *Policies for the Administration of O. Reg. 150/06* and SVCA (2017) *Environmental Planning and Regulations Policies Manual* state that any development within 30 m of unevaluated or locally significant wetlands (also known as the area of interference) requires permission from the appropriate conservation authority. Setback distances for development near regulated areas surrounding HDF typically require in-field assessment to determine riverine flooding and erosion hazard allowances and valley slopes or meander belt allowance. Staking of the unevaluated wetlands is also typically required.

Terms of Reference

This ToR has been prepared to frame the study requirements for review by the Township of Southgate, Grey County, SVCA, and GRCA. The ToR was prepared in the context of the following:

- *Provincial Policy Statement, 2020*
- Federal *Fisheries Act, 2019*
- *Migratory Birds Convention Act, 1994*
- *Endangered Species Act, 2007*
- Federal *Species at Risk Act, 2002*
- *Greenbelt Plan, 2017*
- *O. Regs. 150/06 and 169/06*
- GRCA Planning and Permitting Policies, including GRCA (2015) *Policies for the Administration of O. Reg. 150/06*
- SVCA (2017) *Environmental Planning and Regulations Policies Manual*
- Township of Southgate and Grey County Official Plans
- GRCA (2005) *Environmental Impact Study Guidelines and Submission Standards for Wetlands*
- *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority and Credit Valley Conservation, 2014)

Specifically, the tasks to be included within the ToR are:

1. Prepare and attend a site meeting with representatives from the Township of Southgate, Grey County, SVCA, and GRCA (if necessary) and stake the major features of the Site. GRCA has requested that wetland boundaries be delineated during the appropriate season using a combination of flagging tape, wire flags, and/or wooden stakes. The wetland boundary will be verified by GRCA and subsequently surveyed and clearly illustrated in the EIS report. A minimum buffer width and supporting rationale will also be included in the EIS report. GRCA also recommended completing a wetland evaluation to help address the *Provincial Policy Statement, 2020*.~~(e.g., wetland limits and woodland dripline).~~
2. Compile and synthesize information for the property from existing background documents, studies, and provincial databases, including biodiversity atlases for birds, mammals, herpetofauna, and butterflies, ~~including~~as well as a gap analysis review.
3. Undertake scoped seasonal inventories for amphibians, vegetation, and breeding birds (including Species at Risk [SAR]) in accordance with widely accepted provincial standards (e.g. Birds Canada et al. [2008] Marsh Monitoring Program Participant's Handbook for Surveying Amphibians, Ontario Breeding Bird Atlas [2001] Guide for Participants), review and update vegetation communities in accordance with the provincial Ecological Land Classification system and existing available data, and screen lands for the presence of Butternut (*Juglans cinerea*) trees and other SAR as well as SAR habitat potential.
4. Aerial photography indicates potential drainage across the Site. The Rapid Method provided in the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority and Credit Valley Conservation, 2014) will be applied if appropriate.
5. Aquatic habitat and fisheries investigations will be completed in late summer, if appropriate.

6. Synthesize the above information and analyze the findings to determine the presence of features and attributes of local and provincial interest under the *Planning Act, 1990* and to the Township of Southgate, Grey County, SVCA, and GRCA.
7. Establish appropriate buffers and setbacks for features of significance with reference to the policies and standards of the Township of Southgate, Grey County, SVCA, and GRCA.
8. Prepare an EIS report, including GIS generated figures for submission to the Township of Southgate, Grey County, SVCA, and GRCA in support of a final version of the Site Plan application. This report will rely on input from the Hydrogeology Report, the Functional Servicing Report (prepared by Crozier and Associates), and other submission materials.

Species at Risk

SLR will complete a desktop analysis to review potential for SAR and SAR habitat including species that may be of regional or local significance in accordance with Provincial regulations. This analysis will include accessing the Ministry of Northern Development, Mines, Natural Resources and Forestry's (NDMNRF) digital Land Information Ontario and Natural Heritage Information Centre databases to obtain a list of SAR known to occur in or near the Site and refining the list to relevant species potentially occurring within the Site.

In addition to the desktop screening, SLR will complete SAR screenings for Western Chorus Frog (*Pseudacris triseriata*) and Butternut to inform consultation with the Ministry of the Environment, Conservation and Parks (MECP). The need for additional targeted SAR surveys will be determined in consultation with MECP. ~~Otherwise, targeted SAR surveys are not anticipated; however, if SAR are incidentally observed during field investigations an Information Gathering Form will be submitted to the Ministry of the Environment, Conservation and Parks~~.

Headwater Drainage Feature

All components of the headwater sampling protocol (OSAP S4.M10) will be applied to complete a rapid assessment of the HDF on Site following the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority and Credit Valley Conservation, 2014). The assessment will document HDF form and flow conditions, riparian vegetation, channel connectivity, and site features that are important components of habitat.

Staking of Natural Features

In collaboration with the GRCA, SVCA, and Township of Southgate staff, SLR will confirm and stake the appropriate natural feature boundaries that are present on the Site (HDF, wetlands, and woodland dripline). SLR will coordinate with GRCA, SVCA, and Township staff to confirm and agree to the staked limits. GRCA and SVCA regulation and floodplain limits will be included on a figure but will be delineated through air photo interpretation and online sources.

Arborist Study

The TIPP will conform to the standards and specifications defined under the Township of Southgate Fill/Site Alteration By-law No. 2017-049. The purpose of the TIPP is to provide an inventory and assessment of the trees within the Site, positioned outside of the staked features to be preserved in accordance with applicable procedures and guidelines. SLR will conduct the arborist work in two phases to support preliminary and detailed design work. Phase 1 will include a preliminary investigation to identify potential heritage trees or trees which may be required to be considered for preservation. Preliminary results will be presented in a

memorandum. Phase 2 will consist of consultation with the Township (and SVCA/GRCA, if necessary) to refine the area of the detailed arborist work, scope areas of concern to the Township only, and completion of a Buffer Restoration Plan, if required. Once an approved method is confirmed with the Township, an International Society of Arboriculture certified arborist will complete the evaluation under Phase 2 for trees that are recommended for removal or retention within the Site Plan.

Scoped Environmental Impact Study

The draft Scoped EIS report will include a description of the ecological features and functions that occur on and adjacent to the Site, information on proposed development conditions, constraint mapping (including maximum limits for building envelopes), impact analysis, and potential monitoring requirements. The Scoped EIS will also include recommendations for additional measures (next steps) required to achieve policy conformity and recommended restoration and/or enhancement measures, including thermal mitigation measures and enhanced quality control. The Scoped EIS will be prepared in accordance with the policies outlined in the GRCA (2005) *Environmental Impact Study Guidelines and Submission Standards for Wetlands* and the SVCA (2017) *Environmental Planning and Regulations Policies Manual*.

Closure

Please confirm that these Terms of Reference for a Scoped EIS meet the intent of the information and study requirements for the subject property as referenced above. If you have any further questions or comments, we look forward to discussing them with you at your earliest convenience.

Yours sincerely,

SLR Consulting (Canada) Ltd.

Megan Olson, M.Sc.
Ecologist
416-333-8279
molson@slrconsulting.com

Kim Logan, B.Sc., P.Geo. (Limited), P.Biol.
Senior Ecologist
226-203-7214
klogan@slrconsulting.com

From:	Chris Lorenz
To:	Megan Olson; m.oberle.@svca.on.ca
Cc:	Kim Logan
Subject:	RE: Terms of Reference for Scoped EIS - Dundalk, Ontario
Date:	August 04, 2022 9:19:10 AM
Attachments:	image001.png image002.png image006.png image007.png image008.png image009.png image010.png

Thank you Megan. GRCA has no further comment.

Chris Lorenz, M.Sc.
Resource Planner
Grand River Conservation Authority
519-621-2763 ext. 2236

From: Megan Olson <molson@slrconsulting.com>
Sent: July 28, 2022 5:14 PM
To: Chris Lorenz <clorenz@grandriver.ca>; m.oberle.@svca.on.ca
Cc: Kim Logan <klogan@slrconsulting.com>
Subject: RE: Terms of Reference for Scoped EIS - Dundalk, Ontario

Hi Chris,
Thank you for your review and comments – I have addressed your comments in red below and provided an updated version of the Terms of Reference with the requested edits in Track Changes.

Thanks,
Megan

Megan Olson, M.Sc.
Ecologist

C +1 416 333 8279
E molson@slrconsulting.com

SLR Consulting (Canada) Ltd.
300 Town Centre Blvd, Suite 200, Markham, ON L3R 5Z6

From: Chris Lorenz <clorenz@grandriver.ca>
Sent: July 07, 2022 9:48 AM
To: Megan Olson <molson@slrconsulting.com>
Cc: Kim Logan <klogan@slrconsulting.com>
Subject: RE: Terms of Reference for Scoped EIS - Dundalk, Ontario

Hi Megan,

Please find below GRCA comments for the proposed Terms of Reference for the Concession 1 and 2W lands:

1. The subject lands are regulated by the GRCA owing to the presence of unevaluated wetlands, watercourse (thermal regime unknown), and associated floodplain (estimated). Updated the Project Understanding section of the TOR to include this information.

2. The following municipal drains are present:
    a. 98- -L227C1W_A (tiled/closed)
    b. 98- -L227C1W_B (open)

    Updated the Project Understanding section of the TOR to include this information.

3. It is requested that wetland boundaries be delineated during the appropriate season using a combination of flagging tape, wire flags, and/or wood stakes, surveyed, and clearly illustrated in the EIS report. The wetland boundary will also need to be verified by the GRCA. A minimum buffer width and supporting rationale should also be included in the EIS report. Item 1 of the TOR has been updated to address this comment.

4. The need for thermal mitigation measures and enhanced quality control should be discussed in the EIS report. The Scoped Environmental Impact Study section has been updated to include this comment.

5. We recommend that biodiversity atlases for birds, mammals, herpetofauna, and butterflies be consulted for background information. Item 2 of the TOR has been updated to address this comment.

6. A wetland evaluation is recommended to help address the Provincial Policy Statement. Item 1 of the TOR has been updated to include this recommendation.

7. We recommend that all biological surveys (e.g. breeding amphibians, breeding birds, vegetation) be conducted in accordance with widely accepted standards. The need for targeted surveys of species at risk should be determined in consultation with the Ministry of the Environment, Conservation, and Parks. Item 3 and the Species at Risk section of the TOR have been expanded upon to more directly address this comment.

8. According to mapping information obtained from the Ministry of Northern Development, Mines, Natural Resources, and Forestry (MNDMNRF), the following fish species have been recorded in the unnamed watercourse:
    a. Brook Stickleback, Central Mudminnow, Creek Chub, Fathead Minnow, Johnny Darter, Northern Redbelly Dace

    Thank you – we will include this data in the EIS.

9. According to mapping information obtained from the Natural Heritage Information Center, the following species at risk have been recorded on or within the vicinity of the subject lands:
    a. *Chelydra serpentina* (Snapping Turtle)
    b. *Sturnella magna* (Eastern Meadowlark)

    Thank you – we will include this data in the EIS.

Thanks Megan. Any questions please let me know.

Chris Lorenz, M.Sc.
Resource Planner
Grand River Conservation Authority

Office: 519-621-2763 ext. 2236
Email: clorenz@grandriver.ca
www.grandriver.ca | Connect with us on social

From: Chris Lorenz
Sent: July 7, 2022 9:38 AM
To: Megan Olson <molson@slrconsulting.com>
Cc: Kim Logan <klogan@slrconsulting.com>
Subject: RE: Terms of Reference for Scoped EIS - Dundalk, Ontario

Hi Megan,

Apologies for the delay. Please find below GRCA comments for the proposed Terms of Reference for the Ida Street sites:

1. The terms of reference state that the proposed subdivision development is subject to a Minister's Zoning Order. This should be clarified in the EIS report.

2. According to the existing map layer, no regulated features are present within the Grand River portion of the study area. However, a pond and headwater drainage feature (HDF) appear to be present at #752212 Ida Street. We agree that the HDF should be assessed using accepted guidelines developed by Credit Valley Conservation (CVC) and Toronto and Region Conservation Authority (TRCA).

3. Water depths and vegetation species in the pond should be assessed to determine if this feature is a wetland. If a wetland is determined to be present, it is requested that the boundary be delineated, verified by the GRCA and clearly illustrated in the EIS report. A minimum buffer width and supporting rationale should also be included in the EIS report.

4. It is requested that the key conclusions and recommendations of related hydrogeological assessments, stormwater management plans, and functional servicing plans be discussed in the EIS report.

5. The EIS report will need to clearly demonstrate that wetland hydroperiods are maintained, restored, or enhanced. A pre- and post-development wetland water balance assessment will be required to demonstrate that the development will not negatively impact the hydrologic or ecological functions of the wetlands located within the Saugeen River watershed.

6. The need for thermal mitigation measures and enhanced quality control should be discussed in the EIS.

7. We recommend that all biological surveys (e.g. breeding amphibians, breeding birds, vegetation) be conducted in accordance with widely accepted provincial standards. The need for targeted surveys of species at risk should be determined in consultation with the Ministry of the Environment, Conservation, and Parks.

8. According to mapping information obtained from the Ministry of Northern Development, Mines, Natural Resources, and Forestry (MNDMNRF), the following fish species have been recorded in the unnamed watercourse:

    - Blacknose Dace, Brassy Minnow, Brook Stickleback, Brown Bullhead, Central Mudminnow, Central Stoneroller, Common Shiner, Creek Chub, Emerald Shiner, Fathead Minnow, Golden Shiner, Iowa Darter, Johnny Darter, Least Darter, Northern Pike, Northern Redbelly Dace, Pumpkinseed, Rainbow Darter, White Sucker

Thanks Megan. Any questions please let me know.

Chris Lorenz, M.Sc.
Resource Planner
Grand River Conservation Authority
Office: 519-621-2763 ext. 2236

Email: clorenz@grandriver.ca
www.grandriver.ca | Connect with us on social

From: Megan Olson <molson@slrconsulting.com>
Sent: June 20, 2022 3:00 PM
To: Chris Lorenz <clorenz@grandriver.ca>
Cc: Kim Logan <klogan@slrconsulting.com>
Subject: RE: Terms of Reference for Scoped EIS - Dundalk, Ontario

Hi Chris,
Apologies for the delay! I have attached maps for two of the three sites for your reference. The third map will follow in a separate email as I received an undeliverable message from GRCA trying to send all three at once.

Thanks!
Megan

Megan Olson, M.Sc.
Ecologist

C +1 416 333 8279
E molson@slrconsulting.com

SLR Consulting (Canada) Ltd.
300 Town Centre Blvd, Suite 200, Markham, ON L3R 5Z6

From: Chris Lorenz <clorenz@grandriver.ca>
Sent: June 14, 2022 10:16 AM
To: Megan Olson <molson@slrconsulting.com>
Subject: RE: Terms of Reference for Scoped EIS - Dundalk, Ontario

Hi Megan,

I have taken over as resource planner for the north of the watershed and will look after these TORs. I'm hoping you can provide mapping for all three of the TORs you recently provided (2 in Dundalk, 1 in Melancthon) so I can confirm study boundaries.

Thanks,

Chris Lorenz, M.Sc.
Resource Planner
Grand River Conservation Authority

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From: Megan Olson <molson@slrconsulting.com>
Sent: Wednesday, June 8, 2022 11:57 AM
To: Laura Warner <lwarner@grandriver.ca>; b.walter@svca.on.ca
Cc: Kim Logan <klogan@slrconsulting.com>
Subject: Terms of Reference for Scoped EIS - Dundalk, Ontario

Hi Laura and Brandi,
Attached are Terms of Reference for two Scoped Environmental Impact Studies at the following locations:

- 752226, 752240, and 752242 Ida Street, Dundalk, Ontario
- Lots 223, 224, 225, and 226, Concessions 1 and 2 W, Dundalk, Ontario

Both sites fall under the jurisdiction of both GRCA and Saugeen Conservation. Please let me know if you have any questions or concerns with the TOR at this time.

Thanks,
Megan Olson

Megan Olson, M.Sc.
Ecologist

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Appendix B Botanical Inventory

Environmental Impact Study

Glenelg Phase 3

Flato Developments Inc.

SLR Project No. 209.30125.00003

May 24, 2023

GLENELG PHASE 3, DUNDALK, ON		
Common Name	**Scientific Name**	**SRank[1]**
Balsam Fir	*Abies balsamea*	S5
Red Maple	*Acer rubrum*	S5
Sugar Maple	*Acer saccharum*	S5
Canada Anemone	*Anemone canadensis*	S5
Common Lady Fern	*Athyrium filix-femina*	S5
Paper Birch	*Betula papyrifera*	S5
Bladder Sedge	*Carex intumescens*	S5
Retrorse Sedge	*Carex retrorsa*	S5
Fox Sedge	*Carex vulpinoidea*	S5
Red-osier Dogwood	*Cornus sericea*	S5
Wild Carrot	*Daucus carota*	SNA
Spinulose Wood Fern	*Dryopteris carthusiana*	S5
Field Horsetail	*Equisetum arvense*	S5
Spotted Joe Pye Weed	*Eutrochium maculatum*	S5
American Beech	*Fagus grandifolia*	S4
White Ash	*Fraxinus americana*	S4
Black Ash	*Fraxinus nigra*	S4
Green Ash	*Fraxinus pennsylvanica*	S4
Fowl Mannagrass	*Glyceria striata*	S5
Spotted Jewelweed	*Impatiens capensis*	S5
American Larch	*Larix laricina*	S5
Garden Bird's-foot Trefoil	*Lotus corniculatus*	SNA
Purple Loosestrife	*Lythrum salicaria*	SNA
Ostrich Fern	*Matteuccia struthiopteris*	S5
Common Evening Primros	*Oenothera biennis*	S5
Sensitive Fern	*Onoclea sensibilis*	S5
Reed Canary Grass	*Phalaris arundinacea*	S5
Common Timothy	*Phleum pratense*	SNA
Common Reed	*Phragmites australis*	SU
Balsam Poplar	*Populus balsamifera*	S5
Trembling Aspen	*Populus tremuloides*	S5
Black Cherry	*Prunus serotina*	S5
Choke Cherry	*Prunus virginiana*	S5
Bebb's Willow	*Salix bebbiana*	S5
Pussy Willow	*Salix discolor*	S5
Shining Willow	*Salix lucida*	S5
Dark-green Bulrush	*Scirpus atrovirens*	S5
Cottongrass Bulrush	*Scirpus cyperinus*	S5
Climbing Nightshade	*Solanum dulcamara*	SNA
Tall Goldenrod	*Solidago altissima*	S5
Panicled Aster	*Symphyotrichum lanceolatum*	S5
Swamp Aster	*Symphyotrichum puniceum*	S5
Eastern White Cedar	*Thuja occidentalis*	S5
Colt's-foot	*Tussilago farfara*	SNA
Broad-leaved Cattail	*Typha latifolia*	S5
American Elm	*Ulmus americana*	S5
Tufted Vetch	*Vicia cracca*	SNA

[1]**S-Ranks** - Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assignedin a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario. **S1** Critically Imperiled—Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) **S2** Imperiled—Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province. **S3** Vulnerable—Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation. **S4** Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors. **S5** Secure—Common, widespread, and abundant in the nation or state/province. **S#S#** Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4). **SX** Apparently extirpated from Ontario, with little likelihood of rediscovery. Typically not seen in the province for many decades, despite searches at known historic sites. **SNA** (Formally SE) Exotic; not believed to be a native component of Ontario's flora.

[2]**SARA** - Species at Risk Act (S.C. 2002, c. 29) Act current to 2022-02-23 and last amended on 2022-02-03.COSEWIC (Committee on the Status of Endangered Wildlife in Canada)

[3]**SARO** - ONTARIO REGULATION 230/08 under the Endangered Species Act, 2007 species at risk in Ontario list. Act current 2022-01-26.

[4]**L Ranks** Toronto and Region Conservation Authority (TRCA). 2017. Scoring and Ranking TRCA's Vegetation Communities, Flora, and Fauna Species.
L+ Exotic; not native to the TRCA jurisdiction; includes hybrids between a native species and an exotic. **L5** Able to withstand high levels of disturbance; generally secure. **L4** Able to withstand some disturbance; generally secure in rural matrix; of concern in urban matrix.**L3** Able to withstand minor disturbance; generally secure in natural matrix; considered to be of regional concern. **L2** Unable to withstand disturbance; some criteria are very limiting factors; generally occur in high-quality natural areas, in natural matrix; probably rare in the TRCA jurisdiction; of concern regionally. **L1** Unable to withstand disturbance; many criteria are limiting factors; generally occur in high-quality natural areas in natural matrix; almost certainly rare in the TRCA jurisdiction; of concern regional.

Appendix C Wildlife Observations

Environmental Impact Study

Glenelg Phase 3

Flato Developments Inc.

SLR Project No. 209.30125.00003

May 24, 2023

Common Name	Scientific Name	SRank[1]	SARA[2] COSEWIC	SARO[3]	Highest Breeding Evidence Observed[4]	Comments
Avifauna						
Alder Flycatcher	*Empidonax alnorum*	S5B			T	
American Crow	*Corvus brachyrhynchos*	S5B,SZN			H	
American Goldfinch	*Carduelis tristis*	S5B,SZN			P	
American Redstart	*Setophaga ruticilla*	S5B			P	
American Robin	*Turdus migratorius*	S5B,SZN			CF	
American Woodcock	*Scolopax minor*	S4B			D	Detected during amphibian breeding surveys
Barn Swallow	***Hirundo rustica***	**S5B,SZN**	**THR SCH 1 SC**	**SC**	NU	
Black-and-white Warbler	*Mniotilta varia*	S5B			S	
Black-capped Chickadee	*Poecile atricapillus*	S5			FY	
Blue Jay	*Cyanocitta cristata*	S5			H	
Brown-headed Cowbird	*Molothrus ater*	S4B			H	
Brown Thrasher	*Toxostoma rufum*	S4B			S	
Cedar Waxwing	*Bombycilla cedrorum*	S5B,SZN			H	
Chipping Sparrow	*Spizella passerina*	S5B			T	
Common Grackle	*Quiscalus quiscula*	S5B,SZN			CF	
Common Yellowthroat	*Geothlypis trichas*	S5B			P	
Eastern Kingbird	*Tyrannus tyrannus*	S4B			T	
Eastern Wood-Pewee	***Contopus virens***	**S4B**	**SC SCH 1 SC**	**SC**	T	
European Starling	*Sturnus vulgaris*	SNA			S	
Gray Catbird	*Dumetella carolinensis*	S4B			T	
Green Heron	*Butorides virescens*	S4B			H	
House Wren	*Troglodytes aedon*	S5B,SZN			T	
Indigo Bunting	*Passerina cyanea*	S4B			A	
Mallard	*Anas platyrhynchos*	S5			H	
Mourning Dove	*Zenaida macroura*	S5			S	
Nashville Warbler	*Leiothlypis ruficapilla*	S5B			S	
Northern Cardinal	*Cardinalis cardinalis*	S5			T	
Northern Flicker	*Colaptes auratus*	S4B			P	
Ovenbird	*Seiurus aurocapilla*	S5B			S	
Pileated Woodpecker	*Dryocopus pileatus*	S5			H	
Pine Warbler	*Setophaga pinus*	S5B			T	
Purple Finch	*Haemorhous purpureus*	S5			T	
Red-breasted Nuthatch	*Sitta canadensis*	S5			H	
Red-eyed Vireo	*Vireo olivaceus*	S5B,SZN			T	
Red-winged Blackbird	*Agelaius phoeniceus*	S4			CF	
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	S4			T	
Savannah Sparrow	*Passerculus sandwichensis*	S4B			T	
Sedge Wren	*Cistothorus stellaris*	S4B			S	
Song Sparrow	*Melospiza melodia*	S5B,SZN			CF	
Swamp Sparrow	*Melospiza georgiana*	S5B,S4N			A	
Tree Swallow	*Tachycineta bicolor*	S4B			H	
Turkey Vulture	*Cathartes aura*	S5B			X	
Veery	*Catharus fuscescens*	S5B			S	
Warbling Vireo	*Vireo gilvus*	S5B,SZN			T	
White-throated Sparrow	*Zonotrichia albicollis*	S5			S	
Wild Turkey	*Meleagris gallopavo*	S5			H	
Wilson's Snipe	*Gallinago delicata*	S5B			D	Detected during amphibian breeding surveys
Winter Wren	*Troglodytes hiemalis*	S5B,S4N			T	
Yellow-bellied Sapsucker	*Sphyrapicus varius*	S5B			P	
Yellow-rumped Warbler	*Setophaga coronata*	S5B,S4N			S	
Yellow Warbler	*Setophaga petechia*	S5B			CF	
Herptiles						
American Toad	*Anaxyrus americanus*	S5			Calling	
Gray Treefrog	*Dryophytes versicolor*	S5			Calling	
Green Frog	*Lithobates clamitans*	S5			Calling	
Northern Leopard Frog	*Lithobates pipiens*	S5			Calling	
Spring Peeper	*Pseudacris crucifer*	S5			Calling	
Western Chorus Frog	***Pseudacris maculata pop. 1***	**S4**	**THR SCH 1 THR**	**NAR**	**Calling**	
Wood Frog	*Lithobates sylvaticus*	S5			Calling	
Mammals / Other						
Chimney Crayfish	*n/a*	n/a			Burrows observed	species unknown
Coyote	*Canis latrans*	S5			Howling	
Muskrat	*Ondatra zibethicus*	S5			Individuals and push-ups observed	
White-tailed Deer	*Odocoileus virginianus*	S5			Tracks	

[1]**S-Ranks** - Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario.
S1 Critically Imperiled—Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
S2 Imperiled—Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S3 Vulnerable—Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 Secure—Common, widespread, and abundant in the nation or state/province.
S#S# Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
SX Apparently extirpated from Ontario, with little likelihood of rediscovery. Typically not seen in the province for many decades, despite searches at known historic sites.
SNA (Formally SE) Exotic; not believed to be a native component of Ontario's flora.

[2]**SARA** - Species at Risk Act (S.C. 2002, c. 29) Act current to 2018-07-05 and last amended on 2018-05-30.

[3]**SARO** - ONTARIO REGULATION 230/08 under the Endangered Species Act, 2007 species at risk in Ontario list. Act current to 2018-08-01. COSEWIC (Committee on the Status of Endangered Wildlife in Canada)
EXT Extinct - A species that no longer exists.
EXP Extirpated - A species no longer existing in the wild in Canada, but occurring elsewhere.
END Endangered - A species facing imminent extirpation or extinction.
THR Threatened - A species likely to become endangered if limiting factors are not reversed.
SC Special Concern (formerly vulnerable) - A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
NAR Not At Risk - A species that has been evaluated and found to be not at risk of extinction given the current circumstances.
DD Data Deficient (formerly Indeterminate) - Available information is insufficient to resolve a species' eligibility for assessment or to permit an assessment of the species' risk of extinction.
* - Species on Schedule 1 of Species At Risk Act (SARA)

[4]**Highest Breeding Evidence Ontario Breeding Bird Atlas: Breeding Evidence Codes**
X - Present **XX** - Heard but not expected to be breeding (e.g. using habitat - foraging)
POSSIBLE
H *- Species observed in its breeding season in suitable nesting habitat.*
S *- Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season.*
PROBABLE
P - Pair observed in suitable nesting habitat in nesting season
T - Permanent terriroty presumed through registration of territorial behaviour (song, etc.) on at least two days, a week or more apart, at the same place
D - Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulations
V - Visiting probably nest site
A - Agitated behabiour or anxiety calls of an adult
B - Brood patch on adult female or cloacal protuberance on adult males
N - Nest building or excavation of nest hole
CONFIRMED
DD - Distraction display or injury feigning **CF -** Adult carrying food for young **NE -** Nest containing eggs
NY - Nest with young seen or heard **NU -** Used nest or egg shells found (occupied or laid within the period of the survey) **FY -** Recently fleged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight
AE - Adult leaving or entering nest sites in circumstancing indicating occupied nest **FS -** Adult carrying fecal sac

Appendix D Significant Wildlife Habitat Assessment

Environmental Impact Study

Glenelg Phase 3

Flato Developments Inc.

SLR Project No. 209.30125.00003

May 24, 2023

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
Seasonal Concentration Areas of Animals					
Waterfowl Stopover and Staging Areas (Terrestrial) **Rationale**: Habitat important to migrating waterfowl	American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall	CUM1 CUT1 Plus evidence of annual spring flooding from meltwater or run-off within these Ecosites.	•Fields with sheet water during Spring (mid-March to May) •Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl •Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available <u>Information Sources</u> •Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. •Reports and other information available from Conservation Authorities •Sites documented through waterfowl planning processes (eg. EHJV implementation plan) •Field Naturalist Clubs •Ducks Unlimited Canada •Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” •Any mixed species aggregations of 100 or more individuals required •The flooded field ecosite habitat plus a 100-300m radius, dependent on local site conditions and adjacent land use is the significant wildlife habitat •Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates) •SWH MIST Index #7 provides development effects and mitigation measures	No species or habitat observed; insufficient flooding of fields to provide suitable habitat
Waterfowl Stopover and Staging Areas (Aquatic) **Rationale**: Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the ecodistrict.	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked duck Common Goldeneye Bufflehead Redhead Ruddy Duck	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	•Ponds, marshes, lakes, bays, coastal inlets and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify •These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water). <u>Information Sources</u> •Environment Canada •Naturalist clubs often are aware of staging/stopover areas. •OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. •Sites documented through waterfowl planning processes (e.g., EHJV implementation plan) •Ducks Unlimited projects •Element occurrence specification by Nature Serve: http://www.natureserve.org •Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of: •Aggregations of 100 or more of listed species for 7 days, results in >700 waterfowl use days •Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH •The combined area of the ELC ecosites and a 100m radius area is the SWH •Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are significant wildlife habitat. •Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” •Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). •SWH MIST Index #7 provides development effects and mitigation measures	Habitat criteria not met. No large ponds or reservoirs capable of supporting shelter areas as stopovers.

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
Shorebird Migratory Stopover Area **Rationale**: High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	•Shorelines of lakes, rivers and wetlands, including beach area, bars and seasonally flooded, muddy and un-vegetated shoreline habitats •Great Lakes coastal shorelines, including groynes and other forms of armor rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October •Sewage treatment ponds and storm water ponds do not qualify as SWH. <u>Information Sources</u> •Western hemisphere shorebird reserve network •Canadian Wildlife Service (CWS) Ontario Shorebird Survey •Bird Studies Canada •Ontario Nature •Local birders and naturalist clubs •Natural Heritage Information Centre (NHIC) Shorebird Migratory Concentration Area	Studies confirming: •Presence of 3 or more of listed species and >1000 shorebird use days during spring or fall migration period (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) •Whimbrel stop briefly (100 Whimbrel used for 3 years or more is significant. •The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area •Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" •SWH MIST Index #8 provides development effects and mitigation measures	Habitat criteria not met. No lakes, shorelines or coastal areas present
Raptor Wintering Area **Rationale**: Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl Special Concern: Short-eared Owl Bald Eagle	Hawks/Owls: Combination of ELC Community Series; need to have present one Community Series from each land class; Forest: FOD, FOM, FOC. Upland: CUM, CUT, CUS, CUW. Bald Eagle: Forest Community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).	•The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors •Raptor wintering (hawk/owl) sites need to be >20 ha with a combination of forest and upland •Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands •Field area of the habitat is to be wind swept with limited snow depth or accumulation. •Eagle sites have open water and large trees and snags available for roosting <u>Information Sources</u> •OMNRF Ecologist or Biologist •Naturalist clubs •Natural Heritage Information Centre (NHIC) Raptor Winter Concentration Area •Data from Bird Studies Canada •Results of Christmas Bird Counts •Reports and other information available from Conservation Authorities	Studies confirm the use of these habitats by: •One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two of the listed hawk/owl species •To be significant a site must be used regularly (3 in 5 years) cxlix for a minimum of 20 days by the above number of birds •The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area •Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" •SWH MIST Index #10 and #11 provides development effects and mitigation measures.	Habitat criteria not met. Woodland and meadow within site do not meet size criteria.

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
Bat Hibernacula **Rationale**: Bat hibernacula are rare habitats in all Ontario landscapes.	Big Brown Bat Tri-colored Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered SWH)	•Hibernacula may be found in caves, mine shafts, underground foundations and Karsts •Active mine sites should not be considered as SWH •The locations of Bat Hibernacula are relatively poorly known <u>Information Sources</u> •OMNRF for possible locations and contact for local experts •Natural Heritage Information Centre (NHIC) Bat Hibernaculum •Ministry of Northern Development and Mines for location of mine shafts •Clubs that explore caves (eg. Sierra Club) •University Biology Departments with bat experts	•All sites with confirmed hibernating bats are SWH •The area includes 200 m radius around the entrance of the hibernaculum for most development types and 1000 m for wind farms •Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects" •SWH MIST Index #1 provides development effects and mitigation measures.	Habitat criteria not met. No known Karst, escarpment areas or rock features (caves).
Bat Maternity Colonies **Rationale**: Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes	Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD, FOM, SWD, SWM	•Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). •Maternity roosts are not found in caves and mines in Ontario •Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees •Female bats prefer wildlife trees (snags) in early stages if decay, class 1-3 or class 1 or 2 •Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred <u>Information Sources</u> •OMNRF for possible locations and contact for local experts •University Biology Departments with bat experts	•Maternity colonies with confirmed use by: o>10 Big Brown Bats o>5 adult female Silver-haired Bats •The area of habitat includes the entire woodland or a forest stand ELC Ecosite or an Eco-element containing the maternity colonies •Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects" •SWH MIST Index #12 provides the development effects and mitigation measures	**Candidate** Woodlands within and adjacent to site provide suitable habitat.
Turtle Wintering Areas **Rationale**: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles: SW, MA, OA and SA; FEO and BOO. Northern Map Turtle: Open water areas such as deeper rivers or streams and lakes with current can also be used as overwintering habitat.	•For most turtles, wintering areas are in the same general areas as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. •Overwintering sites are permanent water bodies, large wetlands and bots or fens with adequate dissolved oxygen. •Manmade ponds such as sewage lagoons or storm water ponds should not be considered SWH. <u>Information Sources</u> •EIA/EIS studies carried out by conservation authorities. •Field naturalists clubs/ university herpetologists. •OMNRF ecologist or biologist •NHIC	•Presence of five overwintering Midland Painted Turtles is significant. •One or more Northern Map Turtle or Snapping Turtle overwintering within a wetland is significant. •The mapped ELC ecosite area with the overwintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are overwintering is the SWH. •Overwintering areas may be identified by searching for congregations (basking areas) of turtles on warm, sunny days during the fall (September to October) or spring (March to May) •Congregation of turtles is more common where wintering areas are limited and therefore significant	No suitable open water habitat present on site.

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
				•SWH MIST Index #28 provides development effects and mitigation measures for turtle wintering habitat	
Reptile Hibernaculum **Rationale**: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Snakes: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake Special Concern: Milksnake Eastern Ribbonsnake Lizard Special Concern: Five-lined Skink (Southern Shield population)	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats. Observations or congregations of snakes on sunny warm days in the spring or fall is a good indicator	•For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. •Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line •Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover •Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures <u>Information Sources</u> •In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells). •Reports and other information available from Conservation Authorities. •Field Naturalist Clubs •University herpetologists •NHIC •OMNRF ecologist or biologist may be aware of locations of wintering skinks	Studies confirming: •Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. •Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct) •NOTE: If there are Special Concern Species present, then site is SWH •NOTE: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc) and consequently are used annually, often by many of the same individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. •The feature in which the hibernacula is located plus a 30 m radius area is the SWH •SWH MIST Index #13 provides development effects and mitigation measures for snake hibernacula • Presence of any active hibernaculum for skink is significant. •SWH MIST Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat.	Habitat is not present. No features assessed on site occur with potential to penetrate deep below the frost line.
Colonially -Nesting Bird Breeding Habitat (Bank and Cliff) **Rationale**: Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns. Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	•Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area •Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles •Does not include a licensed/permitted Mineral Aggregate Operation. <u>Information Sources</u> •Reports and other information available from Conservation Authorities •Ontario Breeding Bird Atlas •Bird Studies Canada; NatureCounts http://www.birdscanada.org/birdmon	Studies confirming: •Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. •A colony identified as SWH will include a 50m radius habitat area from the peripheral nests •Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” •SWH MIST Index #4 provides development effects and mitigation measures.	Habitat criteria not met. No exposed banks observed on site or immediately adjacent.

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
are declining in Ontario.			•Field Naturalist Clubs		
Colonially -Nesting Bird Breeding Habitat (Tree/Shrubs) **Rationale**: Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night Heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	•Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. •Most nests in trees are 11 to 15 m from ground, near the top of the tree. <u>Information Sources</u> •Ontario Breeding Bird Atlas colonial nest records. •Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). •Natural Heritage Information Centre (NHIC) Mixed Wader Nesting Colony •Aerial photographs can help identify large heronries. •Reports and other information available from Conservation Authorities. •MNRF District Offices •Field Naturalist Clubs	Studies confirming: •Presence of 5 or more active nests of Great Blue Heron or other listed species. • The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH. •Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells. •SWH MIST Index #5 provides development effects and mitigation measures.	Habitat criteria not met. No stick nests observed or evidence of nest structures by herons in proximity to the Site.
Colonially -Nesting Bird Breeding Habitat (Ground) **Rationale**: Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6 MAS1 – 3 CUM CUT CUS	•Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. •Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands. <u>Information Sources</u> •Ontario Breeding Bird Atlas, rare/colonial species records. •Canadian Wildlife Service •Reports and other information available from Conservation Authorities •Natural Heritage Information Centre (NHIC) Colonial Waterbird Nesting Area •MNRF District Offices •Field Naturalist Clubs	Studies confirming: •Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern •Presence of 5 or more pairs for Brewer's Blackbird •Any active nesting colony of one or more Little Gull, and Great Black backed Gull is significant •The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWH MIST Index #6 provides development effects and mitigation measures	Habitat criteria not met. No exposed rocks or island peninsulas; Brewer's Blackbird not observed on or adjacent to site
Migratory Butterfly Stopover Areas **Rationale**: Butterfly stopover areas are extremely rare habitats and are	Painted Lady Red Admiral Special Concern: Monarch	Combination of ELC Community Series; need to have present one Community Series from each landclass: FIELD: CUM, CUT, CUS FOREST: FOC, FOD, FOM, CUP	•A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Erie or Lake Ontario •The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south	Studies confirm: •The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct). MUD is based on the number of days the site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day, significant variation can occur between	Habitat criteria not met. Site not within 5 km of Lake Ontario.

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
biologically important for butterfly species that migrate south for the winter.		Anecdotally, a candidate site for butterfly stopover will have a history of butterflies being observed.	•The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat •Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes <u>Information Sources</u> • NHIC •Agriculture Canada in Ottawa may have list of butterfly experts •Field Naturalist Clubs •Toronto Entomologists Association •Conservation Authorities	years and multiple years of sampling should occur •Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. •MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant. •SWH MIST Index #16 provides development effects and mitigation measures.	
Landbird Migratory Stopover Areas **Rationale**: Sites with a high diversity of species as well as high numbers are most significant.	All migratory songbirds Canadian Wildlife Service Ontario website: http://www.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1 All migrant raptor species: Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	•Woodlots >10 ha in size and within 5 km of Lake Ontario. •If woodlands are rare in an area of shoreline, woodland fragments 2-5 ha can be considered for this habitat •If multiple woodlands are located along the shoreline those woodlands <2 km from Lake Ontario are more significant •Sites have a variety of habitats: forest, grassland and wetland complexes •The largest sites are more significant •Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and within 5 km of Lake Ontario are Candidate SWH <u>Information Sources</u> •Bird Studies Canada •Ontario Nature •Local birders and field naturalist clubs •Ontario Important Bird Areas (IBA) Program	Studies confirm: •Use of the habitat by >200 birds/day and with >35 species and with at least 10 bird species recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. •Studies should be completed during spring (Mar.-May) and fall (Aug.- Oct.) migration using standardized assessment techniques. Evaluation to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". •SWH MIST Index #9 provides development effects and mitigation measures.	Habitat criteria not met. Site not within 5 km of Lake Ontario.
Deer Yarding Areas **Rationale:** Winter habitat for deer is considered to be the main limiting factor for northern deer populations. In winter, deer congregate in "yards" to survive severe winter conditions. Deer yards typically	White-tailed Deer	Note: OMNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include; FOM, FOC, SWM and SWC. Or these ELC Ecosites; CUP2 CUP3 FOD3 CUT	•Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioral response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter.	No Studies Required: • Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH. • Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO). • Field investigations that record deer tracks in winter are done to confirm use (best done from an	Not mapped by MNRF.

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.			• The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%. • OMNRF determines deer yards following methods outlined in “Selected Wildlife and Habitat Features: Inventory Manual" •Woodlots with high densities of deer due to artificial feeding are not significant	aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations. cxcv • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWH MIST Index #2 provides development effects and mitigation measures.	
Deer Winter Congregation Areas **Rationale**: Deer movement during winter in the southern areas of Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions	White-tailed Deer	All forested Ecosites with these ELC Community Series: FOC, FOM, FOD, SWC, SWM, SWD Conifer plantations much smaller than 50 ha may also be used.	•Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. • Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands. • If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha. • Woodlots with high densities of deer due to artificial feeding are not significant. <u>Information Sources</u> •MNRF District Offices •LIO/NRVIS	Studies confirm: •Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF. •Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF. •Studies should be completed during winter (Jan./Feb.) when >20 cm of snow is on the ground using aerial survey techniques, ground road surveys, or a pellet count deer density survey. •Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. •SWH MIST Index #2 provides development effects and mitigation measures.	Not mapped by MNRF.
Rare Vegetation Communities					
Cliffs and Talus Slopes **Rationale**: Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO TAS TAT CLO CLS CLT	A Cliff is vertical to near vertical bedrock >3 m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris.	•Most cliff and talus slopes occur along the Niagara Escarpment <u>Information Sources</u> •The Niagara Escarpment Commission has detailed information on location of these habitats •OMNRF Districts •Natural Heritage Information Centre (NHIC) has location information available on their website •Field Naturalist Clubs •Conservation Authorities	•Confirm any ELC Vegetation Type for Cliffs or Talus Slopes •SWH MIST Index #21 provides development effects and mitigation measures	Habitat criteria not met– no cliffs or talus areas present within or adjacent to site
Sand Barren	ELC Ecosites: SBO1 SBS1	Sand barrens typically are exposed sand, generally sparsely vegetated and caused by a lack of moisture,	•A sand barren area >0.5 ha in size <u>Information Sources</u>	•Confirm any ELC Vegetation Type for Sand Barrens •Site must not be dominated by exotic or introduced species (<50%	Habitat criteria not met– none present within or adjacent to site

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
Rationale: Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry.	SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always <60%	periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered but less than 60%.	•OMNRF Districts •Natural Heritage Information Centre (NHIC) has location information available on their website •Field Naturalist Clubs •Conservation Authorities	vegetative cover are exotic spp.) •SWH MIST Index #20 provides development effects and mitigation measures	
Alvar **Rationale**: Alvars are extremely rare habitats in Ecoregion 6E. Most alvars in Ontario are in Ecoregions 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 **Five Alvar Indicator Species**: *Carex crawei* *Panicum philadelphicum* *Eleocharis compressa* *Scutellaria parvula* *Trichostema brachiatum* These indicator species are very specific to Alvars within Ecoregion 6E	An Alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animal species. Vegetation cover varies from patchy to barren with a less than 60% tree cover	•An Alvar site >0.5 ha in size Information Sources •Alvars of Ontario (Federation of Ontario Naturalists, 2000) •Conserving Great Lakes Alvars (Ontario Nature) •OMNRF Districts •Natural Heritage Information Centre (NHIC) has location information available on their website •Field Naturalist Clubs •Conservation Authorities	•Field studies identify that four of the five Alvar Indicator Species at a Candidate Alvar Site is significant •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic spp.) •The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses •SWH MIST Index #17 provides development effects and mitigation measures	Habitat criteria not met–none present within or adjacent to site
Old Growth Forest **Rationale**: Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth Forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multilayered canopy and an abundance of snags and downed woody debris.	Woodland areas 30 ha or greater in size or with at least 10 ha interior habitat assuming 100 m buffer at edge of forest Information Sources •OMNRF Forest Resource Inventory mapping •OMNRF Districts •Field Naturalist Clubs •Conservation Authorities •Sustainable Forestry License (SFL) companies will possibly know locations through field operations •Municipal forestry departments	Field studies will determine: •If dominant tree species of the forest are >140 years old, then the area containing these trees is SWH •The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present) •The area of forest ecosites combined or an eco-element within an ecosite that contain the old growth characteristics is the SWH •Determine ELC vegetation types for the forest area containing the old growth characteristics •SWH MIST Index #23 provides development effects and mitigation measures	Habitat criteria not met–none present within or adjacent to site

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
Savannah **Rationale**: Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25-60%.	•No minimum size to site •Site must be restored or a natural site. Remnant sites such as railway right-of ways are not considered SWH <u>Information Sources</u> •Natural Heritage Information Centre (NHIC) has location information available on their website •Field Naturalist Clubs •Conservation Authorities	Field studies confirm: •One or more of the Savannah indicator species listed in Appendix N should be present. Note: savannah plant spp. List from Ecoregion 6E should be used. •Area of the ELC Ecosite is the SWH •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic spp.) •SWH MIST Index #18 provides development effects and mitigation measures	Habitat criteria not met– none present within or adjacent to site
Tallgrass Prairie **Rationale**: Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	A tallgrass prairie has ground cover dominated by prairie grasses. An open tallgrass prairie habitat has <25% tree cover.	•No minimum size to site •Site must be restored or a natural site. Remnant sites such as railway right-of ways are not considered SWH <u>Information Sources</u> •Natural Heritage Information Centre (NHIC) has location information available on their website •OMNRF Districts •Field Naturalist Clubs •Conservation Authorities	Field studies confirm: •One or more of the Prairie indicator species listed in Appendix N should be present. Note: savannah plant spp. List from Ecoregion 6E should be used. •Area of the ELC Ecosite is the SWH •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic spp.) •SWH MIST Index #19 provides development effects and mitigation measures	Habitat criteria not met– none present within or adjacent to site
Other Rare Vegetation Communities **Rationale**: Plant communities that often contain rare species which depend on the habitat for survival.	Provincially rare (S1, S2, S3) vegetation communities are listed in Appendix M of the Significant Wildlife Habitat Technical Guide (MNRF, 2000). Any ELC Ecosite Code that has a possible ELC Vegetation Type that is provincially rare is candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	•ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in Appendix M of the Significant Wildlife Habitat Technical Guide (MNRF, 2000). •OMNRF/NHIC will have up to date listing for rare vegetation communities. <u>Information Sources</u> •Natural Heritage Information Centre (NHIC) has location information available on their website •OMNRF Districts •Field Naturalist Clubs •Conservation Authorities	•Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of the Significant Wildlife Habitat Technical Guide (MNRF, 2000). •Area of the ELC Vegetation Type polygon is the SWH. •SWH MIST Index #37 provides development effects and mitigation measures	Habitat criteria not met– none observed during numerous site visits conducted.
Specialized Habitat for Wildlife					
Waterfowl Nesting Area **Rationale**: Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SWT1, SWT2, SWD1, SWD2, SWD3, SWD4 Note: Includes adjacency to Provincially Significant Wetlands	• Waterfowl nesting area extends 120 m cxlix from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. •Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. •Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites	Studies confirmed: •Presence of 3 or more nesting pairs for listed species excluding Mallards, or; •Presence of 10 or more nesting pairs for listed species including Mallards. •Any active nesting site of an American Black Duck is considered significant. •Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”	criteria not met. Species and abundance thresholds not observed during field investigations

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
			Information Sources •Ducks Unlimited staff may know the locations of particularly productive nesting sites •MNRF Wetland Evaluations for indication of significant waterfowl nesting habitat •Reports and other information available from Conservation Authorities	•A field study confirming waterfowl nesting habitat will determine boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest •SWH MIST Index #25 provides development effects and mitigation measures.	
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat **Rationale**: Nest sites are fairly uncommon in Eco - region 7E and are used annually by the se species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey Special Concern: Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands.	•Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. •Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy. •Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms) Information Sources •NHIC compiles all known nesting sites for Bald Eagles in Ontario •MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat •Nature Counts, Ontario Nest Records Scheme data. •OMNRF District •Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented •Reports and other information available from Conservation Authorities. •Field Naturalists clubs	Studies confirm the use of these nests by: •One or more active Osprey or Bald Eagle nests in an area •Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. •For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH, maintaining undisturbed shorelines with large trees within this area is important •For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the habitat from 400-800 m is dependent on sight lines from the nest to the development and inclusion of perching and foraging habitat •To be significant a site must be used annually. When found inactive, the site must be known to be inactive for > 3 years or suspected of not being used for >5 years before being considered not significant. •Observational studies to determine nest site use, perching sites and foraging areas need to be done from early March to mid-August. •Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" •SWH MIST Index #26 provides development effects and mitigation measures	Habitat criteria not met. No stick nets or target species observed during numerous site visits conducted.
Woodland Raptor Nesting Habitat **Rationale**: Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3.	•All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat. Interior habitat determined with a 200m buffer. •Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. •In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest.	Studies confirm: •Presence of 1 or more active nests from species list is considered significant •Red-shouldered Hawk and Northern Goshawk – A 400 m radius around the nest or 28 ha area of habitat is the SWH. (The 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest). •Barred Owl – A 200m radius around the nest is the SWH	Habitat criteria not met. Woodland associated with site is not > 30 ha with >4ha of interior habitat.

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
			Information Sources •OMNRF Districts •Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented •Check data from Bird Studies Canada •Reports and other information available from Conservation Authorities	•Broad-winged Hawk and Coopers Hawk, – A 100m radius around the nest is the SWH •Sharp-Shinned Hawk – A 50m radius around the nest is the SWH •Conduct field investigations from early March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. •SWH MIST Index #27 provides development effects and mitigation measures	
Turtle Nesting Areas **Rationale**: These habitats are rare and when identified will often be the only breeding site for local populations of turtles	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100 m) or within the following ELC Ecosites: MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, BOO1, FEO1	•Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. •For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and is located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. •Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes and rivers are most frequently used. Information Sources •Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels) •Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them •Natural Heritage Information Centre (NHIC) •Field naturalist clubs	Studies confirm: •Presence of 5 or more nesting Midland Painted Turtles. •1 or more Northern Map Turtle or Snapping Turtle nesting is a SWH. •The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30 to 100 m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH. •Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30 to 100 m area of habitat. •Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. •SWH MIST Index #28 provides development effects and mitigation measures for turtle nesting habitat.	Suitable nesting habitat and species not observed during field investigations
Seeps and Springs **Rationale**: Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamanders	Seeps/springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	•Any forested area (with <25% meadow/field/ pasture) within the headwaters of a stream or river system •Seeps and springs are important feeding and drinking areas. Especially in the winter will support a variety of plant and animal species. Information Sources •Topographical Map •Thermography •Hydrological surveys conducted by Conservation Authorities and MECP	Studies confirm: •Presence of a site with 2 or more seeps/springs should be considered SWH. • The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat cxlviii. • SWH MIST Index #30 provides development effects and mitigation measures	Habitat criteria not met. Not observed during field evaluations.

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
			•Field Naturalists Clubs and landowners •Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped		
Amphibian Breeding Habitat (Woodland) **Rationale**: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series: FOC, FOM, FOD, SWC, SWM, SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians.	•Presence of a wetland, pond or woodland pool (including vernal pools) >500 m2 (about 25 m diameter) within or adjacent (within 120 m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. •Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat. <u>Information Sources</u> •Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records •Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. •OMNRF Districts and wetland evaluations •Field Naturalist clubs •Canadian Wildlife Service Amphibian Road Call Survey •Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm: •Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or egg masses) or 2 or more of the listed frog species with Call Level Codes of 3. •A combination of observational study and call count surveys will be required during the spring (Mar.-Jun.) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands •The habitat is the wetland area plus a 230m radius of woodland area. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. •SWH MIST Index #14 provides development effects and mitigation measures	Species and abundance thresholds not met during field investigations
Amphibian Breeding Habitat (Wetlands) **Rationale**: Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120 m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bullfrog) may be adjacent to woodlands.	•Wetlands >500m2 (about 25m diameter), supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats •Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators •Bullfrogs require permanent water bodies with abundant emergent vegetation. <u>Information Sources</u> •Ontario Herpetofaunal Summary Atlas (or other similar atlases) •Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. •OMNRF Districts and wetland evaluations. •Reports and other information available from Conservation Authorities	Studies confirm: •Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3 or; Wetland with confirmed breeding Bullfrogs are significant •The ELC ecosite wetland area and the shoreline are the SWH •A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. •If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. •SWH MIST Index #15 provides development effects and mitigation measures	**Confirmed** Species and abundance thresholds met during field investigations

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
Woodland Area - Sensitive Bird Breeding Habitat Rationale: Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Special Concern: Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series: FOC, FOM, FOD, SWC, SWM, SWD	•Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha •Interior forest habitat is at least 200 m from forest edge habitat <u>Information Sources</u>: •Local birder clubs •Canadian Wildlife Service (CWS) for the location of forest bird monitoring •Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species •Reports and other information available from Conservation Authorities.	Studies confirm: •Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. •Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH •Conduct field investigations in spring and early summer when birds are singing and defending their territories •Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” •SWH MIST Index #34 provides development effects and mitigation measures	**Confirmed** Site investigations identified 5 of the listed species presumed to be breeding within woodlands associated with the site
Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)					
Marsh Breeding Bird Habitat **Rationale**: Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan Special Concern: Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: all SW, MA and CUM1 sites	•Nesting occurs in wetlands. •All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present •For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water <u>Information Sources</u> •OMNRF District and wetland evaluations •Field Naturalist clubs •Natural Heritage Information Centre (NHIC) Records •Reports and other information available from Conservation Authorities •Ontario Breeding Bird Atlas	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or or 1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed species • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH • Area of the ELC ecosite is the SWH. • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWH MIST Index #35 provides development effects and mitigation measures	Species and abundance thresholds not met during field investigations
Open Country Bird Breeding Habitat **Rationale:** This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow Special Concern: Short-eared Owl	CUM1 CUM2	•Large grassland areas (includes natural and cultural fields and meadows) >30 ha •Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years) •Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older.	Field studies confirm: •Presence of nesting or breeding of 2 or more of the listed species •A field with 1 or more breeding Short-eared Owls is to be considered SWH •The area of SWH is the contiguous ELC ecosite field areas	Habitat criteria not met. Large areas of grassland or meadow (>30 ha) not present

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records			•The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species <u>Information Sources</u> •Agricultural land classification maps, Ministry of Agriculture •Local bird clubs •Ontario Breeding Bird Atlas •EIA/EIS Reports and other information available from Conservation Authorities	•Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories •Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" •SWH MIST Index #32 provides development effects and mitigation measures	
Shrub/Early Successional Bird Breeding Habitat **Rationale:** This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records.	Indicator Species: Brown Thrasher Clay-colored Sparrow Common Species: Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher Special Concern: Yellow-breasted Chat Golden-winged Warbler	CUT1, CUT2, CUS1, CUS2, CUW1, CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species	•Large field areas succeeding to shrub and thicket habitats >10 ha in size •Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years) •Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species •Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands <u>Information Sources</u> •Agricultural land classification maps, Ministry of Agriculture •Local bird clubs •Ontario Breeding Bird Atlas •Reports and other information available from Conservation Authorities	Field studies confirm: •Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species •A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as SWH •The area of the SWH is the contiguous ELC ecosite field/thicket area. •Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories •Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" •SWH MIST Index #33 provides development effects and mitigation measures	Habitat criteria not met. Large areas of thicket or shrub habitat (>10 ha) not present
Terrestrial Crayfish **Rationale**: Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.	Chimney or Digger Crayfish; (*Fallicambarus fodiens*) Devil Crayfish or Meadow Crayfish; (*Cambarus diogenes*)	MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, MAS1, MAS2, MAS3, SWD, SWT, SWM CUM1 with inclusions of above meadow marsh ecosites can be used by terrestrial crayfish	•Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish •Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water •Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well-formed. <u>Information Sources</u> •Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF, March, 1998	Studies confirm: •Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites •Area of ELC ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH •Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult •SWH MIST Index #36 provides development effects and mitigation measures	**Confirmed** Species and habitat observed during field investigations
Special Concern and Rare Wildlife Species	All Special Concern and Provincially Rare (S1, S2, S3, SH) plant and animal species. Lists of these	All plant and animal element occurrences (EOs) within a 1 km or 10 km grid.	•When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites	Studies confirm: •Assessment/inventory of the site for the identified special concern or rare species needs to be	**Confirmed** Several Eastern Wood-pewee territories identified

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
Rationale: These species are quite rare or have experienced significant population declines in Ontario.	species are tracked by the NHIC.	Older EOs were recorded prior to GPS being available, therefore location information may lack accuracy.	<u>Information Sources</u> •Natural Heritage Information Centre (NHIC) will have Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data •NHIC Website "Get Information": http://nhic.mnr.gov.on.ca •Ontario Breeding Bird Atlas •Expert advice should be sought as many of the rare spp. Have little information available about their requirement	completed during the time of year when the species is present or easily identifiable. •The area of the habitat to the finest ELC scale that protects the habitat features and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. •SWH MIST Index #37 provides development effects and mitigation measures	in woodland associated with the site
Animal Movement Corridors					
Amphibian Movement Corridors **Rationale**: Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	Corridors may be found in all ecosites associated with water. Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1	•Movement corridors between breeding habitat and summer habitat •Movement corridors must be determined when **Amphibian Breeding Habitat** is confirmed as SWH (Amphibian Breeding Habitat, Wetland) <u>Information Sources</u> •MNRF District Office •Natural Heritage Information Centre (NHIC) •Reports and other information available from Conservation Authorities •Field Naturalist Clubs	•Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites •Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant •Corridors should have at least 15m of vegetation on both sides of waterway or be up to 200m wide of woodland habitat and with gaps<20m • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat • SWH MISTIndex #40 provides development effects and mitigation measures	While frogs may disperse from and within the wetlands, the development is proposed within area not suitable for dispersal (active agriculture) and would not impede the movement of amphibians within and between the significant breeding habitat and other wetlands as these are all connected via offsite features
Deer Movement Corridors **Rationale:** Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.	White-tailed Deer	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	•Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule •A deer wintering habitat identified by the OMNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion •Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges) <u>Information Sources:</u> •MNRF District Office •Natural Heritage Information Center (NHIC) •Reports and other information available from Conservation Authorities. •Field Naturalist Clubs	•Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas • Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas. • Corridors should be at least 200m wide with gaps <20m and if following riparian area with at least 15m of vegetation on both sides of waterway. Shorter corridors are more significant than longer corridors. • SWH MIST Index #39 provides development effects and mitigation measures	Not applicable as Deer Wintering Habitat was not identified

Appendix E Terms of Reference for Additional Studies

Environmental Impact Study

Glenelg Phase 3

Flato Developments Inc.

SLR Project No. 209.30125.00003

May 24, 2023

SLR Consulting (Canada) Ltd.
300 Town Centre Boulevard, Suite 200, Markham, ON L3R 5Z6

May 23, 2023

Chris Lorenz, Resource Planner
Grand River Conservation Authority
400 Clyde Road, Box 729
Cambridge, ON N1R 5W6

Michael Oberle, Environmental Planning Coordinator
Saugeen Conservation
261123 Grey Road 28 RR1
Hanover, ON N4N 3B8

SLR Project No.: 209.30125.00003

RE: Terms of Reference – Additional Studies: Scoped Environmental Impact Study Lots 223, 224, 225, and 226, Concessions 1 and 2 W, Dundalk, Ontario

SLR Consulting (Canada) Ltd. (SLR) is pleased to submit this Terms of Reference (ToR) in collaboration with Geomorphix on behalf of Flato Developments Inc. outlining the tasks required to complete additional studies required to support a Scoped Environmental Impact Study (EIS) and Tree Inventory and Preservation Plan (TIPP) for Lots 223, 224, 225, and 226, Concessions 1 and 2 W in Dundalk, Ontario (Site). The southeast half of the Site falls under the jurisdiction of the Grand River Conservation Authority (GRCA) and the northwest half of the Site is under the jurisdiction of Saugeen Conservation (SVCA). This ToR is considered a draft until approved by the applicable agencies.

Project Understanding

It is understood that the Site is proposed for development into a residential subdivision and is subject to a Ministerial Zoning Order (MZO). Natural features on the site include:

- Three tributaries to the Grand River (headwater drainage features [HDF]) and their associated floodplains
- Three unevaluated wetlands on site (MAS2, SWM1-1 and SWD3-1/MAM2-2, Figure 1) and one immediately adjacent to the site (SWD, Figure 1)

Most of the Site is within GRCA or SVCA regulated lands. Features within the Site that are regulated by GRCA include unevaluated wetlands, a watercourse of unknown thermal regime, and an estimated associated floodplain. GRCA also identified the presence of two municipal drains (98- -L227C1W_A [tiled/closed] and 98- -L227C1W_B [open]). Permits under *Ontario Regulations (O. Reg.) 150/06 (GRCA) and 169/06 (SVCA): Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* are required for any development within regulated areas.

The GRCA (2015) *Policies for the Administration of O. Reg. 150/06* and SVCA (2017) *Environmental Planning and Regulations Policies Manual* state that any development within 30 m of unevaluated or locally significant wetlands (also known as the area of interference) requires permission from the appropriate conservation authority. Setback distances for development near regulated areas surrounding HDF typically require in-field

assessment to determine riverine flooding and erosion hazard allowances and valley slopes or meander belt allowance. Staking of the unevaluated wetlands is also typically required.

Objectives for Additional Studies

The additional studies are proposed to further characterize the existing site conditions with respect to the subject wetlands and their hydrologic regimes.

Terms of Reference

This ToR has been prepared to frame the study requirements for review by the Township of Southgate, Grey County, SVCA, and GRCA. The ToR was prepared in the context of the following:

- *Provincial Policy Statement, 2020*
- Federal *Fisheries Act, 2019*
- *Migratory Birds Convention Act, 1994*
- *Endangered Species Act, 2007*
- Federal *Species at Risk Act, 2002*
- *Greenbelt Plan, 2017*
- *O. Regs. 150/06 and 169/06*
- GRCA Planning and Permitting Policies, including GRCA (2015) *Policies for the Administration of O. Reg. 150/06*
- SVCA (2017) *Environmental Planning and Regulations Policies Manual*
- Township of Southgate and Grey County Official Plans
- GRCA (2005) *Environmental Impact Study Guidelines and Submission Standards for Wetlands*
- *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority and Credit Valley Conservation, 2014
- Preliminary site-wide water balance calculations completed by Crozier Consulting Engineers
- Comments on the first submission of the EIS (September 2022) received from the GRCA dated November 25, 2022 and from Triton Engineering dated December 13, 2022.

Specifically, the tasks to be included within the ToR are:

1. Characterize existing conditions
2. Description of the proposed development and potential changes to the hydrology and ecology of the subject wetlands that may result from the proposed development
3. Assess wetland sensitivity to potential changes
4. Alternatives assessment for proposed east-west arterial road alignment
5. Monitor the hydroperiod and hydrologic regime of the subject wetlands
6. Comparison of modeled post to pre hydrologic conditions based on site-wide water balance calculations
7. Provide input to aid in refinement of the site-wide water balance already prepared by Crozier to try and ensure that there is a site-wide balance for pre- to post conditions (a feature based water balance is not proposed)
8. Assessment of outlet options for stormwater facilities and suggest means of mitigating any anticipated impacts to the subject wetlands

Closure

Please confirm that these Terms of Reference for a Scoped EIS meet the intent of the information and study requirements for the subject property as referenced above. If you have any further questions or comments, we look forward to discussing them with you at your earliest convenience.

Yours sincerely,

SLR Consulting (Canada) Ltd.

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LEGEND

- SITE BOUNDARY
- ECOLOGICAL LAND CLASSIFICATION (SLR CONSULTING, 2022)
- WATERBODIES
- PERMANENT WATERCOURSE
- RAILWAY

ELC Code	ELC Description
Ag	Agriculture
CUM1-1	Cultural Meadow
FOD5-2	Dry-Fresh Sugar Maple-Beech Deciduous Forest
HR	Hedgerow
MAM2-2/SWT2-	Reed Canary Grass Mineral Meadow Marsh with Willow Thicket Swamp inclusion
MAS2	Mineral Shallow Marsh Ecosite
MAS2/SWC1-1	Mineral Shallow Marsh with White Cedar Coniferous Swamp inclusion
SWC1-1	White Cedar Mineral Coniferous Swamp
SWD	Mineral Deciduous Swamp
SWD3-1/MAM2-2	Red Maple Mineral Deciduous Swamp with Reed Canary Grass Mineral Meadow Marsh inclusion
SWM1-1	White Cedar - Hardwood Mineral Mixed Swamp
SWT2-2	Willow Mineral Thicket Swamp

NOTES:
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 25 50 100 150 m

SCALE 1:3,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

MHBC PLANNING, URBAN DESIGN & LANDSCAPE ARCHITECTURE
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

ENVIRONMENTAL IMPACT STUDY

ECOLOGICAL LAND CLASSIFICATION

SLR

FIGURE NO: 1

DATE: May 10, 2023

PROJECT NO: 209.V30125.00003

Hydrogeological Assessment

Glenelg Phase 3

Dundalk Village Two Inc.

3621 Highway 7 East, Suite 503
Markham, ON L3R 5Z6

Prepared by:

SLR Consulting (Canada) Ltd.

100 Stone Road West, Suite 201, Guelph, ON N1G 5L3

SLR Project No.: 209.30125.00003

May 25, 2023

Revision: 4

Revision Record

Revision	Date	Prepared By	Checked By	Authorized By
1	September 9, 2022	JV	MV	MV
2	September 12, 2022	JV	MV	MV
3	May 19, 2023	JV/CE	MV	MV
4	May 25, 2023	JV/CE	AM	MV

Statement of Limitations

The Hydrogeological Assessment has been prepared and the work referred to in this report has been undertaken by SLR Consulting (Canada) Ltd. (SLR) for Dundalk Village Two Inc. hereafter referred to as the “Client”. It is intended for the sole and exclusive use of the Client. The report has been prepared in accordance with the Scope of Work and agreement between SLR and the Client. Other than by the Client and as set out herein, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted unless payment for the work has been made in full and express written permission has been obtained from SLR.

This report has been prepared in a manner generally accepted by professional consulting principles and practices for the same locality and under similar conditions. No other representations or warranties, expressed or implied, are made.

Opinions and recommendations contained in this report are based on conditions that existed at the time the services were performed and are intended only for the client, purposes, locations, time frames and project parameters as outlined in the Scope or Work and agreement between SLR and the Client. The data reported, findings, observations and conclusions expressed are limited by the Scope of Work. SLR is not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. SLR does not warranty the accuracy of information provided by third party sources.

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Appendix E MECP Water Well Records

1.0 Introduction

SLR Consulting (Canada) Ltd. (SLR) was retained by Dundalk Village Two Inc. to conduct a Hydrogeological Assessment in support of a Draft Plan of Subdivision and future Site Plan for the proposed Dundalk Northeast residential subdivision located in Dundalk, Ontario (referred to as the "Study Area"). The Study Area includes two residential properties (772350 and 772288 Hwy 10), as well as one currently undeveloped property located on Lot 225, Concession 1 (**Figure 1**). These lands fall within a larger area currently subject to an approved Ministerial Zoning Order (MZO). The development of these subject lands will be phased.

Although the current submission is for the western portion of the property, known as Glenelg Phase 3 development (hereinafter referred to as the "Site"), this report provides details of the entire Dundalk Northeast residential subdivision. It is understood that the proposed Glenelg Phase 3 development will contain single detached and semi-detached lots, as well as townhouse units. There will also be areas of open space, a stormwater management (SWM) pond, a school, and a park. The overall development is expected to have complete municipal servicing, and paved access / site roadways.

1.1 Study Objectives

The objective of the Hydrogeological Assessment is to characterize the hydrogeological conditions across the Study Area, identify any hydrogeological constraints to development and potential impacts of development on natural heritage features, and provide guidance on how to mitigate these impacts. This is completed through a review of relevant geologic and hydrogeologic information available through public records for the area or collected through borehole drilling and groundwater monitoring and sampling efforts. This report has been prepared for submission to the Township of Southgate, Bruce County, Saugeen Valley Conservation Authority (SVCA), and Grand River Conservation Authority (GRCA) to support the Draft Plan of Subdivision and future Site Plan Approval for the proposed development.

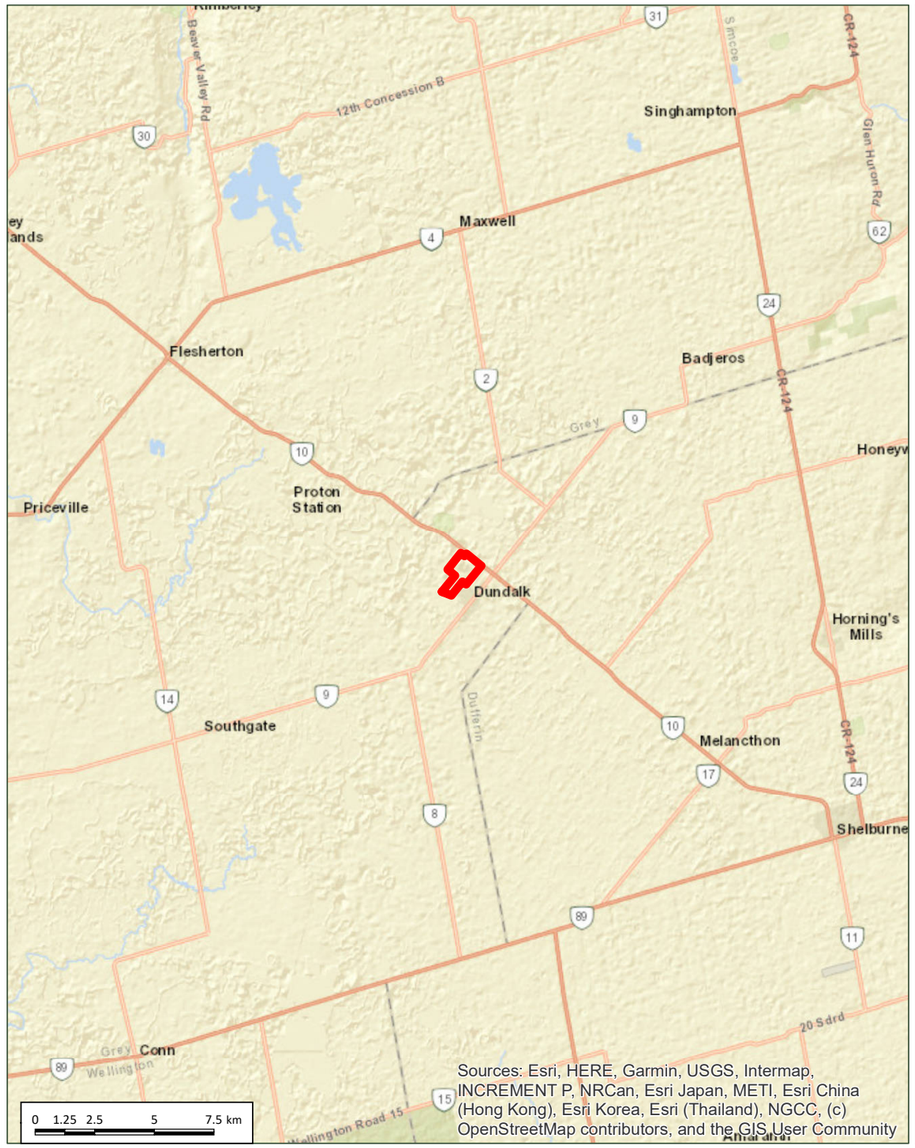
The specific objectives are summarized below:

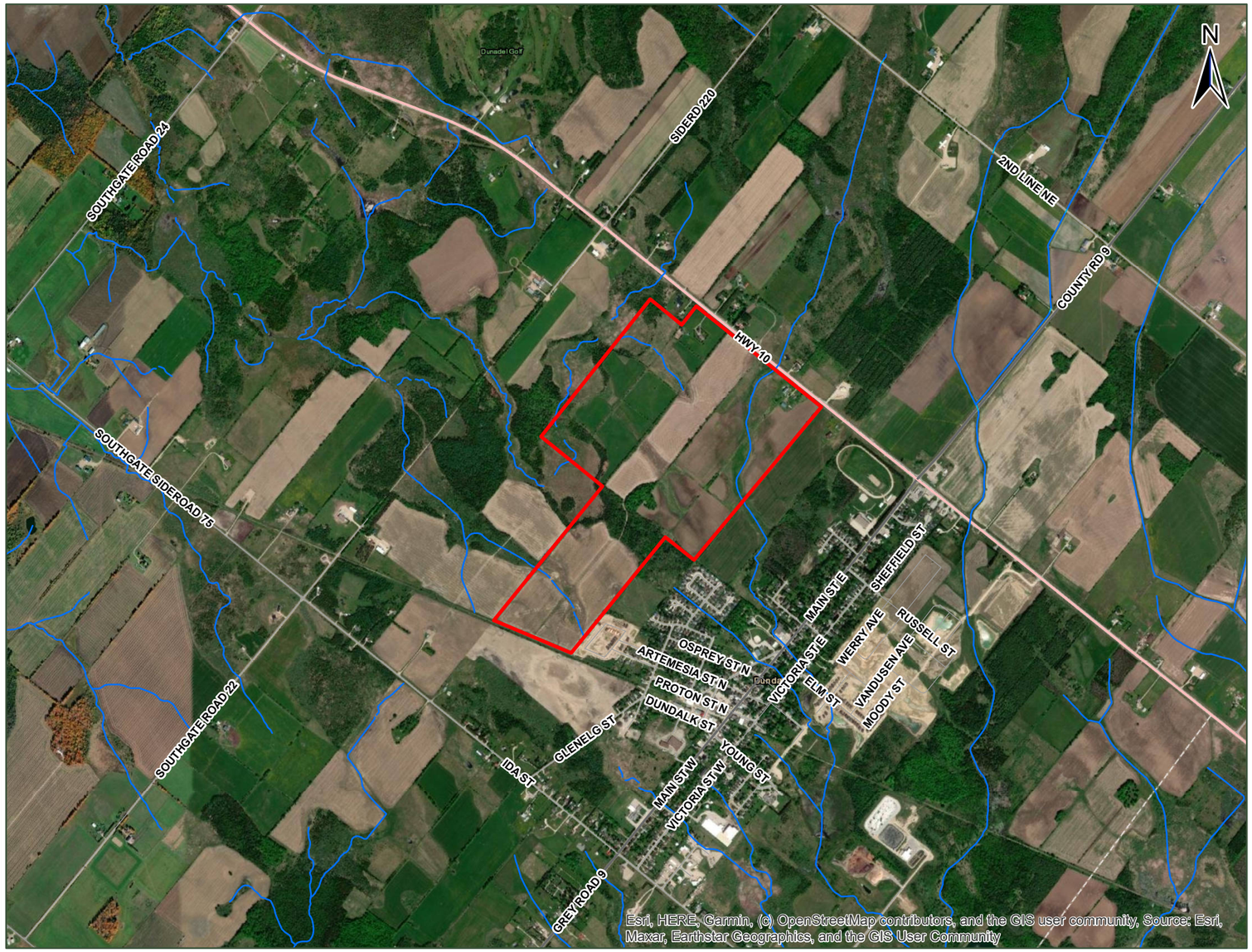
- Document the geology, hydrostratigraphy, groundwater flow, and groundwater quality across the Study Area.
- Evaluate potential impacts with respect to Source Protection Plans
- Assess overall potential impacts of the proposed development on the groundwater flow system.

1.2 Report Organization

This Hydrogeology Assessment report has been organized into eight sections following this introduction. Section 2 provides an overview of background information related to the development, previous investigations and regional geology and hydrogeology. Section 3 provides the field methodologies utilized during the assessment. Section 4 presents a review of the site-specific geological and hydrogeological conditions. Section 5 provides an assessment of the potential impacts of development on shallow groundwater features, potable wells, and surface water features. Section 6 presents the conclusions and recommendations, Section 7 provides closing comments, and Section 8 presents the report references.

All Figures referenced throughout the report are presented within the text. Appendices A through E present the: Development Plan; Borehole Logs; Groundwater Data; Hydraulic Conductivity Analyses; and MECP Water Well Records.





NOTES:
SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022

LEGEND
SITE BOUNDARY

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SCALE 1:25,000
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N
THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY
AND SHOULD NOT BE USED FOR NAVIGATION

DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

HYDROGEOLOGICAL ASSESSMENT

SITE LOCATION

SLR

FIGURE NO:
1

DATE: May 4, 2023
PROJECT NO: 209.V30125.00003

2.0 Background

2.1 Proposed Development

Although this Hydrogeological Assessment discusses hydrogeological conditions across the entire Dundalk Northeast residential subdivision, the current phase of the development only includes the western most parcel (Lots 225 and 226, Concession 2) known as Glenelg Phase 3. The proposed Glenelg Phase 3 development measures approximately 33 ha in size, and includes 291 single detached lots, 24 semi-detached lots, and 74 townhouse units. It also includes a 1.56 ha SWM pond in the western portion of the Site boundary, walkways, trails, open space, and a park. A copy of the proposed development plan is provided in **Appendix A**.

2.2 Site Description

The proposed Dundalk Northeast residential subdivision lies on lands legally described as Lots 223, 224, 225, 226 and 227, Concessions 1 and 2 Southwest of the Toronto and Sydenham Road, Geographic Township of Proton, Township of Southgate, County of Grey. The proposed Glenelg Phase 3 development lies on the western most parcel of the Study Area on Lots 225 and 226, Concession 2.

The Study Area is bounded by Highway 10 in the northeast, Grey Country CP Rail Trail to the southwest, and is found approximately 600 m northwest of Main St E and approximately 600 m northeast of Ida Street. The area surrounding the property is occupied by agricultural lands and rural residential, with a woodlot and associated wetland along the northern portion of the Study Area.

2.3 Regional setting

2.3.1 Topography and Drainage

The Study Area is gently undulating with a gentle decrease in ground surface elevation from north to south. A topographic high of 532 metres above sea level (masl) is located near the north end of the Study Area, with a topographic low of 517 masl at the southwestern boundary and through the centre of the property near the woodlot and wetland area (**Figure 2**).

The Study Area is located on a drainage divide between the Saugeen River Watershed (SRW) and Grand River Watershed (GRW), which are governed by SVCA and GRCA, respectively. The undulating topography at the Study Area is attributed to the presence of several drumlins present on the property, with water generally draining between each drumlin. A number of small unnamed tributaries are present at the Study Area, two that drain towards the northwest (within the SRW), located at the north and south ends of the Study Area, and one that drains offsite towards the south (GRW) at the eastern portion of the Study Area within a wetland. There are also unevaluated wetlands located on the Study Area. An evaluation of the wetlands will be completed as part of the Environmental Impact Study (EIS), to be provided under separate cover.

2.3.2 Physiography

The Study Area lies within the Dundalk Till Plain physiographic region of Southern Ontario (Chapman and Putnam, 1984). The Dundalk Till Plain is a gently undulating, partially drumlinized and fluted surface, where the long axis of the drumlins are oriented in a southeastward direction. The Dundalk Till Plain supports extensive wetland complexes due to the presence of poorly drained depressions.

2.3.3 Regional Hydrostratigraphy

Surficial geology in the Dundalk area mainly consists of drumlinized till plains (Chapman and Putnam, 1984) comprised of the Elma Till (stony sandy silt to silt) and Catfish Creek Till (clayey silt and gravel,

Figure 3). There are isolated deposits of glaciolacustrine, glaciofluvial ice-contact and glaciofluvial outwash materials at surface and interbedded within the till plain. These sand and gravel deposits form the Dundalk Aquifer (Saugeen Valley Source Protection Area, 2015). The extent and thickness of the Dundalk Aquifer is unknown, due to a lack of reliable well records for the area. It is noted that static water levels within the Dundalk Aquifer are close to ground surface.

The overburden material is underlain by bedrock aquifer units comprised of the Guelph, Eramosa, Goat Island and Gasport Formations (Golder, 2018).

2.3.4 Source Protection

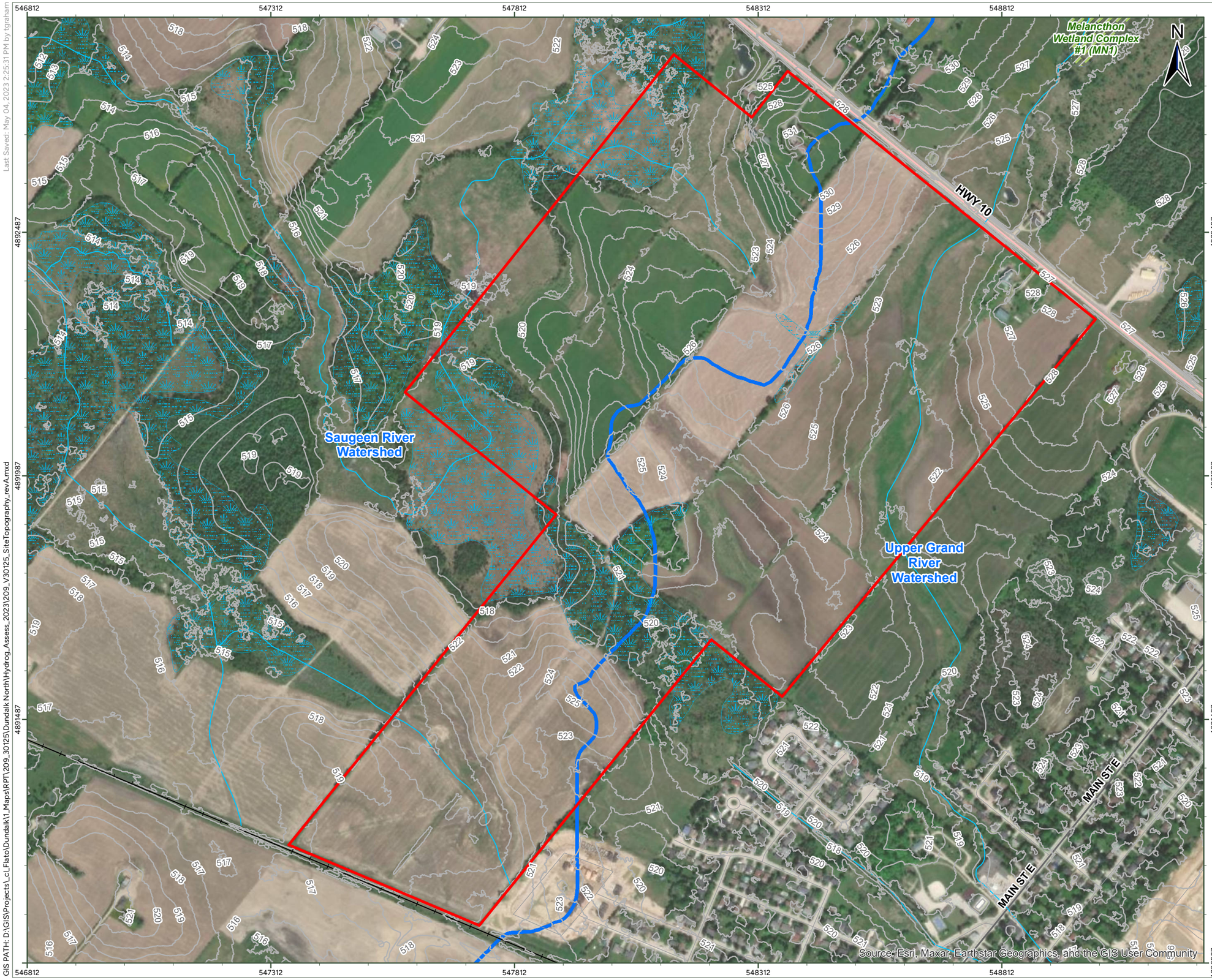
Source Protection Plans (SPPs) have been implemented throughout the region to protect drinking water resources, as mandated by the Ontario Clean Water Act (OCWA), 2006. The susceptibility of an aquifer to contamination is evaluated to identify the most vulnerable areas surrounding a drinking water source. There are four (4) types of vulnerable areas as defined by the Clean Water Act, 2006:

- Highly vulnerable aquifer (HVA): aquifers in which an external source is likely to have a significant adverse effect, this includes the land above the aquifer;
- Significant groundwater recharge area (SGRA): an area in which it is necessary to regulate or monitor drinking water threats that could affect the recharge of an aquifer;
- Surface water intake protection zone (IPZ): an area related to a surface water intake area in which it is necessary to regulate or monitor drinking water threats; and
- Wellhead protection area (WHPA): an area related to a wellhead, within which it is necessary to regulate or monitor drinking water threats.

The Site is within both the Saugeen Valley Source Protection Plan and the Grand River Source Protection Region. The Approved Source Protection Plans have identified the eastern and southeastern portions of the Site to be within either a WHPA-C or WHPA-D, representing a capture zone time frame of between 2 to 25 years (**Figure 4**). In addition, the majority of the wetlands across the Study Area are located within a SGRA (**Figure 5**).

Groundwater and surface water resources within a SGRA or WHPA are relatively sensitive to chemical or pathogen contamination and / or changes in groundwater recharge. Although precautionary measures to protect groundwater and surface water must be applied on all projects, additional protection measures and related documentation may be required where study areas fall within these zones. These include maintenance of the site-specific water balance and limitations on the presence of potential contamination sources such as gas stations and dry cleaner facilities. Based on the current development plan, the Site development does not include any commercial facilities. A site-specific water balance has been completed by Crozier & Associates Consulting Engineers (Crozier) to document pre-development recharge rates, and to look for opportunities to promote the recharge of clean water to meet or exceed pre-development recharge rates. The site-specific water balance is presented under separate cover.

It is important to note that delineation of the vulnerable areas based on regional mapping and do not consider site-specific conditions (i.e., type and thickness of the overlying material). The results of the drilling program indicates that the subsurface soils across the Study Area consists of sandy silt to silty sand till. The material was determined to have low hydraulic conductivity and therefore, the potential to impact deeper aquifers is limited.



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LEGEND

- SITE BOUNDARY
- PERMANENT WATERCOURSE
- SURFACE CONTOUR (1M)
- CARTOGRAPHIC WETLAND (LAND INFORMATION ONTARIO, 2022)
- PROVINCIALLY SIGNIFICANT WETLAND (LAND INFORMATION ONTARIO, 2022)
- DRAINAGE DIVIDE

NOTES:

SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)
CONTOURS:
SWOOP 2015

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SCALE 1:7,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

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DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

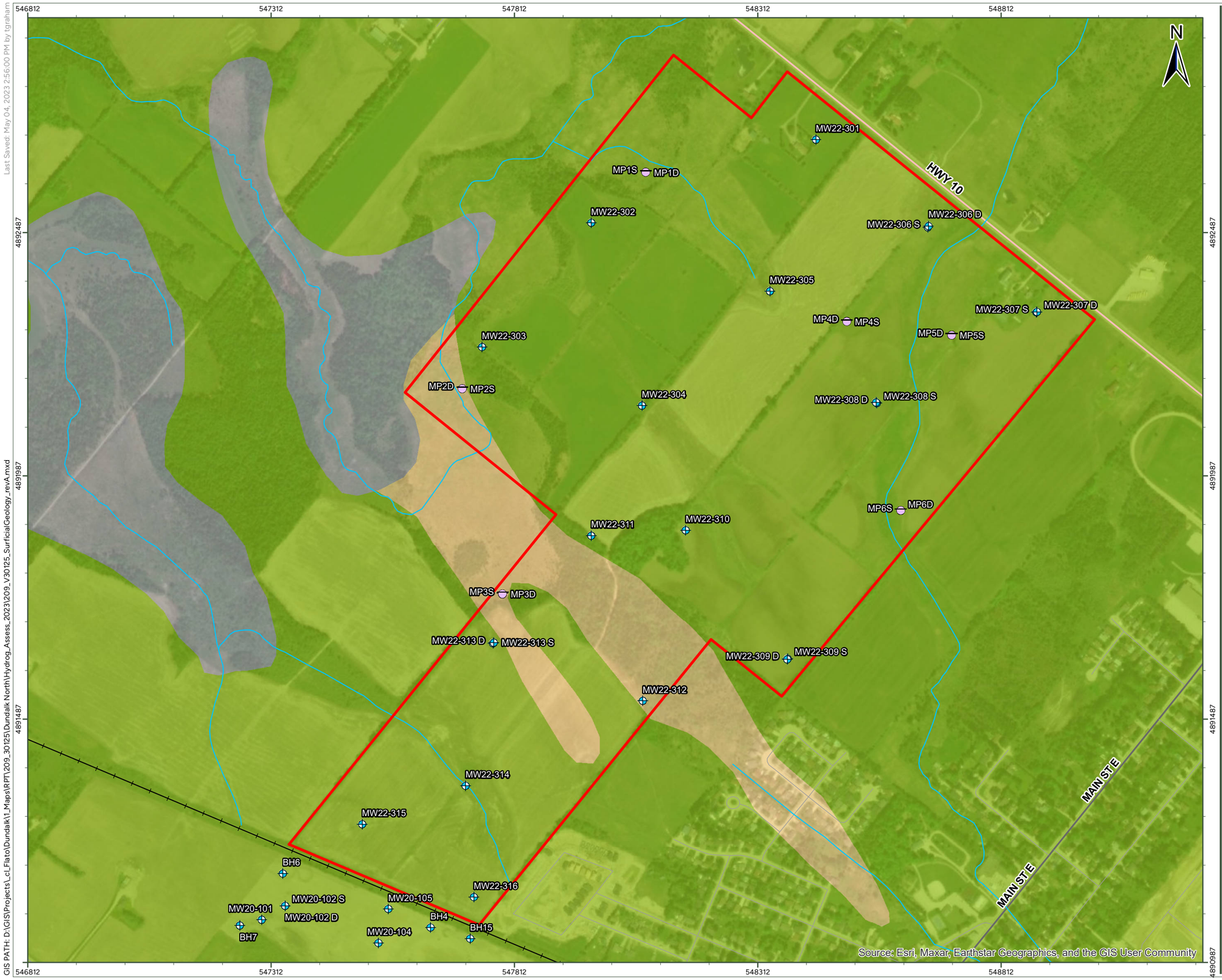
HYDROGEOLOGICAL ASSESSMENT

SITE TOPOGRAPHY

SLR

FIGURE NO: **2**

DATE: May 4, 2023 PROJECT NO: 209.V30125.00003



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LEGEND

- SITE BOUNDARY
- MONITORING WELL
- MINI-PIEZOMETER
- PERMANENT WATERCOURSE
- 5B: STONE-POOR, CARBONATE-DERIVED SILTY TO SANDY TILL
- 7A: SANDY DEPOSITS
- 20: ORGANIC DEPOSITS

NOTES:

SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)
SURFICIAL GEOLOGY OF SOUTHERN ONTARIO:
ONTARIO GEOLOGICAL SURVEY

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PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

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DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

HYDROGEOLOGICAL ASSESSMENT

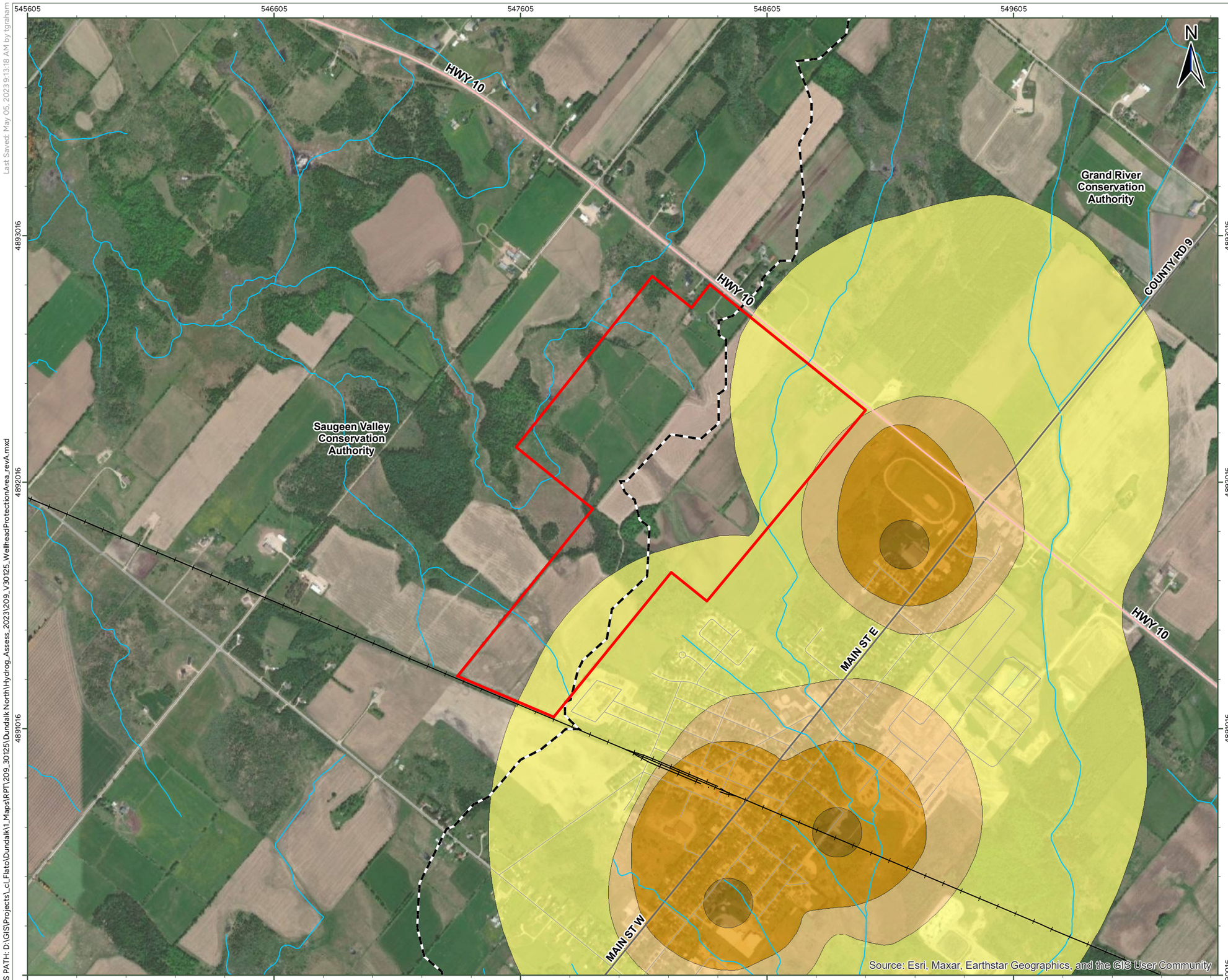
SURFICIAL GEOLOGY

SLR

FIGURE NO: 3

DATE: May 4, 2023

PROJECT NO: 209.V30125.00003



LEGEND

- SITE BOUNDARY
- INTERMITTENT WATERCOURSE
- PERMANENT WATERCOURSE
- CONSERVATION AUTHORITY BOUNDARY

WELLHEAD PROTECTION AREA

- A
- B
- C
- D

NOTES:

SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

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DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

HYDROGEOLOGICAL ASSESSMENT

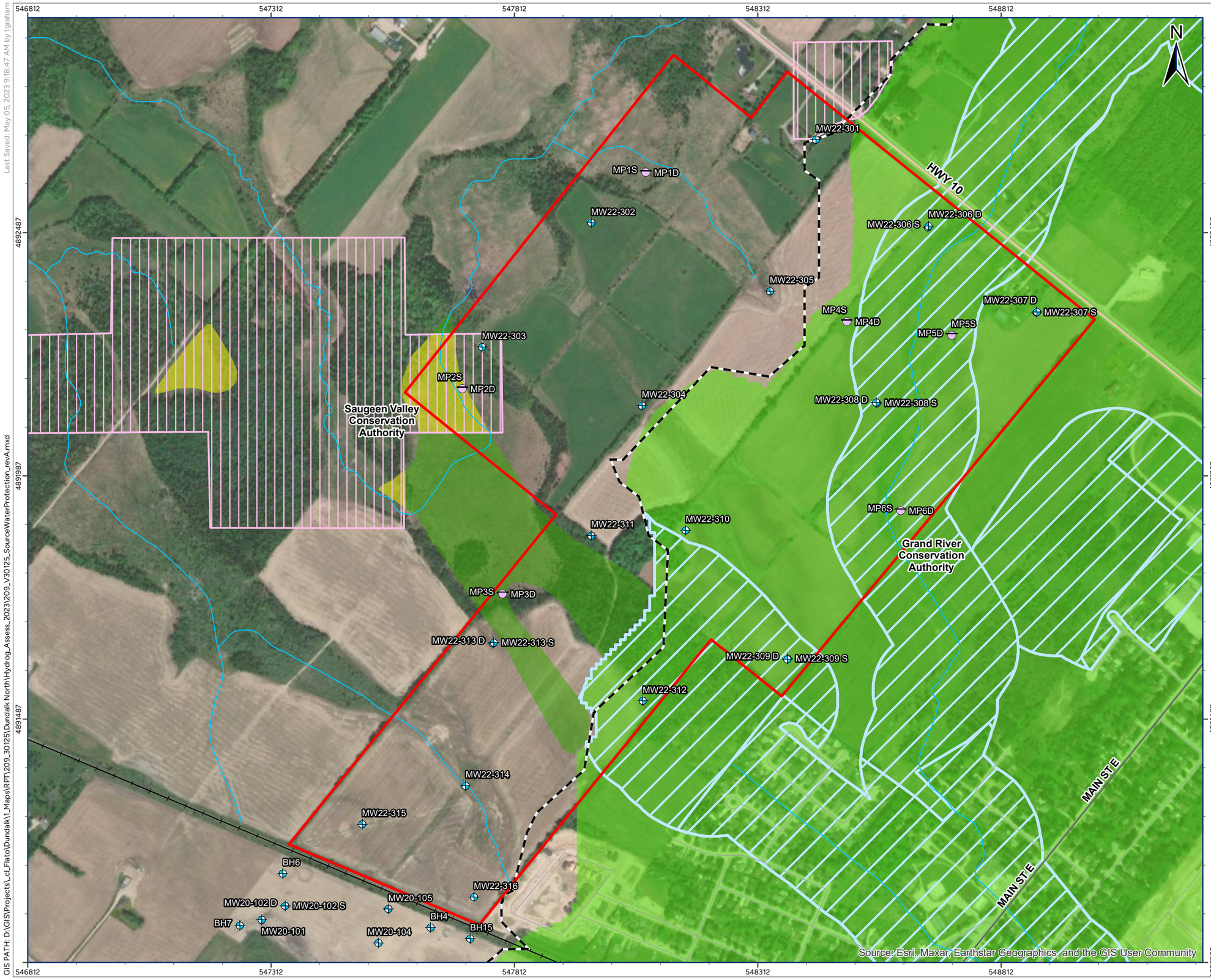
WELLHEAD PROTECTION AREA

SLR

FIGURE NO:
4

DATE: May 5, 2023

PROJECT NO: 209.V30125.00003



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LEGEND

- SITE BOUNDARY
- MONITORING WELL
- MINI-PIEZOMETER
- PERMANENT WATERCOURSE
- CONSERVATION AUTHORITY BOUNDARY
- INTAKE PROTECTION ZONE 3
- HIGHLY VULNERABLE AQUIFERS

SIGNIFICANT GROUNDWATER RECHARGE AREA

- 2
- 4
- 6

NOTES:

SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 75 150 300 450 m

SCALE 1:7,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

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DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

HYDROGEOLOGICAL ASSESSMENT

SOURCE WATER PROTECTION

SLR

FIGURE NO: 5

DATE: May 5, 2023

PROJECT NO: 209.V30125.00003

3.0 Methodology

3.1 Installation of New Monitors

Sixteen (16) boreholes were advanced at select locations across the Site between April and May 2022. The boreholes were drilled using a track-mounted drill rig with 9" outer diameter hollow stem auger. A record of geological and hydrogeological conditions was logged during drilling using a split spoon sampler at approximately 0.76 m intervals down to the targeted depth of the monitoring well. At each borehole location, the soil stratigraphy and classification, moisture content, colour, appearance, soil structure (presence of laminations, heterogeneity, soil weathering, etc.), and odour was noted in general accordance with the Unified Soil Classification System.

All borehole locations were completed as monitoring wells. At five (5) of these locations, nested monitoring wells consisting of a shallow and deep counterpart were installed. The monitoring wells were constructed with a 50-millimetre (mm) diameter polyvinyl chloride (PVC) well pipe. In general, the monitoring wells were constructed with No. 10 slotted PVC screen approximately 1.5 m long. Monitor MW22-306D was constructed with a 3.0 m long screen as it was screened within the clayey silt material. A sand pack was placed around and slightly above the well screen, and the remaining upper portion of the borehole was sealed with bentonite. A steel monument casing was installed over the well at each monitoring location. Upon completion of the monitoring wells, the monitors were tagged registered with the MECP as required by Ontario Regulation (O. Reg.) 903, as amended. Details of the monitoring well construction are summarized in **Table 3-1**. The location of the monitoring wells are depicted in **Figure 6**, and borehole logs are provided in **Appendix B**.

Six (6) nested pairs of piezometers, for a total of twelve (12) mini-piezometers (MP1-S/D through MP6-S/D) were installed within the wetland areas across the Study Area in May 2022. These mini-piezometers were installed to assess groundwater-surface water interactions within the natural heritage features.

An additional five (5) nested pairs of piezometers, for a total of ten (10) mini-piezometers, were installed in April 2023 on the adjacent property north of the Study Area downgradient of the proposed SWM Pond (**Figure 6**). It is our understanding that the proposed SWM pond will discharge water in a northerly direction into the wetland. The purpose of these additional mini-piezometers is to investigate potential impacts in the wetland as a result of the SWM pond.

The mini-piezometers were constructed with a 19 mm diameter steel pipe threaded onto an approximately 0.33 m long screened drive point piezometer Solinst tip, and were installed to the targeted depth through direct push. A pilot hole was not advanced prior to the installation; as such, the screened material at each mini-piezometer location is unknown. The construction details of the mini-piezometers are provided in **Table 3-2**, and the location of the mini-piezometers are shown on **Figure 6**.

Table 3-1: Monitoring Well Details

Monitor	Ground Surface Elevation (masl)	Top of Pipe Elevation (masl)	Screen Interval (masl)	Screened Material
MW22-301	531.0	531.9	523.4-521.9	Sandy SILT TILL
MW22-302	522.6	523.6	518.1-516.5	Sandy SILT TILL
MW22-303	518.4	519.2	513.8-512.3	Sandy SILT TILL
MW22-304	523.5	524.4	519.4-517.9	Silty SAND TILL
MW22-305	523.7	524.8	519.2-517.6	Silty SAND TILL
MW22-306-S	522.9	523.7	519.8 – 518.3	Silty SAND TILL
MW22-306-D	522.8	523.7	516.8 – 513.8	Silty SAND TILL
MW22-307-S	528.0	528.7	523.4 – 521.9	Silty SAND TILL
MW22-307-D	527.9	528.8	519.4 – 517.9	Sandy SILT TILL
MW22-308-S	522.2	523.2	520.7 – 519.2	Silty SAND to Sandy Silt TILL
MW22-308-D	522.4	523.2	518.4 – 516.9	Silty SAND TILL
MW22-309-S	521.9	522.8	517.3 – 515.8	Silty SAND TILL
MW22-309-D	521.8	522.9	512.7 – 511.2	Silty SAND TILL
MW22-310	523.2	524.3	515.6 – 514.1	Silty SAND TILL
MW22-311	521.1	521.9	513.6 – 512.0	Sandy SILT TILL
MW22-312	520.6	521.7	517.6 – 516.0	SAND and GRAVEL
MW22-313-S	520.0	520.9	515.6 – 514.1	Sandy SILT TILL to Silty SAND TILL
MW22-313-D	520.0	521.1	510.9 – 509.3	Silty SAND TILL to Sandy SILT TILL
MW22-314	517.3	518.3	512.7 – 511.2	Silty SAND TILL
MW22-315	518.8	519.7	508.1 – 506.6	Sandy SILT TILL and SAND
MW22-316	520.1	521.0	512.5 – 510.9	Silty SAND TILL

Table 3-1: Mini-Piezometer Details

Monitor	Ground Surface Elevation (masl)	Top of Pipe Elevation (masl)	Screen Interval (masl)
MP1S	519.8	521.1	519.2 – 518.9
MP1D	519.8	521.3	518.3 – 518.0
MP2S	516.9	517.8	516.3 – 516.0
MP2D	516.9	518.2	515.3 – 515.0
MP3S	517.1	517.6	516.4 – 516.0
MP3D	517.0	517.8	515.4 – 515.1
MP4S	523.6	524.2	523.0 – 522.7
MP4D	523.6	524.4	521.9 – 521.6
MP5S	522.8	524.0	522.1 – 521.8
MP5D	522.7	523.9	521.1 – 520.7
MP6S	520.9	522.1	520.3 – 512.0
MP6D	520.9	522.1	519.4 – 519/0
MP301-S [1]	-	1.09	0.53 – 0.76
MP301-D [1]	-	1.31	1.51 – 1.74
MP302-S [1]	-	1.04	0.24 – 0.47
MP302-D [1]	-	0.94	1.28 – 1.51
MP303-S [1]	-	1.09	0.52 – 0.75
MP303-D [1]	-	1.30	1.55 – 1.78
MP304-S [1]	-	1.90	0.54 – 0.77
MP304-D [1]	-	1.33	1.52 – 1.75
MP305-S [1]	-	1.09	0.52 – 0.75
MP305-D [1]	-	1.28	1.56 – 1.79

1. Top of pipe reported in metres above ground surface. Reported top of pipe was measured manually prior to surveying.

3.2 Monitoring Well Development

Following installation, the monitoring wells were developed using dedicated tubing fitted with Waterra inertia foot valves. The monitoring wells were developed to remove any soil fines that may have infiltrated into the monitoring well and its surrounding sand pack during the installation process, and to improve the hydraulic connection between the well and geologic materials. Due to slow recovery, each well was purged dry and allowed to recover. Water was subsequently removed from the monitoring well until discontinuous flow was produced for a second time.

3.3 Water Level Monitoring

Groundwater levels were manually collected in each accessible monitor using a water level meter to collect baseline data prior to development. Water levels were collected on a quarterly basis commencing on May 13, 2022, with the most recent event occurring on March 28, 2023. The surface

water level and groundwater elevation were measured at the mini-piezometer locations to assess groundwater-surface water interactions within the wetland area.

To support a more comprehensive understanding of the Study Area, select monitoring wells and mini-piezometers were instrumented with automated dataloggers on May 13, 2022, in order to obtain continuous groundwater level readings. A barologger was also deployed coincident with the datalogger to measure changes in atmospheric pressure. Continuous water level measurements provide additional insight into the groundwater regime, particularly in response to precipitation events, as well as high-water level conditions. The dataloggers are downloaded every four (4) months while completing manual water level measurements across the Study Area. The dataloggers were removed from the mini-piezometers during the winter period to avoid minimize potential damage due to freeze-thaw events. The dataloggers were re-deployed in the mini-piezometers in spring. The new mini-piezometers installed in the spring 2023 were instrumented with dataloggers on April 26, 2023, to provide continuous groundwater elevations in support of the investigation to understand the potential impacts of the proposed SWM pond on the wetland.

3.4 In-Situ Hydraulic Conductivity and Analysis

In-situ hydraulic conductivity tests were completed in select monitoring wells to establish the permeability (hydraulic conductivity) of the formation in which the wells are screened. Hydraulic conductivity is a parameter that describes the ability of soil to allow water to move through it. The lower the hydraulic conductivity, the less water will be able to move through. Aquifers, such as sandy or gravelly soils, typically have a hydraulic conductivity of 10^{-6} metres per second (m/s) or greater, whereas aquitards (clay or dense silt) have a hydraulic conductivity of 10^{-8} m/s or less.

The testing involved the slug test method, whereby a slug of known volume was removed (rising head test) from each well. The water levels were recorded during the addition, removal, and recovery stages of the slug test using a Diver datalogger temporarily installed in the monitor. The in-situ hydraulic conductivity test was completed once the water level recovered to 90% of static conditions. The slug tests were analyzed in AQTESOLV using the Bouwer-Rice method (1976) for unconfined aquifers.

546812 547312 547812 548312 548812

4892487 4891987 4891487 4890987

N

HWY 10

MAIN ST E

MAIN ST E

Saugeen River Watershed

Upper Grand River Watershed

MW22-301
MP1S MP1D
MW22-302
MW22-306 D
MW22-306 S
MW22-305
MP4S MP4D
MW22-307 D
MW22-307 S
MP5S MP5D
MW22-303
MP2S MP2D
MW22-304
MW22-308 D MW22-308 S
MW22-311
MW22-310
MP6S MP6D
MP3S MP3D
MW22-313 D MW22-313 S
MW22-309 D MW22-309 S
MW22-312
MW22-314
MW22-315
BH6
MW22-316
MW20-102 D MW20-102 S
MW20-105
BH7
MW20-101
BH4
MW20-104
BH15

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

LEGEND

- SITE BOUNDARY
- MONITORING WELL
- MINI-PIEZOMETER
- PERMANENT WATERCOURSE
- DRAINAGE DIVIDE

NOTES:

SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 50 100 200 300 m

SCALE 1:7,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

HYDROGEOLOGICAL ASSESSMENT

SITE PLAN

SLR

FIGURE NO: 6

DATE: May 4, 2023 PROJECT NO: 209.V30125.00003

4.0 Local Geology and Hydrogeology

4.1 Geology and Hydrostratigraphy

4.1.1 Surficial Geology

Based on a review of the Ontario Geological Survey mapping (OGS, 2010), the surficial geology of the Study Area is primarily Elma Till, which is characterized as a stone-poor sandy silt to silty sand till. The wetland found along the western portion of the Study Area is mapped to consist of glaciofluvial sandy river deposits, with minor organic deposits located within wetland areas.

Surficial geology of the Study Area was also characterized by advancing boreholes at select locations across the property. Borehole logs are provided in **Appendix B**. Geological cross-sections of the Study Area, as indicated in **Figure 7**, are presented in **Figure 8** and **Figure 9**.

Based on the results of the drilling program, the Study Area was comprised of a till unit underlying the surficial, overturned topsoil. The till unit is composed of sandy silt to silty sand material and was located at approximately 506.4 (MW22-315) masl to 530.9 (MW22-301) masl. Interbedded within the till unit are discontinuous sand to sandy gravel lenses. The upper 3 to 5 m of the till unit is weathered, and shows root structures, fractures, and oxidized soils. This more permeable weathered soil hosts the water table, primarily due to poor drainage with depth. The glacial till is estimated to be approximately 35 m thick underneath the Site. The glacial till material serves as an aquitard protecting the underlying bedrock aquifer due to its low permeability and substantial thickness.

4.1.2 Bedrock Geology

Boreholes advanced across the Study Area were terminated once the targeted depth of the shallow monitoring wells were reached. As such, bedrock was not encountered during drilling. However, a review of the MECP WWR database indicates that the bedrock in the area lies between 22 mbgs (MECP well ID 2506475) to 36 mbgs (MECP well ID 2515624). The bedrock consists mostly of dolostone/limestone, likely from the Guelph Formation.

Source Protection documents from the GRCA indicates that the bedrock is composed of 88 m of both the Guelph Formation and the Gasport Formation (Lake Erie Region Source Protection Committee, 2021). The Guelph Formation consists of porous, fine to medium crystalline, medium to massive irregularly bedded dolostone (Armstrong, 2010). The underlying Gasport Formation consists of thick- to massive-bedded, fine to coarse-grained dolostone and dolomitic limestone (Armstrong, 2010).

4.2 Groundwater Monitoring

4.2.1 Groundwater Monitoring

Groundwater level measurements were recorded at each accessible monitoring well and mini-piezometer location commencing in May 2022 with the most recent event occurring in March 2023. Monitors MP1 S/D, MP4 S/D, MP5 S/D, MW22-302, MW22-304, MW22-306 S/D, MW22-309S, MW22-313 S/D and MW22-316 were instrumented with Diver dataloggers to collect continuous water level measurements at 12-hour intervals. Groundwater elevations and hydrographs are provided in **Appendix C**. It is noted that continuous groundwater elevations are unavailable for MW22-313 S/D between June 3 and June 14 as the logger was temporarily removed from the well. Continuous water levels are also periodically unavailable between June 27 and July 4 at all monitoring wells due to hydraulic conductivity testing.

Groundwater elevations across the Study Area fluctuated seasonally between May 2022 and March 2023. During the spring 2022 monitoring event, water levels in the monitoring wells ranged between

515.13 masl (MW22-301) and 530.83 (MW22-313D), where groundwater elevations were generally within the upper 2 m. In comparison, water levels during the summer 2022 event ranged between 514.85 masl (MW22-315) and 528.42 masl (MW22-301). During the fall 2022 monitoring event, groundwater levels ranged between 513.80 masl (MW22-315) and 526.23 masl (MW22-301). Groundwater levels were measured to be highest during the spring 2023 monitoring event with groundwater levels ranging between 516.56 masl (MW22-315) and 530.21 masl (MW22-301). It is noted that tile drains are present across the majority of the Study Area, which can influence groundwater elevations locally. The tile drains situated beneath the field in the vicinity of the Site drain to the wetland directly north of the Site.

Groundwater elevations between the shallow and deep monitors at the nested monitoring well locations are comparable, although flashier water levels (in response to precipitation) were observed in the shallow monitors. This is attributed to the fact that the shallow monitor is screened within the weathered till, and the deeper monitor is screened within the unweathered till.

Groundwater elevations in mini piezometers demonstrate a similar response to seasonal fluctuations as the groundwater monitors. Groundwater elevations were high in spring, gradually decreased moving into the summer.

4.2.2 Horizontal Groundwater Flow

The interpreted groundwater contours for March 2023, representing a generally high-water table position, are presented in **Figure 10**. Water levels during spring conditions are of particular interest as it typically represents the highest groundwater elevations and will therefore inform the engineering design of residential development. The interpreted groundwater flow direction is generally in southwesterly direction along the west portion of the Study Area. Along the eastern portion of the Study Area, the groundwater flow direction is influenced by localized flow towards the creek. There is a watershed drainage divide that runs through the centre of the Study Area in a north-south direction separating the two directions of groundwater flow. Shallow groundwater contours at the Study Areahave been interpreted mimic ground surface topography. The horizontal component of groundwater flow travels in the weathered upper till.

4.2.3 Vertical Groundwater Flow

Vertical hydraulic gradients were calculated between the shallow and deep monitors at the nested monitoring well locations to assess groundwater discharge/recharge conditions across the Study Area. Vertical hydraulic gradients were also calculated at the mini-piezometer location to assess groundwater-surface water interactions within the wetland located east of the Study Area. The vertical hydraulic gradients are provided in **Table C-3, Appendix C**.

Groundwater elevations were comparable between the shallow and deep monitor at nested location MW22-309. Measured hydraulic gradients ranged from 0.01 m/m to 0.03 m/m, indicating very weak to negligible downward groundwater movement. At nested location MW22-306, MW22-307, and MW22-308, consistently weak upward hydraulic gradients were recorded (-0.01 m/m to -0.12 m/m), indicating weak groundwater discharge conditions. There was no notable trend at nested location MW22-313.

The shallow and deep monitor at each nested monitoring well locations were screened within the silty sand to sandy silt till, suggesting that in general, weak groundwater discharge conditions are observed within the till unit.

Groundwater elevations at MP6 was generally higher in the deeper piezometers than the shallow, suggesting there are some groundwater contribution to this feature. In contrast, mini piezometers at locations MP2, MP3, MP4, and MP5 generally exhibit groundwater elevations higher in the shallow piezometer, where data exists, indicating that the features are primarily sustained by surface water run-off and precipitation. This is supported by the fact that surface water levels at these monitoring locations are commonly dry in the summer period. Groundwater elevations were comparable between

the shallow and deep mini piezometers at MP1, indicating that there were negligible (i.e., -0.03 to 0.03 m/m) hydraulic gradients.

4.3 Hydraulic Conductivity

In-situ hydraulic conductivity tests were completed at six groundwater monitoring wells at the Study Area. The results of the hydraulic conductivity tests are provided in **Table 4-1**, and the AQTESOLV analysis are provided in **Appendix D**.

Table 4-1: Hydraulic Conductivity

Monitor	Hydraulic Conductivity (m/s)	Screened Strata
MW22-306S	1.4 x10^{-8}	Silty sand till
MW22-306D	7.6 x10^{-8}	Silty sand till
MW22-309S	1.0 x10^{-8}	Silty sand till
MW22-313S	2.2 x 10^{-7}	Silty sand till
MW22-313D	7.6 x 10^{-10}	Silty sand till to Sandy silt till
MW22-316	2.6 x 10^{-7}	Silty sand till

The geometric mean hydraulic conductivity for the five (5) tested monitoring wells is 5.7 x 10^{-8} m/s, with a measured range of 2.2 x 10^{-7} to 1.4 x 10^{-8} m/s. This corresponds to the upper weathered portion of the glacial till. Monitor MW22-313D was screened deeper in the unweathered glacial till aquitard and was found to have a hydraulic conductivity 30 times lower than the upper material at 7.6 x 10^{-10} m/s. The results are consistent with those reported by Freeze and Cherry (1979) for similar soils, and for soils located on the Glenelg Phase 2 development area which is situated immediately south of Glenelg Phase 3.

4.4 MECP Water Well Record Database

Well records from the MECP WWR database were reviewed to assess the stratigraphy and water use of wells located within a 500 m radius of the Study Area. The locations of the wells are shown in **Figure 11**, and a summary is provided in **Appendix E**. Copies of the well records are provided in **Appendix E**.

Fifty (50) MECP wells were identified within 500 m of the property. Twenty-five (25) of those wells were for water supply purposes, fourteen (14) were observation/monitoring wells or test holes, nine (9) were noted to be abandoned and two (2) wells were without a noted water use. None of the water supply wells were noted to be less than 10 m in depth. The wells were screened within one of two units: the overburden aquifer and the deeper bedrock aquifer.

Several local residential wells tap into the upper 10 m of the bedrock, with the bedrock surface generally at about 22 to 36 mbgs. Based on the pumping rate, a sufficient water supply is available within the bedrock aquifer.

The bedrock aquifer is composed of both the Guelph Dolostone Formation and the underlying Gasport Dolostone Formation. The upper bedrock is inferred to be of low permeability, and the municipal production zone lies in the middle of the sequence. Municipal well D4 is found approximately 460 m southeast of the Site boundary, and D3 and D5 to the southeast approximately 1020 m and 1225 m, respectively (**Figure 11**). Several local residential wells also tap a sand and gravel deposit that overlies the bedrock. This deposit is laterally discontinuous, as it is not present at many locations.

546812 547312 547812 548312 548812

4892487 4891987 4891487 4890987

A 7167449

B 1700350

1700351

MW22-301

MP1S MP1D

MW22-302

HWY 10

MW22-306 D

MW22-306 S

1700352

1701454

2515188

MW22-305

MW22-307 S MW22-307 D

MP4S MP4D

MP5D MP5S

Saugeen River Watershed

MW22-303

MP2S MP2D

MW22-304

MW22-308 D MW22-308 S

MP6S MP6D

MW22-310

MW22-311

Upper Grand River Watershed

2515004 A'

2515005

MP3S MP3D

2512639

MW22-313 D MW22-313 S

MW22-309 D MW22-309 S

2505795

MW22-312

7331881

7331884

2503216

2506029

7331883 7331885

2509109

MW22-314

MAIN ST E

7331886 7331882

MW22-315

7385248

BH6 7389879

7285242

MW22-316

MW20-102 S MW20-102 D MW20-105

7237016

2502801

MW20-101

BH4

2515624 2500900

BH7

MW20-104

BH15

B' 2506475

7385249

2500882

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

LEGEND

- SITE BOUNDARY
- MONITORING WELL
- MINI-PIEZOMETER

MECP WELL LOCATION (WWIS, 2022)

- LIVESTOCK
- MUNICIPAL
- MONITORING
- DOMESTIC
- UNCLASSIFIED
- PERMANENT WATERCOURSE
- DRAINAGE DIVIDE
- CROSS SECTION
- RAIL TRAIL

NOTES:

SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 50 100 200 300 m

SCALE 1:7,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

HYDROGEOLOGICAL ASSESSMENT

CROSS-SECTION LOCATIONS

SLR

FIGURE NO: 7

DATE: May 4, 2023 PROJECT NO: 209.V30125.00003

A

NORTHWEST

7167449

MW22-302
522.64 m

MW22-305
523.74 m

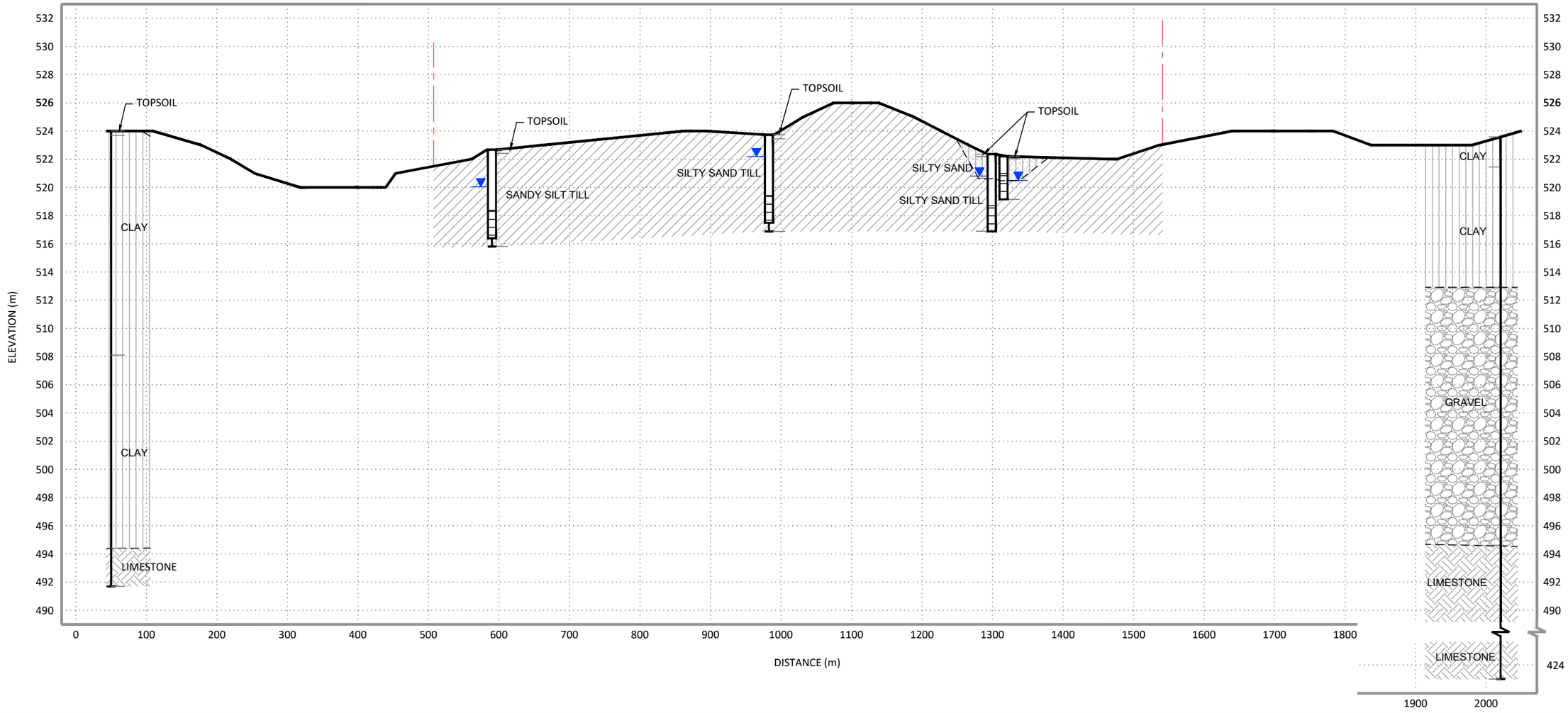
MW22-308D
522.35 m

MW22-308S
522.20 m

A'

SOUTHEAST

2515005



LEGEND:

- PROPERTY BOUNDARY
- MONITORING WELL
- MECP WATER WELL
- WATER LEVEL (MARCH 28, 2023)
- CLAY
- SILTY SAND
- SILTY SAND TILL TO SANDY SILT TILL
- SAND AND GRAVEL
- BEDROCK
- WELL
- SCREENED INTERVAL
- BOREHOLE
- END OF HOLE

NOTES:

1. MW22-308S/D AND MW22-313 WERE BOTH FROZEN DURING THE MARCH 2023 WATER LEVEL EVENT.

0 2.5 5 10 15 m

VERTICAL SCALE 1:300

0 50 100 200 300 m

SCALE 1:6,000

WHEN PLOTTED CORRECTLY ON A 11 x 17 PAGE LAYOUT

NAD 1983 UTM Zone 17 T

FLATO DEVELOPMENTS INC.
NORTHWEST DEVELOPMENT
DUNDALK, ON

HYDROGEOLOGICAL ASSESSMENT

GEOLOGICAL CROSS SECTION A-A'

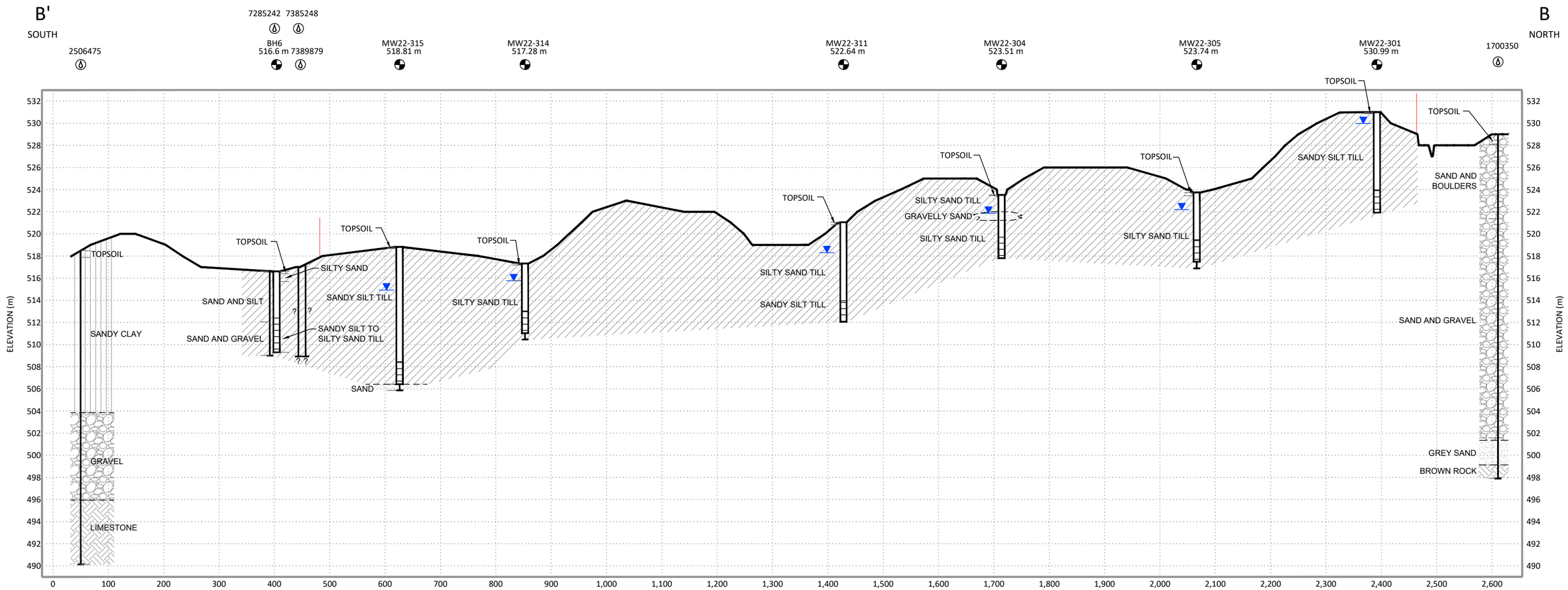
SLR

FIGURE NO:
8

DATE: May 1, 2023

PROJECT NO: 209.30125.00003

Cadfile name: S_209-30125-00003-A4.dwg



LEGEND:

- PROPERTY BOUNDARY
- MONITORING WELL
- MECP WATER WELL
- WATER LEVEL (MARCH 28, 2023)
- CLAY
- SILTY SAND
- SILTY SAND TILL TO SANDY SILT TILL
- SAND AND GRAVEL
- SAND
- BEDROCK
- WELL
- SCREENED INTERVAL
- BOREHOLE
- END OF HOLE

NOTES:
1. MW22-308S/D AND MW22-313 WERE BOTH FROZEN DURING THE MARCH 2023 WATER LEVEL EVENT.

0 2.5 5 10 15 m
VERTICAL SCALE 1:300
0 50 100 200 300 m
SCALE 1:6,000
WHEN PLOTTED CORRECTLY ON A 11 x 20 PAGE LAYOUT
NAD 1983 UTM Zone 17 T

FLATO DEVELOPMENTS INC.
NORTHWEST DEVELOPMENT
DUNDALK, ON

HYDROGEOLOGICAL ASSESSMENT

GEOLOGICAL CROSS SECTION B-B'

SLR

FIGURE NO:
9

DATE: May 1, 2023
PROJECT NO: 209.30125.00003

Cadfile name: S_209-30125-00003-A4.dwg

546812 547312 547812 548312 548812

4892487 4891987 4891487 4890987

N

Saugeen River Watershed

Upper Grand River Watershed

MP1D
MP1S 520.11
MW22-301 530.21
MW22-302 521.43
MW22-303 517.78
MP2D
MP2S 517.24
MW22-304 523.39
MW22-305 523.74
MW22-306 D
MW22-306 S 522.70
MW22-307 S 527.60
MW22-307 D
MP4D
MP4S 523.71
MP5D
MP5S 522.76
MW22-308 D
MW22-308 S Frozen
MP6D
MP6S 521.19
MW22-309 D
MW22-309 S 521.72
MW22-310 522.95
MW22-311 519.65
MP3D
MP3S 517.16
MW22-312 Frozen
MW22-313 S Frozen
MW22-313 D
MW22-314 517.27
MW22-315 516.56
MW22-316 519.21
BH6
MW20-102 D
MW20-102 S
MW20-101
BH7
MW20-105
MW20-104
BH4
BH15

518 520 522 524 526 528 530

HWY 10

MAIN ST E

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

LEGEND

- SITE BOUNDARY
- MONITORING WELL
- MINI-PIEZOMETER
- INFERRED GROUNDWATER ELEVATION CONTOUR
- INFERRED GROUNDWATER FLOW DIRECTION
- 519.1 GROUNDWATER ELEVATION (MARCH 28, 2023)
- PERMANENT WATERCOURSE
- DRAINAGE DIVIDE

NOTES:

SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 50 100 200 300 m

SCALE 1:7,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

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DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

HYDROGEOLOGICAL ASSESSMENT

INTERPRETED GROUNDWATER FLOW DIRECTION - MARCH 2023

SLR

FIGURE NO: 10

DATE: May 10, 2023 PROJECT NO: 209.V30125.00003

Last Saved: May 05, 2023 9:04:47 AM by tgraham

GIS PATH: D:\GIS\Projects_cl_Flato\Dundalk1_Maps\RPT\209_30125\Dundalk North\Hydrog_Assess_2023\209_V30125_MECP_Well_Locations_revA.mxd

LEGEND

- SITE BOUNDARY
- SITE BOUNDARY (500M BUFFER)
- INTERMITTENT WATERCOURSE
- PERMANENT WATERCOURSE

MECP WELL LOCATION (WWIS, 2023)

- LIVESTOCK
- MUNICIPAL
- MONITORING
- DOMESTIC
- TEST HOLE
- NOT USED
- UNCLASSIFIED

NOTES:

SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 50 100 200 300 m

SCALE 1:5,000
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N
THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

HYDROGEOLOGICAL ASSESSMENT

MECP WELL LOCATIONS

SLR

FIGURE NO: 11

DATE: May 5, 2023

PROJECT NO: 209.V30125.00003

5.0 Impact Assessment for Potential Receptors

5.1 Shallow Groundwater Features

Groundwater elevations across the Study Area are relatively shallow (generally less than 5 m) in the spring and fluctuate on a seasonal basis. Higher water levels were observed in late winter into spring following precipitation events and snowmelt. Water levels decreased into the drier summer months. Water levels generally follow ground surface elevations, where higher groundwater elevations occur at the north-western edge of Study Area, and lower groundwater elevations within the southern portion of the property.

During the spring season, the water level is hosed by surficial silty sand, and sand/gravel pockets that is noted to be discontinuous across the property. Water levels in these monitors drop into the underlying weathered till unit in the drier summer months, and subsequently into the unweathered till. The weathered till unit has an estimated hydraulic conductivity of 2×10^{-7} m/s. Based on a review of the MECP WWR records, the till unit extends to approximately 35 mbgs. The hydraulic conductivity of the unweathered till aquitard is estimated at 7.6×10^{-10} m/s, approximately 30 times lower than the weathered till.

5.2 Potable Wells

The Village of Dundalk relies on groundwater supply from wells screened within the dolostone bedrock that extends under the Site. The well capture zones have been documented by the Lake Erie Region Source Protection Committee and extend under the eastern portion of the Study Area within the bedrock. The upper bedrock is inferred to be of low permeability, and the municipal production zone lies in the middle of the sequence. Municipal well D4 is found approximately 460 m southeast of the Study Area boundary, and D3 and D5 to the southeast approximately 1020 m and 1225 m, respectively (**Figure 11**). Given the thickness of the aquitard soils at this Study Area and the fact that there will be no commercial facilities or onsite sewage disposal through private septic beds, no impact to the groundwater quality in the aquifer is expected. In addition, there are no anticipated hydrogeological impacts due to the proximal distance of the municipal wells to the Study Area. Nevertheless, pre-development recharge will have to be maintained in the post-development condition.

Rurally there are several surrounding individual residential private wells that tap into the dolostone bedrock and have been drilled to depths of approximately 28 to 83 m. These residential water wells are a relatively low draw on the groundwater and given the thickness of the overlying clay aquitard, is not expected to be affected by the proposed development provided groundwater recharge is maintained.

Monitoring wells have been installed at the property as part of the site-specific investigations to document stabilized groundwater conditions. Monitoring is on-going and is planned to continue through construction. When the monitoring wells are determined to be no longer required, or if they are determined to be at risk of damage from grading and construction, the wells should be properly decommissioned in accordance with O. Reg. 903. Decommissioning a well which is no longer in use helps ensure the safety of those in the vicinity of the well, prevents surface water infiltration into an aquifer via the well, prevents the vertical movement of water within a well, conserves aquifer yield and hydraulic head, and can potentially remove a physical hazard.

5.3 Surface Water Features

A number of small unnamed tributaries are present at the Study Area; there are two tributaries located in the north and south ends of the Study Area that drain towards the northeast within the SRW, and one tributary within a wetland situated along in the eastern portion of the Study Area that drains towards the south within the GRW. There are also unevaluated wetlands on the Site. The wetlands will be evaluated as part of the EIS to be submitted under separate cover.

Groundwater monitoring completed across the Study Area indicates that in general, the wetland features across the property are primarily fed by precipitation and surface water run-off. However, at mini-piezometer location MP6 located within the GRW, consistently upward hydraulic gradients were recorded indicating groundwater contributions to this feature. A site-specific water balance and corresponding mitigation measures will be assessed in order to ensure that these features are not affected by development.

5.4 Construction Dewatering

Typically, temporary excavations for basements will remain dry from a groundwater inflow perspective, due to the low permeability soils and relatively shallow depths. In the wet season, there may be some temporary groundwater discharge that can be handled by sump and pump techniques. Due to the expected low volumes, it is not expected that Permit to Take Water (PTTW) or Environmental Activity and Sector Registry (EASR) approvals will be required for basement foundations which are anticipated to be fairly shallow. Additional evaluations of dewatering requirements will be completed during detailed design.

6.0 Conclusion

The following presents the conclusions of the Hydrogeological Assessment for the proposed Glenelg Phase 3 development.

- The Study Area is predominantly underlain by surficial sandy silt to silty sand till deposits up to 5 m thick. The upper weathered portion of the till unit has an estimated average hydraulic conductivity of 5.7×10^{-8} m/s. The unweathered glacial till aquitard was found to have a hydraulic conductivity 30 times lower at 7.6×10^{-10} m/s.
- The Study Area lies along a watershed drainage divide that runs through the centre of the property in a north-south direction.
- Groundwater is interpreted to flow primarily in a southwesterly direction along the western portion of the Site and towards the eastern creek direction along the eastern portion of the Study Area.
- There are groundwater contributions to select wetland areas within the GRW, notably at mini-piezometer location MP6. It will be important to maintain groundwater contributions to these natural heritage features. No groundwater discharge conditions were recorded at the remaining mini-piezometer locations. Instead, these features are primarily sustained by precipitation and surface water run-off.
- It is recognized that the Site is located within a WHPA and SGRA.
- Municipal well D4 is located approximately 460 m southeast of the Study Area. In addition, municipal wells D3 and D5 are located approximately 1020 m and 1225 m, respectively, southeast of the Study Area. There are no anticipated hydrogeological impacts due to the proximal distance of the municipal wells to the proposed development area and low permeable surficial soils present at the Study Area.
- There are several surrounding individual residential private wells that tap into the dolostone bedrock and overburden aquifer unit. The residential water wells are a relatively low draw on the groundwater and given the thickness of the overlying clay aquitard, is not expected to be affected by the proposed development provided groundwater recharge is maintained.

7.0 Closure

We trust that this report satisfies your requirements at this time.

Regards,

SLR Consulting (Canada) Ltd.

Jessica Vu, M.Sc., G.I.T.
Environmental Scientist

Michael Venhuis, M.Sc., P.Geo.
Senior Hydrogeologist

Claire Elliott, M.Sc., G.I.T
Environmental Scientist

8.0 References

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Appendix A Development Plan

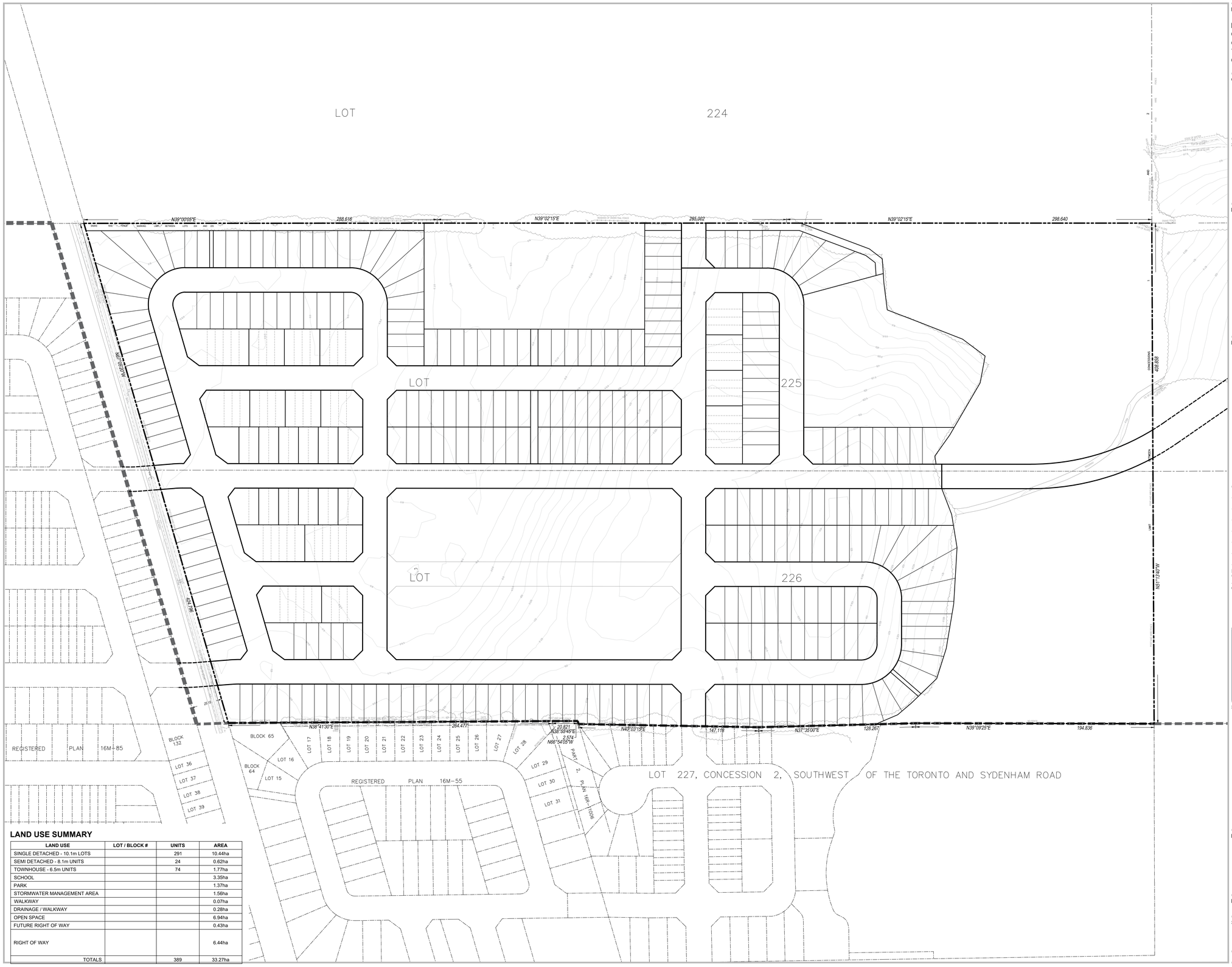
Hydrogeological Assessment

Glenelg Phase 3

Dundalk Village Two Inc.

SLR Project No.: 209.30125.00003

May 25, 2023



LAND USE SUMMARY

LAND USE	LOT / BLOCK #	UNITS	AREA
SINGLE DETACHED - 10.1m LOTS		291	10.44ha
SEMI DETACHED - 8.1m UNITS		24	0.62ha
TOWNHOUSE - 6.5m UNITS		74	1.77ha
SCHOOL			3.35ha
PARK			1.37ha
STORMWATER MANAGEMENT AREA			1.56ha
WALKWAY			0.07ha
DRAINAGE / WALKWAY			0.28ha
OPEN SPACE			6.94ha
FUTURE RIGHT OF WAY			0.43ha
RIGHT OF WAY			6.44ha
TOTALS		389	33.27ha

LEGAL DESCRIPTION

PART OF LOTS 225 AND 226
CONCESSION 2, SOUTHWEST OF THE TORONTO AND SYDENHAM ROAD
GEOGRAPHIC TOWNSHIP OF PROTON
TOWNSHIP OF SOUTHGATE
COUNTY OF GREY

OWNER'S CERTIFICATE

I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.

DATE: _____

SHAKIR REHMATULLAH - PRESIDENT
DUNDALK VILLAGE TWO INC.

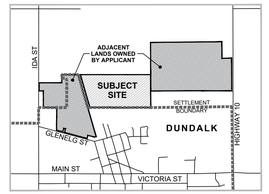
SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE: _____

DAN DZALDOV - O.L.S.
SCHAEFFER DZALDOV BENNETT LTD.

KEY PLAN



SUBJECT SITE

NORTH

SCALE
0 .25 .5 .75 1km

LEGEND

- PROJECT BOUNDARY LINE
- RIGHT OF WAY LINE
- BLOCK LINE
- LOT LINE
- PARCEL FABRIC

REVISION No.	DATE	ISSUED / REVISION	BY

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT R.S.O. 1990 C.P.13 AS AMENDED

A. AS SHOWN
B. AS SHOWN
C. AS SHOWN
D. 369 SINGLES, 18 SEMIS, & 72 TOWNHOUSES
E. AS SHOWN
F. AS SHOWN
G. AS SHOWN
H. MUNICIPAL WATER SUPPLY
I. LOAM/SILT LOAM
J. AS SHOWN
K. ALL SERVICES AS REQUIRED (WATER, SANITARY, STORMWATER, HYDRO)
L. AS SHOWN

113 COLLIER STREET
BARRIE, ON, L4M 1H2
P: 705 728 0045 F: 705 728 2010
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PLANNING
URBAN DESIGN
& LANDSCAPE
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STAMP

DATE	MAY 10, 2023
FILE No.	15184AT
SCALE	1:1,400 (ARCH D)
DRAWN BY	M.M.
CHECKED BY	K.C.
OTHER	

PROJECT

GLENELG PHASE 3

DUNDALK VILLAGE TWO INC.
3621 HIGHWAY 7 EAST, SUITE 503
MARKHAM, ON L3R 0G6
P:(905) 479-9292 F:(905) 429-9165
WWW.FLATOGROUP.COM

NORTH

FILE NAME
DRAFT PLAN OF SUBDIVISION

DWG No. 1 of 1

SCALE BAR

0 7 14 21 28 35 52.5 70 105 140m

MEASUREMENTS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

N:\Southgate\15184AT\Drawings\Draft Plan\CAD\

Appendix B Borehole Logs

Hydrogeological Assessment

Glenelg Phase 3

Dundalk Village Two Inc.

SLR Project No.: 209.30125.00003

May 25, 2023

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Borehole LOG

BOREHOLE NO: ESA-3
SURFACE ELEVATION:

DEPTH (m)	SOIL DESCRIPTION	SAMPLE ID	% Recovery	TEST DATA (■SPT Count / ◆ % Moisture)	WELL COMPLETION NOTES
0	**TOPSOIL** Silty sand, organics, brown, soft, moist	0-2	45.8	5	
1	**Silty SAND TILL** Fine Sand, silty, trace clay, some gravel (angular) and some cobbles, light brown, soft moist to dry	*4-4.5 / DUP-3D	66.7	7	
		*5-7	50.0	14	
2		7.5-9.5	45.8	13	
3		10-12	91.7	>50	bentonite seal
4		12.5-14.5	60.4	>50	
5		15-17		49	
		*17.5-19.5 / DUP-3C	79.2	>50	
6		20-22	33.3		
	End of borehole at m				

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 2, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

Sheet 1 of 1

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-301
SURFACE ELEVATION: 530.99 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: SPT Count / % Moisture	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	530.99	**TOPSOIL**									
	530.86	Fine-coarse sand, silty, some organics (rootlets), gravel and cobbles (sub-angular), dark brown, soft, moist		0-2	37.5		7				
		Sandy SILT TILL Fine sand, some medium-coarse sand, some gravel (sub-angular/sub-rounded), occasional cobbles, trace clay, light brown, soft, moist-wet. Increasing gravel content with depth		2.5-4.5	41.7		16			bentonite seal	
1											530
				5-7	58.3		14				
2											529
	528.53	crushed cobbles, becomes hard/dense		7.5-9.5	58.3		40				
3	527.94	Sub-angular/angular gravel, crumbly, moist		10-12	58.3		>50				528
	527.18	Lower frequency (trace) medium-coarse sand, dense, moist		12.5-14.5	20.8		>50			grout	
4											527
				15-17	33.3		>50				
5											526
				17.5-19.5	12.5		>50				
6	524.89	No recovery			0.0		>50			bentonite seal	525
	524.13	**Sandy SILT TILL** Silty, trace medium-coarse sand, trace gravel, crushed cobbles, brown-grey, crumbly, dense, dry		22.5-24.5	4.2		>50				
7	523.37	Increased clay content, moist-wet									524
				25-27	12.5		>50			silica sand 50 mm 010 slot PVC pipe	
8											523
				27.5-29.5	16.7		>50				
9										end cap	522
		End of monitoring well at 521.92 m Well Completion Details: Screened interval from 523.45 m to 521.92 m Elevation at top of pipe (TOP) = 531.86 m Groundwater Information: Depth to groundwater from TOP = 1.03 m (May 13, 2022) * denotes soil sample taken for lab analysis									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 25, 2022
LOGGED BY: AW
DRILLED BY: Orbit Garrant

Notes: SPLIT SPOON; NO RECOVERY

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-302
SURFACE ELEVATION: 522.64 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80 100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	522.64	**TOPSOIL**								cement	
	522.39	Black-brown									
		Sandy SILT TILL		0-2	100.0		4				522
		Some CLAY, trace organics, trace gravel, dark-light brown, loose, dry-moist									
	521.88	Moist									
1				2.5-4.5	79.2		10				
	521.12	Wet									521
				5-7	16.7		3				
2											
	520.30	Increasing gravel with depth (angular / sub angular), increasing density with depth								bentonite seal	
				7.5-9.5	100.0		25				520
3	519.59	Wet									
				10-12	75.0		45				519
	518.83	Moist-wet									
4				12.5-14.5	83.3		42				
											518
				15-17	66.7		>50				
5											
	517.31	Drilled through cobble from 5.33 m - 5.64 m								silica sand 50 mm 010 slot PVC pipe	
	517.00	Grey-light brown									517
				18.5-20	41.7		>50				
6										end cap silica sand	
				20-22	41.7		>50				
										bentonite seal	516
		End of monitoring well at 515.78 m									
		Well Completion Details: Screened interval from 518.07 m to 516.54 m Elevation at top of pipe (TOP) = 523.59 m									
		Groundwater Information: Depth to groundwater from TOP = 2.63 m (May 13, 2022)									
		* denotes soil sample taken for lab analysis									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 19, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-303
SURFACE ELEVATION: 518.35 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: SPT Count / % Moisture	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	518.35	**TOPSOIL**								cement	
	518.10	**Sandy SILT TILL** Trace silt, trace medium sand, brown, orange-black mottling, loose, moist		0-2	75.0		4				518
1				2.5-4.5	75.0		9				517
	516.83	Silty, trace gravel, brown, loose, soft, wet		5-7	8.3		4				
2	516.06	Increasing gravel with depth, light brown, dense, firm, moist		7.5-9.5	75.0		49			bentonite seal	516
3				10-12	58.3		>50				515
4				12.5-14.5	8.3		>50				514
5				15-17	8.3		>50			silica sand 50 mm 010 slot PVC pipe	
	513.02	Very dense/hard		17.5-19.5	37.5		>50				513
6				20-22	12.5		>50			end cap silica sand	512
										bentonite seal	

End of monitoring well at 511.49 m

Well Completion Details:
Screened interval from 513.78 m to 512.25 m
Elevation at top of pipe (TOP) = 519.22 m

Groundwater Information:
Depth to groundwater from TOP = 1.65 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 19, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-304
SURFACE ELEVATION: 523.51 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80 100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	523.51	**TOPSOIL**									523
	523.46	Silt, organics (rootlets), dark brown, trace fine sand, moist									
		Silty SAND TILL		0-2	50.0		■14				
		Some gravel (sub-angular/sub-rounded), trace, organics, trace medium sand, occasional cobbles, orange mottling, soft-firm, moist									
	522.72	Very loose, saturated									
1				2.6-4.5	62.5		■29				
	521.99	**Gravelly SAND**									522
		Fine-coarse sand, trace silt, gravel (sub-angular/sub-rounded), cobbles, brown, very loose, saturated		5-7	33.3		■45			bentonite seal	
2											
	521.22	**Silty SAND TILL**									521
		Silty, trace medium-coarse sand, some gravel (sub-angular/sub-rounded), crushed cobbles, trace clay, brown, compact, saturated		7.5-9.5	33.3		■35				
3				10-10.5	54.2		■>50				
				10.4-11.1							
	519.70	Trace clay, less sand with depth, crumbly, dry									520
4				12.5-14.5	20.8		■>50				
	518.94	trace gravel, grey, very dense, moist-wet									519
				15-17	25.0		■>50			silica sand 50 mm 010 slot PVC pipe	
5											
				17.5-18.5	12.5		■>50				518
										end cap	

End of monitoring well at 517.87 m

Well Completion Details:
Screened interval from 519.40 m to 517.87 m
Elevation at top of pipe (TOP) = 524.44 m

Groundwater Information:
Depth to groundwater from TOP = 1.65 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)

DRILL DATE: April 26, 2022
LOGGED BY: AW
DRILLED BY: Orbit Garrant

Notes: SPLIT SPOON

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-305
SURFACE ELEVATION: 523.74 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80 100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	523.74	**TOPSOIL**									
	523.44	**Silty SAND TILL** Silty, trace organics, trace clay nodules, brown, orange-black mottling, firm, loose, moist		*0-2.5 / DUP-3A	100.0		■ 5		▼		
	522.98	Firm, compact, increasing gravel content with depth									523
1				2.5-5	50.0		■ 9				
	522.22	Trace medium-coarse sand, trace gravel, trace cobbles, light brown-grey, soft, very loose, wet		*5-7.5	87.5		■ 2				522
2										bentonite seal	
	521.45			7.5-10	45.8		■ 13				521
3	520.69	Saturated		10-12.5	45.8		■ 12				
	519.93	Gravelly, some silt, trace cobble, grey-light brown, dense, firm (crumbles), moist		12.5-15	45.8		■ >50				520
4											
	519.17	Grey, dense, hard, wet		15.-17.5	54.2		■ >50				519
5										silica sand 50 mm 010 slot PVC pipe	
				17.5-20	62.5		■ >50				518
6										end cap silica sand	
				20-22.5	66.7		■ >50			bentonite seal	517
		End of monitoring well at 516.88 m Well Completion Details: Screened interval from 519.17 m to 517.64 m Elevation at top of pipe (TOP) = 524.83 m Groundwater Information: Depth to groundwater from TOP = 1.56 m (May 13, 2022) * denotes soil sample taken for lab analysis									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 22, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-306D
SURFACE ELEVATION: 522.84 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE ID	% Recovery	TEST DATA (SPT Count / % Moisture)	WELL COMPLETION NOTES	ELEVATION (m)
0	522.84	**TOPSOIL**	0-0.4	45.8	6		522
	522.71	Organics (rootlets), clayey silt, trace fine sand, wormholes, soft, moist	0.4-0.7				
			0.7-0.9				
		SAND Fine-medium sand (layered 1-2mm), silty, grey-brown/orange mottling, soft, loose-compact, wet	2.5-3.3	58.3	22		
1	521.82	**Silty SAND TILL** Gravel (Rounded to sub-rounded), fine-coarse sand, trace cobbles, trace silt, grey, loose, saturated	3.3-3.7				521
	521.21	Trace gravel (sub-angular/sub-rounded), trace cobbles, increased silt with depth	5-5.3	50	18		
			5.3-6.0				
2			7.5-9.5	50.0	>50		520
						bentonite seal	
3			10-12	16.7	>50		519
	518.98		12.5-12.7	25.0	>50		
4		grey, dense/hard (increasing with depth), moist	12.7-13				
	518.27	grey, dry	15-17	8.3	>50		518
5							
			17.5-19.5	20.8	>50		517
6				0.0			
			22.5-24.5	45.8	>50	silica sand 50 mm 010 slot PVC pipe	516
7							
				0.0			515
8			27.5-29.5	50.0	>50		
							514
9						end cap	

End of monitoring well at 513.80 m

Well Completion Details:
Screened interval from 516.85 m to 513.80 m
Elevation at top of pipe (TOP) = 523.67 m

Groundwater Information:
Depth to groundwater from TOP = 1.16 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 28, 2022
LOGGED BY: AW
DRILLED BY: Orbit Garrant

Notes: SPLIT SPOON; NO RECOVERY

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-306S
SURFACE ELEVATION: 522.85 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80 100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
	522.85	**TOPSOIL**									
	522.72	Organics (rootlets), clayey silt, trace fine sand, wormholes, soft, moist									
		SAND Fine-medium sand (layered 1-2mm), silty, grey-brown/orange mottling, soft, loose-compact, wet							▼		522
1	521.83	**Silty SAND TILL** Gravel (Rounded to sub-rounded), fine-coarse sand, trace cobbles, trace silt, grey, loose, saturated								bentonite seal	
	521.22	Trace gravel (sub-angular/sub-rounded), trace cobbles, increased silt with depth									521
2											
											520
3											
										silica sand	
	518.99	grey, dense/hard (increasing with depth), moist								50 mm 010 slot PVC pipe	519
4											
										end cap	
		End of monitoring well at 518.28 m Well Completion Details: Screened interval from 519.80 m to 518.28 m Elevation at top of pipe (TOP) = 523.72 m Groundwater Information: Depth to groundwater from TOP = 1.30 m (May 13, 2022) MW22-306S was straight drilled adjacent to MW22-306D									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 28, 2022
LOGGED BY: AW
DRILLED BY: Orbit Garrant

Notes:

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-307D
SURFACE ELEVATION: 527.91 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	527.91	**TOPSOIL**									
	527.76	Organics, dark brown, soft, moist									
		Clayey SILT		0-2	50.0		4			silica sand	
1	527.02	Clayey silt, some fine-medium sand, some gravel (rounded), brown, soft, moist, high-plasticity		2.5-4.5	75.0		4				527
		Silty, trace clay, gravel (rounded), moist-wet		5-7	20.8		5				
2	525.62	**Silty SAND TILL**									526
		Fine sand, some gravel (angular) and cobbles, light brown, dense/hard, dry-moist		7.5-9.5	75.0		27				
3				10-12	75.0		>50				525
4				12.5-14.5	70.8		>50			bentonite seal	524
				15-17	79.2						
5	522.58	No Recovery			0.0		>50				523
6	521.81	**Sandy SILT TILL**		20-22	66.7		>50				522
		Fine sand, some gravel (angular) and cobbles, light brown, dense/hard, dry-moist									
7	521.05	Wet		22.5-24.5	62.5		50				521
8				25-27	33.3		>50				520
				27.5-29.5	25.0		>50				
9				30-32	16.7		>50			silica sand 50 mm 010 slot PVC pipe	519
10				32.5-34.5	8.3		>50			end cap silica sand	518
11				35-37	50.0		>50			bentonite seal	517

End of monitoring well at 516.48 m

Well Completion Details:
Screened interval from 519.38 m to 517.85 m
Elevation at top of pipe (TOP) = 528.81 m

Groundwater Information:
Depth to groundwater from TOP = 2.14 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 5, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON
NO RECOVERY

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-307S
SURFACE ELEVATION: 527.97 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
	527.97	**TOPSOIL**									
	527.82	Organics, dark brown, soft, moist								silica sand	
		Clayey SILT Clayey silt, some fine-medium sand, some gravel (rounded), brown, soft, moist, high-plasticity									
	527.08										
1		Silty, trace clay, gravel (rounded), moist-wet									527
2											526
	525.68	**Silty SAND TILL** Fine sand, some gravel (angular) and cobbles, light brown, dense/hard, dry-moist								bentonite seal	
3											525
4											524
5											523
	522.64	No Recovery								silica sand 50 mm 010 slot PVC pipe	
6											522
		End of monitoring well at 521.87 m								end cap	
		Well Completion Details: Screened interval from 523.40 m to 521.87 m Elevation at top of pipe (TOP) = 528.71 m									
		Groundwater Information: Depth to groundwater from TOP = 2.16 m (May 13, 2022)									
		MW22-307S was straight drilled adjacent to									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)

DRILL DATE: May 6, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes:

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-307S
SURFACE ELEVATION: 527.97 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
		MW22-307D									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 6, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes:

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-308D
SURFACE ELEVATION: 522.35 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	522.35	**TOPSOIL**									
	522.17	Organics, silt, trace fine sanddark brown, soft-firm with depth, moist		0-0.6	62.5		8				
				0.6-1.25	8.3		33				
		Silty SAND Some medium-coarse sand, trace organics, trace silt, banded (1-3 mm), gravel (sub-rounded/rounded), brown, loose-compact, wet									
1				*5-5.5	75.0		20				522
	520.62			5.5-7							
		Silty SAND TILL Fine sand, some clay, some gravel, some crushed cobbles, brown, low plasticity, dense, hard, moist-dry								bentonite seal	
2				7.5-9.5	29.2		>50				521
3	519.30	Trace-some medium-coarse sand, crumbly, dry		10-12	20.8		>50				520
	518.54	Some fine to medium sand, some gravel (sub-angular / sub-rounded), low plasticity, brown, very hard, dry		12.5-14.5	12.5		>50				519
4										silica sand 50 mm 010 slot PVC pipe	518
5				15-17	33.3		>50				
	517.02	Brown-grey, crumbly, dry		17.5-18	16.7		>50				517
		End of monitoring well at 516.86 m								end cap	

Well Completion Details:
Screened interval from 518.39 m to 516.86 m
Elevation at top of pipe (TOP) = 523.18 m

Groundwater Information:
Depth to groundwater from TOP = 1.55 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)

DRILL DATE: April 29, 2022
LOGGED BY: AW
DRILLED BY: Orbit Garrant

Notes: SPLIT SPOON

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-308S
SURFACE ELEVATION: 522.20 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
	522.20	**TOPSOIL** Organics, silt, trace fine sanddark brown, soft-firm with depth, moist									
	522.02	**Silty SAND** Some medium-coarse sand, trace organics, trace silt, banded (1-3 mm), gravel (sub-rounded/rounded), brown, loose-compact, wet								bentonite seal	522
1											
											521
	520.47	**Silty SAND TILL** Fine sand, some clay, some gravel, some crushed cobbles, brown, low plasticity, dense, hard, moist-dry									
2										silica sand 50 mm 010 slot PVC pipe	520
3										end cap	
		End of monitoring well at 519.15 m Well Completion Details: Screened interval from 520.68 m to 519.15 m Elevation at top of pipe (TOP) = 523.23 m Groundwater Information: Depth to groundwater from TOP = 1.70 m (May 13, 2022) MW22-308S was straight drilled adjacent to MW22-308D									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 4, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes:

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-309D
SURFACE ELEVATION: 521.82 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE ID	% Recovery	TEST DATA (SPT Count / % Moisture)	WELL COMPLETION NOTES	ELEVATION (m)
0	521.82	**TOPSOIL**				silica sand	
	521.67	Organics, dark brown, moist	0-2	75.0	10		
		Silty SAND					
	521.06	Medium-fine sand, silt, trace clay, light brown, orange mottling, soft, moist					
1		**Silty SAND TILL**	*2.5-4.5	29.2	8		521
		Medium-fine, gravel (angular) and cobbles, silty, light brown, soft, compact, moist					
			*5-7	41.7	27		
2	519.53						520
	519.28	wet	7.5-9.5	100.0			
		Fine sand, cobbles, light brown, compact, moist-wet					
3	518.77	No Recovery		0.0	>50		519
	518.01	Some orange mottling, dry-moist	12.5-14.5	66.7	>50		518
4							
						bentonite seal	
5			15-17	100.0	>50		517
			17.5-19.5	70.8	47		
6							516
			20-22	91.7	44		
7			22.5-24.5	100.0	50		515
	514.20	Wet from 7.62 m to EOH					
8			25-27	41.2	>50		514
			27.5-29.5	54.2	>50		
9							513
			30-32	37.5	>50		
10						silica sand 50 mm 010 slot PVC pipe	512
			32.5-34.5	62.5	>50		
	511.15	**COBBLE**				end cap silica sand	
11		Pulverized cobble	35-37	66.7	>50	bentonite seal	511

End of monitoring well at 510.39 m

Well Completion Details:
Screened interval from 512.68 m to 511.15 m
Elevation at top of pipe (TOP) = 522.91 m

Groundwater Information:
Depth to groundwater from TOP = 2.26 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 3, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON
NO RECOVERY

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-309S
SURFACE ELEVATION: 521.85 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
	521.85	**TOPSOIL**									
	521.70	Organics, dark brown, moist								silica sand	
		Silty SAND Medium-fine sand, silt, trace clay, light brown, orange mottling, soft, moist									
	521.09	**Silty SAND TILL** Medium-fine, gravel (angular) and cobbles, silty, light brown, soft, compact, moist									521
1											
2											520
	519.56	wet								bentonite seal	
	519.31	Fine sand, cobbles, light brown, compact, moist-wet									519
3	518.80	No Recovery									
	518.04	**Silty SAND TILL** Medium-fine, gravel (angular) and cobbles, silty, light brown, orange mottling, soft, compact, dry-moist									518
4											
											517
5										silica sand 50 mm 010 slot PVC pipe	
											516
6										end cap	
		End of monitoring well at 515.75 m Well Completion Details: Screened interval from 517.28 m to 515.75 m Elevation at top of pipe (TOP) = 522.83 m Groundwater Information: Depth to groundwater from TOP = 2.14 m (May 13, 2022)									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 3, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes:

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-310
SURFACE ELEVATION: 523.21 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE ID	% Recovery	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80 100)	WELL COMPLETION NOTES	ELEVATION (m)
0	523.21	**TOPSOIL** Organics, dark brown, soft, moist	0-2	100.0	5	silica sand	523
1	522.45	**Silty SAND TILL** Fine sand, some gravel, and cobbles, ligh brown, soft, moist	2.5-4.5	54.2	5		522
	521.69	Increased gravel content with depth, hard, moist-dry	5.7	91.7	17		
2			7.5-9.5	50.0	>50		521
3	520.16	**COBBLE** Cobble chips, some sand and silt		0.0	>50		520
	519.40	**Silty SAND TILL** Fine sand, clay, gravel (angular to sub-angular), cobbles, light brown, moist	12.5-14.5	33.4	>50	bentonite seal	
4	518.64	Cobble chips, dense/hard, dry	15-17	41.7	>50		519
5			17.5-19.5	54.2	>50		518
6			20-22	66.7	>50		517
7	516.35	No Recovery (cobble)		0.0	>50		516
	515.59	**SILTY SAND TILL** Fine sand, gravel (angular) and cobbles, light brown, dense, increasing silt and clay content, water coming through auger	25-27	33.4	>50	silica sand 50 mm 010 slot PVC pipe	
8			27.5-29.5	25.0	>50		515
9						end cap	

End of monitoring well at 514.07 m

Well Completion Details:
Screened interval from 515.59 m to 514.07 m
Elevation at top of pipe (TOP) = 524.26 m

Groundwater Information:
Depth to groundwater from TOP = 2.32 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 3, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON
NO RECOVERY

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-311
SURFACE ELEVATION: 521.05 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	521.05	**TOPSOIL**		0-0.75	66.7		16				521
	520.82	Fine sand, silt, some organics (rootlets), dark brown, soft, moist		0.75-1.0						bentonite seal	
		Silty SAND TILL									
	520.29	Trace medium-coarse sand, silty, brown, orange-dark brown mottling, soft, moist-wet		2.5-2.75	12.5		14				
1		Large cobble									520
	519.53	Increased medium-coarse sand, silty, trace-some gravel (sub-angular / sub-rounded), cobbles, trace clay, brown, dense/hard, saturated-moist, increasing gravel/cobbles with depth		5-7	29.2		9		▼		
2				7.5-9.5	29.2		>50				519
3				10-12	41.7		>50				518
										grout	
4				12.5-14.5	8.3		>50				517
	516.48	Grey, very dense, moist									
5				15-17	16.7		>50				516
	515.72	No recovery	○		0.0		>50				
6	514.95	**Sandy SILT TILL**		20-22	20.8		>50				515
		Fine-coarse sand, some gravel (sub-angular/sub-rounded), trace clay, crushed cobbles, grey, very dense, moist									
7				22.5-24.5	20.8		>50			bentonite seal	514
	513.43	No recovery	○		0.0		>50				
8										silica sand 50 mm 010 slot PVC pipe	513
	512.67	**Sandy SILT TILL**									
		Silty, some gravel, grey, very dense, moist-saturated		27.5-29.5	45.8		>50				
9										end cap	

End of monitoring well at 512.03 m

Well Completion Details:
Screened interval from 513.56 m to 512.03 m
Elevation at top of pipe (TOP) = 521.88 m

Groundwater Information:
Depth to groundwater from TOP = 2.75 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 26, 2022
LOGGED BY: AW
DRILLED BY: Orbit Garrant

Notes: SPLIT SPOON
NO RECOVERY

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-312
SURFACE ELEVATION: 520.61 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	520.61	**TOPSOIL**									
	520.15	**Silty SAND TILL** Fine to medium sand, trace silt, trace gravel (sub-angular-angular), brown, orange mottling, loose, soft, wet		0-2	91.7		■4				520
1	519.54	Fine sand, brown-grey, compact/hard, moist-wet		2.5-4.5	62.5		■10			bentonite seal	
	519.09	No orange mottling onward									519
2				5-7	20.8		■15				
				7.5-9.5	37.5		■18				518
3	517.56	**SAND and GRAVEL** Fine sand, trace coarse sand, trace cobble, trace silt, brown-grey, soft, dense, wet		10-12	20.8		■38			silica sand 50 mm 010 slot PVC pipe	517
4				12.5-14.5	66.7		■37				
	516.04 516.01	Trace gravel, trace silt, grey, dense, moist **Silty SAND TILL** Trace gravel, grey, very dense, very hard, moist		15-17	16.7		■>50			end cap silica sand	516
5										bentonite seal	
		End of monitoring well at 515.28 m Well Completion Details: Screened interval from 517.56 m to 516.04 m Elevation at top of pipe (TOP) = 521.66 m Groundwater Information: Depth to groundwater from TOP = 1.25 m (May 13, 2022) * denotes soil sample taken for lab analysis									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 20, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-313D
SURFACE ELEVATION: 520.00 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	520.00	**TOPSOIL**									
	519.87	Fine sandy silt, organics (rootlets), trace clay, dark brown, soft, moist								silica sand	
	519.24	**Sandy SILT TILL**									
1		Silty, trace medium-coarse sand, trace clay, brown, dark brown mottling, soft, moist, high plasticity									519
		Trace gravel (sub-angular/sub-rounded), increased gravel with depth, trace cobbles, saturated									
2											518
	517.56	Silty fine sand, firm-hard, moist									
3	516.95	Orange mottling/staining (oxidation)									517
	516.19	No recovery									
4											516
	515.43	**Silty SAND TILL**								bentonite seal	
5		Silty fine sand, some gravel (sub-rounded/sub-angular), firm-hard, moist							▼		515
6	513.90	Silty, cobble chips, wet		20-22	37.5		>50				514
	513.14	Coarse sand, silty, gravel (angular), cobble chips, trace clay, light brown, dense, wet-moist		22.5-24.5	33.3		>50				
7											513
				25-27	83.3		>50				
8											512
				27.5-29.5	70.8		>50				
9											511
				30-32	33.3		>50				
10	510.09	No Recovery			0.0		>50			silica sand 50 mm 010 slot PVC pipe	510
	509.33	**Sandy SILT TILL**								end cap silica sand	
11		Fine sand, clay, gravel, light brown, wet		35-37	20.8		>50			bentonite seal	509
		End of monitoring well at 508.57 m									
		Well Completion Details: Screened interval from 510.86 m to 509.33 m Elevation at top of pipe (TOP) = 521.06 m									
		Groundwater Information: Depth to groundwater from TOP = 5.93 m (May 13, 2022)									
		* denotes soil sample taken for lab analysis									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 5, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON
NO RECOVERY

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-313S
SURFACE ELEVATION: 520.03 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: SPT Count / % Moisture	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	520.03	**TOPSOIL**									
	519.90	Fine sandy silt, organics (rootlets), trace clay, dark brown, soft, moist									
		Sandy SILT TILL									
		Silty, trace medium-coarse sand, trace clay, brown, dark brown mottling, soft, moist, high plasticity		0-2	25.0		10				
	519.27	Trace gravel (sub-angular/sub-rounded), increased gravel with depth, trace cobbles, saturated									
1				2.5-4.5	58.3		13				519
				5-7	54.2		14			bentonite seal	
2											518
	517.59	Silty fine sand, firm-hard, moist		8-9.5	79.2		34				
3	516.98	Orange mottling/staining (oxidation)		10-12	25.0		>50				517
	516.22	No recovery			0.0		>50				
4											516
	515.46	**Silty SAND TILL**									
		Silty fine sand, some gravel (sub-rounded/sub-angular), firm-hard, moist		15-17	25.0		>50			silica sand	
5										50 mm 010 slot PVC pipe	515
					4.2		>50				
										end cap	

End of monitoring well at 514.09 m

Well Completion Details:
Screened interval from 515.61 m to 514.09 m
Elevation at top of pipe (TOP) = 520.85 m

Groundwater Information:
Depth to groundwater from TOP = 1.19 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 27, 2022
LOGGED BY: AW
DRILLED BY: Orbit Garrant

Notes: SPLIT SPOON
NO RECOVERY

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-314
SURFACE ELEVATION: 517.28 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	517.28	**TOPSOIL**								cement	517
	517.13	**SAND** Silty, occasional medium sand, trace gravel, brown, orange-black mottling, loose, frim, moist		0-2	70.8		■4				
	516.52	**Silty SAND TILL** Fine sand, some cobbles, brown-grey, loose, firm, wet		2.5-4.5	41.7		■14				516
1	515.76										
	515.65	Some silt, occasional coarse sand, trace gravel, brown/grey - orange mottling, loose, soft-firm, wet Orange mottling, loose, firm, wet		5-7	41.7		■6				
2	514.99									bentonite seal	515
		fine-medium sand, some gravel (angular), trace cobble, trace clay, brown-grey, dense, firm, moist-dry, increasing gravel content with depth		7.5-9.5	41.7		■>50				
3				10-12	41.7		■39				514
4				12.5-14.5	33.3		■>50				513
	512.71	loose, sands and gravel layer		15-17	33.3		■>50				
5										silica sand 50 mm 010 slot PVC pipe	512
				17.5-19.5	66.7		■>50				
6										end cap silica sand	511
				20-22	37.5		■>50			bentonite seal	

End of monitoring well at 510.42 m

Well Completion Details:
Screened interval from 512.71 m to 511.18 m
Elevation at top of pipe (TOP) = 518.25 m

Groundwater Information:
Depth to groundwater from TOP = 1.55 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 20, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-315
SURFACE ELEVATION: 518.81 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count ◆ % Moisture (10 20 30 40 50 / 20 40 60 80 100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	518.81	**TOPSOIL**								cement	518
	518.61	**Sandy SILT TILL** Some clay, trace gravel, orange-black mottling, brown, firm, loose, moist		*0-0.4 / DUP-3B	50.0		5				
	518.05	Trace medium sand, hard, moist, increasing density and gravel content with depth		2.5-5	33.3		9				
1	517.29	Firm, compact, moist		5-7.5	66.7		15				517
2				7.5-10	100.0		48				
3				10-12.5	41.7		>50				516
4				12.5-15	62.5		>50				515
5				15-17.5	83.3		49				514
				17.5-20	79.2		>50			bentonite seal	
6				20-22.5	79.2		34				513
7				22.5-25	54.2		>50				512
8				25-27.5	37.5		>50				511
				27.5-30	54.2		>50				
9				30-32.5	16.7		>50				510
10				32.5-35	8.3		>50				509
11				35-37.5	20.8		>50				508
				37.5-40	33.3		>50			silica sand 50 mm 010 slot PVC pipe	
12										end cap	507
	506.41	**SAND** Fine-medium sand, gravel (angular), light grey, firm, compact, wet		40-42.5	41.7		>50			silica sand bentonite seal	506
		End of monitoring well at 505.86 m									

Well Completion Details:
Screened interval from 508.14 m to 506.62 m
Elevation at top of pipe (TOP) = 519.73 m

Groundwater Information:
Depth to groundwater from TOP = 3.89 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 28, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-316
SURFACE ELEVATION: 520.07 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE ID	% Recovery	SPT Count / % Moisture	WELL COMPLETION NOTES	ELEVATION (m)
0	520.07	**TOPSOIL**				silica sand	520
	519.84	Organics, dark brown, moist	0-2	37.5	6		
		Silty SAND TILL Fine sand, silt, gravel (angular), trace clay, light brown, soft, moist	*2.5-4.5 / DUP-3E	37.5	12		
1							519
			*5-7	33.3	13		
2							518
	517.78	Cobbles, light brown, dense/hard, dry	7.5-9.5	83.3	35		
3							517
			10-12	58.3	>50		
	516.26	**COBBLE** Cobble chips, dry				bentonite seal	
4			12.5-14.5	20.8	>50		516
			15-17		>50		
5							515
	514.74	No Recovery		0.0			
6	513.97	**Silty SAND TILL** Fine sand, gravel (angular), light brown-grey, dense/hard, dry	20-22	45.8	>50		514
			22.5-24.5	50.0	>50		
7							513
	512.45	Wet from 7.62 to EOH	25-27	45.8	>50		
8							512
			27.5-29.5	37.5	>50	silica sand 50 mm 010 slot PVC pipe	
9							511
						end cap	

End of monitoring well at 510.93 m

Well Completion Details:
Screened interval from 512.45 m to 510.93 m
Elevation at top of pipe (TOP) = 521.04 m

Groundwater Information:
Depth to groundwater from TOP = 2.37 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 4, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON
NO RECOVERY

Appendix C Groundwater Data

Hydrogeological Assessment

Glenelg Phase 3

Dundalk Village Two Inc.

SLR Project No.: 209.30125.00003

May 25, 2023

Table C-1: Groundwater Elevations in Monitoring Wells

Monitor ID	Units	13-May-22	13-Jul-22	20-Sep-22	25-Nov-22	28-Mar-23
MW22-301	mbgs	0.16	2.57	3.70	4.76	0.78
	masl	530.83	528.42	527.29	526.23	530.21
MW22-302	mbgs	1.68	2.15	3.49	2.94	1.21
	masl	520.96	520.49	519.15	519.70	521.43
MW22-303	mbgs	0.77	1.37	2.55	0.85	0.57
	masl	517.58	516.98	515.80	517.50	517.78
MW22-304	mbgs	0.71	1.80	3.08	3.68	0.12
	masl	522.80	521.71	520.43	519.83	523.39
MW22-305	mbgs	0.46	1.31	2.59	2.50	0.00
	masl	523.28	522.43	521.15	521.24	523.74
MW22-306S	mbgs	0.43	1.30	2.48	1.75	0.15
	masl	522.42	521.55	520.37	521.10	522.70
MW22-306D	mbgs	0.33	1.24	2.36	1.61	0.02
	masl	522.52	521.60	520.48	521.23	522.82
MW22-307S	mbgs	1.41	2.23	3.95	4.48	0.37
	masl	526.56	525.74	524.02	523.49	527.60
MW22-307D	mbgs	1.24	2.06	3.69	4.13	0.18
	masl	526.67	525.85	524.22	523.78	527.73
MW22-308S	mbgs	0.67	1.75	2.52	2.08	Frozen
	masl	521.54	520.45	519.69	520.12	Frozen
MW22-308D	mbgs	0.72	1.89	2.81	2.22	Frozen
	masl	521.63	520.46	519.54	520.13	Frozen
MW22-309S	mbgs	1.15	-	-	2.82	0.13
	masl	520.70	-	-	519.03	521.72
MW22-309D	mbgs	1.17	-	-	2.89	0.17
	masl	520.65	-	-	518.93	521.65

Table C-1: Groundwater Elevations in Monitoring Wells

Monitor ID	Units	13-May-22	13-Jul-22	20-Sep-22	25-Nov-22	28-Mar-23
MW22-310	mbgs	1.27	1.96	3.57	3.37	0.26
	masl	521.94	521.25	519.64	519.84	522.95
MW22-311	mbgs	1.91	2.56	3.71	3.69	1.40
	masl	519.14	518.49	517.34	517.36	519.65
MW22-312	mbgs	0.20	1.03	2.25	1.70	Frozen
	masl	520.41	519.58	518.36	518.91	Frozen
MW22-313S	mbgs	0.36	1.43	2.50	2.11	Frozen
	masl	519.67	518.60	517.53	517.92	Frozen
MW22-313D	mbgs	4.87	1.59	2.22	2.09	-0.01
	masl	515.13	518.42	517.78	517.92	520.01
MW22-314	mbgs	0.58	1.43	2.57	1.89	0.01
	masl	516.70	515.85	514.71	515.39	517.27
MW22-315	mbgs	2.97	3.96	5.18	5.01	2.25
	masl	515.84	514.85	513.63	513.80	516.56
MW22-316	mbgs	1.40	2.14	3.46	2.89	0.86
	masl	518.67	517.94	516.62	517.18	519.21

Table C-2: Groundwater Elevations in Mini-Piezometers

Monitor ID	Units	13-May-22	13-Jul-22	20-Sep-22	25-Nov-22	28-Mar-23
MP1S	mbgs	-0.19	0.08	0.77	-0.07	-0.29
	masl	520.01	519.74	519.05	519.89	520.11
MP1D	mbgs	-0.20	0.05	0.77	-0.09	-0.30
	masl	520.01	519.76	519.04	519.90	520.11
MP2S	mbgs	-0.25	-0.35	0.69	0.11	-0.36
	masl	517.13	517.23	516.19	516.77	517.24
MP2D	mbgs	-0.20	0.52	0.78	0.22	-0.28
	masl	517.13	516.41	516.15	516.71	517.21
MP3S	mbgs	0.34	0.42	0.99	0.45	-0.09
	masl	516.73	516.65	516.08	516.62	517.16
MP3D	mbgs	1.70	0.27	0.91	0.36	-0.19
	masl	515.26	516.69	516.05	516.60	517.16
MP4S	mbgs	-0.03	Dry @ 0.86	0.00	0.54	-0.09
	masl	523.65	Dry @ 522.76	Dry @ 522.76	523.08	523.71
MP4D	mbgs	0.22	1.46	0.00	1.45	-0.14
	masl	523.36	522.12	Dry @ 521.83	522.14	523.72
MP5S	mbgs	-0.79	Dry @ 0.95	0.00	-0.30	-0.01
	masl	523.54	Dry @ 521.80	Dry @ 521.84	523.05	522.76
MP5D	mbgs	0.02	1.23	0.00	-0.37	-0.09
	masl	522.65	521.44	Dry @ 520.91	523.04	522.76
MP6S	mbgs	-0.04	0.36	0.00	0.62	-0.28
	masl	520.95	520.55	Dry @ 519.95	520.30	521.19
MP6D	mbgs	-0.23	0.11	1.21	0.41	-0.34
	masl	521.12	520.78	519.68	520.48	521.23

Table C-3a: Vertical Hydraulic Gradients - Monitoring Wells

Well ID	13-May-22	13-Jul-22	20-Sep-22	25-Nov-22	28-Mar-23
MW22-306					
Shallow groundwater elevations (masl)	522.42	521.55	520.37	521.10	522.70
Deep groundwater elevations (masl)	522.52	521.60	520.48	521.23	522.82
Hydraulic gradient (m/m)	-0.07	-0.03	-0.08	-0.09	-0.09
MW22-307					
Shallow groundwater elevations (masl)	526.56	525.74	524.02	523.49	527.60
Deep groundwater elevations (masl)	526.67	525.85	524.22	523.78	527.73
Hydraulic gradient (m/m)	-0.04	-0.05	-0.08	-0.12	-0.05
MW22-308					
Shallow groundwater elevations (masl)	521.54	520.45	519.69	520.12	Frozen
Deep groundwater elevations (masl)	521.63	520.46	519.54	520.13	Frozen
Hydraulic gradient (m/m)	-0.12	-0.01	0.19	-0.01	-
MW22-309					
Shallow groundwater elevations (masl)	520.70	-	-	519.03	521.72
Deep groundwater elevations (masl)	520.65	-	-	518.93	521.65
Hydraulic gradient (m/m)	0.01	-	-	0.03	0.03
MW22-313					
Shallow groundwater elevations (masl)	519.67	518.60	517.53	517.92	Frozen
Deep groundwater elevations (masl)	515.13	518.42	517.78	517.92	520.01
Hydraulic gradient (m/m)	N.R.	0.06	-0.08	0.00	-

Notes:

masl denotes metres above sea level
Positive value denotes downward hydraulic gradients (i.e., groundwater recharge conditions)
Negative value denotes upward hydraulic gradients (i.e., groundwater discharge conditions)
N.R. denotes not representative as water levels did not fully recover following installation

Table C-3b: Vertical Hydraulic Gradients - Mini Piezometers

Well ID	13-May-22	13-Jul-22	20-Sep-22	25-Nov-22	28-Mar-23
MP1					
Shallow groundwater elevations (masl)	520.01	519.74	519.05	519.89	520.11
Deep groundwater elevations (masl)	520.01	519.76	519.04	519.90	520.11
Hydraulic gradients (m/m)	-0.01	-0.03	0.03	-0.01	-0.01
MP2					
Shallow groundwater elevations (masl)	517.13	517.23	516.19	516.77	517.24
Deep groundwater elevations (masl)	517.13	516.41	516.15	516.71	517.21
Hydraulic gradients (m/m)	0.00	-	0.05	0.08	0.03
MP3					
Shallow groundwater elevations (masl)	516.73	516.65	516.08	516.62	517.16
Deep groundwater elevations (masl)	515.26	516.69	516.05	516.60	517.16
Hydraulic gradients (m/m)	-	-0.07	0.05	0.03	0.00
MP4					
Shallow groundwater elevations (masl)	523.65	Dry	Dry	523.08	523.71
Deep groundwater elevations (masl)	523.36	522.12	Dry	522.14	523.72
Hydraulic gradients (m/m)	0.39	na	na	-	-0.01
MP5					
Shallow groundwater elevations (masl)	523.54	Dry	Dry	523.05	522.76
Deep groundwater elevations (masl)	522.65	521.44	Dry	523.04	522.76
Hydraulic gradients (m/m)	-	na	na	0.02	0.00
MP6					
Shallow groundwater elevations (masl)	520.95	520.55	Dry	520.30	521.19
Deep groundwater elevations (masl)	521.12	520.78	519.68	520.48	521.23
Hydraulic gradients (m/m)	-0.28	-0.38	na	-0.31	-0.08

Notes:

masl denotes metres above sea level
Positive value denotes downward hydraulic gradients (i.e., groundwater recharge conditions)
Negative value denotes upward hydraulic gradients (i.e., groundwater discharge conditions)
-' inicates that a hydraulic gradient value could not be obtained as the difference in groundwater elevation was greater than the difference in length.

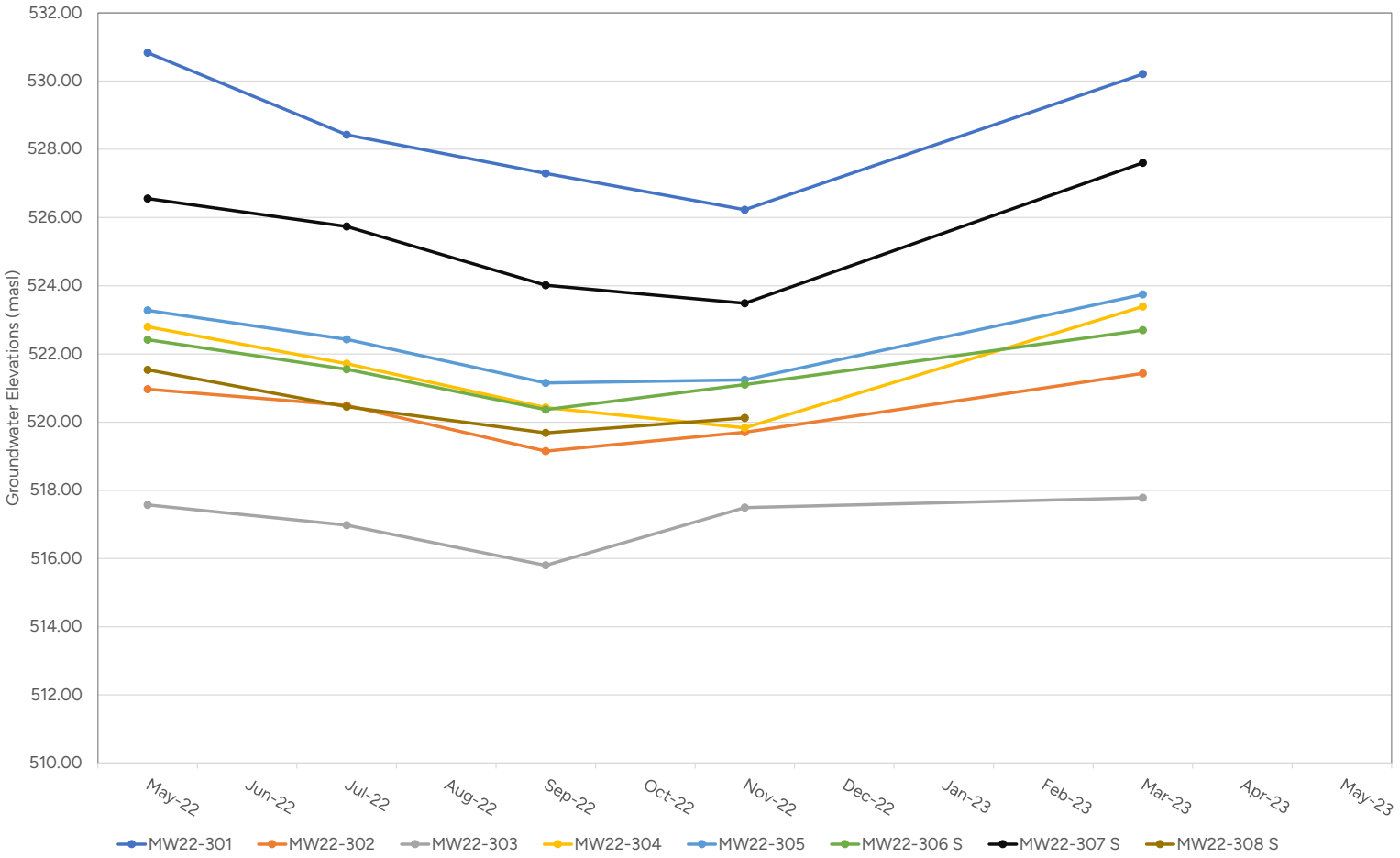


Figure C-1a	Hydrograph - Manual Measurements (Groundwater Wells)	SLR

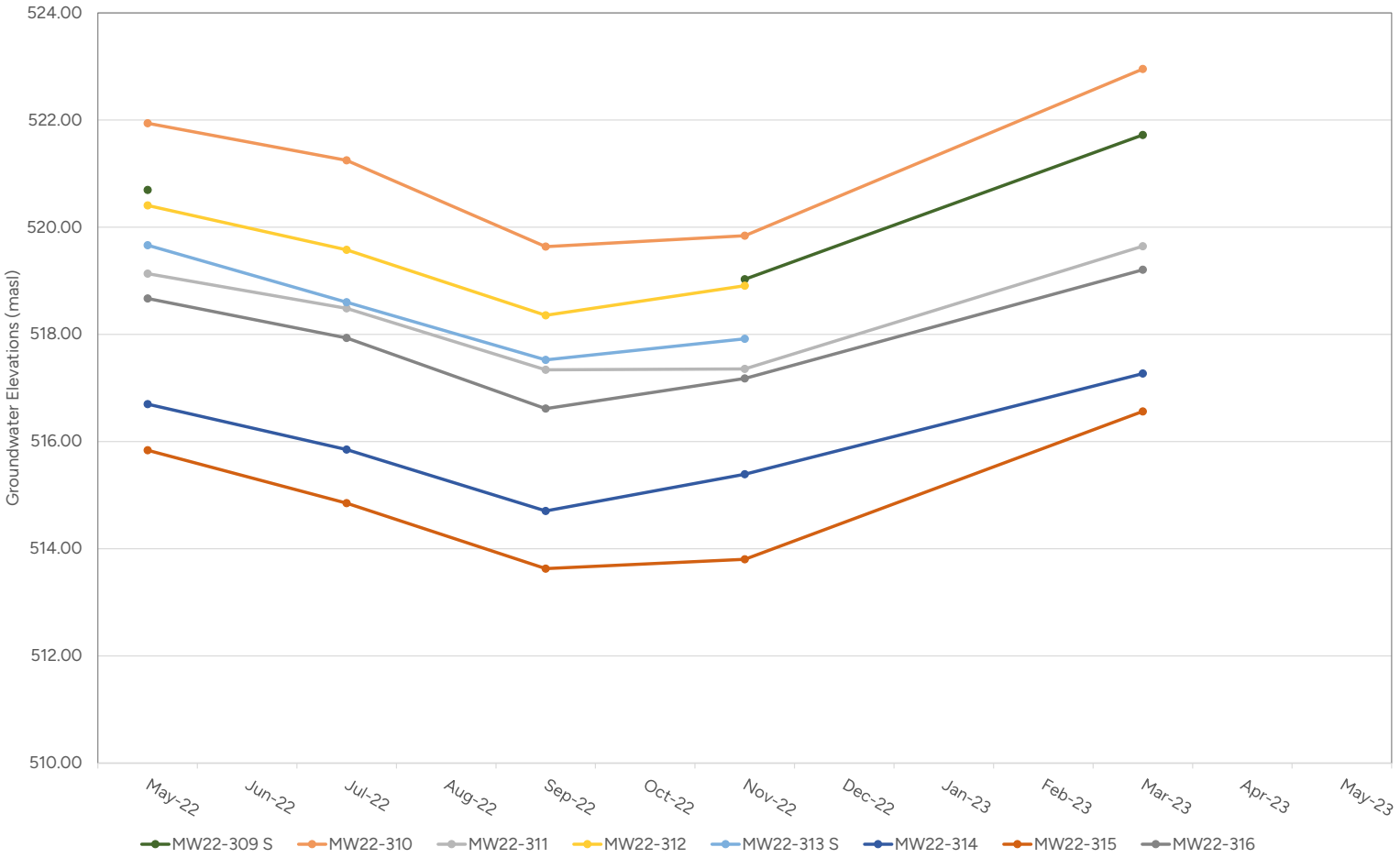


Figure C-1b	Hydrograph - Manual Measurements (Groundwater Wells)	SLR

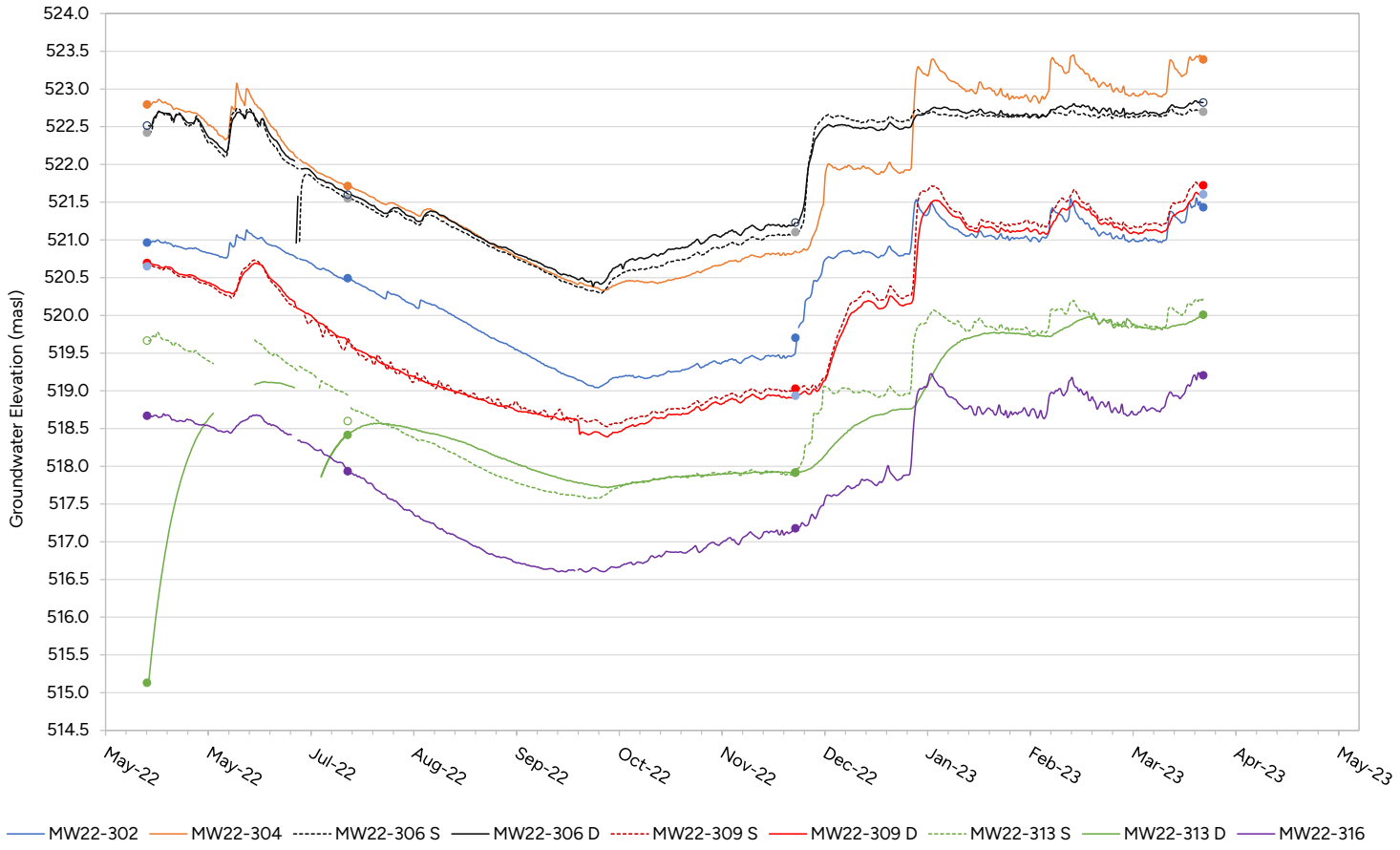


Figure C-2	Hydrograph - Continuous Groundwater Elevations (Groundwater Wells)	SLR

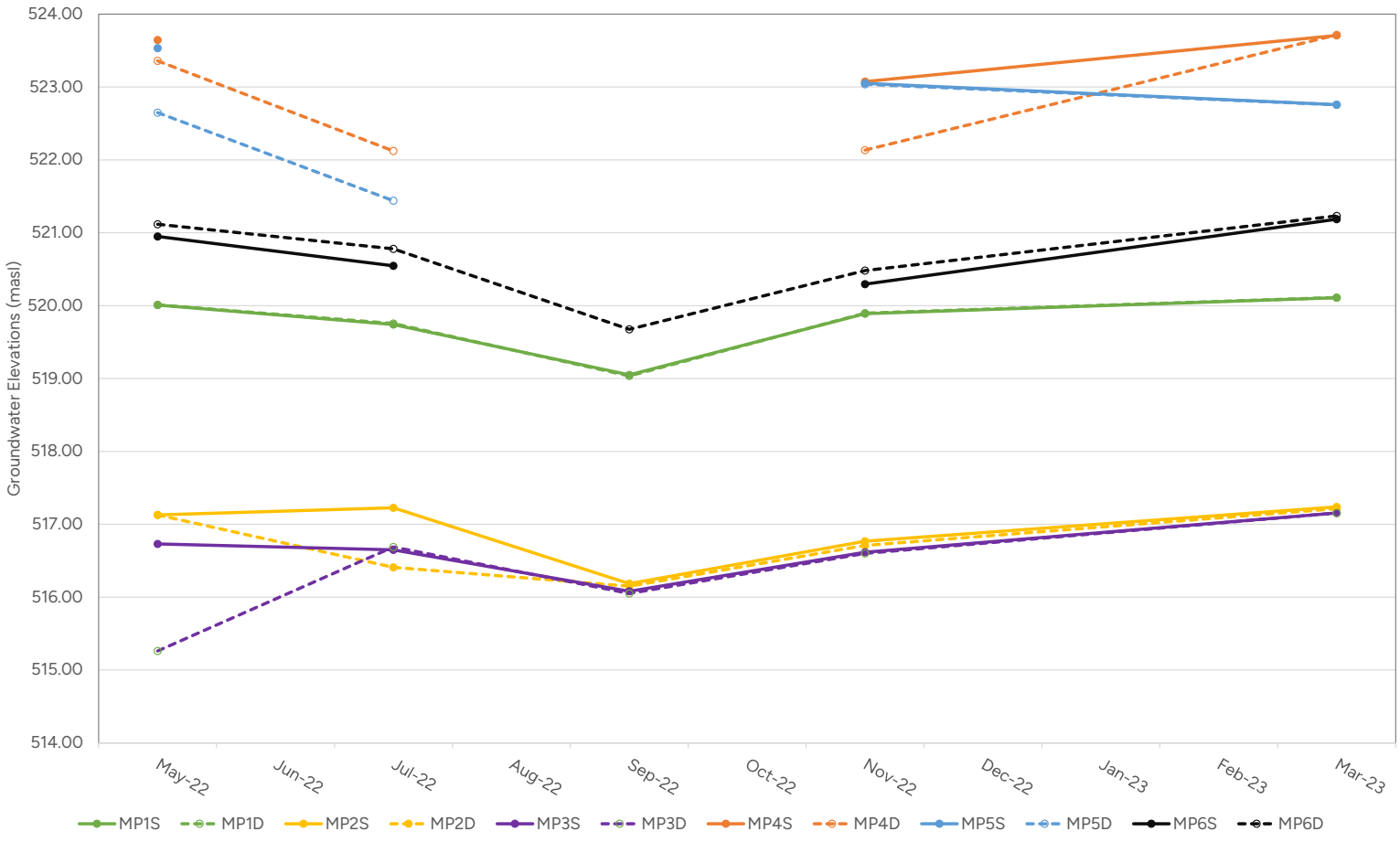


Figure C-3	Hydrograph - Manual Measurements (Mini-Piezometers)	SLR

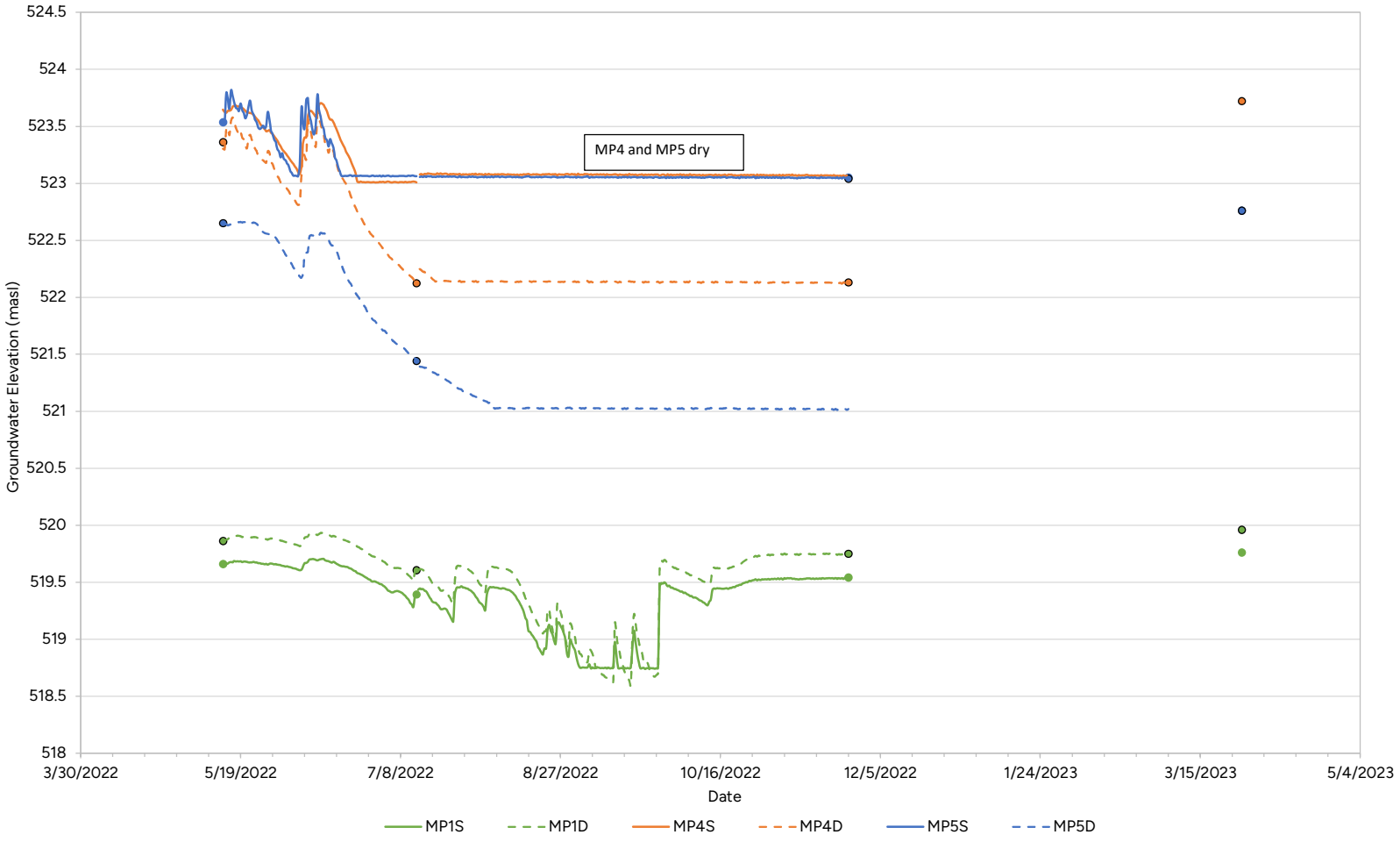


Figure C-4 | **Hydrograph - Continuous Groundwater Elevations (mini-piezometers)** | SLR

Appendix D Hydraulic Conductivity Analyses

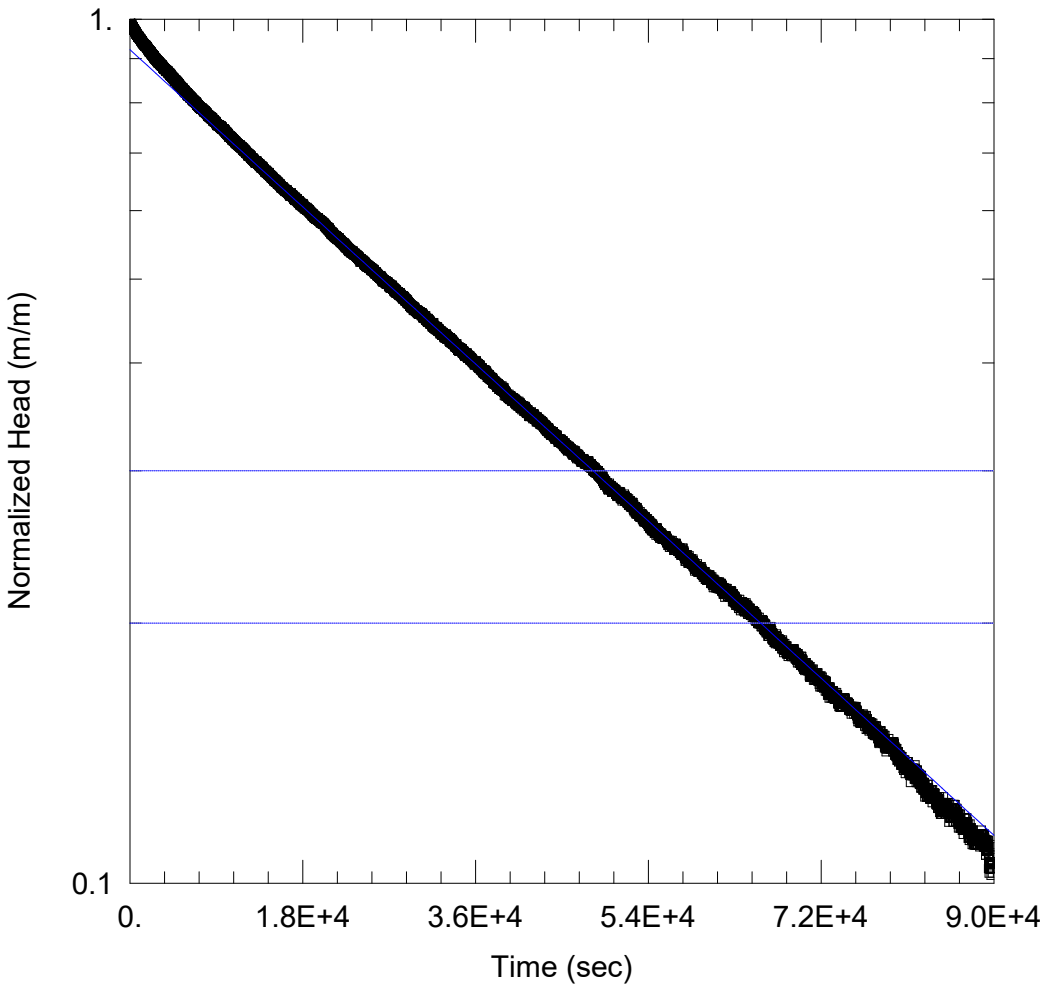
Hydrogeological Assessment

Glenelg Phase 3

Dundalk Village Two Inc.

SLR Project No.: 209.30125.00003

May 25, 2023



WELL TEST ANALYSIS

Data Set: N:\...\MW22-306D_AM.aqt
Date: 07/27/22 Time: 12:08:33

PROJECT INFORMATION

Project: 209.30125.00003
Location: Dundalk North
Test Date: 6/27/2022

AQUIFER DATA

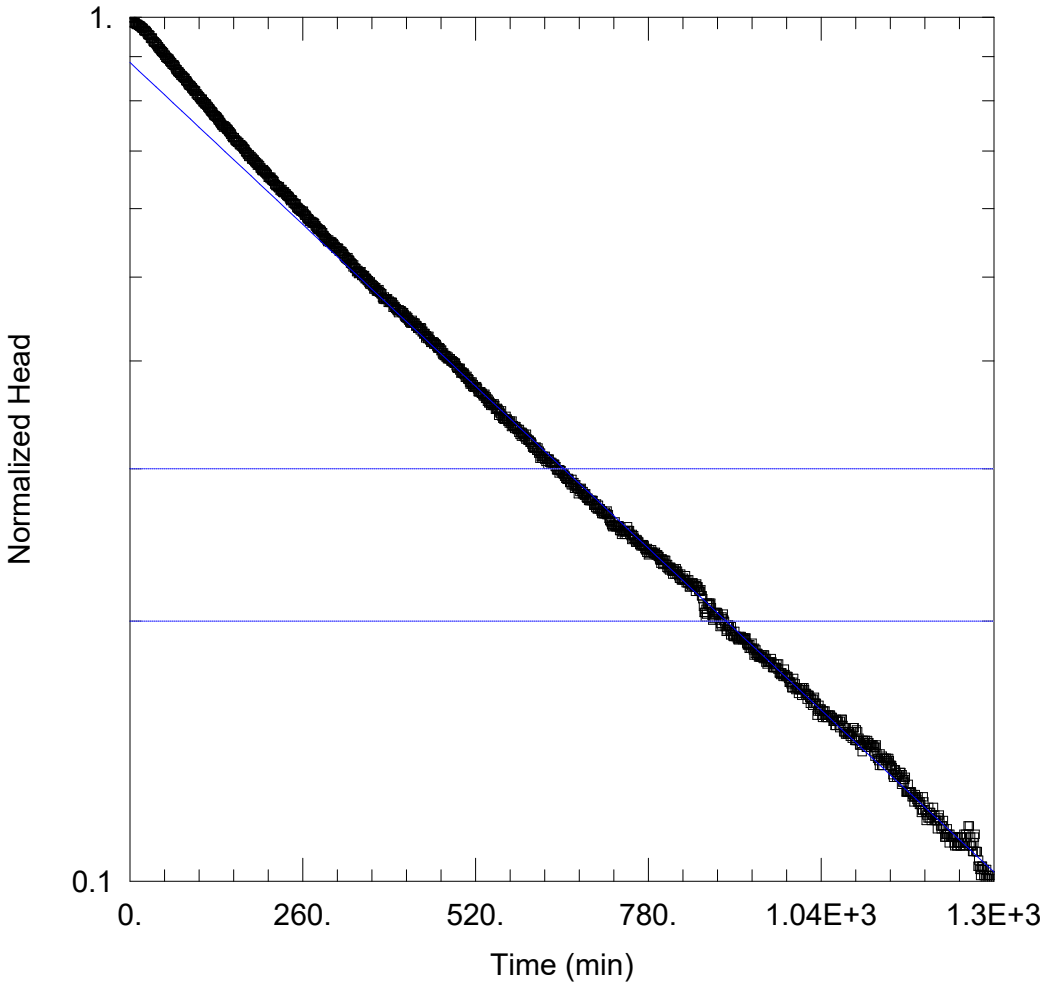
Saturated Thickness: 8.265 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW22-306D)

Initial Displacement: 1.472 m
Total Well Penetration Depth: 8.208 m
Casing Radius: 0.0254 m
Static Water Column Height: 8.265 m
Screen Length: 3.048 m
Well Radius: 0.1016 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 7.592E-9 m/sec
y0 = 1.357 m



WELL TEST ANALYSIS

Data Set: N:\...\MW22-306S_AM.aqt
Date: 07/27/22 Time: 16:59:39

PROJECT INFORMATION

Company: SLR Consulting
Client: FLATO Developments Inc.
Project: 209.30125
Location: Dundalk North
Test Well: MW22-306S
Test Date: June 28, 2022

AQUIFER DATA

Saturated Thickness: 3.62 m Anisotropy Ratio (Kz/Kr): 1.

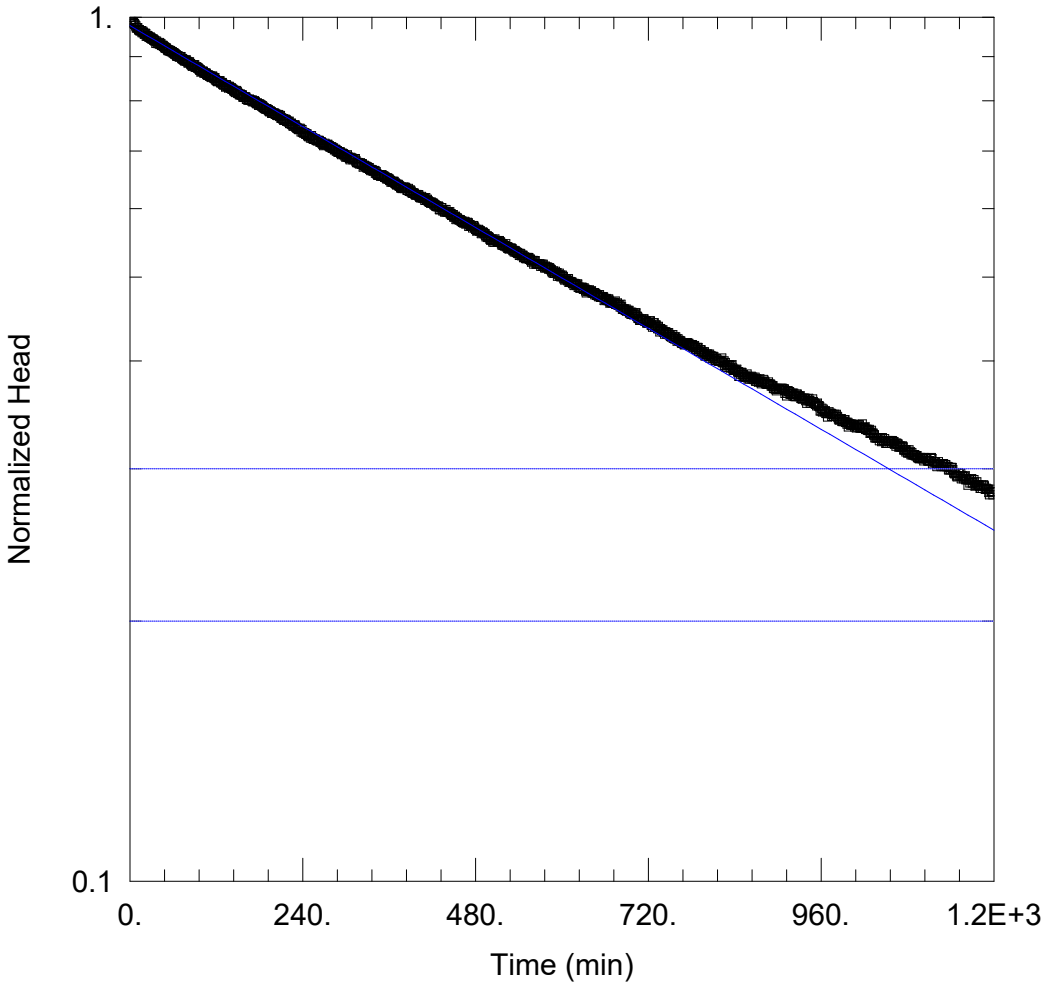
WELL DATA (MW22-306S)

Initial Displacement: 1.183 m
Total Well Penetration Depth: 3.62 m
Casing Radius: 0.0254 m
Static Water Column Height: 3.62 m
Screen Length: 1.52 m
Well Radius: 0.1016 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.439E-8 m/sec y0 = 1.048 m



WELL TEST ANALYSIS

Data Set: N:\...\MW22-309S_AM.aqt
Date: 07/28/22 Time: 06:57:49

PROJECT INFORMATION

Company: SLR Consulting
Client: FLATO Developments Inc.
Project: 209.30125
Location: Dundalk North
Test Well: MW22-309S
Test Date: June 27, 2022

AQUIFER DATA

Saturated Thickness: 4.35 m Anisotropy Ratio (Kz/Kr): 1.

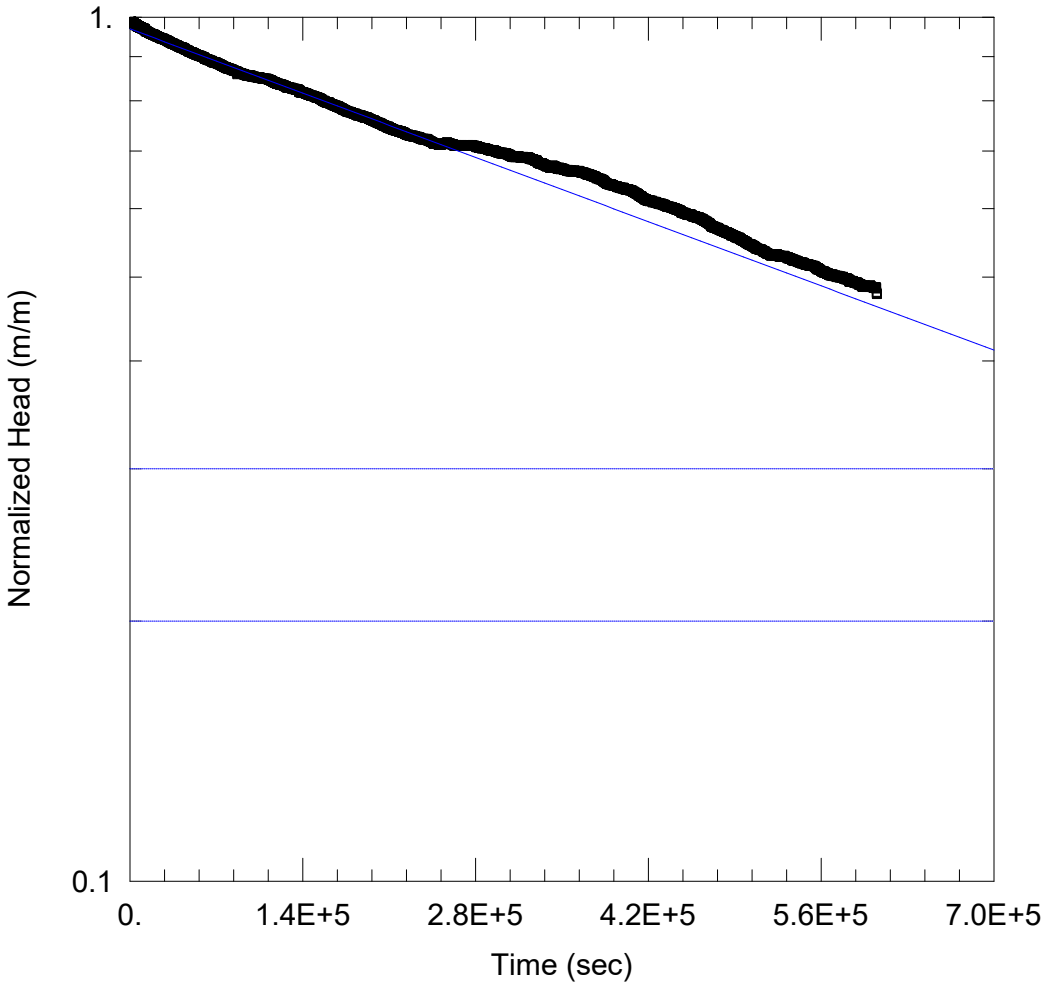
WELL DATA (MW22-309S)

Initial Displacement: 1.14 m
Total Well Penetration Depth: 4.35 m
Casing Radius: 0.0254 m
Static Water Column Height: 4.35 m
Screen Length: 1.53 m
Well Radius: 0.1016 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.003E-8 m/sec y0 = 1.114 m



WELL TEST ANALYSIS

Data Set: N:\...\MW22-313D_JH.aqt
Date: 09/02/22 Time: 08:28:59

PROJECT INFORMATION

Company: SLR
Client: Flato
Project: 209.30125.00003
Location: Dundalk North
Test Well: MW22-313D

AQUIFER DATA

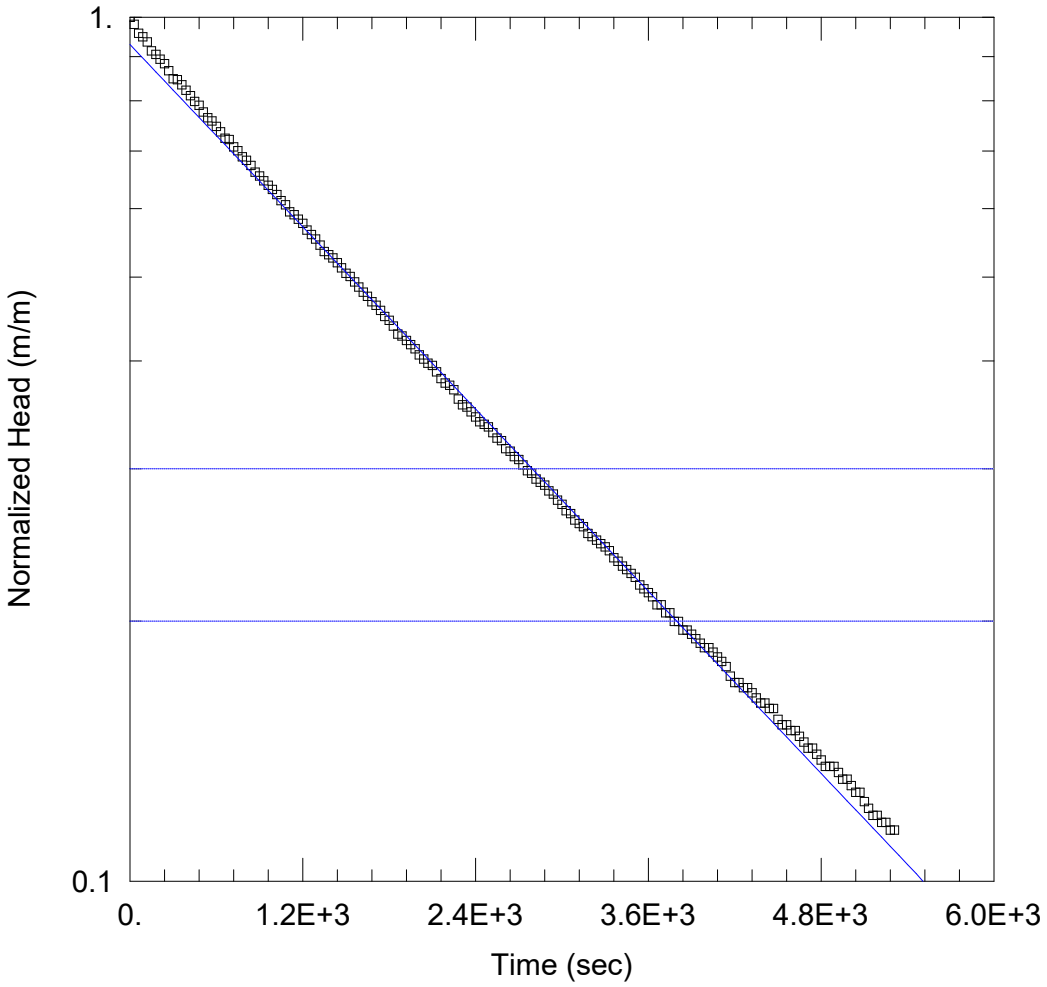
Saturated Thickness: 10.05 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW22-313D)

Initial Displacement: 2.907 m
Total Well Penetration Depth: 10.05 m
Casing Radius: 0.0254 m
Static Water Column Height: 10.05 m
Screen Length: 1.524 m
Well Radius: 0.1016 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 7.628E-10 m/sec
y0 = 2.817 m



WELL TEST ANALYSIS

Data Set: N:\...\MW22-313S_JH.aqt
Date: 07/29/22 Time: 12:13:07

PROJECT INFORMATION

Company: SLR
Client: Flato
Project: 209.30125.00003
Location: Dundalk North
Test Well: MW22-313S

AQUIFER DATA

Saturated Thickness: 4.825 m Anisotropy Ratio (Kz/Kr): 1.

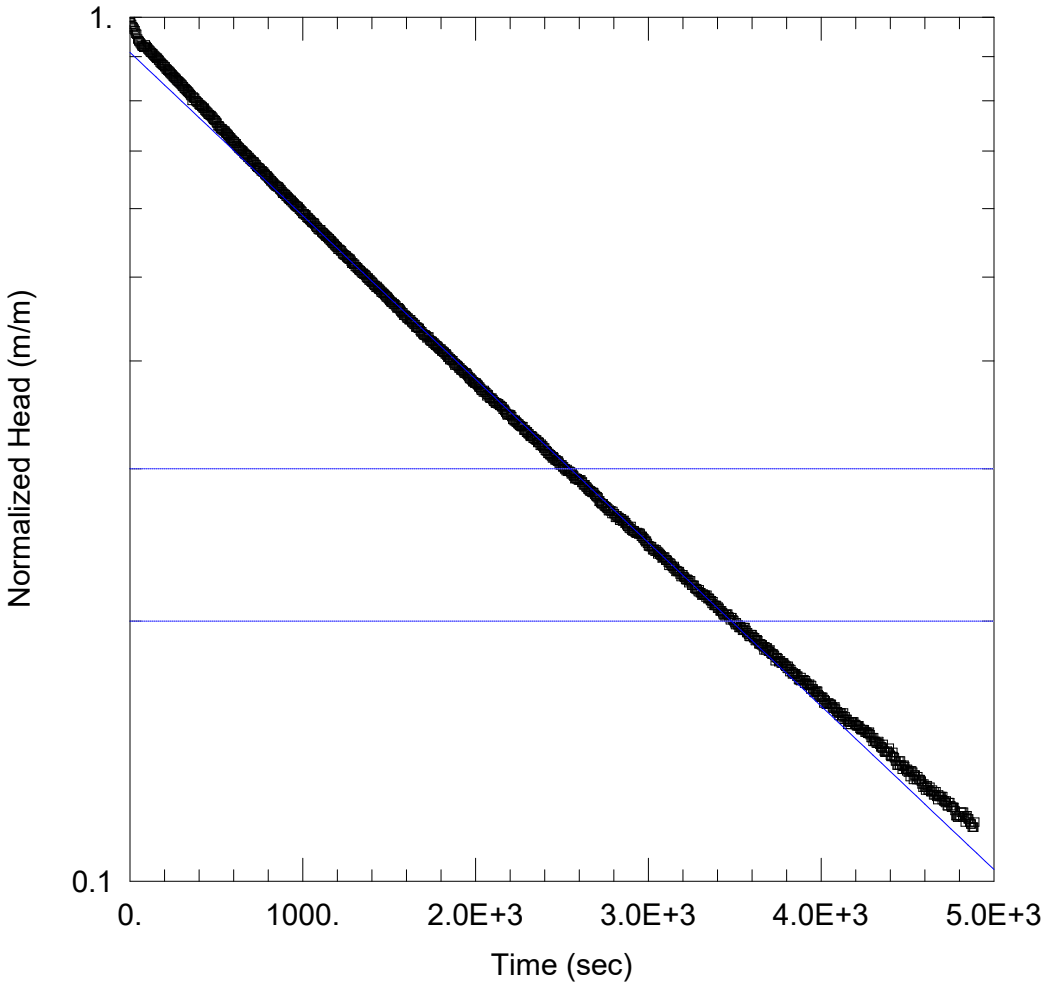
WELL DATA (MW22-313S)

Initial Displacement: 1.216 m
Total Well Penetration Depth: 4.825 m
Casing Radius: 0.0254 m
Static Water Column Height: 4.825 m
Screen Length: 1.524 m
Well Radius: 0.1016 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.226E-7 m/sec y0 = 1.13 m



WELL TEST ANALYSIS

Data Set: N:\...\MW22-316_JH.aqt
Date: 07/29/22 Time: 12:14:11

PROJECT INFORMATION

Company: SLR
Client: Flato
Project: 209.30125.00003
Location: Dundalk North
Test Well: MW22-316

AQUIFER DATA

Saturated Thickness: 7.369 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW22-316)

Initial Displacement: 1.763 m
Total Well Penetration Depth: 7.369 m
Casing Radius: 0.0254 m
Static Water Column Height: 7.369 m
Screen Length: 1.524 m
Well Radius: 0.1016 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.585E-7 m/sec
y0 = 1.605 m

Appendix E MECP Water Well Records

Hydrogeological Assessment

Glenelg Phase 3

Dundalk Village Two Inc.

SLR Project No.: 209.30125.00003

May 25, 2023

Table E-1: Summary of MECP Well Records

Well ID	Well Tag	Date Drilled	Well Depth (m)	Bottom Lithology	Water Use	Water Status	Depth Water at Found (m)	Static Level (m)	Pumping Rate (L/s)
1700350		26-Jul-67	31.1	Rock	Water Supply	Livestock	30.5	4.6	1.516
1700351		20-Feb-63	25.6	Gravel	Water Supply	Domestic	25.0	4.3	1.516
1700352		18-Oct-62	27.7	Rock	Water Supply	Domestic	19.8	7.3	0.91
1701035		6-Nov-69	36.9	Limestone	Water Supply	Livestock	35.4	7.3	0.606
1701454		6-Apr-73	64.6	Limestone	Water Supply	Domestic	64.6	12.2	1.592
1703380		5-May-87	24.4	Gravel	Water Supply	Domestic	21.3	1.8	1.516
2500876		28-Jun-53	43	Rock	Water Supply	Domestic		6.1	0.758
2500882		15-Oct-54	45.7	Limestone	Water Supply	Domestic	45.7	7.6	0.303
2500888		7-May-56	48.2	Limestone	Water Supply	Domestic	45.7	4	1.137
2500897		5-May-60	83.2	Limestone	Water Supply	Municipal	31.7	7	3.411
2500900		9-Jun-65	35.7	Gravel	Water Supply	Domestic	35.1	12.2	0.379
2502801		7-Mar-69	43.9	Rock	Water Supply	Livestock	41.1	10.7	1.137
2503215		1-Jul-70	39.6	Rock	Water Supply	Livestock	38.1	5.2	1.137
2503216		26-Jun-70	37.5	Rock	Water Supply	Livestock	35.1	12.8	0.758
2505795		17-Aug-76	40.2	Limestone	Water Supply	Domestic	39.0	18.3	0.606
2506029		15-Apr-77	33.2	Limestone	Water Supply	Domestic	32.6	11.6	1.364
2506475		29-Apr-78	28.3	Limestone	Water Supply	Domestic	28.3	3.7	1.516
2509109		15-Sep-87	55.8	Limestone	Water Supply	Domestic	55.8	16.5	0.455
2512639		30-Aug-94	42.1	Limestone	Water Supply	Domestic	33.2	17.1	0.531
2515004		25-Mar-02	100.6	Limestone	Water Supply	Municipal	47.2		
2515005		22-Apr-02	100.6	Limestone	Water Supply	Municipal	38.1		
2515188		25-Sep-02	73.5	Limestone	Water Supply	Domestic	64.0	28	0.379
2515624		4-Jun-03	43.3	Limestone	Water Supply	Domestic	36.9	8.2	0.91
2516415	A027686	9-Jun-05	6	Silt	Observation Wells	Not Used	1.5		
7041281	A005365	30-Nov-06	4.6	Silt	Test Hole	Not Used			
7049155	A047429	7-Apr-07	4.6	Silt	Observation Wells				
7116620		25-Nov-08	0		Abandoned-Other		1.2		
7155347		2-Sep-10	0		Abandoned-Other				
7155361		20-Sep-10	0		Abandoned-Other				
7166939	A117947	29-Jun-11	4.6		Test Hole	Test Hole			
7167449	A089996	20-Apr-11	32.3	Limestone	Water Supply	Domestic	32.0	2.2	3.411
7237016	A166231	3-Dec-14	6.1	Sand	Observation Wells	Monitoring	1.5		
7285238	A210321	17-Nov-16	7.6	Clay	Observation Wells	Monitoring	4.0		
7285242	A210296	15-Nov-16	7.6	Sand	Observation Wells	Monitoring			
7305297	A213693	7-Mar-17	0		Abandoned-Other	Not Used			
7305319	A213692	7-Mar-17	0		Abandoned-Other	Not Used			
7331881	A264297	5-Apr-19	4.6	Silt	Observation Wells	Monitoring	0.6	0.6	
7331882	A264292	5-Apr-19	6.1	Silt	Observation Wells	Monitoring			
7331883	A264294	5-Apr-19	4.6	Silt	Observation Wells	Monitoring	2.1	2.1	
7331884	A264296	5-Apr-19	6.1	Gravel	Observation Wells	Monitoring	2.1	2.1	
7331885	A264295	5-Apr-19	6.1	Silt	Observation Wells	Monitoring	2.1	2.1	
7331886	A264293	5-Apr-19	6.1	Silt	Observation Wells	Monitoring	1.2	1.2	
7339038	A258125	7-May-19	31.1	Limestone	Water Supply	Domestic	30.2	2.4	1.137
7367321	A295208	29-May-20	0						
7385248	_NO_TAG	17-Mar-21	0		Abandoned-Other				
7385249	_NO_TAG	17-Mar-21	0		Abandoned-Other				
7385250	_NO_TAG	17-Mar-21	0		Abandoned-Other				
7385251	_NO_TAG	17-Mar-21	0		Abandoned-Other				
7389879	A294344	24-Feb-21	0						
7397305	A336963	6-Aug-21	6.1	SILT	Observation Wells	Monitoring			

Notice of Collection of Personal Information

Personal information contained on this form is collected pursuant to sections 35-50 and 75(2) of the *Ontario Water Resources Act* and section 16.3 of the Wells Regulation. This information will be used for the purpose of maintaining a public record of wells in Ontario. This form and the information contained on the form will be stored in the Ministry's well record database and made publicly available. Questions about this collection should be directed to the Water Well Customer Service Representative at the Wells Help Desk, 125 Resources Road, Toronto Ontario M9P 3V6, at 1-888-396-9355 or wellshelpdesk@ontario.ca.

Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
A 336963

Type *

☑ Construction ☐ Abandonment

Measurement recorded in: *

☐ Metric ☑ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name
[redacted]	
Organization: Township of Southgate	Email Address: [redacted]

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
		[redacted]	

Country	Province	Postal Code	Telephone Number
Canada	Ontario	[redacted]	

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	550	Main Street East	

Lot	Concession	County/District/Municipality
		GREY

City/Town	Province	Postal Code
Dundalk	Ontario	

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	549142	4891746	Test UTM in Map	

Other

3. Overburden and Bedrock Material *

Well Depth * 20 (ft)

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To

				(ft)	(ft)
Black	Fill			0	5
Brown	Silt			5	12
Brown	Silt	Till		12	20

4. Annular Space *

Depth From (ft)	Depth To (ft)	Type of Sealant Used (Material and Type)	Volume Placed (cubic feet)
0	1	Concrete	0.4
1	8	Bentonite	2.67
8	20	Silica Sand	4.54

5. Method of Construction *

☐ Cable Tool ☑ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Diamond
☐ Jetting ☐ Driving ☐ Digging ☐ Rotary (Air) ☑ Augering ☐ Direct Push
☐ Other (specify) _____

6. Well Use *

☐ Public ☐ Industrial ☐ Cooling & Air Conditioning
☐ Domestic ☐ Commercial ☐ Not Used
☐ Livestock ☐ Municipal ☑ Monitoring
☐ Irrigation ☐ Test Hole ☐ Dewatering
☐ Other (specify) _____

7. Status of Well *

☐ Water Supply ☐ Replacement Well ☐ Test Hole
☐ Recharge Well ☐ Dewatering Well ☑ Observation and/or Monitoring Hole
☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality
☐ Abandoned, other (specify) _____
☐ Other (specify) _____

8. Construction Record - Casing * (use negative number(s) to indicate depth above ground surface)

Inside Diameter (in)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (ft)	Depth To (ft)
2	Plastic	0.154	-3	10
4	Steel	0.125	-3	1

9. Construction Record - Screen

Outside Diameter (in)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (ft)	Depth To (ft)
2.375	Plastic	0.01	10	20

10. Water Details

Water found at Depth (ft) ☐ Gas Kind of water ☐ Fresh ☑ Untested ☐ Other

11. Hole Diameter

Depth From (ft)	Depth To (ft)	Diameter (in)
0	20	8.5

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (GPM)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)														

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)													

After test of well yield, water was

☐ Clear and sand free ☐ Other (specify)

Pump intake set at (ft)	Pumping rate (GPM)	Duration of pumping hrs + min	Final water level end of pumping (ft)	Disinfected? * ☐ Yes ☑ No

Recommended pump depth (ft)	Recommended pump rate (GPM)	Well production (GPM)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☑ Make map area bigger

14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☐ Yes ☑ No		2021/08/06

Comments

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
London Soil Test Ltd.	7190

Business Address

Unit Number	Street Number	Street Name *
	712078	Southgate Sdrd 71

City/Town/Village *	Province	Postal Code *
Dundalk	ON	N0C 1B0

Business Telephone Number	Business Email Address
519-455-5777	info@londonsoil.com

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
McIntosh	Tyler	4037

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
McIntosh	Tyler	info@londonsoil.com

Signature	Date Submitted (yyyy/mm/dd)
Tyler McIntosh Digitally signed by Tyler McIntosh DN: cn=Tyler McIntosh, o=London Soil Test Ltd., ou, email=info@londonsoil.com, c=CA Date: 2021.09.08 14:42:47 -04'00'	2021/09/08

17. Ministry Use Only

Audit Number

5VRV O5JH

SB

UTM Zone 17 E 5 R Lot 227 N

Elev. 5 R 1730

Basin 23

The Ontario Water Resources Commission Act

WATER WELL RECORD

WATER RESOURCES DIVISION
AUG 8 1967
ONTARIO WATER RESOURCES COMMISSION

17 No 350

County or District DUFFERIN Township, Village, Town or City MELANCTHON

Con. 1 N.E. Lot PT. 224 Date completed 26 (day) JULY (month) 1967 (year)

[redacted] ress DUNDALK ONT.

Casing and Screen Record

Inside diameter of casing 4"

Total length of casing 97

Type of screen

Length of screen

Depth to top of screen

Diameter of finished hole 4"

Pumping Test

Static level 16

Test-pumping rate 20 G.P.M.

Pumping level 16

Duration of test pumping 3 HRS

Water clear or cloudy at end of test CLEAR

Recommended pumping rate 15 G.P.M.

with pump setting of 25 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
TOP SOIL	0	3	100	FRESH
SAND & BOULDERS	3	25	TO	
SAND & GRAVEL	25	90	102	
GREY ~~ROCK~~ SAND	90	98		
BROWN ROCK	98	102		

For what purpose(s) is the water to be used? STOCK & DOMESTIC

Is well on upland, in valley, or on hillside? UPLAND

Drilling or Boring Firm DURHAM DRILLING & ENTERPRISES LTD

Address DURHAM ONT.

Licence Number 1791

Name of Driller or Borer ED HOTCHKISS

Address DURHAM ONT.

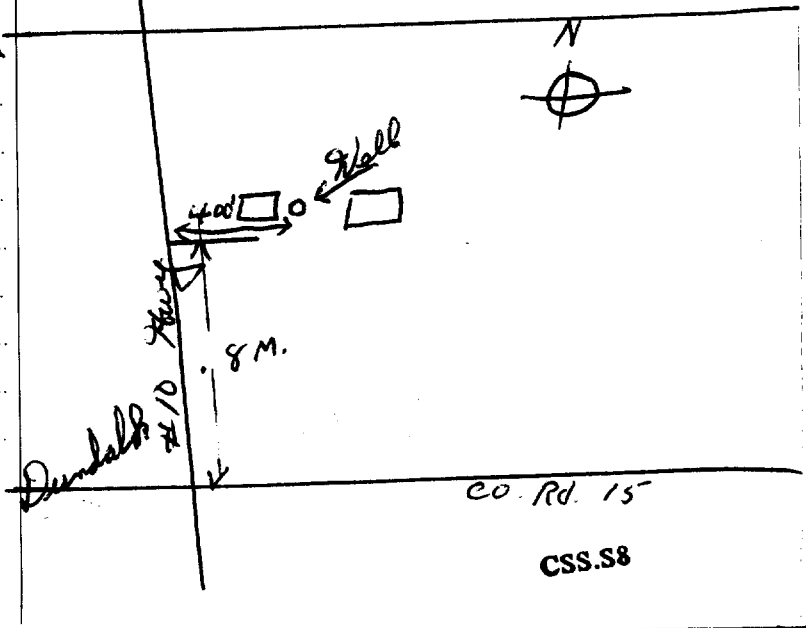
Date July 27-67

P E Johnston

(Signature of Licensed Drilling or Boring Contractor)

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



Form 7 15M-60-4138

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GROUND WATER BRANCH
17 MAY No. 1963 351
ONTARIO WATER RESOURCES COMMISSION

UTM Z E
5 R N
Elev. 5 R 1730

The Ontario Water Resources Commission Act

WATER WELL RECORD

Basin 23
County or District Dufferin
Township, Village, Town or City Melancthon
Con. No. 10. Hwy. Lot 225 227
Date completed 20 (day) Feb. (month) 1963. (year)
[redacted] ress Dundalk.

Casing and Screen Record

Inside diameter of casing 4"
Total length of casing 84'
Type of screen —
Length of screen —
Depth to top of screen —
Diameter of finished hole 4"

Pumping Test

Static level 14'
Test-pumping rate 20 G.P.M.
Pumping level 17'
Duration of test pumping 2 hrs.
Water clear or cloudy at end of test Clear.
Recommended pumping rate 10 G.P.M.
with pump setting of 25' feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
Stones & Boulders	0.	20'		
Gravel & Stones	20'	42'	82'	
Hardpan & Boulders	42'	64'	84'	Fresh
Sand & Gravel	64'	72'		
Gravel	72'	84'		

For what purpose(s) is the water to be used?
Household use.
Is well on upland, in valley, or on hillside? Upland.
Drilling or Boring Firm Durham Drilling Enterprises Ltd.
Address Box 299. Durham Ont.
Licence Number 1000
Name of Driller or Borer Percy Johnston &
Address Fred Hoch Bros.
Date April 2nd. 1963.
Percy Johnston.
(Signature of Licensed Drilling or Boring Contractor)

Form 7 10M-62-1152

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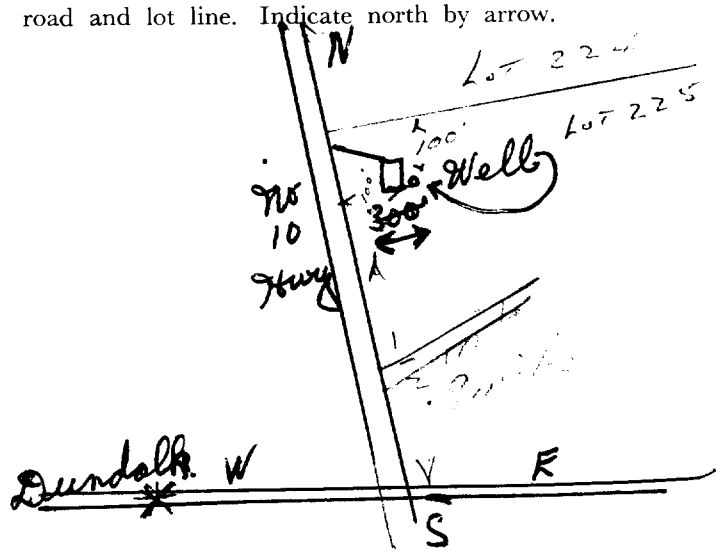
Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



CSS.S8
P.C.

UTM Z E

Sub. 5 R 4 N

Elev. 5 R T 725

Basin 2 3 6

County or District DUFFERIN

The Ontario Water Resources Commission Act

WATER WELL RECORD

GROUND WATER BRANCH
17 No 352
JAN 14
ONTARIO WATER RESOURCES COMMISSION

Township, Village, Town or City MELANCTHON

Con. #10 HIGHWAY Lot 226

Date completed 18TH (day) OCT (month) 1962 (year)

[redacted] ress DUNDALK ONTARIO

Casing and Screen Record

Inside diameter of casing 4"

Total length of casing 79'

Type of screen —

Length of screen —

Depth to top of screen

Diameter of finished hole 4"

Pumping Test

Static level 24'

Test-pumping rate 12 G.P.M.

Pumping level 70 FT.

Duration of test pumping 3 HRS

Water clear or cloudy at end of test CLEAR

Recommended pumping rate 10 G.P.M.

with pump setting of 80 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
TOP SOIL	0'	4'	65	CLEAR
SANDY CLAY	4'	25'	&	
STONEY CLAY	25'	50'	85	FRESH
SANDY CLAY	50'	60'		
~~GREY ROCK~~				
STONEY CLAY	60'	65'		
CLAY	65'	79'		
HARD GREY ROCK	79'	91'		

For what purpose(s) is the water to be used? DOMESTIC

Is well on upland, in valley, or on hillside? UPLAND

Drilling or Boring Firm DURHAM DRILLERS

Address DURHAM ONTARIO BOX 299.

Licence Number 620

Name of Driller or Borer E. HOICHRISS

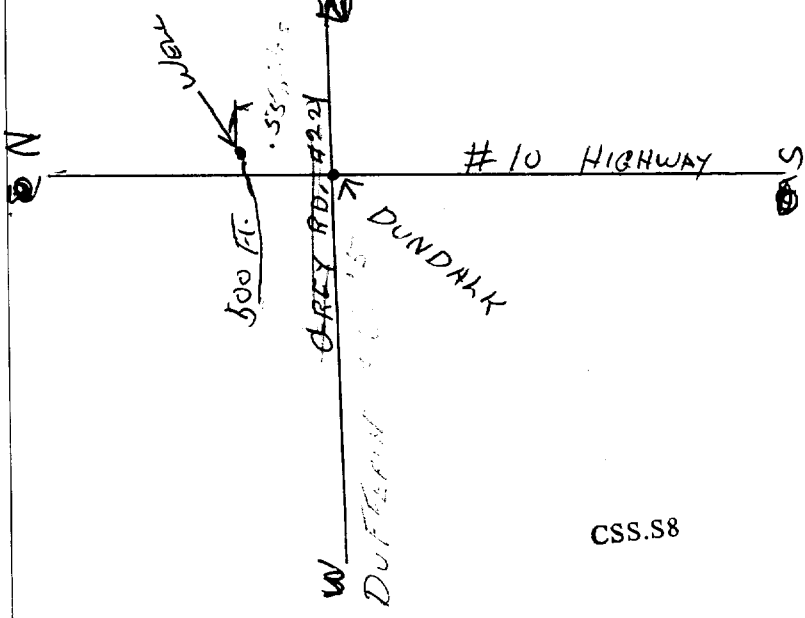
Address DURHAM ONTARIO

Date JAN 4TH 1963

Percy Johnston
(Signature of Licensed Drilling or Boring Contractor)

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



Form 7 10M-62-1152

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SRE CONT LOT 224

The Ontario Water Resources Commission Act

WATER WELL RECORD

Water management in Ontario

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 (1 2) | 1701035 (3) | MUNICIP. 17004 (10-14) | CON. SR E (15-22) | 01 (23 24)

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT 25-27
~~GREY~~ DUFFERIN	~~PROTON~~ MELANCTHON	I S.RI.E.	224

OWNER (SURNAME FIRST) [redacted] ADDRESS DUNDALK

DATE COMPLETED 28-53: DAY 06 MO. NOV YR 1969

G 92730 (24) RC. 4 (25) ELEVATION 1230 (26) RC. 5 (30) BASIN CODE 23 (31) I II III IV (47)

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	DEPTH – FEET TO
	CLAY-ROCKS, GRAVEL LAYERS			0	105
GREY	BROKEN - LIMESTONE.			105	121

31: 0105 0111 | 0121 0125

32: (10 14 15 21 32 43 54 65 75 80)

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0116 (10-13)	1 ☑ FRESH 3 ☐ SULPHUR (14) / 2 ☐ SALTY 4 ☐ MINERAL
121	
(15-18)	1 ☐ FRESH 3 ☐ SULPHUR (19) / 2 ☐ SALTY 4 ☐ MINERAL
(20-23)	1 ☐ FRESH 3 ☐ SULPHUR (24) / 2 ☐ SALTY 4 ☐ MINERAL
(25-28)	1 ☐ FRESH 3 ☐ SULPHUR (29) / 2 ☐ SALTY 4 ☐ MINERAL
(30-33)	1 ☐ FRESH 3 ☐ SULPHUR (34) / 2 ☐ SALTY 4 ☐ MINERAL (80)

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	DEPTH – FEET TO
(10-11) 04	1 ☑ STEEL (12) 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	205	0	0121 (13-16)
(17-18)	1 ☐ STEEL (19) 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	SLOTTED CASING	FROM [redacted]	114 FT TO 131 FT 5 IN (20-23 27-30)
(24-25)	1 ☐ STEEL (26) 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.) 31-33	DIAMETER INCHES 34-38	LENGTH FEET 39-40
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET 41-44	80

61 PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
(10-13)	(14-17)	
(18-21)	(22-25)	
(26-29)	(30-33) (80)	

71 PUMPING TEST

PUMPING TEST METHOD (10)	PUMPING RATE (11-14)	DURATION OF PUMPING (15-16 HOURS 17-18 MINS.)
1 ☑ PUMP 2 ☐ BAILER	0008 GPM.	02 HOURS 00 MINS.

STATIC LEVEL (19-21)	WATER LEVEL END OF PUMPING (22-24)	WATER LEVELS DURING (25) 1 ☑ PUMPING 2 ☐ RECOVERY	15 MINUTES (26-28)	30 MINUTES (29-31)	45 MINUTES (32-34)	60 MINUTES (35-37)
024 FEET	024 FEET		030 FEET	030 FEET	030 FEET	030 FEET

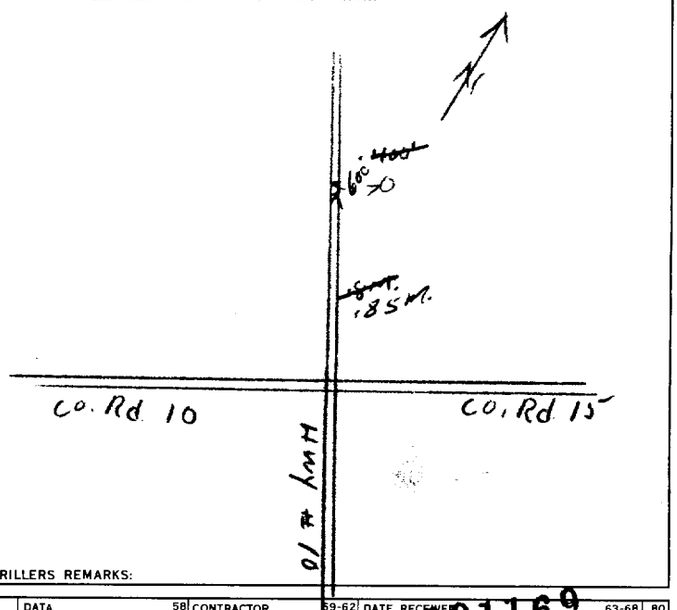
IF FLOWING, GIVE RATE (38-41)	PUMP INTAKE SET AT	WATER AT END OF TEST (42)
GPM.	FEET	1 ☑ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING (43-45)	RECOMMENDED PUMPING RATE (46-49)
☐ SHALLOW ☑ DEEP	065 FEET	0008 GPM.

(50-53) 016.0 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL (54)

1 ☑ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE (55-56) 12

1 ☑ DOMESTIC 2 ☑ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING ☐ OTHER 9 ☐ NOT USED

METHOD OF DRILLING (57)

1 ☐ CABLE TOOL 2 ☑ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: LADCO DRILLING — LICENCE NUMBER: 3423

ADDRESS: Hillsburg R.R. #1

NAME OF DRILLER OR BORER: THOMAS LANG — LICENCE NUMBER: 3423

SIGNATURE OF CONTRACTOR: T. Lang — SUBMISSION DATE: DAY 13 MO. NOV YR. 69

OFFICE USE ONLY

DATA SOURCE (58): 1 — CONTRACTOR (59-62): 3316 — DATE RECEIVED (63-68): 191169 (80)

DATE OF INSPECTION — INSPECTOR

REMARKS:

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MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

ONTARIO

4IA/IW

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 1701454 | MUNICIP. 17004 | CON. SR. E | 01

COUNTY OR DISTRICT: ~~Grey~~ DUFFERIN
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Melancthon
CON., BLOCK, TRACT, SURVEY, ETC.: 1 TSRE
LOT: 228
[redacted] Dundalk Ont.
DATE COMPLETED: DAY 06 MO 04 YR 73
UTM: 92200 | RC. | ELEVATION 1725 | RC. 5 | BASIN CODE 23

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Clay Stones & Gravel			0	25
	Hardpan			25	100
	~~Rock~~ LIMESTONE			100	212

31 | 0025 | 05 | 12 | 11 | 0100 | 14 | 0212 | 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0212	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
07	☒ 1 STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE ~~4 OPEN HOLE~~	241	0	~~100~~ 0100
			100	~~212~~ 0212
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE GPM.	DURATION OF PUMPING HOURS	MINS
1 ☒ PUMP ~~2 BAILER~~	0021	05	00

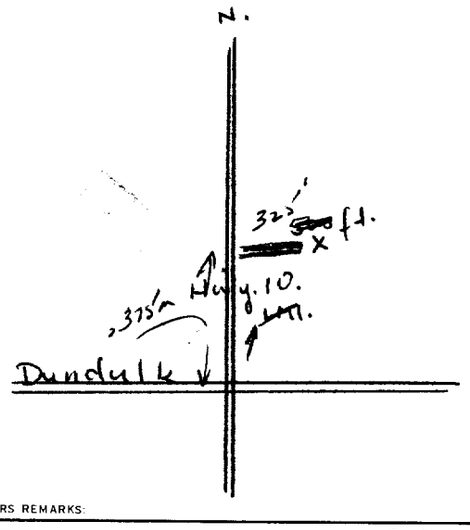
STATIC LEVEL FEET	WATER LEVEL END OF PUMPING FEET	WATER LEVELS DURING	15 MINUTES FEET	30 MINUTES FEET	45 MINUTES FEET	60 MINUTES FEET
040	110	1 ☒ PUMPING 2 ☐ RECOVERY	080	110	110	110

IF FLOWING, GIVE RATE GPM	PUMP INTAKE SET AT FEET	WATER AT END OF TEST	RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING FEET	RECOMMENDED PUMPING RATE GPM.
	190	1 ☐ CLEAR 2 ☒ CLOUDY	☐ SHALLOW ☑ DEEP	190	0021

50-53: 000.3 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL

54: 1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED

WATER USE

55-56: 1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED

01

METHOD OF DRILLING

57: 1 ☒ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: S. Neumann — LICENCE NUMBER: 3813
ADDRESS: R. R. 4. Dundalk
NAME OF DRILLER OR BORER — LICENCE NUMBER
SIGNATURE OF CONTRACTOR: S. Neumann — SUBMISSION DATE: DAY 6. MO. 4. YR. 73

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 3813 — DATE RECEIVED 63-68: 060673 — 80
DATE OF INSPECTION — INSPECTOR
REMARKS: CSS.S8
P
WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 07-091

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1703380

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
DUFFERIN	MELANCTON	1 NETSR PT	222

[redacted] BOX 67 DUNDALK NOC 1B0

DATE COMPLETED: DAY 5 MO 5 87

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BLACK	TOPSOIL			0	1
BROWN	HARDPAN & GRAVEL			1	58
BROWN	SAND & GRAVEL			58	80

47 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
70	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
TO	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
80	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
5"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	1/188	0	80
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE: | DEPTH TO TOP OF SCREEN FEET:

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☒ BAILER	20 GPM	3 HOURS 30 MINS

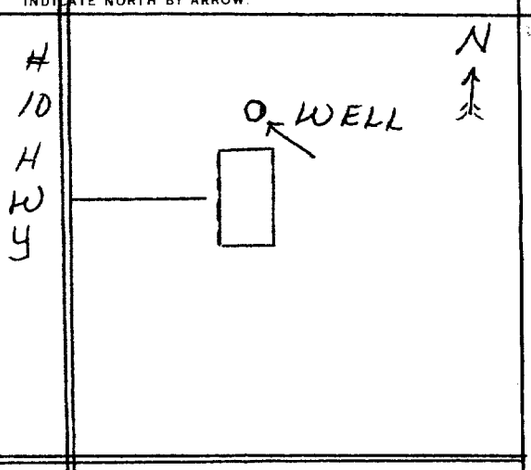
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
6 FEET	18 FEET	1 ☐ PUMPING 2 ☒ RECOVERY	8 FEET	6 FEET	6 FEET	6 FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	22 FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	60 FEET	12 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS: 06023

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE

1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD

1 ☒ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

TRACTOR: 1 MORILLING ENT LTD | LICENCE NUMBER: 1804

RHAM NOGIRO | LICENCE NUMBER: T-0206

ANYI

ston | SUBMISSION DATE: DAY 6 MO 5 87 YR

OFFICE USE ONLY

DATE RECEIVED: 260587

DATE OF INSPECTION: | INSPECTOR:

REMARKS:

CSS.ES

FORM NO. 0506—4—77 FORM 7

OF THE ENVIRONMENT COPY

UTM 17 Z 548115 E
9 R 4819065 10 N

4 1/4 west

Elev. 9 R 17013

Basin 23

ONTARIO

RECEIVED
JUL 30 1953
GEOLOGICAL BRANCH
DEPARTMENT OF MINES

25 No 876

X

The Well Drillers Act

Department of Mines, Province of Ontario

Water Well Record

County or Territorial District.... Grey .... Township, ~~Village, Town or City~~ Village of Dundalk

Con. — Lot — Street and Number (if in Village, Town or City)....

Owner.... [redacted] Address.... Dundalk Ont.

Date Completed.... 28 (day) June (month) 53 (year) Cost of Well (excluding pump)....

Pipe and Casing Record

Casing diameter(s).... 4" outside

Length(s) of casing(s).... 1.1.9'

Type of screen.... none used

Length of screen....

Distance from top of screen to ground level....

Is well a gravel-wall type?....

Pumping Test

Date....

Static level.... 20'

Pumping level.... 20' how

Pumping rate.... 600 gal. per ~~minute~~

Duration of test.... one hours

Distance from cylinder or bowls to ground level....

Water Record

Kind (fresh or mineral).... fresh

Quality (hard, soft, contains iron, sulphur, etc.) medium hard

Appearance (clear, cloudy, coloured).... clear

For what purpose(s) is the water to be used?.... Domestic

How far is well from possible source of contamination?....

What is the source of contamination?....

Enclose a copy of any mineral analysis that has been made of water....

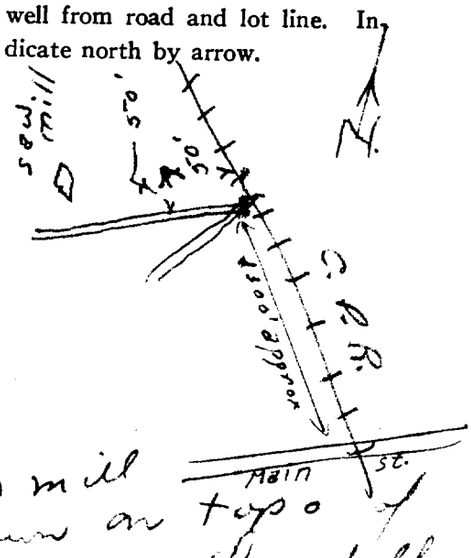
Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises

Well Log

Overburden and Bedrock Record	From	To
clay & boulders	0 ft.	117 ft.
rock	117	141

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



Situation: Is well on upland, in valley, or on hillside?....

Drilling Firm....

Address....

Name of Driller.... M. A. Bellerby Address 19 Melgund Rd. Toronto

Date.... July 28/53 Licence Number.... 48

M. A. Bellerby
Signature of Licensee

FORM 5

4/A/1

UTM 17 Z 548225 E

9 R 4819078 10 N

Elev. 9 R 1707

Basin 23

ONTARIO

The Water-well Drillers Act, 1954

Department of Mines

RECEIVED

FEB 16 1955

GEOLOGICAL BRANCH
DEPARTMENT OF MINES

25 No 882

Water-Well Record

County or Territorial District Grey Township, Village, ~~Town or City~~ Flesherton

Con. — Lot Centre Street and Number (if in Village, Town or City) Flesherton

Owner [redacted] Address

Date completed 13 10 1954
(day) (month) (year)

Pipe and Casing Record

Casing diameter(s) 4" O.D.

Length(s) 100

Type of screen No Screen

Length of screen

Pumping Test

Static level 25' Ft.

Pumping rate 150 Gal per Hour

Pumping level 25 Ft.

Duration of test 1 Hr.

Well Log

Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
Clay & Stones	Ground Level	100	150	125'	Fresh
Limestone Rock	100	150			

For what purpose(s) is the water to be used?

Domestic - house -

Is water clear or cloudy? Clear

Is well on upland, in valley, or on hillside? upland

Drilling firm M. A. Bellerby

Address

Name of Driller M. A. Bellerby

Address 19 Collingwood Rd Owen Sound

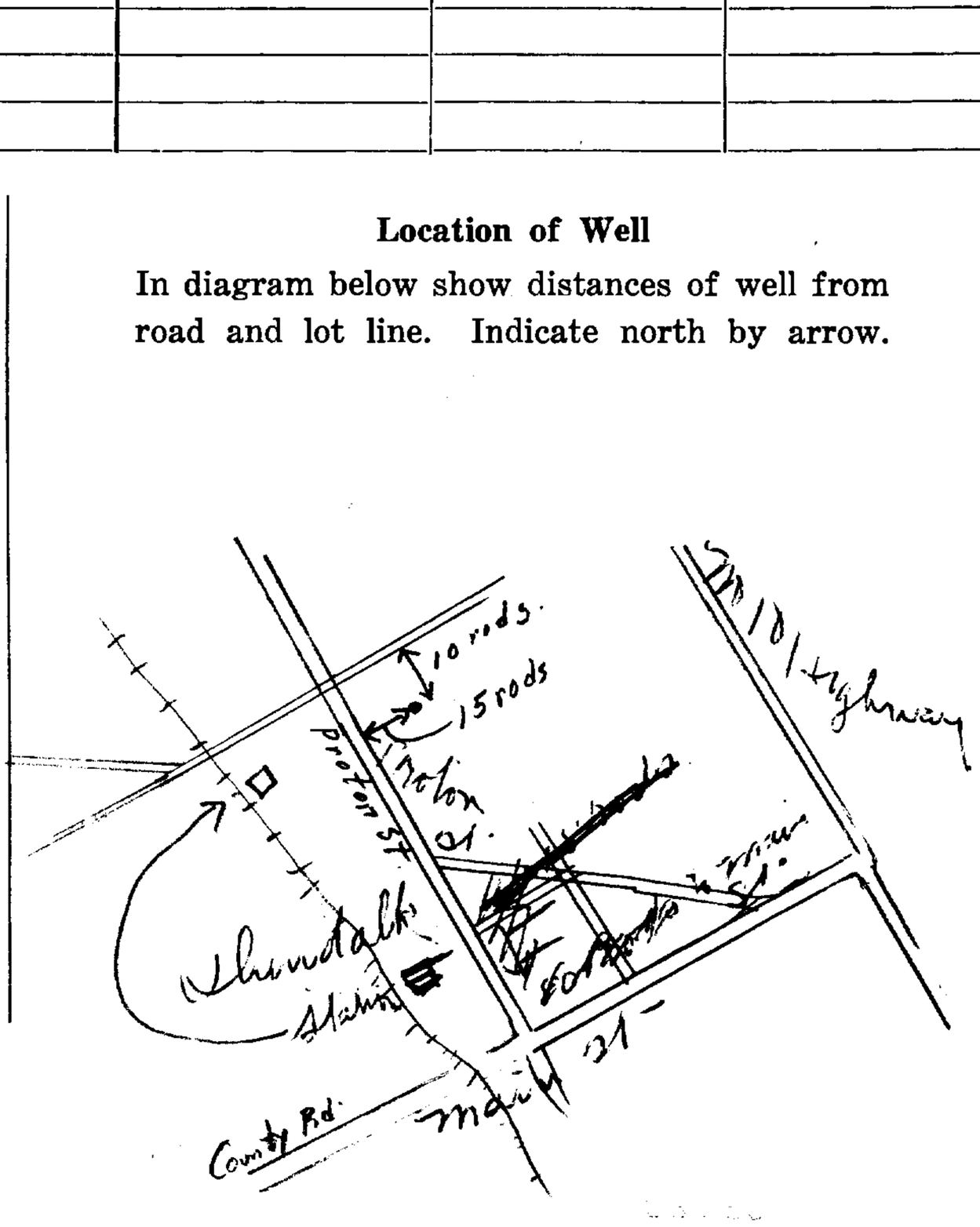
Licence Number 48

I certify that the foregoing statements of fact are true.

Date Oct-15 M. A. Bellerby
Signature of Licensee

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



Form 5

41 A/11 e

UTM | 17 | Z | 541910 | E
| 9 | R | 4891052 | 5 | N
Elev. | 9 | R | 17010 |
Basin | 23 | | |

ONTARIO

The Water-well Drillers Act, 1954
Department of Mines

25 No 888

GROUND WATER BRANCH
APR 17 1957
ONTARIO WATER RESOURCES COMMISSION

Water-Well Record

[redacted] COEY [redacted] Township, Village, ~~Town or City~~ Dundalk
[redacted] Village, Town or City)
[redacted] address
Date completed 1 (day) May (month) 1956 (year)

Pipe and Casing Record

Casing diameter(s) 3 5/8
Length(s) 102
Type of screen
Length of screen

Pumping Test

Static level 13
Pumping rate 15 G.P.M.
Pumping level 13
Duration of test

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
Clay, boulders	0	102			
Limestone	102	158	150	137	Fresh

For what purpose(s) is the water to be used?
Domestic
Is water clear or cloudy? clear
Is well on upland, in valley, or on hillside? upland

Drilling firm M. S. Bellerby
Address

Name of Driller
Address

Licence Number 98

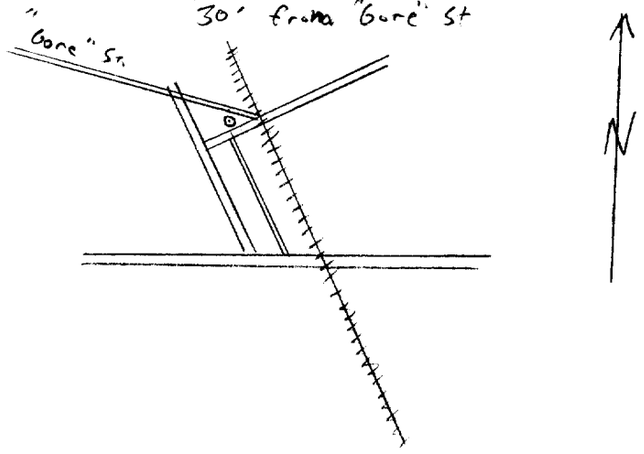
I certify that the foregoing statements of fact are true.

Date Apr 17/57 M. S. Bellerby
Signature of Licensee

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.

40 rds from R.R.
30' from "Gore" St



Form 5

4/A/ ~~Sept~~

UTM 17 Z 548140 E
9 R 4819070 N
Elev. 9 R 1701 4
Basin 23

25 № 897

GROUND WATER BRANCH
JUN 16 1960
ONTARIO WATER RESOURCES COMMISSION

The Ontario Water Resources Commission Act, 1957

WATER WELL RECORD

County ~~or District~~ Grey — Township, (Village) Town or City Village of Dundalk

Con. Block P — Lot T — Date completed 5 (day) May (month) 1960 (year)

Owner Village of Dundalk (print in block letters) — Address Dundalk, Ont.

Casing and Screen Record — Village well # 2

Inside diameter of casing 10"
Total length of casing 99'-10"
Type of screen —
Length of screen —
Depth to top of screen —
Diameter of finished hole 10"

Pumping Test

Static level 23
Test-pumping rate 45 G.P.M.
Pumping level 153'
Duration of test pumping 20 hrs.
Water clear or cloudy at end of test clear
Recommended pumping rate 45 G.P.M.
with pumping level of 175'

Well Log — Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, sulphur)
Fill, -1	0	2			
Sand & gravel	2	12			
hardpan, stoney	12	54			
Sand & clay	54	62			
Sand & gravel	62	98			
Limestone, light brown, hard	98	102			
" , Buff, hard	102	152	104'	81'	Fresh
" , brown, hard	152	195	195	172'	Fresh
" white, hard	195	208			
" Light brown, hard	208	218			
" Buff, hard	218	228	228	205'	Fresh
" Brown, hard	228	248	248	225'	Fresh
" dark Brown, red hard	248	273	—		

For what purpose(s) is the water to be used?
Municipal Supply

Is well on upland, in valley, or on hillside?
upland

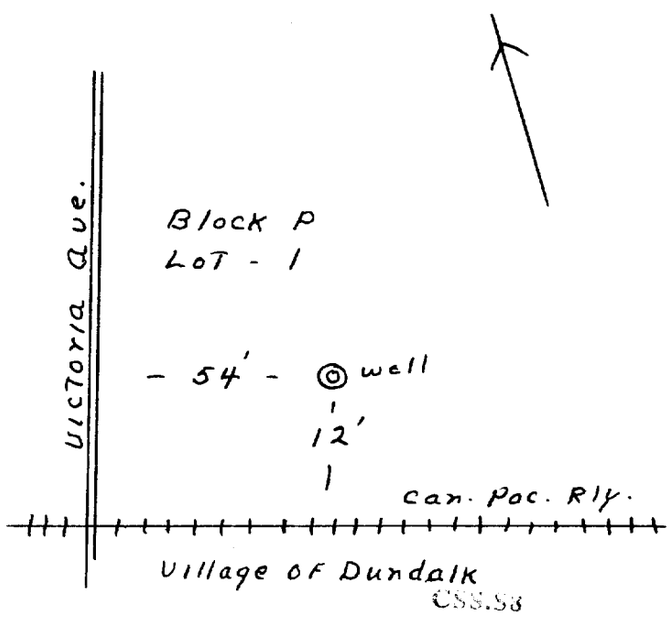
Drilling Firm G. L. Davidson
Address Wingham

Licence Number 593
Name of Driller E. Thompson
Address Wingham
Date May 30

G. L. Davidson
(Signature of Licensed Drilling Contractor)

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



CSS.58

GD

41A/1 ~~East~~

UTM 17 Z 547975 E

9 R 4891085 0 N

Elev. 9 R 1701 4

Basin 23

County or District ~~Grey~~

Con. [redacted] Lot

WATER RESOURCES DIVISION
25 No 100
AUG 26 1965
ONTARIO WATER RESOURCES COMMISSION

The Ontario Water Resources Commission Act

WATER WELL RECORD

~~Township~~, Village, ~~Town or City~~ ~~Proton~~ Dundalk

Date completed 9 (day) June (month) 1965 (year)

ress Dundalk.

Casing and Screen Record

Inside diameter of casing 4"

Total length of casing 114'

Type of screen —

Length of screen —

Depth to top of screen —

Diameter of finished hole 4"

Pumping Test

Static level 40'

Test-pumping rate 5 G.P.M.

Pumping level 50

Duration of test pumping 5 hrs

Water clear or cloudy at end of test Clear

Recommended pumping rate 4 G.P.M.

with pump setting of 80' feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
Hard Pan & Boulders	0	114		
Gravel	114	117		
			115	Fresh
			to	
			117	

For what purpose(s) is the water to be used?

Household

Is well on upland, in valley, or on hillside? Upland

Drilling or Boring Firm Durham Drilling Enterprises Ltd

Address Box 299. Durham

Licence Number 1767

Name of Driller or Borer David Watson

Address Priceville

Date June 10. 1965

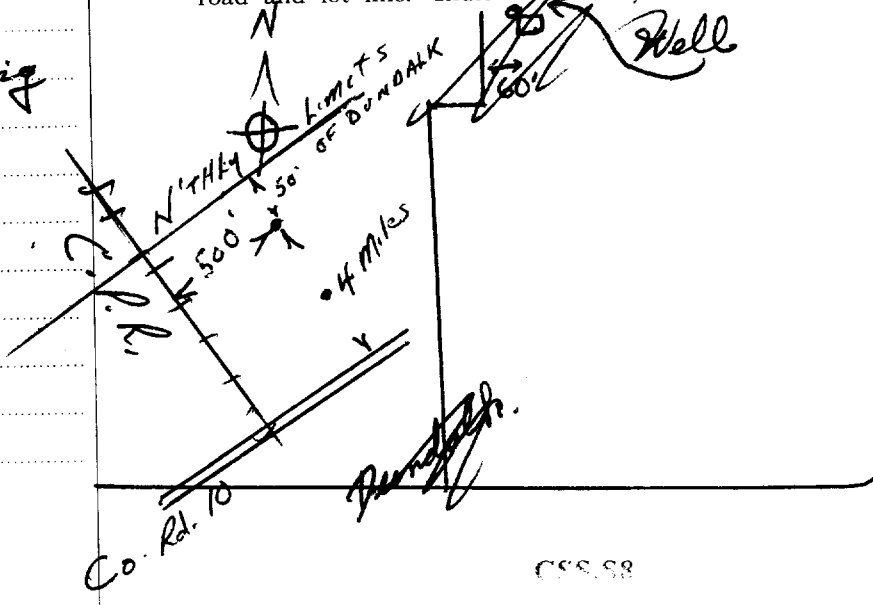
Percy Johnston
(Signature of Licensed Drilling or Boring Contractor)

Form 7 15M-60-4138

OWRC COPY

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



CSS 58

Ontario (https://www.ontario.ca/page/government-ontario)

Map: Well records

This map allows you to search and view well record information from reported wells in Ontario.

Full dataset is available in the Open Data catalogue (https://data.ontario.ca/dataset/well-records) .

Go Back to Map

Well ID

Well ID Number: 2502801
Well Audit Number:
Well Tag Number:
This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location		

Township	DUNDALK VILLAGE
Lot	
Concession	
County/District/Municipality	GREY
City/Town/Village	
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 17 Easting: 548014.30 Northing: 4891073.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To
	LOAM			0 ft	3 ft
	CLAY	MSND		3 ft	20 ft
	GRVL	BLDR		20 ft	30 ft
	CLAY	GRVL		30 ft	40 ft
	GRVL	BLDR		40 ft	50 ft
	CLAY	GRVL		50 ft	127 ft
	ROCK			127 ft	144 ft

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant Used (Material and Type)	Volume Placed

Method of Construction & Well Use

Method of Construction	Well Use
Cable Tool	Domestic
	Livestock

Status of Well

Water Supply

Construction Record - Casing

Inside Diameter	Open Hole or material	Depth From	Depth To
4 inch	STEEL		127 ft
4 inch	OPEN HOLE		144 ft

Construction Record - Screen

Outside Diameter	Material	Depth From	Depth To

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 1804

Results of Well Yield Testing

After test of well yield, water was	CLOUDY
If pumping discontinued, give reason	
Pump intake set at	
Pumping Rate	15 GPM

Duration of Pumping	2 h:0 m
Final water level	60 ft
If flowing give rate	
Recommended pump depth	85 ft
Recommended pump rate	12 GPM
Well Production	PUMP
Disinfected?	

Draw Down & Recovery

Draw Down Time(min)	Draw Down Water level	Recovery Time(min)	Recovery Water level
SWL	35 ft		
1		1	

2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
45		45	
50		50	

60		60	

Water Details

Water Found at Depth	Kind
135 ft	Fresh

Hole Diameter

Depth From	Depth To	Diameter

Audit Number:

Date Well Completed: March 07, 1969

Date Well Record Received by MOE: April 08, 1969

Related

How to use a Ministry of the Environment map (https://www.ontario.ca/page/how-use-ministry-environment-map#wells)

Technical documentation: Metadata record (https://data.ontario.ca/dataset/well-records/resource/3031344e-e3f2-48d5-888c-c1deadfd2f77)

Updated: October 18, 2021
Published: March 20, 2014

The Ontario Water Resources Commission Act

WATER WELL RECORD

41 A 1 W C

Water management in Ontario

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 2503215 | MUNICIP. 2501/2 | CON. SR W C 01

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
GREY	PROTON	1 ~~SWFSR~~ WSR	~~220~~ 221, ~~222~~

[redacted] UNDALE — DATE COMPLETED DAY 01 MO ~~July~~ YR 70

92900 | RC. 4 | ELEVATION 1725 | RC. 5 | BASIN CODE 23

17

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	DEPTH – FEET TO
BLACK	TOPSOIL	BOULDERS	LOOSE	0	2
GREY	CLAY	11	PACKED	2	30
11	11	STONES	11	30	60
11	SAND	CLAY	11	60	100
BROWN	CLAY	BOULDERS	11	100	120
11	ROCK			120	130

31 | 0002802/13 | 0030205/13 | 0060205/12 | 0100209ast | 0120605/13 | 0130626

32

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0125	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
0130	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	DEPTH – FEET TO
~~4~~ 04	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ ~~OPEN HOLE~~	4	0 120	0120 ~~130~~
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			0130
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	DEPTH SET AT – FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☒ BAILER	0015 GPM.	02 HOURS 20 MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
017 FEET	017 FEET	017 FEET	017 FEET	017 FEET	017 FEET

1 ☒ PUMPING 2 ☐ RECOVERY

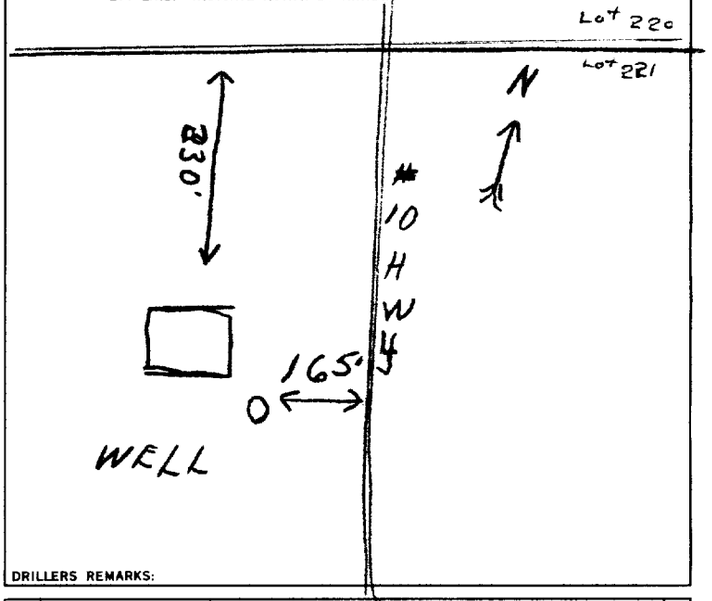
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
X GPM.	60 FEET	1 ☐ CLEAR 2 ☒ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	060 FEET	0015 GPM.

030.0 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 12

1 ☒ DOMESTIC 2 ☒ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING ☐ OTHER 9 ☐ NOT USED

METHOD OF DRILLING

1 ☒ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: ~~ED~~ DURHAM DRILLING & ENTILED — LICENCE NUMBER 1804

ADDRESS: DURHAM ONT BOX 299

NAME OF DRILLER OR BORER: ED HOTCHKISS — LICENCE NUMBER

SIGNATURE OF CONTRACTOR: P Edmonston — SUBMISSION DATE DAY 1 MO July YR 70

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 1804 | DATE RECEIVED 060770

DATE OF INSPECTION 21/6/71 | INSPECTOR PE

REMARKS:

OWRC COPY

41A 1W

The Ontario Water Resources Commission Act

WATER WELL RECORD

Water management in Ontario

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 2503216 | MUNICIP. 25702 | CON.

COUNTY OR DISTRICT: GREY | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: PROTON DUNDALK | CON., BLOCK, TRACT, SURVEY, ETC. | LOT

[redacted] DUNDALK ONT. | DATE COMPLETED 06-53 DAY 26 MO JUNE YR 70

RC. 81200 | RC. 4 | ELEVATION 1720 | RC. 5 | BASIN CODE 23

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	DEPTH – FEET TO
BLACK	TOPSOIL			0	2
BROWN	HARD PAN & STONES.			2	103
BROWN	HARD ROCK			103	123

31 | 0002802 | 0103614/12 | 0123626

32

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0115	1 ☐ FRESH 2 ☒ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
~~70~~	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
~~123~~	1 ☒ ~~FRESH~~ 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	DEPTH – FEET TO
04"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	1/4"	0	~~103~~ 0103
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ ~~OPEN HOLE~~		103	~~123~~ 0123
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☒ BAILER	0010 GPM.	02 HOURS 20 MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
042 FEET	045 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	045 FEET	~~045~~ FEET	~~045~~ FEET	~~045~~ FEET

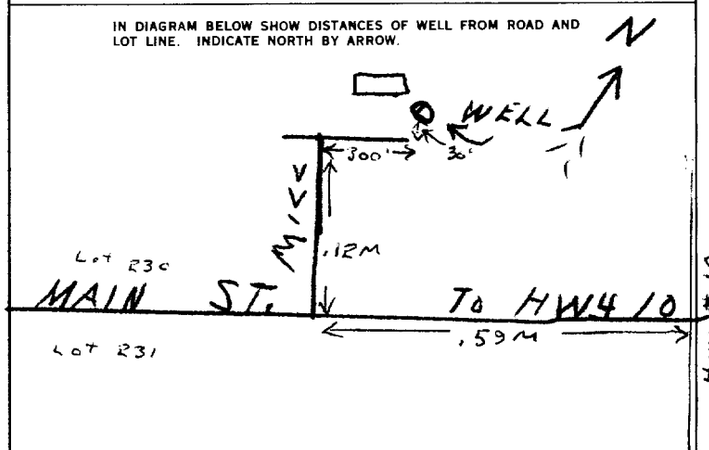
IF FLOWING, GIVE RATE ____ GPM. | PUMP INTAKE SET AT ____ FEET | WATER AT END OF TEST 1 ☐ CLEAR 2 ☒ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING 080' FEET | RECOMMENDED PUMPING RATE 0008 GPM.

003.3 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL 54

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 55-56 12

1 ☒ ~~DOMESTIC~~ 2 ☒ ~~STOCK~~ 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING 57

1 ☒ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: DURHAM DRILLING ENT. LTD | LICENCE NUMBER: 1804

ADDRESS: BOX 299 DURHAM.

NAME OF DRILLER OR BORER: David Watson | LICENCE NUMBER: 1804

SIGNATURE OF CONTRACTOR: P.E. Johnston | SUBMISSION DATE: DAY 26 MO June YR 70

OFFICE USE ONLY

DATA SOURCE 58: 1 | CONTRACTOR 59-62: 1804 | DATE RECEIVED 63-68: 060770

DATE OF INSPECTION: 21/6/71 | INSPECTOR: P/E

REMARKS:

OWRC COPY

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

41 A/1W

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 2505795 | MUNICIP 25012 | CON SR W | 01

COUNTY OR DISTRICT: Grey

TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Proton

CON., BLOCK, TRACT, SURVEY, ETC.: 1 S. Rd W

LOT: A229

[redacted] 11 St. Dundalk

DATE COMPLETED: DAY 17 MO 08 YR 76

UTM ZONE | RC | EASTING 291360 | NORTHING 5 | ELEVATION 1715 | RC 5 | BASIN CODE 23

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Black	Topsoil			0	1
Brown	Hardpan	Boulders, Sand, Gravel		1	67
Grey	Hardpan			67	74
Brown	Hardpan	Boulders		74	104
Grey	Limestone			104	112
Blue	Limestone			112	119
Grey	Limestone	Shale	Hard	119	132

31 | 0001802 | 0006761413 08 | 0007421 14 | 0104611413 | 0112215 | 0119315 | 1

32 | 0132211517 23

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0128	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
04"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	205	0	0106
04"	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		1060	132
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER

PUMPING RATE: 0008 GPM | DURATION OF PUMPING: 01 HOURS 45 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
060 FEET	090 FEET		090 FEET	090 FEET	090 FEET	090 FEET

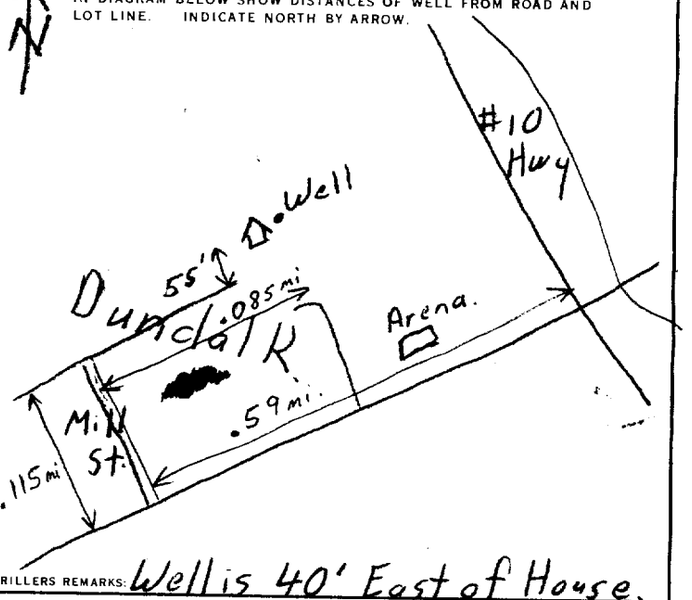
IF FLOWING, GIVE RATE: GPM | PUMP INTAKE SET AT: 90 FEET | WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING: 090 FEET | RECOMMENDED PUMPING RATE: 0005 GPM

GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS: Well is 40' East of House.

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE

01

1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING

2

1 ☐ CABLE TOOL 2 ☒ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Ray Spencer + Son Well Dr. Inc. | LICENCE NUMBER: 4856

ADDRESS: RR #5 Mount Forest.

NAME OF DRILLER OR BORER: Mike Kelly | LICENCE NUMBER:

SIGNATURE OF CONTRACTOR | SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 4856 | DATE RECEIVED: 22 09 76

DATE OF INSPECTION: June 16/77 | INSPECTOR

REMARKS: P/B.S. WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 MOE 07-091

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

Ontario

WATER WELL RECORD

8.P.M. 41A/1W

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

(11) 2506029 | MUNICIP. 25012 | CON. SR W | LOT 01

COUNTY OR DISTRICT: Grey
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Proton
CON., BLOCK, TRACT, SURVEY, ETC.: 1st ~~Range~~ S Rd W
LOT: 229
OWNER (SURNAME FIRST): [redacted]
ADDRESS: 1 Melrose ST. Dundalk.
DATE COMPLETED: DAY 15 MO. 04 YR. 77
NORTHING: 891150 | RC. 5 | ELEVATION: 1705 | RC. 5 | BASIN CODE: 33

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Black	Topsoil			0	1
Brown	Sandy Clay	Gravel		1	27
Brown	Hardpan	Gravel, Boulders.		27	100
Grey	Limestone	Brown Shale.		100	109

(31) 0001802 | 0027605 11 81 | 0100611 11 13 | 0109215 17
(32)

(41) WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
107	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

(51) CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
04"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	205	0	102
04"	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		102	109
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

(61) PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)
10-13	14-17	
18-21	22-25	
26-29	30-33	

(71) PUMPING TEST

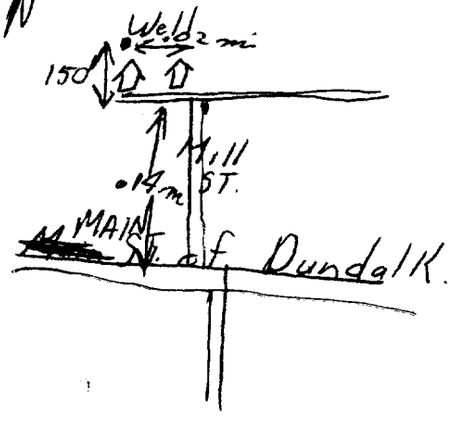
PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0018 GPM	01 HOURS 30 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
038 FEET	060 FEET		060 FEET	060 FEET	060 FEET	060 FEET

IF FLOWING, GIVE RATE: GPM
PUMP INTAKE SET AT: 60 FEET
WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING: 060 FEET
RECOMMENDED PUMPING RATE: 0007 GPM
GPM/FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS: Well is 150' From Rd.

FINAL STATUS OF WELL (54): 1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED POOR QUALITY; 7 ☐ UNFINISHED

WATER USE (55-56) 01: 1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED

METHOD OF DRILLING (57) 2: 1 ☐ CABLE TOOL; 2 ☒ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Ray Spencer & Son Well Dr. Inc. | LICENCE NUMBER: 4856
ADDRESS: RR #5 Mount Forest.
NAME OF DRILLER OR BORER: Mike Kelly | LICENCE NUMBER:
SIGNATURE OF CONTRACTOR | SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE (58): 1 | CONTRACTOR (59-62): 4856 | DATE RECEIVED (63-68): 020577
DATE OF INSPECTION: 12/6/76 | INSPECTOR:
REMARKS:
P
WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 MOE 07-091

Ministry of the Environment

Ontario

The Ontario Water Resources Act

WATER WELL RECORD

4/A/1 W

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 2506475 MUNICIP. 25012 CON. SR W 02

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
GREY	DROTON	II 2 S-Rd W.	~~225~~ 224

[redacted] RR2 Dundalk. DATE COMPLETED DAY 29 MO 04 YR 78

UTM 90800 5 ELEVATION 1700 5 BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Top Soil			0	2
	SANDY CLAY			2	48
	GRAVEL			48	74
BROWN	LIME STONE			74	93

31 0002 02 | 0048 0581 | 0074 11 | 0093 36 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0093	1 ☑ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06 1/4	1 ☑ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0074
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		74	0093
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

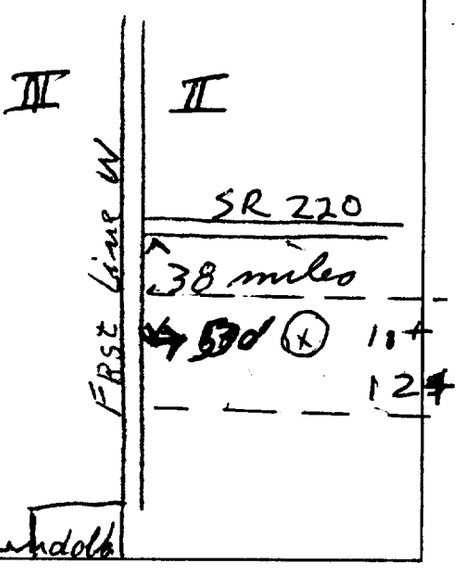
PUMPING TEST METHOD	PUMPING RATE GPM	DURATION OF PUMPING HOURS	MINS
1 ☑ PUMP 2 ☐ BAILER	0020	04	00

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
012 FEET	~~025~~ 030 FEET	1 ☐ PUMPING 2 ☐ RECOVERY	030 FEET	030 FEET	030 FEET	030 FEET

IF FLOWING, GIVE RATE GPM	PUMP INTAKE SET AT FEET	WATER AT END OF TEST	RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING FEET	RECOMMENDED PUMPING RATE GPM
		1 ☑ CLEAR 2 ☐ CLOUDY	☐ SHALLOW ☑ DEEP	060	0020

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS: Dundalk

FINAL STATUS OF WELL 54: 1 ☑ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED — 1

WATER USE 55-56: 1 ☑ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; ☐ OTHER; 9 ☐ NOT USED — 01

METHOD OF DRILLING 57: 1 ☑ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING — 1

CONTRACTOR

NAME OF WELL CONTRACTOR: IMBRO BREBRIC — LICENCE NUMBER: 1458

ADDRESS: Box 382, Dundalk, Ont.

NAME OF DRILLER OR BORER — LICENCE NUMBER

SIGNATURE OF CONTRACTOR: Imbro Brebric — SUBMISSION DATE: DAY 29 MO. 4 YR. 78

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 1458 — DATE RECEIVED 63-68: 170778

DATE OF INSPECTION: 11, 6, 79 — INSPECTOR

REMARKS:

P LL
WI LL

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

41A/1W

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11

2509109

MUNICIP 250.12 | CON CON | 01

COUNTY OR DISTRICT: Grey
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Proton
CON., BLOCK, TRACT, SURVEY, ETC.: I. GVR
LOT: 229
[redacted]
Dundalk
DATE COMPLETED: DAY 15 MO 9 YR 87
89/1/25
ELEVATION: 1700
BASIN CODE:

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Top soil			0	1
	Clay stones & some gravel			1	53
	Hardpan & stones			53	106
	Limestone			106	183

31
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
183	1 ☒ FRESH 2 ☐ SALTY; 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY; 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY; 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY; 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY; 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC	.188	0	107
			107	183
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

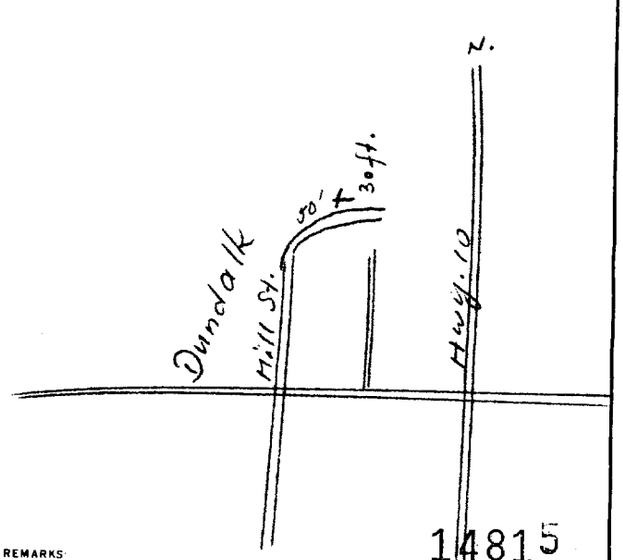
PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER — Compr.
PUMPING RATE: 6 GPM
DURATION OF PUMPING: 0 HOURS ____ MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☒ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
54 FEET	128 FEET	93 FEET	128 FEET	128 FEET	128 FEET

IF FLOWING, GIVE RATE: ____ GPM
PUMP INTAKE SET AT: 150 FEET
WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☐ DEEP
RECOMMENDED PUMP SETTING: 150 FEET
RECOMMENDED PUMPING RATE: 6 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS: 14815

FINAL STATUS OF WELL
1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 8 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED; 9 ☐ DEWATERING

WATER USE
1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED

METHOD OF CONSTRUCTION
1 ☐ CABLE TOOL; 2 ☒ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING; ☐ DIGGING; ☐ OTHER
3813

CONTRACTOR

NAME OF WELL CONTRACTOR: S. Neumann
WELL CONTRACTOR'S LICENCE NUMBER: 3813
ADDRESS: R.R.4 Dundalk Ont.
NAME OF WELL TECHNICIAN: S. Neumann
WELL TECHNICIAN'S LICENCE NUMBER: T-0214
SIGNATURE OF TECHNICIAN/CONTRACTOR: [signature]
SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR | DATE RECEIVED: OCT 06 1987
DATE OF INSPECTION: 11/9/88 | INSPECTOR
REMARKS: Pitless

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 — 2512639 — MUNICIP 25012 — CON SR W — LOT 229

COUNTY OR DISTRICT: [redacted]
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Proton
CON, BLOCK, TRACT, SURVEY, ETC: CON 1 TSW
LOT: 229
ADDRESS OF WELL LOCATION: RR# 1 Proton Station N0C 1L0
DATE COMPLETED: DAY 30 MO 8 YR 94

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Topsoil			0	1
Brown	silty	sand gravel		1	8
Gray	Silt	gravel stones		8	102
Gray	Limestone		Hard	102	138

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
109	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
133	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	.188	+1	104
6	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC		104	138
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE: | DEPTH TO TOP OF SCREEN FEET:

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)
0	30	Bensea l

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☒ BAILER	7 GPM	1 HOURS ___ MINS

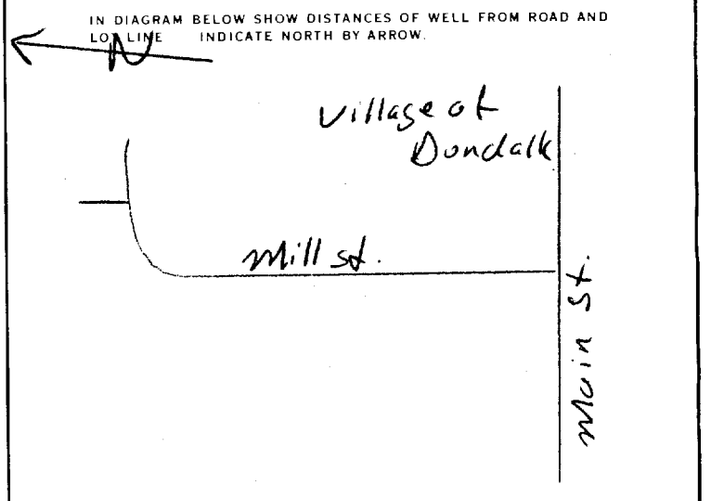
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☐ PUMPING 2 ☐ RECOVERY)	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
56 FEET	FEET		FEET	FEET	FEET	FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	100 FEET	6-7 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS: 131050

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED ☐ DEWATERING

WATER USE

1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF CONSTRUCTION

1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☒ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING ☐ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: Highland Water Wells
WELL CONTRACTOR'S LICENCE NUMBER: 2576
ADDRESS: Box 141 Durham
NAME OF WELL TECHNICIAN: Nigel Poppelton
WELL TECHNICIAN'S LICENCE NUMBER: 72130
SIGNATURE OF TECHNICIAN/CONTRACTOR:
SUBMISSION DATE: DAY 6 MO. 9 YR. 94

OFFICE USE ONLY

DATA SOURCE: | CONTRACTOR: 2576 | DATE RECEIVED: SEP 12 1994
DATE OF INSPECTION: | INSPECTOR:
REMARKS: CSS.ES

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ontario Ministry of the Environment 02-13

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 — 2515004 — Municipality 25702 — Con.

County or District	Township/Borough/City/Town/Village	Con	block	tract	survey, etc.	Lot
GREY	TOWN OF DUNDALK/ANTON TWP	CONC	1	SWTSR		230

Owner's surname	First Name	Address	Date completed (day / month / year)
TOWNSHIP OF SOUTHGATE		RR 1, DUNDALK, ON, N0C 1B0	25 / 03 / 02

21 — UTM: Zone — Easting — Northing — RC — Elevation — RC — Basin Code — ii — iii — iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
BROWN	CLAY	ROCKS	FILL	0	6
BROWN	CLAY	SAND + STONES		6	35
BROWN	GRAVEL	CLAY		35	97
GREY BROWN	LIMESTONE		INTERMIXED	97	154
TAN	LIMESTONE			154	180
BROWN	LIMESTONE			180	211
TAN	LIMESTONE			211	330

31

32

41 WATER RECORD

Water found at - feet	Kind of water
125 / 155	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
215 / 260	NOT TESTED — 1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
300 / 310	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4	1 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.188	+2	105
	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic		105	330
	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet

Material and type — Depth at top of screen feet

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
0	105	BENTONITE

71 PUMPING TEST

Pumping test method: 1 ☐ Pump 2 ☐ Bailer — Pumping rate: GPM — Duration of pumping: Hours Mins

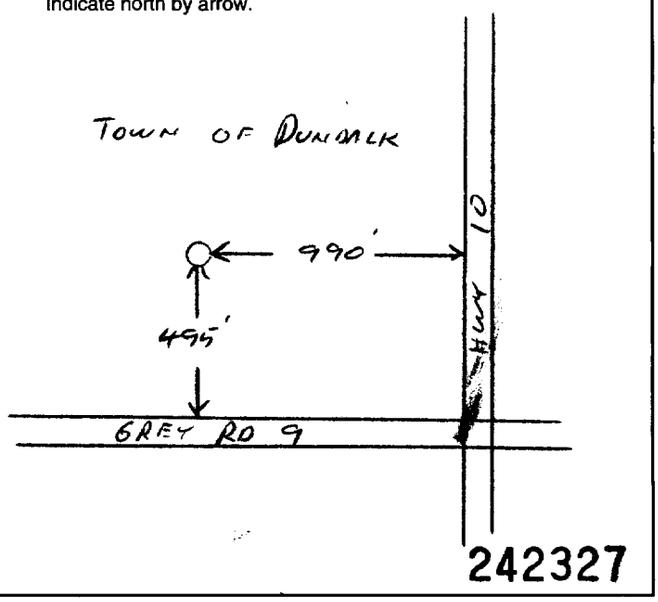
Static level feet	Water level end of pumping feet	Water levels during: 1 ☐ Pumping 2 ☐ Recovery — 15 minutes feet	30 minutes feet	45 minutes feet	60 minutes feet
	TESTING BY		OTHERS		

If flowing give rate: GPM — Pump intake set at: feet — Water at end of test: ☐ Clear ☐ Cloudy

Recommended pump type: ☐ Shallow ☐ Deep — Recommended pump setting: feet — Recommended pump rate: GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.



242327

FINAL STATUS OF WELL

1 ☒ Water supply 2 ☐ Observation well 3 ☒ Test hole 4 ☐ Recharge well 5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering 9 ☐ Unfinished 10 ☐ Replacement well

WATER USE

1 ☐ Domestic 2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial 5 ☐ Commercial 6 ☒ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning 9 ☐ Not use 10 ☐ Other

METHOD OF CONSTRUCTION

1 ☐ Cable tool 2 ☒ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☐ Rotary (air) 5 ☐ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting 9 ☐ Driving 10 ☐ Digging 11 ☐ Other

Name of Well Contractor	Well Contractor's Licence No.
MEADOWBANK DRILLING SERVICES	6865
Address: RR 1 ELORA ONT N0B 1S0	
Name of Well Technician: JIM BROADFOOT	Well Technician's Licence No.: T0370
Signature of Technician/Contractor	Submission date: day mo yr

MINISTRY USE ONLY

Data source — Contractor: 6865 — Date received: JUN 10 2002

Date of inspection — Inspector

Remarks: CSS.ES2

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0506 (07/00) Front Form 9

Ontario Ministry of the Environment

02-18

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 2515005 Municipality 25702 Con.

County or District	Township/Borough/City/Town/Village	Con	block	tract	survey, etc.	Lot
GREY	TOWN OF DUNDALK	CON 1	SW	TSR		PART 230

Owner's surname	First Name	Address	Date completed (day / month / year)
TOWNSHIP OF SOUTHGATE		RR 1, DUNDALK, ON, N0C 1B0	22 / 04 / 02

21 UTM Zone | Easting | Northing | RC | Elevation | RC | Basin Code | ii | iii | iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
BROWN	CLAY	ROCKS	FILL	0	7
BROWN	CLAY	SAND & STONES		7	35
BROWN	GRAVEL	CLAY/ROCK'S	ROCK'S	35	95
GREY & BROWN	LIMESTONE		INTERMIXED	95	154
TAN	LIMESTONE			154	180
BROWN	LIMESTONE			180	211
TAN	LIMESTONE			211	330

31

32

41 WATER RECORD

Water found at - feet	Kind of water
109 / 125	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
154 / 215	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
260 / 300	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
310	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
10 1/4	1 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.250	+2	105
9 7/8	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		105	330
	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet
Material and type	Depth at top of screen feet	

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
0	105	BENTONITE

71 PUMPING TEST

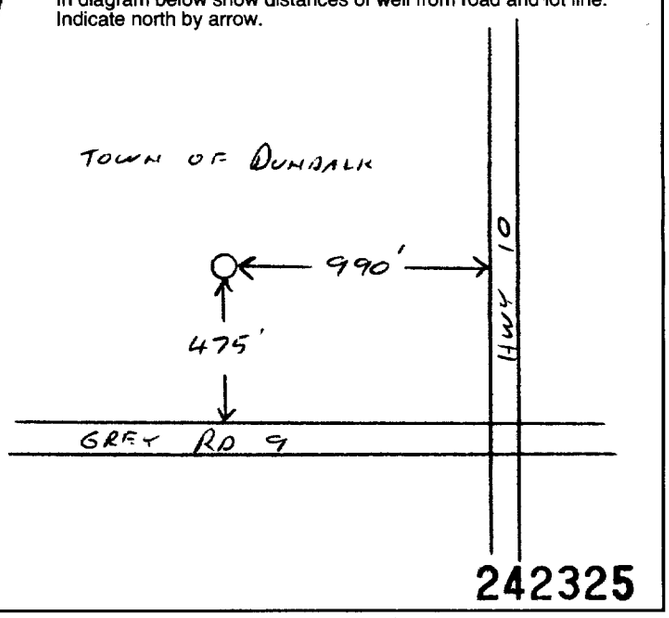
Pumping test method: 1 ☐ Pump 2 ☐ Bailer
Pumping rate: GPM
Duration of pumping: Hours Mins

Static level feet	Water level end of pumping feet	Water levels during: 1 ☐ Pumping 2 ☐ Recovery	15 minutes feet	30 minutes feet	45 minutes feet	60 minutes feet

If flowing give rate: GPM
Pump intake set at: feet
Water at end of test: ☐ Clear ☐ Cloudy
Recommended pump type: ☐ Shallow ☐ Deep
Recommended pump setting: feet
Recommended pump rate: GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.



242325

FINAL STATUS OF WELL 54

1 ☒ Water supply 2 ☐ Observation well 3 ☒ Test hole 4 ☐ Recharge well 5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering 9 ☐ Unfinished 10 ☐ Replacement well

WATER USE 55-56

1 ☐ Domestic 2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial 5 ☐ Commercial 6 ☒ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning 9 ☐ Not use 10 ☐ Other

METHOD OF CONSTRUCTION 57

1 ☐ Cable tool 2 ☒ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☐ Rotary (air) 5 ☐ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting 9 ☐ Driving 10 ☐ Digging 11 ☐ Other

Name of Well Contractor	Well Contractor's Licence No.
MEADOWBANK DRILLING SERVICES	6865
Address: RR 1, EZORA, ON, N0B 1S0	
Name of Well Technician: JIM BRADFOOT	Well Technician's Licence No.: T0370
Signature of Technician/Contractor: J Bradfoot	Submission date: day mo yr

MINISTRY USE ONLY

Data source 58	Contractor 59-62	Date received 63-68	80
	6865	JUN 10 2002	
Date of inspection	Inspector		
Remarks: CSS.ES2			

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Ontario **Ministry of the Environment**

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 — 2515188 — Municipality 25012 — Con. SR W — 01

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
GREY	PROTON	CON 1 SRW	228

Address [redacted] — Date completed 25 (day) 9 (month) 02 (year)

21 — UTM — Northing — RC — Elevation — RC — Basin Code — ii — iii — iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
	TOPSOIL			0	1
BRN	CLAY	STONES, GRAVEL		1	97
GREY	LIMESTONE			97	150
BRN	LIMESTONE			150	241

31

32

41 WATER RECORD

Water found at - feet	Kind of water
210	1 [X] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas
230	1 [ ] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas
	1 [ ] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas
	1 [ ] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas
	1 [ ] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4	1 [X] Steel 2 [ ] Galvanized 3 [ ] Concrete 4 [ ] Open hole 5 [ ] Plastic	.188	+2	99
6	1 [ ] Steel 2 [ ] Galvanized 3 [ ] Concrete 4 [X] Open hole 5 [ ] Plastic		99	241
	1 [ ] Steel 2 [ ] Galvanized 3 [ ] Concrete 4 [ ] Open hole 5 [ ] Plastic			

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet

Material and type — Depth at top of screen feet

61 PLUGGING & SEALING RECORD

[X] Annular space [ ] Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
0	50	Bentonite Grout

PUMPING TEST

71 — Pumping test method 1 [ ] Pump 2 [ ] Bailer — Pumping rate 5 GPM — Duration of pumping 1 Hours Mins

Static level	Water level end of pumping	Water levels during 25	15 minutes	30 minutes	45 minutes	60 minutes
92 feet	173 feet	1 [X] Pumping 2 [ ] Recovery	173 feet	173 feet	173 feet	173 feet

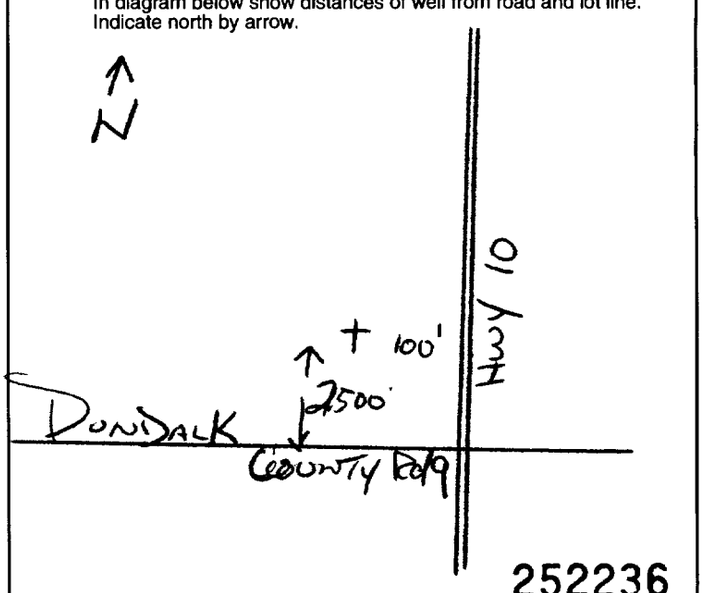
If flowing give rate GPM — Pump intake set at feet — Water at end of test [X] Clear [ ] Cloudy

Recommended pump type [ ] Shallow [X] Deep — Recommended pump setting 220 feet — Recommended pump rate 5 GPM

50-53

LOCATION OF WELL

In diagram below show distances of well from road and lot line.
Indicate north by arrow.



252236

FINAL STATUS OF WELL 54

1 [X] Water supply 2 [ ] Observation well 3 [ ] Test hole 4 [ ] Recharge well 5 [ ] Abandoned, insufficient supply 6 [ ] Abandoned, poor quality 7 [ ] Abandoned (Other) 8 [ ] Dewatering 9 [ ] Unfinished 10 [ ] Replacement well

WATER USE 55-56

1 [X] Domestic 2 [ ] Stock 3 [ ] Irrigation 4 [ ] Industrial 5 [ ] Commercial 6 [ ] Municipal 7 [ ] Public supply 8 [ ] Cooling & air conditioning 9 [ ] Not use 10 [ ] Other

METHOD OF CONSTRUCTION 57

1 [ ] Cable tool 2 [X] Rotary (conventional) 3 [ ] Rotary (reverse) 4 [ ] Rotary (air) 5 [X] Air percussion 6 [ ] Boring 7 [ ] Diamond 8 [ ] Jetting 9 [ ] Driving 10 [ ] Digging 11 [ ] Other

Name of Well Contractor	Well Contractor's Licence No.
NEUMANN WELL DRILLING	7015
Address: RR#4 DUNDALK	
Name of Well Technician: TOM GILLIES	Well Technician's Licence No.: T-1958
Signature of Technician/Contractor	Submission date: day mo yr

MINISTRY USE ONLY

Data source 58	Contractor 59-62	Date received 63-68 80
	7015	OCT 28 2002
Date of inspection	Inspector	
Remarks		

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Ontario — Ministry of Environment and Energy

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 — 2515624 — Municipality 25012 — Con. SR W — 02

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
[redacted]	PROTON	CON 2 SRW	227
	Address of Well Location	Date completed: 4 day, 6 month, 03 year	

21 — UTM: Zone — Easting — Northing — RC — Elevation — RC — Basin Code — ii — iii — iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
	TOPSOIL			0	1
BEN	CLAY	HARDPAN, STONES		1	116
	LIMESTONE			116	142

31

32

41 WATER RECORD

Water found at - feet	Kind of water
121	1 [X] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas
133	1 [ ] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas
	1 [ ] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas
	1 [ ] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas
	1 [ ] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4	1 [X] Steel 2 [ ] Galvanized 3 [ ] Concrete 4 [ ] Open hole 5 [ ] Plastic	.188	+2	118
6	1 [ ] Steel 2 [ ] Galvanized 3 [ ] Concrete 4 [X] Open hole 5 [ ] Plastic		118	142
	1 [ ] Steel 2 [ ] Galvanized 3 [ ] Concrete 4 [ ] Open hole 5 [ ] Plastic			

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet
Material and type	Depth at top of screen feet	

61 PLUGGING & SEALING RECORD

[X] Annular space [ ] Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
0	35	Bentonite Grout

AIR LIFT 25 GPM

71 PUMPING TEST

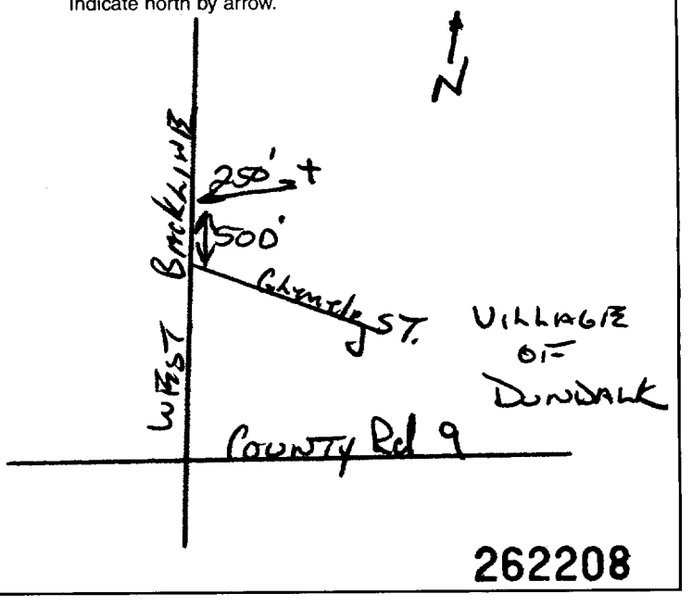
Pumping test method: 1 [X] Pump 2 [ ] Bailer — Pumping rate: 12 GPM — Duration of pumping: 2 Hours ... Mins

Static level	Water level end of pumping	Water levels during: 1 [X] Pumping 2 [ ] Recovery			
		15 minutes	30 minutes	45 minutes	60 minutes
27 feet	31 feet	31 feet	31 feet	31 feet	31 feet

If flowing give rate	Pump intake set at	Water at end of test	Recommended pump type	Recommended pump setting	Recommended pump rate
GPM	feet	[X] Clear [ ] Cloudy	[ ] Shallow [X] Deep	60 feet	10-12 GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.



262208

FINAL STATUS OF WELL

1 [X] Water supply; 2 [ ] Observation well; 3 [ ] Test hole; 4 [ ] Recharge well; 5 [ ] Abandoned, insufficient supply; 6 [ ] Abandoned, poor quality; 7 [ ] Abandoned (Other); 8 [ ] Dewatering; 9 [ ] Unfinished; 10 [ ] Replacement well

WATER USE

1 [X] Domestic; 2 [ ] Stock; 3 [ ] Irrigation; 4 [ ] Industrial; 5 [ ] Commercial; 6 [ ] Municipal; 7 [ ] Public supply; 8 [ ] Cooling & air conditioning; 9 [ ] Not use; 10 [ ] Other

METHOD OF CONSTRUCTION

1 [ ] Cable tool; 2 [X] Rotary (conventional); 3 [ ] Rotary (reverse); 4 [ ] Rotary (air); 5 [X] Air percussion; 6 [ ] Boring; 7 [ ] Diamond; 8 [ ] Jetting; 9 [ ] Driving; 10 [ ] Digging; 11 [ ] Other

Name of Well Contractor	Well Contractor's Licence No.
NEUMANN WELL DRILLING	7015
Address: RR#4 DUNDALK	
Name of Well Technician: TOM GILLIES	Well Technician's Licence No.: 1-1958
Signature of Technician/Contractor	Submission date: day mo yr

MINISTRY USE ONLY

Data source	Contractor	Date received
	7015	JUL 16 2003
Date of inspection	Inspector	
Remarks		

CSS.ESS

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0506 (06/02) Front Form 9

Ontario Ministry of the Environment

Well Tag Number (Place Sticker and/or Print Number below) A027686

Amec # 050626 June 8/05

Well Record

Regulation 903 Ontario Water Resources Act

[redacted]

page ___ of ___

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

[redacted]

Address of Well Location (County/District/Municipality) | Township | Lot | Concession

RR#/Street Number/Name: 185 Proton St. W. | City/Town/Village: Dundalk | Site/Compartment/Block/Tract etc.

GPS Reading: NAD 83 | Zone 17 | Easting 548212 | Northing 4890953 | Unit Make/Model: Magellan | Mode of Operation: ☐ Undifferentiated ☑ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
Grey	gravel			0	.11
brown	sand	gravel		.11	.9
brown	sand	silt		.9	2.1
light brown	silt	sand	Rocky	2.1	6

Hole Diameter

Depth From	Depth To (Metres)	Diameter Centimetres
0	6.	21

Water Record

Water found at ___ Metres / Kind of Water

1.5 m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: ___

___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: ___

___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: ___

After test of well yield, water was
☐ Clear and sediment free
☐ Other, specify ___

Chlorinated ☐ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
5	☐ Steel ☐ Fibreglass ☑ Plastic ☐ Concrete ☐ Galvanized	.7	0	1.2
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☑ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
6.4		10	1.2	6
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level			
Pumping rate - (litres/min)	1		1	
Duration of pumping ___hrs +___ min	2		2	
Final water level end of pumping ___metres	3		3	
Recommended pump type. ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___metres	5		5	
Recommended pump rate. (litres/min)	10		10	
	15		15	
If flowing give rate - (litres/min)	20		20	
	25		25	
If pumping discontinued, give reason.	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record ☑ Annular space ☐ Abandonment

Depth set at - Metres From	Depth set at - Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	.15	Concrete	
.15	1.1	bentonite	

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☑ Boring ☐ Driving

Water Use

☐ Domestic ☐ Industrial ☐ Public Supply ☑ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☑ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor: Geo-Environmental Drilling | Well Contractor's Licence No.: 6607

Business Address (street name, number, city etc.): 340 Market Dr. Milton

Name of Well Technician (last name, first name): Hails, Ryan | Well Technician's Licence No.: T3212

Signature of Technician/Contractor: X [signature] | Date Submitted YYYY MM DD: 2005 06 09

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.

see map

Audit No. Z 28263 | Date Well Completed YYYY MM DD: 2005 06 09

Was the well owner's information package delivered? ☐ Yes ☐ No | Date Delivered YYYY MM DD

Ministry Use Only

Data Source | Contractor 6607

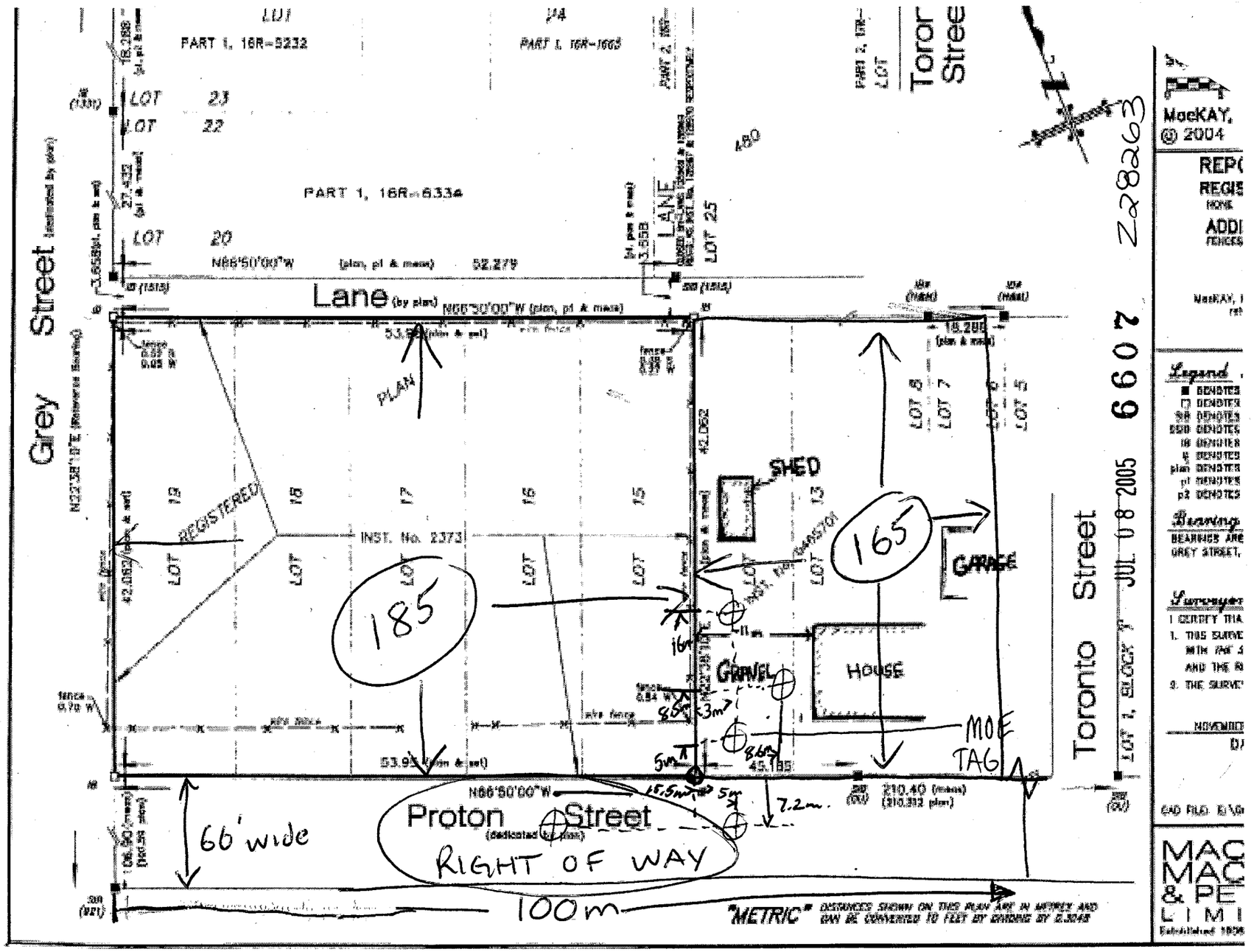
Date Received YYYY MM DD: JUL 08 2005 | Date of Inspection YYYY MM DD

Remarks | Well Record Number

0506E (09/03)

Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐

Cette formule est disponible en français


PART 1, 16R-5232
PART 1, 16R-6334
LOT 23
LOT 22
LOT 20
LOT 25
LANE
Lane (by plan)
N66°50'00"W (plan, p1 & meas) 52.279
Grey Street
Toronto Street
Proton Street
(dedicated by plan)
RIGHT OF WAY
66' wide
100m
SHED
HOUSE
GARAGE
GRAVEL
INST. No. 2373
REGISTERED PLAN
185
165
MOE TAG
7.2m
5m
"METRIC" DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048
MacKAY,
© 2004
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6607
JUL 08 2005
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Ontario Ministry of the Environment

Well Tag (Number below) A 005365

A 005365

Well Record

Regulation 903 Ontario Water Resources Act

page 1 of 1

Instructions for Completing Form

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- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

[redacted]

Address of Well Location (County/District/Municipality): 165 PROTON ST

Township: DUNDALK

Lot | Concession

RR#/Street Number/Name

City/Town/Village: TOWNSHIP SOUTHGATE

Site/Compartment/Block/Tract etc.: COUNTY OF GREY

GPS Reading: NAD 83 | Zone 17 | Easting 548228 | Northing 4690907

Unit Make/Model: GARMIN

Mode of Operation: ☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
Black	topsoil	sand	Loose	0	.3
Brown	silt	Cobbles, Sand	Dense	.3	4.57
	AMEC				

Hole Diameter

Depth From	Metres To	Diameter Centimetres
0	4.57	20

Water Record

Water found at ___ Metres / Kind of Water

- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was
☐ Clear and sediment free
☐ Other, specify

Chlorinated ☐ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
.5	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	SCH40	0	1.52.
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam		Slot No.		
.6	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	10	4.57	1.52
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level			
Pumping rate - (litres/min)	1		1	
Duration of pumping ___hrs +___ min	2		2	
Final water level end of pumping ___metres	3		3	
Recommended pump type. ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___metres	5		5	
Recommended pump rate. (litres/min)	10		10	
If flowing give rate - (litres/min)	15		15	
	20		20	
	25		25	
If pumping discontinued, give reason.	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	.3	Cement	
.3	1.0	Bentonite Chips	

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☒ Boring ☐ Driving

Water Use

☐ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☒ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☒ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor: ATCOST DRILLING | Well Contractor's Licence No.: 6032.

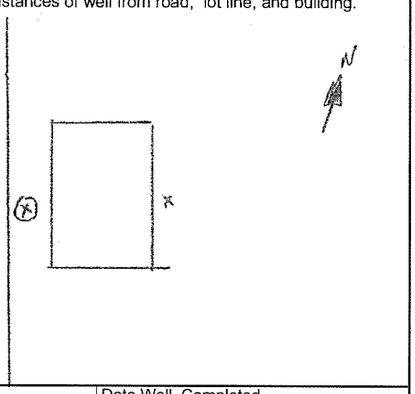
Business Address (street name, number, city etc.): 2160 HWY #7 CONCORD

Name of Well Technician (last name, first name): MONETTE CHRIS | Well Technician's Licence No.: T685

Signature of Technician/Contractor: X [signature] | Date Submitted: YYYY 2006 MM 11 DD 30

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No. Z 46561

Date Well Completed: YYYY 2006 MM 11 DD 30

Was the well owner's information package delivered? ☐ Yes ☒ No

Date Delivered: YYYY MM DD

Ministry Use Only

Data Source | Contractor 6032

Date Received: YYYY MM DD FEB 26 2007 | Date of Inspection: YYYY MM DD

Remarks | Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☒ Well Owner's Copy ☐ *Cette formule est disponible en français*

Ontario Ministry of the Environment

Well Tag Number (Place sticker and print number below)
A 047429
A047429

Well Record
Regulation 903 Ontario Water Resources Act

page 1 of 1

Instructions for Completing Form

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- Please print clearly in blue or black ink only.

Ministry Use Only
MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR, Lot, Concession)
IMPERIAL	OIL	90 WYNFORD DRIVE

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
	TORONTO	Ontario		416441-7866

Address of Well Location (County/District/Municipality)	Township	Lot	Concession

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
185 PROTON ST	DUNDALK	

GPS Reading: NAD 83 | Zone 17 | Easting 0548236 | Northing 4890905 | Unit Make/Model GARMIN eTREX | Mode of Operation: ☒ Undifferentiated ☐ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
BROWN	SILT	SAND		0	1.2
BROWN	SILT	SAND TRACE GRAVEL & CLAY		1.2	4.6

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)
0	4.3M	20.32cm

Water Record

Water found at ___ Metres / Kind of Water

- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was
☐ Clear and sediment free
☐ Other, specify

Chlorinated ☐ Yes ☐ No

Construction Record

Casing

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
5.1cm	☐ Steel ☐ Fibreglass ☒ Plastic ☐ Concrete ☐ Galvanized	0.48cm	0	1.2m
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			

Screen

Outside diam	Material	Slot No.	Depth From	Depth To (Metres)
6.0cm	☐ Steel ☐ Fibreglass ☒ Plastic ☐ Concrete ☐ Galvanized	10	1.2m	4.3M

No Casing or Screen

☐ Open hole

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level			
Pumping rate - (litres/min)	1		1	
Duration of pumping ___hrs +___ min	2		2	
Final water level end of pumping ___metres	3		3	
Recommended pump type. ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___metres	5		5	
Recommended pump rate. (litres/min)	10		10	
	15		15	
If flowing give rate - (litres/min)	20		20	
	25		25	
If pumping discontinued, give reason.	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres From	Depth set at - Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	1	HOLE PLUG	0.02976

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☒ Other AUGER
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☐ Domestic ☐ Industrial ☐ Public Supply ☒ Other TESTING
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☒ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
KODIAK ENVIRONMENTAL	6988

Business Address (street name, number, city etc.): 871 EQUESTRIAN CT. OAKVILLE, ON.

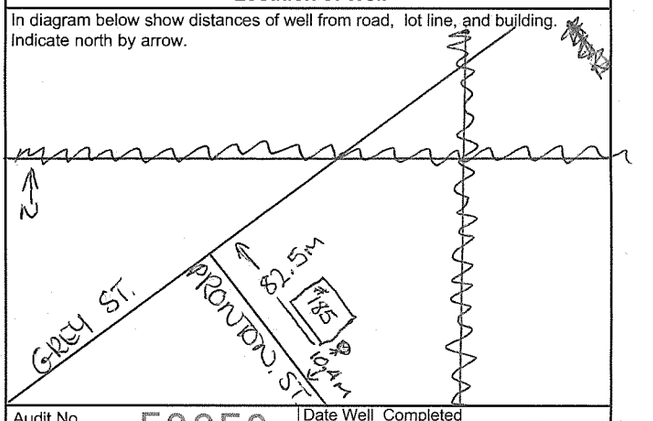
Name of Well Technician (last name, first name)	Well Technician's Licence No.
RITCEY DOUG	T-2656

Signature of Technician/Contractor: X

Date Submitted: 2007 / 10 / 24 (YYYY MM DD)

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No. Z 53653

Date Well Completed: 2007 / 04 / 07 (YYYY MM DD)

Was the well owner's information package delivered? ☐ Yes ☒ No

Date Delivered (YYYY MM DD)

Ministry Use Only

Data Source | Contractor 6988

Date Received: SEP 10 2007 (YYYY MM DD) | Date of Inspection (YYYY MM DD)

Remarks | Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☒ Well Owner's Copy ☐

Cette formule est disponible en français

Ontario — Ministry of the Environment

Well Tag No. *(Place Sticker and/or Print Below)*
DECOMMISSION
NO TAG PRESENT

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: [X] Metric [ ] Imperial

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	
	IMPERIAL OIL		[ ] Well Constructed by Well Owner

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
111 ST. CLAIR AVENUE W.	TORONTO	ONTARIO	M5W1K3	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
165 PROTON STREET NORTH	PROTON	229	RANGE 2W

County/District/Municipality	City/Town/Village	Province	Postal Code
GREY	DUNDALK	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	548200	4890909		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
			- WELLS DECOMMISSIONED PER REG 903.21		
			- ALL WELL MATERIALS REMOVED FROM BOREHOLE		
			- BOREHOLES SEALED W/ BENTONITE		
			- NO WELL TAG PRESENT.		

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
0.0	0.2	CONCRETE	
0.2	6.1	BENSEAL	
	6.1	EOM	

Method of Construction

[ ] Cable Tool [ ] Diamond
[ ] Rotary (Conventional) [ ] Jetting
[ ] Rotary (Reverse) [ ] Driving
[ ] Boring [ ] Digging
[ ] Air percussion
[ ] Other, *specify*

Well Use

[ ] Public [ ] Commercial [ ] Not used
[ ] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[ ] Industrial
[ ] Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
5.0	PVC		0.0	6.0

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
6.3	PVC		5.0	6.1

Status of Well

[ ] Water Supply
[ ] Replacement Well
[ ] Test Hole
[ ] Recharge Well
[ ] Dewatering Well
[ ] Observation and/or Monitoring Hole
[ ] Alteration (Construction)
[ ] Abandoned, Insufficient Supply
[ ] Abandoned, Poor Water Quality
[X] Abandoned, other, *specify*
[ ] Other, *specify*

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
1.2	[ ]	[X] Fresh [ ] Untested	
	[ ]	[ ] Fresh [ ] Untested	
	[ ]	[ ] Fresh [ ] Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)

Results of Well Yield Testing

After test of well yield, water was:
[ ] Clear and sand free
[ ] Other, *specify*

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping ____ hrs + ____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)*

Recommended pump rate *(l/min / GPM)*

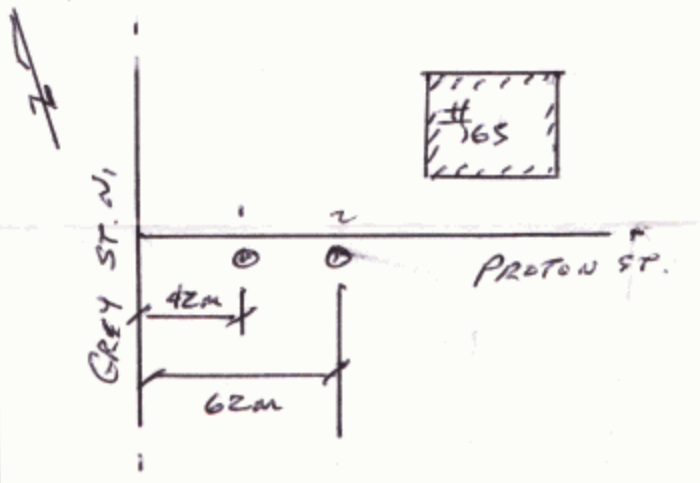
Well production *(l/min / GPM)*

Disinfected? [ ] Yes [ ] No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:
MAP ATTACHED

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
SONIC SOIL SAMPLING INC.	7147

Business Address (Street Number/Name)	Municipality
668 MILLWAY AVENUE	YORK

Province	Postal Code	Business E-mail Address
ONTARIO	L4K 3V2	sonic@sonicsoil.com

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
9056600501	ARCHIBALD, ALAN

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
2881	per Sec	2008/12/05

Well owner's information package delivered	Date Package Delivered	Date Work Completed
[ ] Yes [X] No		2008/12/25

Ministry Use Only
Audit No. Z 85200
DEC 17 2008
Received

Ministry's Copy

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)*: NO TAG FOUND

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Imperial Oil Ltd		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
90 Wynford Drive	Toronto	Ont	M3C1K5	4164417862

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
165 Proton St. W.	Grey		

County/District/Municipality	City/Town/Village	Province	Postal Code
GREY	Dundalk	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	543260	4890289		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Hole No	EASTING	NORTHING	SEALANT		
1	17/543260	4890289	Bentonite	0'	15'
2	17/543263	4890285	Bentonite	0'	15'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☐ Air percussion ☐ Other, *specify*

Well Use

☐ Public ☐ Commercial ☐ Not used ☐ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☐ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To

Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☒ Abandoned, other, *specify*: Not in Use ☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

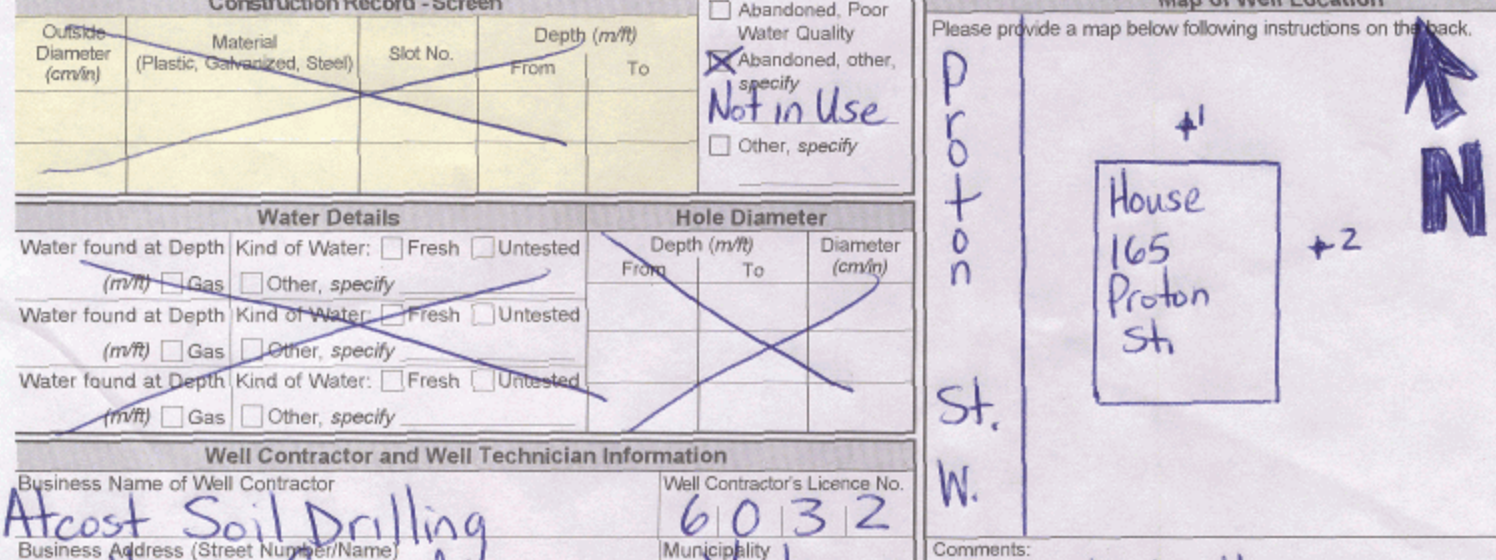
Well production (l/min / GPM)

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments: Consultant Hazco

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Atcost Soil Drilling	6032

Business Address (Street Number/Name)	Municipality
2160 Hwy 7 Concord	York

Province	Postal Code	Business E-mail Address
Ont	L4K1W6	

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
9056691253	Green Wayne

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
	Wayne Green	2010/11/09

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☒ No		2010/09/02

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Audit No. z121173

Received DEC 03 2010

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Measurements recorded in: ☐ Metric ☑ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* DECOM

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	IMPERIAL OIL LTD		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
90 WYNFORD DR	TORONTO	ONT	M3C1K5	4164417862

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
165 PROTON ST. W.	GREY		

County/District/Municipality	City/Town/Village	Province	Postal Code
GREY	DUNDALK	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	543264	4890283		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
		1) DECOM			
(1)			PULL 2 INNER PLASTIC PIPES, CHLORINATE, BACK FILL FROM 140' - 37'6" WITH SAND, 1" BENTONITE CHIPS, GROUT UP TO 5' & FILL TOP 5' WITH BENTONITE CHIPS STATIC WATER TABLE AT 37'6"	0'	140'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
		BENTONITE CHIPS (5) DECOM	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, *specify*

DECOM

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
	DECOM			

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
	DECOM			

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☒ Abandoned, other, *specify*, NOT USED
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
		☐ Fresh ☐ Untested	
		☐ Fresh ☐ Untested	
		☐ Fresh ☐ Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

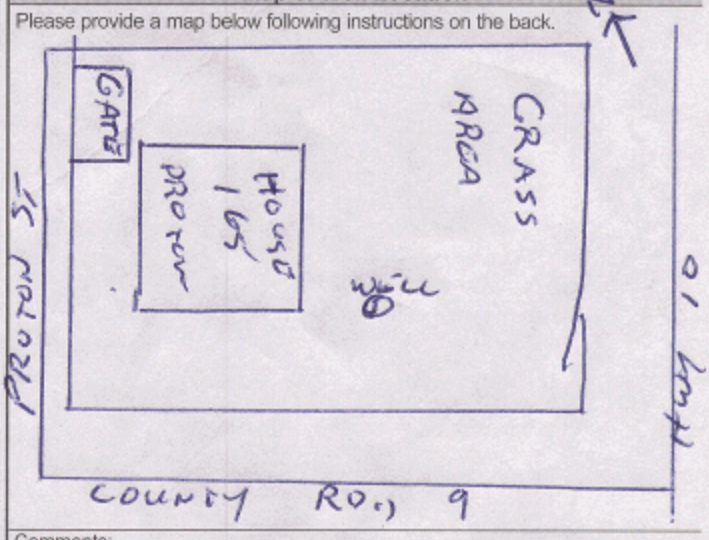
Well production (l/min / GPM)

Disinfected? ☑ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments: HARCO 10A 202

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
ATCOST DRILLING	6032

Business Address (Street Number/Name)	Municipality
2160 HWY 7 CONCORD	VAUGHAN

Province	Postal Code	Business E-mail Address
ONT	L4K1W6	info@atcostdrilling.com

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
9056691253	TRUSCOTT ORLA

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
7394	O. Truscott	20100920

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☑ No		20100920

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Audit No. Z108898

DEC 03 2010

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A117947

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☐ Imperial

Well Tag No. *(Place Sticker and)* A 117947

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Imperial Oil		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
90 Wynford Drive	Toronto	Ont	M3C 1K5	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
185 Proton St			

County/District/Municipality	City/Town/Village	Province	Postal Code
	Dundalk	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	561586	4830612		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Brown	Fill	Sandy	moist	0	8
Brown	Cobble	Till	dry	8	15

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
15	8	Sand	
8	1	Bentonite	
1	0	Sand / Flushmount / Concrete	

Method of Construction

☐ Cable Tool ☐ Diamond
☑ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, *specify*

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☑ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
2	Plastic	40	10	0

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
2	Plastic	10	15	10

Status of Well

☐ Water Supply
☐ Replacement Well
☑ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	
☐ Gas	☐ Fresh ☐ Untested	☐ Other, *specify*
☐ Gas	☐ Fresh ☐ Untested	☐ Other, *specify*
☐ Gas	☐ Fresh ☐ Untested	☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
15	0	8

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

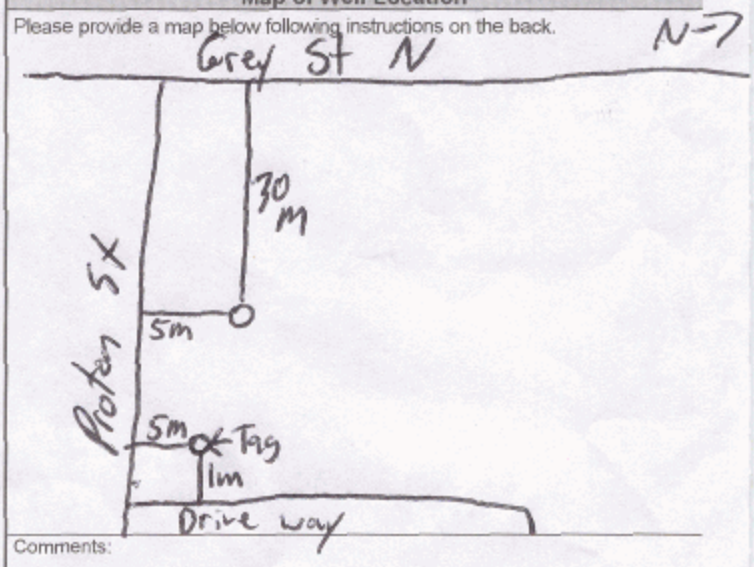
Well production (l/min / GPM)

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Profile Drilling	7215

Business Address (Street Number/Name)	Municipality	Province	Postal Code	Business E-mail Address
6525 Northam Drive	Mississauga	ON	L4V 1J2	Jason@Profiledrilling.com

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)	Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
4166506444	Slocki, Jason	2978		2011 07 29

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No	Y Y Y Y M M D D	2011 06 29

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Audit No. z133646

Received AUG 09 2011

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Measurements recorded in: ☒ Metric ☐ Imperial

Well Tag No. **A 089996**

A089996

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
772418	PROTON	220	1

County/District/Municipality	City/Town/Village	Province	Postal Code
GREY	DUNDALK	Ontario	N0C1B0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	547578	4892878		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
	TOP SOIL			0	.3
BROWN	CLAY	STONES & ROCKS		.3	15.9
GREY	CLAY	STONES		15.9	29.6
GREY/BROWN	LIMESTONE		INTERMIXED	29.6	32.3

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	13	BENTONITE SLURRY	.3

Method of Construction

☐ Cable Tool ☐ Diamond ☒ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☐ Air percussion ☐ Other, *specify*

Well Use

☐ Public ☐ Commercial ☐ Not used ☒ Domestic ☐ Municipal ☐ Dewatering ☒ Livestock ☐ Test Hole ☐ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
16.0	STEEL	.5	+.8	30.7
			30.7	32.3

Status of Well

☒ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, *specify* ☐ Other, *specify*

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To

Water Details

Water found at Depth (m/ft)	Kind of Water	
32	☐ Fresh ☒ Untested	☐ Gas ☐ Other, *specify*
	☐ Fresh ☐ Untested	☐ Gas ☐ Other, *specify*
	☐ Fresh ☐ Untested	☐ Gas ☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	6.4	25.0
6.4	30.7	20.0
30.7	32.3	15.6

Results of Well Yield Testing

After test of well yield, water was: ☒ Clear and sand free ☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft) 12.2

Pumping rate (l/min / GPM) 45

Duration of pumping 1 hrs + 0 min

Final water level end of pumping (m/ft) 9.16

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft) 12.2 m (40')

Recommended pump rate (l/min / GPM) 40L (10GPM)

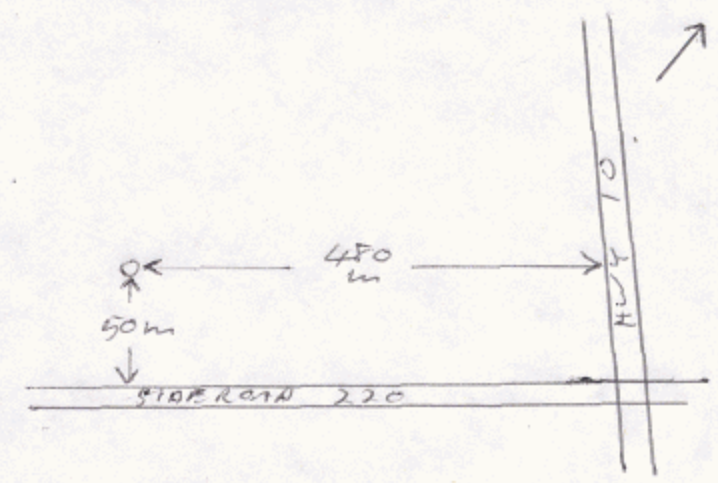
Well production (l/min / GPM)

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	7.28		9.16
1	8.18	1	8.18
2	8.36	2	8.08
3	8.46	3	8.02
4	8.56	4	7.95
5	8.62	5	7.92
10	8.79	10	7.75
15	8.89	15	7.68
20	8.96	20	7.62
25	8.99	25	7.57
30	9.02	30	7.53
40	9.10	40	7.49
50	9.12	50	7.46
60	9.16	60	7.44

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
WELL INITIATIVES	7221

Business Address (Street Number/Name)	Municipality
15 TOWNLINE	ORANGEVILLE

Province	Postal Code	Business E-mail Address
ONT	N0B1S0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
5198468289	BROADFOOT JIM

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0370	Jim Broadfoot	2011 07 12

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered: Y Y Y Y M M D D

Date Work Completed: 2011 07 20

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Audit No. z118780

Received AUG 19 2011

0506E (2007/12)

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Ontario — Ministry of the Environment

Well Tag No. *(Place Sticker and/or Print Below)*
Tag #: A166231

Well Record
Regulation 903 Ontario Water Resources Act

Page 1 of 1

Measurements recorded in: ☐ Metric ☒ Imperial

Well Owner's Information

First Name	Last Name / Organization	E-mail
	WHITE ROSE PARK DIV TO 2127107 ONTARIO INC	[redacted]

Mailing Address (Street Number/Name)	Municipality	Province
138 KALE CRESCENT	MAPLE	[redacted]

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
~~LOT 227;~~ 7SHP of SOUTHGATE, former tshp of PROTON		227	RANGE 2W

County/District/Municipality	City/Town/Village	Province	Postal Code
COUNTY of GREY	DUNDALK	Ontario	N0C 1B0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	17	~~541418~~	~~4889445~~	E 547975, N 4891096	

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Brown	silty sand and gravel	clay	Compact to v. dense.	0	20

"cluster of 10 piezometer installations"

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
20	8	Sand	
8	0	Bentonite	

Method of Construction

☐ Cable Tool ☐ Diamond
☑ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, *specify*

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☑ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
2	Plastic		+2.5	10

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
2	Plastic		10	20

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☒ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
5	☑ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	20	6

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping ____ hrs + ____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)*

Recommended pump rate *(l/min / GPM)*

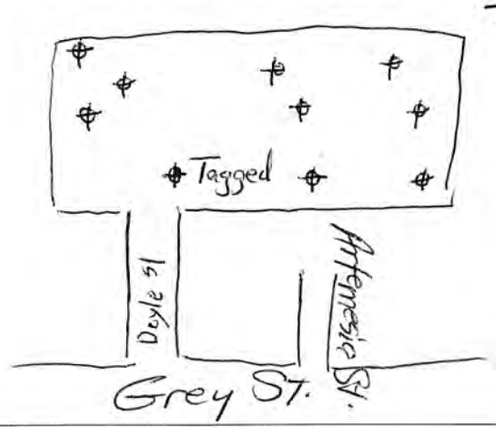
Well production *(l/min / GPM)*

Disinfected? ☐ Yes ☐ No

Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level			
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
50		50	
60		60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
LONDON SOIL TEST LTD	7190

Business Address (Street Number/Name)	Municipality
R.R.6	DUNDALK

Province	Postal Code	Business E-mail Address
ON	N0C 1B0	info@londonsoil.com

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
5194555777	Ross, Ryan

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3576		2014/12/15

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No		2014/12/03

Ministry Use Only
Audit No: Z 186058
Received FEB 09 2015

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Ministry's Copy

Ontario (https://www.ontario.ca/page/government-ontario)

Map: Well records

This map allows you to search and view well record information from reported wells in Ontario.

Full dataset is available in the Open Data catalogue (https://data.ontario.ca/dataset/well-records) .

Go Back to Map

Well ID

Well ID Number: 7285238
Well Audit Number: *Z251816*
Well Tag Number: *A210321*
This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location	231 GLENELG DR	

Township	PROTON TOWNSHIP
Lot	
Concession	
County/District/Municipality	GREY
City/Town/Village	Southgate
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 17 Easting: 547796.00 Northing: 4890661.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To
BRWN	SAND	SLTY		0 ft	15 ft
BRWN	SAND	SLTY	CLAY	15 ft	20 ft
GREY	CLAY	BLDR		20 ft	25 ft

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant Used (Material and Type)	Volume Placed
13 ft	0 ft	BENTONITE	

Method of Construction & Well Use

Method of Construction	Well Use
Other Method	

AUGER	Monitoring

Status of Well

Observation Wells

Construction Record - Casing

Inside Diameter	Open Hole or material	Depth From	Depth To
2 inch	PLASTIC	0 ft	15 ft

Construction Record - Screen

Outside Diameter	Material	Depth From	Depth To
2.5 inch	PLASTIC	15 ft	25 ft

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 7360

Results of Well Yield Testing

After test of well yield, water was	
If pumping discontinued, give reason	
Pump intake set at	
Pumping Rate	
Duration of Pumping	
Final water level	
If flowing give rate	
Recommended pump depth	

Recommended pump rate	
Well Production	
Disinfected?	

Draw Down & Recovery

Draw Down Time(min)	Draw Down Water level	Recovery Time(min)	Recovery Water level
SWL			
1		1	
2		2	
3		3	
4		4	
5		5	

10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
45		45	
50		50	
60		60	

Water Details

Water Found at Depth	Kind	

13 ft	Untested

Hole Diameter

Depth From	Depth To	Diameter
0 ft	25 ft	3 inch

Audit Number: Z251816

Date Well Completed: November 17, 2016

Date Well Record Received by MOE: April 13, 2017

Related

How to use a Ministry of the Environment map (https://www.ontario.ca/page/how-use-ministry-environment-map#wells)

Technical documentation: Metadata record (https://data.ontario.ca/dataset/well-records/resource/3031344e-e3f2-48d5-888c-c1deadfd2f77)

Updated: October 18, 2021
Published: March 20, 2014

Ontario (https://www.ontario.ca/page/government-ontario)

Map: Well records

This map allows you to search and view well record information from reported wells in Ontario.

Full dataset is available in the Open Data catalogue (https://data.ontario.ca/dataset/well-records) .

Go Back to Map

Well ID

Well ID Number: 7285242
Well Audit Number: *Z251811*
Well Tag Number: *A210296*
This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location	231 GLENELG ST	

Township	PROTON TOWNSHIP
Lot	
Concession	
County/District/Municipality	GREY
City/Town/Village	Southgate
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 17 Easting: 547335.00 Northing: 4891170.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To
GREY	SAND	SILT	SOFT	0 ft	15 ft
BRWN	SAND	GRVL	HARD	15 ft	25 ft

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant Used (Material and Type)	Volume Placed
12 ft	0 ft	BENTONITE	

Method of Construction & Well Use

Method of Construction	Well Use
Other Method	
AUGER	Monitoring

Status of Well

Observation Wells

Construction Record - Casing

Inside Diameter	Open Hole or material	Depth From	Depth To
2 inch	PLASTIC		

Construction Record - Screen

Outside Diameter	Material	Depth From	Depth To
2.5 inch	PLASTIC		

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 7360

Results of Well Yield Testing

After test of well yield, water was	
If pumping discontinued, give reason	
Pump intake set at	
Pumping Rate	
Duration of Pumping	
Final water level	
If flowing give rate	
Recommended pump depth	
Recommended pump rate	

Well Production	
Disinfected?	

Draw Down & Recovery

Draw Down Time(min)	Draw Down Water level	Recovery Time(min)	Recovery Water level
SWL			
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	

15		15	
20		20	
25		25	
30		30	
40		40	
45		45	
50		50	
60		60	

Water Details

Water Found at Depth	Kind	

Hole Diameter

Depth From	Depth To	Diameter
0 ft	25 ft	6 inch

Audit Number: Z251811

Date Well Completed: November 15, 2016

Date Well Record Received by MOE: April 13, 2017

Related

How to use a Ministry of the Environment map (https://www.ontario.ca/page/how-use-ministry-environment-map#wells)

Technical documentation: Metadata record (https://data.ontario.ca/dataset/well-records/resource/3031344e-e3f2-48d5-888c-c1deadfd2f77)

Updated: October 18, 2021
Published: March 20, 2014

Ontario (https://www.ontario.ca/page/government-ontario)

Map: Well records

This map allows you to search and view well record information from reported wells in Ontario.

Full dataset is available in the Open Data catalogue (https://data.ontario.ca/dataset/well-records) .

Go Back to Map

Well ID

Well ID Number: 7305297
Well Audit Number: *Z243695*
Well Tag Number: *A213693*
This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location	231 GLENENG ST	

Township	PROTON TOWNSHIP
Lot	
Concession	
County/District/Municipality	GREY
City/Town/Village	DUNDALK
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 17 Easting: 547926.00 Northing: 4890744.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant Used (Material and Type)	Volume Placed
135 ft	-12 ft	HOLEPLUG	

Method of Construction & Well Use

Method of Construction	Well Use
	Not Used

Status of Well

Abandoned-Other

Construction Record - Casing

Inside Diameter	Open Hole or material	Depth From	Depth To

Construction Record - Screen

Outside Diameter	Material	Depth From	Depth To

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 6634

Results of Well Yield Testing

After test of well yield, water was	
If pumping discontinued, give reason	
Pump intake set at	
Pumping Rate	
Duration of Pumping	
Final water level	
If flowing give rate	
Recommended pump depth	
Recommended pump rate	
Well Production	

Disinfected?	

Draw Down & Recovery

Draw Down Time(min)	Draw Down Water level	Recovery Time(min)	Recovery Water level
SWL			
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	

20		20	
25		25	
30		30	
40		40	
45		45	
50		50	
60		60	

Water Details

Water Found at Depth	Kind

Hole Diameter

Depth From	Depth To	Diameter

Audit Number: Z243695

Date Well Completed: March 07, 2017

Date Well Record Received by MOE: February 13, 2018

Related

How to use a Ministry of the Environment map (https://www.ontario.ca/page/how-use-ministry-environment-map#wells)

Technical documentation: Metadata record (https://data.ontario.ca/dataset/well-records/resource/3031344e-e3f2-48d5-888c-c1deadfd2f77)

Updated: October 18, 2021
Published: March 20, 2014

Ontario

Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☐ Imperial

Well Tag No. (Place Sticker and/or Print Below)
Tag#: A 213692
TAG# A213692

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
J.T.	EXCAVATING		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
DURHAM		ONTARIO	N0G1R0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
231 GLENELG STREET	PROTON		

County/District/Municipality	City/Town/Village	Province	Postal Code
	DUNDALK	Ontario	N0C1B0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	17	514791 25	4819017 411		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	SEALED OFF 5 INCH WELL 35 FEET DEEP				

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
35	-12FT	3/8 HOLEPLUG	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☑ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☑ Abandoned, other, *specify* NOT USED
☐ Other, *specify*

Water Details

Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify* _____

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping _____ hrs + _____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

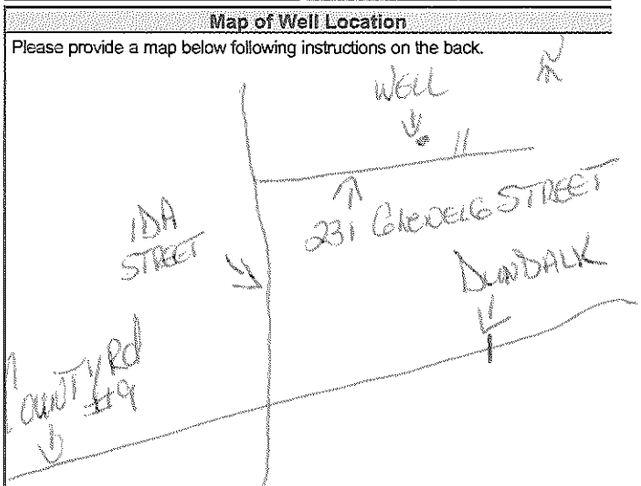
Well production (l/min / GPM)

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
KAUFMAN INVESTMENTS LTD	6613

Business Address (Street Number/Name)	Municipality
314023 HWY #6 RR#1 DURHAM	WESTGREY

Province	Postal Code	Business E-mail Address
ONTARIO	N0G1R0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
519 369 3344	KAUFMAN, PAUL

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
1912		2018/02/08

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
☐ Yes ☑ No	2017/03/07	Audit No. Z243696
	Date Work Completed	FEB 13 2018
	2017/03/07	Received

7331881

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A264297

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

[redacted]

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
END OF BRADLEY ST		PT LOT 221	2 SWTSR
County/District/Municipality	**City/Town/Village**	**Province**	**Postal Code**
Grey County	DUNDALK	Ontario	
UTM Coordinates Zone	Easting	Northing	**Municipal Plan and Sublot Number** / **Other**
NAD 8 3 17	548151	4889468	

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
Black	Peat	Some Silt	Saturated, Swampy	0	1
Grey	Silt	Some Sand	Saturated, Water bearing	1	15

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*
15	8	SILICA SAND	
8	0	HYDRATED Bentonite	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☒ Other, *specify* AUGER

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☒ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
2"	PVC	3/10	10	+3
4X4	Steel	1/8"	-1	+3

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
2"	PVC	.010	15	10

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☒ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water: Fresh / Untested / Other, specify
2	☐	
	☐	
	☐	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	15	8"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

Well production (l/min / GPM)

Disinfected? ☐ Yes ☒ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		2"		
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.

SEE ATTACHED MAP

Comments: STEEL STICK UP CASING

Well Contractor and Well Technician Information

LONDON SOIL TEST LTD.
712078 Southgate Sdrd. 71
Dundalk, ON N0C 1B0
519-455-5777 info@londonsoil.com

Well Contractor's Licence No. 7190

Municipality

Bus.Telephone No. *(inc. area code)* | Name of Well Technician (Last Name, First Name): WATTS MIKE

Well Technician's Licence No. 7190 | Signature of Technician and/or Contractor | Date Submitted: 2019/04/05

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered

Date Work Completed: 2019/04/05

Ministry Use Only
Audit No. Z305990
Received APR 23 2019

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A264297
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A264297
A264296
A264295
A264294
A264293
A264292
Wilson Crescent
Highpoint St
Pine Ct
Bradley St
Grey St N
Google Earth
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200 m
N

7331882

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A264292

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

2570970 ONTARIO INC.

Address of Well Location (Street Number/Name)	Township	Lot	Concession
Vacant property - End of Bradley St.		PT LOT 22	2 SWTSR
County/District/Municipality	**City/Town/Village**	**Province**	**Postal Code**
Grey County		Ontario	
UTM Coordinates Zone / Easting / Northing	**Municipal Plan and Sublot Number**	**Other**	
NAD 8 3 / 17 548052 / 4891270		4207090005052 00	

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
Brown	Silt	Some Sand	Soft	0	10
Brown	Silt	Gravel & Sand	very Dense	10	20

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
20	8	SILICA SAND	
8	0	HYDRATED Bentonite	

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☐ Air percussion ☒ Other, *specify* Auger

Well Use

☐ Public ☐ Commercial ☐ Not used ☐ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☒ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
2"	PVC	3/16"	10	+3
4x4	Steel	1/8"	-1	+3

Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☒ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, *specify* ☐ Other, *specify*

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
2"	PVC	.010	20	10

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

Well production (l/min / GPM)

Disinfected? ☐ Yes ☒ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Water Details

Water found at Depth (m/ft)	Kind of Water	
	☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*
	☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*
	☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	20'	8"

Map of Well Location

Please provide a map below following instructions on the back.

SEE ATTACHED MAP.

Comments: STEEL STICK UP CASING

Well Contractor and Well Technician Information

LONDON SOIL TEST LTD.
712078 Southgate Sdrd. 71
Dundalk, ON N0C 1B0
519-455-5777 info@londonsoil.com

Well Contractor's Licence No. 7190

Municipality

Email Address

Bus. Telephone No. *(inc. area code)* | Name of Well Technician (Last Name, First Name): WATTS Mike

Well Technician's Licence No. | Signature of Technician and/or Contractor | Date Submitted: 2019/04/05

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered

Date Work Completed 2019/04/05

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Audit No. Z305986

Received APR 23 2019

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Wilson Crescent
Highpoint St
Pine Ct
Bradley St
Grey St N
N
200 m
Google Earth
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7331883

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A264294

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

2570970 ONTARIO INC.

Address of Well Location (Street Number/Name)	Township	Lot	Concession
END OF BRADLEY ST		PT LOT 22	2 SWTSR
County/District/Municipality	**City/Town/Village**	**Province**	**Postal Code**
Grey County.	DUNDALK	Ontario	
UTM Coordinates Zone	Easting	Northing	**Municipal Plan and Sublot Number**	**Other**
NAD 8 3	17 548 064	4 891 347		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
Brown	Silt		Very Silty Soil	0	5
Brown	Silt	Gravel & Sand	Water bearing gravel material	5	15

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
15	8	SILICA SAND	
8	0	HYDRATED Bentonite	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☒ Other, *specify* AUGER

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☑ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
2"	PVC	3/16"	10	+3

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
2"	PVC	.010	15	10

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☑ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Hole Diameter Depth From	To	Diameter (cm/in)
7. ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*	0	15	8"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

Well production (l/min / GPM)

Disinfected? ☐ Yes ☒ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		7		
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.

SEE ATTACHED MAP.

Comments:

Well Contractor and Well Technician Information

LONDON SOIL TEST LTD.
712078 Southgate Sdrd. 71
Dundalk, ON N0C 1B0
519-455-5777 info@londonsoil.com

Well Contractor's Licence No. 7190

Municipality

Email Address

Bus. Telephone No. *(inc. area code)*

Name of Well Technician (Last Name, First Name) WATTS Mike

Well Technician's Licence No. 1671

Signature of Technician and/or Contractor

Date Submitted 2019/04/05

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered

Date Work Completed 2019/04/05

Ministry Use Only

Audit No. Z305989

Received APR 23 2019

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Wilson Crescent
Highpoint St
Pine Ct
Bradley St
Grey St N
N
200 m
Google Earth
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7331884

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A264296

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

2570970 ONTARIO INC.

Address of Well Location (Street Number/Name)	Township	Lot	Concession
END OF BAILEY ST	SOUTHGATE	PT LOT 27	2 SWTSR
County/District/Municipality	**City/Town/Village**	**Province**	**Postal Code**
Grey County	DUNDALK	Ontario	
UTM Coordinates Zone / Easting / Northing	**Municipal Plan and Sublot Number**	**Other**	
NAD 8 3 17 5 9 8 0 9 0 4 8 9 1 4 3 3		420709000505200	

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
Dark Brown	Silt	Some Sand	Soft Topsoil Soil type	0	3
Brown	Gravel	Silt & Sand	Compact Water Bearing	3	20

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
20	8	SILICA SAND	
8	0	HYDRATED Bentonite	

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☐ Air percussion ☒ Other, *specify* AUGER

Well Use

☐ Public ☐ Commercial ☐ Not used ☐ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☑ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
2"	PVC	3/16"	+0	13

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
2"	PVC	.010	20	10

Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☑ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, *specify* ☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Hole Diameter Depth From	To	Diameter (cm/in)
7 ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*	0	20	8"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

Well production (l/min / GPM)

Disinfected? ☐ Yes ☒ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		7'		
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.

SEE ATTACHED MAP.

Comments:

Well Contractor and Well Technician Information

LONDON SOIL TEST LTD.
712078 Southgate Sdrd. 71
Dundalk, ON N0C 1B0
519-455-5777 info@londonsoil.com

Well Contractor's Licence No. 7190

Municipality

il Address

Bus. Telephone No. *(inc. area code)* | Name of Well Technician (Last Name, First Name): WATTS Mike

Well Technician's Licence No. 7190 | Signature of Technician and/or Contractor | Date Submitted: 2019/04/15

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered

Date Work Completed 2019/04/05

Ministry Use Only

Audit No. Z305988

APR 23 2019

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A264296
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Wilson Crescent
Pine Ct
Highpoint St
Bradley St
Grey St N
N
200 m
Google Earth
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7331885

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A264295

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

2570970 ONTARIO INC.

Address of Well Location (Street Number/Name)	Township	Lot	Concession
End of BRADLEY ST.		PT LOT 22	2 SWTSR
County/District/Municipality	**City/Town/Village**	**Province**	**Postal Code**
Grey County	DUNDALK	Ontario	
UTM Coordinates Zone / Easting / Northing	**Municipal Plan and Sublot Number**	**Other**	
NAD 8 3 17548715 4891359			

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
Brown	Silt	Some Sand	Soft, loose	0	5
Brown	Silt	Gravel & Sand	Water bearing & Compact	5	20

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
20	8	SILICA SAND	
8	0	HYDRATED Bentonite	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☒ Other, *specify* Auger

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☒ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
2"	PVC	3/110"	20	+3

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
2"	PVC		20	10

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☒ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Hole Diameter Depth From	To	Diameter (cm/in)
7 ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*	0	20	8"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping ____ hrs + ____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)*

Recommended pump rate *(l/min / GPM)*

Well production *(l/min / GPM)*

Disinfected? ☐ Yes ☒ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	7'		
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
50		50	
60		60	

Map of Well Location

Please provide a map below following instructions on the back.

SEE ATTACHED MAP.

Comments:

Well Contractor and Well Technician Information

LONDON SOIL TEST LTD.
712078 Southgate Sdrd. 71
Dundalk, ON N0C 1B0
519-455-5777 info@londonsoil.com

Well Contractor's Licence No. 7190

Municipality

Email Address

Bus. Telephone No. *(inc. area code)*

Name of Well Technician (Last Name, First Name) WATTS, Mike

Well Technician's Licence No. 7179

Signature of Technician and/or Contractor

Date Submitted 2019/04/15

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered

Date Work Completed 2019/04/05

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Audit No. Z305996

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Pine Ct
Bradley St
Grey St N
N
200 m
Google Earth
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7331886

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A264293

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

2570970 ONTARIO INC.

Address of Well Location (Street Number/Name)	Township	Lot	Concession
End of BRADLEY ST.		PT LOT 22	2 SWTSR

County/District/Municipality	City/Town/Village	Province	Postal Code
Grey County	Dundalk	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	17	547960	4891287		420709000505206

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
Dark Brown	Silt	Some Sand	Loose Topsoil on surface	0	4
Brown/Grey	Gravel	Silt & Sand	Perched water	4	10
Brown	Silt	Some Gravel, Sand	Very Compact	10	20

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*
20	8	SILICA SAND	
8	0	HYDRATED Bentonite	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☒ Other, *specify* AUGER.

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☒ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
2"	PVC	3/10"	10	+3

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
2"	PVC	010	20	10

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☒ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*
4		

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	20	8"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping ____ hrs + ____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)*

Recommended pump rate *(l/min / GPM)*

Well production *(l/min / GPM)*

Disinfected? ☐ Yes ☒ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		21		
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.

SEE ATTACHED MAP.

Comments:

Well Contractor and Well Technician Information

LONDON SOIL TEST LTD.
712078 Southgate Sdrd. 71
Dundalk, ON N0C 1B0
519-455-5777 info@londonsoil.com

Well Contractor's Licence No. 7119 16

Municipality

il Address

Bus.Telephone No. *(inc. area code)*

Name of Well Technician (Last Name, First Name) WATT, Mike

Well Technician's Licence No. 1071

Signature of Technician and/or Contractor

Date Submitted 2019/04/15

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered

Date Work Completed 2019/04/05

Ministry Use Only

Audit No. Z305987

APR 23 2019

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A264293
A264292
Wilson Crescent
Highpoint St
Pine Ct
Bradley St
N
200 m
Google Earth
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Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A258125

Tag#:A258125

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
159155 HWY 10	MELANCTHON	223	1 SRE
County/District/Municipality	**City/Town/Village**	**Province**	**Postal Code**
DUFFERIN		Ontario	
UTM Coordinates NAD 83 Zone 17 Easting 548395 Northing 4893013	**Municipal Plan and Sublot Number**	**Other**	

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	TOPSOIL			0	1
BRN	CLAY	STONES		1	15
BRN	STONES	CLAY GRAVEL		15	64
	STONES	CLAY, GRAVEL		64	81
	LIMESTONE			81	102

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	60'	Bentonite Grout	.5 m³

Method of Construction

☐ Cable Tool ☐ Diamond
☒ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☒ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4	STEEL	.188	+3	84
6"	OPEN HOLE		84	102

Status of Well

☑ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify* _____
☐ Other, *specify* _____

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Results of Well Yield Testing

After test of well yield, water was:
☑ Clear and sand free
☐ Other, *specify* _____

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)* 15 GPM

Duration of pumping 2 hrs + _____ min

Final water level end of pumping *(m/ft)* 9

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)* 45 FT

Recommended pump rate *(l/min / GPM)* 10-15 GPM

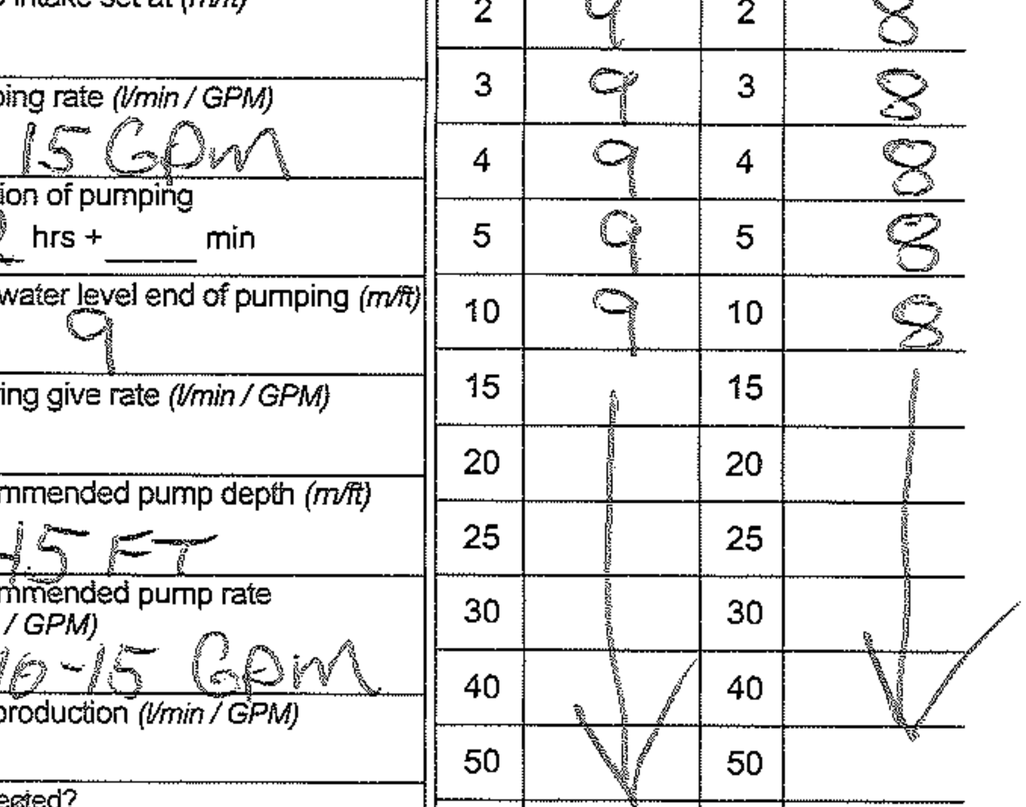
Well production *(l/min / GPM)*

Disinfected? ☑ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	8		9
1	9	1	8
2	9	2	8
3	9	3	8
4	9	4	8
5	9	5	8
10	9	10	8
15		15	
20		20	
25		25	
30		30	
40		40	
50		50	
60		60	

Map of Well Location

Please provide a map below following instructions on the back.



Water Details

Water found at Depth	Kind of Water	
99 (m/ft) ☐ Gas	☑ Fresh ☐ Untested	☐ Other, *specify* _____
(m/ft) ☐ Gas	☐ Fresh ☐ Untested	☐ Other, *specify* _____
(m/ft) ☐ Gas	☐ Fresh ☐ Untested	☐ Other, *specify* _____

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)

Comments: AIR LIFT 40 GPM.

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
NEUMANN WELL DRILLING LTD	7015
Business Address (Street Number/Name)	**Municipality**
453022 GREY Rd 2 BOX 180	DUNDALK
Province	**Postal Code**
ONT	N0C 1B0
Business E-mail Address	
Bus. Telephone No. (inc. area code)	**Name of Well Technician (Last Name, First Name)**
519 923 3203	GILLIES TOM
Well Technician's Licence No.	**Signature of Technician and/or Contractor**
1958	Tom Gillies

Date Submitted Y Y Y Y M M D D

Well owner's information package delivered ☑ Yes ☐ No

Date Package Delivered Y Y Y Y M M D D

Date Work Completed 20190507

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Audit No. Z306956

AUG 01 2019

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Ontario (https://www.ontario.ca/page/government-ontario)

Map: Well records

This map allows you to search and view well record information from reported wells in Ontario.

Full dataset is available in the Open Data catalogue (https://data.ontario.ca/dataset/well-records) .

Go Back to Map

Well ID

Well ID Number: 7367321
Well Audit Number: *C47994*
Well Tag Number: *A295208*
This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location		

Township	PROTON TOWNSHIP
Lot	
Concession	
County/District/Municipality	GREY
City/Town/Village	
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 17 Easting: 547875.00 Northing: 4890860.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant Used (Material and Type)	Volume Placed

Method of Construction & Well Use

Method of Construction	Well Use

Status of Well

Construction Record - Casing

Inside Diameter	Open Hole or material	Depth From	Depth To

Construction Record - Screen

Outside Diameter	Material	Depth From	Depth To

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 7215

Results of Well Yield Testing

After test of well yield, water was		
If pumping discontinued, give reason		
Pump intake set at		
Pumping Rate		
Duration of Pumping		
Final water level		
If flowing give rate		
Recommended pump depth		
Recommended pump rate		
Well Production		
Disinfected?		

Draw Down & Recovery

Draw Down Time(min)	Draw Down Water level	Recovery Time(min)	Recovery Water level
SWL			
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	

25		25	
30		30	
40		40	
45		45	
50		50	
60		60	

Water Details

Water Found at Depth	Kind

Hole Diameter

Depth From	Depth To	Diameter

Audit Number: C47994

Date Well Completed: May 29, 2020

Date Well Record Received by MOE: September 10, 2020

Related

How to use a Ministry of the Environment map (https://www.ontario.ca/page/how-use-ministry-environment-map#wells)

Technical documentation: Metadata record (https://data.ontario.ca/dataset/well-records/resource/3031344e-e3f2-48d5-888c-c1deadfd2f77)

Updated: October 18, 2021
Published: March 20, 2014

Ontario

Ministry of the Environment, Conservation and Parks

Well Record - Regulation 903

Ontario Water Resources Act

Notice of Collection of Personal Information

Personal information contained on this form is collected pursuant to sections 35-50 and 75(2) of the *Ontario Water Resources Act* and section 16.3 of the Wells Regulation. This information will be used for the purpose of maintaining a public record of wells in Ontario. This form and the information contained on the form will be stored in the Ministry's well record database and made publicly available. Questions about this collection should be directed to the Water Well Customer Service Representative at the Wells Help Desk, 125 Resources Road, Toronto Ontario M9P 3V6, at 1-888-396-9355 or wellshelpdesk@ontario.ca.

Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
No Tag on Well

Type *

☐ Construction ☑ Abandonment

Measurement recorded in: *

☑ Metric ☐ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name
[redacted]	
Organization	**Email Address**
Southgate Meadows Inc.	[redacted]

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
		[redacted]	

Country	Province	Postal Code	Telephone Number
Canada	Ontario	[redacted]	

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	231	Glenelg Street	Proton

Lot	Concession	County/District/Municipality
224	Range 2	Grey County

City/Town	Province	Postal Code
Dundalk	Ontario	N0C 1B0

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	547333	4891206	Test UTM in Map	

Other

3. Abandonment and Sealing

Well Depth 4.6 (m)

Provide information of well (e.g. construction date, original contractor). **Do not** enter private information

Original Owner

General Description	Depth From (m)	Depth To (m)

4. Annular Space

Depth From (m)	Depth To (m)	Type of Sealant Used (Material and Type)	Volume Placed (cubic metres)
0	4.6	Bentonite	0.01

5. Method of Construction

☐ Cable Tool ☐ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Diamond
☐ Jetting ☐ Driving ☐ Digging ☐ Rotary (Air) ☐ Augering ☐ Direct Push
☐ Other (specify)

6. Well Use

☐ Public ☐ Industrial ☐ Cooling & Air Conditioning
☐ Domestic ☐ Commercial ☐ Not Used
☐ Livestock ☐ Municipal ☐ Monitoring
☐ Irrigation ☐ Test Hole ☐ Dewatering
☐ Other (specify)

7. Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole
☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole
☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality
☑ Abandoned, other (specify) customer request
☐ Other (specify)

8. Construction Record - Casing (use negative number(s) to indicate depth above ground surface)

Inside Diameter (cm)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (m)	Depth To (m)
5	Plastic		0	1.5

9. Construction Record - Screen

Outside Diameter (cm)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (m)	Depth To (m)
6.3	Plastic		1.5	4.6

10. Water Details

Water found at Depth (m)	☐ Gas	Kind of water ☐ Fresh	☐ Untested	☐ Other

11. Hole Diameter

Depth From (m)	Depth To (m)	Diameter (cm)
0		

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (L/min)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (m)														

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (m)													

After test of well yield, water was

☐ Clear and sand free ☐ Other (specify)

Pump intake set at (m)	Pumping rate (L/min)	Duration of pumping hrs + min	Final water level end of pumping (m)	Disinfected?
				☐ Yes ☑ No

Recommended pump depth (m)	Recommended pump rate (L/min)	Well production (L/min)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☐ Make map area bigger

14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☐ Yes ☑ No		2021/03/17

Comments
MW1 on map

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
SL Sonic Soil Limited	7732

Business Address

Unit Number	Street Number	Street Name *
	441	Carlingview Drive

City/Town/Village *	Province	Postal Code *
Etobicoke	Ontario	M9W 5G8

Business Telephone Number	Business Email Address
905-660-0501	sonic@sonicsoil.com

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
Osborne	Tim	4078

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
Archibald	Alan	sonic@sonicsoil.com

Signature	Date Submitted (yyyy/mm/dd)
Alan Archibald Digitally signed by Alan Archibald DN: C=CA, O=SL Sonic Soil Limited, CN=Alan Archibald, E=sonic@sonicsoil.com Reason: I am the author of this document Location: Date: 2021-04-14 14:42:01 Foxit PhantomPDF Version: 9.4.1	2021/04/14

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Ontario

Ministry of the Environment, Conservation and Parks

Well Record - Regulation 903

Ontario Water Resources Act

Notice of Collection of Personal Information

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Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
No Tag on Well

Type *

☐ Construction ☑ Abandonment

Measurement recorded in: *

☑ Metric ☐ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name
[redacted]	
Organization: Southgate Meadows Inc.	Email Address: [redacted]

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
		[redacted]	

Country	Province	Postal Code	Telephone Number
Canada	Ontario	[redacted]	

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	231	Glenelg Street	Proton

Lot	Concession	County/District/Municipality
227	Range 2	Grey County

City/Town	Province	Postal Code
Dundalk	Ontario	N0C 1B0

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	547746	4891026	Test UTM in Map	

Other

3. Abandonment and Sealing

Well Depth 4.9 (m)

Provide information of well (e.g. construction date, original contractor). **Do not** enter private information

Original Owner

General Description	Depth From (m)	Depth To (m)

4. Annular Space

Depth From (m)	Depth To (m)	Type of Sealant Used (Material and Type)	Volume Placed (cubic metres)
0	4.9	Bentonite	0.01

5. Method of Construction

☐ Cable Tool ☐ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Diamond
☐ Jetting ☐ Driving ☐ Digging ☐ Rotary (Air) ☐ Augering ☐ Direct Push
☐ Other (specify)

6. Well Use

☐ Public ☐ Industrial ☐ Cooling & Air Conditioning
☐ Domestic ☐ Commercial ☐ Not Used
☐ Livestock ☐ Municipal ☐ Monitoring
☐ Irrigation ☐ Test Hole ☐ Dewatering
☐ Other (specify)

7. Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole
☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole
☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality
☑ Abandoned, other (specify) customer request
☐ Other (specify)

8. Construction Record - Casing (use negative number(s) to indicate depth above ground surface)

Inside Diameter (cm)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (m)	Depth To (m)
5	Plastic		0	1.8

9. Construction Record - Screen

Outside Diameter (cm)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (m)	Depth To (m)
6.3	Plastic		1.8	4.9

10. Water Details

Water found at Depth (m)	☐ Gas	Kind of water ☐ Fresh	☐ Untested	☐ Other

11. Hole Diameter

Depth From (m)	Depth To (m)	Diameter (cm)
0		

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (L/min)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (m)														

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (m)													

After test of well yield, water was

☐ Clear and sand free ☐ Other (specify)

Pump intake set at (m)	Pumping rate (L/min)	Duration of pumping hrs + min	Final water level end of pumping (m)	Disinfected?
				☐ Yes ☑ No

Recommended pump depth (m)	Recommended pump rate (L/min)	Well production (L/min)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☐ Make map area bigger

14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☐ Yes ☑ No		2021/03/17

Comments
MW2 on map

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
SL Sonic Soil Limited	7732

Business Address

Unit Number	Street Number	Street Name *
	441	Carlingview Drive

City/Town/Village *	Province	Postal Code *
Etobicoke	Ontario	M9W 5G8

Business Telephone Number	Business Email Address
905-660-0501	sonic@sonicsoil.com

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
Osborne	Tim	4078

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
Archibald	Alan	sonic@sonicsoil.com

Signature	Date Submitted (yyyy/mm/dd)
Alan Archibald Digitally signed by Alan Archibald DN: C=CA, O=SL Sonic Soil Limited, CN=Alan Archibald, E=sonic@sonicsoil.com Reason: I am the author of this document Location: Date: 2021-04-14 14:41:00 Foxit PhantomPDF Version: 9.4.1	2021/04/14

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Ministry of the Environment, Conservation and Parks

Well Record - Regulation 903

Ontario Water Resources Act

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Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
No Tag on Well

Type *

☐ Construction ☑ Abandonment

Measurement recorded in: *

☑ Metric ☐ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name
[redacted]	
Organization	**Email Address**
Southgate Meadows Inc.	[redacted]

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
		[redacted]	

Country	Province	Postal Code	Telephone Number
Canada	Ontario	[redacted]	

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	231	Glenelg Street	Proton

Lot	Concession	County/District/Municipality
228	Range 2	Grey County

City/Town	Province	Postal Code
Dundalk	Ontario	N0C 1B0

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	548027	4890884	Test UTM in Map	

Other

3. Abandonment and Sealing

Well Depth 5.2 (m)

Provide information of well (e.g. construction date, original contractor). **Do not** enter private information

Original Owner

General Description	Depth From (m)	Depth To (m)

4. Annular Space

Depth From (m)	Depth To (m)	Type of Sealant Used (Material and Type)	Volume Placed (cubic metres)
0	5.2	Bentonite	0.0104

5. Method of Construction

☐ Cable Tool ☐ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Diamond
☐ Jetting ☐ Driving ☐ Digging ☐ Rotary (Air) ☐ Augering ☐ Direct Push
☐ Other (specify)

6. Well Use

☐ Public ☐ Industrial ☐ Cooling & Air Conditioning
☐ Domestic ☐ Commercial ☐ Not Used
☐ Livestock ☐ Municipal ☐ Monitoring
☐ Irrigation ☐ Test Hole ☐ Dewatering
☐ Other (specify)

7. Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole
☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole
☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality
☑ Abandoned, other (specify) customer request
☐ Other (specify)

8. Construction Record - Casing (use negative number(s) to indicate depth above ground surface)

Inside Diameter (cm)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (m)	Depth To (m)
5	Plastic		0	2.1

9. Construction Record - Screen

Outside Diameter (cm)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (m)	Depth To (m)
6.3	Plastic		2.1	5.2

10. Water Details

Water found at Depth (m)	☐ Gas	Kind of water ☐ Fresh	☐ Untested	☐ Other

11. Hole Diameter

Depth From (m)	Depth To (m)	Diameter (cm)
0		

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (L/min)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (m)														

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (m)													

After test of well yield, water was

☐ Clear and sand free ☐ Other (specify)

Pump intake set at (m)	Pumping rate (L/min)	Duration of pumping hrs + min	Final water level end of pumping (m)	Disinfected?
				☐ Yes ☑ No

Recommended pump depth (m)	Recommended pump rate (L/min)	Well production (L/min)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☐ Make map area bigger

14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☐ Yes ☑ No		2021/03/17

Comments
MW3 on map

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
SL Sonic Soil Limited	7732

Business Address

Unit Number	Street Number	Street Name *
	441	Carlingview Drive

City/Town/Village *	Province	Postal Code *
Etobicoke	Ontario	M9W 5G8

Business Telephone Number	Business Email Address
905-660-0501	sonic@sonicsoil.com

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
Osborne	Tim	4078

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
Archibald	Alan	sonic@sonicsoil.com

Signature	Date Submitted (yyyy/mm/dd)
Alan Archibald Digitally signed by Alan Archibald DN: C=CA, O=SL Sonic Soil Limited, CN=Alan Archibald, E=sonic@sonicsoil.com Reason: I am the author of this document Location: Date: 2021-04-14 14:41:28 Foxit PhantomPDF Version: 9.4.1	2021/04/14

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Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
No Tag on Well

Type *

☐ Construction ☑ Abandonment

Measurement recorded in: *

☑ Metric ☐ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name
[redacted]	
Organization	Email Address
Southgate Meadows Inc.	[redacted]

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
		[redacted]	

Country	Province	Postal Code	Telephone Number
Canada	Ontario	[redacted]	

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	231	Glenelg Street	Proton

Lot	Concession	County/District/Municipality
225	Range 2	Grey County

City/Town	Province	Postal Code
Dundalk	Ontario	N0C 1B0

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	547965	4890795	Test UTM in Map	

Other

3. Abandonment and Sealing

Well Depth 5.2 (m)

Provide information of well (e.g. construction date, original contractor). **Do not** enter private information

Original Owner

General Description	Depth From (m)	Depth To (m)
	0	5.2

4. Annular Space

Depth From (m)	Depth To (m)	Type of Sealant Used (Material and Type)	Volume Placed (cubic metres)
0	5.2	Bentonite	0.0104

5. Method of Construction

☐ Cable Tool ☐ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Diamond
☐ Jetting ☐ Driving ☐ Digging ☐ Rotary (Air) ☐ Augering ☐ Direct Push
☐ Other (specify)

6. Well Use

☐ Public ☐ Industrial ☐ Cooling & Air Conditioning
☐ Domestic ☐ Commercial ☐ Not Used
☐ Livestock ☐ Municipal ☐ Monitoring
☐ Irrigation ☐ Test Hole ☐ Dewatering
☐ Other (specify)

7. Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole
☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole
☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality
☑ Abandoned, other (specify) customer request
☐ Other (specify)

8. Construction Record - Casing (use negative number(s) to indicate depth above ground surface)

Inside Diameter (cm)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (m)	Depth To (m)
5	Plastic		0	5.2

9. Construction Record - Screen

Outside Diameter (cm)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (m)	Depth To (m)
6.3	Plastic		0	5.2

10. Water Details

Water found at Depth (m)	☐ Gas	Kind of water ☐ Fresh	☐ Untested	☐ Other

11. Hole Diameter

Depth From (m)	Depth To (m)	Diameter (cm)
0		

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (L/min)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (m)														

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (m)													

After test of well yield, water was

☐ Clear and sand free ☐ Other (specify)

Pump intake set at (m)	Pumping rate (L/min)	Duration of pumping hrs + min	Final water level end of pumping (m)	Disinfected?
				☐ Yes ☑ No

Recommended pump depth (m)	Recommended pump rate (L/min)	Well production (L/min)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☐ Make map area bigger

14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☐ Yes ☑ No		2021/03/17

Comments
MW4 on map

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
SL Sonic Soil Limited	7732

Business Address

Unit Number	Street Number	Street Name *
	441	Carlingview Drive

City/Town/Village *	Province	Postal Code *
Etobicoke	Ontario	M9W 5G8

Business Telephone Number	Business Email Address
905-660-0501	sonic@sonicsoil.com

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
Osborne	Tim	4078

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
Archibald	Alan	sonic@sonicsoil.com

Signature
Alan Archibald
Digitally signed by Alan Archibald
DN: C=CA, O=SL Sonic Soil Limited, CN=Alan Archibald, E=sonic@sonicsoil.com
Reason: I am the author of this document
Location:
Date: 2021-04-14 14:41:44
Foxit PhantomPDF Version: 9.4.1

Date Submitted (yyyy/mm/dd)
2021/04/14

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6CW4 L4DH

Ontario (https://www.ontario.ca/page/government-ontario)

Map: Well records

This map allows you to search and view well record information from reported wells in Ontario.

Full dataset is available in the Open Data catalogue (https://data.ontario.ca/dataset/well-records) .

Go Back to Map

Well ID

Well ID Number: 7389879
Well Audit Number: *C49299*
Well Tag Number: *A294344*
This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location		

Township	PROTON TOWNSHIP
Lot	
Concession	
County/District/Municipality	GREY
City/Town/Village	
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 17 Easting: 547332.00 Northing: 4891207.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant Used (Material and Type)	Volume Placed

Method of Construction & Well Use

Method of Construction	Well Use

Status of Well

Construction Record - Casing

Inside Diameter	Open Hole or material	Depth From	Depth To

Construction Record - Screen

Outside Diameter	Material	Depth From	Depth To

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 6988

Results of Well Yield Testing

After test of well yield, water was		
If pumping discontinued, give reason		
Pump intake set at		
Pumping Rate		
Duration of Pumping		
Final water level		
If flowing give rate		
Recommended pump depth		
Recommended pump rate		
Well Production		
Disinfected?		

Draw Down & Recovery

Draw Down Time(min)	Draw Down Water level	Recovery Time(min)	Recovery Water level
SWL			
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	

25		25	
30		30	
40		40	
45		45	
50		50	
60		60	

Water Details

Water Found at Depth	Kind

Hole Diameter

Depth From	Depth To	Diameter

Audit Number: C49299

Date Well Completed: February 24, 2021

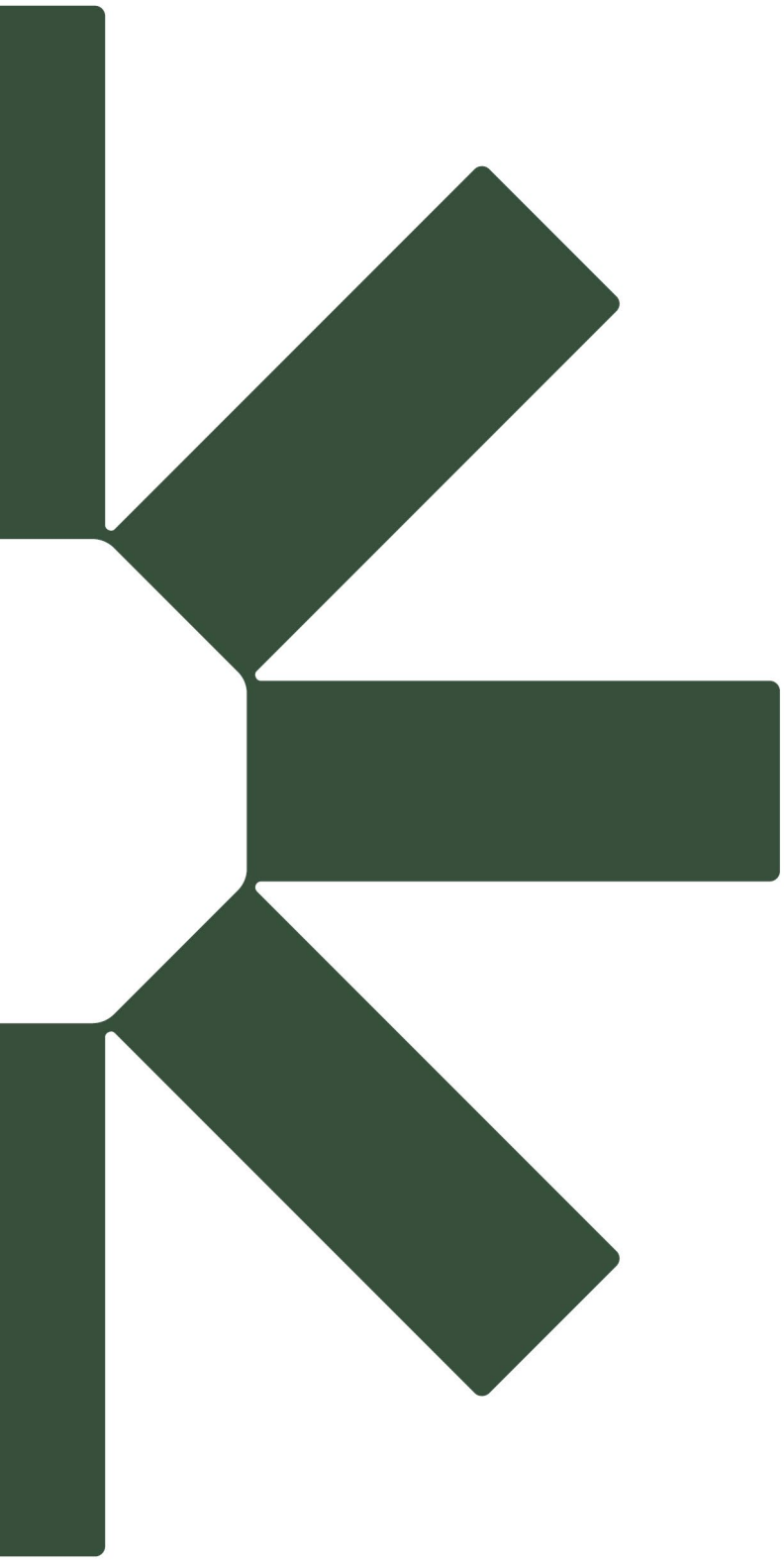
Date Well Record Received by MOE: June 21, 2021

Related

How to use a Ministry of the Environment map (https://www.ontario.ca/page/how-use-ministry-environment-map#wells)

Technical documentation: Metadata record (https://data.ontario.ca/dataset/well-records/resource/3031344e-e3f2-48d5-888c-c1deadfd2f77)

Updated: October 18, 2021
Published: March 20, 2014



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Soil Engineers Ltd.
CONSULTING ENGINEERS
GEOTECHNICAL • ENVIRONMENTAL • HYDROGEOLOGICAL • BUILDING SCIENCE
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TEL: (705) 721-7863	TEL: (905) 542-7605	TEL: (905) 440-2040	TEL: (905) 853-0647	TEL: (705) 684-4242	TEL: (905) 777-7956
FAX: (705) 721-7864	FAX: (905) 542-2769	FAX: (905) 725-1315	FAX: (905) 881-8335	FAX: (705) 684-8522	FAX: (905) 542-2769

A REPORT TO
FLATO DEVELOPMENTS INC.

A GEOTECHNICAL INVESTIGATION FOR PROPOSED RESIDENTIAL DEVELOPMENT

PART OF LOTS 225 AND 226 CONCESSION 2
TOWNSHIP OF SOUTHGATE (DUNDALK)

REFERENCE NO. 2210-S028C

JANUARY 2023

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1.0 INTRODUCTION

In accordance with a written authorization from Ms. Nazy Majidi of Flato Developments Inc. dated September 20, 2022, Soil Engineers Ltd. was retained to carry out a geotechnical review based on the monitoring well logs and groundwater monitoring data prepared by SLR Consulting (Canada) Ltd. (SLR) at a land parcel with the legal description of "Part of Lots 225 and 226, Concession 2, Southwest of the Toronto and Sydenham Road, Geographic Township of Proton, Township of Southgate, County of Grey".

The purpose of this review was to evaluate the subsurface conditions and determine the engineering properties of the disclosed soils from SLR boreholes for the design and construction of the proposed residential development. The geotechnical findings and resulting recommendations are presented in this report.

2.0 SITE AND PROJECT DESCRIPTION

The Township of Southgate (Dundalk) is situated in the physiographic region known as Dundalk Till Plain, where moraines and eskers occur in areas that have been partly eroded by glacial Lake Algonquin and filled with lacustrine sands, silts, and reworked till.

The subject site, approximately 32 hectares in area, is currently a vacant farm field with a wooded area occupying the eastern portion of the site. It is located to the north of the Grey County CP Rail Trail and northwest of Todd Crescent, in the Township of Southgate. The existing site gradient is undulating, with a slight drop towards the west and centre of the site.

Based on the Draft Plan of Subdivision prepared by MHBC Planning dated August 18, 2022, the subject site will be developed into a residential subdivision with a park block and a stormwater management (SWM) pond. The subdivision will be serviced with municipal sewers and roadways meeting urban standards.

3.0 FIELD WORK AND LABORATORY TESTS

The field work, consisting of five (5) boreholes extending to depths of 5.33 to 12.95 m, was supervised by SLR between April 19 and May 5, 2022. Upon the completion of drilling and sampling, six (6) monitoring wells, including a pair of nested wells, were installed in all borehole locations to facilitate groundwater monitoring and hydrogeological study. All

borehole and monitoring well locations are shown on the Borehole and Monitoring Well Location Plan, Drawing No. 1.

Standard Penetration Tests (SPT) were performed at regular sample interval to determine the Standard Penetration Resistance (or 'N' values) of the subsoil. The relative density of the non-cohesive strata is inferred from the 'N' values. The results of the SPT were documented in the Monitoring Well Logs in Appendix A of this report.

Aside from the SPT during the field work, grain size analyses were also performed on selected soil samples to determine the gradation of the subsoils. The gradation graphs were presented in Appendix B of this report.

4.0 SUBSURFACE CONDITIONS

The investigation revealed that beneath a topsoil veneer, the site is underlain by strata of sandy silt till/silty sand till, and sand deposits.

Detailed descriptions of the encountered subsurface conditions are presented on SLR Monitoring Well Logs attached in the Appendix A. The engineering properties of the disclosed soils are discussed herein.

4.1 Topsoil

The topsoil veneer, 13 to 46 cm in thickness, was contacted at the ground surface in all boreholes. Thicker topsoil may be found in areas beyond the borehole locations, especially in low-lying areas and treed areas.

4.2 Silty Sand Till/Sandy Silt Till

The native silty sand till/sandy silt till predominates the soil stratigraphy within the depth of the investigation. The tills consist of a random mixture of soil particle sizes ranging from clay to gravel, with silt and sand being the dominant influence on its soil properties. Two (2) grainsize analyses were performed on the till deposits and their gradations were presented in Appendix B of this report.

The obtained 'N' values of the till samples range from 6 to over 50, with a median of over 50 blows per 30 cm of penetration, indicating the till deposit is loose to very dense, being

generally very dense in relative density. Occasional cobbles, boulders and rock fragments were identified within the till samples by SLR.

SLR indicated that the till samples were generally in moist conditions, with localized wet sand layers at various depths.

The engineering properties of the till deposit are listed below:

- High frost susceptibility and low water erodibility.
- The till will be stable in relatively steep excavation; however, localized sheet collapse may occur under prolonged exposure.

4.3 Sand

The sand deposit was generally found near the ground surface or between the till deposits in MW22-312, MW22-314 and MW22-315. It is generally fine to coarse grained and contains a trace of gravel to being gravelly. One (1) grain size was carried out in the sand and gravel deposit and the gradation is presented in Appendix B of this report.

The obtained 'N' values of the sand range between 4 and over 50 blows per 30 cm of penetration, indicating the sand is very loose to very dense in relative density. The low 'N' value of 4 was contacted near the ground surface, likely being disturbed by farming activities or weakened by weathering process.

According to SLR's sample examination, the sand deposit near the ground surface was in moist condition, while the sand deposit at deeper depths is wet.

The engineering properties of the sand deposit are given below:

- Low frost-susceptibility and high water erodibility
- In excavation, the sand will slough to its angle of repose, run with water seepage and boil with a piezometric head of about 0.3 m.

5.0 GROUNDWATER CONDITION

Groundwater levels were recorded in the monitoring wells on May 13, 2022, and the records are presented on the logs and summarized in Table 1.

Table 1 - Groundwater Level in Monitoring Wells

Monitoring Well No.	Well Depth (m)	Ground Elevation (m)	May 13, 2022	
			Depth (m)	Elevation (m)
MW22-312	4.57	520.61	0.20	520.41
MW22-313D	10.67	520.00	4.87	515.13
MW22-313S	5.94	520.03	0.37	519.66
MW22-314	6.10	517.28	0.58	516.70
MW22-315	12.19	518.81	2.97	515.84
MW22-316	9.14	520.07	1.40	518.67

Groundwater was recorded at a depth of 0.20 to 4.87 m from the prevailing ground surface, or between El. 515.13 m and El. 520.41 m. On-going groundwater monitoring will be completed by SLR and presented in the hydrogeological report under separate cover.

6.0 DISCUSSION AND RECOMMENDATIONS

The investigation revealed that beneath a topsoil veneer, the site is underlain by strata of sandy silt till/silty sand till, sand deposits.

Groundwater was recorded at a depth of 0.20 to 4.87 m from the prevailing ground surface, or between El. 515.13 m and El. 520.41 m.

It is understood that subject site will be developed into a residential subdivision with a park block and a stormwater management (SWM) pond. The geotechnical findings warranting special consideration for the proposed development are presented below:

- The topsoil must be removed for site development. The topsoil can be re-used for landscaping only. Any surplus should be removed off-site
- Where the surface soil is weathered or disturbed, it should be subexcavated and inspected before reusing for structural backfill.
- In areas where the site will be regraded with additional fill, the earth fill can be placed in an engineered manner for foundation, site services and pavement construction.
- The proposed residential houses can be supported on conventional spread and strip footings founded on engineered fill or undisturbed native subsoil. The foundation subgrade must be inspected by a geotechnical engineer, or a senior geotechnical

technician, to ensure that the revealed conditions are compatible with the design of foundations.

- For conventional basement design, the foundation wall should be damp-proofed and provided with perimeter subdivisions at wall base. Where wet subgrade is evident below the basement slab, underfloor weepers must be considered.
- A Class 'B' bedding, consisting of compacted 19-mm Crusher-Run Limestone (CRL), or equivalent, is recommended for the construction of the underground utilities. Where wet subgrade or dewatering is required, A Class 'A' concrete bedding should be used instead.

The recommendations appropriate for the project are presented herein. One must be aware that the subsurface conditions may vary. Should this become apparent during construction, a geotechnical engineer must be consulted to determine whether the following recommendations require revision.

6.1 Site Preparation

In areas where the site will be regraded with additional fill, the earth fill should be place in an engineered manner for foundation, site services and pavement construction. The engineering requirements for a certifiable fill are presented below:

1. All the existing topsoil must be removed. Any weathered/disturbed soil encountered on the ground surface should be subexcavated, sorted free of organics or deleterious material, if any, aerated before reusing for structural backfill. The exposed subgrade must be inspected and proof-rolled prior to any fill placement.
2. Inorganic soils must be used, and they must be uniformly compacted in 20 cm thick lifts to at least 98% Standard Proctor dry density (SPDD) up to the proposed finished grade. The soil moisture must be properly controlled near the optimum. If the foundations are to be built soon after the fill placement, the densification process for the engineered fill must be increased to 100% SPDD.
3. If the engineered fill is compacted with the moisture content on the wet side of the optimum, the underground services and pavement construction should not begin until the pore pressure within the fill mantle has completely dissipated. This must be further assessed at the time of the engineered fill construction.
4. If imported fill is to be used, it should be inorganic soils, free of deleterious or any material with environmental issue (contamination). Any potential imported earth fill from off site must be reviewed for geotechnical and environmental quality by the

appropriate personnel as authorized by the developer or agency, before it is hauled to the site.

5. The engineered fill must not be placed during the period where freezing ambient temperatures occur either persistently or intermittently. This is to ensure that the fill is free of frozen soils, ice and snow. If the engineered fill is to be left over the winter months, adequate earth cover, or equivalent, must be provided for protection against frost action.
6. The fill operation must be supervised and monitored on a full-time basis by a technician under the direction of a geotechnical engineer.
7. The engineered fill envelope and finished elevations must be clearly and accurately defined in the field, and they must be precisely documented.
8. The foundations and underground services subgrade must be inspected by the geotechnical consulting firm that inspected the engineered fill placement. This is to ensure that the foundations are placed within the engineered fill envelope, and the integrity of the fill has not been compromised by interim construction, environmental degradation and/or disturbance by the footing excavation.
9. Any excavation carried out in certified engineered fill must be reported to the geotechnical consultant who supervised the fill placement in order to document the locations of the excavation and/or to supervise reinstatement of the excavated areas to engineered fill status. If construction on the engineered fill does not commence within a period of 2 years from the date of certification, the condition of the engineered fill must be assessed for re-certification.
10. Despite stringent control in the placement of the engineered fill, variations in soil type and density may occur in the engineered fill. Therefore, the foundations must be reinforced and designed by a structural engineer.
11. In sewer construction, the engineered fill is considered to have the same structural proficiency as a natural inorganic soil.

6.2 **Foundations**

The proposed residential dwellings can be constructed on conventional footings founded on the undisturbed native soil or engineered fill. The recommended bearing pressures for conventional footing design are presented below:

- Maximum Soil Bearing Pressure at Serviceability Limit State (SLS) = 150 kPa
- Factored Ultimate Bearing Pressure at Ultimate Limit State (ULS) = 250 kPa

The total and differential settlements of the conventional spread and strip footings, designed for the bearing pressure at SLS, are estimated to be 25 mm and 20 mm, respectively.

The footing subgrade must be inspected by a geotechnical engineer, or a geotechnical technician under the supervision of a geotechnical engineer; this is to ensure that the subgrade conditions are compatible with the foundation design requirements.

Where water seepage is encountered during footing excavations, or where the subgrade of the foundations is found to be wet, the subgrade should be protected by a concrete mud-slab immediately after exposure and inspection. This will prevent construction disturbance and costly rectification.

Footings exposed to weathering or in unheated areas, should have at least 1.6 m of earth cover for protection against frost action or must be adequately insulated.

The foundations shall meet the requirements specified in the latest Ontario Building Code. The proposed development should be designed to resist an earthquake force using Site Classification 'D' (stiff soil).

6.3 Basement Construction

The basement walls should be designed to sustain a lateral earth pressure calculated using the soil parameters stated in Section 6.8. Any applicable surcharge loads beside the basement must also be included in the design of underground structure.

In conventional design, perimeter subdrains and damp-proofing of the foundation walls will be required. The subdrains should be encased in a fabric filter to protect them against blockage by silting and connected to a positive outlet. Typical details of the perimeter subdrain are illustrated on Drawing No. 2.

Where wet subgrade is evident below the basement, underfloor weepers should be implemented. In addition, a vapour barrier should also be placed between the concrete slab and the granular bedding to prevent upfiltration of water vapour. Details of the underfloor weepers are illustrated on Drawing No. 3. The necessity of the underfloor weepers should be further verified once the basement elevation is available for review.

The subgrade must consist of sound native soils or properly compacted inorganic fill. Any weak or wet soil should be subexcavated and replaced with suitable inorganic soil compacted

to at least 98% SPDD. The final subgrade must be inspected and assessed by proof-rolling prior to placement of granular bedding.

The basement floor slab should be constructed on a granular bedding, at least 20 cm in thickness, consisting of 19-mm CRL, or equivalent, compacted to 100% SPDD. Where underfloor weepers are required, the thickness of the granular bedding should be increased to 30 cm in thickness.

The exterior grading around the buildings must be such that it directs runoff away from the structures.

6.4 Underground Services

The subgrade for underground services should consist of properly compacted inorganic earth fill or sound native soils. Where weak or wet subgrade is encountered, it can be further subexcavated to competent soil and replaced with bedding material compacted to 98% SPDD in lifts no more than 20 cm in thickness.

A Class 'B' bedding, consisting of compacted 19-mm CRL or equivalent, is recommended for the design of the underground services construction. Where saturated soils and/or dewatering is required for the construction of the underground services, Class 'A' concrete bedding should be used instead.

In order to prevent pipe floatation when the sewer trench is deluged with water, a soil cover with a thickness equal to two times the pipe diameter should be in place at all times after completion of the pipe installation.

The pipe joints connecting into manholes and catch basins should be leak-proof or wrapped with a waterproof membrane. Openings to subdrains should be shielded by a fabric filter to prevent blockage by silting.

All metal fittings for the underground services should be protected against soil corrosion. The in-situ soils have moderately high corrosivity to buried metal. In determining the mode of protection, an estimated electrical resistivity of the disclosed soil should be used and must meet the minimum requirement as specified by the Municipality.

6.5 Backfilling in Trenches and Excavation

The on-site inorganic soils are suitable in general to be reused for structural backfill. However, the wet soils, if any, should be spread thinly on the ground to allow aeration in warm and dry weather prior to be reused for structural backfill. They should be free of deleterious materials or oversized (over 15 cm) boulders and cobbles.

The backfill in service trenches or beside foundation walls should be compacted to at least 95% SPDD. In zone within 1.0 m below the pavement subgrade or floor slab, the subgrade must be compacted to at least 98% SPDD. The lift thickness should be limited to 20 cm, or the lift thickness should be determined by test strips.

In normal construction practice, the problem areas of pavement settlement largely occur adjacent to foundation walls, manholes, catch basins and services crossings. In areas which are inaccessible to a heavy compactor, granular backfill should be used in order to achieve the compaction with a light equipment.

One must be aware of the possible consequences during trench backfilling and exercise caution as described below:

- When construction is carried out in freezing winter weather, allowance should be made for these following conditions. Despite stringent backfill monitoring, frozen soil layers may inadvertently be mixed with the structural trench backfill. Should the in-situ soils have a water content on the dry side of the optimum, it would be impossible to wet the soils due to the freezing condition, rendering difficulties in obtaining uniform and proper compaction. Furthermore, the freezing condition will prevent wetting of the backfill when it is required, such as in a narrow vertical trench section, or when the trench box is removed. The above will invariably cause backfill settlement that may become evident within 1 to several years, depending on the depth of the trench which has been backfilled.
- In areas where the construction is carried out during the winter months, prolonged exposure of the trench walls will result in frost heave within the soil mantle of the walls. This may result in some settlement as the frost recedes, and repair costs will be incurred prior to final surfacing of the new pavement and the slab-on-grade construction.
- In deep trench backfill, one must be aware that future settlement may occur, unless the side of the cut is flattened to at least 2H:1V, and the lifts of the fill and its moisture content are stringently controlled; i.e., lifts should be no more than 20 cm (or less if the

backfilling conditions dictate) and uniformly compacted to achieve at least 98% SPDD, with the moisture content controlled near the optimum.

- It is often difficult to achieve uniform compaction of the backfill in the lower vertical section of a trench which is stabilized by a trench box. These sectors must be backfilled with sand or non shrinkable fill, and the compaction must be carried out diligently prior to the placement of the backfill above this sector; i.e., in the upper sloped trench section. This measure is necessary in order to prevent consolidation of inadvertent voids and loose backfill which will compromise the compaction of the backfill in the upper section.
- In areas where groundwater movement is expected in the trench backfill, anti-seepage collars (OPSS 802.095) should be provided.

6.6 Garages and Driveways

Due to the frost susceptible characteristics of the subgrade soils, heaving of the pavement is anticipated during cold weather and the surface structures should be designed to tolerate the movement.

The driveway leading to the garage should be backfilled with non-frost susceptible granular material with a frost taper at a slope of 1H:1V or gentler. The subgrade of the garage floor and the interior garage foundation walls should be insulated with 75-mm Styrofoam, or its thermal equivalent.

The ground surface must be graded to direct water away from the structures to minimize the frost heave phenomenon generally associated with the disclosed soil.

6.7 Pavement Design

The recommended pavement design for both Local Road and Collectors is presented in Table 2.

Table 2 - Pavement Design

Course	Thickness (mm)	OPS Specifications
Asphalt Surface	40	HL3
Asphalt Binder - Local Road - Collectors	 50 70	HL4
Granular Base	150	Granular 'A' or equivalent
Granular Sub-base	450	Granular 'B' or equivalent

In preparation of the pavement subgrade, the subgrade must be proof-rolled. Any soft spot identified must be subexcavated, and replaced with inorganic material and properly compacted to at least 98% SPDD, with the water content 2% to 3% drier than the optimum in 20 cm layers, or the lift thickness should be determined by test strips. All the granular bases should be compacted to 100% SPDD.

The pavement subgrade will suffer a strength regression if water is allowed to infiltrate prior to paving. The following measures should be incorporated in the construction procedures and pavement design:

- The lot areas adjacent to the pavement should be properly graded to prevent ponding of water.
- The pavement subgrade should be properly crowned and smooth-rolled to allow interim precipitation to be properly drained.
- Fabric filter-encased curb subdrains on both sides of the roadway are required to meet the Town's requirements.
- If the pavement is to be constructed during the wet seasons and extremely soft subgrade occurs, the granular sub-base may require thickening. This can be further assessed during construction.

6.8 Stormwater Management Area (Block 396)

Details of the SWM facility was not provided for review at the time of preparation of this report. Due to the presence of wet silty sand and/or sand deposit in the overburden of the nearby boreholes, where the pond is constructed with sub-excavation into the native ground, a clay liner will likely be required.

Further recommendations can be provided once details of the SWM facility was provided for our review. Additional borehole and laboratory tests may be required to evaluate the need of clay liner and its thickness.

6.9 Soil Parameters

The recommended soil parameters for the project design are given in Table 3.

Table 3 - Soil Parameters

Unit Weight and Bulk Factor	**Unit Weight (kN/m^3)**		**Estimated Bulk Factor**	
	Bulk	**Submerged**	**Loose**	**Compacted**
Silty Sand/Sand	20.5	10.5	1.20	1.00
Silty Sand Till/Sandy Silt Till	22.5	12.5	1.25	1.03

Lateral Earth Pressure Coefficients	**Active K_a**	**At Rest K_0**	**Passive K_p**
Sand	0.29	0.46	3.36
Silty Sand Till/Sandy Silt Till/Silty Sand	0.30	0.40	3.33

Estimated Coefficient of Permeability (K) and Percolation Time (T)	**K (cm/sec)**	**T (min/cm)**
Sand	10^{-2} to 10^{-3}	4 to 8
Silty Sand	10^{-4}	15
Silty Sand Till/Sandy Silt Till	10^{-4} to 10^{-6}	15 to 50

Estimated California Bearing Ratio	
Sand	15%
Silty Sand/Silty Sand Till/Sandy Sit Till	5% to 8%

Estimated Electrical Resistivity	
Sand	5500 ohm·cm
Silty Sand/Silty Sand Till/Sandy Silt Till	4500 ohm·cm

Maximum Allowable Soil Pressure (SLS) For Thrust Block Design	
Engineered Fill and Sound Native Soils	75 kPa

Coefficients of Friction	
Between Concrete and Granular Base	0.50
Between Concrete and Sound Native Soil	0.35

6.10 Excavation

Excavation should be carried out in accordance with Ontario Regulation 213/91. The types of excavated soils are classified in Table 4.

Table 4 - Classification of Soils for Excavation

Material	Type
Silty Sand Till/Sandy Silt Till	2
Weathered/disturbed Soils, drained Soils	3
Saturated Soils	4

For excavation within the till deposit, water seepage, if any, is expected to be low in rate and limited in quantity. The seepage can be removed by conventional pumping from sumps. Where the excavation extends into the saturated soils, the water seepage will be appreciable and likely persistent. Dewatering from closely spaced sumps and sump wells may be required. Details related to the rate and volume of dewatering will be discussed in the hydrogeological assessment. The method of dewatering should be confirmed with the hydrogeological consultant and the dewatering contractor.

Prospective contractors should assess the in situ subsurface conditions for excavation by digging test pits to at least 0.5 m below the intended bottom of excavation prior to excavating. These test pits may be allowed to remain open for a few hours to assess its seepage and stability conditions.

7.0 LIMITATIONS OF REPORT

This report was prepared by Soil Engineers Ltd. for the account of Flato Developments Inc. and for review by the designated consultants, financial institutions, and government agencies. Use of the report is subject to the conditions and limitations of the contractual agreement.

The material in the report reflects the judgment of Poh Fung Kwok and Kin Fung Li, P.Eng., in light of the information available to it at the time of preparation. Any use which a Third Party makes of this report, and/or any reliance on decisions to be made based on it are the responsibility of such Third Parties. Soil Engineers Ltd. accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

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APPENDIX A

MONITORING WELL LOGS

REFERENCE NO. 2210-S028C

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-312
SURFACE ELEVATION: 520.61 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE ID	% Recovery	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80 100)	WELL COMPLETION NOTES	ELEVATION (m)
0	520.61	**TOPSOIL**	0-2	91.7	4		
	520.15	**Silty SAND TILL** Fine to medium sand, trace silt, trace gravel (sub-angular-angular), brown, orange mottling, loose, soft, wet					520
1	519.54	Fine sand, brown-grey, compact/hard, moist-wet	2.5-4.5	62.5	10	bentonite seal	
	519.09	No orange mottling onward					519
2			5-7	20.8	15		
			7.5-9.5	37.5	18		518
3	517.56	**SAND and GRAVEL** Fine sand, trace coarse sand, trace cobble, trace silt, brown-grey, soft, dense, wet	10-12	20.8	38	silica sand 50 mm 010 slot PVC pipe	517
4			12.5-14.5	66.7	37		
	516.04 516.01	Trace gravel, trace silt, grey, dense, moist **Silty SAND TILL** Trace gravel, grey, very dense, very hard, moist	15-17	16.7	>50	end cap silica sand	516
5						bentonite seal	

End of monitoring well at 515.28 m

Well Completion Details:
Screened interval from 517.56 m to 516.04 m
Elevation at top of pipe (TOP) = 521.66 m

Groundwater Information:
Depth to groundwater from TOP = 1.25 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 20, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-313D
SURFACE ELEVATION: 520.00 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	520.00	**TOPSOIL**									
	519.87	Fine sandy silt, organics (rootlets), trace clay, dark brown, soft, moist								silica sand	
	519.24	**Sandy SILT TILL**									
1		Silty, trace medium-coarse sand, trace clay, brown, dark brown mottling, soft, moist, high plasticity									519
		Trace gravel (sub-angular/sub-rounded), increased gravel with depth, trace cobbles, saturated									
2											518
	517.56	Silty fine sand, firm-hard, moist									
3	516.95	Orange mottling/staining (oxidation)									517
	516.19	No recovery									
4											516
	515.43	**Silty SAND TILL**								bentonite seal	
5		Silty fine sand, some gravel (sub-rounded/sub-angular), firm-hard, moist							▼		515
6	513.90	Silty, cobble chips, wet		20-22	37.5		>50				514
	513.14	Coarse sand, silty, gravel (angular), cobble chips, trace clay, light brown, dense, wet-moist		22.5-24.5	33.3		>50				
7											513
				25-27	83.3		>50				
8											512
				27.5-29.5	70.8		>50				
9											511
				30-32	33.3		>50				
10	510.09	No Recovery			0.0		>50			silica sand 50 mm 010 slot PVC pipe	510
	509.33	**Sandy SILT TILL**								end cap silica sand	
11		Fine sand, clay, gravel, light brown, wet		35-37	20.8		>50			bentonite seal	509
		End of monitoring well at 508.57 m									
		Well Completion Details: Screened interval from 510.86 m to 509.33 m Elevation at top of pipe (TOP) = 521.06 m									
		Groundwater Information: Depth to groundwater from TOP = 5.93 m (May 13, 2022)									
		* denotes soil sample taken for lab analysis									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 5, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON
NO RECOVERY

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_MG_2022.08.30.GPJ SLR_CAN V5.2 MOISTURE.GDT 11/17/22

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-313S
SURFACE ELEVATION: 520.03 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE ID	% Recovery	TEST DATA: SPT Count / % Moisture	WELL COMPLETION NOTES	ELEVATION (m)
	520.03						
	519.90	**TOPSOIL** Fine sandy silt, organics (rootlets), trace clay, dark brown, soft, moist	0-2	25.0	10		
		Sandy SILT TILL Silty, trace medium-coarse sand, trace clay, brown, dark brown mottling, soft, moist, high plasticity					
	519.27	Trace gravel (sub-angular/sub-rounded), increased gravel with depth, trace cobbles, saturated					
1			2.5-4.5	58.3	13		519
			5-7	54.2	14	bentonite seal	
2							518
	517.59	Silty fine sand, firm-hard, moist	8-9.5	79.2	34		
3	516.98	Orange mottling/staining (oxidation)	10-12	25.0	>50		517
	516.22	No recovery		0.0	>50		
4							516
	515.46	**Silty SAND TILL** Silty fine sand, some gravel (sub-rounded/sub-angular), firm-hard, moist	15-17	25.0	>50	silica sand	
5						50 mm 010 slot PVC pipe	515
				4.2	>50		
						end cap	

End of monitoring well at 514.09 m

Well Completion Details:
Screened interval from 515.61 m to 514.09 m
Elevation at top of pipe (TOP) = 520.85 m

Groundwater Information:
Depth to groundwater from TOP = 1.19 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 27, 2022
LOGGED BY: AW
DRILLED BY: Orbit Garrant

Notes: SPLIT SPOON; NO RECOVERY

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-314
SURFACE ELEVATION: 517.28 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	517.28	**TOPSOIL**								cement	517
	517.13	**SAND** Silty, occasional medium sand, trace gravel, brown, orange-black mottling, loose, frim, moist		0-2	70.8		■4				
	516.52	**Silty SAND TILL** Fine sand, some cobbles, brown-grey, loose, firm, wet		2.5-4.5	41.7		■14				516
1	515.76										
	515.65	Some silt, occasional coarse sand, trace gravel, brown/grey - orange mottling, loose, soft-firm, wet Orange mottling, loose, firm, wet		5-7	41.7		■6				
2	514.99	fine-medium sand, some gravel (angular), trace cobble, trace clay, brown-grey, dense, firm, moist-dry, increasing gravel content with depth		7.5-9.5	41.7		■>50			bentonite seal	515
3				10-12	41.7		■39				514
4				12.5-14.5	33.3		■>50				513
	512.71	loose, sands and gravel layer		15-17	33.3		■>50				
5										silica sand 50 mm 010 slot PVC pipe	512
				17.5-19.5	66.7		■>50				
6										end cap silica sand	511
				20-22	37.5		■>50			bentonite seal	

End of monitoring well at 510.42 m

Well Completion Details:
Screened interval from 512.71 m to 511.18 m
Elevation at top of pipe (TOP) = 518.25 m

Groundwater Information:
Depth to groundwater from TOP = 1.55 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 20, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-315
SURFACE ELEVATION: 518.81 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80 100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	518.81	**TOPSOIL**		*0-0.4 / DUP-3B	50.0		5			cement	518
	518.61	**Sandy SILT TILL** Some clay, trace gravel, orange-black mottling, brown, firm, loose, moist									
1	518.05	Trace medium sand, hard, moist, increasing density and gravel content with depth		2.5-5	33.3		9				517
	517.29	Firm, compact, moist		5-7.5	66.7		15				
2				7.5-10	100.0		48				516
3				10-12.5	41.7		>50				515
4				12.5-15	62.5		>50				514
5				15-17.5	83.3		49			bentonite seal	513
6				17.5-20	79.2		>50				512
7				20-22.5	79.2		34				511
8				22.5-25	54.2		>50				510
9				25-27.5	37.5		>50				509
10				27.5-30	54.2		>50				508
11				30-32.5	16.7		>50				507
12				32.5-35	8.3		>50			silica sand 50 mm 010 slot PVC pipe	506
	506.41	**SAND** Fine-medium sand, gravel (angular), light grey, firm, compact, wet		35-37.5	20.8		>50			end cap silica sand	
				37.5-40	33.3		>50			bentonite seal	
				40-42.5	41.7		>50				

End of monitoring well at 505.86 m

Well Completion Details:
Screened interval from 508.14 m to 506.62 m
Elevation at top of pipe (TOP) = 519.73 m

Groundwater Information:
Depth to groundwater from TOP = 3.89 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 28, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-316
SURFACE ELEVATION: 520.07 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: SPT Count / % Moisture	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	520.07	**TOPSOIL**									520
	519.84	Organics, dark brown, moist									
		Silty SAND TILL Fine sand, silt, gravel (angular), trace clay, light brown, soft, moist		0-2	37.5		6			silica sand	
1				*2.5-4.5 / DUP-3E	37.5		12				519
				*5-7	33.3		13				
2	517.78	Cobbles, light brown, dense/hard, dry		7.5-9.5	83.3		35				518
3				10-12	58.3		>50				517
	516.26	**COBBLE** Cobble chips, dry		12.5-14.5	20.8		>50			bentonite seal	
4				15-17			>50				516
5	514.74	No Recovery			0.0						515
6	513.97	**Silty SAND TILL** Fine sand, gravel (angular), light brown-grey, dense/hard, dry		20-22	45.8		>50				514
7				22.5-24.5	50.0		>50				513
	512.45	Wet from 7.62 to EOH									
8				25-27	45.8		>50				512
				27.5-29.5	37.5		>50			silica sand 50 mm 010 slot PVC pipe	
9										end cap	511

End of monitoring well at 510.93 m

Well Completion Details:
Screened interval from 512.45 m to 510.93 m
Elevation at top of pipe (TOP) = 521.04 m

Groundwater Information:
Depth to groundwater from TOP = 2.37 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 4, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON
NO RECOVERY

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_MG_2022.08.30.GPJ SLR_CAN V5.2 MOISTURE.GDT 11/17/22

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BARRIE	MISSISSAUGA	OSHAWA	NEWMARKET	GRAVENHURST	HAMILTON
TEL: (705) 721-7863	TEL: (905) 542-7605	TEL: (905) 440-2040	TEL: (905) 853-0647	TEL: (705) 684-4242	TEL: (905) 777-7956
FAX: (705) 721-7864	FAX: (905) 542-2769	FAX: (905) 725-1315	FAX: (905) 881-8335	FAX: (705) 684-8522	FAX: (905) 542-2769

APPENDIX B

GRAIN SIZE DISTRIBUTION GRAPHS

REFERENCE NO. 2210-S028C

Soil Engineers Ltd.

GRAIN SIZE DISTRIBUTION

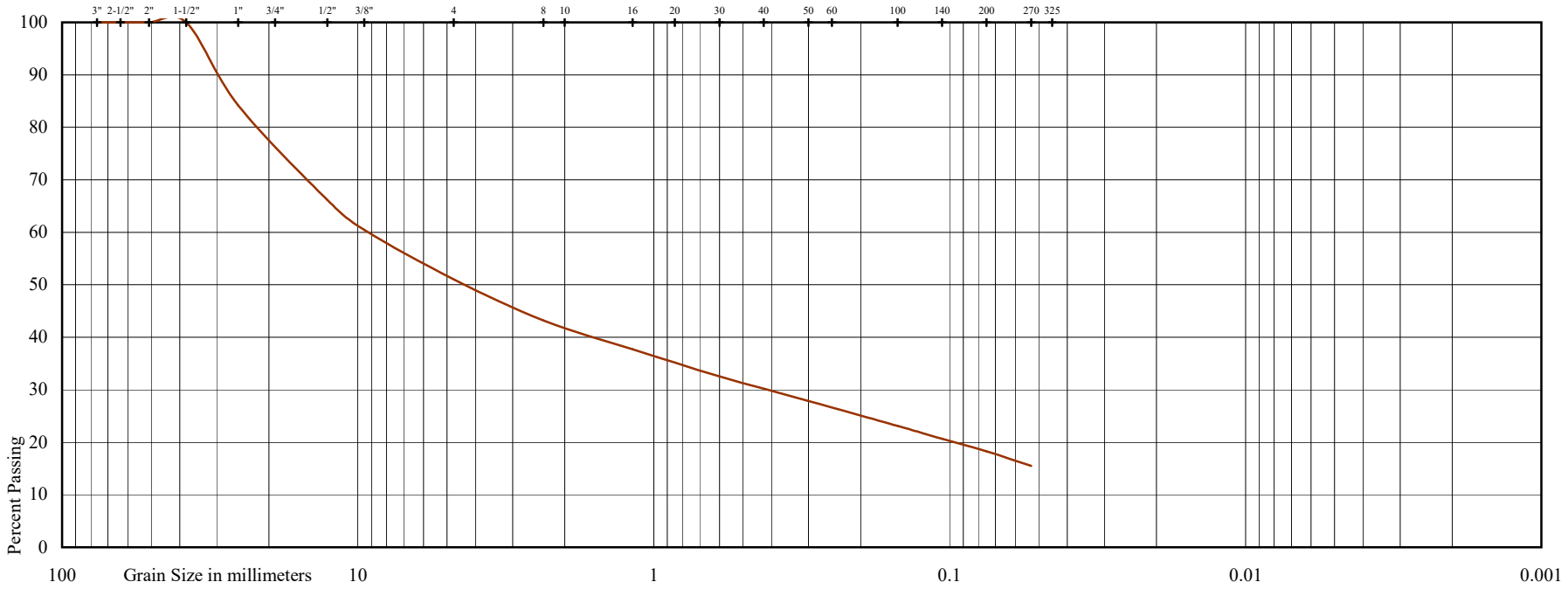
Reference No: 2210-S028C

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Proposed Residential Development

Location: Part of Lots 225 & 226 Concession 2, Township of Southgate (Dundalk)

Borehole No: MW22 - 312

Sample No: 10 - 12

Depth (m): 3.4

Elevation (m): 517.3

Liquid Limit (%) = -

Plastic Limit (%) = -

Plasticity Index (%) = -

Moisture Content (%) = -

Estimated Permeability (cm./sec.) = 10^{-3}

Classification of Sample [& Group Symbol]: SANDY GRAVEL some silt

Figure: 1

Soil Engineers Ltd.

GRAIN SIZE DISTRIBUTION

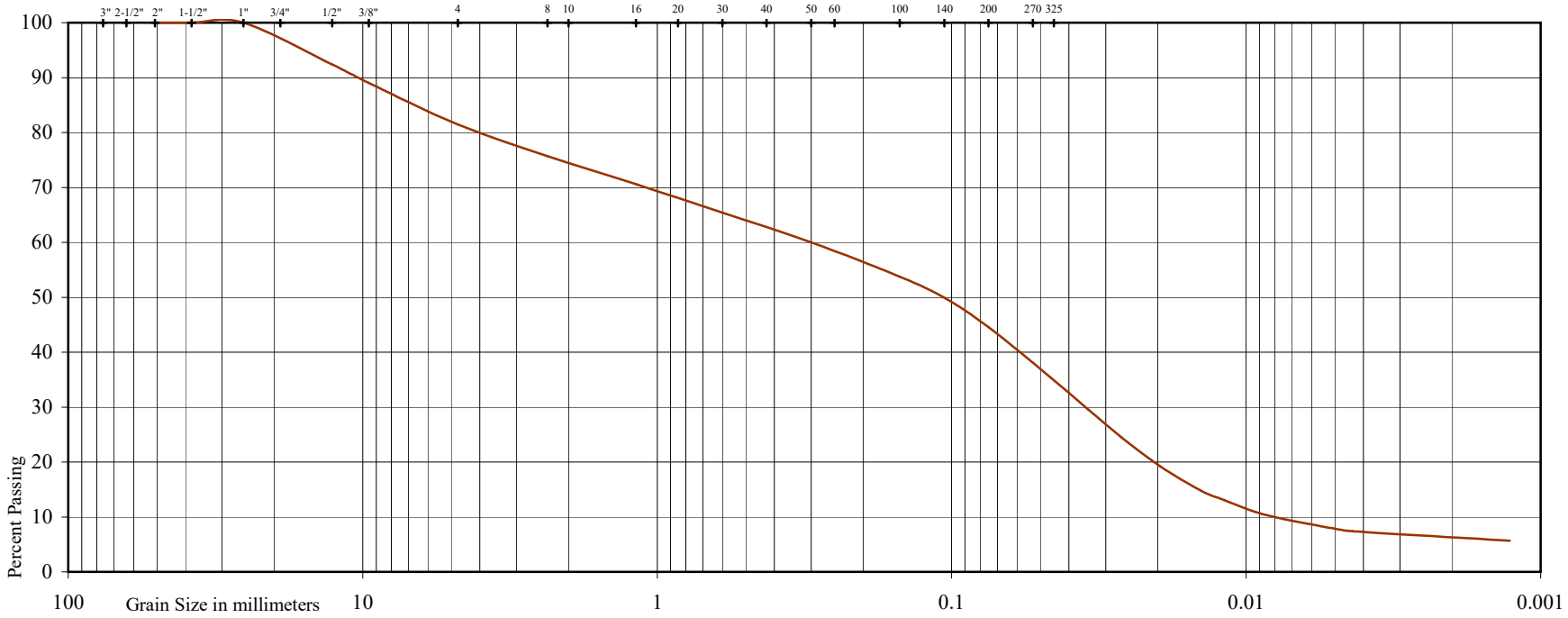
Reference No: 2210-S028C

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Proposed Residential Development

Location: Part of Lots 225 & 226 Concession 2, Township of Southgate (Dundalk)

Borehole No: MW22 - 314

Sample No: 12.5 - 14.5

Depth (m): 4.1

Elevation (m): 513.2

Liquid Limit (%) = -

Plastic Limit (%) = -

Plasticity Index (%) = -

Moisture Content (%) = -

Estimated Permeability (cm./sec.) = 10^{-4}

Classification of Sample [& Group Symbol]: SANDY SILT, TILL
some gravel, a trace of clay

Figure: 2

Soil Engineers Ltd.

GRAIN SIZE DISTRIBUTION

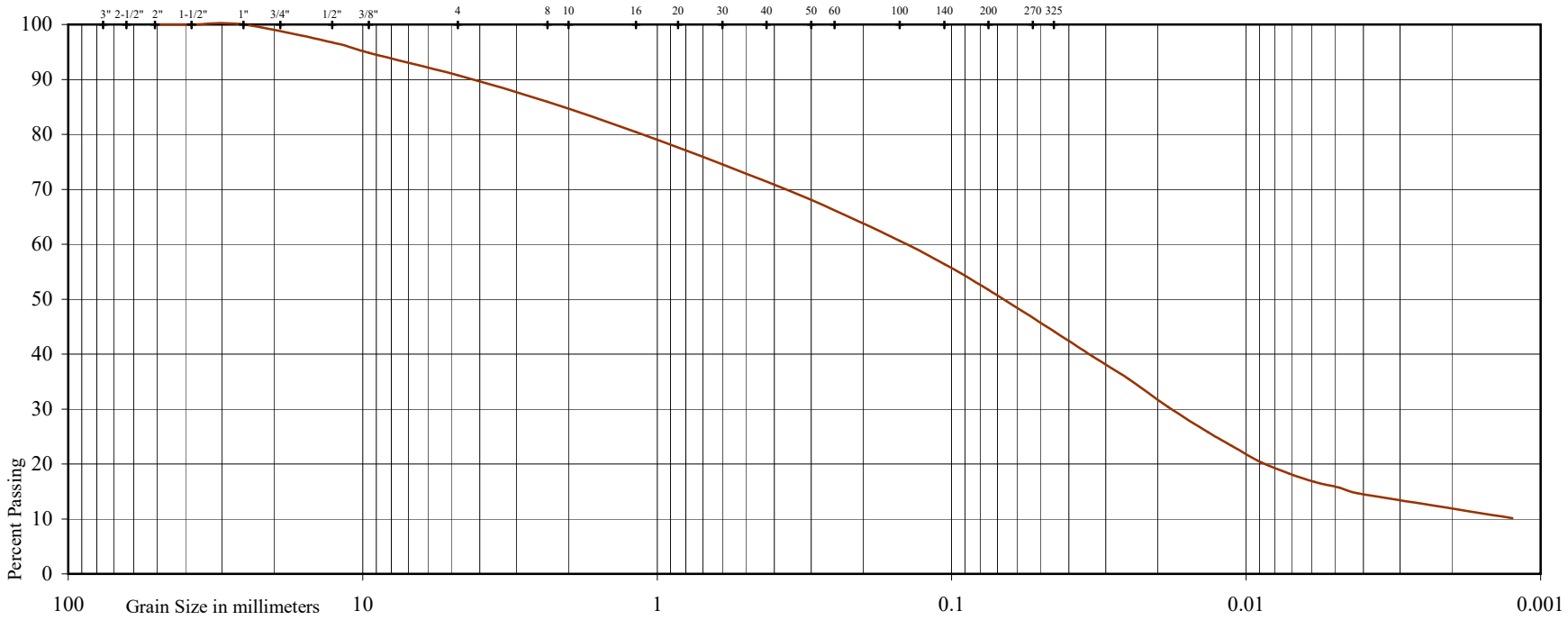
Reference No: 2210-S028C

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Proposed Residential Development

Location: Part of Lots 225 & 226 Concession 2, Township of Southgate (Dundalk)

Borehole No: MW22 - 315

Sample No: 7.5 - 10

Depth (m): 2.7

Elevation (m): 516.1

Liquid Limit (%) = -

Plastic Limit (%) = -

Plasticity Index (%) = -

Moisture Content (%) = -

Estimated Permeability (cm./sec.) = 10^{-6}

Classification of Sample [& Group Symbol]: SANDY SILT, TILL
some clay, a trace of gravel

Figure: 3

MW22-315

MW22-313-S/D

MW22-314

MW22-316

MW22-312

STREET A
STREET B
STREET C
STREET D
STREET E
STREET F
STREET H
STREET I
BRADLEY STREET EXTENSION
TODD CRES.
BRADLEY ST.
MACKENZIE ST.
GREY COUNTY CP RAIL TRAIL
ADJACENT LANDS OWNED BY APPLICANT
SETTLEMENT BOUNDARY
RESIDENTIAL
FUTURE RESIDENTIAL
CROPLAND
WOODED AREA
SWM AREA
LOT 227, CONCESSION 2, SOUTHWEST OF THE TORONTO AND SYDENHAM ROAD

LAND USE SUMMARY

LAND USE	LOT / BLOCK #	UNITS	AREA
SINGLE DETACHED - 10.1m LOTS	001-369	369	13.14ha
SEMI DETACHED - 8.1m UNITS	370-378	18	0.48ha
TOWNHOUSE - 6.5m UNITS	379-394	72	1.66ha
Park	395		1.37ha
STORMWATER MANAGEMENT AREA	396		1.39ha
WALKWAY	397-398		0.09ha
DRAINAGE / WALKWAY	399-401		0.29ha
OPEN SPACE	402-403		6.94ha
FUTURE RIGHT OF WAY	404-405		0.50ha
RIGHT OF WAY	A, B, C, D, E, F, G H, I, BRADLEY STREET EXTENSION		7.46ha
TOTALS		459	33.27ha

LEGEND

SLR Borehole/Monitoring Well

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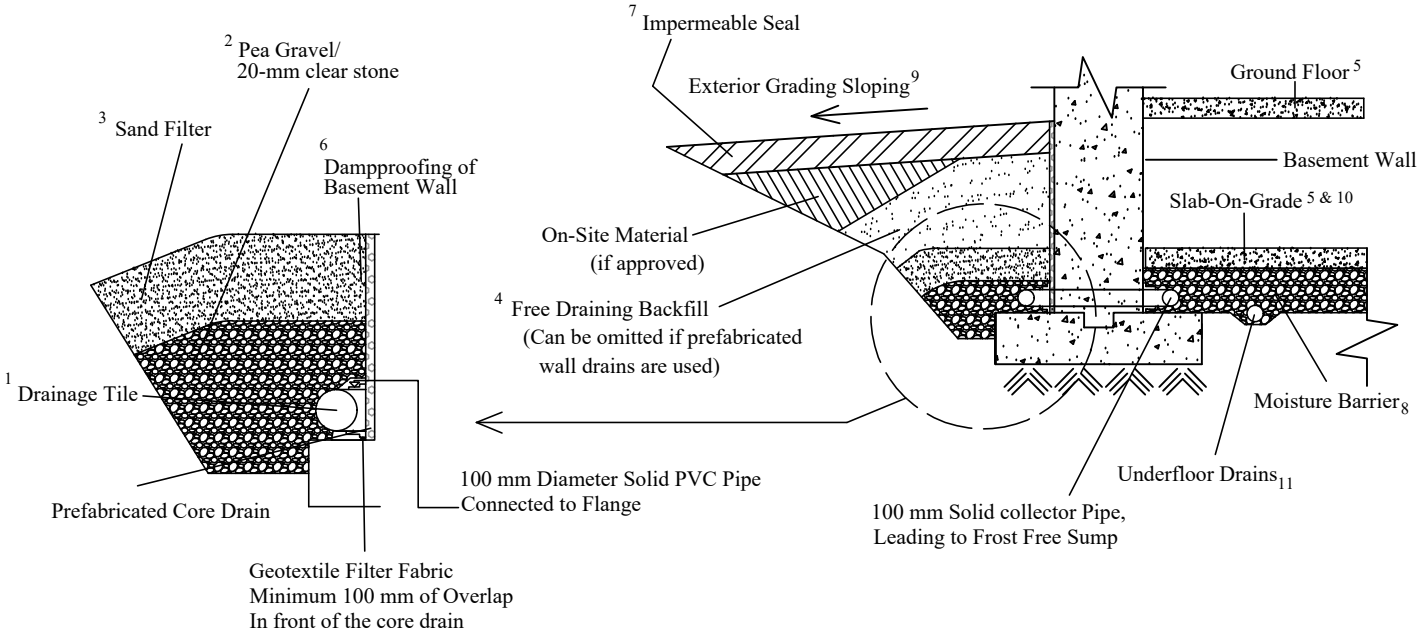
Borehole and Monitoring Well Location Plan

SITE: Part of Lots 225 & 226 Concession 2 Southgate, ON (Dundalk North)

DESIGNED BY: D.K.	CHECKED BY: K.L.	DWG NO.: 1	
SCALE: 1:4000	REF. NO.: 2210-S028C	DATE: January 2023	REV -



NOTES:

1. **Drainage tile**: consists of 100 mm (4") diameter weeping tile or equivalent perforated pipe leading to a positive sump or outlet. Invert to be at minimum of 150 mm (6") below underside of basement floor slab.

2. **Pea gravel**: at 150 mm (6") on the top and sides of drain. If drain is not placed on concrete footing, provide 100 mm (4") of pea gravel below drain. The pea gravel may be replaced by 20 mm clear stone provided that the drain is covered by a porous geotextile membrane of Terrafix 270R or equivalent.

3. **Filter material**: consists of C.S.A. fine concrete aggregate. A minimum of 300 mm (12") on the top and sides of gravel. This may be replaced by an approved porous geotextile membrane of Terrafix 270R or equivalent.

4. **Free-draining backfill**: OPSS Granular 'B' or equivalent, compacted to 95% to 98% (maximum) Standard Proctor dry density. Do not compact closer than 1.8 m (6') from wall with heavy equipment. This may be replaced by on-site material if prefabricated wall drains (Miradrain) extending from the finished grade to the bottom of the basement wall are used.

5. **Do not backfill** until the wall is supported by the basement floor slab and ground floor framing, or adquate bracing.

6. **Dampproofing** of the basement wall is required before backfilling

7. **Impermeable backfill seal** of compacted clay, clayey silt or equivalent. If the original soil in the vicinity is a free-draining sand, the seal may be omitted.

8. **Moisture barrier**: 20-mm clear stone or compacted OPSS Granular 'A', or equivalent. The thickness of this layer should be 150 mm (6") minimum.

9. **Exterior Grade**: slope away from basement wall on all the sides of the building.

10. **Slab-On-Grade** should not be structurally connected to walls or foundations.

11. **Underfloor drains*** should be placed in parallel rows at 6 to 8 m (20'-25') centre, on 100 mm (4") of pea gravel with 150 mm (6") of pea gravel on top and sides. The invert should be at least 300 mm (12") below the underside of the floor slab. The drains should be connected to positive sumps or outlets. Do not connect the underfloor drains to the perimeter drains.

* Underfloor drains can be deleted where not required.

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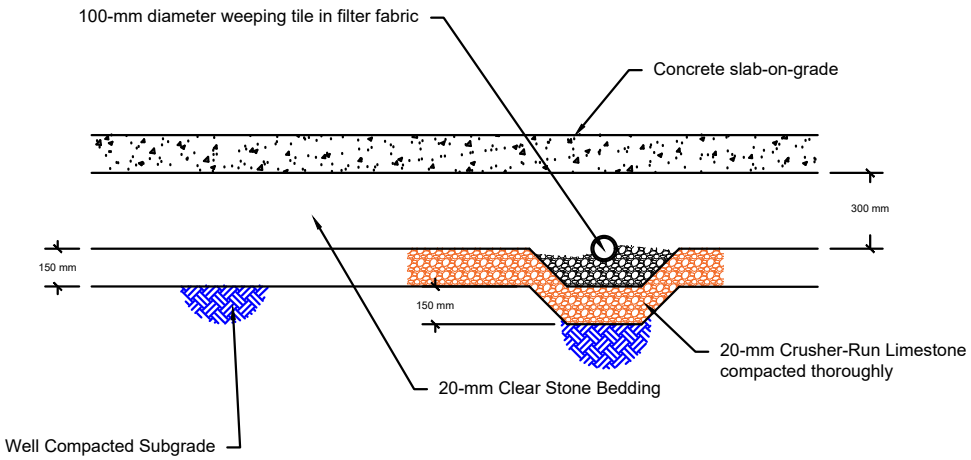
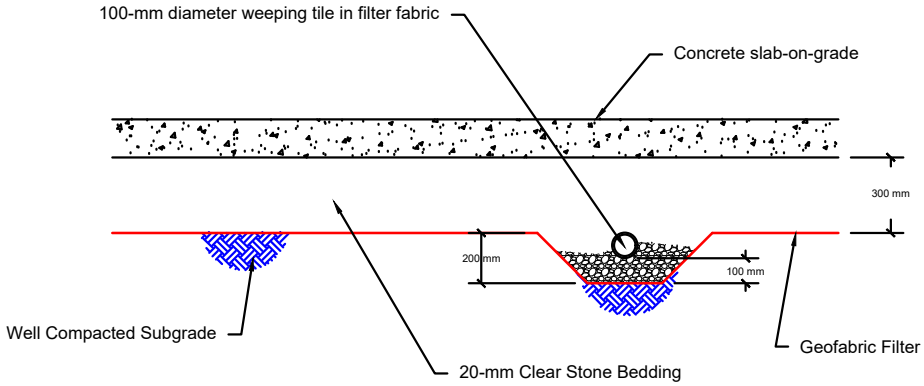
Details of Permanent Perimeter Drainage System

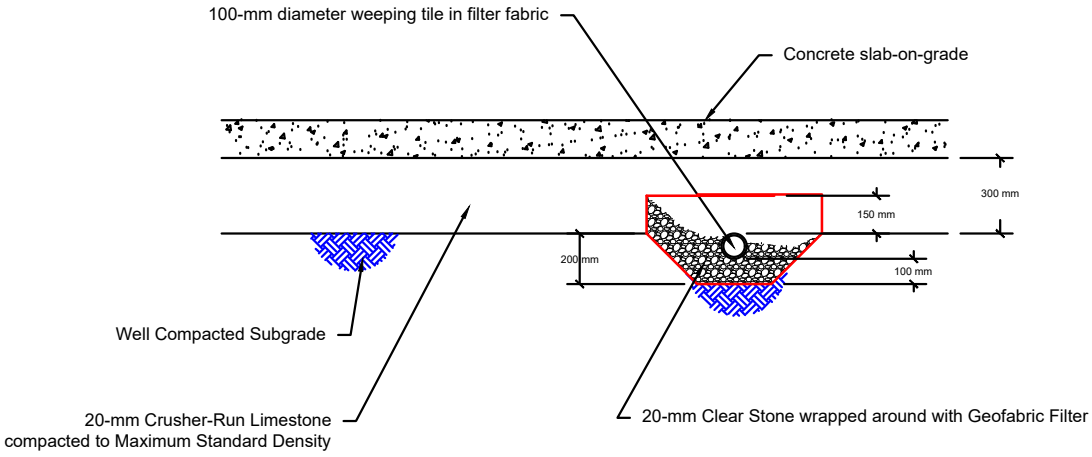
SITE Part of Lots 225 & 226 Concession 2, Township of Southgate (Dundalk)			
DESIGNED BY K.L.	**CHECKED BY** B.S.	**DWG NO.** 2	
SCALE N.T.S.	**REF. NO.** 2210-S028C	**DATE** January 2023	**REV** -



Option 'A'



Option 'B'



Option 'C'

Note:

1. Weepers should be placed in 6 m grids, draining in a positive gradient towards an outlet or a sump pit for removal by pumping.
2. A 10-mil polyethylene sheet should be specified between the gravel bedding and concrete slab.

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100 NUGGET AVENUE, TORONTO, ONTARIO M1S 3A7 · TEL: (416) 754-8515 · FAX: (416) 754-8516

Underfloor Subdrain Details

SITE: Part of Lots 225 & 226 Concession 2, Township of Southgate (Dundalk)			
DESIGNED BY: K.L.	**CHECKED BY:** B.L.	**DWG NO.:** 3	
SCALE: N.T.S.	**REF. NO.:** 2210-S028C	**DATE:** January 2023	**REV** -

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SWM Facility Calculations

APPENDIX F

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APPENDIX G

Background Reports

Environmental Impact Study

Glenelg Phase 3

Flato Developments Inc.

3621 Highway 7 East, Suite 503
Markham, Ontario
L3R 0G6

Prepared by:

SLR Consulting (Canada) Ltd.

300 Town Centre Blvd., Suite 200
Markham, Ontario
L3R 5Z6

SLR Project No:

209.30125.00003

May 24, 2023

Revision Record

Revision No.	Revision Date	Revision Description
Version 0	September 9, 2022	
Version 1	May 17, 2023	Draft issued for review: Address agency comments, updated site plan
Version 2	May 24, 2023	Final issued for submission

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Appendix B Botanical Inventory

Appendix C Wildlife Observations

Appendix D Significant Wildlife Habitat Assessment

Appendix E Terms of Reference for Additional Studies

1.0 Introduction

SLR Consulting (Canada) was retained by Flato Developments Inc. (Flato) to undertake environmental investigations on two parcels of land, Lot 225 Concession 1 W and part lots 225 and 226 Concession 2 W located in Dundalk, Ontario in support of proposals for residential development within the westernmost portion of these properties ("site", Figure 1). The southeast half of the subject lands fall under the jurisdiction of the Grand River Conservation Authority (GRCA) and the northwest half is under the jurisdiction of Saugeen Conservation (SVCA).

These lands fall within a larger area currently subject to an approved Ministerial Zoning Order (MZO). The development of these subject lands will be phased.

1.1 Goals and Objectives

The purpose of the EIS is to demonstrate that the proposed development has regard for the policies, guidelines and regulations that apply to these lands in the Official Plans of the Township of Southgate and Grey County, the Planning Act and Provincial Policy Statement 2020 and Policies of both the Grand Region Conservation Authority (GRCA) and the Saugeen Valley Conservation Authority (SVCA). The objectives of this study include the following:

- Characterize existing conditions
- Identify significant natural heritage features, functions, and sensitivities
- Assess potential effects associated with the proposed development
- Apply mitigation strategies and techniques to minimize potential effects and show consistency with the natural heritage policy and legislative framework that applies to these lands
- Recommend whether the proposed Draft Plan of Subdivision (DPOS) can proceed with appropriate mitigation and/or compensation if required

1.2 Planning context

Development on the site is subject to federal, provincial, and local environmental Acts, regulations, and policies. These documents provide direction and guidance regarding proposed changes in land use and the protection of natural heritage features and functions.

The applicable natural heritage regulatory and policy framework that applies to the site includes:

- Provincial Policy Statement, 2020
- Federal Fisheries Act, 2019
- Migratory Birds Convention Act, 1994
- Endangered Species Act, 2007
- Federal Species at Risk Act, 2002
- O. Regs. 150/06 and 169/06
- GRCA Planning and Permitting Policies, including GRCA (2015) Policies for the Administration of O. Reg. 150/06
- SVCA (2017) Environmental Planning and Regulations Policies Manual

- Township of Southgate Official Plan (2022)
- Grey County Official Plan (2019)
- GRCA (2005) Environmental Impact Study Guidelines and Submission Standards for Wetlands
- Evaluation, Classification and Management of Headwater Drainage Features Guidelines (Toronto and Region Conservation Authority and Credit Valley Conservation, 2014)

A Terms of Reference (ToR) for the EIS was developed with input from the GRCA (see Appendix A).

1.3 Site Location and Description

The site is approximately 35 ha and located immediately east of the Grey County CP Rail Trail, west of Highway 10 and north of Todd Crescent. Natural features on and adjacent to the site include:

- Three tributaries to the Saugeen River and Grand River (headwater drainage features [HDF]) and their associated floodplains; the single on-site tributary to be assessed occurs within the jurisdiction of the Saugeen Valley Conservation Authority
- Three unevaluated wetlands.

Development is proposed on approximately 26 ha of the western portion of the site, with connections planned to a development under construction to the south and another to the Carriage House Phase 2 development currently under construction west of the Grey County Rail Trail. Please refer to Figure 1.

Low, medium, and high-density residential development is proposed east of an environmental protection area consisting of significant woodlands and unevaluated wetlands.

2.0 Methodology

This EIS includes a summary of the existing conditions based on a review of secondary source material and preliminary field inventories including vegetation mapping, aquatic resource investigations, targeted wildlife surveys and feature staking exercises with representatives from the GRCA (scheduled for September) and Township of Southgate. Existing conditions within the site were evaluated through a review of secondary source material and site investigations by qualified SLR Ecologists between November 2021 and August 2022. Recent aerial photographs of the site were obtained and used to assist in field verification. Data collected were integrated to review the natural environment features and functions and identify environmental constraints to the Draft Plan for Subdivision application.

2.1 Desktop Analysis

A secondary source review was performed to characterize the natural environment of the site and identify known natural heritage features and functions within and adjacent to the site. The information presented in Table 1 was reviewed and used to inform the need for additional field studies and avoid duplication of effort.

Table 1: Information Source Summary and Description

Information Source	Data Description
Aerial Imagery	Google, MNDMNRF imagery from 1954 to 2021
Ontario Geological Survey Mapping (OGS)	Physiography, topography and soil characteristics of the site
Grand River Conservation Authority, Map your Property Application. Accessed on-line for Ontario Regulation 150/06 policies and Watershed Development Guidelines (August 2022) https://maps.grandriver.ca/web-gis/public/?theme=MYP	Policies in accordance with Ontario Regulation 150/06 and GRCA regulation limits
Saugeen Valley Conservation Authority mapping tool. Accessed on-line for Ontario Regulation 169/06 policies and watershed development guidelines (August 2022) https://www.saugeenconservation.ca/en/permits-and-planning/maps-and-gis.aspx	Policies in accordance with Ontario Regulation 169/06 and SVCA regulation limits
Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry, Natural Heritage Information Centre (NHIC), *Element Occurrences* © Queen's Printer for Ontario, 2020, Accessed August 2022	Evaluated and unevaluated wetlands, watercourses, woodlands, Greenlands, ANSIs, rare species occurrences, plant communities, wetlands, and natural areas information
Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry, Land Information Ontario (LIO), *Wetlands, ANSI, Natural Features* © Queen's Printer for Ontario, 2020, Downloaded July 2022	Evaluated and unevaluated wetlands, ANSIs, natural feature and topography
Ontario Breeding Bird Atlas Online. Accessed on-line November 8, 2021 https://www.birdsontario.org/atlas/index.jsp?lang=en	General Avian species and potential Species at Risk
Fisheries and Oceans Canada Distribution Maps for Fish and Mussel Species at Risk (on-line accessed August 22, 2022; modified 2022-08-11	Online mapping resource to identify potential species at risk occurrences and critical habitat
Ontario Species at Risk List (O. Reg. 230/08)	Species at Risk list and current status ratings
Southgate Township Official Plan (2022)	Environmental protection areas, Greenbelt, natural heritage system and schedules
Grey County Official Plan (2019)	Environmental protection areas, Greenbelt, natural heritage system and schedules.

2.2 Field Studies

The following sections outline the field studies that have been completed along with what is proposed for future site characterization (see the TOR for additional studies in Appendix E).

2.2.1 Terrain and Surficial Geology

To complement the review of Ontario Geological Survey (OGS) mapping, SLR is also completing hydrogeological investigations in support of the proposed project. These investigations are on-going, and findings will be reported under a separate cover upon completion.

2.2.2 Natural Environment

Additional information with respect to fisheries, wildlife, and Species at Risk (SAR) were obtained through preliminary field reconnaissance and targeted field surveys. This information was used to develop the description of the natural environment and to identify potential impacts related to proposed land use changes. The following table (Table 2) provides a summary of site visits and field tasks completed to date.

Table 2: Summary of Field Surveys

Date/Time	Task	Personnel	Weather
November 10, 2021 11:45-14:00	Site Reconnaissance and preliminary vegetation inventory	Gord Wichert Matthew Ross	Sky: partly cloudy; Beaufort wind: 3; Temperature: 10°C
April 20, 2022 14:15-17:20	Headwater Drainage Feature Assessment	Diane Francis	Sky: Clear, Beaufort wind: N/A [1]; Temperature: 5°C
April 24, 2022 23:30-24:00	Amphibian Surveys	Joelle Pecora Megan Olson	Sky: Cloudy, Beaufort wind: 1; Temperature: 13°C
April 25, 2022 13:45-14:05	Headwater Drainage Feature Assessment	Diane Francis	Sky: Rain, Beaufort Wind: 2-3; Temperature: 13°C
May 2, 2022 21:30-21:33	Amphibian Surveys	Diane Francis Megan Olson	Sky: Cloudy, Beaufort Wind: 2; Temperature: 9°C
May 17, 2022 3 hrs	Vegetation Survey	Kim Laframboise Fiona Shi	Sky: Clear, Beaufort Wind: 0; Temperature: 13°
May 25, 2022 9:00-13:35	Headwater Drainage Feature Assessment	Diane Francis	Sky: Cloudy, Beaufort Wind: 3-5; Temperature: 13°C
May 30, 2022 21:35-21:38	Amphibian Surveys	Danielle Bourque Fiona Shi	Sky: Partly cloudy, Beaufort Wind: 1; Temperature: 25°C
June 1, 2022 22:57-23:01	Amphibian Surveys	Joelle Pecora Fiona Shi	Sky: Clear; Beaufort Wind: 2; Air temperature 12°C;

Date/Time	Task	Personnel	Weather
June 14, 2022 ~6:00-10:00	Breeding Bird Surveys	Jeremy Bensette	N/A
June 28, 2022 11:15-11:18	Amphibian Surveys	Ed Poropat Jeremy Bensette	Sky: Partly cloudy; Beaufort Wind: 2; Air Temperature 20°C;
June 30, 2022 ~6:00-10:00	Breeding Bird Surveys	Jeremy Bensette	N/A
August 9, 2022 10:28-17:05	Headwater Drainage Feature Assessment	Danielle Bourque	Sky: Rain, Beaufort Wind: 1; Temperature: N/A
August 10, 2022	Natural Feature Boundary Pre-staking and Ecological Land Classification	Joelle Pecora Megan Olson	Sky: partly cloudy, Beaufort Wind: 3; Temperature: 25°C
August 11, 2022 12:30-13:30	Natural Feature Boundary Pre-staking and Ecological Land Classification	Matthew Ross Fiona Shi	Sky: partly cloudy, Beaufort Wind: 3; Temperature: 25°C
September 21, 2022 9:30-4:30	Natural Feature Boundary Verification with GRCA	Joelle Pecora Fiona Shi	Sky: partly cloudy, Beaufort Wind: 4; Temperature: 28°C
[1]The Beaufort Wind Scale is a tool used to estimate wind conditions. [0] Air calm, smoke rises vertically [1] Light air movement, smoke drifts, [2] Wind felt on face, leaves rustle [3] Leaves and small twigs in continual motion, wind extends light flags [4] Wind raises dust, loose paper, moves small branches [5] Small trees begin to sway, white crested wavelets form on inland waters [6] Large branches in motion			

2.2.2.1 Fish and Aquatic Habitat

The objective of field investigations was to identify, map, and describe the existing aquatic habitat present on the subject lands.

A review of current and historical aerial imagery of the subject lands identified the potential presence of Headwater Drainage Features (HDF). Drainage features have undergone evaluation in April, May, and August 2022 using the Rapid Method provided in the Evaluation, Classification and Management of Headwater Drainage Features Guideline (TRCA and CVC, 2014). This approach is appropriate for low sensitivity sites and documents the HDF form and flow conditions, riparian vegetation and site features that are important components of habitat. Recommended management options for drainage features derive from information collected according to the HDF guidelines.

2.2.2.2 Vegetation Communities

Aerial photography, and Land Information Ontario data were used to delineate vegetation communities according to principles of the Ecological Land Classification (ELC) for Southern Ontario: First

Approximation and its Application (Lee et. al., 1998). Preliminary site investigations were undertaken in November 2021 with confirmatory mapping completed throughout 2022 to collect vegetation data at the community level. A split-spoon soil auger was used to sample soil profiles to determine at what point they exhibit hydric properties, i.e., sufficiently saturated to support greater than 50% wetland species. Wetlands on and adjacent to site that may be subject to potential impacts from the proposed development will be assessed using the guidance of the Ontario Wetland Evaluation System.

2.2.2.3 Feature Staking

The pre-staking of features to delineate the boundaries of wetland features and tree dripline of woodland features within the Study Area was undertaken on August 9, 10 and 11, 2022. Feature Staking verification with GRCA occurred on September 21, 2022. A survey of the verified boundaries will be undertaken in 2023 as a condition of draft plan approval. The wetland boundary was determined where wetland vegetation dominates the community and the soils exhibit characteristics of at least seasonal saturation as per the definition of wetland in the PPS, 2020.

2.2.2.4 Tree Inventory

An inventory of trees that could be injured or destroyed by the proposed DPOS is planned to assess trees that may be impacted. Trees not protected by a buffer but within 6 m of the property boundary will be included. An arborist report and Tree Inventory and Protection Plan (TIPP) will be prepared under separate cover.

2.2.2.5 Breeding Bird Surveys

The Ontario Breeding Bird Atlas (OBBA) (BSC 2006) was reviewed to compile a master list of potential birds breeding at the site, which was subsequently analyzed against known available suitable supporting habitat to tailor findings specifically to the existing site conditions.

Breeding bird surveys were undertaken within the recognized surveying window in Ontario for breeding birds (typically June and early July) on June 14 and 30, 2022. Surveys followed standard methodologies and conditions established by the OBBA (BSC 2001) (i.e., between 05:30 and 10:00, low winds, no precipitation, and suitable temperatures). Breeding evidence was recorded and classified as possible, probable, or confirmed (e.g., singing male, pair observed or adult carrying food) in accordance with the standard protocols. Where SAR birds were observed, information including sex, behaviour and interaction with other SAR and non-SAR birds were also recorded.

2.2.2.6 Reptile and Amphibian Surveys

Secondary source literature was reviewed to identify known records of reptiles, amphibians, or both, potentially found within the site, including the NHIC database. Amphibian surveys were undertaken to understand the potential presence of breeding amphibians and presence of SAR (e.g., Western Chorus Frog (*Pseudacris triseriata*)). Targeted surveys for reptiles were not undertaken by SLR as no preliminary triggers were identified.

Calling surveys were undertaken on April 24, May 2 and 30, June 1 and 28, 2022 and followed the general methodology of the Marsh Monitoring Program (MMP) (adapted to site conditions), during appropriate seasons and weather conditions. Established methods sponsored by Environment and Climate Change Canada (2017) for detecting Western Chorus Frog were also used. These methods involved daytime surveys where calls of the Western Chorus Frog are more detectable and not drowned out by the loud calls of the Spring Peeper (*Pseudacris crucifer*) which typically call at night.

Survey times were coordinated with several other ecologists throughout Southern Ontario via email circulation to assist surveyors in targeting the prime breeding window for early and late breeders targeting Western Chorus Frog (*Pseudacris triseriata*). As climate change has the potential to shift the incidence of calling amphibians, it is increasingly important to coordinate surveys based on weather conditions and seasonal trends. The Beaufort Wind Scale was used to determine whether wind levels were too strong to hear an accurate representation of amphibians occupying the site. A reference site was used to ensure calling was conducted during appropriate weather conditions and served as a benchmark for amphibian activity (i.e. increase confidence in negative results if calls are not detected at test sites). Calling evidence was recorded on a scale of L0-L3 and interpreted as follows:

- L0 – No calling
- L1 – Individuals can be accurately counted; calls do not overlap
- L2 – Some calls simultaneous, number of individuals can be estimated
- L3 – Full chorus, calls overlap, individuals cannot be estimated

2.2.2.7 Incidental Wildlife

All incidental observations were recorded while ecologists were onsite. Evidence of presence was recorded during various field investigations from direct sightings and indirectly from such indicators as calls, nests, tracks, scats, browse and burrows.

2.2.2.8 Species of Conservation Concern

Aquatic and terrestrial species that are designated federally or provincially and are of regional or local interest (e.g. rare to the watershed or municipality) are collectively identified as Species of Conservation Concern. This category also includes species protected under the ESA, 2007. The Natural Heritage Information Centre (NHIC) (on-line accessed November 2021) and the Fisheries and Oceans Canada Distribution Maps for Fish and Mussel Species at Risk (on-line accessed November 2021) were consulted for element occurrences. A habitat-based approach was used to evaluate the potential for Species of Conservation Concern to occur within the site.

With the recent addition of several bat species to the ESA list, a cursory review of site conditions was completed to determine potential habitat. This review was scoped to provide information on possible use and presence within the general context of the site.

2.2.2.9 Significant Wildlife Habitat

Using the criteria outlined in the Significant Wildlife Habitat (SWH) Technical Guide and Ecoregion Criterion Schedules 6E (Ministry of Natural Resources and Forestry 2015), SWH was evaluated as part of the field investigations to evaluate the potential to occur on or adjacent to the site. Under the SWH Criteria, constructed habitat is not to be considered as SWH.

2.2.2.10 Wetland Assessment and Evaluation

An assessment of the wetlands on and adjacent to the site shall be undertaken following the guidance of the Ontario Wetland Evaluation System. This will include the gathering of data on the habitat types, species of flora and fauna present within the features. Data collected will be incorporated with the results of a hydrologic study to provide a detailed assessment of the sensitivity of the wetlands.

3.0 Existing Conditions

The subject properties are characterized by a predominately agricultural landscape containing cultivated lands, with woodland, wetland, and hedgerow features. Three watercourses (HDFs) occur within the boundaries of the subject parcels, while one is present within the Study Area of the proposed DPOS (Figure 1). The following sections describe geological, aquatic, and terrestrial site characteristics.

3.1 Terrain and Surficial Geology

Based on a review of surficial geology maps from the Ontario Geological Survey (OGS), the overburden of the area is composed of the Elma Till which consists of sandy silt to silt deposits that are imperfectly drained.

The underlying bedrock is of the Guelph Formation which consists of Silurian fine to medium crystalline, medium to thick-bedded, porous dolostone of a thickness ranging from 4 to 100 m. The Guelph formation is mainly located in the subsurface of southwestern Ontario but is exposed south and west of the Niagara Escarpment from the Niagara River through the Bruce Peninsula (Jagger Hims Limited and Rowell, 2009). SLR is completing hydrogeological investigations in support of the proposed project, under a separate cover.

3.2 Fish and Aquatic Habitat

Agricultural lands predominate on the subject properties. Three drainage features occur within the vicinity of the study area identified as permanent features by Land Information Ontario; site observations show that the features flow intermittently. Data supporting the Headwater Drainage Feature evaluation were completed in the spring and summer of 2022.

Observations made in April, May, and August 2022 to characterize potential headwater drainage feature associated with the proposed DPOS are summarized in Table 3. Surface water was observed at the feature during the April visit, while the feature was dry during subsequent visits. Standing water was present in the feature off site to the north during April and May visits and was dry in August. Based on these observations the assessment of the headwater drainage feature on the site of the proposed DPOS was classified as No Management Required, while the segment occurring immediately off site to the north was classified as Protection (Figure 3) according to the Headwater Features Guidelines (CVC and TRCA 2014). Management can range from replication of functions through enhanced lot level conveyance measures such as vegetated swales, to mimic online wet vegetation pockets, to constructed wetlands connected to downstream features as appropriate.

Table 3: Headwater Drainage Feature Observations

Drainage Feature Segment	Hydrology	Hydrology Modifiers	Riparian	Fish Habitat	Terrestrial Habitat	HDF Management Recommendations	Photos
1	Limited or recharge April: Standing Water May: Dry August: Dry	Swale (tilled through)	Limited Function Cropped land	Contributing function allochthonous transport	Limited Function Cropped land	No Management Required	
2	Limited or recharge April: Standing Water May: Dry August: Dry	Swale (tilled through)	Limited Function Cropped land	Contributing function allochthonous transport	Limited Function Cropped land	No Management Required	
3	Limited or recharge April: Standing Water May: Dry August: Dry	Swale (tilled through)	Limited Function Cropped land	Contributing function allochthonous transport	Limited Function Cropped land	No Management Required	

Drainage Feature Segment	Hydrology	Hydrology Modifiers	Riparian	Fish Habitat	Terrestrial Habitat	HDF Management Recommendations	Photos
4	Limited or recharge April: Standing Water May: Dry August: Dry	Swale (tilled through)	Limited Function Cropped land	Contributing function allochthonous transport	Limited Function Cropped land	No Management Required	
5	Limited or recharge April: Standing Water May: Dry August: Dry	Swale (tilled through)	Limited Function Cropped land	Contributing function allochthonous transport	Limited Function Cropped land	No Management Required	
6	Limited or recharge April: Standing Water May: Dry August: Dry	Swale (tilled through)	Limited Function Cropped land	Contributing function allochthonous transport	Limited Function Cropped land	No Management Required	

Drainage Feature Segment	Hydrology	Hydrology Modifiers	Riparian	Fish Habitat	Terrestrial Habitat	HDF Management Recommendations	Photos
7	Limited or recharge April: Standing Water May: Dry August: Dry	No defined channel	Limited Function Cropped land	Contributing function allochthonous transport	Limited Function Cropped land	No Management Required	
8	Limited or recharge April: Standing water May: Damp ground August: Dry	No defined channel	Limited Function Cropped land	Contributing function allochthonous transport	Limited Function Cropped land	No Management Required	
9	Valued or Contributing April: Standing water May: Standing water August: Dry	No defined channel, tile drain outlet	Important function Riparian wetland	Contributing function allochthonous transport	Important Function Wetland with breeding amphibians	Protection	

3.3 Vegetation Communities

Preliminary mapping of the vegetation communities is provided on (Figure 4) classified using Ecological Land Classification (ELC) (Lee et al., 1998). Each unit is named according to the soil and plant attributes and a code is assigned (e.g. Cultural Woodland, CUW). Wetland is delineated by the survey limit staked in the field as determined by the dominance of wetland vegetation and hydric soils. The site is largely agricultural, and wetland and woodland forest communities separate the eastern and western portions. Wetland communities contiguous with those on the site extend north and south of the site. Wetland associated with a watercourse on site occurs in the eastern portion of the site, immediately southwest of Highway 10 along with a farmhouse and associated outbuildings and landscape trees. Deciduous hedgerows occur along some field and site boundaries A botanical inventory is provided in Appendix B.

In addition to the agricultural fields, farm, and residence, the communities dominated by natural vegetation on and immediately surrounding the Study Area include:

- Dry-Fresh Sugar Maple-Beech Deciduous Forest (FOD5-2)
- White Cedar – Hardwood Mineral Mixed Swamp (SWM1-1)
- Red Maple Mineral Deciduous Swamp with Reed Canary Grass Mineral Meadow Marsh inclusion (SWD3-1/MAM2-2)
- Mineral Shallow Marsh Ecosite (MAS2)
- White Cedar Mineral Coniferous Swamp (SWC1-1)
- Reed Canary Grass Mineral Meadow Marsh with Willow Mineral Thicket Swamp inclusion (MAM2-2/SWT2-2)
- Willow Mineral Thicket Swamp (SWT2-2)
- Cultural Meadow (CUM1-1)
- Hedgerow (HR)

3.3.1 Dry-Fresh Sugar Maple-Beech Deciduous Forest (FOD5-2)

This community abuts the eastern side of the wetland communities in the center of the site. Species include Sugar Maple (*Acer saccharum*), American Beech (*Fagus grandifolia*), White Ash (*Fraxinus americana*), Choke Cherry (*Prunus virginiana*), with some White Birch (*Betula papyrifera*), Eastern White Cedar (*Thuja occidentalis*) and Balsam Fir (*Abies balsamea*).

3.3.2 White Cedar – Hardwood Mineral Mixed Swamp (SWM1-1)

This swamp community is situated at the center of the site, bisecting the eastern and western portions of agricultural land. Limits were verified with the GRCA. The canopy layer consists of Eastern White Cedar, (Green Ash (*Fraxinus pennsylvanica*), Balsam Poplar (*Populus balsamifera*), American Elm (*Ulmus americana*), White Birch, Balsam Fir, and Black Cherry (*Prunus serotina*), with Balsam Poplar, Green Ash, American Elm, and Black ash in the sub canopy. Ground cover includes Sensitive Fern (*Onoclea sensibilis*), Spinulose Wood Fern (*Dryopteris carthusiana*), Greater Bladder Sedge (*Carex intumescens*), Common Lady Fern (*Athyrium filix-femina*), Ostrich Fern (*Matteuccia struthiopteris*) and Bittersweet Nightshade (*Solanum dulcamara*).

3.3.3 Red Maple Mineral Deciduous Swamp with Reed Canary Grass Mineral Meadow Marsh inclusion (SWD3-1/MAM2-2)

This community is in the center of the site near the southern edge of the property boundary. The canopy layer is comprised primarily of Red Maple (*Acer rubrum*), with White Birch and Trembling Aspen, and some Eastern White cedar in the sub canopy. The shrub layer contains Reed Canary Grass, Red-osier Dogwood, Spotted Joe Pye Weed and Woolgrass (*Scirpus cyperinus*), while ground cover consists of Sensitive Fern, Spotted Jewelweed, with some Fox Sedge (*Carex vulpinoidea*) and Retrorse Sedge (*Carex retrorsa*). A small inclusion of Reed Canary Grass Meadow Marsh is present at the northeast of this community. The limits of this wetland were verified with the GRCA.

3.3.4 Mineral Shallow Marsh (MAS2)

This wetland community type occurs over large areas in and adjacent to the north end of the site. The predominate species present are Broad-leaved Cattail (*Typha latifolia*), Reed Canary Grass (), with scattered occurrences of Eastern White Cedar, American Elm, Tamarack, White Birch, Pussy Willow (*Salix discolor*), Bebb's Willow (*Salix bebbiana*). The largest of this community type, at the northernmost end of the site, contains inclusions of White Cedar Mineral Coniferous Swamp (SWC1-1).

3.3.5 White Cedar Mineral Coniferous Swamp (SWC1-1)

This community occurs adjacent to, as well as an inclusion within the large shallow marsh communities in the north end of the site. The limits were verified with the GRCA. The canopy is dominated by Eastern White Cedar, with some Balsam Fir (*Abies balsamea*), Tamarack, Balsam Poplar, and White Birch. Ground cover is minimal and includes mosses and forbs.

3.3.6 Reed Canary Grass Mineral Meadow Marsh with Willow Mineral Thicket Swamp inclusion (MAM2-2/SWT2-2)

This community occurs in in the eastern portion of the site, in association with the easternmost watercourse feature and the other to the west of this feature. The GRCA verified the boundaries of this feature. The species present include Reed Canary Grass, Spotted Joe Pye Weed, Broad-leaved Cattail, Field Horsetail (*Equisetum arvense*), Dark-green Bulrush (*Scirpus atrovirens*), Purple Loosestrife (*Lythrum salicaria*), Panicled Aster (*Symphyotrichum lanceolatum*), and Swamp Aster (*Symphyotrichum puniceum*). Inclusions of thicket swamp consisting of Pussy Willow and Bebb's Willow are present within these communities.

3.3.7 Willow Mineral Thicket Swamp (SWT2-2)

This community is located in the eastern portion of the site, east of the FOD5-2 community. The predominate species here are Pussy Willow and Bebb's Willow. The GRCA verified the feature limits.

3.3.8 Cultural Meadow (CUM1-1)

This community type occurs at several locations on the subject lands, primarily in the upland areas situated adjacent to meadow marsh wetlands in the eastern half of the site. The species present are typical of this community type and include Tall Goldenrod (*Solidago altissima*), Reed Canary Grass, Wild Carrot (*Daucus carota*), Tall Meadow Rue (*Thalictrum pubescens*), Stinging Nettle (*Urtica dioica*), Oxeye Daisy (*Leucanthemum vulgare*), Colts-foot (*Tussilago farfara*), and Common Dandelion (*Taraxacum officinale*).

3.3.9 Deciduous Hedgerow (HR-D)

These features are generally present at the borders of agricultural fields or along field access laneways and are comprised of a mix of deciduous and coniferous species including...

3.4 Tree inventory

A tree inventory is planned to assess trees that may be impacted by the proposed DPOS. An arborist report and Tree Inventory and Protection Plan (TIPP) will be prepared under separate cover at a later stage of the application process.

3.5 Breeding Birds

A review of the OBBA map square 17NJ49 yielded 93 results of birds potentially breeding in the area: the map squares measure 10 km by 10 km, with many of the results unlikely to be present within the site due to a lack of suitable supporting habitat. Review of the NHIC online database yielded potential occurrences for seven provincially rare species:

- Eastern Meadowlark (*Sturnella magna*) (Threatened)
- Bobolink (*Dolichonyx oryzivorus*)(Threatened)
- Bank Swallow (*Riparia riparia*) (Special Concern)
- Barn Swallow (*Hirundo rustica*) (Special Concern)
- Eastern Wood-pewee (*Contopus virens*) (Special Concern)
- Grasshopper Sparrow (*Ammodramus savannarum*) (Special Concern)
- Canada Warbler (*Cardellina canadensis*) (Special Concern)

Two breeding bird surveys were completed by SLR on June 14 and 30, 2022, within the designated window (Figure 5). The inventory of wildlife observed on the site is provided in Appendix C. Most of the species recorded are rural/urban tolerant species, typical of cultural and agricultural landscapes and will breed in a variety of disturbed habitats. Observed species include Song Sparrow (*Melospiza melodia*), Red-winged Blackbird (*Agelaius phoeniceus*), and American Robin (*Turdus migratorius*).

Eastern Wood-pewee were observed exhibiting probable breeding evidence within the Mixed Swamp and Sugar Maple-Beech Deciduous Forest communities.

Barn Swallow fledglings were observed near the barn in the northeast portion of the site. A used Barn Swallow nest was also found in the barn, indicating that the species was breeding here, however, it could not be confirmed that the fledglings seen were hatched in the nest observed. This species is known to use old buildings to support nesting behaviour, whereas foraging habitat is typically associated with meadows, marshes, and open spaces. Barn Swallow are provincially designated as Special Concern. Although it is not subject to provisions under the ESA, its habitat is protected as SWH under the PPS, 2020.

3.6 Reptiles and Amphibians

Review of the NHIC online database yielded records of two species of concern: Midland Painted Turtle (*Chrysemys picta marginata*) and Snapping Turtle (*Chelydra serpentina*).

Suitable habitat for amphibians is present on the subject lands, within wooded wetlands and marsh communities.

Amphibian surveys were conducted April 24, May 2 and 30, June 1 and 28, 2022 at strategic locations on the site to provide suitable coverage for detection of calling individuals (Figure 5). SLR conducted separate surveys to capture potential Western Chorus Frog populations as well as a generalized survey to capture all amphibians active during the early and late spring timing windows.

Western Chorus Frog surveys completed detected the presence of populations within or around the property, particularly in association with the large wetland complex that bisects the site and occurs both to the north and south of the site. Species detected during surveys included Spring Peeper (*Pseudacris crucifer*), American Toad (*Anaxyrus americanus*), Gray Tree Frog (*Dryophytes versicolor*) and Green Frog (*Lithobates clamitans*), among others presented in Table 4.

Amphibian observations were also made incidentally and included numerous (19) Green Frogs as well as Western Chorus Frogs associated with the large wetlands situated in the center of the site.

Table 4: 2021 Amphibian Survey Results

Common Name	Call Level		
Survey Date	April 2021	May 2021	June 2021
Spring Peeper	3	-	-
American Toad	3	-	-
Gray Tree Frog	-	2	-
Green Frog	-	-	1
Wood Frog	3	-	-
Northern Leopard Frog	2	-	-
Western Chorus Frog	2	-	-

3.7 Other Wildlife

Wildlife observed on site by SLR during the 2020 and 2021 field visits were typical of locations in semi-urban environments and agricultural settings (Appendix C). Evidence of Coyote (*Canis latrans*) and White-tailed Deer (*Odocoileus virginianus*) was observed within the site. At least three Muskrat (*Ondatra zibethicus*) push-ups were observed within the wetland immediately south of Highway 10 associated with the watercourse (HDF).

Evidence of chimney crayfish (i.e., burrows) were observed at several low-lying areas of the site, including at the edges of wetlands and the agricultural fields.

Other species of mammals and birds tolerant of urban environments are expected to occur as suitable habitats are present.

3.8 Species of Conservation Concern and Significant Wildlife Habitat

The MNRF website provided the following Element Occurrence (EO) records* for 1km Squares (17NJ4792, 17NJ4892) in the vicinity of the site:

- Eastern Meadowlark (*Sturnella magna*) provincially designated as Threatened
- Snapping Turtle (*Chelydra serpentina*) provincially designated as Special Concern

Department of Fisheries and Oceans' (DFO) interactive Aquatic Habitat Mapping did not identify the presence of Species at Risk or Critical Habitat within or adjacent to the site.

While no additional element occurrences were recorded for the broad area search there are Species of Conservation Concern that may occur if suitable habitat is present. The species in Table 5 have been identified as having potential habitat affinities within the site.

*Note: Species at Risk Information is accurate and up to date as of this report (May 2023). New species designations under Ontario Regulation 230/08 (Species at Risk in Ontario List) occur periodically. The owner is responsible to ensure that species and habitats regulated under Endangered Species Act (2007) or those described under other policies (i.e. the Migratory Bird Convention Act, Fish and Wildlife Conservation Act) are protected.

Table 5: Species of Conservation Concern Screening Results

Common Name[1]	Scientific Name	Designation	Potential for Habitat Affinities to Occur within or Adjacent to the site
Mammals			
[1] Tri-colored Bat	*Perimyotis subflavus*	Endangered	Yes, suitable habitat in large, open canopied trees exhibiting decay. Potential roosting and foraging (woodland features / hedgerows, trees generally).
[1] Little Brown Myotis	*Myotis lucifugus*	Endangered	Yes, suitable habitat in large, open canopied trees exhibiting decay. Potential roosting and foraging (anthropogenic features, woodland features / hedgerows, trees generally).
[1] Northern Myotis	*Myotis septentrionalis*	Endangered	Yes, suitable habitat in large, open canopied trees exhibiting decay. Potential roosting and foraging (woodland features).
Avifauna			

Common Name[1]	Scientific Name	Designation	Potential for Habitat Affinities to Occur within or Adjacent to the site
[1] Canada Warbler	*Cardellina canadensis*	Special Concern	Potential habitat in wooded wetland on and adjacent to the site. Species not observed on site.
[1] Eastern Wood-pewee	*Contopus virens*	Special Concern	Yes, suitable habitat present in woodland features. Species observed in deciduous forest and mixed swamp on site
[1] Bobolink	*Dolichonyx oryzivorus*	Threatened	Unlikely to breed on site as fields are under cultivation and existing meadow habitat is too small. Species not observed on site
[1, 2] Eastern Meadowlark	*Sturnella magna*	Threatened	Unlikely to breed on site as fields are under cultivation and existing meadow habitat is too small. Species not observed on site
[1] Barn Swallow	*Hirundo rustica*	Special Concern	Suitable foraging habitat on site. Anthropogenic structures (nesting) also located on the site. Species confirmed nesting on site.
[1] Grasshopper Sparrow	*Ammodramus savannarum*	Special Concern	Unlikely to breed on site as fields are under cultivation and existing meadow habitat is too small. Species not observed on site
Herptofauna			
[1, 2] Snapping Turtle	*Chelydra serpentina*	Special Concern	Wetlands on and adjacent to the site provide potential habitat and movement corridors. Species not observed on site

Common Name[1]	Scientific Name	Designation	Potential for Habitat Affinities to Occur within or Adjacent to the site
[1] Midland Painted Turtle	*Chrysemys picta marginata*	*Designated in 2018 by COSEWIC, not legally listed Provincially	Wetlands on and adjacent to the site provide potential habitat and movement corridors. Species not observed on site
Vegetation			
[1] Butternut	*Juglans cinerea*	Endangered	Potential habitat present in wooded features, hedgerows Species not observed on site.
Other			
[1] Rusty-patched Bumble Bee (*Bombus affinis*) [1] Gypsy Cuckoo Bumble Bee *(Bombus bohemicus*) [1] Nine-spotted Lady Beetle (*Coccinella novemnotata*) [1] Transverse Lady Beetle (*Coccinella transversoguttata*)		Endangered	Possible however degree of habitat alteration and ploughing makes occurrence unlikely. Habitat generalists. Often overlooked. A range of habitats (meadow successional fields, forests, riparian areas, parks)
[1] Yellow-banded Bumble Bee (*Bombus terricola*)		Special Concern	
[1] Monarch	*Danaus plexippus*	Special Concern	Habitat present – meadows suitable for foraging Species not observed on site.

Source: (1) MNRF, SARO List, SLR expertise; (2) NHIC (2022)
Designation Status
Provincial Status - Species at Risk in Ontario list maintained by the Ontario Ministry of Natural Resources and Forestry, O.Reg. 230/08. Endangered Species Act Regulation OMNR S.O. 2007, Chapter 6. Schedules 1 thru 5.4. O. Reg. 242/08.
Regional or Local

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC). S3 [Vulnerable] Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

3.9 Significant Wildlife Habitat

The significance of an area as wildlife habitat is often difficult to determine at the site-specific level, as the assessment must incorporate information from a wide geographic area and consider other factors such as

regional resource patterns and landscape effects. Therefore, under the PPS, the planning authorities have the responsibility to identify and designate Significant Wildlife Habitat (SWH). Wildlife habitat significance includes:

- Seasonal concentration areas (e.g. conifer forests for deer wintering)
- Rare vegetation communities or specialized habitats for wildlife
- Habitats of species of conservation interest, excluding the habitats of endangered and threatened species which are protected under the 2020 PPS and 2007 ESA
- Animal movement corridors

The Township of Southgate does not identify SWH within their Official Plan Schedules although it is within their responsibility under the PPS, 2020 to do so. To address this habitat function, criteria for evaluating significant wildlife habitat for Eco-region 6E have been provided by MNRF (2015). An assessment of SWH is provided in Appendix D. Field investigations completed to date identified confirmed habitat for:

- Special Concern and Rare Wildlife Species for Eastern Wood-pewee
- Woodland Area -Sensitive Bird Breeding Habitat
- Amphibian Breeding Habitat (Wetlands)
- Terrestrial Crayfish

Candidate SWH was identified for:

- Bat Maternity Colonies

SWH for the Site and immediately adjacent natural features is identified on Figure 6.

4.0 Description of Development

The proposed DPOS consists of single detached (291 units), semi-detached (24 units), townhouses (74 units), as well as a school, parkland, open space, and stormwater management facilities (SWMF), all planned within the western portion of the site bounded on the east by wetlands and on the west by the Grey County CP Rail Trail. A future road right-of-way is planned to connect the west and east portions of the site. The proposed SWMF abutting the north edge of the site and the adjacent wetland is planned to have an area of 1.56 ha and outlet directly to the wetland. A Functional Servicing Report (FSR) has been prepared by Crozier (2023) under separate cover.

5.0 Impact Assessment

5.1 Direct Impacts

Direct impacts include those that have an immediate effect on natural features and are generally associated with site preparation and construction activities, such as vegetation clearing and grubbing, grading, excavation, paving and building of structures.

5.1.1 Environmental Constraints

The DPOS was overlaid on the features and constraints mapping to determine whether residual impacts remain (Figure 7). The figure presents natural features and the wetland boundaries have been verified by GRCA in the field but have not been surveyed (to be completed as a condition of Draft Plan Approval in

2023). Following the receipt of the survey of wetland boundary limits, mapping will be updated with the surveyed linework, and the application of buffers required through applicable municipal, GRCA and SVCA policy frameworks will occur, with updates to be provided at the next stage of the application process (if required redlines will be made to the plan as per conditions of Draft Plan Approval). These features and recommended buffers are presented in Table 6.

Table 6: Recommended Buffers to Natural Features and Structures

Policy	Woodland	Wetland	Watercourse	Top of Bank	Floodplain[1]	Hedgerow Trees
Grey County OP	Not specified	30 m	30 m (less with rationale/no negative impacts)	30 m (less with rationale/no negative impacts)	Not identified in the OP	Not identified in the OP
Township of Southgate OP	Not identified in the OP	Not identified in the OP	15 m, or 30 m for coldwater stream	Defers to Conservation Authority (CA)	Not identified in the OP	Not identified in the OP
GRCA	Not specified	30 m (less with rationale/no negative impacts)	15 m (Superseded by floodplain)	15 m	15 m	GRCA does not regulate individual trees except within the regulatory limit
SVCA	Not specified	30 m (less with rationale/no negative impacts)	15 m (Superseded by floodplain)	15 m	15 m	SVCA does not regulate individual trees except within the regulatory limit
Buffers recommended	10 m	30 m (less with rationale/no negative impacts)	Not represented because other buffers extend further	15 m	15 m	Estimate 3 m but could change with detailed tree preservation report

[1] *A buffer would also be applied to the watercourse however the floodplain and wetland plus buffers far exceeds that constraint therefore it is not illustrated.*

Note: grading is generally not allowed within the buffers unless approved. Development is expected to meet existing grades at the limit of the buffer.

5.1.2 Fish and Aquatic Habitat

The watercourses identified on site were assessed using the Evaluation, Classification and Management of Headwater Drainage Features Guidelines (CVC and TRCA, 2014). No fish were observed during field investigations and all the features were found to be dry during the August 2022 assessment. Due to either their contribution to downstream fish habitat through allochthonous transport, or their association with important riparian or terrestrial habitat (e.g. wetlands), appropriate management recommendations are applied to each feature to allow their primary functions to be maintained (see Figure 3). The proposed DPOS would remove a portion of the HDF to accommodate development. This feature was not identified as a watercourse and instead as a shallow, non vegetated swale providing overland flow to offsite wetlands to the north. As flow to these features is to be maintained through the outlet of the proposed SWMF, which would implement appropriate quality control measures, impacts to fish, and fish habitat are not expected.

5.1.3 Terrestrial Habitat

The DPOS is situated in agricultural lands and is generally set back from natural feature constraints. The plan overlies the HDF located in the center of the agricultural field that provides flow to offsite wetlands. The SWMF for the DPOS is planned for the northernmost portion of this HDF and will outlet to the same wetlands. Therefore, as water flow to the wetlands will be maintained, it is anticipated that wetland functions will also be maintained, provided appropriate pre and post quality controls are implemented. As the outflow from the SWMF to the wetlands is proposed to be greater than current, pre-development volume (as per current calculations), a detailed hydrologic study is underway to assess the capacity of the downstream wetland features. The results of this study, along with the assessment of wetland sensitivity will guide the application of mitigation measures to maintain wetland features and functions. This assessment is proposed as a condition of Draft Plan Approval and the proposed ToR for this study is included in Appendix E.

The proposed future road right-of-way that will connect the western and eastern portions of the site will bisect the wetlands located in the center of the site. Selection of a preferred alignment will occur via an assessment of alternative options that considers planning, engineering, and environmental factors as well as relevant policies. This assessment will be provided at a later stage of the application process and could be considered a condition of Draft Plan Approval or as a component of the next phase of development (DPA).

The DPOS also overlies portions of hedgerows that occur along the northern and southern boundaries of the site. These proposed removals are to be addressed under the applicable by-law. A tree preservation plan will be prepared at the detailed design stage to the satisfaction of the appropriate authority to support the Site Plan Application.

Small portions of the planned residential lots appear to encroach within the southwestern edge of the wetland natural features as they are currently delineated. Following the receipt of the survey of wetland boundary limits, applicable municipal, GRCA and SVCA setbacks will be applied with subsequent updates to the setbacks and plan. These updates will be provided at the next stage of the application process.

Generally, impacts to features on and adjacent to the site can be minimized through the implementation of appropriate erosion and sediment control measures, and the avoidance of sensitive timing windows for birds and bats following current guidance from Environment Canada and the MECP (April 1st-September 30th). Tree removals required for construction will occur in accordance with the *Grey County Forestry Management By-law #4341-06*, and restoration of disturbed areas and buffers are to be planted and seeded as per a future landscape restoration plan to be provided under separate cover.

To assist with further assessment of impacts and the application of appropriate mitigation measures, the wetlands on site and downstream of the proposed SWMF will be assessed following the guidance of the Ontario Wetland Evaluation System and utilize the information available from observations made on the project site. These assessments are planned to occur in 2023 and should be considered a condition of Draft Plan Approval. The proposed ToR for this assessment is located in Appendix E.

5.1.4 Species of Conservation Concern

To date, three SAR (Eastern Wood-pewee, Barn Swallow, and Western Chorus Frog) have been detected on site, and there is the likelihood for SAR bats to occur as well. Foraging habitat for Monarch is present in meadow and meadow marsh communities on site and any removals can be restored within the setbacks of protected natural features. For the current DPOS, the plan is, for the most part, set back from wetland habitat for Western Chorus frog as well as habitat for Eastern Wood-pewee, and removal of the outbuilding providing Barn Swallow nesting habitat is not proposed, therefore, impacts to these species or their habitat are not anticipated. The verification of feature boundaries with review agencies, and subsequent updates to setbacks (if required) will ensure adequate protection for these species and their habitat. To avoid potential impacts to bats that may be utilizing trees on site, removal of trees should occur outside of the active season for bats which typically occurs between April 1st and September 30th.

5.2 Indirect Impacts

Indirect impacts may occur from the residential occupation of the development and could include the dumping of refuse, encroachment of yards into natural features, and unsanctioned use of natural features for recreation (e.g., trails, parties, etc.). Off-leash or unconfined household pets may disturb the natural features and impact the natural function through disrupting sensitive breeding behaviours or predation of native fauna (e.g., cats hunting wild birds). Stormwater runoff from built-up impermeable areas including roads may contain sediments and pollutants such as oils and hydrocarbons. Overall, these indirect impacts could result in damage to the ecological functions of the natural features through the removal of native species, the introduction and spread of non-native or invasive flora or fauna, and degradation due to pollution.

In order to minimize the potential for these indirect impacts, mitigations can be implemented to provide physical barriers (i.e. fences), create awareness (education through interpretive signage), provide appropriate avenues for recreation (sanctioned trail system) and enforcement of applicable by-laws. Setbacks identified in the EIS should be restored to provide a buffer to the existing natural features and ultimately result in an increase in natural area. The use of low impact developments (LID) in the design of the proposed development would aid in the reduction of stormwater runoff and appropriately pre-treat any runoff prior to entry into the stormwater management facility.

5.3 Monitoring

Monitoring of environmental conditions both during and post construction are important components to determine the effectiveness of implemented mitigation and restoration measures. The details specifying the types of monitoring required, their locations and timing are to be provided at the detailed design stage of site plan application.

6.0 Policy Review and Conformity

The following section describes policies relevant to the natural environment and describes how the natural heritage features identified within this EIS have been addressed. Policy conformity is summarized in Table 7.

Table 7: Summary of Policy Conformity

POLICY	CONFORMITY	RATIONALE
Provincial Policy Statement (PPS, 2020)	In compliance	• No features of provincial interest identified on the site (significant woodlands, significant wildlife habitat) or adjacent lands will be negatively affected should mitigation recommendations be implemented (avoidance/setbacks) • Wetlands on site and downstream of proposed SWMF to be assessed using the guidance of the Ontario Wetland Evaluation System during the 2023 field season as a condition of Draft Plan Approval
Grey County Official Plan (2019)	In compliance with natural heritage policies	• EIS describes the features and functions of the subject lands and confirms there are no significant/natural heritage features that will be negatively affected by the proposed DPOS
Township of Southgate Official Plan (2022)	In compliance with natural heritage policies	• DPOS is set back from features identified in OP section 6 such that negative impacts are not anticipated should mitigation recommendations be implemented • Tree removals will be subject to the appropriate municipal by-law
Ontario Regulation 150/06 (GRCA)	Permit for development in a regulated area required	• Minor encroachment into wetland features • Survey of conservation authority verified feature boundary limits required in order to determine appropriate setbacks and mitigation (to be completed in 2023) • Wetlands on site and downstream of proposed SWMF to be assessed using the guidance of the Ontario Wetland Evaluation System during the 2023 field season as a condition of Draft Plan Approval
Ontario Regulation 169/06 (SVCA)	Permit for development in a regulated area required	• Alteration to a mapped watercourse and regulated area is proposed to accommodate the DPOS • Minor encroachment into wetland features • Survey of conservation authority verified feature boundary limits required to determine appropriate setbacks and mitigation (to be completed in 2023) • Wetlands on site and downstream of proposed SWMF to be assessed using the guidance of the Ontario Wetland Evaluation System during the 2023 field season as a condition of Draft Plan Approval
Endangered Species Act (ESA, 2007)	Compliant with the implementation of recommended mitigation	• Potential for SAR bats to occur • Should it be deemed necessary, consultation with MECP regarding these impacts will be coordinated during subsequent phase of development

POLICY	CONFORMITY	RATIONALE
Migratory Birds Convention Act (MBCA, 1994)	Compliance with the implementation of recommendation	• Vegetation clearing will not occur within the breeding bird period provided under Environment Canada guidance for periods of highest nesting probability (i.e. cannot occur generally between April 1st and August 31st) and may be extended to September 30th in consultation with MECP for mitigation of interference with SAR bats
Fisheries Act (2019)	Conforms	• No fish habitat identified on site of proposed DPOS • Flow input to downstream habitat to be maintained

7.0 Conclusions and Recommendations

To date, field investigations and analysis have determined that the site of the proposed DPOS is primarily agricultural lands, with principal constraints consisting of large areas of wetland present within the northeast portion of the site as well as adjacent to the north boundary of the site. A headwater drainage feature located in the center of the proposed plan will be removed to accommodate the development, although flow input to downstream features will be maintained through stormwater outlet.

We recommend that best management practices are implemented with respect to sediment and erosion control, excess soil and fill, vegetation clearing, construction timing windows, and stabilization of disturbed soils. The analysis of the natural heritage features and functions associated with proposed Draft Plan of Subdivision is ongoing to determine their sensitivity and appropriate mitigation measures. As such, in addition to the recommendations below, it is recommended that the following be considered as conditions of draft plan approval:

- Survey of verified natural feature boundaries
- Completion of the hydrologic study
- Completion of wetland assessments
- Alternatives assessment for proposed east-west arterial road alignment
- Provision of mitigation recommendations based on the results of the above (e.g., SWM controls, buffers, etc.)

Details pertaining to the application of mitigation measures (e.g., location, type, plans, etc.) will be provided at the detailed design stage of the application process. A Terms of Reference (ToR) for the ongoing and proposed studies required is provided in Appendix E. If the conditions of Draft Plan Approval determine an increase in sensitivity and enhanced mitigation is required, then a redline of the Draft Plan can be provided where applicable.

7.1 Recommendations

The following operational constraints and mitigation strategies are recommended as a minimum for use during the construction phase of this project for the protection of natural heritage features and functions on and adjacent to the subject lands (updates will be provided if applicable following the clearance of Draft Plan Approval conditions):

- A Tree inventory and Protection Plan is to be completed for trees that may be impacted by the proposed development.
- Recommendations as outlined in the accompanying application documents (i.e. geotechnical Investigation reports and or hydrogeology reports) are to be implemented where applicable.
- Permanent post and page wire or chain-link fence is recommended along the limits of proposed buffers. This fencing should be sturdy beyond the typical rebar and sediment fabric fence. Prior to the commencement of construction, the limits of protection areas (buffers) are to be delineated and fenced to avoid inadvertent intrusion of machinery or other activities such as

stockpiling of materials. Temporary sediment control fencing can be attached to the fencing and must be maintained and remain in place until final grading and landscaping has been completed.

- Where possible, grading limits are to respect minimum root protection zones for trees along the woodland and in tree protection zones for trees to be retained beyond the buffers, to be determined in the TPP. Minimum protection of the root zone is measured from the base of the tree to the tree's dripline. Earthworks/ grading, stockpiling of material etc. is to be directed away from protection areas. Final site grading and design is to ensure these areas are not encroached upon unless approved by the municipality and/or CA where minor grading intrusions may be necessary (e.g. to match grades).
- Vegetation removals associated with construction related activities are to be minimized. Additional tree hording/ fencing may be required in consultation with the CA to prevent intrusion and stockpiling of materials into adjacent forests and wetland.
- Stockpiling of materials should be kept away from adjacent natural features; no fill should be placed in and around the wetland communities.
- Exposed soils should be re-vegetated as soon as possible with native seed mixes to reduce erosion. If stabilization is not possible by plantings, then other appropriate erosion controls (e.g. coir mats) should be applied in the interim.
- A risk management plan should be prepared which outlines the best management practices and appropriate measures regarding the storage of chemicals (such as oils, degreasers and salt) on site, including spill response kits, secondary containment, a spill response plan and training.
- It is the responsibility of the proponent to ensure that the works are in conformity with the Migratory Bird Convention Act and Endangered Species Act, 2007 in that no migratory bird(s) or SAR species will be harassed, harmed, killed or nests / habitats destroyed by the proposed work. The recommended avoidance window (where vegetation removal should be avoided) is from April 1st to August 31st but may be extended to September 30th in consultation with MECP. No avoidance window absolves the proponent or their contractors from contravening the MBCA or ESA. If a nest, egg, fledging or SAR species is encountered work must stop and the appropriate agency (e.g. Environment Canada) be consulted for advice.
- Consultation with the DFO will be undertaken to determine appropriate mitigation and/or permit requirements pertaining to work within or adjacent to aquatic habitat.
- Restoration of the buffer is proposed. A restoration landscape plan is to be prepared under separate cover. Native Milkweed (*Asclepias* sp.) should be incorporated into any buffer planting seed mix and where possible other natural areas on the property. The proposed restoration plan should also include construction areas not being developed by structures or hardscaped (i.e., servicing infrastructure).
- Fencing and signage should be installed to prevent unwanted access or encroachment to natural areas and their buffers and provide awareness regarding the importance and sensitivity of the natural features and functions.
- LID measures can be utilized where appropriate in the design to reduce stormwater runoff and associated environmental pollutants.

- To protect wildlife in general, no animals are to be knowingly harmed. If wildlife is encountered during construction, work must stop, and animals be allowed to disperse on their own. If necessary, the CA or MNRF should be contacted for advice.
- Construction monitoring by an ecologist/arborist and certified inspector of sediment and erosion control (CISEC) is recommended as a part of a monitoring program to be developed. This may include (but not limited to): photographic records, periodic SEC inspection reports and inspection of protected limits to ensure no encroachment and other mitigation measures are implemented.
- All outdoor lighting (including any new street lighting and external lighting on buildings) should have cut-off optics and be directed towards the ground and away from the natural areas.
- Compensation for the removal of potential habitat for SAR bats, if required, will be determined through consultation with the MECP in accordance with ESA policies.
- All Greenway System lands should be conveyed to public ownership through the development process.

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9.0 Statement of Limitations

This report has been prepared and the work referred to in this report has been undertaken by SLR Consulting (Canada) Ltd. (SLR) for Flato Developments Inc., hereafter referred to as the "Client". The report has been prepared in accordance with the Scope of Work and agreement between SLR and the Client. It is intended for the sole and exclusive use of Client. Other than by the Client and as set out herein, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted unless payment for the work has been made in full and express written permission has been obtained from SLR.

This report has been prepared for specific application to this site and site conditions existing at the time work for the report was completed. Any conclusions or recommendations made in this report reflect SLR's professional opinion.

Information contained within this report may have been provided to SLR from third party sources. This information may not have been verified by a third party and/or updated since the date of issuance of the external report and cannot be warranted by SLR. SLR is entitled to rely on the accuracy and completeness of the information provided from third party sources and no obligation to update such information.

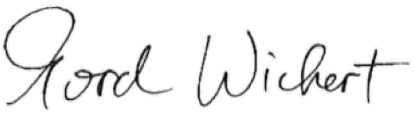
Nothing in this report is intended to constitute or provide a legal opinion. SLR makes no representation as to the requirements of compliance with environmental laws, rules, regulations or policies established by federal, provincial or local government bodies. Revisions to the regulatory standards referred to in this report may be expected over time. As a result, modifications to the findings, conclusions and recommendations in this report may be necessary.

The Client may submit this report to the appropriate environmental regulatory authorities or persons for review and comment purposes.

10.0 Closure

Prepared and Reviewed By:

SLR Consulting (Canada) Ltd.



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Figures

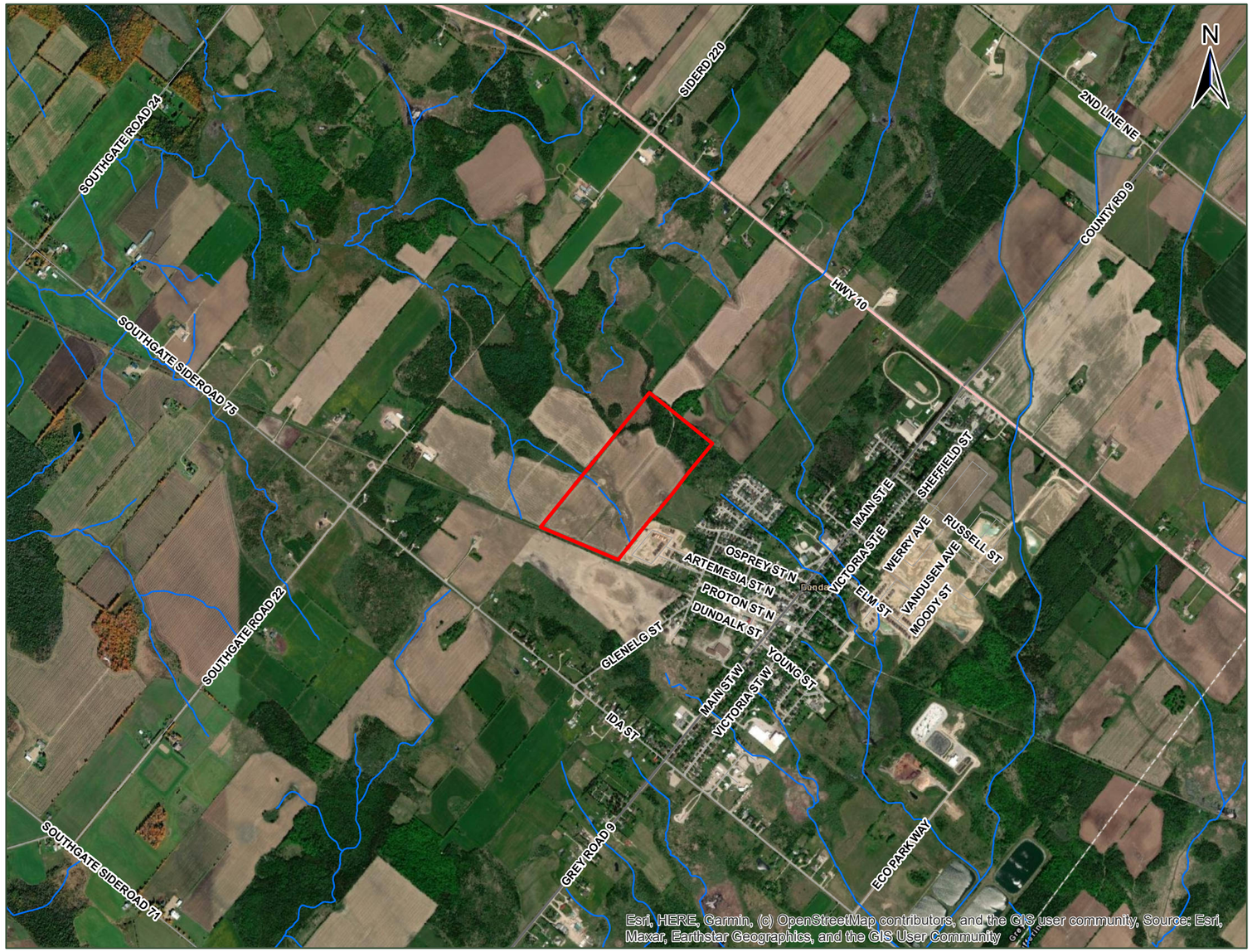
Environmental Impact Study

Glenelg Phase 3

Flato Developments Inc.

SLR Project No. 209.30125.00003

May 24, 2023



NOTES:
SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022

LEGEND
SITE BOUNDARY

0 250 500 1,000 1,500 m

SCALE 1:25,000
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N
THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY
AND SHOULD NOT BE USED FOR NAVIGATION

MHBC PLANNING, URBAN DESIGN & LANDSCAPE ARCHITECTURE
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

ENVIRONMENTAL IMPACT STUDY

SITE LOCATION

SLR

FIGURE NO:
1

DATE: May 10, 2023
PROJECT NO: 209.V30125.00003

547220 547720 548220

4891532

LEGEND

- SITE BOUNDARY
- MONITORING WELL
- MINI-PIEZOMETER
- PERMANENT WATERCOURSE
- DRAINAGE DIVIDE

NOTES:

BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 25 50 100 150 m

SCALE 1:3,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

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AND SHOULD NOT BE USED FOR NAVIGATION

MHBC PLANNING, URBAN DESIGN & LANDSCAPE ARCHITECTURE
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

ENVIRONMENTAL IMPACT STUDY

HYDROGEOLOGICAL INVESTIGATIONS

SLR

FIGURE NO:
2

DATE: May 10, 2023

PROJECT NO: 209.V30125.00003

547220 547720 548220

4891532

4891032

547220 547720 548220

LEGEND

- SITE BOUNDARY
- OBSERVATION LOCATION

HEADWATER DRAINAGE FEATURE

- NO MANAGEMENT
- PROTECTION
- CARTOGRAPHIC WETLAND
- WATERBODIES
- PERMANENT WATERCOURSE

NOTES:

BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 25 50 100 150 m

SCALE 1:3,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

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MHBC PLANNING, URBAN DESIGN & LANDSCAPE ARCHITECTURE
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

ENVIRONMENTAL IMPACT STUDY

HEADWATER DRAINAGE FEATURES

SLR

FIGURE NO:
3

DATE: May 10, 2023 PROJECT NO: 209.V30125.00003

LEGEND

- SITE BOUNDARY
- ECOLOGICAL LAND CLASSIFICATION (SLR CONSULTING, 2022)
- WATERBODIES
- PERMANENT WATERCOURSE
- RAILWAY

ELC Code	ELC Description
Ag	Agriculture
CUM1-1	Cultural Meadow
FOD5-2	Dry-Fresh Sugar Maple-Beech Deciduous Forest
HR	Hedgerow
MAM2-2/SWT2-	Reed Canary Grass Mineral Meadow Marsh with Willow Thicket Swamp inclusion
MAS2	Mineral Shallow Marsh Ecosite
MAS2/SWC1-1	Mineral Shallow Marsh with White Cedar Coniferous Swamp inclusion
SWC1-1	White Cedar Mineral Coniferous Swamp
SWD	Mineral Deciduous Swamp
SWD3-1/MAM2-2	Red Maple Mineral Deciduous Swamp with Reed Canary Grass Mineral Meadow Marsh inclusion
SWM1-1	White Cedar - Hardwood Mineral Mixed Swamp
SWT2-2	Willow Mineral Thicket Swamp

NOTES:
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 25 50 100 150 m

SCALE 1:3,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N
THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

MHBC PLANNING, URBAN DESIGN & LANDSCAPE ARCHITECTURE
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

ENVIRONMENTAL IMPACT STUDY

ECOLOGICAL LAND CLASSIFICATION

SLR

FIGURE NO:
4

DATE: May 10, 2023
PROJECT NO: 209.V30125.00003

547220 547720 548220

4891532

4891032

547220 547720 548220

LEGEND

- SITE BOUNDARY
- AMPHIBIAN SURVEY LOCATION (2022)
- BREEDING BIRD SURVEY (TRANSECT; 2022)
- WATERBODIES
- PERMANENT WATERCOURSE
- RAILWAY

NOTES:

BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 25 50 100 150 m

SCALE 1:3,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY
AND SHOULD NOT BE USED FOR NAVIGATION

MHBC PLANNING, URBAN DESIGN & LANDSCAPE ARCHITECTURE
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

ENVIRONMENTAL IMPACT STUDY

SURVEY LOCATIONS

SLR

FIGURE NO:
5

DATE: May 10, 2023

PROJECT NO: 209.V30125.00003

LEGEND

- SITE BOUNDARY

CONFIRMED SWH

- AMPHIBIAN BREEDING HABITAT (WETLANDS)
- EASTERN WOOD-PEWEE
- TERRESTRIAL CRAYFISH
- WOODLAND AREA - SENSITIVE BIRD BREEDING HABITAT

CANDIDATE SWH

- BAT MATERNITY COLONIES
- WATERBODIES
- PERMANENT WATERCOURSE
- RAILWAY

NOTES:

BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 25 50 100 150 m

SCALE 1:3,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

MHBC PLANNING, URBAN DESIGN & LANDSCAPE ARCHITECTURE
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

ENVIRONMENTAL IMPACT STUDY

SIGNIFICANT WILDLIFE HABITAT

SLR

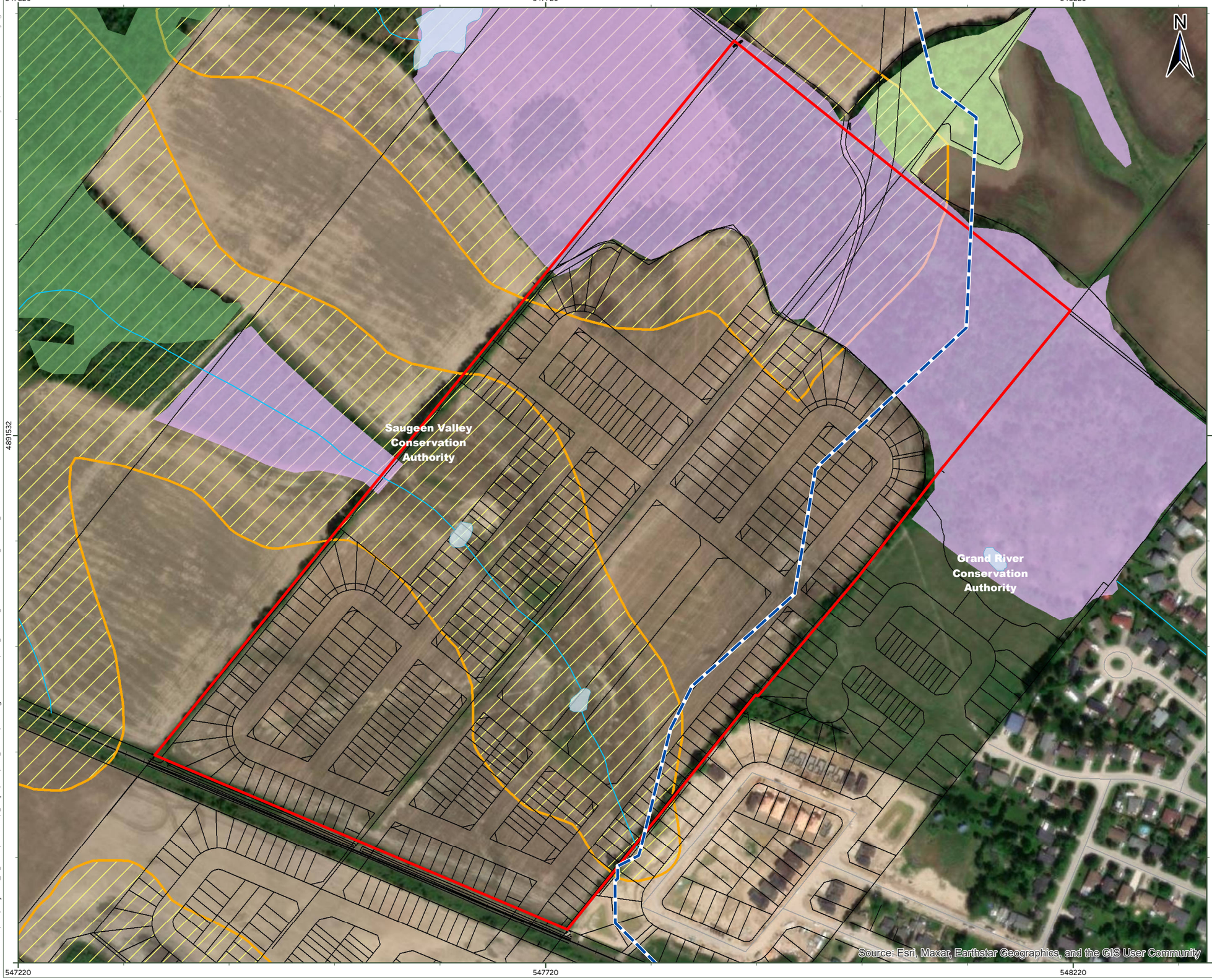
FIGURE NO: **6**

DATE: May 10, 2023

PROJECT NO: 209.V30125.00003

547220 547720 548220

4891532



4891032

547220 547720 548220

LEGEND

- SITE BOUNDARY
- SITE PLAN (MHBC, MAY 18, 2023)
- CONSERVATION AUTHORITY ADMIN AREA
- APPROXIMATE SCREENING AREA (SVCA)
- REGULATORY FLOODPLAIN (GRCA)
- SIGNIFICANT WOODLANDS (GREY COUNTY OFFICIAL PLAN (2018))
- WOODED ECOLOGICAL LAND CLASSIFICATION
- WETLAND ECOLOGICAL LAND CLASSIFICATION
- WATERBODIES
- PERMANENT WATERCOURSE
- RAILWAY

NOTES:
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 25 50 100 150 m

SCALE 1:3,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

MHBC PLANNING, URBAN DESIGN & LANDSCAPE ARCHITECTURE
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

ENVIRONMENTAL IMPACT STUDY

ENVIRONMENTAL CONSTRAINTS AND SITE PLAN

SLR

FIGURE NO: **7**

DATE: May 24, 2023 PROJECT NO: 209.V30125.00003

Appendix A EIS Terms of Reference and Correspondence

Environmental Impact Study

Glenelg Phase 3

Flato Developments Inc.

SLR Project No. 209.30125.00003

May 24, 2023

SLR Consulting (Canada) Ltd.
300 Town Centre Boulevard, Suite 200, Markham, ON L3R 5Z6

~~June 7, 2022~~July 28, 2022

~~Laura Warner~~Chris Lorenz, Resource Planner
Grand River Conservation Authority
400 Clyde Road, Box 729
Cambridge, ON N1R 5W6

Michael Oberle~~Brandi Walter~~, Environmental Planning Coordinator
Saugeen Conservation
261123 Grey Road 28 RR1
Hanover, ON N4N 3B8

SLR Project No.: 209.30125.00003

RE: Terms of Reference - Scoped Environmental Impact Study
Lots 223, 224, 225, and 226, Concessions 1 and 2 W, Dundalk, Ontario

SLR Consulting (Canada) Ltd. (SLR) is pleased to submit this Terms of Reference (ToR) on behalf of Flato Developments Inc. outlining the tasks required to complete a Scoped Environmental Impact Study (EIS) and Tree Inventory and Preservation Plan (TIPP) for Lots 223, 224, 225, and 226, Concessions 1 and 2 W in Dundalk, Ontario (Site). The southeast half of the Site falls under the jurisdiction of the Grand River Conservation Authority (GRCA) and the northwest half of the Site is under the jurisdiction of Saugeen Conservation (SVCA).

Project Understanding

SLR understands that the Site is proposed for development into a residential subdivision and is subject to a Ministerial Zoning Order (MZO). Natural features on the site include:

- Three tributaries to the Grand River (headwater drainage features [HDF]) and their associated floodplains
- Three unevaluated wetlands

Most of the Site is within GRCA or SVCA regulated lands. Features within the Site that are regulated by GRCA include unevaluated wetlands, a watercourse of unknown thermal regime, and an estimated associated floodplain. GRCA also identified the presence of two municipal drains (98- -L227C1W_A [tiled/closed] and 98- -L227C1W_B [open]). Permits under *Ontario Regulations (O. Reg.) 150/06 (GRCA) and 169/06 (SVCA): Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* are required for any development within regulated areas.

The GRCA (2015) *Policies for the Administration of O. Reg. 150/06* and SVCA (2017) *Environmental Planning and Regulations Policies Manual* state that any development within 30 m of unevaluated or locally significant wetlands (also known as the area of interference) requires permission from the appropriate conservation authority. Setback distances for development near regulated areas surrounding HDF typically require in-field assessment to determine riverine flooding and erosion hazard allowances and valley slopes or meander belt allowance. Staking of the unevaluated wetlands is also typically required.

Terms of Reference

This ToR has been prepared to frame the study requirements for review by the Township of Southgate, Grey County, SVCA, and GRCA. The ToR was prepared in the context of the following:

- *Provincial Policy Statement, 2020*
- Federal *Fisheries Act, 2019*
- *Migratory Birds Convention Act, 1994*
- *Endangered Species Act, 2007*
- Federal *Species at Risk Act, 2002*
- *Greenbelt Plan, 2017*
- *O. Regs. 150/06 and 169/06*
- GRCA Planning and Permitting Policies, including GRCA (2015) *Policies for the Administration of O. Reg. 150/06*
- SVCA (2017) *Environmental Planning and Regulations Policies Manual*
- Township of Southgate and Grey County Official Plans
- GRCA (2005) *Environmental Impact Study Guidelines and Submission Standards for Wetlands*
- *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority and Credit Valley Conservation, 2014)

Specifically, the tasks to be included within the ToR are:

1. Prepare and attend a site meeting with representatives from the Township of Southgate, Grey County, SVCA, and GRCA (if necessary) and stake the major features of the Site. GRCA has requested that wetland boundaries be delineated during the appropriate season using a combination of flagging tape, wire flags, and/or wooden stakes. The wetland boundary will be verified by GRCA and subsequently surveyed and clearly illustrated in the EIS report. A minimum buffer width and supporting rationale will also be included in the EIS report. GRCA also recommended completing a wetland evaluation to help address the *Provincial Policy Statement, 2020*.~~(e.g., wetland limits and woodland dripline).~~
2. Compile and synthesize information for the property from existing background documents, studies, and provincial databases, including biodiversity atlases for birds, mammals, herpetofauna, and butterflies, ~~including~~as well as a gap analysis review.
3. Undertake scoped seasonal inventories for amphibians, vegetation, and breeding birds (including Species at Risk [SAR]) in accordance with widely accepted provincial standards (e.g. Birds Canada et al. [2008] Marsh Monitoring Program Participant's Handbook for Surveying Amphibians, Ontario Breeding Bird Atlas [2001] Guide for Participants), review and update vegetation communities in accordance with the provincial Ecological Land Classification system and existing available data, and screen lands for the presence of Butternut (*Juglans cinerea*) trees and other SAR as well as SAR habitat potential.
4. Aerial photography indicates potential drainage across the Site. The Rapid Method provided in the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority and Credit Valley Conservation, 2014) will be applied if appropriate.
5. Aquatic habitat and fisheries investigations will be completed in late summer, if appropriate.

6. Synthesize the above information and analyze the findings to determine the presence of features and attributes of local and provincial interest under the *Planning Act, 1990* and to the Township of Southgate, Grey County, SVCA, and GRCA.
7. Establish appropriate buffers and setbacks for features of significance with reference to the policies and standards of the Township of Southgate, Grey County, SVCA, and GRCA.
8. Prepare an EIS report, including GIS generated figures for submission to the Township of Southgate, Grey County, SVCA, and GRCA in support of a final version of the Site Plan application. This report will rely on input from the Hydrogeology Report, the Functional Servicing Report (prepared by Crozier and Associates), and other submission materials.

Species at Risk

SLR will complete a desktop analysis to review potential for SAR and SAR habitat including species that may be of regional or local significance in accordance with Provincial regulations. This analysis will include accessing the Ministry of Northern Development, Mines, Natural Resources and Forestry's (NDMNRF) digital Land Information Ontario and Natural Heritage Information Centre databases to obtain a list of SAR known to occur in or near the Site and refining the list to relevant species potentially occurring within the Site.

In addition to the desktop screening, SLR will complete SAR screenings for Western Chorus Frog (*Pseudacris triseriata*) and Butternut to inform consultation with the Ministry of the Environment, Conservation and Parks (MECP). The need for additional targeted SAR surveys will be determined in consultation with MECP. ~~Otherwise, targeted SAR surveys are not anticipated; however, if SAR are incidentally observed during field investigations an Information Gathering Form will be submitted to the Ministry of the Environment, Conservation and Parks~~.

Headwater Drainage Feature

All components of the headwater sampling protocol (OSAP S4.M10) will be applied to complete a rapid assessment of the HDF on Site following the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority and Credit Valley Conservation, 2014). The assessment will document HDF form and flow conditions, riparian vegetation, channel connectivity, and site features that are important components of habitat.

Staking of Natural Features

In collaboration with the GRCA, SVCA, and Township of Southgate staff, SLR will confirm and stake the appropriate natural feature boundaries that are present on the Site (HDF, wetlands, and woodland dripline). SLR will coordinate with GRCA, SVCA, and Township staff to confirm and agree to the staked limits. GRCA and SVCA regulation and floodplain limits will be included on a figure but will be delineated through air photo interpretation and online sources.

Arborist Study

The TIPP will conform to the standards and specifications defined under the Township of Southgate Fill/Site Alteration By-law No. 2017-049. The purpose of the TIPP is to provide an inventory and assessment of the trees within the Site, positioned outside of the staked features to be preserved in accordance with applicable procedures and guidelines. SLR will conduct the arborist work in two phases to support preliminary and detailed design work. Phase 1 will include a preliminary investigation to identify potential heritage trees or trees which may be required to be considered for preservation. Preliminary results will be presented in a

memorandum. Phase 2 will consist of consultation with the Township (and SVCA/GRCA, if necessary) to refine the area of the detailed arborist work, scope areas of concern to the Township only, and completion of a Buffer Restoration Plan, if required. Once an approved method is confirmed with the Township, an International Society of Arboriculture certified arborist will complete the evaluation under Phase 2 for trees that are recommended for removal or retention within the Site Plan.

Scoped Environmental Impact Study

The draft Scoped EIS report will include a description of the ecological features and functions that occur on and adjacent to the Site, information on proposed development conditions, constraint mapping (including maximum limits for building envelopes), impact analysis, and potential monitoring requirements. The Scoped EIS will also include recommendations for additional measures (next steps) required to achieve policy conformity and recommended restoration and/or enhancement measures, including thermal mitigation measures and enhanced quality control. The Scoped EIS will be prepared in accordance with the policies outlined in the GRCA (2005) *Environmental Impact Study Guidelines and Submission Standards for Wetlands* and the SVCA (2017) *Environmental Planning and Regulations Policies Manual*.

Closure

Please confirm that these Terms of Reference for a Scoped EIS meet the intent of the information and study requirements for the subject property as referenced above. If you have any further questions or comments, we look forward to discussing them with you at your earliest convenience.

Yours sincerely,

SLR Consulting (Canada) Ltd.

Megan Olson, M.Sc.
Ecologist
416-333-8279
molson@slrconsulting.com

Kim Logan, B.Sc., P.Geo. (Limited), P.Biol.
Senior Ecologist
226-203-7214
klogan@slrconsulting.com

From:	Chris Lorenz
To:	Megan Olson; m.oberle.@svca.on.ca
Cc:	Kim Logan
Subject:	RE: Terms of Reference for Scoped EIS - Dundalk, Ontario
Date:	August 04, 2022 9:19:10 AM
Attachments:	image001.png image002.png image006.png image007.png image008.png image009.png image010.png

Thank you Megan. GRCA has no further comment.

Chris Lorenz, M.Sc.
Resource Planner
Grand River Conservation Authority
519-621-2763 ext. 2236

From: Megan Olson <molson@slrconsulting.com>
Sent: July 28, 2022 5:14 PM
To: Chris Lorenz <clorenz@grandriver.ca>; m.oberle.@svca.on.ca
Cc: Kim Logan <klogan@slrconsulting.com>
Subject: RE: Terms of Reference for Scoped EIS - Dundalk, Ontario

Hi Chris,
Thank you for your review and comments – I have addressed your comments in red below and provided an updated version of the Terms of Reference with the requested edits in Track Changes.

Thanks,
Megan

Megan Olson, M.Sc.
Ecologist

C +1 416 333 8279
E molson@slrconsulting.com

SLR Consulting (Canada) Ltd.
300 Town Centre Blvd, Suite 200, Markham, ON L3R 5Z6

From: Chris Lorenz <clorenz@grandriver.ca>
Sent: July 07, 2022 9:48 AM
To: Megan Olson <molson@slrconsulting.com>
Cc: Kim Logan <klogan@slrconsulting.com>
Subject: RE: Terms of Reference for Scoped EIS - Dundalk, Ontario

Hi Megan,

Please find below GRCA comments for the proposed Terms of Reference for the Concession 1 and 2W lands:

1. The subject lands are regulated by the GRCA owing to the presence of unevaluated wetlands, watercourse (thermal regime unknown), and associated floodplain (estimated). Updated the Project Understanding section of the TOR to include this information.

2. The following municipal drains are present:
    a. 98- -L227C1W_A (tiled/closed)
    b. 98- -L227C1W_B (open)

    Updated the Project Understanding section of the TOR to include this information.

3. It is requested that wetland boundaries be delineated during the appropriate season using a combination of flagging tape, wire flags, and/or wood stakes, surveyed, and clearly illustrated in the EIS report. The wetland boundary will also need to be verified by the GRCA. A minimum buffer width and supporting rationale should also be included in the EIS report. Item 1 of the TOR has been updated to address this comment.

4. The need for thermal mitigation measures and enhanced quality control should be discussed in the EIS report. The Scoped Environmental Impact Study section has been updated to include this comment.

5. We recommend that biodiversity atlases for birds, mammals, herpetofauna, and butterflies be consulted for background information. Item 2 of the TOR has been updated to address this comment.

6. A wetland evaluation is recommended to help address the Provincial Policy Statement. Item 1 of the TOR has been updated to include this recommendation.

7. We recommend that all biological surveys (e.g. breeding amphibians, breeding birds, vegetation) be conducted in accordance with widely accepted standards. The need for targeted surveys of species at risk should be determined in consultation with the Ministry of the Environment, Conservation, and Parks. Item 3 and the Species at Risk section of the TOR have been expanded upon to more directly address this comment.

8. According to mapping information obtained from the Ministry of Northern Development, Mines, Natural Resources, and Forestry (MNDMNRF), the following fish species have been recorded in the unnamed watercourse:
    a. Brook Stickleback, Central Mudminnow, Creek Chub, Fathead Minnow, Johnny Darter, Northern Redbelly Dace

    Thank you – we will include this data in the EIS.

9. According to mapping information obtained from the Natural Heritage Information Center, the following species at risk have been recorded on or within the vicinity of the subject lands:
    a. *Chelydra serpentina* (Snapping Turtle)
    b. *Sturnella magna* (Eastern Meadowlark)

    Thank you – we will include this data in the EIS.

Thanks Megan. Any questions please let me know.

Chris Lorenz, M.Sc.
Resource Planner
Grand River Conservation Authority

Office: 519-621-2763 ext. 2236
Email: clorenz@grandriver.ca
www.grandriver.ca | Connect with us on social

From: Chris Lorenz
Sent: July 7, 2022 9:38 AM
To: Megan Olson <molson@slrconsulting.com>
Cc: Kim Logan <klogan@slrconsulting.com>
Subject: RE: Terms of Reference for Scoped EIS - Dundalk, Ontario

Hi Megan,

Apologies for the delay. Please find below GRCA comments for the proposed Terms of Reference for the Ida Street sites:

1. The terms of reference state that the proposed subdivision development is subject to a Minister's Zoning Order. This should be clarified in the EIS report.

2. According to the existing map layer, no regulated features are present within the Grand River portion of the study area. However, a pond and headwater drainage feature (HDF) appear to be present at #752212 Ida Street. We agree that the HDF should be assessed using accepted guidelines developed by Credit Valley Conservation (CVC) and Toronto and Region Conservation Authority (TRCA).

3. Water depths and vegetation species in the pond should be assessed to determine if this feature is a wetland. If a wetland is determined to be present, it is requested that the boundary be delineated, verified by the GRCA and clearly illustrated in the EIS report. A minimum buffer width and supporting rationale should also be included in the EIS report.

4. It is requested that the key conclusions and recommendations of related hydrogeological assessments, stormwater management plans, and functional servicing plans be discussed in the EIS report.

5. The EIS report will need to clearly demonstrate that wetland hydroperiods are maintained, restored, or enhanced. A pre- and post-development wetland water balance assessment will be required to demonstrate that the development will not negatively impact the hydrologic or ecological functions of the wetlands located within the Saugeen River watershed.

6. The need for thermal mitigation measures and enhanced quality control should be discussed in the EIS.

7. We recommend that all biological surveys (e.g. breeding amphibians, breeding birds, vegetation) be conducted in accordance with widely accepted provincial standards. The need for targeted surveys of species at risk should be determined in consultation with the Ministry of the Environment, Conservation, and Parks.

8. According to mapping information obtained from the Ministry of Northern Development, Mines, Natural Resources, and Forestry (MNDMNRF), the following fish species have been recorded in the unnamed watercourse:

    - Blacknose Dace, Brassy Minnow, Brook Stickleback, Brown Bullhead, Central Mudminnow, Central Stoneroller, Common Shiner, Creek Chub, Emerald Shiner, Fathead Minnow, Golden Shiner, Iowa Darter, Johnny Darter, Least Darter, Northern Pike, Northern Redbelly Dace, Pumpkinseed, Rainbow Darter, White Sucker

Thanks Megan. Any questions please let me know.

Chris Lorenz, M.Sc.
Resource Planner
Grand River Conservation Authority
Office: 519-621-2763 ext. 2236

Email: clorenz@grandriver.ca
www.grandriver.ca | Connect with us on social

From: Megan Olson <molson@slrconsulting.com>
Sent: June 20, 2022 3:00 PM
To: Chris Lorenz <clorenz@grandriver.ca>
Cc: Kim Logan <klogan@slrconsulting.com>
Subject: RE: Terms of Reference for Scoped EIS - Dundalk, Ontario

Hi Chris,
Apologies for the delay! I have attached maps for two of the three sites for your reference. The third map will follow in a separate email as I received an undeliverable message from GRCA trying to send all three at once.

Thanks!
Megan

Megan Olson, M.Sc.
Ecologist

C +1 416 333 8279
E molson@slrconsulting.com

SLR Consulting (Canada) Ltd.
300 Town Centre Blvd, Suite 200, Markham, ON L3R 5Z6

From: Chris Lorenz <clorenz@grandriver.ca>
Sent: June 14, 2022 10:16 AM
To: Megan Olson <molson@slrconsulting.com>
Subject: RE: Terms of Reference for Scoped EIS - Dundalk, Ontario

Hi Megan,

I have taken over as resource planner for the north of the watershed and will look after these TORs. I'm hoping you can provide mapping for all three of the TORs you recently provided (2 in Dundalk, 1 in Melancthon) so I can confirm study boundaries.

Thanks,

Chris Lorenz, M.Sc.
Resource Planner
Grand River Conservation Authority

Office: 519-621-2763 ext. 2236
Email: clorenz@grandriver.ca
www.grandriver.ca | Connect with us on social

From: Megan Olson <molson@slrconsulting.com>
Sent: Wednesday, June 8, 2022 11:57 AM
To: Laura Warner <lwarner@grandriver.ca>; b.walter@svca.on.ca
Cc: Kim Logan <klogan@slrconsulting.com>
Subject: Terms of Reference for Scoped EIS - Dundalk, Ontario

Hi Laura and Brandi,
Attached are Terms of Reference for two Scoped Environmental Impact Studies at the following locations:

- 752226, 752240, and 752242 Ida Street, Dundalk, Ontario
- Lots 223, 224, 225, and 226, Concessions 1 and 2 W, Dundalk, Ontario

Both sites fall under the jurisdiction of both GRCA and Saugeen Conservation. Please let me know if you have any questions or concerns with the TOR at this time.

Thanks,
Megan Olson

Megan Olson, M.Sc.
Ecologist

C +1 416 333 8279
E molson@slrconsulting.com

SLR Consulting (Canada) Ltd.
300 Town Centre Blvd, Suite 200, Markham, ON L3R 5Z6

Appendix B Botanical Inventory

Environmental Impact Study

Glenelg Phase 3

Flato Developments Inc.

SLR Project No. 209.30125.00003

May 24, 2023

GLENELG PHASE 3, DUNDALK, ON		
Common Name	**Scientific Name**	**SRank[1]**
Balsam Fir	*Abies balsamea*	S5
Red Maple	*Acer rubrum*	S5
Sugar Maple	*Acer saccharum*	S5
Canada Anemone	*Anemone canadensis*	S5
Common Lady Fern	*Athyrium filix-femina*	S5
Paper Birch	*Betula papyrifera*	S5
Bladder Sedge	*Carex intumescens*	S5
Retrorse Sedge	*Carex retrorsa*	S5
Fox Sedge	*Carex vulpinoidea*	S5
Red-osier Dogwood	*Cornus sericea*	S5
Wild Carrot	*Daucus carota*	SNA
Spinulose Wood Fern	*Dryopteris carthusiana*	S5
Field Horsetail	*Equisetum arvense*	S5
Spotted Joe Pye Weed	*Eutrochium maculatum*	S5
American Beech	*Fagus grandifolia*	S4
White Ash	*Fraxinus americana*	S4
Black Ash	*Fraxinus nigra*	S4
Green Ash	*Fraxinus pennsylvanica*	S4
Fowl Mannagrass	*Glyceria striata*	S5
Spotted Jewelweed	*Impatiens capensis*	S5
American Larch	*Larix laricina*	S5
Garden Bird's-foot Trefoil	*Lotus corniculatus*	SNA
Purple Loosestrife	*Lythrum salicaria*	SNA
Ostrich Fern	*Matteuccia struthiopteris*	S5
Common Evening Primros	*Oenothera biennis*	S5
Sensitive Fern	*Onoclea sensibilis*	S5
Reed Canary Grass	*Phalaris arundinacea*	S5
Common Timothy	*Phleum pratense*	SNA
Common Reed	*Phragmites australis*	SU
Balsam Poplar	*Populus balsamifera*	S5
Trembling Aspen	*Populus tremuloides*	S5
Black Cherry	*Prunus serotina*	S5
Choke Cherry	*Prunus virginiana*	S5
Bebb's Willow	*Salix bebbiana*	S5
Pussy Willow	*Salix discolor*	S5
Shining Willow	*Salix lucida*	S5
Dark-green Bulrush	*Scirpus atrovirens*	S5
Cottongrass Bulrush	*Scirpus cyperinus*	S5
Climbing Nightshade	*Solanum dulcamara*	SNA
Tall Goldenrod	*Solidago altissima*	S5
Panicled Aster	*Symphyotrichum lanceolatum*	S5
Swamp Aster	*Symphyotrichum puniceum*	S5
Eastern White Cedar	*Thuja occidentalis*	S5
Colt's-foot	*Tussilago farfara*	SNA
Broad-leaved Cattail	*Typha latifolia*	S5
American Elm	*Ulmus americana*	S5
Tufted Vetch	*Vicia cracca*	SNA

[1]**S-Ranks** - Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assignedin a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario. **S1** Critically Imperiled—Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) **S2** Imperiled—Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province. **S3** Vulnerable—Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation. **S4** Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors. **S5** Secure—Common, widespread, and abundant in the nation or state/province. **S#S#** Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4). **SX** Apparently extirpated from Ontario, with little likelihood of rediscovery. Typically not seen in the province for many decades, despite searches at known historic sites. **SNA** (Formally SE) Exotic; not believed to be a native component of Ontario's flora.

[2]**SARA** - Species at Risk Act (S.C. 2002, c. 29) Act current to 2022-02-23 and last amended on 2022-02-03.COSEWIC (Committee on the Status of Endangered Wildlife in Canada)

[3]**SARO** - ONTARIO REGULATION 230/08 under the Endangered Species Act, 2007 species at risk in Ontario list. Act current 2022-01-26.

[4]**L Ranks** Toronto and Region Conservation Authority (TRCA). 2017. Scoring and Ranking TRCA's Vegetation Communities, Flora, and Fauna Species.
L+ Exotic; not native to the TRCA jurisdiction; includes hybrids between a native species and an exotic. **L5** Able to withstand high levels of disturbance; generally secure. **L4** Able to withstand some disturbance; generally secure in rural matrix; of concern in urban matrix.**L3** Able to withstand minor disturbance; generally secure in natural matrix; considered to be of regional concern. **L2** Unable to withstand disturbance; some criteria are very limiting factors; generally occur in high-quality natural areas, in natural matrix; probably rare in the TRCA jurisdiction; of concern regionally. **L1** Unable to withstand disturbance; many criteria are limiting factors; generally occur in high-quality natural areas in natural matrix; almost certainly rare in the TRCA jurisdiction; of concern regional.

Appendix C Wildlife Observations

Environmental Impact Study

Glenelg Phase 3

Flato Developments Inc.

SLR Project No. 209.30125.00003

May 24, 2023

Common Name	Scientific Name	SRank[1]	SARA[2] COSEWIC	SARO[3]	Highest Breeding Evidence Observed[4]	Comments
Avifauna						
Alder Flycatcher	*Empidonax alnorum*	S5B			T	
American Crow	*Corvus brachyrhynchos*	S5B,SZN			H	
American Goldfinch	*Carduelis tristis*	S5B,SZN			P	
American Redstart	*Setophaga ruticilla*	S5B			P	
American Robin	*Turdus migratorius*	S5B,SZN			CF	
American Woodcock	*Scolopax minor*	S4B			D	Detected during amphibian breeding surveys
Barn Swallow	***Hirundo rustica***	**S5B,SZN**	**THR SCH 1 SC**	**SC**	NU	
Black-and-white Warbler	*Mniotilta varia*	S5B			S	
Black-capped Chickadee	*Poecile atricapillus*	S5			FY	
Blue Jay	*Cyanocitta cristata*	S5			H	
Brown-headed Cowbird	*Molothrus ater*	S4B			H	
Brown Thrasher	*Toxostoma rufum*	S4B			S	
Cedar Waxwing	*Bombycilla cedrorum*	S5B,SZN			H	
Chipping Sparrow	*Spizella passerina*	S5B			T	
Common Grackle	*Quiscalus quiscula*	S5B,SZN			CF	
Common Yellowthroat	*Geothlypis trichas*	S5B			P	
Eastern Kingbird	*Tyrannus tyrannus*	S4B			T	
Eastern Wood-Pewee	***Contopus virens***	**S4B**	**SC SCH 1 SC**	**SC**	T	
European Starling	*Sturnus vulgaris*	SNA			S	
Gray Catbird	*Dumetella carolinensis*	S4B			T	
Green Heron	*Butorides virescens*	S4B			H	
House Wren	*Troglodytes aedon*	S5B,SZN			T	
Indigo Bunting	*Passerina cyanea*	S4B			A	
Mallard	*Anas platyrhynchos*	S5			H	
Mourning Dove	*Zenaida macroura*	S5			S	
Nashville Warbler	*Leiothlypis ruficapilla*	S5B			S	
Northern Cardinal	*Cardinalis cardinalis*	S5			T	
Northern Flicker	*Colaptes auratus*	S4B			P	
Ovenbird	*Seiurus aurocapilla*	S5B			S	
Pileated Woodpecker	*Dryocopus pileatus*	S5			H	
Pine Warbler	*Setophaga pinus*	S5B			T	
Purple Finch	*Haemorhous purpureus*	S5			T	
Red-breasted Nuthatch	*Sitta canadensis*	S5			H	
Red-eyed Vireo	*Vireo olivaceus*	S5B,SZN			T	
Red-winged Blackbird	*Agelaius phoeniceus*	S4			CF	
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	S4			T	
Savannah Sparrow	*Passerculus sandwichensis*	S4B			T	
Sedge Wren	*Cistothorus stellaris*	S4B			S	
Song Sparrow	*Melospiza melodia*	S5B,SZN			CF	
Swamp Sparrow	*Melospiza georgiana*	S5B,S4N			A	
Tree Swallow	*Tachycineta bicolor*	S4B			H	
Turkey Vulture	*Cathartes aura*	S5B			X	
Veery	*Catharus fuscescens*	S5B			S	
Warbling Vireo	*Vireo gilvus*	S5B,SZN			T	
White-throated Sparrow	*Zonotrichia albicollis*	S5			S	
Wild Turkey	*Meleagris gallopavo*	S5			H	
Wilson's Snipe	*Gallinago delicata*	S5B			D	Detected during amphibian breeding surveys
Winter Wren	*Troglodytes hiemalis*	S5B,S4N			T	
Yellow-bellied Sapsucker	*Sphyrapicus varius*	S5B			P	
Yellow-rumped Warbler	*Setophaga coronata*	S5B,S4N			S	
Yellow Warbler	*Setophaga petechia*	S5B			CF	
Herptiles						
American Toad	*Anaxyrus americanus*	S5			Calling	
Gray Treefrog	*Dryophytes versicolor*	S5			Calling	
Green Frog	*Lithobates clamitans*	S5			Calling	
Northern Leopard Frog	*Lithobates pipiens*	S5			Calling	
Spring Peeper	*Pseudacris crucifer*	S5			Calling	
Western Chorus Frog	***Pseudacris maculata pop. 1***	**S4**	**THR SCH 1 THR**	**NAR**	**Calling**	
Wood Frog	*Lithobates sylvaticus*	S5			Calling	
Mammals / Other						
Chimney Crayfish	*n/a*	n/a			Burrows observed	species unknown
Coyote	*Canis latrans*	S5			Howling	
Muskrat	*Ondatra zibethicus*	S5			Individuals and push-ups observed	
White-tailed Deer	*Odocoileus virginianus*	S5			Tracks	

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S1 Critically Imperiled—Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
S2 Imperiled—Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S3 Vulnerable—Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
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S#S# Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
SX Apparently extirpated from Ontario, with little likelihood of rediscovery. Typically not seen in the province for many decades, despite searches at known historic sites.
SNA (Formally SE) Exotic; not believed to be a native component of Ontario's flora.

[2]**SARA** - Species at Risk Act (S.C. 2002, c. 29) Act current to 2018-07-05 and last amended on 2018-05-30.

[3]**SARO** - ONTARIO REGULATION 230/08 under the Endangered Species Act, 2007 species at risk in Ontario list. Act current to 2018-08-01. COSEWIC (Committee on the Status of Endangered Wildlife in Canada)
EXT Extinct - A species that no longer exists.
EXP Extirpated - A species no longer existing in the wild in Canada, but occurring elsewhere.
END Endangered - A species facing imminent extirpation or extinction.
THR Threatened - A species likely to become endangered if limiting factors are not reversed.
SC Special Concern (formerly vulnerable) - A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
NAR Not At Risk - A species that has been evaluated and found to be not at risk of extinction given the current circumstances.
DD Data Deficient (formerly Indeterminate) - Available information is insufficient to resolve a species' eligibility for assessment or to permit an assessment of the species' risk of extinction.
* - Species on Schedule 1 of Species At Risk Act (SARA)

[4]**Highest Breeding Evidence Ontario Breeding Bird Atlas: Breeding Evidence Codes**
X - Present **XX** - Heard but not expected to be breeding (e.g. using habitat - foraging)
POSSIBLE
H *- Species observed in its breeding season in suitable nesting habitat.*
S *- Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season.*
PROBABLE
P - Pair observed in suitable nesting habitat in nesting season
T - Permanent terriroty presumed through registration of territorial behaviour (song, etc.) on at least two days, a week or more apart, at the same place
D - Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulations
V - Visiting probably nest site
A - Agitated behabiour or anxiety calls of an adult
B - Brood patch on adult female or cloacal protuberance on adult males
N - Nest building or excavation of nest hole
CONFIRMED
DD - Distraction display or injury feigning **CF -** Adult carrying food for young **NE -** Nest containing eggs
NY - Nest with young seen or heard **NU -** Used nest or egg shells found (occupied or laid within the period of the survey) **FY -** Recently fleged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight
AE - Adult leaving or entering nest sites in circumstancing indicating occupied nest **FS -** Adult carrying fecal sac

Appendix D Significant Wildlife Habitat Assessment

Environmental Impact Study

Glenelg Phase 3

Flato Developments Inc.

SLR Project No. 209.30125.00003

May 24, 2023

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
Seasonal Concentration Areas of Animals					
Waterfowl Stopover and Staging Areas (Terrestrial) **Rationale**: Habitat important to migrating waterfowl	American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall	CUM1 CUT1 Plus evidence of annual spring flooding from meltwater or run-off within these Ecosites.	•Fields with sheet water during Spring (mid-March to May) •Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl •Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available <u>Information Sources</u> •Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. •Reports and other information available from Conservation Authorities •Sites documented through waterfowl planning processes (eg. EHJV implementation plan) •Field Naturalist Clubs •Ducks Unlimited Canada •Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” •Any mixed species aggregations of 100 or more individuals required •The flooded field ecosite habitat plus a 100-300m radius, dependent on local site conditions and adjacent land use is the significant wildlife habitat •Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates) •SWH MIST Index #7 provides development effects and mitigation measures	No species or habitat observed; insufficient flooding of fields to provide suitable habitat
Waterfowl Stopover and Staging Areas (Aquatic) **Rationale**: Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the ecodistrict.	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked duck Common Goldeneye Bufflehead Redhead Ruddy Duck	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	•Ponds, marshes, lakes, bays, coastal inlets and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify •These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water). <u>Information Sources</u> •Environment Canada •Naturalist clubs often are aware of staging/stopover areas. •OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. •Sites documented through waterfowl planning processes (e.g., EHJV implementation plan) •Ducks Unlimited projects •Element occurrence specification by Nature Serve: http://www.natureserve.org •Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of: •Aggregations of 100 or more of listed species for 7 days, results in >700 waterfowl use days •Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH •The combined area of the ELC ecosites and a 100m radius area is the SWH •Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are significant wildlife habitat. •Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” •Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). •SWH MIST Index #7 provides development effects and mitigation measures	Habitat criteria not met. No large ponds or reservoirs capable of supporting shelter areas as stopovers.

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
Shorebird Migratory Stopover Area **Rationale**: High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	•Shorelines of lakes, rivers and wetlands, including beach area, bars and seasonally flooded, muddy and un-vegetated shoreline habitats •Great Lakes coastal shorelines, including groynes and other forms of armor rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October •Sewage treatment ponds and storm water ponds do not qualify as SWH. <u>Information Sources</u> •Western hemisphere shorebird reserve network •Canadian Wildlife Service (CWS) Ontario Shorebird Survey •Bird Studies Canada •Ontario Nature •Local birders and naturalist clubs •Natural Heritage Information Centre (NHIC) Shorebird Migratory Concentration Area	Studies confirming: •Presence of 3 or more of listed species and >1000 shorebird use days during spring or fall migration period (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) •Whimbrel stop briefly (100 Whimbrel used for 3 years or more is significant. •The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area •Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" •SWH MIST Index #8 provides development effects and mitigation measures	Habitat criteria not met. No lakes, shorelines or coastal areas present
Raptor Wintering Area **Rationale**: Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl Special Concern: Short-eared Owl Bald Eagle	Hawks/Owls: Combination of ELC Community Series; need to have present one Community Series from each land class; Forest: FOD, FOM, FOC. Upland: CUM, CUT, CUS, CUW. Bald Eagle: Forest Community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).	•The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors •Raptor wintering (hawk/owl) sites need to be >20 ha with a combination of forest and upland •Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands •Field area of the habitat is to be wind swept with limited snow depth or accumulation. •Eagle sites have open water and large trees and snags available for roosting <u>Information Sources</u> •OMNRF Ecologist or Biologist •Naturalist clubs •Natural Heritage Information Centre (NHIC) Raptor Winter Concentration Area •Data from Bird Studies Canada •Results of Christmas Bird Counts •Reports and other information available from Conservation Authorities	Studies confirm the use of these habitats by: •One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two of the listed hawk/owl species •To be significant a site must be used regularly (3 in 5 years) cxlix for a minimum of 20 days by the above number of birds •The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area •Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" •SWH MIST Index #10 and #11 provides development effects and mitigation measures.	Habitat criteria not met. Woodland and meadow within site do not meet size criteria.

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
Bat Hibernacula **Rationale**: Bat hibernacula are rare habitats in all Ontario landscapes.	Big Brown Bat Tri-colored Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered SWH)	•Hibernacula may be found in caves, mine shafts, underground foundations and Karsts •Active mine sites should not be considered as SWH •The locations of Bat Hibernacula are relatively poorly known <u>Information Sources</u> •OMNRF for possible locations and contact for local experts •Natural Heritage Information Centre (NHIC) Bat Hibernaculum •Ministry of Northern Development and Mines for location of mine shafts •Clubs that explore caves (eg. Sierra Club) •University Biology Departments with bat experts	•All sites with confirmed hibernating bats are SWH •The area includes 200 m radius around the entrance of the hibernaculum for most development types and 1000 m for wind farms •Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects" •SWH MIST Index #1 provides development effects and mitigation measures.	Habitat criteria not met. No known Karst, escarpment areas or rock features (caves).
Bat Maternity Colonies **Rationale**: Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes	Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD, FOM, SWD, SWM	•Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). •Maternity roosts are not found in caves and mines in Ontario •Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees •Female bats prefer wildlife trees (snags) in early stages if decay, class 1-3 or class 1 or 2 •Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred <u>Information Sources</u> •OMNRF for possible locations and contact for local experts •University Biology Departments with bat experts	•Maternity colonies with confirmed use by: o>10 Big Brown Bats o>5 adult female Silver-haired Bats •The area of habitat includes the entire woodland or a forest stand ELC Ecosite or an Eco-element containing the maternity colonies •Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects" •SWH MIST Index #12 provides the development effects and mitigation measures	**Candidate** Woodlands within and adjacent to site provide suitable habitat.
Turtle Wintering Areas **Rationale**: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles: SW, MA, OA and SA; FEO and BOO. Northern Map Turtle: Open water areas such as deeper rivers or streams and lakes with current can also be used as overwintering habitat.	•For most turtles, wintering areas are in the same general areas as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. •Overwintering sites are permanent water bodies, large wetlands and bots or fens with adequate dissolved oxygen. •Manmade ponds such as sewage lagoons or storm water ponds should not be considered SWH. <u>Information Sources</u> •EIA/EIS studies carried out by conservation authorities. •Field naturalists clubs/ university herpetologists. •OMNRF ecologist or biologist •NHIC	•Presence of five overwintering Midland Painted Turtles is significant. •One or more Northern Map Turtle or Snapping Turtle overwintering within a wetland is significant. •The mapped ELC ecosite area with the overwintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are overwintering is the SWH. •Overwintering areas may be identified by searching for congregations (basking areas) of turtles on warm, sunny days during the fall (September to October) or spring (March to May) •Congregation of turtles is more common where wintering areas are limited and therefore significant	No suitable open water habitat present on site.

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
				•SWH MIST Index #28 provides development effects and mitigation measures for turtle wintering habitat	
Reptile Hibernaculum **Rationale**: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Snakes: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake Special Concern: Milksnake Eastern Ribbonsnake Lizard Special Concern: Five-lined Skink (Southern Shield population)	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats. Observations or congregations of snakes on sunny warm days in the spring or fall is a good indicator	•For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. •Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line •Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover •Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures <u>Information Sources</u> •In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells). •Reports and other information available from Conservation Authorities. •Field Naturalist Clubs •University herpetologists •NHIC •OMNRF ecologist or biologist may be aware of locations of wintering skinks	Studies confirming: •Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. •Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct) •NOTE: If there are Special Concern Species present, then site is SWH •NOTE: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc) and consequently are used annually, often by many of the same individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. •The feature in which the hibernacula is located plus a 30 m radius area is the SWH •SWH MIST Index #13 provides development effects and mitigation measures for snake hibernacula • Presence of any active hibernaculum for skink is significant. •SWH MIST Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat.	Habitat is not present. No features assessed on site occur with potential to penetrate deep below the frost line.
Colonially -Nesting Bird Breeding Habitat (Bank and Cliff) **Rationale**: Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns. Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	•Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area •Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles •Does not include a licensed/permitted Mineral Aggregate Operation. <u>Information Sources</u> •Reports and other information available from Conservation Authorities •Ontario Breeding Bird Atlas •Bird Studies Canada; NatureCounts http://www.birdscanada.org/birdmon	Studies confirming: •Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. •A colony identified as SWH will include a 50m radius habitat area from the peripheral nests •Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” •SWH MIST Index #4 provides development effects and mitigation measures.	Habitat criteria not met. No exposed banks observed on site or immediately adjacent.

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
are declining in Ontario.			•Field Naturalist Clubs		
Colonially -Nesting Bird Breeding Habitat (Tree/Shrubs) **Rationale**: Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night Heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	•Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. •Most nests in trees are 11 to 15 m from ground, near the top of the tree. <u>Information Sources</u> •Ontario Breeding Bird Atlas colonial nest records. •Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). •Natural Heritage Information Centre (NHIC) Mixed Wader Nesting Colony •Aerial photographs can help identify large heronries. •Reports and other information available from Conservation Authorities. •MNRF District Offices •Field Naturalist Clubs	Studies confirming: •Presence of 5 or more active nests of Great Blue Heron or other listed species. • The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH. •Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells. •SWH MIST Index #5 provides development effects and mitigation measures.	Habitat criteria not met. No stick nests observed or evidence of nest structures by herons in proximity to the Site.
Colonially -Nesting Bird Breeding Habitat (Ground) **Rationale**: Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6 MAS1 – 3 CUM CUT CUS	•Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. •Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands. <u>Information Sources</u> •Ontario Breeding Bird Atlas, rare/colonial species records. •Canadian Wildlife Service •Reports and other information available from Conservation Authorities •Natural Heritage Information Centre (NHIC) Colonial Waterbird Nesting Area •MNRF District Offices •Field Naturalist Clubs	Studies confirming: •Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern •Presence of 5 or more pairs for Brewer's Blackbird •Any active nesting colony of one or more Little Gull, and Great Black backed Gull is significant •The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWH MIST Index #6 provides development effects and mitigation measures	Habitat criteria not met. No exposed rocks or island peninsulas; Brewer's Blackbird not observed on or adjacent to site
Migratory Butterfly Stopover Areas **Rationale**: Butterfly stopover areas are extremely rare habitats and are	Painted Lady Red Admiral Special Concern: Monarch	Combination of ELC Community Series; need to have present one Community Series from each landclass: FIELD: CUM, CUT, CUS FOREST: FOC, FOD, FOM, CUP	•A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Erie or Lake Ontario •The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south	Studies confirm: •The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct). MUD is based on the number of days the site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day, significant variation can occur between	Habitat criteria not met. Site not within 5 km of Lake Ontario.

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
biologically important for butterfly species that migrate south for the winter.		Anecdotally, a candidate site for butterfly stopover will have a history of butterflies being observed.	•The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat •Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes <u>Information Sources</u> • NHIC •Agriculture Canada in Ottawa may have list of butterfly experts •Field Naturalist Clubs •Toronto Entomologists Association •Conservation Authorities	years and multiple years of sampling should occur •Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. •MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant. •SWH MIST Index #16 provides development effects and mitigation measures.	
Landbird Migratory Stopover Areas **Rationale**: Sites with a high diversity of species as well as high numbers are most significant.	All migratory songbirds Canadian Wildlife Service Ontario website: http://www.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1 All migrant raptor species: Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	•Woodlots >10 ha in size and within 5 km of Lake Ontario. •If woodlands are rare in an area of shoreline, woodland fragments 2-5 ha can be considered for this habitat •If multiple woodlands are located along the shoreline those woodlands <2 km from Lake Ontario are more significant •Sites have a variety of habitats: forest, grassland and wetland complexes •The largest sites are more significant •Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and within 5 km of Lake Ontario are Candidate SWH <u>Information Sources</u> •Bird Studies Canada •Ontario Nature •Local birders and field naturalist clubs •Ontario Important Bird Areas (IBA) Program	Studies confirm: •Use of the habitat by >200 birds/day and with >35 species and with at least 10 bird species recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. •Studies should be completed during spring (Mar.-May) and fall (Aug.- Oct.) migration using standardized assessment techniques. Evaluation to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". •SWH MIST Index #9 provides development effects and mitigation measures.	Habitat criteria not met. Site not within 5 km of Lake Ontario.
Deer Yarding Areas **Rationale:** Winter habitat for deer is considered to be the main limiting factor for northern deer populations. In winter, deer congregate in "yards" to survive severe winter conditions. Deer yards typically	White-tailed Deer	Note: OMNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include; FOM, FOC, SWM and SWC. Or these ELC Ecosites; CUP2 CUP3 FOD3 CUT	•Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioral response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter.	No Studies Required: • Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH. • Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO). • Field investigations that record deer tracks in winter are done to confirm use (best done from an	Not mapped by MNRF.

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.			• The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%. • OMNRF determines deer yards following methods outlined in “Selected Wildlife and Habitat Features: Inventory Manual" •Woodlots with high densities of deer due to artificial feeding are not significant	aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations. cxcv • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWH MIST Index #2 provides development effects and mitigation measures.	
Deer Winter Congregation Areas **Rationale**: Deer movement during winter in the southern areas of Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions	White-tailed Deer	All forested Ecosites with these ELC Community Series: FOC, FOM, FOD, SWC, SWM, SWD Conifer plantations much smaller than 50 ha may also be used.	•Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. • Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands. • If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha. • Woodlots with high densities of deer due to artificial feeding are not significant. <u>Information Sources</u> •MNRF District Offices •LIO/NRVIS	Studies confirm: •Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF. •Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF. •Studies should be completed during winter (Jan./Feb.) when >20 cm of snow is on the ground using aerial survey techniques, ground road surveys, or a pellet count deer density survey. •Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. •SWH MIST Index #2 provides development effects and mitigation measures.	Not mapped by MNRF.
Rare Vegetation Communities					
Cliffs and Talus Slopes **Rationale**: Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO TAS TAT CLO CLS CLT	A Cliff is vertical to near vertical bedrock >3 m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris.	•Most cliff and talus slopes occur along the Niagara Escarpment <u>Information Sources</u> •The Niagara Escarpment Commission has detailed information on location of these habitats •OMNRF Districts •Natural Heritage Information Centre (NHIC) has location information available on their website •Field Naturalist Clubs •Conservation Authorities	•Confirm any ELC Vegetation Type for Cliffs or Talus Slopes •SWH MIST Index #21 provides development effects and mitigation measures	Habitat criteria not met– no cliffs or talus areas present within or adjacent to site
Sand Barren	ELC Ecosites: SBO1 SBS1	Sand barrens typically are exposed sand, generally sparsely vegetated and caused by a lack of moisture,	•A sand barren area >0.5 ha in size <u>Information Sources</u>	•Confirm any ELC Vegetation Type for Sand Barrens •Site must not be dominated by exotic or introduced species (<50%	Habitat criteria not met– none present within or adjacent to site

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
Rationale: Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry.	SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always <60%	periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered but less than 60%.	•OMNRF Districts •Natural Heritage Information Centre (NHIC) has location information available on their website •Field Naturalist Clubs •Conservation Authorities	vegetative cover are exotic spp.) •SWH MIST Index #20 provides development effects and mitigation measures	
Alvar **Rationale**: Alvars are extremely rare habitats in Ecoregion 6E. Most alvars in Ontario are in Ecoregions 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 **Five Alvar Indicator Species**: *Carex crawei* *Panicum philadelphicum* *Eleocharis compressa* *Scutellaria parvula* *Trichostema brachiatum* These indicator species are very specific to Alvars within Ecoregion 6E	An Alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animal species. Vegetation cover varies from patchy to barren with a less than 60% tree cover	•An Alvar site >0.5 ha in size Information Sources •Alvars of Ontario (Federation of Ontario Naturalists, 2000) •Conserving Great Lakes Alvars (Ontario Nature) •OMNRF Districts •Natural Heritage Information Centre (NHIC) has location information available on their website •Field Naturalist Clubs •Conservation Authorities	•Field studies identify that four of the five Alvar Indicator Species at a Candidate Alvar Site is significant •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic spp.) •The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses •SWH MIST Index #17 provides development effects and mitigation measures	Habitat criteria not met–none present within or adjacent to site
Old Growth Forest **Rationale**: Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth Forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multilayered canopy and an abundance of snags and downed woody debris.	Woodland areas 30 ha or greater in size or with at least 10 ha interior habitat assuming 100 m buffer at edge of forest Information Sources •OMNRF Forest Resource Inventory mapping •OMNRF Districts •Field Naturalist Clubs •Conservation Authorities •Sustainable Forestry License (SFL) companies will possibly know locations through field operations •Municipal forestry departments	Field studies will determine: •If dominant tree species of the forest are >140 years old, then the area containing these trees is SWH •The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present) •The area of forest ecosites combined or an eco-element within an ecosite that contain the old growth characteristics is the SWH •Determine ELC vegetation types for the forest area containing the old growth characteristics •SWH MIST Index #23 provides development effects and mitigation measures	Habitat criteria not met–none present within or adjacent to site

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
Savannah **Rationale**: Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25-60%.	•No minimum size to site •Site must be restored or a natural site. Remnant sites such as railway right-of ways are not considered SWH <u>Information Sources</u> •Natural Heritage Information Centre (NHIC) has location information available on their website •Field Naturalist Clubs •Conservation Authorities	Field studies confirm: •One or more of the Savannah indicator species listed in Appendix N should be present. Note: savannah plant spp. List from Ecoregion 6E should be used. •Area of the ELC Ecosite is the SWH •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic spp.) •SWH MIST Index #18 provides development effects and mitigation measures	Habitat criteria not met– none present within or adjacent to site
Tallgrass Prairie **Rationale**: Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	A tallgrass prairie has ground cover dominated by prairie grasses. An open tallgrass prairie habitat has <25% tree cover.	•No minimum size to site •Site must be restored or a natural site. Remnant sites such as railway right-of ways are not considered SWH <u>Information Sources</u> •Natural Heritage Information Centre (NHIC) has location information available on their website •OMNRF Districts •Field Naturalist Clubs •Conservation Authorities	Field studies confirm: •One or more of the Prairie indicator species listed in Appendix N should be present. Note: savannah plant spp. List from Ecoregion 6E should be used. •Area of the ELC Ecosite is the SWH •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic spp.) •SWH MIST Index #19 provides development effects and mitigation measures	Habitat criteria not met– none present within or adjacent to site
Other Rare Vegetation Communities **Rationale**: Plant communities that often contain rare species which depend on the habitat for survival.	Provincially rare (S1, S2, S3) vegetation communities are listed in Appendix M of the Significant Wildlife Habitat Technical Guide (MNRF, 2000). Any ELC Ecosite Code that has a possible ELC Vegetation Type that is provincially rare is candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	•ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in Appendix M of the Significant Wildlife Habitat Technical Guide (MNRF, 2000). •OMNRF/NHIC will have up to date listing for rare vegetation communities. <u>Information Sources</u> •Natural Heritage Information Centre (NHIC) has location information available on their website •OMNRF Districts •Field Naturalist Clubs •Conservation Authorities	•Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of the Significant Wildlife Habitat Technical Guide (MNRF, 2000). •Area of the ELC Vegetation Type polygon is the SWH. •SWH MIST Index #37 provides development effects and mitigation measures	Habitat criteria not met– none observed during numerous site visits conducted.
Specialized Habitat for Wildlife					
Waterfowl Nesting Area **Rationale**: Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SWT1, SWT2, SWD1, SWD2, SWD3, SWD4 Note: Includes adjacency to Provincially Significant Wetlands	• Waterfowl nesting area extends 120 m cxlix from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. •Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. •Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites	Studies confirmed: •Presence of 3 or more nesting pairs for listed species excluding Mallards, or; •Presence of 10 or more nesting pairs for listed species including Mallards. •Any active nesting site of an American Black Duck is considered significant. •Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”	criteria not met. Species and abundance thresholds not observed during field investigations

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
			Information Sources •Ducks Unlimited staff may know the locations of particularly productive nesting sites •MNRF Wetland Evaluations for indication of significant waterfowl nesting habitat •Reports and other information available from Conservation Authorities	•A field study confirming waterfowl nesting habitat will determine boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest •SWH MIST Index #25 provides development effects and mitigation measures.	
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat **Rationale**: Nest sites are fairly uncommon in Eco - region 7E and are used annually by the se species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey Special Concern: Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands.	•Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. •Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy. •Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms) Information Sources •NHIC compiles all known nesting sites for Bald Eagles in Ontario •MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat •Nature Counts, Ontario Nest Records Scheme data. •OMNRF District •Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented •Reports and other information available from Conservation Authorities. •Field Naturalists clubs	Studies confirm the use of these nests by: •One or more active Osprey or Bald Eagle nests in an area •Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. •For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH, maintaining undisturbed shorelines with large trees within this area is important •For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the habitat from 400-800 m is dependent on sight lines from the nest to the development and inclusion of perching and foraging habitat •To be significant a site must be used annually. When found inactive, the site must be known to be inactive for > 3 years or suspected of not being used for >5 years before being considered not significant. •Observational studies to determine nest site use, perching sites and foraging areas need to be done from early March to mid-August. •Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" •SWH MIST Index #26 provides development effects and mitigation measures	Habitat criteria not met. No stick nets or target species observed during numerous site visits conducted.
Woodland Raptor Nesting Habitat **Rationale**: Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3.	•All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat. Interior habitat determined with a 200m buffer. •Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. •In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest.	Studies confirm: •Presence of 1 or more active nests from species list is considered significant •Red-shouldered Hawk and Northern Goshawk – A 400 m radius around the nest or 28 ha area of habitat is the SWH. (The 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest). •Barred Owl – A 200m radius around the nest is the SWH	Habitat criteria not met. Woodland associated with site is not > 30 ha with >4ha of interior habitat.

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
			Information Sources •OMNRF Districts •Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented •Check data from Bird Studies Canada •Reports and other information available from Conservation Authorities	•Broad-winged Hawk and Coopers Hawk, – A 100m radius around the nest is the SWH •Sharp-Shinned Hawk – A 50m radius around the nest is the SWH •Conduct field investigations from early March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. •SWH MIST Index #27 provides development effects and mitigation measures	
Turtle Nesting Areas **Rationale**: These habitats are rare and when identified will often be the only breeding site for local populations of turtles	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100 m) or within the following ELC Ecosites: MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, BOO1, FEO1	•Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. •For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and is located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. •Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes and rivers are most frequently used. Information Sources •Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels) •Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them •Natural Heritage Information Centre (NHIC) •Field naturalist clubs	Studies confirm: •Presence of 5 or more nesting Midland Painted Turtles. •1 or more Northern Map Turtle or Snapping Turtle nesting is a SWH. •The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30 to 100 m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH. •Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30 to 100 m area of habitat. •Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. •SWH MIST Index #28 provides development effects and mitigation measures for turtle nesting habitat.	Suitable nesting habitat and species not observed during field investigations
Seeps and Springs **Rationale**: Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamanders	Seeps/springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	•Any forested area (with <25% meadow/field/ pasture) within the headwaters of a stream or river system •Seeps and springs are important feeding and drinking areas. Especially in the winter will support a variety of plant and animal species. Information Sources •Topographical Map •Thermography •Hydrological surveys conducted by Conservation Authorities and MECP	Studies confirm: •Presence of a site with 2 or more seeps/springs should be considered SWH. • The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat cxlviii. • SWH MIST Index #30 provides development effects and mitigation measures	Habitat criteria not met. Not observed during field evaluations.

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
			•Field Naturalists Clubs and landowners •Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped		
Amphibian Breeding Habitat (Woodland) **Rationale**: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series: FOC, FOM, FOD, SWC, SWM, SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians.	•Presence of a wetland, pond or woodland pool (including vernal pools) >500 m2 (about 25 m diameter) within or adjacent (within 120 m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. •Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat. <u>Information Sources</u> •Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records •Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. •OMNRF Districts and wetland evaluations •Field Naturalist clubs •Canadian Wildlife Service Amphibian Road Call Survey •Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm: •Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or egg masses) or 2 or more of the listed frog species with Call Level Codes of 3. •A combination of observational study and call count surveys will be required during the spring (Mar.-Jun.) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands •The habitat is the wetland area plus a 230m radius of woodland area. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. •SWH MIST Index #14 provides development effects and mitigation measures	Species and abundance thresholds not met during field investigations
Amphibian Breeding Habitat (Wetlands) **Rationale**: Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120 m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bullfrog) may be adjacent to woodlands.	•Wetlands >500m2 (about 25m diameter), supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats •Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators •Bullfrogs require permanent water bodies with abundant emergent vegetation. <u>Information Sources</u> •Ontario Herpetofaunal Summary Atlas (or other similar atlases) •Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. •OMNRF Districts and wetland evaluations. •Reports and other information available from Conservation Authorities	Studies confirm: •Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3 or; Wetland with confirmed breeding Bullfrogs are significant •The ELC ecosite wetland area and the shoreline are the SWH •A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. •If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. •SWH MIST Index #15 provides development effects and mitigation measures	**Confirmed** Species and abundance thresholds met during field investigations

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
Woodland Area - Sensitive Bird Breeding Habitat Rationale: Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Special Concern: Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series: FOC, FOM, FOD, SWC, SWM, SWD	•Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha •Interior forest habitat is at least 200 m from forest edge habitat <u>Information Sources</u>: •Local birder clubs •Canadian Wildlife Service (CWS) for the location of forest bird monitoring •Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species •Reports and other information available from Conservation Authorities.	Studies confirm: •Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. •Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH •Conduct field investigations in spring and early summer when birds are singing and defending their territories •Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” •SWH MIST Index #34 provides development effects and mitigation measures	**Confirmed** Site investigations identified 5 of the listed species presumed to be breeding within woodlands associated with the site
Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)					
Marsh Breeding Bird Habitat **Rationale**: Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan Special Concern: Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: all SW, MA and CUM1 sites	•Nesting occurs in wetlands. •All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present •For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water <u>Information Sources</u> •OMNRF District and wetland evaluations •Field Naturalist clubs •Natural Heritage Information Centre (NHIC) Records •Reports and other information available from Conservation Authorities •Ontario Breeding Bird Atlas	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or or 1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed species • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH • Area of the ELC ecosite is the SWH. • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWH MIST Index #35 provides development effects and mitigation measures	Species and abundance thresholds not met during field investigations
Open Country Bird Breeding Habitat **Rationale:** This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow Special Concern: Short-eared Owl	CUM1 CUM2	•Large grassland areas (includes natural and cultural fields and meadows) >30 ha •Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years) •Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older.	Field studies confirm: •Presence of nesting or breeding of 2 or more of the listed species •A field with 1 or more breeding Short-eared Owls is to be considered SWH •The area of SWH is the contiguous ELC ecosite field areas	Habitat criteria not met. Large areas of grassland or meadow (>30 ha) not present

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records			•The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species <u>Information Sources</u> •Agricultural land classification maps, Ministry of Agriculture •Local bird clubs •Ontario Breeding Bird Atlas •EIA/EIS Reports and other information available from Conservation Authorities	•Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories •Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" •SWH MIST Index #32 provides development effects and mitigation measures	
Shrub/Early Successional Bird Breeding Habitat **Rationale:** This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records.	Indicator Species: Brown Thrasher Clay-colored Sparrow Common Species: Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher Special Concern: Yellow-breasted Chat Golden-winged Warbler	CUT1, CUT2, CUS1, CUS2, CUW1, CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species	•Large field areas succeeding to shrub and thicket habitats >10 ha in size •Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years) •Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species •Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands <u>Information Sources</u> •Agricultural land classification maps, Ministry of Agriculture •Local bird clubs •Ontario Breeding Bird Atlas •Reports and other information available from Conservation Authorities	Field studies confirm: •Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species •A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as SWH •The area of the SWH is the contiguous ELC ecosite field/thicket area. •Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories •Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" •SWH MIST Index #33 provides development effects and mitigation measures	Habitat criteria not met. Large areas of thicket or shrub habitat (>10 ha) not present
Terrestrial Crayfish **Rationale**: Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.	Chimney or Digger Crayfish; (*Fallicambarus fodiens*) Devil Crayfish or Meadow Crayfish; (*Cambarus diogenes*)	MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, MAS1, MAS2, MAS3, SWD, SWT, SWM CUM1 with inclusions of above meadow marsh ecosites can be used by terrestrial crayfish	•Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish •Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water •Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well-formed. <u>Information Sources</u> •Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF, March, 1998	Studies confirm: •Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites •Area of ELC ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH •Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult •SWH MIST Index #36 provides development effects and mitigation measures	**Confirmed** Species and habitat observed during field investigations
Special Concern and Rare Wildlife Species	All Special Concern and Provincially Rare (S1, S2, S3, SH) plant and animal species. Lists of these	All plant and animal element occurrences (EOs) within a 1 km or 10 km grid.	•When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites	Studies confirm: •Assessment/inventory of the site for the identified special concern or rare species needs to be	**Confirmed** Several Eastern Wood-pewee territories identified

Ecoregion 6E Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in EIA Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Source	Defining Criteria	
Rationale: These species are quite rare or have experienced significant population declines in Ontario.	species are tracked by the NHIC.	Older EOs were recorded prior to GPS being available, therefore location information may lack accuracy.	<u>Information Sources</u> •Natural Heritage Information Centre (NHIC) will have Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data •NHIC Website "Get Information": http://nhic.mnr.gov.on.ca •Ontario Breeding Bird Atlas •Expert advice should be sought as many of the rare spp. Have little information available about their requirement	completed during the time of year when the species is present or easily identifiable. •The area of the habitat to the finest ELC scale that protects the habitat features and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. •SWH MIST Index #37 provides development effects and mitigation measures	in woodland associated with the site
Animal Movement Corridors					
Amphibian Movement Corridors **Rationale**: Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	Corridors may be found in all ecosites associated with water. Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1	•Movement corridors between breeding habitat and summer habitat •Movement corridors must be determined when **Amphibian Breeding Habitat** is confirmed as SWH (Amphibian Breeding Habitat, Wetland) <u>Information Sources</u> •MNRF District Office •Natural Heritage Information Centre (NHIC) •Reports and other information available from Conservation Authorities •Field Naturalist Clubs	•Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites •Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant •Corridors should have at least 15m of vegetation on both sides of waterway or be up to 200m wide of woodland habitat and with gaps<20m • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat • SWH MISTIndex #40 provides development effects and mitigation measures	While frogs may disperse from and within the wetlands, the development is proposed within area not suitable for dispersal (active agriculture) and would not impede the movement of amphibians within and between the significant breeding habitat and other wetlands as these are all connected via offsite features
Deer Movement Corridors **Rationale:** Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.	White-tailed Deer	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	•Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule •A deer wintering habitat identified by the OMNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion •Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges) <u>Information Sources:</u> •MNRF District Office •Natural Heritage Information Center (NHIC) •Reports and other information available from Conservation Authorities. •Field Naturalist Clubs	•Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas • Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas. • Corridors should be at least 200m wide with gaps <20m and if following riparian area with at least 15m of vegetation on both sides of waterway. Shorter corridors are more significant than longer corridors. • SWH MIST Index #39 provides development effects and mitigation measures	Not applicable as Deer Wintering Habitat was not identified

Appendix E Terms of Reference for Additional Studies

Environmental Impact Study

Glenelg Phase 3

Flato Developments Inc.

SLR Project No. 209.30125.00003

May 24, 2023

SLR Consulting (Canada) Ltd.
300 Town Centre Boulevard, Suite 200, Markham, ON L3R 5Z6

May 23, 2023

Chris Lorenz, Resource Planner
Grand River Conservation Authority
400 Clyde Road, Box 729
Cambridge, ON N1R 5W6

Michael Oberle, Environmental Planning Coordinator
Saugeen Conservation
261123 Grey Road 28 RR1
Hanover, ON N4N 3B8

SLR Project No.: 209.30125.00003

RE: Terms of Reference – Additional Studies: Scoped Environmental Impact Study Lots 223, 224, 225, and 226, Concessions 1 and 2 W, Dundalk, Ontario

SLR Consulting (Canada) Ltd. (SLR) is pleased to submit this Terms of Reference (ToR) in collaboration with Geomorphix on behalf of Flato Developments Inc. outlining the tasks required to complete additional studies required to support a Scoped Environmental Impact Study (EIS) and Tree Inventory and Preservation Plan (TIPP) for Lots 223, 224, 225, and 226, Concessions 1 and 2 W in Dundalk, Ontario (Site). The southeast half of the Site falls under the jurisdiction of the Grand River Conservation Authority (GRCA) and the northwest half of the Site is under the jurisdiction of Saugeen Conservation (SVCA). This ToR is considered a draft until approved by the applicable agencies.

Project Understanding

It is understood that the Site is proposed for development into a residential subdivision and is subject to a Ministerial Zoning Order (MZO). Natural features on the site include:

- Three tributaries to the Grand River (headwater drainage features [HDF]) and their associated floodplains
- Three unevaluated wetlands on site (MAS2, SWM1-1 and SWD3-1/MAM2-2, Figure 1) and one immediately adjacent to the site (SWD, Figure 1)

Most of the Site is within GRCA or SVCA regulated lands. Features within the Site that are regulated by GRCA include unevaluated wetlands, a watercourse of unknown thermal regime, and an estimated associated floodplain. GRCA also identified the presence of two municipal drains (98- -L227C1W_A [tiled/closed] and 98- -L227C1W_B [open]). Permits under *Ontario Regulations (O. Reg.) 150/06 (GRCA) and 169/06 (SVCA): Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* are required for any development within regulated areas.

The GRCA (2015) *Policies for the Administration of O. Reg. 150/06* and SVCA (2017) *Environmental Planning and Regulations Policies Manual* state that any development within 30 m of unevaluated or locally significant wetlands (also known as the area of interference) requires permission from the appropriate conservation authority. Setback distances for development near regulated areas surrounding HDF typically require in-field

assessment to determine riverine flooding and erosion hazard allowances and valley slopes or meander belt allowance. Staking of the unevaluated wetlands is also typically required.

Objectives for Additional Studies

The additional studies are proposed to further characterize the existing site conditions with respect to the subject wetlands and their hydrologic regimes.

Terms of Reference

This ToR has been prepared to frame the study requirements for review by the Township of Southgate, Grey County, SVCA, and GRCA. The ToR was prepared in the context of the following:

- *Provincial Policy Statement, 2020*
- Federal *Fisheries Act, 2019*
- *Migratory Birds Convention Act, 1994*
- *Endangered Species Act, 2007*
- Federal *Species at Risk Act, 2002*
- *Greenbelt Plan, 2017*
- *O. Regs. 150/06 and 169/06*
- GRCA Planning and Permitting Policies, including GRCA (2015) *Policies for the Administration of O. Reg. 150/06*
- SVCA (2017) *Environmental Planning and Regulations Policies Manual*
- Township of Southgate and Grey County Official Plans
- GRCA (2005) *Environmental Impact Study Guidelines and Submission Standards for Wetlands*
- *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority and Credit Valley Conservation, 2014
- Preliminary site-wide water balance calculations completed by Crozier Consulting Engineers
- Comments on the first submission of the EIS (September 2022) received from the GRCA dated November 25, 2022 and from Triton Engineering dated December 13, 2022.

Specifically, the tasks to be included within the ToR are:

1. Characterize existing conditions
2. Description of the proposed development and potential changes to the hydrology and ecology of the subject wetlands that may result from the proposed development
3. Assess wetland sensitivity to potential changes
4. Alternatives assessment for proposed east-west arterial road alignment
5. Monitor the hydroperiod and hydrologic regime of the subject wetlands
6. Comparison of modeled post to pre hydrologic conditions based on site-wide water balance calculations
7. Provide input to aid in refinement of the site-wide water balance already prepared by Crozier to try and ensure that there is a site-wide balance for pre- to post conditions (a feature based water balance is not proposed)
8. Assessment of outlet options for stormwater facilities and suggest means of mitigating any anticipated impacts to the subject wetlands

Closure

Please confirm that these Terms of Reference for a Scoped EIS meet the intent of the information and study requirements for the subject property as referenced above. If you have any further questions or comments, we look forward to discussing them with you at your earliest convenience.

Yours sincerely,

SLR Consulting (Canada) Ltd.

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LEGEND

- SITE BOUNDARY
- ECOLOGICAL LAND CLASSIFICATION (SLR CONSULTING, 2022)
- WATERBODIES
- PERMANENT WATERCOURSE
- RAILWAY

ELC Code	ELC Description
Ag	Agriculture
CUM1-1	Cultural Meadow
FOD5-2	Dry-Fresh Sugar Maple-Beech Deciduous Forest
HR	Hedgerow
MAM2-2/SWT2-	Reed Canary Grass Mineral Meadow Marsh with Willow Thicket Swamp inclusion
MAS2	Mineral Shallow Marsh Ecosite
MAS2/SWC1-1	Mineral Shallow Marsh with White Cedar Coniferous Swamp inclusion
SWC1-1	White Cedar Mineral Coniferous Swamp
SWD	Mineral Deciduous Swamp
SWD3-1/MAM2-2	Red Maple Mineral Deciduous Swamp with Reed Canary Grass Mineral Meadow Marsh inclusion
SWM1-1	White Cedar - Hardwood Mineral Mixed Swamp
SWT2-2	Willow Mineral Thicket Swamp

NOTES:
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 25 50 100 150 m

SCALE 1:3,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

MHBC PLANNING, URBAN DESIGN & LANDSCAPE ARCHITECTURE
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

ENVIRONMENTAL IMPACT STUDY

ECOLOGICAL LAND CLASSIFICATION

SLR

FIGURE NO: 1

DATE: May 10, 2023

PROJECT NO: 209.V30125.00003

Hydrogeological Assessment

Glenelg Phase 3

Dundalk Village Two Inc.

3621 Highway 7 East, Suite 503
Markham, ON L3R 5Z6

Prepared by:

SLR Consulting (Canada) Ltd.

100 Stone Road West, Suite 201, Guelph, ON N1G 5L3

SLR Project No.: 209.30125.00003

May 25, 2023

Revision: 4

Revision Record

Revision	Date	Prepared By	Checked By	Authorized By
1	September 9, 2022	JV	MV	MV
2	September 12, 2022	JV	MV	MV
3	May 19, 2023	JV/CE	MV	MV
4	May 25, 2023	JV/CE	AM	MV

Statement of Limitations

The Hydrogeological Assessment has been prepared and the work referred to in this report has been undertaken by SLR Consulting (Canada) Ltd. (SLR) for Dundalk Village Two Inc. hereafter referred to as the “Client”. It is intended for the sole and exclusive use of the Client. The report has been prepared in accordance with the Scope of Work and agreement between SLR and the Client. Other than by the Client and as set out herein, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted unless payment for the work has been made in full and express written permission has been obtained from SLR.

This report has been prepared in a manner generally accepted by professional consulting principles and practices for the same locality and under similar conditions. No other representations or warranties, expressed or implied, are made.

Opinions and recommendations contained in this report are based on conditions that existed at the time the services were performed and are intended only for the client, purposes, locations, time frames and project parameters as outlined in the Scope or Work and agreement between SLR and the Client. The data reported, findings, observations and conclusions expressed are limited by the Scope of Work. SLR is not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. SLR does not warranty the accuracy of information provided by third party sources.

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1.0 Introduction

SLR Consulting (Canada) Ltd. (SLR) was retained by Dundalk Village Two Inc. to conduct a Hydrogeological Assessment in support of a Draft Plan of Subdivision and future Site Plan for the proposed Dundalk Northeast residential subdivision located in Dundalk, Ontario (referred to as the "Study Area"). The Study Area includes two residential properties (772350 and 772288 Hwy 10), as well as one currently undeveloped property located on Lot 225, Concession 1 (**Figure 1**). These lands fall within a larger area currently subject to an approved Ministerial Zoning Order (MZO). The development of these subject lands will be phased.

Although the current submission is for the western portion of the property, known as Glenelg Phase 3 development (hereinafter referred to as the "Site"), this report provides details of the entire Dundalk Northeast residential subdivision. It is understood that the proposed Glenelg Phase 3 development will contain single detached and semi-detached lots, as well as townhouse units. There will also be areas of open space, a stormwater management (SWM) pond, a school, and a park. The overall development is expected to have complete municipal servicing, and paved access / site roadways.

1.1 Study Objectives

The objective of the Hydrogeological Assessment is to characterize the hydrogeological conditions across the Study Area, identify any hydrogeological constraints to development and potential impacts of development on natural heritage features, and provide guidance on how to mitigate these impacts. This is completed through a review of relevant geologic and hydrogeologic information available through public records for the area or collected through borehole drilling and groundwater monitoring and sampling efforts. This report has been prepared for submission to the Township of Southgate, Bruce County, Saugeen Valley Conservation Authority (SVCA), and Grand River Conservation Authority (GRCA) to support the Draft Plan of Subdivision and future Site Plan Approval for the proposed development.

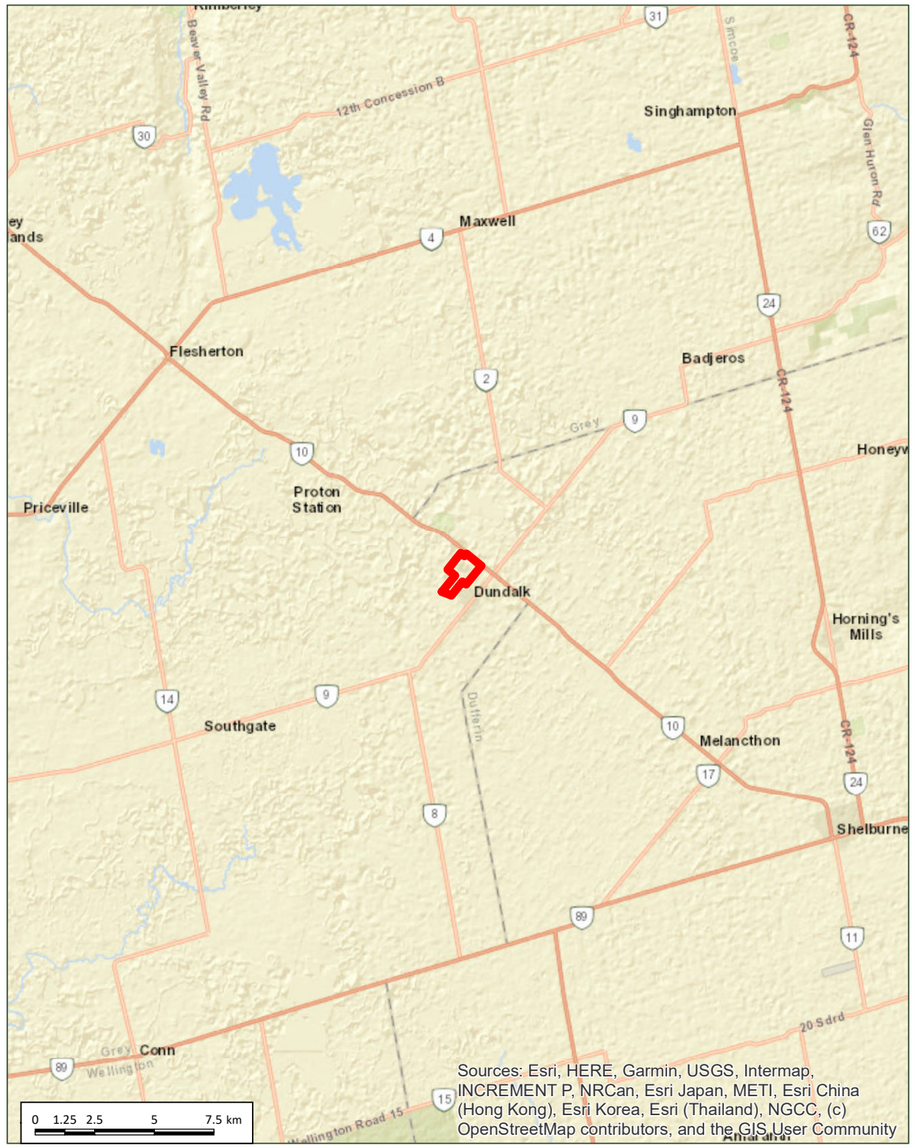
The specific objectives are summarized below:

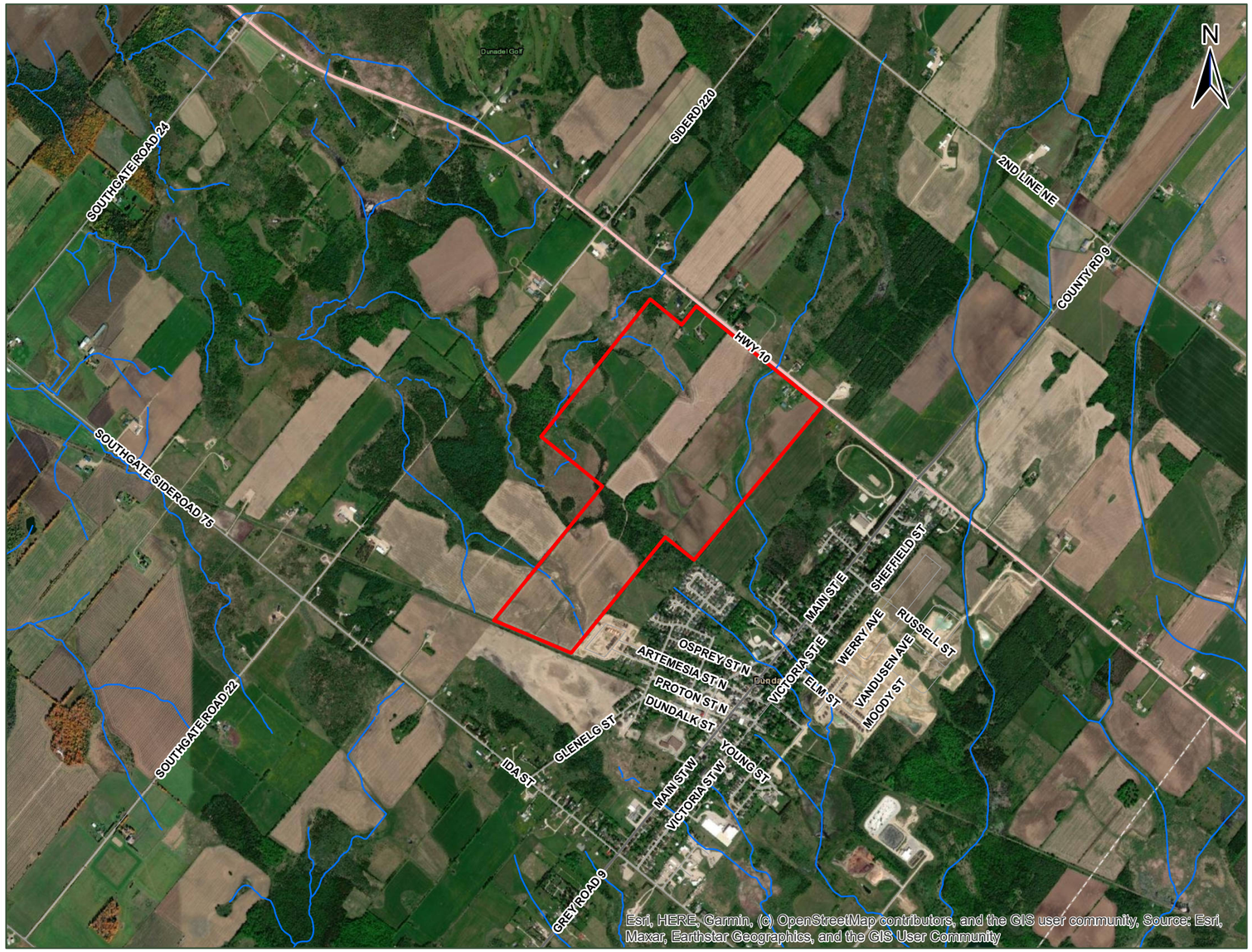
- Document the geology, hydrostratigraphy, groundwater flow, and groundwater quality across the Study Area.
- Evaluate potential impacts with respect to Source Protection Plans
- Assess overall potential impacts of the proposed development on the groundwater flow system.

1.2 Report Organization

This Hydrogeology Assessment report has been organized into eight sections following this introduction. Section 2 provides an overview of background information related to the development, previous investigations and regional geology and hydrogeology. Section 3 provides the field methodologies utilized during the assessment. Section 4 presents a review of the site-specific geological and hydrogeological conditions. Section 5 provides an assessment of the potential impacts of development on shallow groundwater features, potable wells, and surface water features. Section 6 presents the conclusions and recommendations, Section 7 provides closing comments, and Section 8 presents the report references.

All Figures referenced throughout the report are presented within the text. Appendices A through E present the: Development Plan; Borehole Logs; Groundwater Data; Hydraulic Conductivity Analyses; and MECP Water Well Records.





NOTES:
SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022

LEGEND
SITE BOUNDARY

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SCALE 1:25,000
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N
THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY
AND SHOULD NOT BE USED FOR NAVIGATION

DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

HYDROGEOLOGICAL ASSESSMENT

SITE LOCATION

SLR

FIGURE NO:
1

DATE: May 4, 2023
PROJECT NO: 209.V30125.00003

2.0 Background

2.1 Proposed Development

Although this Hydrogeological Assessment discusses hydrogeological conditions across the entire Dundalk Northeast residential subdivision, the current phase of the development only includes the western most parcel (Lots 225 and 226, Concession 2) known as Glenelg Phase 3. The proposed Glenelg Phase 3 development measures approximately 33 ha in size, and includes 291 single detached lots, 24 semi-detached lots, and 74 townhouse units. It also includes a 1.56 ha SWM pond in the western portion of the Site boundary, walkways, trails, open space, and a park. A copy of the proposed development plan is provided in **Appendix A**.

2.2 Site Description

The proposed Dundalk Northeast residential subdivision lies on lands legally described as Lots 223, 224, 225, 226 and 227, Concessions 1 and 2 Southwest of the Toronto and Sydenham Road, Geographic Township of Proton, Township of Southgate, County of Grey. The proposed Glenelg Phase 3 development lies on the western most parcel of the Study Area on Lots 225 and 226, Concession 2.

The Study Area is bounded by Highway 10 in the northeast, Grey Country CP Rail Trail to the southwest, and is found approximately 600 m northwest of Main St E and approximately 600 m northeast of Ida Street. The area surrounding the property is occupied by agricultural lands and rural residential, with a woodlot and associated wetland along the northern portion of the Study Area.

2.3 Regional setting

2.3.1 Topography and Drainage

The Study Area is gently undulating with a gentle decrease in ground surface elevation from north to south. A topographic high of 532 metres above sea level (masl) is located near the north end of the Study Area, with a topographic low of 517 masl at the southwestern boundary and through the centre of the property near the woodlot and wetland area (**Figure 2**).

The Study Area is located on a drainage divide between the Saugeen River Watershed (SRW) and Grand River Watershed (GRW), which are governed by SVCA and GRCA, respectively. The undulating topography at the Study Area is attributed to the presence of several drumlins present on the property, with water generally draining between each drumlin. A number of small unnamed tributaries are present at the Study Area, two that drain towards the northwest (within the SRW), located at the north and south ends of the Study Area, and one that drains offsite towards the south (GRW) at the eastern portion of the Study Area within a wetland. There are also unevaluated wetlands located on the Study Area. An evaluation of the wetlands will be completed as part of the Environmental Impact Study (EIS), to be provided under separate cover.

2.3.2 Physiography

The Study Area lies within the Dundalk Till Plain physiographic region of Southern Ontario (Chapman and Putnam, 1984). The Dundalk Till Plain is a gently undulating, partially drumlinized and fluted surface, where the long axis of the drumlins are oriented in a southeastward direction. The Dundalk Till Plain supports extensive wetland complexes due to the presence of poorly drained depressions.

2.3.3 Regional Hydrostratigraphy

Surficial geology in the Dundalk area mainly consists of drumlinized till plains (Chapman and Putnam, 1984) comprised of the Elma Till (stony sandy silt to silt) and Catfish Creek Till (clayey silt and gravel,

Figure 3). There are isolated deposits of glaciolacustrine, glaciofluvial ice-contact and glaciofluvial outwash materials at surface and interbedded within the till plain. These sand and gravel deposits form the Dundalk Aquifer (Saugeen Valley Source Protection Area, 2015). The extent and thickness of the Dundalk Aquifer is unknown, due to a lack of reliable well records for the area. It is noted that static water levels within the Dundalk Aquifer are close to ground surface.

The overburden material is underlain by bedrock aquifer units comprised of the Guelph, Eramosa, Goat Island and Gasport Formations (Golder, 2018).

2.3.4 Source Protection

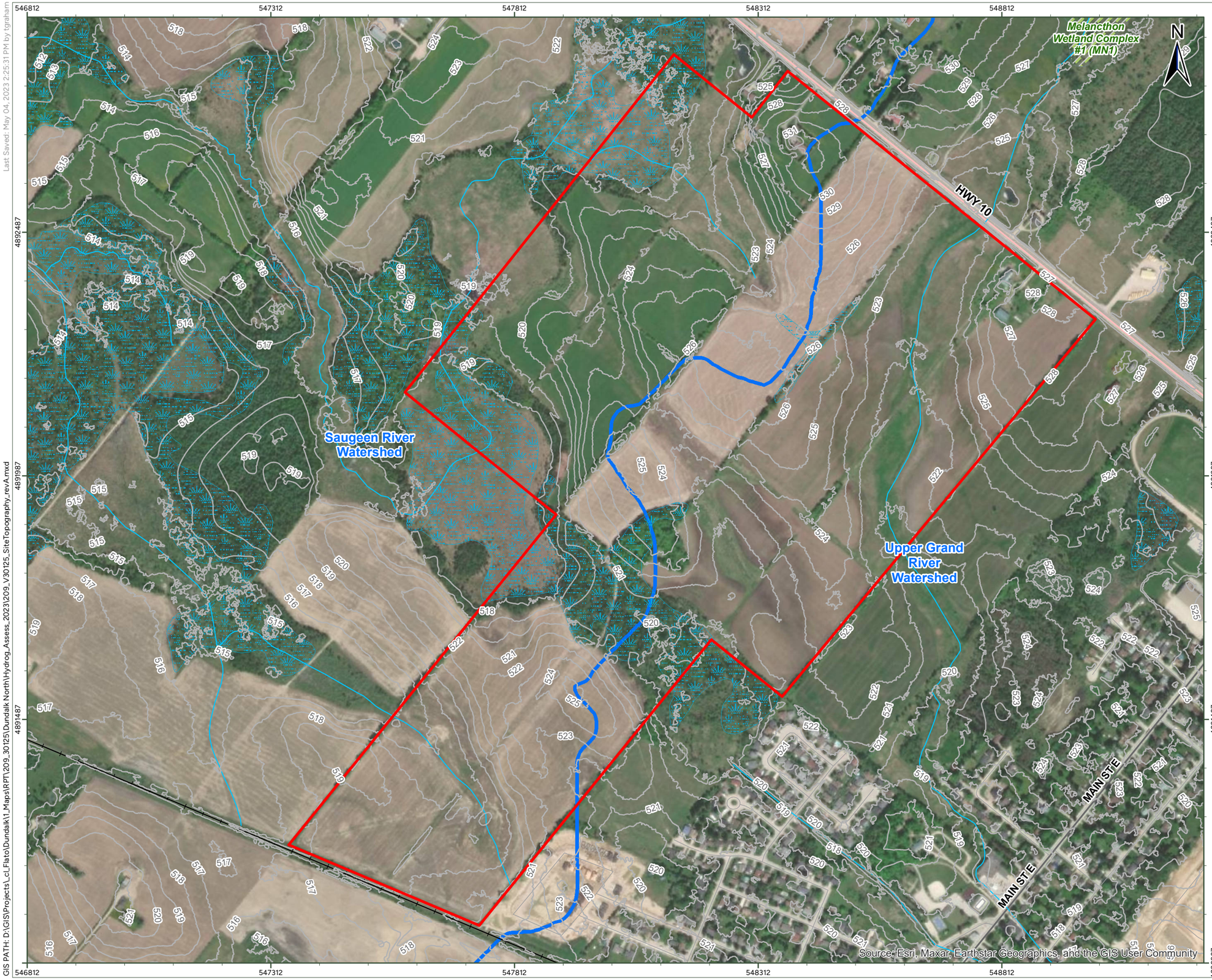
Source Protection Plans (SPPs) have been implemented throughout the region to protect drinking water resources, as mandated by the Ontario Clean Water Act (OCWA), 2006. The susceptibility of an aquifer to contamination is evaluated to identify the most vulnerable areas surrounding a drinking water source. There are four (4) types of vulnerable areas as defined by the Clean Water Act, 2006:

- Highly vulnerable aquifer (HVA): aquifers in which an external source is likely to have a significant adverse effect, this includes the land above the aquifer;
- Significant groundwater recharge area (SGRA): an area in which it is necessary to regulate or monitor drinking water threats that could affect the recharge of an aquifer;
- Surface water intake protection zone (IPZ): an area related to a surface water intake area in which it is necessary to regulate or monitor drinking water threats; and
- Wellhead protection area (WHPA): an area related to a wellhead, within which it is necessary to regulate or monitor drinking water threats.

The Site is within both the Saugeen Valley Source Protection Plan and the Grand River Source Protection Region. The Approved Source Protection Plans have identified the eastern and southeastern portions of the Site to be within either a WHPA-C or WHPA-D, representing a capture zone time frame of between 2 to 25 years (**Figure 4**). In addition, the majority of the wetlands across the Study Area are located within a SGRA (**Figure 5**).

Groundwater and surface water resources within a SGRA or WHPA are relatively sensitive to chemical or pathogen contamination and / or changes in groundwater recharge. Although precautionary measures to protect groundwater and surface water must be applied on all projects, additional protection measures and related documentation may be required where study areas fall within these zones. These include maintenance of the site-specific water balance and limitations on the presence of potential contamination sources such as gas stations and dry cleaner facilities. Based on the current development plan, the Site development does not include any commercial facilities. A site-specific water balance has been completed by Crozier & Associates Consulting Engineers (Crozier) to document pre-development recharge rates, and to look for opportunities to promote the recharge of clean water to meet or exceed pre-development recharge rates. The site-specific water balance is presented under separate cover.

It is important to note that delineation of the vulnerable areas based on regional mapping and do not consider site-specific conditions (i.e., type and thickness of the overlying material). The results of the drilling program indicates that the subsurface soils across the Study Area consists of sandy silt to silty sand till. The material was determined to have low hydraulic conductivity and therefore, the potential to impact deeper aquifers is limited.



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LEGEND

- SITE BOUNDARY
- PERMANENT WATERCOURSE
- SURFACE CONTOUR (1M)
- CARTOGRAPHIC WETLAND (LAND INFORMATION ONTARIO, 2022)
- PROVINCIALLY SIGNIFICANT WETLAND (LAND INFORMATION ONTARIO, 2022)
- DRAINAGE DIVIDE

NOTES:

SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)
CONTOURS:
SWOOP 2015

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SCALE 1:7,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

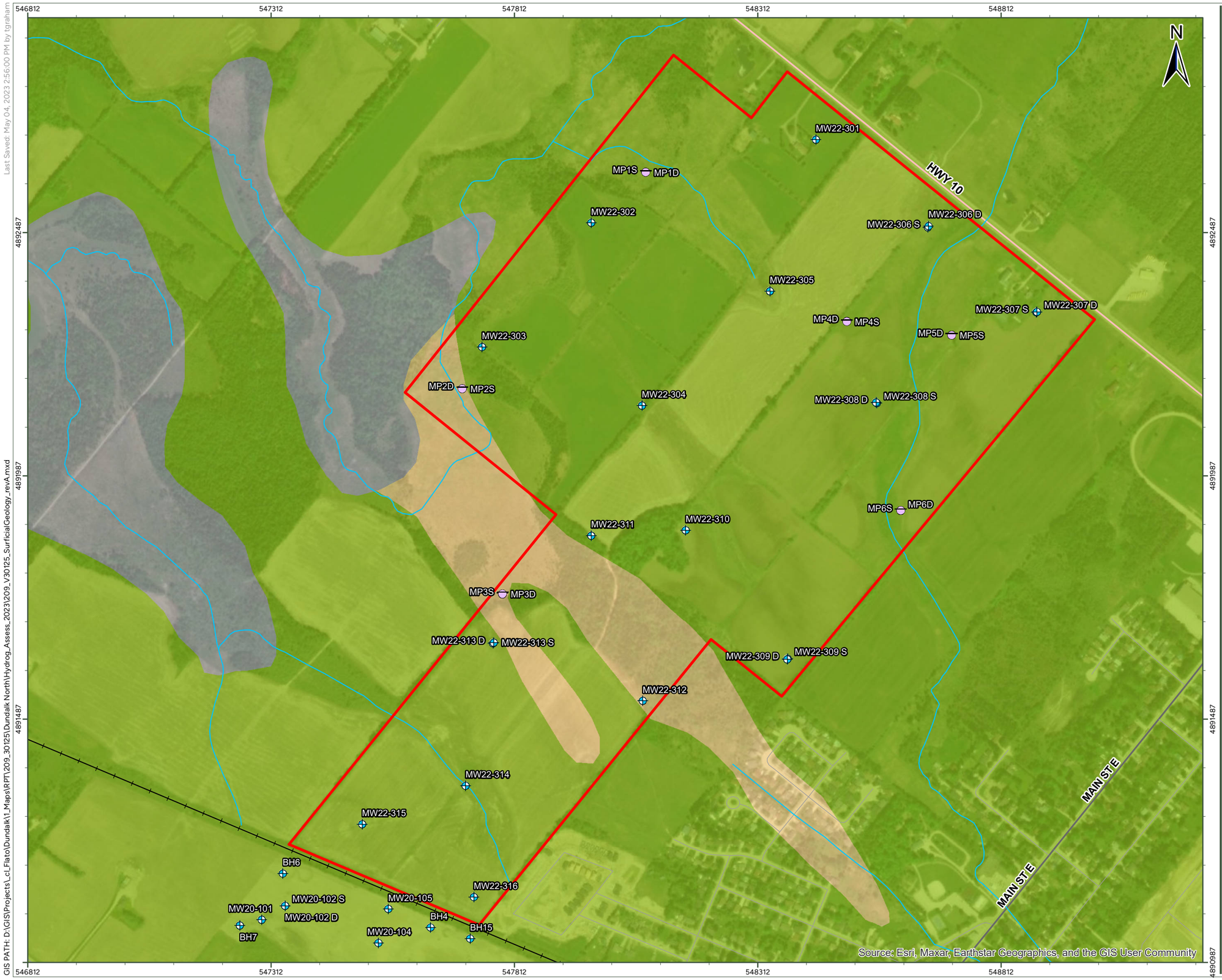
HYDROGEOLOGICAL ASSESSMENT

SITE TOPOGRAPHY

SLR

FIGURE NO: **2**

DATE: May 4, 2023 PROJECT NO: 209.V30125.00003



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LEGEND

- SITE BOUNDARY
- MONITORING WELL
- MINI-PIEZOMETER
- PERMANENT WATERCOURSE
- 5B: STONE-POOR, CARBONATE-DERIVED SILTY TO SANDY TILL
- 7A: SANDY DEPOSITS
- 20: ORGANIC DEPOSITS

NOTES:

SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)
SURFICIAL GEOLOGY OF SOUTHERN ONTARIO:
ONTARIO GEOLOGICAL SURVEY

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PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

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DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

HYDROGEOLOGICAL ASSESSMENT

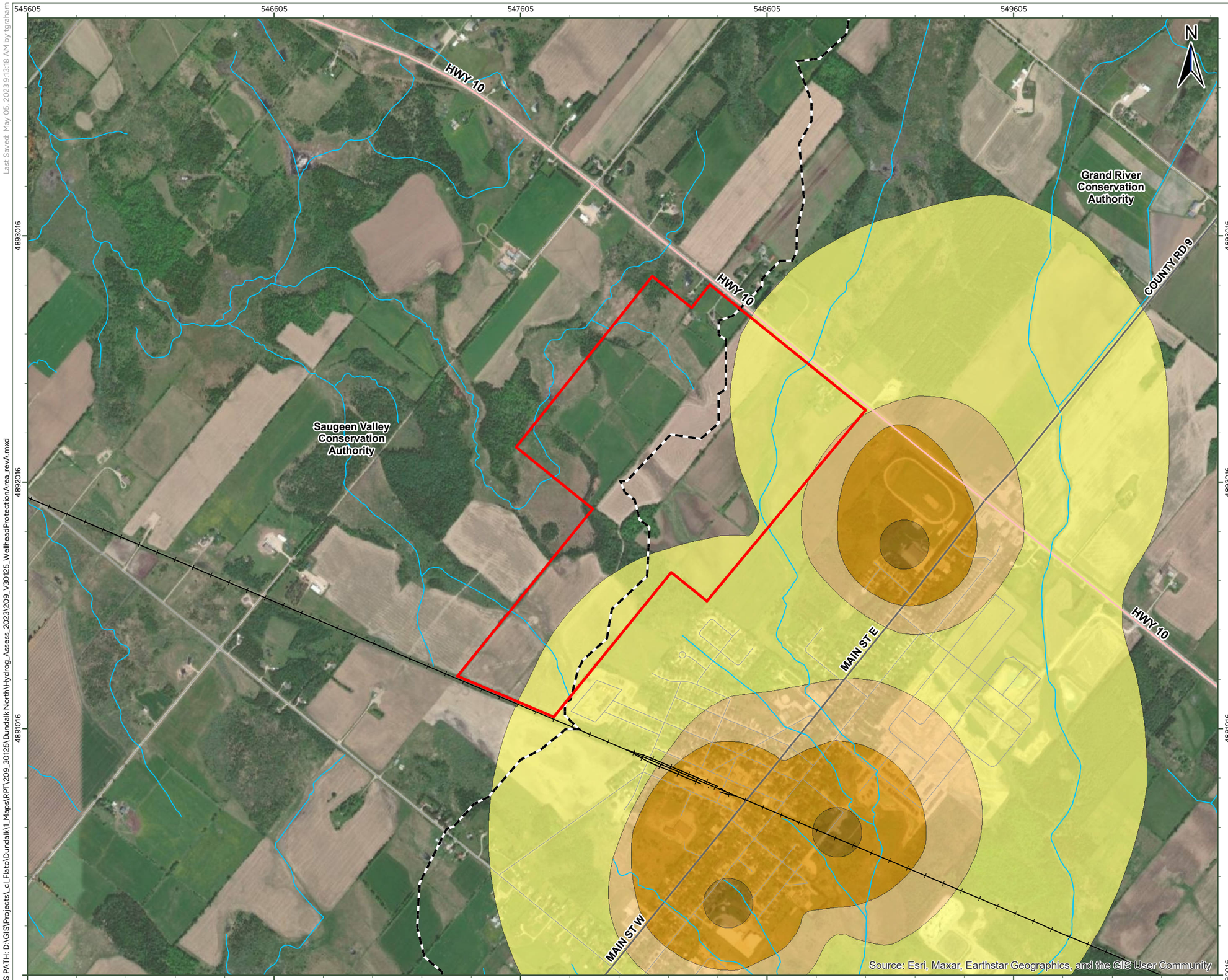
SURFICIAL GEOLOGY

SLR

FIGURE NO: 3

DATE: May 4, 2023

PROJECT NO: 209.V30125.00003



LEGEND

- SITE BOUNDARY
- INTERMITTENT WATERCOURSE
- PERMANENT WATERCOURSE
- CONSERVATION AUTHORITY BOUNDARY

WELLHEAD PROTECTION AREA

- A
- B
- C
- D

NOTES:

SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

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PAGE SIZE 11 x 17
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DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

HYDROGEOLOGICAL ASSESSMENT

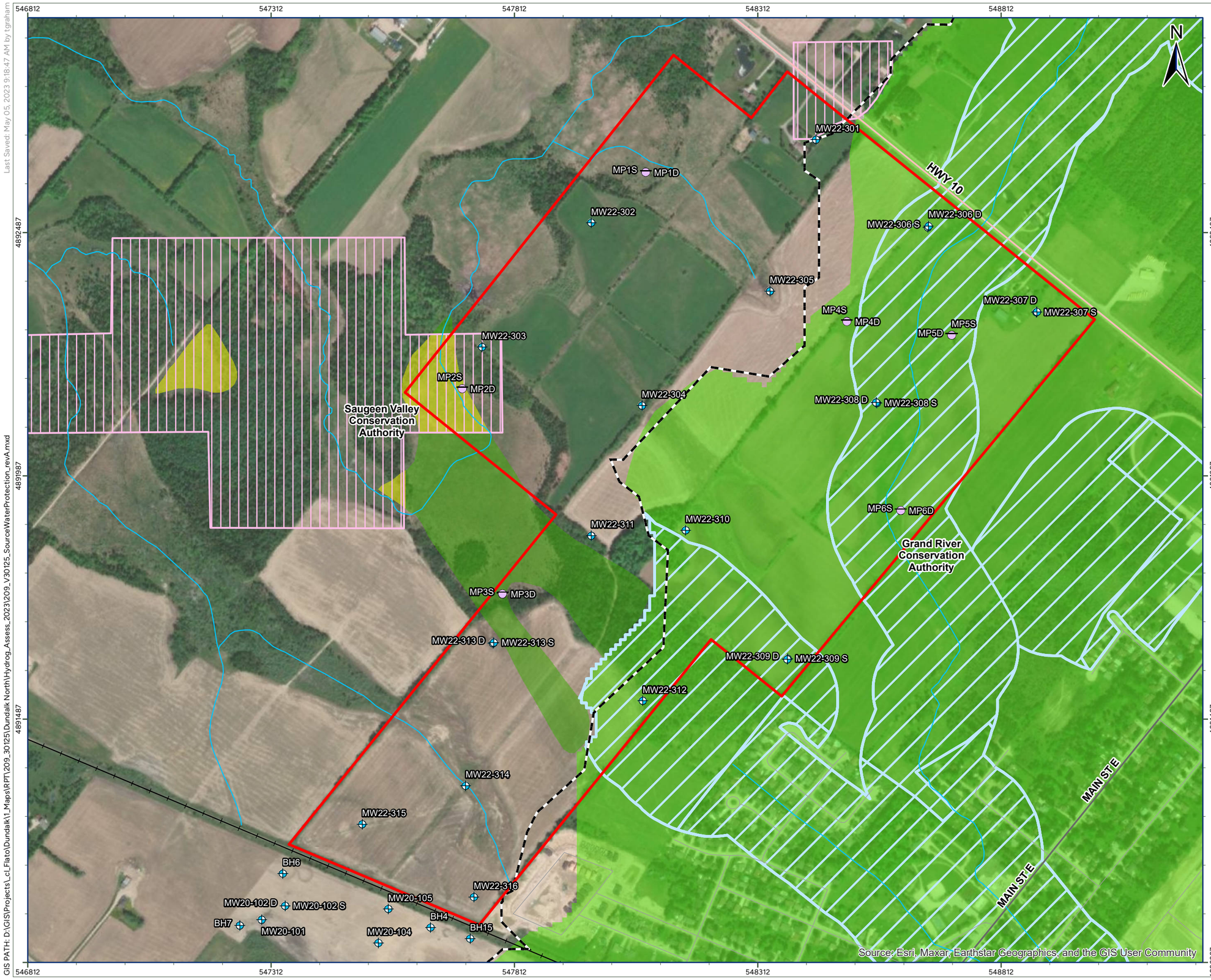
WELLHEAD PROTECTION AREA

SLR

FIGURE NO:
4

DATE: May 5, 2023

PROJECT NO: 209.V30125.00003



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LEGEND

- SITE BOUNDARY
- MONITORING WELL
- MINI-PIEZOMETER
- PERMANENT WATERCOURSE
- CONSERVATION AUTHORITY BOUNDARY
- INTAKE PROTECTION ZONE 3
- HIGHLY VULNERABLE AQUIFERS

SIGNIFICANT GROUNDWATER RECHARGE AREA

- 2
- 4
- 6

NOTES:

SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

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SCALE 1:7,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

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DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

HYDROGEOLOGICAL ASSESSMENT

SOURCE WATER PROTECTION

SLR

FIGURE NO: 5

DATE: May 5, 2023

PROJECT NO: 209.V30125.00003

3.0 Methodology

3.1 Installation of New Monitors

Sixteen (16) boreholes were advanced at select locations across the Site between April and May 2022. The boreholes were drilled using a track-mounted drill rig with 9" outer diameter hollow stem auger. A record of geological and hydrogeological conditions was logged during drilling using a split spoon sampler at approximately 0.76 m intervals down to the targeted depth of the monitoring well. At each borehole location, the soil stratigraphy and classification, moisture content, colour, appearance, soil structure (presence of laminations, heterogeneity, soil weathering, etc.), and odour was noted in general accordance with the Unified Soil Classification System.

All borehole locations were completed as monitoring wells. At five (5) of these locations, nested monitoring wells consisting of a shallow and deep counterpart were installed. The monitoring wells were constructed with a 50-millimetre (mm) diameter polyvinyl chloride (PVC) well pipe. In general, the monitoring wells were constructed with No. 10 slotted PVC screen approximately 1.5 m long. Monitor MW22-306D was constructed with a 3.0 m long screen as it was screened within the clayey silt material. A sand pack was placed around and slightly above the well screen, and the remaining upper portion of the borehole was sealed with bentonite. A steel monument casing was installed over the well at each monitoring location. Upon completion of the monitoring wells, the monitors were tagged registered with the MECP as required by Ontario Regulation (O. Reg.) 903, as amended. Details of the monitoring well construction are summarized in **Table 3-1**. The location of the monitoring wells are depicted in **Figure 6**, and borehole logs are provided in **Appendix B**.

Six (6) nested pairs of piezometers, for a total of twelve (12) mini-piezometers (MP1-S/D through MP6-S/D) were installed within the wetland areas across the Study Area in May 2022. These mini-piezometers were installed to assess groundwater-surface water interactions within the natural heritage features.

An additional five (5) nested pairs of piezometers, for a total of ten (10) mini-piezometers, were installed in April 2023 on the adjacent property north of the Study Area downgradient of the proposed SWM Pond (**Figure 6**). It is our understanding that the proposed SWM pond will discharge water in a northerly direction into the wetland. The purpose of these additional mini-piezometers is to investigate potential impacts in the wetland as a result of the SWM pond.

The mini-piezometers were constructed with a 19 mm diameter steel pipe threaded onto an approximately 0.33 m long screened drive point piezometer Solinst tip, and were installed to the targeted depth through direct push. A pilot hole was not advanced prior to the installation; as such, the screened material at each mini-piezometer location is unknown. The construction details of the mini-piezometers are provided in **Table 3-2**, and the location of the mini-piezometers are shown on **Figure 6**.

Table 3-1: Monitoring Well Details

Monitor	Ground Surface Elevation (masl)	Top of Pipe Elevation (masl)	Screen Interval (masl)	Screened Material
MW22-301	531.0	531.9	523.4-521.9	Sandy SILT TILL
MW22-302	522.6	523.6	518.1-516.5	Sandy SILT TILL
MW22-303	518.4	519.2	513.8-512.3	Sandy SILT TILL
MW22-304	523.5	524.4	519.4-517.9	Silty SAND TILL
MW22-305	523.7	524.8	519.2-517.6	Silty SAND TILL
MW22-306-S	522.9	523.7	519.8 – 518.3	Silty SAND TILL
MW22-306-D	522.8	523.7	516.8 – 513.8	Silty SAND TILL
MW22-307-S	528.0	528.7	523.4 – 521.9	Silty SAND TILL
MW22-307-D	527.9	528.8	519.4 – 517.9	Sandy SILT TILL
MW22-308-S	522.2	523.2	520.7 – 519.2	Silty SAND to Sandy Silt TILL
MW22-308-D	522.4	523.2	518.4 – 516.9	Silty SAND TILL
MW22-309-S	521.9	522.8	517.3 – 515.8	Silty SAND TILL
MW22-309-D	521.8	522.9	512.7 – 511.2	Silty SAND TILL
MW22-310	523.2	524.3	515.6 – 514.1	Silty SAND TILL
MW22-311	521.1	521.9	513.6 – 512.0	Sandy SILT TILL
MW22-312	520.6	521.7	517.6 – 516.0	SAND and GRAVEL
MW22-313-S	520.0	520.9	515.6 – 514.1	Sandy SILT TILL to Silty SAND TILL
MW22-313-D	520.0	521.1	510.9 – 509.3	Silty SAND TILL to Sandy SILT TILL
MW22-314	517.3	518.3	512.7 – 511.2	Silty SAND TILL
MW22-315	518.8	519.7	508.1 – 506.6	Sandy SILT TILL and SAND
MW22-316	520.1	521.0	512.5 – 510.9	Silty SAND TILL

Table 3-1: Mini-Piezometer Details

Monitor	Ground Surface Elevation (masl)	Top of Pipe Elevation (masl)	Screen Interval (masl)
MP1S	519.8	521.1	519.2 – 518.9
MP1D	519.8	521.3	518.3 – 518.0
MP2S	516.9	517.8	516.3 – 516.0
MP2D	516.9	518.2	515.3 – 515.0
MP3S	517.1	517.6	516.4 – 516.0
MP3D	517.0	517.8	515.4 – 515.1
MP4S	523.6	524.2	523.0 – 522.7
MP4D	523.6	524.4	521.9 – 521.6
MP5S	522.8	524.0	522.1 – 521.8
MP5D	522.7	523.9	521.1 – 520.7
MP6S	520.9	522.1	520.3 – 512.0
MP6D	520.9	522.1	519.4 – 519/0
MP301-S [1]	-	1.09	0.53 – 0.76
MP301-D [1]	-	1.31	1.51 – 1.74
MP302-S [1]	-	1.04	0.24 – 0.47
MP302-D [1]	-	0.94	1.28 – 1.51
MP303-S [1]	-	1.09	0.52 – 0.75
MP303-D [1]	-	1.30	1.55 – 1.78
MP304-S [1]	-	1.90	0.54 – 0.77
MP304-D [1]	-	1.33	1.52 – 1.75
MP305-S [1]	-	1.09	0.52 – 0.75
MP305-D [1]	-	1.28	1.56 – 1.79

1. Top of pipe reported in metres above ground surface. Reported top of pipe was measured manually prior to surveying.

3.2 Monitoring Well Development

Following installation, the monitoring wells were developed using dedicated tubing fitted with Waterra inertia foot valves. The monitoring wells were developed to remove any soil fines that may have infiltrated into the monitoring well and its surrounding sand pack during the installation process, and to improve the hydraulic connection between the well and geologic materials. Due to slow recovery, each well was purged dry and allowed to recover. Water was subsequently removed from the monitoring well until discontinuous flow was produced for a second time.

3.3 Water Level Monitoring

Groundwater levels were manually collected in each accessible monitor using a water level meter to collect baseline data prior to development. Water levels were collected on a quarterly basis commencing on May 13, 2022, with the most recent event occurring on March 28, 2023. The surface

water level and groundwater elevation were measured at the mini-piezometer locations to assess groundwater-surface water interactions within the wetland area.

To support a more comprehensive understanding of the Study Area, select monitoring wells and mini-piezometers were instrumented with automated dataloggers on May 13, 2022, in order to obtain continuous groundwater level readings. A barologger was also deployed coincident with the datalogger to measure changes in atmospheric pressure. Continuous water level measurements provide additional insight into the groundwater regime, particularly in response to precipitation events, as well as high-water level conditions. The dataloggers are downloaded every four (4) months while completing manual water level measurements across the Study Area. The dataloggers were removed from the mini-piezometers during the winter period to avoid minimize potential damage due to freeze-thaw events. The dataloggers were re-deployed in the mini-piezometers in spring. The new mini-piezometers installed in the spring 2023 were instrumented with dataloggers on April 26, 2023, to provide continuous groundwater elevations in support of the investigation to understand the potential impacts of the proposed SWM pond on the wetland.

3.4 In-Situ Hydraulic Conductivity and Analysis

In-situ hydraulic conductivity tests were completed in select monitoring wells to establish the permeability (hydraulic conductivity) of the formation in which the wells are screened. Hydraulic conductivity is a parameter that describes the ability of soil to allow water to move through it. The lower the hydraulic conductivity, the less water will be able to move through. Aquifers, such as sandy or gravelly soils, typically have a hydraulic conductivity of 10^{-6} metres per second (m/s) or greater, whereas aquitards (clay or dense silt) have a hydraulic conductivity of 10^{-8} m/s or less.

The testing involved the slug test method, whereby a slug of known volume was removed (rising head test) from each well. The water levels were recorded during the addition, removal, and recovery stages of the slug test using a Diver datalogger temporarily installed in the monitor. The in-situ hydraulic conductivity test was completed once the water level recovered to 90% of static conditions. The slug tests were analyzed in AQTESOLV using the Bouwer-Rice method (1976) for unconfined aquifers.

546812 547312 547812 548312 548812

4892487 4891987 4891487 4890987

N

HWY 10

MAIN ST E

MAIN ST E

Saugeen River Watershed

Upper Grand River Watershed

MW22-301
MP1S MP1D
MW22-302
MW22-306 D
MW22-306 S
MW22-305
MP4S MP4D
MW22-307 D
MW22-307 S
MP5S MP5D
MW22-303
MP2S MP2D
MW22-304
MW22-308 D MW22-308 S
MW22-311
MW22-310
MP6S MP6D
MP3S MP3D
MW22-313 D MW22-313 S
MW22-309 D MW22-309 S
MW22-312
MW22-314
MW22-315
BH6
MW22-316
MW20-102 D MW20-102 S
MW20-105
BH7
MW20-101
BH4
MW20-104
BH15

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

LEGEND

- SITE BOUNDARY
- MONITORING WELL
- MINI-PIEZOMETER
- PERMANENT WATERCOURSE
- DRAINAGE DIVIDE

NOTES:

SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 50 100 200 300 m

SCALE 1:7,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

HYDROGEOLOGICAL ASSESSMENT

SITE PLAN

SLR

FIGURE NO: 6

DATE: May 4, 2023 PROJECT NO: 209.V30125.00003

4.0 Local Geology and Hydrogeology

4.1 Geology and Hydrostratigraphy

4.1.1 Surficial Geology

Based on a review of the Ontario Geological Survey mapping (OGS, 2010), the surficial geology of the Study Area is primarily Elma Till, which is characterized as a stone-poor sandy silt to silty sand till. The wetland found along the western portion of the Study Area is mapped to consist of glaciofluvial sandy river deposits, with minor organic deposits located within wetland areas.

Surficial geology of the Study Area was also characterized by advancing boreholes at select locations across the property. Borehole logs are provided in **Appendix B**. Geological cross-sections of the Study Area, as indicated in **Figure 7**, are presented in **Figure 8** and **Figure 9**.

Based on the results of the drilling program, the Study Area was comprised of a till unit underlying the surficial, overturned topsoil. The till unit is composed of sandy silt to silty sand material and was located at approximately 506.4 (MW22-315) masl to 530.9 (MW22-301) masl. Interbedded within the till unit are discontinuous sand to sandy gravel lenses. The upper 3 to 5 m of the till unit is weathered, and shows root structures, fractures, and oxidized soils. This more permeable weathered soil hosts the water table, primarily due to poor drainage with depth. The glacial till is estimated to be approximately 35 m thick underneath the Site. The glacial till material serves as an aquitard protecting the underlying bedrock aquifer due to its low permeability and substantial thickness.

4.1.2 Bedrock Geology

Boreholes advanced across the Study Area were terminated once the targeted depth of the shallow monitoring wells were reached. As such, bedrock was not encountered during drilling. However, a review of the MECP WWR database indicates that the bedrock in the area lies between 22 mbgs (MECP well ID 2506475) to 36 mbgs (MECP well ID 2515624). The bedrock consists mostly of dolostone/limestone, likely from the Guelph Formation.

Source Protection documents from the GRCA indicates that the bedrock is composed of 88 m of both the Guelph Formation and the Gasport Formation (Lake Erie Region Source Protection Committee, 2021). The Guelph Formation consists of porous, fine to medium crystalline, medium to massive irregularly bedded dolostone (Armstrong, 2010). The underlying Gasport Formation consists of thick- to massive-bedded, fine to coarse-grained dolostone and dolomitic limestone (Armstrong, 2010).

4.2 Groundwater Monitoring

4.2.1 Groundwater Monitoring

Groundwater level measurements were recorded at each accessible monitoring well and mini-piezometer location commencing in May 2022 with the most recent event occurring in March 2023. Monitors MP1 S/D, MP4 S/D, MP5 S/D, MW22-302, MW22-304, MW22-306 S/D, MW22-309S, MW22-313 S/D and MW22-316 were instrumented with Diver dataloggers to collect continuous water level measurements at 12-hour intervals. Groundwater elevations and hydrographs are provided in **Appendix C**. It is noted that continuous groundwater elevations are unavailable for MW22-313 S/D between June 3 and June 14 as the logger was temporarily removed from the well. Continuous water levels are also periodically unavailable between June 27 and July 4 at all monitoring wells due to hydraulic conductivity testing.

Groundwater elevations across the Study Area fluctuated seasonally between May 2022 and March 2023. During the spring 2022 monitoring event, water levels in the monitoring wells ranged between

515.13 masl (MW22-301) and 530.83 (MW22-313D), where groundwater elevations were generally within the upper 2 m. In comparison, water levels during the summer 2022 event ranged between 514.85 masl (MW22-315) and 528.42 masl (MW22-301). During the fall 2022 monitoring event, groundwater levels ranged between 513.80 masl (MW22-315) and 526.23 masl (MW22-301). Groundwater levels were measured to be highest during the spring 2023 monitoring event with groundwater levels ranging between 516.56 masl (MW22-315) and 530.21 masl (MW22-301). It is noted that tile drains are present across the majority of the Study Area, which can influence groundwater elevations locally. The tile drains situated beneath the field in the vicinity of the Site drain to the wetland directly north of the Site.

Groundwater elevations between the shallow and deep monitors at the nested monitoring well locations are comparable, although flashier water levels (in response to precipitation) were observed in the shallow monitors. This is attributed to the fact that the shallow monitor is screened within the weathered till, and the deeper monitor is screened within the unweathered till.

Groundwater elevations in mini piezometers demonstrate a similar response to seasonal fluctuations as the groundwater monitors. Groundwater elevations were high in spring, gradually decreased moving into the summer.

4.2.2 Horizontal Groundwater Flow

The interpreted groundwater contours for March 2023, representing a generally high-water table position, are presented in **Figure 10**. Water levels during spring conditions are of particular interest as it typically represents the highest groundwater elevations and will therefore inform the engineering design of residential development. The interpreted groundwater flow direction is generally in southwesterly direction along the west portion of the Study Area. Along the eastern portion of the Study Area, the groundwater flow direction is influenced by localized flow towards the creek. There is a watershed drainage divide that runs through the centre of the Study Area in a north-south direction separating the two directions of groundwater flow. Shallow groundwater contours at the Study Areahave been interpreted mimic ground surface topography. The horizontal component of groundwater flow travels in the weathered upper till.

4.2.3 Vertical Groundwater Flow

Vertical hydraulic gradients were calculated between the shallow and deep monitors at the nested monitoring well locations to assess groundwater discharge/recharge conditions across the Study Area. Vertical hydraulic gradients were also calculated at the mini-piezometer location to assess groundwater-surface water interactions within the wetland located east of the Study Area. The vertical hydraulic gradients are provided in **Table C-3, Appendix C**.

Groundwater elevations were comparable between the shallow and deep monitor at nested location MW22-309. Measured hydraulic gradients ranged from 0.01 m/m to 0.03 m/m, indicating very weak to negligible downward groundwater movement. At nested location MW22-306, MW22-307, and MW22-308, consistently weak upward hydraulic gradients were recorded (-0.01 m/m to -0.12 m/m), indicating weak groundwater discharge conditions. There was no notable trend at nested location MW22-313.

The shallow and deep monitor at each nested monitoring well locations were screened within the silty sand to sandy silt till, suggesting that in general, weak groundwater discharge conditions are observed within the till unit.

Groundwater elevations at MP6 was generally higher in the deeper piezometers than the shallow, suggesting there are some groundwater contribution to this feature. In contrast, mini piezometers at locations MP2, MP3, MP4, and MP5 generally exhibit groundwater elevations higher in the shallow piezometer, where data exists, indicating that the features are primarily sustained by surface water run-off and precipitation. This is supported by the fact that surface water levels at these monitoring locations are commonly dry in the summer period. Groundwater elevations were comparable between

the shallow and deep mini piezometers at MP1, indicating that there were negligible (i.e., -0.03 to 0.03 m/m) hydraulic gradients.

4.3 Hydraulic Conductivity

In-situ hydraulic conductivity tests were completed at six groundwater monitoring wells at the Study Area. The results of the hydraulic conductivity tests are provided in **Table 4-1**, and the AQTESOLV analysis are provided in **Appendix D**.

Table 4-1: Hydraulic Conductivity

Monitor	Hydraulic Conductivity (m/s)	Screened Strata
MW22-306S	1.4 x10^{-8}	Silty sand till
MW22-306D	7.6 x10^{-8}	Silty sand till
MW22-309S	1.0 x10^{-8}	Silty sand till
MW22-313S	2.2 x 10^{-7}	Silty sand till
MW22-313D	7.6 x 10^{-10}	Silty sand till to Sandy silt till
MW22-316	2.6 x 10^{-7}	Silty sand till

The geometric mean hydraulic conductivity for the five (5) tested monitoring wells is 5.7 x 10^{-8} m/s, with a measured range of 2.2 x 10^{-7} to 1.4 x 10^{-8} m/s. This corresponds to the upper weathered portion of the glacial till. Monitor MW22-313D was screened deeper in the unweathered glacial till aquitard and was found to have a hydraulic conductivity 30 times lower than the upper material at 7.6 x 10^{-10} m/s. The results are consistent with those reported by Freeze and Cherry (1979) for similar soils, and for soils located on the Glenelg Phase 2 development area which is situated immediately south of Glenelg Phase 3.

4.4 MECP Water Well Record Database

Well records from the MECP WWR database were reviewed to assess the stratigraphy and water use of wells located within a 500 m radius of the Study Area. The locations of the wells are shown in **Figure 11**, and a summary is provided in **Appendix E**. Copies of the well records are provided in **Appendix E**.

Fifty (50) MECP wells were identified within 500 m of the property. Twenty-five (25) of those wells were for water supply purposes, fourteen (14) were observation/monitoring wells or test holes, nine (9) were noted to be abandoned and two (2) wells were without a noted water use. None of the water supply wells were noted to be less than 10 m in depth. The wells were screened within one of two units: the overburden aquifer and the deeper bedrock aquifer.

Several local residential wells tap into the upper 10 m of the bedrock, with the bedrock surface generally at about 22 to 36 mbgs. Based on the pumping rate, a sufficient water supply is available within the bedrock aquifer.

The bedrock aquifer is composed of both the Guelph Dolostone Formation and the underlying Gasport Dolostone Formation. The upper bedrock is inferred to be of low permeability, and the municipal production zone lies in the middle of the sequence. Municipal well D4 is found approximately 460 m southeast of the Site boundary, and D3 and D5 to the southeast approximately 1020 m and 1225 m, respectively (**Figure 11**). Several local residential wells also tap a sand and gravel deposit that overlies the bedrock. This deposit is laterally discontinuous, as it is not present at many locations.

546812 547312 547812 548312 548812

4892487 4891987 4891487 4890987

A 7167449

B 1700350

1700351

MW22-301

MP1S MP1D

MW22-302

HWY 10

MW22-306 D

MW22-306 S

1700352

1701454

2515188

MW22-305

MW22-307 S MW22-307 D

MP4S MP4D

MP5D MP5S

Saugeen River Watershed

MW22-303

MP2S MP2D

MW22-304

MW22-308 D MW22-308 S

MP6S MP6D

MW22-310

MW22-311

Upper Grand River Watershed

2515004 A'

2515005

MP3S MP3D

2512639

MW22-313 D MW22-313 S

MW22-309 D MW22-309 S

2505795

MW22-312

7331881

7331884

2503216

2506029

7331883 7331885

2509109

MW22-314

MAIN ST E

7331886 7331882

MW22-315

7385248

BH6 7389879

7285242

MW22-316

MW20-102 S MW20-102 D MW20-105

7237016

2502801

MW20-101

BH4

2515624 2500900

BH7

MW20-104

BH15

B' 2506475

7385249

2500882

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

LEGEND

- SITE BOUNDARY
- MONITORING WELL
- MINI-PIEZOMETER

MECP WELL LOCATION (WWIS, 2022)

- LIVESTOCK
- MUNICIPAL
- MONITORING
- DOMESTIC
- UNCLASSIFIED
- PERMANENT WATERCOURSE
- DRAINAGE DIVIDE
- CROSS SECTION
- RAIL TRAIL

NOTES:

SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 50 100 200 300 m

SCALE 1:7,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

HYDROGEOLOGICAL ASSESSMENT

CROSS-SECTION LOCATIONS

SLR

FIGURE NO: 7

DATE: May 4, 2023 PROJECT NO: 209.V30125.00003

A

NORTHWEST

7167449

MW22-302
522.64 m

MW22-305
523.74 m

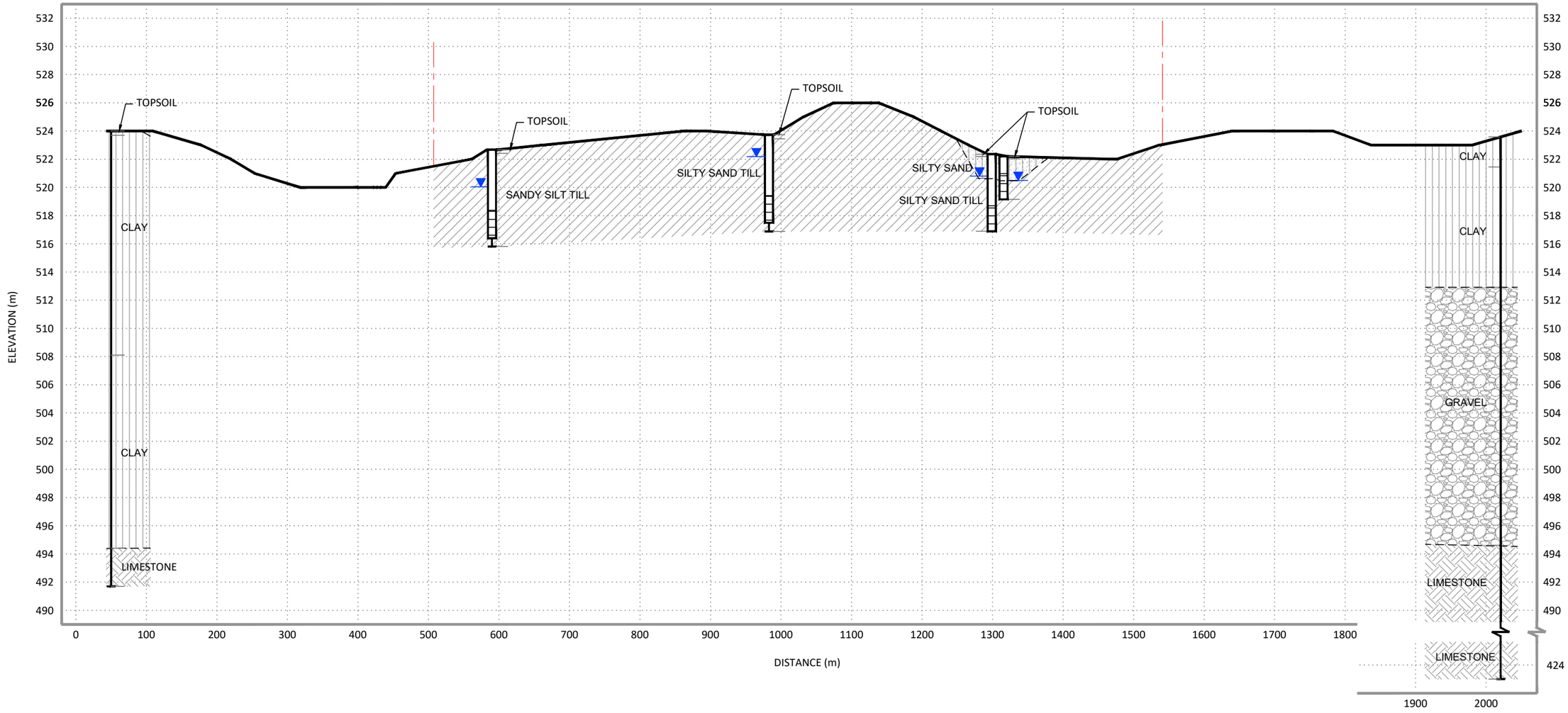
MW22-308D
522.35 m

MW22-308S
522.20 m

A'

SOUTHEAST

2515005



LEGEND:

- PROPERTY BOUNDARY
- MONITORING WELL
- MECP WATER WELL
- WATER LEVEL (MARCH 28, 2023)
- CLAY
- SILTY SAND
- SILTY SAND TILL TO SANDY SILT TILL
- SAND AND GRAVEL
- BEDROCK
- WELL
- SCREENED INTERVAL
- BOREHOLE
- END OF HOLE

NOTES:

1. MW22-308S/D AND MW22-313 WERE BOTH FROZEN DURING THE MARCH 2023 WATER LEVEL EVENT.

0 2.5 5 10 15 m

VERTICAL SCALE 1:300

0 50 100 200 300 m

SCALE 1:6,000

WHEN PLOTTED CORRECTLY ON A 11 x 17 PAGE LAYOUT

NAD 1983 UTM Zone 17 T

FLATO DEVELOPMENTS INC.
NORTHWEST DEVELOPMENT
DUNDALK, ON

HYDROGEOLOGICAL ASSESSMENT

GEOLOGICAL CROSS SECTION A-A'

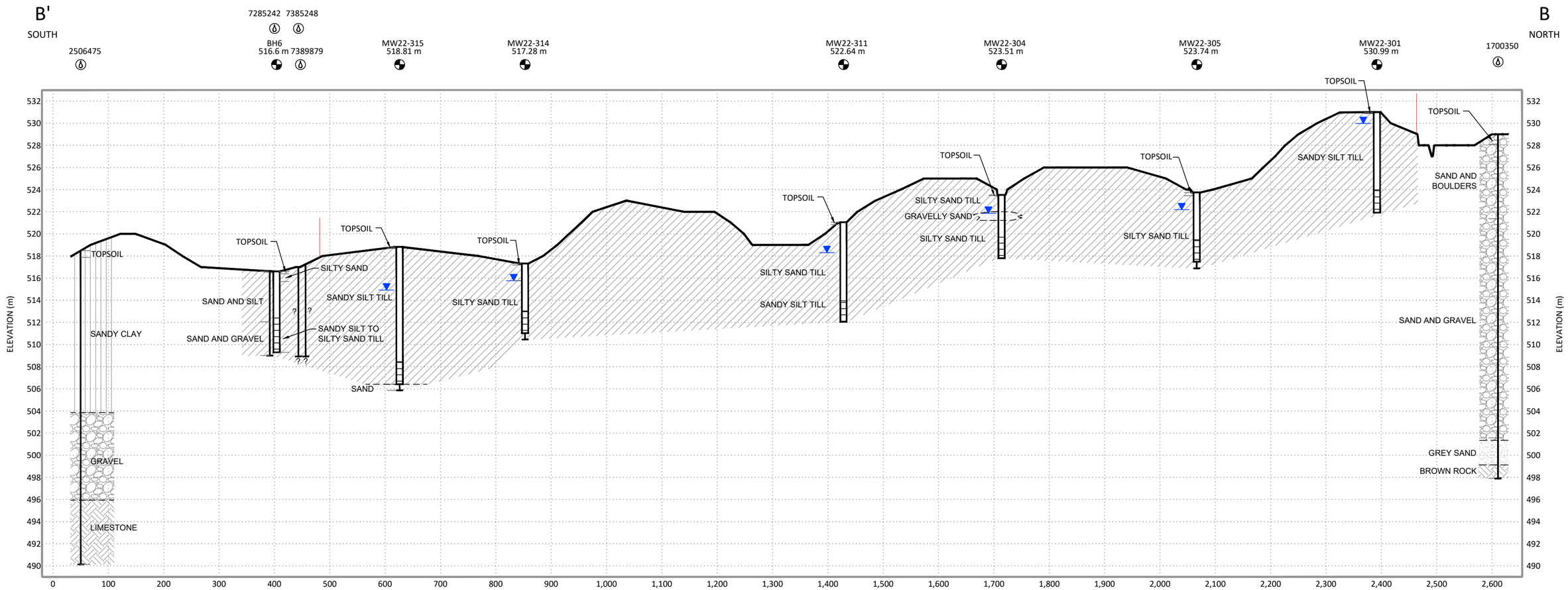
SLR

FIGURE NO:
8

DATE: May 1, 2023

PROJECT NO: 209.30125.00003

Cadfile name: S_209-30125-00003-A4.dwg



LEGEND:

- PROPERTY BOUNDARY
- MONITORING WELL
- MECP WATER WELL
- WATER LEVEL (MARCH 28, 2023)
- CLAY
- SILTY SAND
- SILTY SAND TILL TO SANDY SILT TILL
- SAND AND GRAVEL
- SAND
- BEDROCK
- WELL
- SCREENED INTERVAL
- BOREHOLE
- END OF HOLE

NOTES:
1. MW22-308S/D AND MW22-313 WERE BOTH FROZEN DURING THE MARCH 2023 WATER LEVEL EVENT.

0 2.5 5 10 15 m
VERTICAL SCALE 1:300
0 50 100 200 300 m
SCALE 1:6,000
WHEN PLOTTED CORRECTLY ON A 11 x 20 PAGE LAYOUT
NAD 1983 UTM Zone 17 T

FLATO DEVELOPMENTS INC.
NORTHWEST DEVELOPMENT
DUNDALK, ON

HYDROGEOLOGICAL ASSESSMENT

GEOLOGICAL CROSS SECTION B-B'

SLR

FIGURE NO:
9

DATE: May 1, 2023
PROJECT NO: 209.30125.00003

Cadfile name: S_209-30125-00003-A4.dwg

546812 547312 547812 548312 548812

4892487 4891987 4891487 4890987

N

Saugeen River Watershed

Upper Grand River Watershed

MP1D
MP1S 520.11
MW22-301 530.21
MW22-302 521.43
MW22-303 517.78
MP2D
MP2S 517.24
MW22-304 523.39
MW22-305 523.74
MW22-306 D
MW22-306 S 522.70
MW22-307 S 527.60
MW22-307 D
MP4D
MP4S 523.71
MP5D
MP5S 522.76
MW22-308 D
MW22-308 S Frozen
MP6D
MP6S 521.19
MW22-309 D
MW22-309 S 521.72
MW22-310 522.95
MW22-311 519.65
MP3D
MP3S 517.16
MW22-312 Frozen
MW22-313 S Frozen
MW22-313 D
MW22-314 517.27
MW22-315 516.56
MW22-316 519.21
BH6
MW20-102 D
MW20-102 S
MW20-101
BH7
MW20-105
MW20-104
BH4
BH15

518 520 522 524 526 528 530

HWY 10

MAIN ST E

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

LEGEND

- SITE BOUNDARY
- MONITORING WELL
- MINI-PIEZOMETER
- INFERRED GROUNDWATER ELEVATION CONTOUR
- INFERRED GROUNDWATER FLOW DIRECTION
- 519.1 GROUNDWATER ELEVATION (MARCH 28, 2023)
- PERMANENT WATERCOURSE
- DRAINAGE DIVIDE

NOTES:

SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 50 100 200 300 m

SCALE 1:7,500
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

HYDROGEOLOGICAL ASSESSMENT

INTERPRETED GROUNDWATER FLOW DIRECTION - MARCH 2023

SLR

FIGURE NO: 10

DATE: May 10, 2023 PROJECT NO: 209.V30125.00003

Last Saved: May 05, 2023 9:04:47 AM by tgraham

GIS PATH: D:\GIS\Projects_cl_Flato\Dundalk1_Maps\RPT\209_30125\Dundalk North\Hydrog_Assess_2023\209_V30125_MECP_Well_Locations_revA.mxd

LEGEND

- SITE BOUNDARY
- SITE BOUNDARY (500M BUFFER)
- INTERMITTENT WATERCOURSE
- PERMANENT WATERCOURSE

MECP WELL LOCATION (WWIS, 2023)

- LIVESTOCK
- MUNICIPAL
- MONITORING
- DOMESTIC
- TEST HOLE
- NOT USED
- UNCLASSIFIED

NOTES:

SITE BOUNDARY; SCHAEFFER DZALDOV BENNETT LTD.; 2022
BASEDATA:
ONTARIO MINISTRY OF NATURAL RESOURCES, LAND INFORMATION ONTARIO (LIO)

0 50 100 200 300 m

SCALE 1:5,000
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 17N
THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

DUNDALK VILLAGE TWO INC.
GLENELG PHASE 3
DUNDALK, ONTARIO, CANADA

HYDROGEOLOGICAL ASSESSMENT

MECP WELL LOCATIONS

SLR

FIGURE NO: 11

DATE: May 5, 2023

PROJECT NO: 209.V30125.00003

5.0 Impact Assessment for Potential Receptors

5.1 Shallow Groundwater Features

Groundwater elevations across the Study Area are relatively shallow (generally less than 5 m) in the spring and fluctuate on a seasonal basis. Higher water levels were observed in late winter into spring following precipitation events and snowmelt. Water levels decreased into the drier summer months. Water levels generally follow ground surface elevations, where higher groundwater elevations occur at the north-western edge of Study Area, and lower groundwater elevations within the southern portion of the property.

During the spring season, the water level is hosed by surficial silty sand, and sand/gravel pockets that is noted to be discontinuous across the property. Water levels in these monitors drop into the underlying weathered till unit in the drier summer months, and subsequently into the unweathered till. The weathered till unit has an estimated hydraulic conductivity of 2×10^{-7} m/s. Based on a review of the MECP WWR records, the till unit extends to approximately 35 mbgs. The hydraulic conductivity of the unweathered till aquitard is estimated at 7.6×10^{-10} m/s, approximately 30 times lower than the weathered till.

5.2 Potable Wells

The Village of Dundalk relies on groundwater supply from wells screened within the dolostone bedrock that extends under the Site. The well capture zones have been documented by the Lake Erie Region Source Protection Committee and extend under the eastern portion of the Study Area within the bedrock. The upper bedrock is inferred to be of low permeability, and the municipal production zone lies in the middle of the sequence. Municipal well D4 is found approximately 460 m southeast of the Study Area boundary, and D3 and D5 to the southeast approximately 1020 m and 1225 m, respectively (**Figure 11**). Given the thickness of the aquitard soils at this Study Area and the fact that there will be no commercial facilities or onsite sewage disposal through private septic beds, no impact to the groundwater quality in the aquifer is expected. In addition, there are no anticipated hydrogeological impacts due to the proximal distance of the municipal wells to the Study Area. Nevertheless, pre-development recharge will have to be maintained in the post-development condition.

Rurally there are several surrounding individual residential private wells that tap into the dolostone bedrock and have been drilled to depths of approximately 28 to 83 m. These residential water wells are a relatively low draw on the groundwater and given the thickness of the overlying clay aquitard, is not expected to be affected by the proposed development provided groundwater recharge is maintained.

Monitoring wells have been installed at the property as part of the site-specific investigations to document stabilized groundwater conditions. Monitoring is on-going and is planned to continue through construction. When the monitoring wells are determined to be no longer required, or if they are determined to be at risk of damage from grading and construction, the wells should be properly decommissioned in accordance with O. Reg. 903. Decommissioning a well which is no longer in use helps ensure the safety of those in the vicinity of the well, prevents surface water infiltration into an aquifer via the well, prevents the vertical movement of water within a well, conserves aquifer yield and hydraulic head, and can potentially remove a physical hazard.

5.3 Surface Water Features

A number of small unnamed tributaries are present at the Study Area; there are two tributaries located in the north and south ends of the Study Area that drain towards the northeast within the SRW, and one tributary within a wetland situated along in the eastern portion of the Study Area that drains towards the south within the GRW. There are also unevaluated wetlands on the Site. The wetlands will be evaluated as part of the EIS to be submitted under separate cover.

Groundwater monitoring completed across the Study Area indicates that in general, the wetland features across the property are primarily fed by precipitation and surface water run-off. However, at mini-piezometer location MP6 located within the GRW, consistently upward hydraulic gradients were recorded indicating groundwater contributions to this feature. A site-specific water balance and corresponding mitigation measures will be assessed in order to ensure that these features are not affected by development.

5.4 Construction Dewatering

Typically, temporary excavations for basements will remain dry from a groundwater inflow perspective, due to the low permeability soils and relatively shallow depths. In the wet season, there may be some temporary groundwater discharge that can be handled by sump and pump techniques. Due to the expected low volumes, it is not expected that Permit to Take Water (PTTW) or Environmental Activity and Sector Registry (EASR) approvals will be required for basement foundations which are anticipated to be fairly shallow. Additional evaluations of dewatering requirements will be completed during detailed design.

6.0 Conclusion

The following presents the conclusions of the Hydrogeological Assessment for the proposed Glenelg Phase 3 development.

- The Study Area is predominantly underlain by surficial sandy silt to silty sand till deposits up to 5 m thick. The upper weathered portion of the till unit has an estimated average hydraulic conductivity of 5.7×10^{-8} m/s. The unweathered glacial till aquitard was found to have a hydraulic conductivity 30 times lower at 7.6×10^{-10} m/s.
- The Study Area lies along a watershed drainage divide that runs through the centre of the property in a north-south direction.
- Groundwater is interpreted to flow primarily in a southwesterly direction along the western portion of the Site and towards the eastern creek direction along the eastern portion of the Study Area.
- There are groundwater contributions to select wetland areas within the GRW, notably at mini-piezometer location MP6. It will be important to maintain groundwater contributions to these natural heritage features. No groundwater discharge conditions were recorded at the remaining mini-piezometer locations. Instead, these features are primarily sustained by precipitation and surface water run-off.
- It is recognized that the Site is located within a WHPA and SGRA.
- Municipal well D4 is located approximately 460 m southeast of the Study Area. In addition, municipal wells D3 and D5 are located approximately 1020 m and 1225 m, respectively, southeast of the Study Area. There are no anticipated hydrogeological impacts due to the proximal distance of the municipal wells to the proposed development area and low permeable surficial soils present at the Study Area.
- There are several surrounding individual residential private wells that tap into the dolostone bedrock and overburden aquifer unit. The residential water wells are a relatively low draw on the groundwater and given the thickness of the overlying clay aquitard, is not expected to be affected by the proposed development provided groundwater recharge is maintained.

7.0 Closure

We trust that this report satisfies your requirements at this time.

Regards,

SLR Consulting (Canada) Ltd.

Jessica Vu, M.Sc., G.I.T.
Environmental Scientist

Michael Venhuis, M.Sc., P.Geo.
Senior Hydrogeologist

Claire Elliott, M.Sc., G.I.T
Environmental Scientist

8.0 References

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Appendix A Development Plan

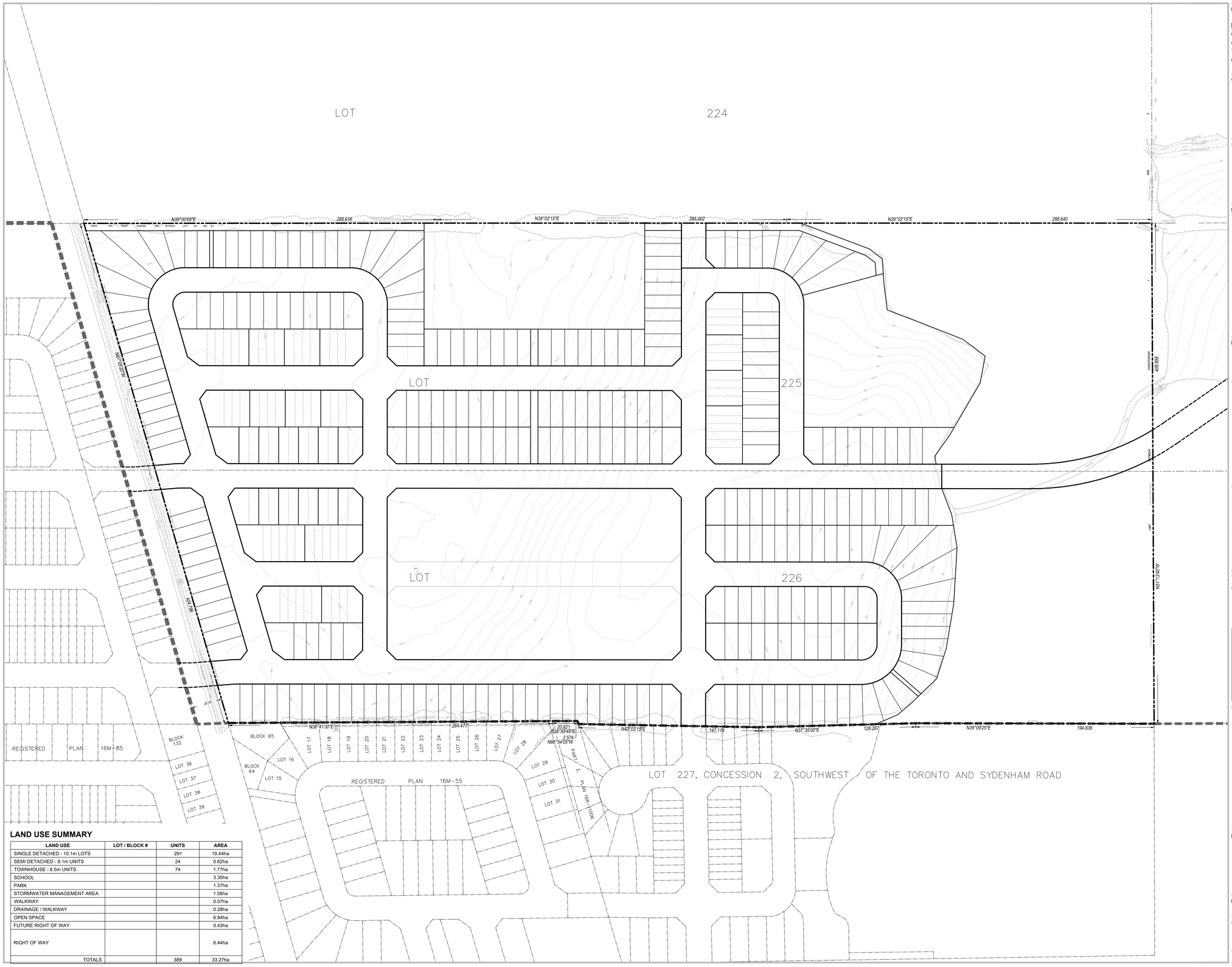
Hydrogeological Assessment

Glenelg Phase 3

Dundalk Village Two Inc.

SLR Project No.: 209.30125.00003

May 25, 2023



LAND USE SUMMARY

LAND USE	LOT / BLOCK #	UNITS	AREA
SINGLE DETACHED - 10.1m LOTS		291	10.44ha
SEMI DETACHED - 8.1m UNITS		24	0.62ha
TOWNHOUSE - 6.5m UNITS		74	1.77ha
SCHOOL			3.35ha
PARK			1.37ha
STORMWATER MANAGEMENT AREA			1.56ha
WALKWAY			0.07ha
DRAINAGE / WALKWAY			0.28ha
OPEN SPACE			6.94ha
FUTURE RIGHT OF WAY			0.43ha
RIGHT OF WAY			6.44ha
TOTALS		389	33.27ha

LEGAL DESCRIPTION

PART OF LOTS 225 AND 226
CONCESSION 2, SOUTHWEST OF THE TORONTO AND SYDENHAM ROAD
GEOGRAPHIC TOWNSHIP OF PROTON
TOWNSHIP OF SOUTHGATE
COUNTY OF GREY

OWNER'S CERTIFICATE

I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.

DATE: _____

SHAKIR REHMATULLAH - PRESIDENT
DUNDALK VILLAGE TWO INC.

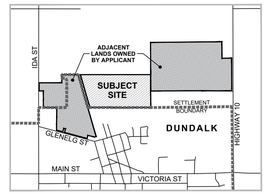
SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE: _____

DAN DZALDOV - O.L.S.
SCHAEFFER DZALDOV BENNETT LTD.

KEY PLAN



SUBJECT SITE

NORTH

SCALE
0 .25 .5 .75 1km

LEGEND

- PROJECT BOUNDARY LINE
- RIGHT OF WAY LINE
- BLOCK LINE
- LOT LINE
- PARCEL FABRIC

REVISION No.	DATE	ISSUED / REVISION	BY

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT R.S.O. 1990 C.P.13 AS AMENDED

A. AS SHOWN
B. AS SHOWN
C. AS SHOWN
D. 369 SINGLES, 18 SEMIS, & 72 TOWNHOUSES
E. AS SHOWN
F. AS SHOWN
G. AS SHOWN
H. MUNICIPAL WATER SUPPLY
I. LOAM/SILT LOAM
J. AS SHOWN
K. ALL SERVICES AS REQUIRED (WATER, SANITARY, STORMWATER, HYDRO)
L. AS SHOWN

113 COLLIER STREET
BARRIE, ON, L4M 1H2
P: 705 728 0045 F: 705 728 2010
WWW.MHBCPLAN.COM
PLANNING
URBAN DESIGN
& LANDSCAPE
ARCHITECTURE
MHBC PLANNING

STAMP

DATE	MAY 10, 2023
FILE No.	15184AT
SCALE	1:1,400 (ARCH D)
DRAWN BY	M.M.
CHECKED BY	K.C.
OTHER	

PROJECT

GLENELG PHASE 3

DUNDALK VILLAGE TWO INC.
3621 HIGHWAY 7 EAST, SUITE 503
MARKHAM, ON L3R 0G6
P:(905) 479-9292 F:(905) 429-9165
WWW.FLATOGROUP.COM

NORTH

FILE NAME
DRAFT PLAN OF SUBDIVISION

DWG No. 1 of 1

SCALE BAR

0 7 14 21 28 35 52.5 70 105 140m

MEASUREMENTS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

N:\Southgate\15184AT\Drawings\Draft Plan\CAD\

Appendix B Borehole Logs

Hydrogeological Assessment

Glenelg Phase 3

Dundalk Village Two Inc.

SLR Project No.: 209.30125.00003

May 25, 2023

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Borehole LOG

BOREHOLE NO: ESA-3
SURFACE ELEVATION:

DEPTH (m)	SOIL DESCRIPTION	SAMPLE ID	% Recovery	TEST DATA (■SPT Count / ◆ % Moisture)	WELL COMPLETION NOTES
0	**TOPSOIL** Silty sand, organics, brown, soft, moist	0-2	45.8	5	
1	**Silty SAND TILL** Fine Sand, silty, trace clay, some gravel (angular) and some cobbles, light brown, soft moist to dry	*4-4.5 / DUP-3D	66.7	7	
		*5-7	50.0	14	
2		7.5-9.5	45.8	13	
3		10-12	91.7	>50	bentonite seal
4		12.5-14.5	60.4	>50	
5		15-17		49	
		*17.5-19.5 / DUP-3C	79.2	>50	
6		20-22	33.3		
	End of borehole at m				

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 2, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

Sheet 1 of 1

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-301
SURFACE ELEVATION: 530.99 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: SPT Count / % Moisture	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	530.99	**TOPSOIL**									
	530.86	Fine-coarse sand, silty, some organics (rootlets), gravel and cobbles (sub-angular), dark brown, soft, moist		0-2	37.5		7				
		Sandy SILT TILL Fine sand, some medium-coarse sand, some gravel (sub-angular/sub-rounded), occasional cobbles, trace clay, light brown, soft, moist-wet. Increasing gravel content with depth		2.5-4.5	41.7		16			bentonite seal	
1											530
				5-7	58.3		14				
2											529
	528.53	crushed cobbles, becomes hard/dense		7.5-9.5	58.3		40				
3	527.94	Sub-angular/angular gravel, crumbly, moist		10-12	58.3		>50				528
	527.18	Lower frequency (trace) medium-coarse sand, dense, moist		12.5-14.5	20.8		>50			grout	
4											527
				15-17	33.3		>50				
5											526
				17.5-19.5	12.5		>50				
6	524.89	No recovery			0.0		>50			bentonite seal	525
	524.13	**Sandy SILT TILL** Silty, trace medium-coarse sand, trace gravel, crushed cobbles, brown-grey, crumbly, dense, dry		22.5-24.5	4.2		>50				
7	523.37	Increased clay content, moist-wet									524
				25-27	12.5		>50			silica sand 50 mm 010 slot PVC pipe	
8											523
				27.5-29.5	16.7		>50				
9										end cap	522
		End of monitoring well at 521.92 m Well Completion Details: Screened interval from 523.45 m to 521.92 m Elevation at top of pipe (TOP) = 531.86 m Groundwater Information: Depth to groundwater from TOP = 1.03 m (May 13, 2022) * denotes soil sample taken for lab analysis									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 25, 2022
LOGGED BY: AW
DRILLED BY: Orbit Garrant

Notes: SPLIT SPOON; NO RECOVERY

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-302
SURFACE ELEVATION: 522.64 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80 100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	522.64	**TOPSOIL**								cement	
	522.39	Black-brown									
		Sandy SILT TILL		0-2	100.0		4				522
		Some CLAY, trace organics, trace gravel, dark-light brown, loose, dry-moist									
	521.88	Moist									
1				2.5-4.5	79.2		10				
	521.12	Wet									521
				5-7	16.7		3				
2											
	520.30	Increasing gravel with depth (angular / sub angular), increasing density with depth								bentonite seal	
				7.5-9.5	100.0		25				520
3	519.59	Wet									
				10-12	75.0		45				519
	518.83	Moist-wet									
4				12.5-14.5	83.3		42				
											518
				15-17	66.7		>50				
5											
	517.31	Drilled through cobble from 5.33 m - 5.64 m								silica sand 50 mm 010 slot PVC pipe	
	517.00	Grey-light brown									517
				18.5-20	41.7		>50				
6										end cap silica sand	
				20-22	41.7		>50				
										bentonite seal	516
		End of monitoring well at 515.78 m									
		Well Completion Details: Screened interval from 518.07 m to 516.54 m Elevation at top of pipe (TOP) = 523.59 m									
		Groundwater Information: Depth to groundwater from TOP = 2.63 m (May 13, 2022)									
		* denotes soil sample taken for lab analysis									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 19, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-303
SURFACE ELEVATION: 518.35 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: SPT Count / % Moisture	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	518.35	**TOPSOIL**								cement	
	518.10	**Sandy SILT TILL** Trace silt, trace medium sand, brown, orange-black mottling, loose, moist		0-2	75.0		4				518
1				2.5-4.5	75.0		9				517
	516.83	Silty, trace gravel, brown, loose, soft, wet		5-7	8.3		4				
2	516.06	Increasing gravel with depth, light brown, dense, firm, moist		7.5-9.5	75.0		49			bentonite seal	516
3				10-12	58.3		>50				515
4				12.5-14.5	8.3		>50				514
5				15-17	8.3		>50			silica sand 50 mm 010 slot PVC pipe	
	513.02	Very dense/hard		17.5-19.5	37.5		>50				513
6				20-22	12.5		>50			end cap silica sand	512
										bentonite seal	

End of monitoring well at 511.49 m

Well Completion Details:
Screened interval from 513.78 m to 512.25 m
Elevation at top of pipe (TOP) = 519.22 m

Groundwater Information:
Depth to groundwater from TOP = 1.65 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 19, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-304
SURFACE ELEVATION: 523.51 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80 100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	523.51	**TOPSOIL**									523
	523.46	Silt, organics (rootlets), dark brown, trace fine sand, moist									
		Silty SAND TILL		0-2	50.0		■14				
		Some gravel (sub-angular/sub-rounded), trace, organics, trace medium sand, occasional cobbles, orange mottling, soft-firm, moist									
	522.72	Very loose, saturated									
1				2.6-4.5	62.5		■29				
	521.99	**Gravelly SAND**									522
		Fine-coarse sand, trace silt, gravel (sub-angular/sub-rounded), cobbles, brown, very loose, saturated		5-7	33.3		■45			bentonite seal	
2											
	521.22	**Silty SAND TILL**									521
		Silty, trace medium-coarse sand, some gravel (sub-angular/sub-rounded), crushed cobbles, trace clay, brown, compact, saturated		7.5-9.5	33.3		■35				
3				10-10.5	54.2		■>50				
				10.4-11.1							
	519.70	Trace clay, less sand with depth, crumbly, dry									520
4				12.5-14.5	20.8		■>50				
	518.94	trace gravel, grey, very dense, moist-wet									519
				15-17	25.0		■>50			silica sand 50 mm 010 slot PVC pipe	
5											
				17.5-18.5	12.5		■>50				518
										end cap	

End of monitoring well at 517.87 m

Well Completion Details:
Screened interval from 519.40 m to 517.87 m
Elevation at top of pipe (TOP) = 524.44 m

Groundwater Information:
Depth to groundwater from TOP = 1.65 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)

DRILL DATE: April 26, 2022
LOGGED BY: AW
DRILLED BY: Orbit Garrant

Notes: SPLIT SPOON

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-305
SURFACE ELEVATION: 523.74 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80 100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	523.74	**TOPSOIL**									
	523.44	**Silty SAND TILL** Silty, trace organics, trace clay nodules, brown, orange-black mottling, firm, loose, moist		*0-2.5 / DUP-3A	100.0		■ 5		▼		
	522.98	Firm, compact, increasing gravel content with depth									523
1				2.5-5	50.0		■ 9				
	522.22	Trace medium-coarse sand, trace gravel, trace cobbles, light brown-grey, soft, very loose, wet		*5-7.5	87.5		■ 2				522
2										bentonite seal	
	521.45			7.5-10	45.8		■ 13				521
3	520.69	Saturated		10-12.5	45.8		■ 12				
	519.93	Gravelly, some silt, trace cobble, grey-light brown, dense, firm (crumbles), moist		12.5-15	45.8		■ >50				520
4											
	519.17	Grey, dense, hard, wet		15.-17.5	54.2		■ >50				519
5										silica sand 50 mm 010 slot PVC pipe	
				17.5-20	62.5		■ >50				518
6										end cap silica sand	
				20-22.5	66.7		■ >50			bentonite seal	517
		End of monitoring well at 516.88 m Well Completion Details: Screened interval from 519.17 m to 517.64 m Elevation at top of pipe (TOP) = 524.83 m Groundwater Information: Depth to groundwater from TOP = 1.56 m (May 13, 2022) * denotes soil sample taken for lab analysis									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 22, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-306D
SURFACE ELEVATION: 522.84 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE ID	% Recovery	TEST DATA (SPT Count / % Moisture)	WELL COMPLETION NOTES	ELEVATION (m)
0	522.84	**TOPSOIL**	0-0.4	45.8	6		522
	522.71	Organics (rootlets), clayey silt, trace fine sand, wormholes, soft, moist	0.4-0.7				
			0.7-0.9				
		SAND Fine-medium sand (layered 1-2mm), silty, grey-brown/orange mottling, soft, loose-compact, wet	2.5-3.3	58.3	22		
1	521.82	**Silty SAND TILL** Gravel (Rounded to sub-rounded), fine-coarse sand, trace cobbles, trace silt, grey, loose, saturated	3.3-3.7				521
	521.21	Trace gravel (sub-angular/sub-rounded), trace cobbles, increased silt with depth	5-5.3	50	18		
			5.3-6.0				
2			7.5-9.5	50.0	>50		520
						bentonite seal	
3			10-12	16.7	>50		519
	518.98		12.5-12.7	25.0	>50		
4		grey, dense/hard (increasing with depth), moist	12.7-13				
	518.27	grey, dry	15-17	8.3	>50		518
5							
			17.5-19.5	20.8	>50		517
6				0.0			
			22.5-24.5	45.8	>50	silica sand 50 mm 010 slot PVC pipe	516
7							
				0.0			515
8			27.5-29.5	50.0	>50		
							514
9						end cap	

End of monitoring well at 513.80 m

Well Completion Details:
Screened interval from 516.85 m to 513.80 m
Elevation at top of pipe (TOP) = 523.67 m

Groundwater Information:
Depth to groundwater from TOP = 1.16 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 28, 2022
LOGGED BY: AW
DRILLED BY: Orbit Garrant

Notes: SPLIT SPOON; NO RECOVERY

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-306S
SURFACE ELEVATION: 522.85 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80 100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
	522.85	**TOPSOIL**									
	522.72	Organics (rootlets), clayey silt, trace fine sand, wormholes, soft, moist									
		SAND Fine-medium sand (layered 1-2mm), silty, grey-brown/orange mottling, soft, loose-compact, wet							▼		522
1	521.83	**Silty SAND TILL** Gravel (Rounded to sub-rounded), fine-coarse sand, trace cobbles, trace silt, grey, loose, saturated								bentonite seal	
	521.22	Trace gravel (sub-angular/sub-rounded), trace cobbles, increased silt with depth									521
2											
											520
3											
										silica sand	
	518.99	grey, dense/hard (increasing with depth), moist								50 mm 010 slot PVC pipe	519
4											
										end cap	
		End of monitoring well at 518.28 m Well Completion Details: Screened interval from 519.80 m to 518.28 m Elevation at top of pipe (TOP) = 523.72 m Groundwater Information: Depth to groundwater from TOP = 1.30 m (May 13, 2022) MW22-306S was straight drilled adjacent to MW22-306D									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 28, 2022
LOGGED BY: AW
DRILLED BY: Orbit Garrant

Notes:

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-307D
SURFACE ELEVATION: 527.91 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	527.91	**TOPSOIL**									
	527.76	Organics, dark brown, soft, moist									
		Clayey SILT		0-2	50.0		4			silica sand	
1	527.02	Clayey silt, some fine-medium sand, some gravel (rounded), brown, soft, moist, high-plasticity		2.5-4.5	75.0		4				527
		Silty, trace clay, gravel (rounded), moist-wet		5-7	20.8		5				
2	525.62	**Silty SAND TILL**									526
		Fine sand, some gravel (angular) and cobbles, light brown, dense/hard, dry-moist		7.5-9.5	75.0		27				
3				10-12	75.0		>50				525
4				12.5-14.5	70.8		>50			bentonite seal	524
				15-17	79.2						
5	522.58	No Recovery			0.0		>50				523
6	521.81	**Sandy SILT TILL**		20-22	66.7		>50				522
		Fine sand, some gravel (angular) and cobbles, light brown, dense/hard, dry-moist									
7	521.05	Wet		22.5-24.5	62.5		50				521
8				25-27	33.3		>50				520
				27.5-29.5	25.0		>50				
9				30-32	16.7		>50			silica sand 50 mm 010 slot PVC pipe	519
10				32.5-34.5	8.3		>50			end cap silica sand	518
11				35-37	50.0		>50			bentonite seal	517

End of monitoring well at 516.48 m

Well Completion Details:
Screened interval from 519.38 m to 517.85 m
Elevation at top of pipe (TOP) = 528.81 m

Groundwater Information:
Depth to groundwater from TOP = 2.14 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 5, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON
NO RECOVERY

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-307S
SURFACE ELEVATION: 527.97 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
	527.97	**TOPSOIL**									
	527.82	Organics, dark brown, soft, moist								silica sand	
		Clayey SILT Clayey silt, some fine-medium sand, some gravel (rounded), brown, soft, moist, high-plasticity									
	527.08										
1		Silty, trace clay, gravel (rounded), moist-wet									527
2											526
	525.68	**Silty SAND TILL** Fine sand, some gravel (angular) and cobbles, light brown, dense/hard, dry-moist								bentonite seal	
3											525
4											524
5											523
	522.64	No Recovery								silica sand 50 mm 010 slot PVC pipe	
6											522
		End of monitoring well at 521.87 m								end cap	
		Well Completion Details: Screened interval from 523.40 m to 521.87 m Elevation at top of pipe (TOP) = 528.71 m									
		Groundwater Information: Depth to groundwater from TOP = 2.16 m (May 13, 2022)									
		MW22-307S was straight drilled adjacent to									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)

DRILL DATE: May 6, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes:

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-307S
SURFACE ELEVATION: 527.97 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
		MW22-307D									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 6, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes:

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-308D
SURFACE ELEVATION: 522.35 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	522.35	**TOPSOIL**									
	522.17	Organics, silt, trace fine sanddark brown, soft-firm with depth, moist		0-0.6	62.5		8				
				0.6-1.25	8.3		33				
		Silty SAND Some medium-coarse sand, trace organics, trace silt, banded (1-3 mm), gravel (sub-rounded/rounded), brown, loose-compact, wet									
1				*5-5.5	75.0		20				522
	520.62			5.5-7							
		Silty SAND TILL Fine sand, some clay, some gravel, some crushed cobbles, brown, low plasticity, dense, hard, moist-dry								bentonite seal	
2				7.5-9.5	29.2		>50				521
3	519.30	Trace-some medium-coarse sand, crumbly, dry		10-12	20.8		>50				520
	518.54	Some fine to medium sand, some gravel (sub-angular / sub-rounded), low plasticity, brown, very hard, dry		12.5-14.5	12.5		>50				519
4										silica sand 50 mm 010 slot PVC pipe	518
5				15-17	33.3		>50				
	517.02	Brown-grey, crumbly, dry		17.5-18	16.7		>50				517
		End of monitoring well at 516.86 m								end cap	

Well Completion Details:
Screened interval from 518.39 m to 516.86 m
Elevation at top of pipe (TOP) = 523.18 m

Groundwater Information:
Depth to groundwater from TOP = 1.55 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)

DRILL DATE: April 29, 2022
LOGGED BY: AW
DRILLED BY: Orbit Garrant

Notes: SPLIT SPOON

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-308S
SURFACE ELEVATION: 522.20 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
	522.20	**TOPSOIL** Organics, silt, trace fine sanddark brown, soft-firm with depth, moist									
	522.02	**Silty SAND** Some medium-coarse sand, trace organics, trace silt, banded (1-3 mm), gravel (sub-rounded/rounded), brown, loose-compact, wet								bentonite seal	522
1											
											521
	520.47	**Silty SAND TILL** Fine sand, some clay, some gravel, some crushed cobbles, brown, low plasticity, dense, hard, moist-dry									
2										silica sand 50 mm 010 slot PVC pipe	520
3										end cap	
		End of monitoring well at 519.15 m Well Completion Details: Screened interval from 520.68 m to 519.15 m Elevation at top of pipe (TOP) = 523.23 m Groundwater Information: Depth to groundwater from TOP = 1.70 m (May 13, 2022) MW22-308S was straight drilled adjacent to MW22-308D									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 4, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes:

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-309D
SURFACE ELEVATION: 521.82 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE ID	% Recovery	TEST DATA (SPT Count / % Moisture)	WELL COMPLETION NOTES	ELEVATION (m)
0	521.82	**TOPSOIL**				silica sand	
	521.67	Organics, dark brown, moist	0-2	75.0	10		
		Silty SAND					
	521.06	Medium-fine sand, silt, trace clay, light brown, orange mottling, soft, moist					
1		**Silty SAND TILL**	*2.5-4.5	29.2	8		521
		Medium-fine, gravel (angular) and cobbles, silty, light brown, soft, compact, moist					
			*5-7	41.7	27		
2	519.53						520
	519.28	wet	7.5-9.5	100.0			
		Fine sand, cobbles, light brown, compact, moist-wet					
3	518.77	No Recovery		0.0	>50		519
	518.01	Some orange mottling, dry-moist	12.5-14.5	66.7	>50		518
4							
						bentonite seal	
5			15-17	100.0	>50		517
			17.5-19.5	70.8	47		
6							516
			20-22	91.7	44		
7			22.5-24.5	100.0	50		515
	514.20	Wet from 7.62 m to EOH					
8			25-27	41.2	>50		514
			27.5-29.5	54.2	>50		
9							513
			30-32	37.5	>50		
10						silica sand 50 mm 010 slot PVC pipe	512
			32.5-34.5	62.5	>50		
	511.15	**COBBLE**				end cap silica sand	
11		Pulverized cobble	35-37	66.7	>50	bentonite seal	511

End of monitoring well at 510.39 m

Well Completion Details:
Screened interval from 512.68 m to 511.15 m
Elevation at top of pipe (TOP) = 522.91 m

Groundwater Information:
Depth to groundwater from TOP = 2.26 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 3, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON
NO RECOVERY

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-309S
SURFACE ELEVATION: 521.85 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
	521.85	**TOPSOIL**									
	521.70	Organics, dark brown, moist								silica sand	
		Silty SAND Medium-fine sand, silt, trace clay, light brown, orange mottling, soft, moist									
	521.09	**Silty SAND TILL** Medium-fine, gravel (angular) and cobbles, silty, light brown, soft, compact, moist									521
1											
2											520
	519.56	wet								bentonite seal	
	519.31	Fine sand, cobbles, light brown, compact, moist-wet									519
3	518.80	No Recovery									
	518.04	**Silty SAND TILL** Medium-fine, gravel (angular) and cobbles, silty, light brown, orange mottling, soft, compact, dry-moist									518
4											
											517
5										silica sand 50 mm 010 slot PVC pipe	
											516
6										end cap	
		End of monitoring well at 515.75 m Well Completion Details: Screened interval from 517.28 m to 515.75 m Elevation at top of pipe (TOP) = 522.83 m Groundwater Information: Depth to groundwater from TOP = 2.14 m (May 13, 2022)									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 3, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes:

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-310
SURFACE ELEVATION: 523.21 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE ID	% Recovery	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80 100)	WELL COMPLETION NOTES	ELEVATION (m)
0	523.21	**TOPSOIL** Organics, dark brown, soft, moist	0-2	100.0	5	silica sand	523
1	522.45	**Silty SAND TILL** Fine sand, some gravel, and cobbles, ligh brown, soft, moist	2.5-4.5	54.2	5		522
	521.69	Increased gravel content with depth, hard, moist-dry	5.7	91.7	17		
2			7.5-9.5	50.0	>50		521
3	520.16	**COBBLE** Cobble chips, some sand and silt		0.0	>50		520
	519.40	**Silty SAND TILL** Fine sand, clay, gravel (angular to sub-angular), cobbles, light brown, moist	12.5-14.5	33.4	>50	bentonite seal	
4	518.64	Cobble chips, dense/hard, dry	15-17	41.7	>50		519
5			17.5-19.5	54.2	>50		518
6			20-22	66.7	>50		517
7	516.35	No Recovery (cobble)		0.0	>50		516
	515.59	**SILTY SAND TILL** Fine sand, gravel (angular) and cobbles, light brown, dense, increasing silt and clay content, water coming through auger	25-27	33.4	>50	silica sand 50 mm 010 slot PVC pipe	
8			27.5-29.5	25.0	>50		515
9						end cap	

End of monitoring well at 514.07 m

Well Completion Details:
Screened interval from 515.59 m to 514.07 m
Elevation at top of pipe (TOP) = 524.26 m

Groundwater Information:
Depth to groundwater from TOP = 2.32 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 3, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON
NO RECOVERY

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-311
SURFACE ELEVATION: 521.05 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	521.05	**TOPSOIL**		0-0.75	66.7		16				521
	520.82	Fine sand, silt, some organics (rootlets), dark brown, soft, moist		0.75-1.0						bentonite seal	
		Silty SAND TILL									
	520.29	Trace medium-coarse sand, silty, brown, orange-dark brown mottling, soft, moist-wet		2.5-2.75	12.5		14				
1		Large cobble									520
	519.53	Increased medium-coarse sand, silty, trace-some gravel (sub-angular / sub-rounded), cobbles, trace clay, brown, dense/hard, saturated-moist, increasing gravel/cobbles with depth		5-7	29.2		9		▼		
2				7.5-9.5	29.2		>50				519
3				10-12	41.7		>50				518
										grout	
4				12.5-14.5	8.3		>50				517
	516.48	Grey, very dense, moist									
5				15-17	16.7		>50				516
	515.72	No recovery	○		0.0		>50				
6	514.95	**Sandy SILT TILL**		20-22	20.8		>50				515
		Fine-coarse sand, some gravel (sub-angular/sub-rounded), trace clay, crushed cobbles, grey, very dense, moist									
7				22.5-24.5	20.8		>50			bentonite seal	514
	513.43	No recovery	○		0.0		>50				
8										silica sand 50 mm 010 slot PVC pipe	513
	512.67	**Sandy SILT TILL**									
		Silty, some gravel, grey, very dense, moist-saturated		27.5-29.5	45.8		>50				
9										end cap	

End of monitoring well at 512.03 m

Well Completion Details:
Screened interval from 513.56 m to 512.03 m
Elevation at top of pipe (TOP) = 521.88 m

Groundwater Information:
Depth to groundwater from TOP = 2.75 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 26, 2022
LOGGED BY: AW
DRILLED BY: Orbit Garrant

Notes: SPLIT SPOON
NO RECOVERY

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-312
SURFACE ELEVATION: 520.61 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	520.61	**TOPSOIL**									
	520.15	**Silty SAND TILL** Fine to medium sand, trace silt, trace gravel (sub-angular-angular), brown, orange mottling, loose, soft, wet		0-2	91.7		■4				520
1	519.54	Fine sand, brown-grey, compact/hard, moist-wet		2.5-4.5	62.5		■10			bentonite seal	
	519.09	No orange mottling onward									519
2				5-7	20.8		■15				
				7.5-9.5	37.5		■18				518
3	517.56	**SAND and GRAVEL** Fine sand, trace coarse sand, trace cobble, trace silt, brown-grey, soft, dense, wet		10-12	20.8		■38			silica sand 50 mm 010 slot PVC pipe	517
4				12.5-14.5	66.7		■37				
	516.04 516.01	Trace gravel, trace silt, grey, dense, moist **Silty SAND TILL** Trace gravel, grey, very dense, very hard, moist		15-17	16.7		■>50			end cap silica sand	516
5										bentonite seal	
		End of monitoring well at 515.28 m Well Completion Details: Screened interval from 517.56 m to 516.04 m Elevation at top of pipe (TOP) = 521.66 m Groundwater Information: Depth to groundwater from TOP = 1.25 m (May 13, 2022) * denotes soil sample taken for lab analysis									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 20, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-313D
SURFACE ELEVATION: 520.00 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	520.00	**TOPSOIL**									
	519.87	Fine sandy silt, organics (rootlets), trace clay, dark brown, soft, moist								silica sand	
	519.24	**Sandy SILT TILL**									
1		Silty, trace medium-coarse sand, trace clay, brown, dark brown mottling, soft, moist, high plasticity									519
		Trace gravel (sub-angular/sub-rounded), increased gravel with depth, trace cobbles, saturated									
2											518
	517.56	Silty fine sand, firm-hard, moist									
3	516.95	Orange mottling/staining (oxidation)									517
	516.19	No recovery									
4											516
	515.43	**Silty SAND TILL**								bentonite seal	
5		Silty fine sand, some gravel (sub-rounded/sub-angular), firm-hard, moist							▼		515
6	513.90	Silty, cobble chips, wet		20-22	37.5		>50				514
	513.14	Coarse sand, silty, gravel (angular), cobble chips, trace clay, light brown, dense, wet-moist		22.5-24.5	33.3		>50				
7											513
				25-27	83.3		>50				
8											512
				27.5-29.5	70.8		>50				
9											511
				30-32	33.3		>50				
10	510.09	No Recovery			0.0		>50			silica sand 50 mm 010 slot PVC pipe	510
	509.33	**Sandy SILT TILL**								end cap silica sand	
11		Fine sand, clay, gravel, light brown, wet		35-37	20.8		>50			bentonite seal	509
		End of monitoring well at 508.57 m									
		Well Completion Details: Screened interval from 510.86 m to 509.33 m Elevation at top of pipe (TOP) = 521.06 m									
		Groundwater Information: Depth to groundwater from TOP = 5.93 m (May 13, 2022)									
		* denotes soil sample taken for lab analysis									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 5, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON
NO RECOVERY

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-313S
SURFACE ELEVATION: 520.03 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: SPT Count / % Moisture	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	520.03	**TOPSOIL**									
	519.90	Fine sandy silt, organics (rootlets), trace clay, dark brown, soft, moist									
		Sandy SILT TILL									
		Silty, trace medium-coarse sand, trace clay, brown, dark brown mottling, soft, moist, high plasticity		0-2	25.0		10				
	519.27	Trace gravel (sub-angular/sub-rounded), increased gravel with depth, trace cobbles, saturated									
1				2.5-4.5	58.3		13				519
				5-7	54.2		14			bentonite seal	
2											518
	517.59	Silty fine sand, firm-hard, moist		8-9.5	79.2		34				
3	516.98	Orange mottling/staining (oxidation)		10-12	25.0		>50				517
	516.22	No recovery			0.0		>50				
4											516
	515.46	**Silty SAND TILL**									
		Silty fine sand, some gravel (sub-rounded/sub-angular), firm-hard, moist		15-17	25.0		>50			silica sand	
5										50 mm 010 slot PVC pipe	515
					4.2		>50				
										end cap	

End of monitoring well at 514.09 m

Well Completion Details:
Screened interval from 515.61 m to 514.09 m
Elevation at top of pipe (TOP) = 520.85 m

Groundwater Information:
Depth to groundwater from TOP = 1.19 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 27, 2022
LOGGED BY: AW
DRILLED BY: Orbit Garrant

Notes: SPLIT SPOON
NO RECOVERY

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_AM_2022.11.17.GPJ SLR_CAN V5.2 MOISTURE.GDT 5/11/23

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-314
SURFACE ELEVATION: 517.28 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	517.28	**TOPSOIL**								cement	517
	517.13	**SAND** Silty, occasional medium sand, trace gravel, brown, orange-black mottling, loose, frim, moist		0-2	70.8		■4				
	516.52	**Silty SAND TILL** Fine sand, some cobbles, brown-grey, loose, firm, wet		2.5-4.5	41.7		■14				516
1	515.76										
	515.65	Some silt, occasional coarse sand, trace gravel, brown/grey - orange mottling, loose, soft-firm, wet Orange mottling, loose, firm, wet		5-7	41.7		■6				
2	514.99									bentonite seal	515
		fine-medium sand, some gravel (angular), trace cobble, trace clay, brown-grey, dense, firm, moist-dry, increasing gravel content with depth		7.5-9.5	41.7		■>50				
3				10-12	41.7		■39				514
4				12.5-14.5	33.3		■>50				513
	512.71	loose, sands and gravel layer		15-17	33.3		■>50				
5										silica sand 50 mm 010 slot PVC pipe	512
				17.5-19.5	66.7		■>50				
6										end cap silica sand	511
				20-22	37.5		■>50			bentonite seal	

End of monitoring well at 510.42 m

Well Completion Details:
Screened interval from 512.71 m to 511.18 m
Elevation at top of pipe (TOP) = 518.25 m

Groundwater Information:
Depth to groundwater from TOP = 1.55 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 20, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-315
SURFACE ELEVATION: 518.81 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count ◆ % Moisture (10 20 30 40 50 / 20 40 60 80 100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	518.81	**TOPSOIL**								cement	518
	518.61	**Sandy SILT TILL** Some clay, trace gravel, orange-black mottling, brown, firm, loose, moist		*0-0.4 / DUP-3B	50.0		5				
	518.05	Trace medium sand, hard, moist, increasing density and gravel content with depth		2.5-5	33.3		9				
1	517.29	Firm, compact, moist		5-7.5	66.7		15				517
2				7.5-10	100.0		48				
3				10-12.5	41.7		>50				516
4				12.5-15	62.5		>50				515
5				15-17.5	83.3		49				514
				17.5-20	79.2		>50			bentonite seal	
6				20-22.5	79.2		34				513
7				22.5-25	54.2		>50				512
8				25-27.5	37.5		>50				511
				27.5-30	54.2		>50				
9				30-32.5	16.7		>50				510
10				32.5-35	8.3		>50				509
11				35-37.5	20.8		>50				508
				37.5-40	33.3		>50			silica sand 50 mm 010 slot PVC pipe	
12										end cap	507
	506.41	**SAND** Fine-medium sand, gravel (angular), light grey, firm, compact, wet		40-42.5	41.7		>50			silica sand bentonite seal	506
		End of monitoring well at 505.86 m									

Well Completion Details:
Screened interval from 508.14 m to 506.62 m
Elevation at top of pipe (TOP) = 519.73 m

Groundwater Information:
Depth to groundwater from TOP = 3.89 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 28, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-316
SURFACE ELEVATION: 520.07 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE ID	% Recovery	SPT Count / % Moisture	WELL COMPLETION NOTES	ELEVATION (m)
0	520.07	**TOPSOIL**				silica sand	520
	519.84	Organics, dark brown, moist	0-2	37.5	6		
		Silty SAND TILL Fine sand, silt, gravel (angular), trace clay, light brown, soft, moist	*2.5-4.5 / DUP-3E	37.5	12		
1							519
			*5-7	33.3	13		
2							518
	517.78	Cobbles, light brown, dense/hard, dry	7.5-9.5	83.3	35		
3							517
			10-12	58.3	>50		
	516.26	**COBBLE** Cobble chips, dry				bentonite seal	
4			12.5-14.5	20.8	>50		516
			15-17		>50		
5							515
	514.74	No Recovery		0.0			
6	513.97	**Silty SAND TILL** Fine sand, gravel (angular), light brown-grey, dense/hard, dry	20-22	45.8	>50		514
			22.5-24.5	50.0	>50		
7							513
	512.45	Wet from 7.62 to EOH	25-27	45.8	>50		
8							512
			27.5-29.5	37.5	>50	silica sand 50 mm 010 slot PVC pipe	
9							511
						end cap	

End of monitoring well at 510.93 m

Well Completion Details:
Screened interval from 512.45 m to 510.93 m
Elevation at top of pipe (TOP) = 521.04 m

Groundwater Information:
Depth to groundwater from TOP = 2.37 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 4, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON
NO RECOVERY

Appendix C Groundwater Data

Hydrogeological Assessment

Glenelg Phase 3

Dundalk Village Two Inc.

SLR Project No.: 209.30125.00003

May 25, 2023

Table C-1: Groundwater Elevations in Monitoring Wells

Monitor ID	Units	13-May-22	13-Jul-22	20-Sep-22	25-Nov-22	28-Mar-23
MW22-301	mbgs	0.16	2.57	3.70	4.76	0.78
	masl	530.83	528.42	527.29	526.23	530.21
MW22-302	mbgs	1.68	2.15	3.49	2.94	1.21
	masl	520.96	520.49	519.15	519.70	521.43
MW22-303	mbgs	0.77	1.37	2.55	0.85	0.57
	masl	517.58	516.98	515.80	517.50	517.78
MW22-304	mbgs	0.71	1.80	3.08	3.68	0.12
	masl	522.80	521.71	520.43	519.83	523.39
MW22-305	mbgs	0.46	1.31	2.59	2.50	0.00
	masl	523.28	522.43	521.15	521.24	523.74
MW22-306S	mbgs	0.43	1.30	2.48	1.75	0.15
	masl	522.42	521.55	520.37	521.10	522.70
MW22-306D	mbgs	0.33	1.24	2.36	1.61	0.02
	masl	522.52	521.60	520.48	521.23	522.82
MW22-307S	mbgs	1.41	2.23	3.95	4.48	0.37
	masl	526.56	525.74	524.02	523.49	527.60
MW22-307D	mbgs	1.24	2.06	3.69	4.13	0.18
	masl	526.67	525.85	524.22	523.78	527.73
MW22-308S	mbgs	0.67	1.75	2.52	2.08	Frozen
	masl	521.54	520.45	519.69	520.12	Frozen
MW22-308D	mbgs	0.72	1.89	2.81	2.22	Frozen
	masl	521.63	520.46	519.54	520.13	Frozen
MW22-309S	mbgs	1.15	-	-	2.82	0.13
	masl	520.70	-	-	519.03	521.72
MW22-309D	mbgs	1.17	-	-	2.89	0.17
	masl	520.65	-	-	518.93	521.65

Table C-1: Groundwater Elevations in Monitoring Wells

Monitor ID	Units	13-May-22	13-Jul-22	20-Sep-22	25-Nov-22	28-Mar-23
MW22-310	mbgs	1.27	1.96	3.57	3.37	0.26
	masl	521.94	521.25	519.64	519.84	522.95
MW22-311	mbgs	1.91	2.56	3.71	3.69	1.40
	masl	519.14	518.49	517.34	517.36	519.65
MW22-312	mbgs	0.20	1.03	2.25	1.70	Frozen
	masl	520.41	519.58	518.36	518.91	Frozen
MW22-313S	mbgs	0.36	1.43	2.50	2.11	Frozen
	masl	519.67	518.60	517.53	517.92	Frozen
MW22-313D	mbgs	4.87	1.59	2.22	2.09	-0.01
	masl	515.13	518.42	517.78	517.92	520.01
MW22-314	mbgs	0.58	1.43	2.57	1.89	0.01
	masl	516.70	515.85	514.71	515.39	517.27
MW22-315	mbgs	2.97	3.96	5.18	5.01	2.25
	masl	515.84	514.85	513.63	513.80	516.56
MW22-316	mbgs	1.40	2.14	3.46	2.89	0.86
	masl	518.67	517.94	516.62	517.18	519.21

Table C-2: Groundwater Elevations in Mini-Piezometers

Monitor ID	Units	13-May-22	13-Jul-22	20-Sep-22	25-Nov-22	28-Mar-23
MP1S	mbgs	-0.19	0.08	0.77	-0.07	-0.29
	masl	520.01	519.74	519.05	519.89	520.11
MP1D	mbgs	-0.20	0.05	0.77	-0.09	-0.30
	masl	520.01	519.76	519.04	519.90	520.11
MP2S	mbgs	-0.25	-0.35	0.69	0.11	-0.36
	masl	517.13	517.23	516.19	516.77	517.24
MP2D	mbgs	-0.20	0.52	0.78	0.22	-0.28
	masl	517.13	516.41	516.15	516.71	517.21
MP3S	mbgs	0.34	0.42	0.99	0.45	-0.09
	masl	516.73	516.65	516.08	516.62	517.16
MP3D	mbgs	1.70	0.27	0.91	0.36	-0.19
	masl	515.26	516.69	516.05	516.60	517.16
MP4S	mbgs	-0.03	Dry @ 0.86	0.00	0.54	-0.09
	masl	523.65	Dry @ 522.76	Dry @ 522.76	523.08	523.71
MP4D	mbgs	0.22	1.46	0.00	1.45	-0.14
	masl	523.36	522.12	Dry @ 521.83	522.14	523.72
MP5S	mbgs	-0.79	Dry @ 0.95	0.00	-0.30	-0.01
	masl	523.54	Dry @ 521.80	Dry @ 521.84	523.05	522.76
MP5D	mbgs	0.02	1.23	0.00	-0.37	-0.09
	masl	522.65	521.44	Dry @ 520.91	523.04	522.76
MP6S	mbgs	-0.04	0.36	0.00	0.62	-0.28
	masl	520.95	520.55	Dry @ 519.95	520.30	521.19
MP6D	mbgs	-0.23	0.11	1.21	0.41	-0.34
	masl	521.12	520.78	519.68	520.48	521.23

Table C-3a: Vertical Hydraulic Gradients - Monitoring Wells

Well ID	13-May-22	13-Jul-22	20-Sep-22	25-Nov-22	28-Mar-23
MW22-306					
Shallow groundwater elevations (masl)	522.42	521.55	520.37	521.10	522.70
Deep groundwater elevations (masl)	522.52	521.60	520.48	521.23	522.82
Hydraulic gradient (m/m)	-0.07	-0.03	-0.08	-0.09	-0.09
MW22-307					
Shallow groundwater elevations (masl)	526.56	525.74	524.02	523.49	527.60
Deep groundwater elevations (masl)	526.67	525.85	524.22	523.78	527.73
Hydraulic gradient (m/m)	-0.04	-0.05	-0.08	-0.12	-0.05
MW22-308					
Shallow groundwater elevations (masl)	521.54	520.45	519.69	520.12	Frozen
Deep groundwater elevations (masl)	521.63	520.46	519.54	520.13	Frozen
Hydraulic gradient (m/m)	-0.12	-0.01	0.19	-0.01	-
MW22-309					
Shallow groundwater elevations (masl)	520.70	-	-	519.03	521.72
Deep groundwater elevations (masl)	520.65	-	-	518.93	521.65
Hydraulic gradient (m/m)	0.01	-	-	0.03	0.03
MW22-313					
Shallow groundwater elevations (masl)	519.67	518.60	517.53	517.92	Frozen
Deep groundwater elevations (masl)	515.13	518.42	517.78	517.92	520.01
Hydraulic gradient (m/m)	N.R.	0.06	-0.08	0.00	-

Notes:

masl denotes metres above sea level
Positive value denotes downward hydraulic gradients (i.e., groundwater recharge conditions)
Negative value denotes upward hydraulic gradients (i.e., groundwater discharge conditions)
N.R. denotes not representative as water levels did not fully recover following installation

Table C-3b: Vertical Hydraulic Gradients - Mini Piezometers

Well ID	13-May-22	13-Jul-22	20-Sep-22	25-Nov-22	28-Mar-23
MP1					
Shallow groundwater elevations (masl)	520.01	519.74	519.05	519.89	520.11
Deep groundwater elevations (masl)	520.01	519.76	519.04	519.90	520.11
Hydraulic gradients (m/m)	-0.01	-0.03	0.03	-0.01	-0.01
MP2					
Shallow groundwater elevations (masl)	517.13	517.23	516.19	516.77	517.24
Deep groundwater elevations (masl)	517.13	516.41	516.15	516.71	517.21
Hydraulic gradients (m/m)	0.00	-	0.05	0.08	0.03
MP3					
Shallow groundwater elevations (masl)	516.73	516.65	516.08	516.62	517.16
Deep groundwater elevations (masl)	515.26	516.69	516.05	516.60	517.16
Hydraulic gradients (m/m)	-	-0.07	0.05	0.03	0.00
MP4					
Shallow groundwater elevations (masl)	523.65	Dry	Dry	523.08	523.71
Deep groundwater elevations (masl)	523.36	522.12	Dry	522.14	523.72
Hydraulic gradients (m/m)	0.39	na	na	-	-0.01
MP5					
Shallow groundwater elevations (masl)	523.54	Dry	Dry	523.05	522.76
Deep groundwater elevations (masl)	522.65	521.44	Dry	523.04	522.76
Hydraulic gradients (m/m)	-	na	na	0.02	0.00
MP6					
Shallow groundwater elevations (masl)	520.95	520.55	Dry	520.30	521.19
Deep groundwater elevations (masl)	521.12	520.78	519.68	520.48	521.23
Hydraulic gradients (m/m)	-0.28	-0.38	na	-0.31	-0.08

Notes:

masl denotes metres above sea level
Positive value denotes downward hydraulic gradients (i.e., groundwater recharge conditions)
Negative value denotes upward hydraulic gradients (i.e., groundwater discharge conditions)
-' inicates that a hydraulic gradient value could not be obtained as the difference in groundwater elevation was greater than the difference in length.

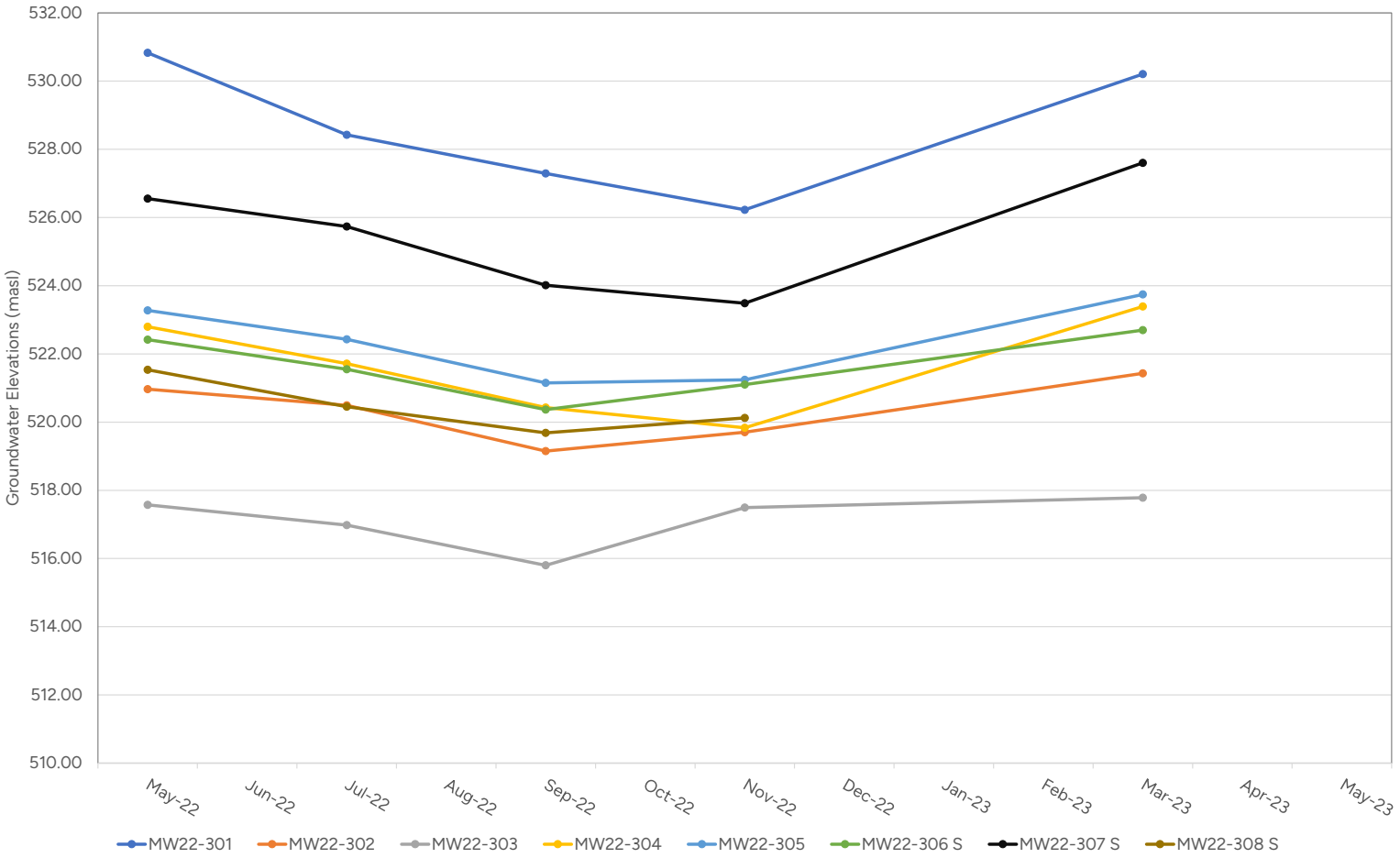


Figure C-1a	Hydrograph - Manual Measurements (Groundwater Wells)	SLR

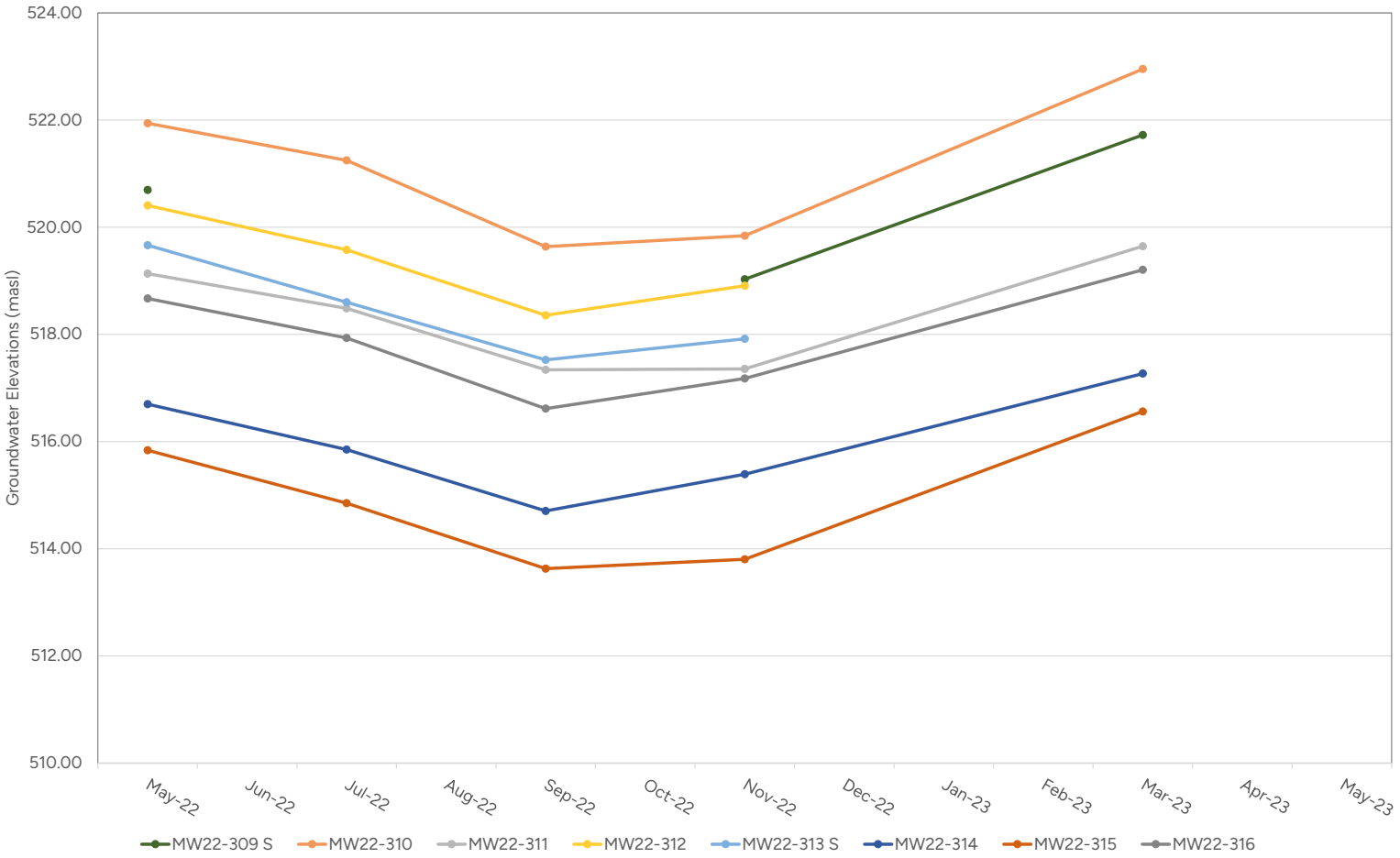


Figure C-1b	Hydrograph - Manual Measurements (Groundwater Wells)	SLR

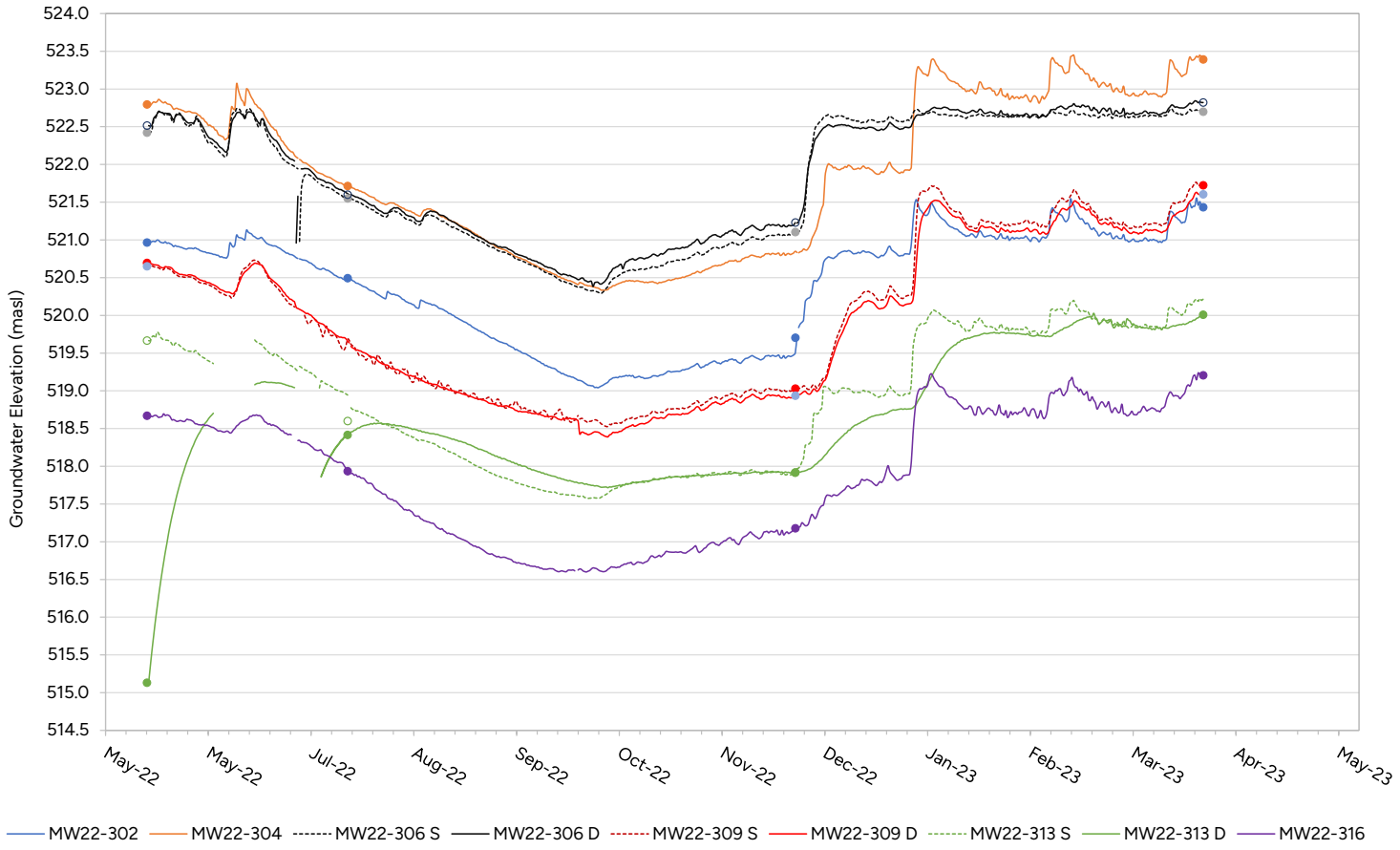


Figure C-2	Hydrograph - Continuous Groundwater Elevations (Groundwater Wells)	SLR

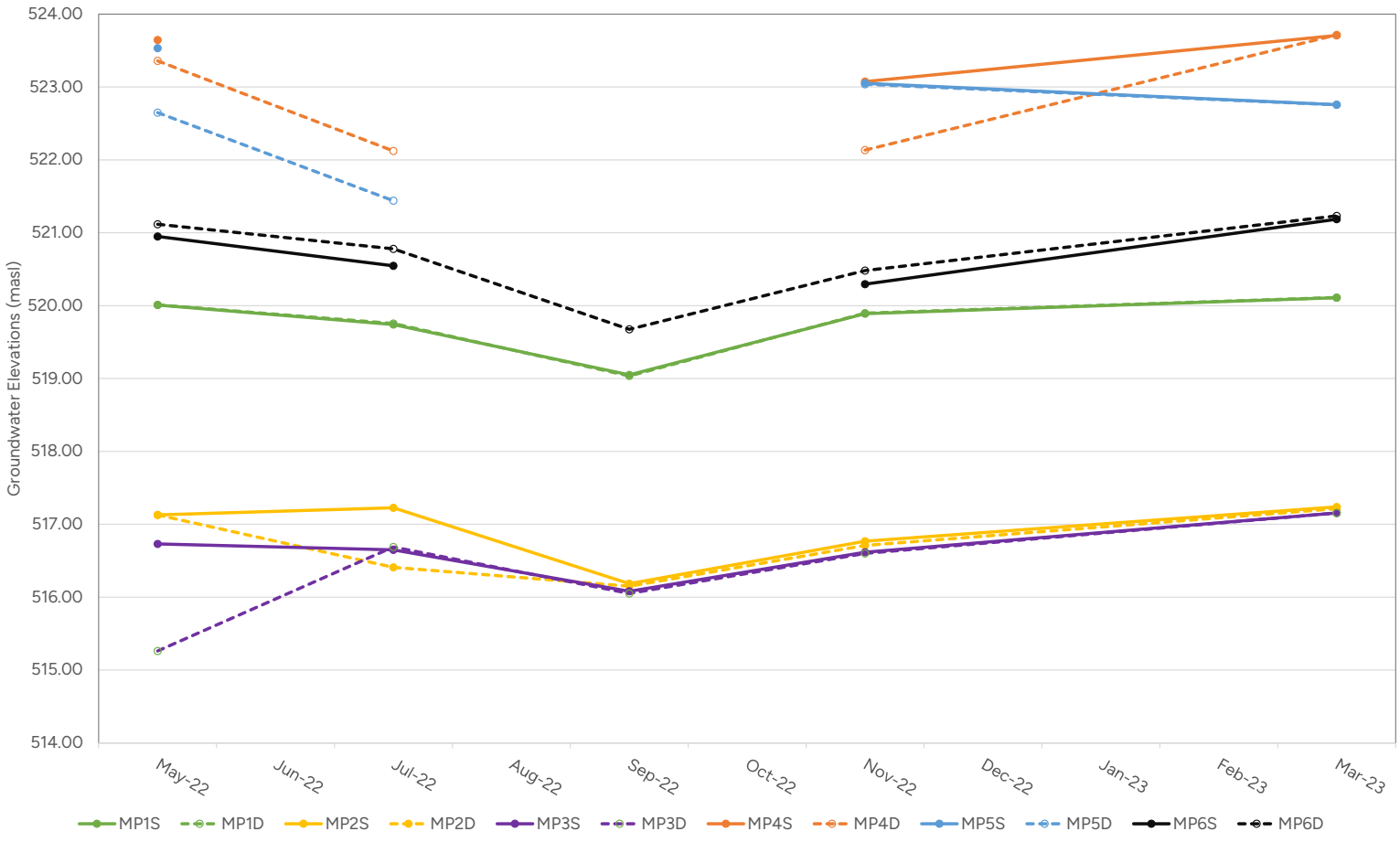


Figure C-3	Hydrograph - Manual Measurements (Mini-Piezometers)	SLR

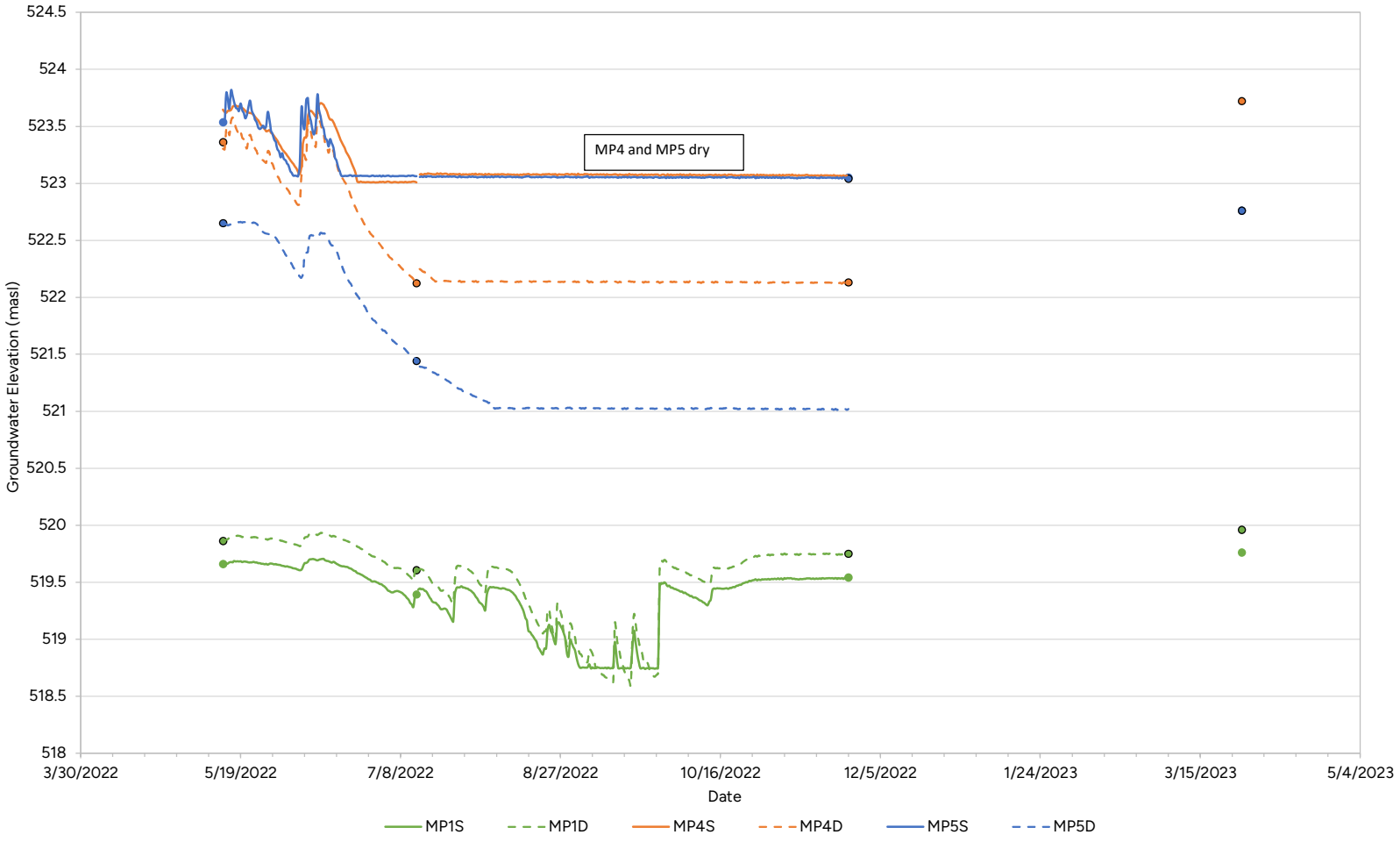


Figure C-4 | **Hydrograph - Continuous Groundwater Elevations (mini-piezometers)** | SLR

Appendix D Hydraulic Conductivity Analyses

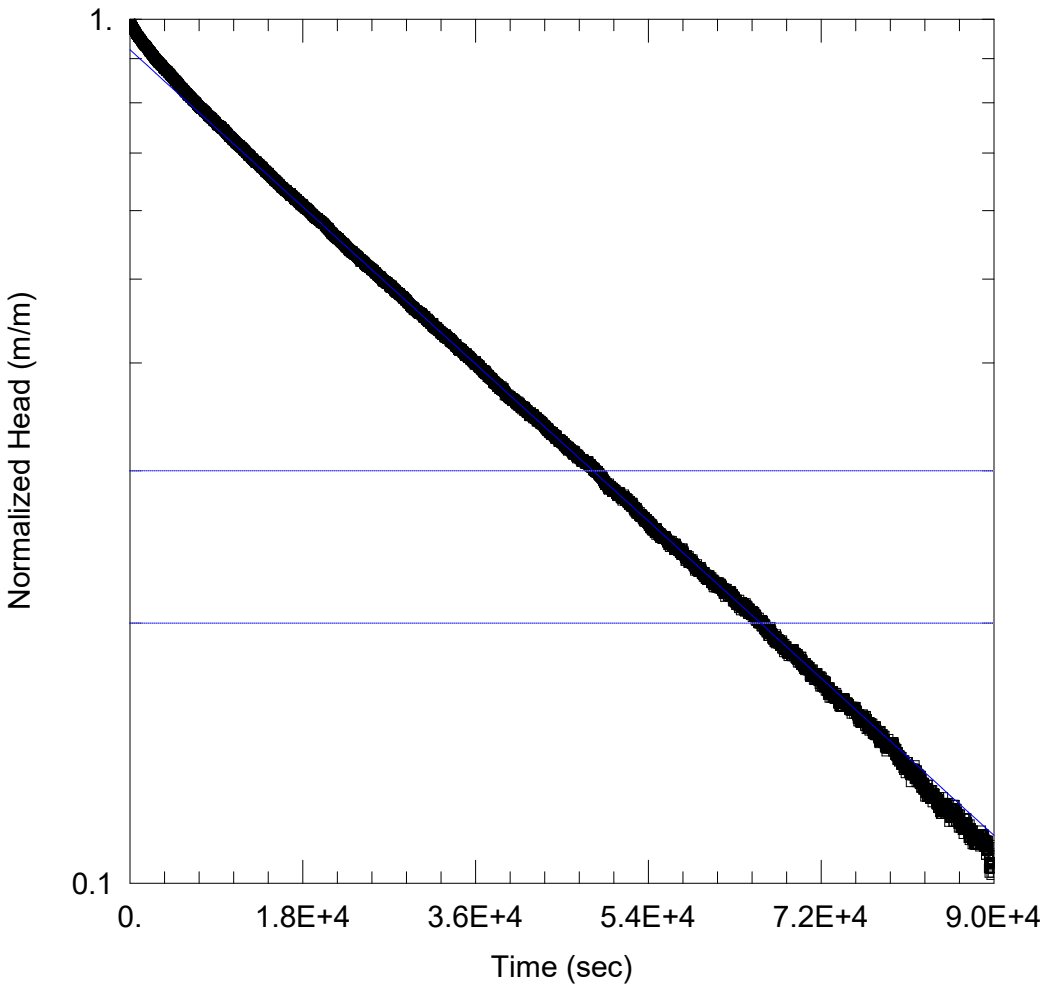
Hydrogeological Assessment

Glenelg Phase 3

Dundalk Village Two Inc.

SLR Project No.: 209.30125.00003

May 25, 2023



WELL TEST ANALYSIS

Data Set: N:\...\MW22-306D_AM.aqt
Date: 07/27/22 Time: 12:08:33

PROJECT INFORMATION

Project: 209.30125.00003
Location: Dundalk North
Test Date: 6/27/2022

AQUIFER DATA

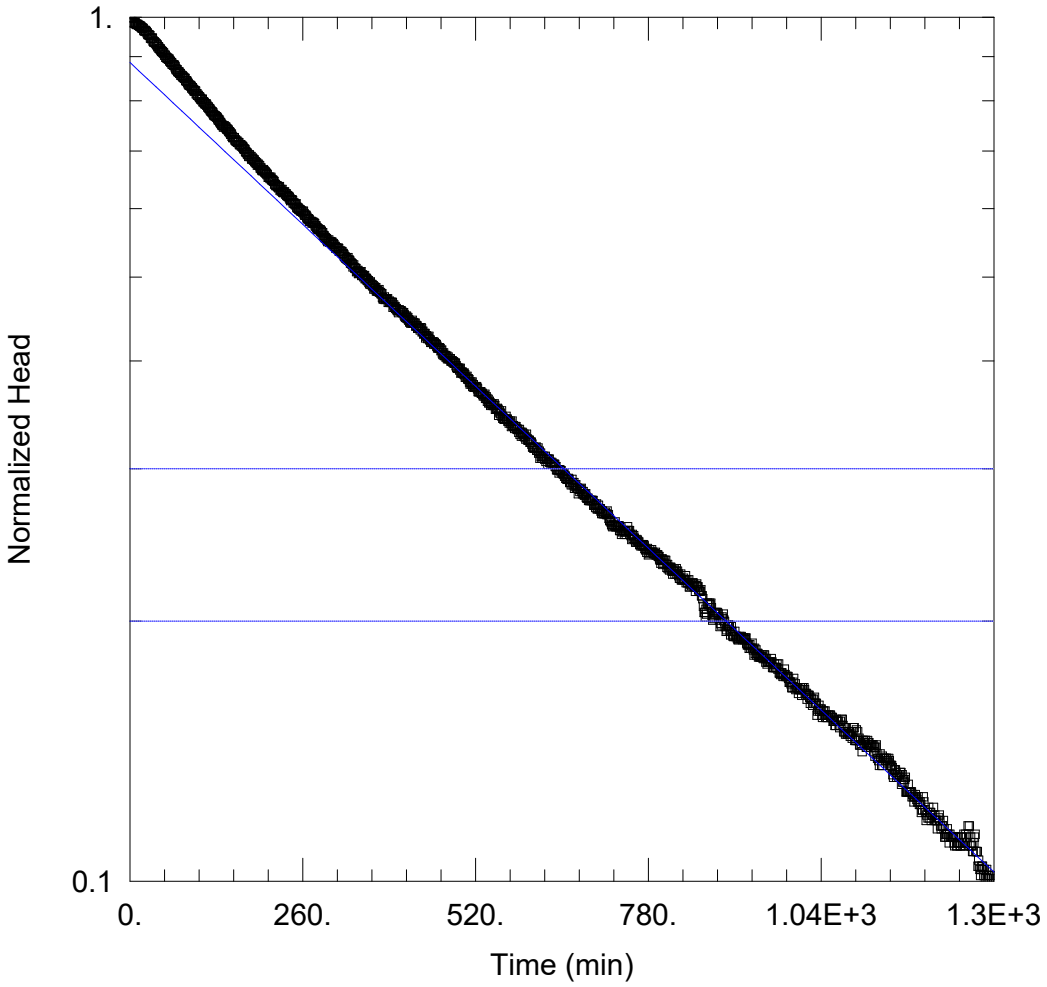
Saturated Thickness: 8.265 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW22-306D)

Initial Displacement: 1.472 m
Total Well Penetration Depth: 8.208 m
Casing Radius: 0.0254 m
Static Water Column Height: 8.265 m
Screen Length: 3.048 m
Well Radius: 0.1016 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 7.592E-9 m/sec
y0 = 1.357 m



WELL TEST ANALYSIS

Data Set: N:\...\MW22-306S_AM.aqt
Date: 07/27/22 Time: 16:59:39

PROJECT INFORMATION

Company: SLR Consulting
Client: FLATO Developments Inc.
Project: 209.30125
Location: Dundalk North
Test Well: MW22-306S
Test Date: June 28, 2022

AQUIFER DATA

Saturated Thickness: 3.62 m Anisotropy Ratio (Kz/Kr): 1.

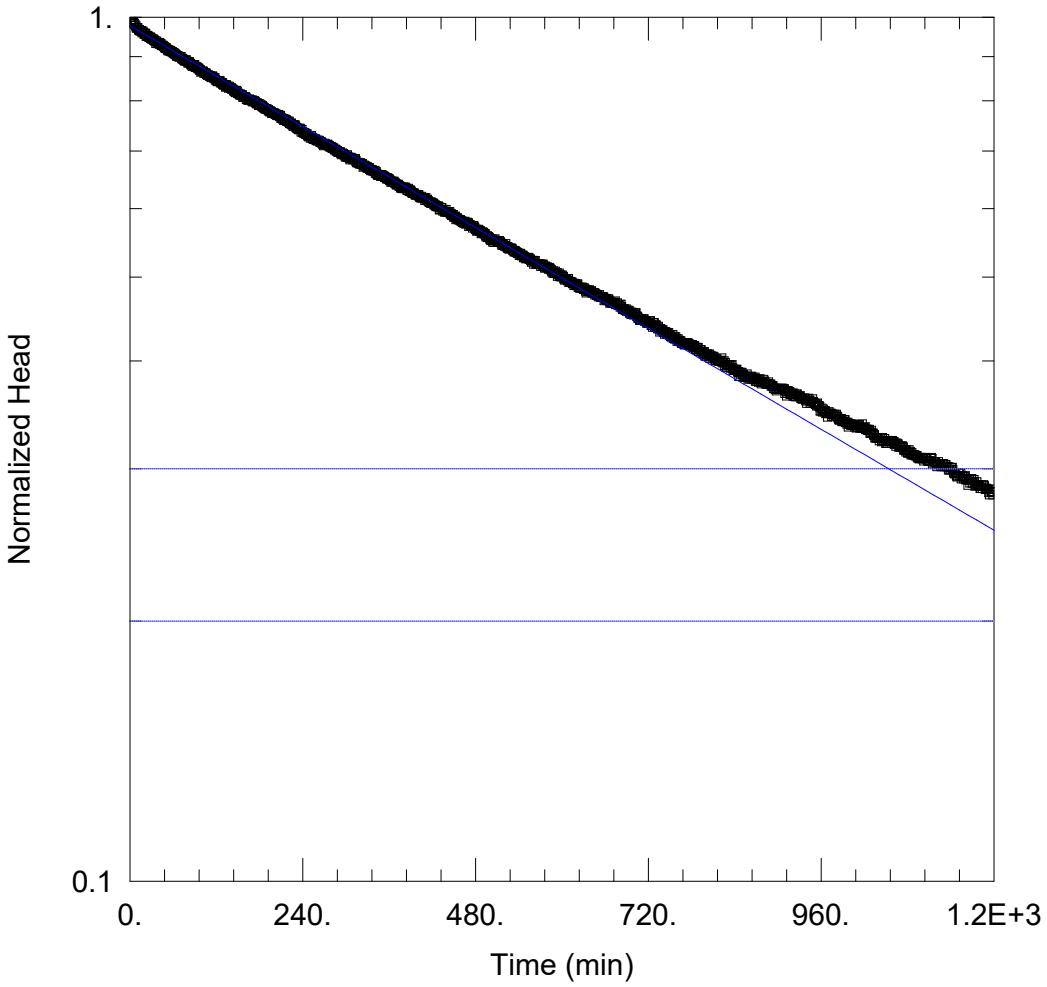
WELL DATA (MW22-306S)

Initial Displacement: 1.183 m
Total Well Penetration Depth: 3.62 m
Casing Radius: 0.0254 m
Static Water Column Height: 3.62 m
Screen Length: 1.52 m
Well Radius: 0.1016 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.439E-8 m/sec y0 = 1.048 m



WELL TEST ANALYSIS

Data Set: N:\...\MW22-309S_AM.aqt
Date: 07/28/22 Time: 06:57:49

PROJECT INFORMATION

Company: SLR Consulting
Client: FLATO Developments Inc.
Project: 209.30125
Location: Dundalk North
Test Well: MW22-309S
Test Date: June 27, 2022

AQUIFER DATA

Saturated Thickness: 4.35 m Anisotropy Ratio (Kz/Kr): 1.

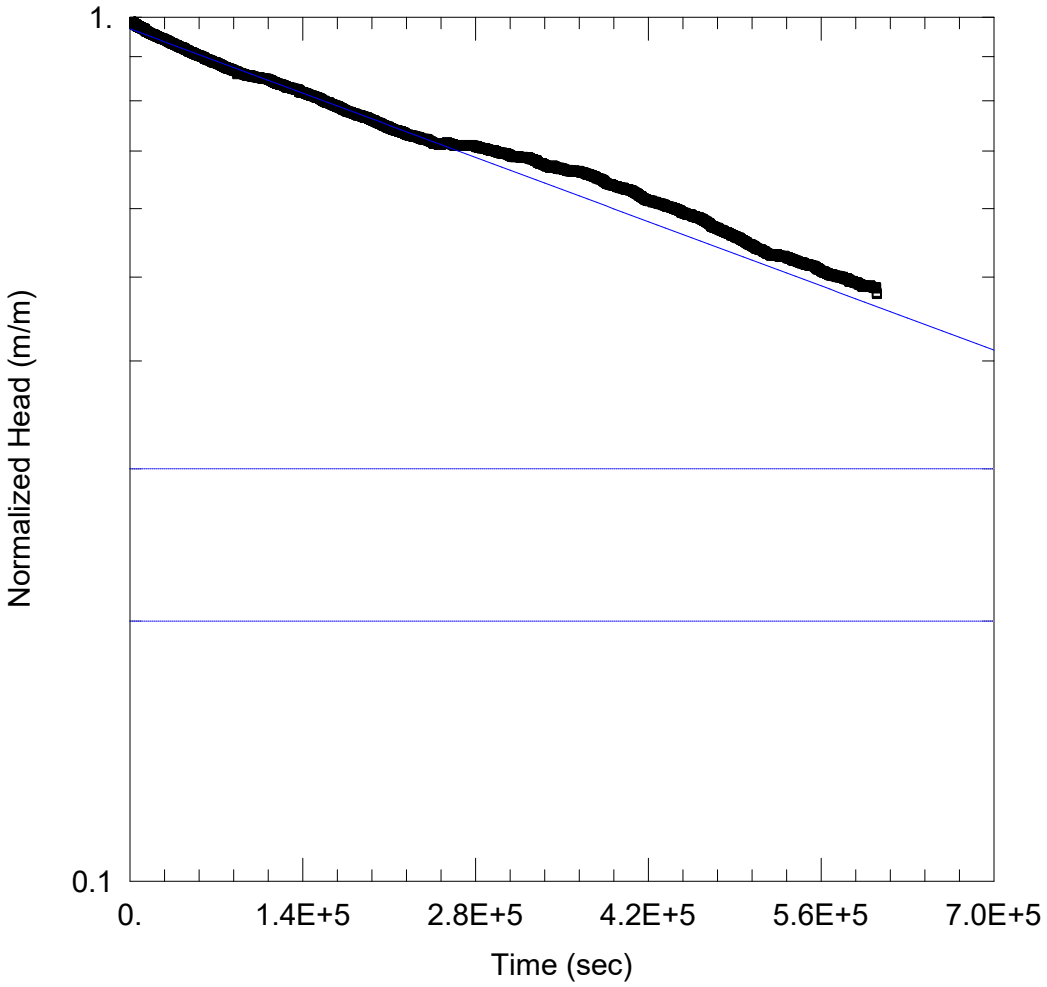
WELL DATA (MW22-309S)

Initial Displacement: 1.14 m
Total Well Penetration Depth: 4.35 m
Casing Radius: 0.0254 m
Static Water Column Height: 4.35 m
Screen Length: 1.53 m
Well Radius: 0.1016 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.003E-8 m/sec y0 = 1.114 m



WELL TEST ANALYSIS

Data Set: N:\...\MW22-313D_JH.aqt
Date: 09/02/22 Time: 08:28:59

PROJECT INFORMATION

Company: SLR
Client: Flato
Project: 209.30125.00003
Location: Dundalk North
Test Well: MW22-313D

AQUIFER DATA

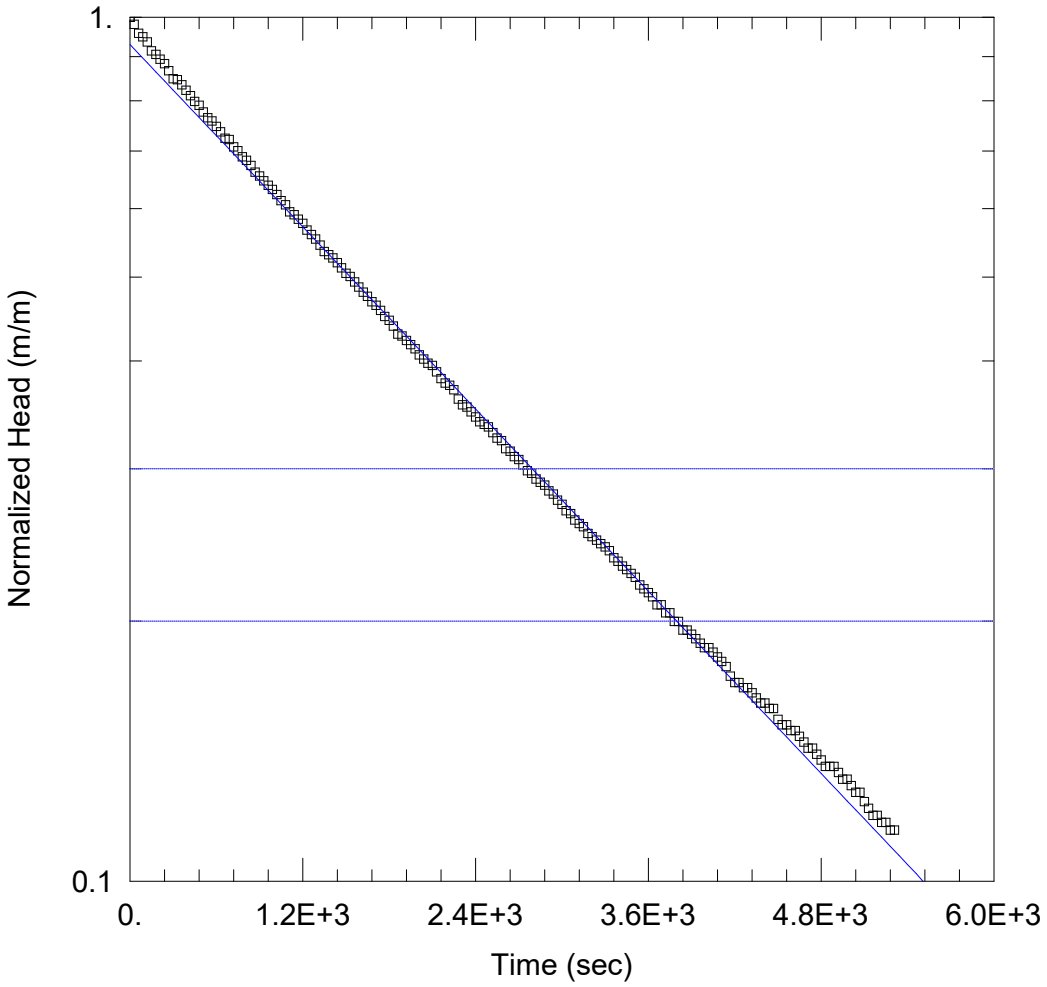
Saturated Thickness: 10.05 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW22-313D)

Initial Displacement: 2.907 m
Total Well Penetration Depth: 10.05 m
Casing Radius: 0.0254 m
Static Water Column Height: 10.05 m
Screen Length: 1.524 m
Well Radius: 0.1016 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 7.628E-10 m/sec
y0 = 2.817 m



WELL TEST ANALYSIS

Data Set: N:\...\MW22-313S_JH.aqt
Date: 07/29/22 Time: 12:13:07

PROJECT INFORMATION

Company: SLR
Client: Flato
Project: 209.30125.00003
Location: Dundalk North
Test Well: MW22-313S

AQUIFER DATA

Saturated Thickness: 4.825 m Anisotropy Ratio (Kz/Kr): 1.

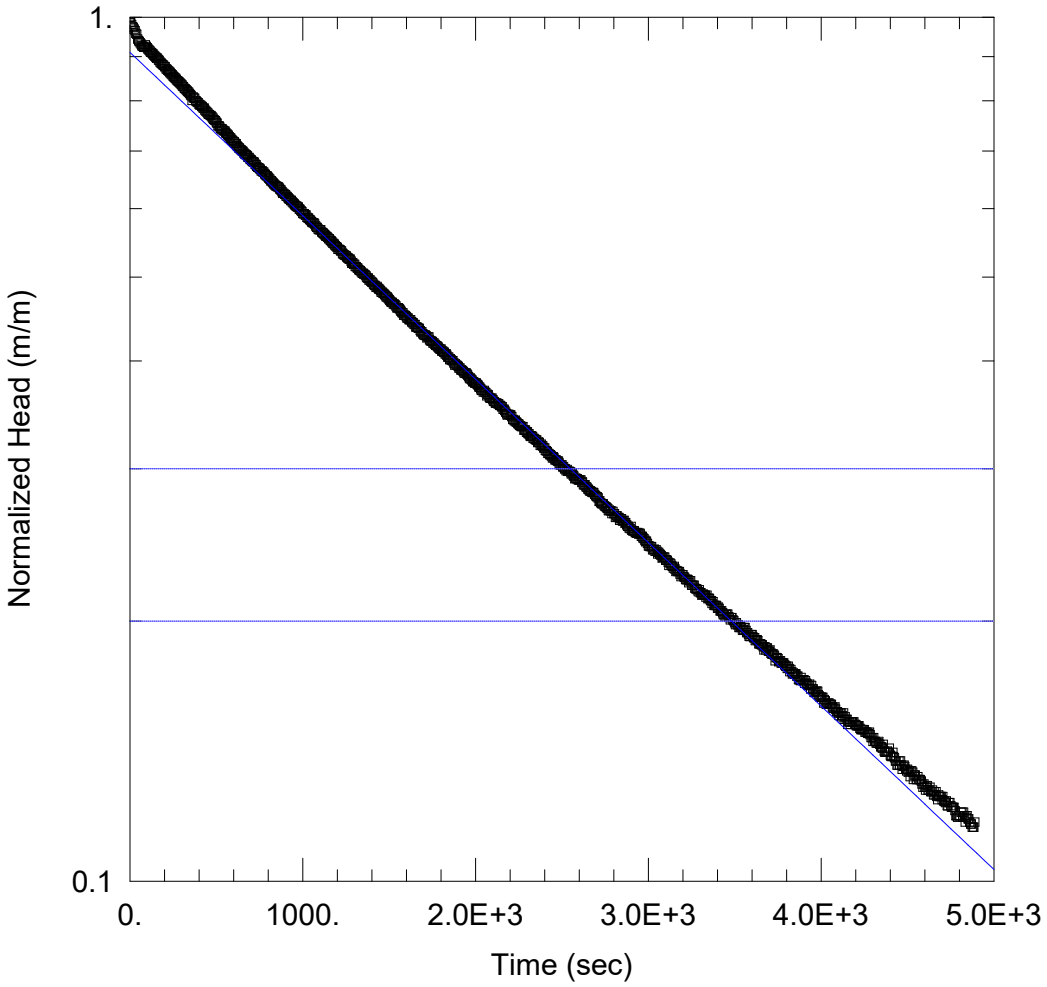
WELL DATA (MW22-313S)

Initial Displacement: 1.216 m
Total Well Penetration Depth: 4.825 m
Casing Radius: 0.0254 m
Static Water Column Height: 4.825 m
Screen Length: 1.524 m
Well Radius: 0.1016 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.226E-7 m/sec y0 = 1.13 m



WELL TEST ANALYSIS

Data Set: N:\...\MW22-316_JH.aqt
Date: 07/29/22 Time: 12:14:11

PROJECT INFORMATION

Company: SLR
Client: Flato
Project: 209.30125.00003
Location: Dundalk North
Test Well: MW22-316

AQUIFER DATA

Saturated Thickness: 7.369 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW22-316)

Initial Displacement: 1.763 m
Total Well Penetration Depth: 7.369 m
Casing Radius: 0.0254 m
Static Water Column Height: 7.369 m
Screen Length: 1.524 m
Well Radius: 0.1016 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.585E-7 m/sec
y0 = 1.605 m

Appendix E MECP Water Well Records

Hydrogeological Assessment

Glenelg Phase 3

Dundalk Village Two Inc.

SLR Project No.: 209.30125.00003

May 25, 2023

Table E-1: Summary of MECP Well Records

Well ID	Well Tag	Date Drilled	Well Depth (m)	Bottom Lithology	Water Use	Water Status	Depth Water at Found (m)	Static Level (m)	Pumping Rate (L/s)
1700350		26-Jul-67	31.1	Rock	Water Supply	Livestock	30.5	4.6	1.516
1700351		20-Feb-63	25.6	Gravel	Water Supply	Domestic	25.0	4.3	1.516
1700352		18-Oct-62	27.7	Rock	Water Supply	Domestic	19.8	7.3	0.91
1701035		6-Nov-69	36.9	Limestone	Water Supply	Livestock	35.4	7.3	0.606
1701454		6-Apr-73	64.6	Limestone	Water Supply	Domestic	64.6	12.2	1.592
1703380		5-May-87	24.4	Gravel	Water Supply	Domestic	21.3	1.8	1.516
2500876		28-Jun-53	43	Rock	Water Supply	Domestic		6.1	0.758
2500882		15-Oct-54	45.7	Limestone	Water Supply	Domestic	45.7	7.6	0.303
2500888		7-May-56	48.2	Limestone	Water Supply	Domestic	45.7	4	1.137
2500897		5-May-60	83.2	Limestone	Water Supply	Municipal	31.7	7	3.411
2500900		9-Jun-65	35.7	Gravel	Water Supply	Domestic	35.1	12.2	0.379
2502801		7-Mar-69	43.9	Rock	Water Supply	Livestock	41.1	10.7	1.137
2503215		1-Jul-70	39.6	Rock	Water Supply	Livestock	38.1	5.2	1.137
2503216		26-Jun-70	37.5	Rock	Water Supply	Livestock	35.1	12.8	0.758
2505795		17-Aug-76	40.2	Limestone	Water Supply	Domestic	39.0	18.3	0.606
2506029		15-Apr-77	33.2	Limestone	Water Supply	Domestic	32.6	11.6	1.364
2506475		29-Apr-78	28.3	Limestone	Water Supply	Domestic	28.3	3.7	1.516
2509109		15-Sep-87	55.8	Limestone	Water Supply	Domestic	55.8	16.5	0.455
2512639		30-Aug-94	42.1	Limestone	Water Supply	Domestic	33.2	17.1	0.531
2515004		25-Mar-02	100.6	Limestone	Water Supply	Municipal	47.2		
2515005		22-Apr-02	100.6	Limestone	Water Supply	Municipal	38.1		
2515188		25-Sep-02	73.5	Limestone	Water Supply	Domestic	64.0	28	0.379
2515624		4-Jun-03	43.3	Limestone	Water Supply	Domestic	36.9	8.2	0.91
2516415	A027686	9-Jun-05	6	Silt	Observation Wells	Not Used	1.5		
7041281	A005365	30-Nov-06	4.6	Silt	Test Hole	Not Used			
7049155	A047429	7-Apr-07	4.6	Silt	Observation Wells				
7116620		25-Nov-08	0		Abandoned-Other		1.2		
7155347		2-Sep-10	0		Abandoned-Other				
7155361		20-Sep-10	0		Abandoned-Other				
7166939	A117947	29-Jun-11	4.6		Test Hole	Test Hole			
7167449	A089996	20-Apr-11	32.3	Limestone	Water Supply	Domestic	32.0	2.2	3.411
7237016	A166231	3-Dec-14	6.1	Sand	Observation Wells	Monitoring	1.5		
7285238	A210321	17-Nov-16	7.6	Clay	Observation Wells	Monitoring	4.0		
7285242	A210296	15-Nov-16	7.6	Sand	Observation Wells	Monitoring			
7305297	A213693	7-Mar-17	0		Abandoned-Other	Not Used			
7305319	A213692	7-Mar-17	0		Abandoned-Other	Not Used			
7331881	A264297	5-Apr-19	4.6	Silt	Observation Wells	Monitoring	0.6	0.6	
7331882	A264292	5-Apr-19	6.1	Silt	Observation Wells	Monitoring			
7331883	A264294	5-Apr-19	4.6	Silt	Observation Wells	Monitoring	2.1	2.1	
7331884	A264296	5-Apr-19	6.1	Gravel	Observation Wells	Monitoring	2.1	2.1	
7331885	A264295	5-Apr-19	6.1	Silt	Observation Wells	Monitoring	2.1	2.1	
7331886	A264293	5-Apr-19	6.1	Silt	Observation Wells	Monitoring	1.2	1.2	
7339038	A258125	7-May-19	31.1	Limestone	Water Supply	Domestic	30.2	2.4	1.137
7367321	A295208	29-May-20	0						
7385248	_NO_TAG	17-Mar-21	0		Abandoned-Other				
7385249	_NO_TAG	17-Mar-21	0		Abandoned-Other				
7385250	_NO_TAG	17-Mar-21	0		Abandoned-Other				
7385251	_NO_TAG	17-Mar-21	0		Abandoned-Other				
7389879	A294344	24-Feb-21	0						
7397305	A336963	6-Aug-21	6.1	SILT	Observation Wells	Monitoring			

Notice of Collection of Personal Information

Personal information contained on this form is collected pursuant to sections 35-50 and 75(2) of the *Ontario Water Resources Act* and section 16.3 of the Wells Regulation. This information will be used for the purpose of maintaining a public record of wells in Ontario. This form and the information contained on the form will be stored in the Ministry's well record database and made publicly available. Questions about this collection should be directed to the Water Well Customer Service Representative at the Wells Help Desk, 125 Resources Road, Toronto Ontario M9P 3V6, at 1-888-396-9355 or wellshelpdesk@ontario.ca.

Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
A 336963

Type *

☑ Construction ☐ Abandonment

Measurement recorded in: *

☐ Metric ☑ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name
[redacted]	
Organization: Township of Southgate	Email Address: [redacted]

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
		[redacted]	

Country	Province	Postal Code	Telephone Number
Canada	Ontario	[redacted]	

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	550	Main Street East	

Lot	Concession	County/District/Municipality
		GREY

City/Town	Province	Postal Code
Dundalk	Ontario	

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	549142	4891746	Test UTM in Map	

Other

3. Overburden and Bedrock Material *

Well Depth * 20 (ft)

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To

				(ft)	(ft)
Black	Fill			0	5
Brown	Silt			5	12
Brown	Silt	Till		12	20

4. Annular Space *

Depth From (ft)	Depth To (ft)	Type of Sealant Used (Material and Type)	Volume Placed (cubic feet)
0	1	Concrete	0.4
1	8	Bentonite	2.67
8	20	Silica Sand	4.54

5. Method of Construction *

☐ Cable Tool ☑ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Diamond
☐ Jetting ☐ Driving ☐ Digging ☐ Rotary (Air) ☑ Augering ☐ Direct Push
☐ Other (specify) _____

6. Well Use *

☐ Public ☐ Industrial ☐ Cooling & Air Conditioning
☐ Domestic ☐ Commercial ☐ Not Used
☐ Livestock ☐ Municipal ☑ Monitoring
☐ Irrigation ☐ Test Hole ☐ Dewatering
☐ Other (specify) _____

7. Status of Well *

☐ Water Supply ☐ Replacement Well ☐ Test Hole
☐ Recharge Well ☐ Dewatering Well ☑ Observation and/or Monitoring Hole
☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality
☐ Abandoned, other (specify) _____
☐ Other (specify) _____

8. Construction Record - Casing * (use negative number(s) to indicate depth above ground surface)

Inside Diameter (in)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (ft)	Depth To (ft)
2	Plastic	0.154	-3	10
4	Steel	0.125	-3	1

9. Construction Record - Screen

Outside Diameter (in)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (ft)	Depth To (ft)
2.375	Plastic	0.01	10	20

10. Water Details

Water found at Depth (ft) ☐ Gas Kind of water ☐ Fresh ☑ Untested ☐ Other

11. Hole Diameter

Depth From (ft)	Depth To (ft)	Diameter (in)
0	20	8.5

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (GPM)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)														

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)													

After test of well yield, water was

☐ Clear and sand free ☐ Other (specify)

Pump intake set at (ft)	Pumping rate (GPM)	Duration of pumping hrs + min	Final water level end of pumping (ft)	Disinfected? * ☐ Yes ☑ No

Recommended pump depth (ft)	Recommended pump rate (GPM)	Well production (GPM)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☑ Make map area bigger

14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☐ Yes ☑ No		2021/08/06

Comments

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
London Soil Test Ltd.	7190

Business Address

Unit Number	Street Number	Street Name *
	712078	Southgate Sdrd 71

City/Town/Village *	Province	Postal Code *
Dundalk	ON	N0C 1B0

Business Telephone Number	Business Email Address
519-455-5777	info@londonsoil.com

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
McIntosh	Tyler	4037

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
McIntosh	Tyler	info@londonsoil.com

Signature	Date Submitted (yyyy/mm/dd)
Tyler McIntosh Digitally signed by Tyler McIntosh DN: cn=Tyler McIntosh, o=London Soil Test Ltd., ou, email=info@londonsoil.com, c=CA Date: 2021.09.08 14:42:47 -04'00'	2021/09/08

17. Ministry Use Only

Audit Number

5VRV O5JH

SB

UTM Zone 17 E 5 R Lot 227 N

Elev. 5 R 1730

Basin 23

The Ontario Water Resources Commission Act

WATER WELL RECORD

WATER RESOURCES DIVISION
AUG 8 1967
ONTARIO WATER RESOURCES COMMISSION

17 No 350

County or District DUFFERIN Township, Village, Town or City MELANCTHON

Con. 1 N.E. Lot PT. 224 Date completed 26 (day) JULY (month) 1967 (year)

[redacted] ress DUNDALK ONT.

Casing and Screen Record

Inside diameter of casing 4"

Total length of casing 97

Type of screen

Length of screen

Depth to top of screen

Diameter of finished hole 4"

Pumping Test

Static level 16

Test-pumping rate 20 G.P.M.

Pumping level 16

Duration of test pumping 3 HRS

Water clear or cloudy at end of test CLEAR

Recommended pumping rate 15 G.P.M.

with pump setting of 25 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
TOP SOIL	0	3	100	FRESH
SAND & BOULDERS	3	25	TO	
SAND & GRAVEL	25	90	102	
GREY ~~ROCK~~ SAND	90	98		
BROWN ROCK	98	102		

For what purpose(s) is the water to be used? STOCK & DOMESTIC

Is well on upland, in valley, or on hillside? UPLAND

Drilling or Boring Firm DURHAM DRILLING & ENTERPRISES LTD

Address DURHAM ONT.

Licence Number 1791

Name of Driller or Borer ED HOTCHKISS

Address DURHAM ONT.

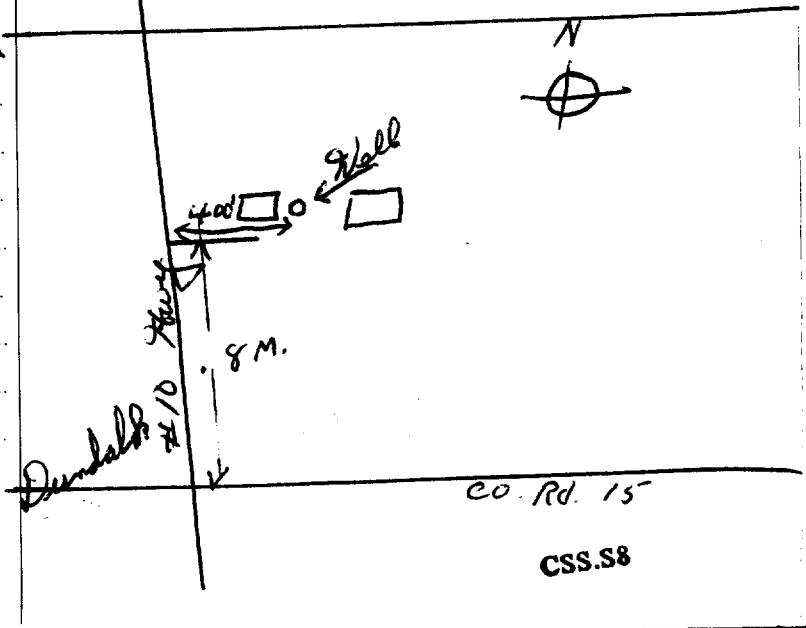
Date July 27-67

P E Johnston

(Signature of Licensed Drilling or Boring Contractor)

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



Form 7 15M-60-4138

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CSS.S8

GROUND WATER BRANCH
17 MAY No. 1963 351
ONTARIO WATER RESOURCES COMMISSION

UTM Z E
5 R N
Elev. 5 R 1730

The Ontario Water Resources Commission Act

WATER WELL RECORD

Basin 23
County or District Dufferin
Township, Village, Town or City Melancthon
Con. No. 10. Hwy. Lot 225 227
Date completed 20 (day) Feb. (month) 1963. (year)
[redacted] ress Dundalk.

Casing and Screen Record

Inside diameter of casing 4"
Total length of casing 84'
Type of screen —
Length of screen —
Depth to top of screen —
Diameter of finished hole 4"

Pumping Test

Static level 14'
Test-pumping rate 20 G.P.M.
Pumping level 17'
Duration of test pumping 2 hrs.
Water clear or cloudy at end of test Clear.
Recommended pumping rate 10 G.P.M.
with pump setting of 25' feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
Stones & Boulders	0.	20'		
Gravel & Stones	20'	42'	82'	
Hardpan & Boulders	42'	64'	84'	Fresh
Sand & Gravel	64'	72'		
Gravel	72'	84'		

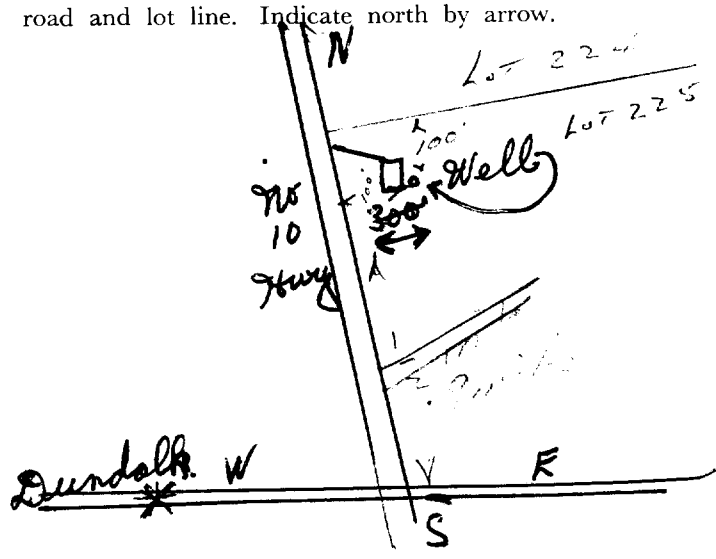
For what purpose(s) is the water to be used?
Household use.
Is well on upland, in valley, or on hillside? Upland.
Drilling or Boring Firm Durham Drilling Enterprises Ltd.
Address Box 299. Durham Ont.
Licence Number 1000
Name of Driller or Borer Percy Johnston &
Address Fred Hoch Bros.
Date April 2nd. 1963.
Percy Johnston.
(Signature of Licensed Drilling or Boring Contractor)

Form 7 10M-62-1152

OWRC COPY

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



CSS.S8
P.C.

UTM Z E

Sub. 5 R 4 N

Elev. 5 R T 725

Basin 2 3 6

County or District DUFFERIN

The Ontario Water Resources Commission Act

WATER WELL RECORD

GROUND WATER BRANCH
17 No 352
JAN 14
ONTARIO WATER RESOURCES COMMISSION

Township, Village, Town or City MELANCTHON

Con. #10 HIGHWAY Lot 226

Date completed 18TH (day) OCT (month) 1962 (year)

[redacted] ress DUNDALK ONTARIO

Casing and Screen Record

Inside diameter of casing 4"

Total length of casing 79'

Type of screen —

Length of screen —

Depth to top of screen

Diameter of finished hole 4"

Pumping Test

Static level 24'

Test-pumping rate 12 G.P.M.

Pumping level 70 FT.

Duration of test pumping 3 HRS

Water clear or cloudy at end of test CLEAR

Recommended pumping rate 10 G.P.M.

with pump setting of 80 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
TOP SOIL	0'	4'	65	CLEAR
SANDY CLAY	4'	25'	&	
STONEY CLAY	25'	50'	85	FRESH
SANDY CLAY	50'	60'		
~~GREY ROCK~~				
STONEY CLAY	60'	65'		
CLAY	65'	79'		
HARD GREY ROCK	79'	91'		

For what purpose(s) is the water to be used? DOMESTIC

Is well on upland, in valley, or on hillside? UPLAND

Drilling or Boring Firm DURHAM DRILLERS

Address DURHAM ONTARIO BOX 299.

Licence Number 620

Name of Driller or Borer E. HOICHRISS

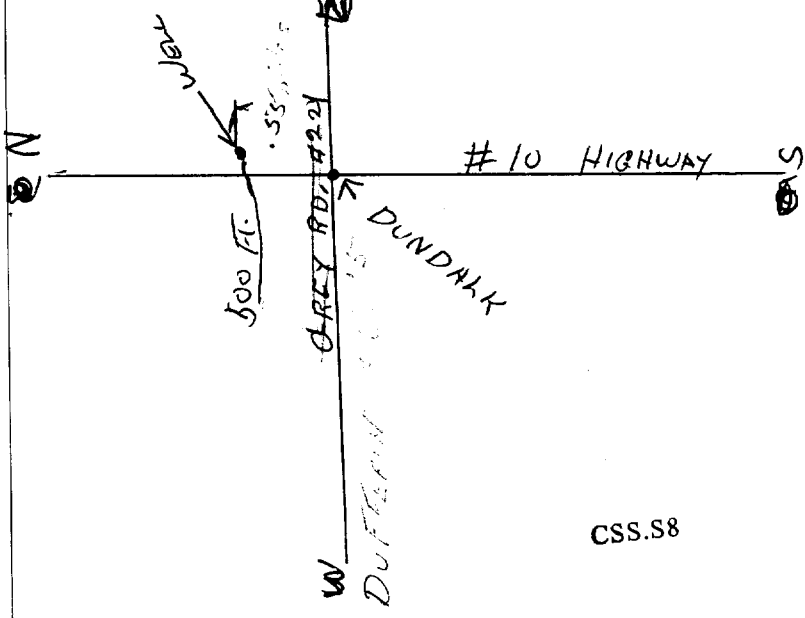
Address DURHAM ONTARIO

Date JAN 4TH 1963

Percy Johnston
(Signature of Licensed Drilling or Boring Contractor)

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



Form 7 10M-62-1152

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SRE CONT LOT 224

The Ontario Water Resources Commission Act

WATER WELL RECORD

Water management in Ontario

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2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 (1 2) | 1701035 (3) | MUNICIP. 17004 (10-14) | CON. SR E (15-22) | 01 (23 24)

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT 25-27
~~GREY~~ DUFFERIN	~~PROTON~~ MELANCTHON	I S.RI.E.	224

OWNER (SURNAME FIRST) [redacted] ADDRESS DUNDALK

DATE COMPLETED 28-53: DAY 06 MO. NOV YR 1969

G 92730 (24) RC. 4 (25) ELEVATION 1230 (26) RC. 5 (30) BASIN CODE 23 (31) I II III IV (47)

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	DEPTH – FEET TO
	CLAY-ROCKS, GRAVEL LAYERS			0	105
GREY	BROKEN - LIMESTONE.			105	121

31: 0105 0111 | 0121 0125

32: (10 14 15 21 32 43 54 65 75 80)

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0116 (10-13)	1 ☑ FRESH 3 ☐ SULPHUR (14) / 2 ☐ SALTY 4 ☐ MINERAL
121	
(15-18)	1 ☐ FRESH 3 ☐ SULPHUR (19) / 2 ☐ SALTY 4 ☐ MINERAL
(20-23)	1 ☐ FRESH 3 ☐ SULPHUR (24) / 2 ☐ SALTY 4 ☐ MINERAL
(25-28)	1 ☐ FRESH 3 ☐ SULPHUR (29) / 2 ☐ SALTY 4 ☐ MINERAL
(30-33)	1 ☐ FRESH 3 ☐ SULPHUR (34) / 2 ☐ SALTY 4 ☐ MINERAL (80)

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	DEPTH – FEET TO
(10-11) 04	1 ☑ STEEL (12) 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	205	0	0121 (13-16)
(17-18)	1 ☐ STEEL (19) 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	SLOTTED CASING	FROM [redacted]	114 FT TO 131 FT 5 IN (20-23 27-30)
(24-25)	1 ☐ STEEL (26) 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.) 31-33	DIAMETER INCHES 34-38	LENGTH FEET 39-40
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET 41-44	80

61 PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
(10-13)	(14-17)	
(18-21)	(22-25)	
(26-29)	(30-33) (80)	

71 PUMPING TEST

PUMPING TEST METHOD (10)	PUMPING RATE (11-14)	DURATION OF PUMPING (15-16 HOURS 17-18 MINS.)
1 ☑ PUMP 2 ☐ BAILER	0008 GPM.	02 HOURS 00 MINS.

STATIC LEVEL (19-21)	WATER LEVEL END OF PUMPING (22-24)	WATER LEVELS DURING (25) 1 ☑ PUMPING 2 ☐ RECOVERY	15 MINUTES (26-28)	30 MINUTES (29-31)	45 MINUTES (32-34)	60 MINUTES (35-37)
024 FEET	024 FEET		030 FEET	030 FEET	030 FEET	030 FEET

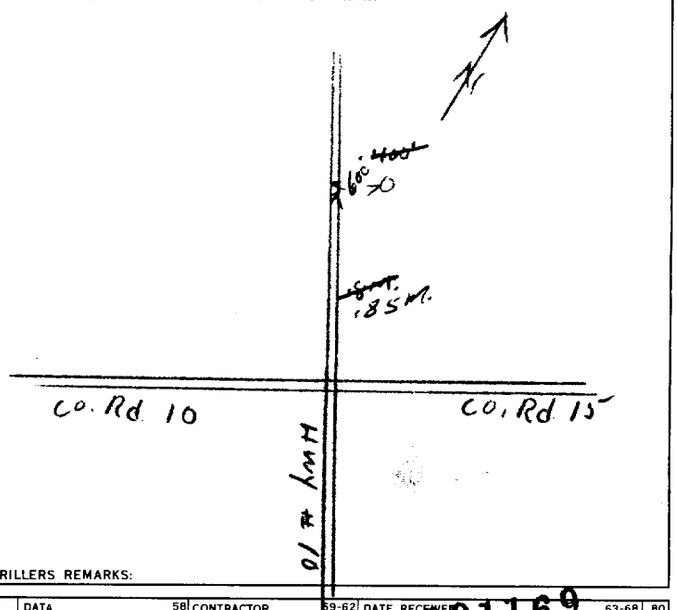
IF FLOWING, GIVE RATE (38-41)	PUMP INTAKE SET AT	WATER AT END OF TEST (42)
GPM.	FEET	1 ☑ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING (43-45)	RECOMMENDED PUMPING RATE (46-49)
☐ SHALLOW ☑ DEEP	065 FEET	0008 GPM.

(50-53) 016.0 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL (54)

1 ☑ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE (55-56) 12

1 ☑ DOMESTIC 2 ☑ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING ☐ OTHER 9 ☐ NOT USED

METHOD OF DRILLING (57)

1 ☐ CABLE TOOL 2 ☑ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: LADCO DRILLING — LICENCE NUMBER: 3423

ADDRESS: Hillsburg R.R. #1

NAME OF DRILLER OR BORER: THOMAS LANG — LICENCE NUMBER: 3423

SIGNATURE OF CONTRACTOR: T. Lang — SUBMISSION DATE: DAY 13 MO. NOV YR. 69

OFFICE USE ONLY

DATA SOURCE (58): 1 — CONTRACTOR (59-62): 3316 — DATE RECEIVED (63-68): 191169 (80)

DATE OF INSPECTION — INSPECTOR

REMARKS:

CSS.S8

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MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

ONTARIO

4IA/IW

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11 | 1701454 | MUNICIP. 17004 | CON. SR. E | 01

COUNTY OR DISTRICT: ~~Grey~~ DUFFERIN
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Melancthon
CON., BLOCK, TRACT, SURVEY, ETC.: 1 TSRE
LOT: 228
[redacted] Dundalk Ont.
DATE COMPLETED: DAY 06 MO 04 YR 73
UTM: 92200 | RC. | ELEVATION 1725 | RC. 5 | BASIN CODE 23

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Clay Stones & Gravel			0	25
	Hardpan			25	100
	~~Rock~~ LIMESTONE			100	212

31 | 0025 | 05 | 12 | 11 | 0100 | 14 | 0212 | 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0212	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
07	☒ 1 STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE ~~4 OPEN HOLE~~	241	0	~~100~~ 0100
			100	~~212~~ 0212
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE GPM.	DURATION OF PUMPING HOURS	MINS
1 ☒ PUMP ~~2 BAILER~~	0021	05	00

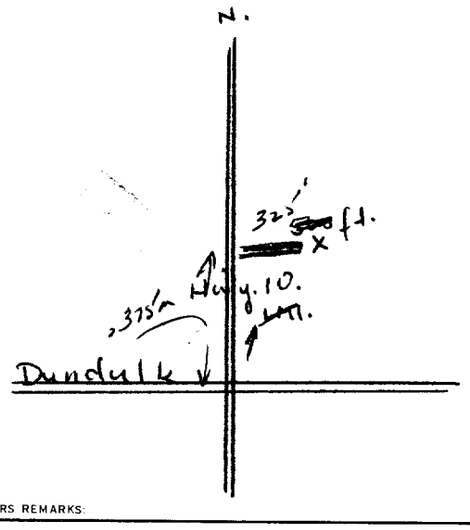
STATIC LEVEL FEET	WATER LEVEL END OF PUMPING FEET	WATER LEVELS DURING	15 MINUTES FEET	30 MINUTES FEET	45 MINUTES FEET	60 MINUTES FEET
040	110	1 ☒ PUMPING 2 ☐ RECOVERY	080	110	110	110

IF FLOWING, GIVE RATE GPM	PUMP INTAKE SET AT FEET	WATER AT END OF TEST	RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING FEET	RECOMMENDED PUMPING RATE GPM.
	190	1 ☐ CLEAR 2 ☒ CLOUDY	☐ SHALLOW ☑ DEEP	190	0021

50-53: 000.3 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL

54: 1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED

WATER USE

55-56: 1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED

01

METHOD OF DRILLING

57: 1 ☒ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: S. Neumann — LICENCE NUMBER: 3813
ADDRESS: R. R. 4. Dundalk
NAME OF DRILLER OR BORER — LICENCE NUMBER
SIGNATURE OF CONTRACTOR: S. Neumann — SUBMISSION DATE: DAY 6. MO. 4. YR. 73

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 3813 — DATE RECEIVED 63-68: 060673 — 80
DATE OF INSPECTION — INSPECTOR
REMARKS: CSS.S8
P
WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 07-091

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1703380

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COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
DUFFERIN	MELANCTON	1 NETSR PT	222

[redacted] BOX 67 DUNDALK NOC 1B0

DATE COMPLETED: DAY 5 MO 5 87

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BLACK	TOPSOIL			0	1
BROWN	HARDPAN & GRAVEL			1	58
BROWN	SAND & GRAVEL			58	80

47 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
70	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
TO	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
80	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
5"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	1/188	0	80
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE: | DEPTH TO TOP OF SCREEN FEET:

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☒ BAILER	20 GPM	3 HOURS 30 MINS

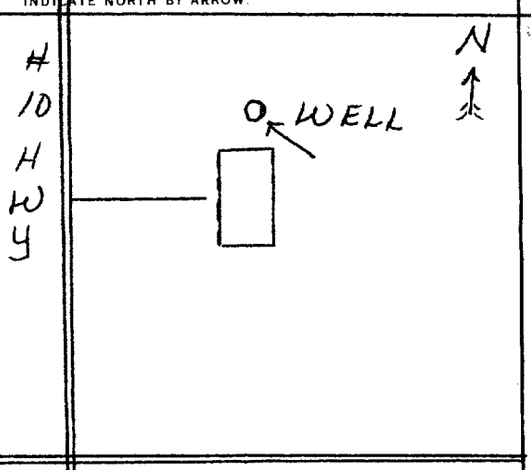
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
6 FEET	18 FEET	1 ☐ PUMPING 2 ☒ RECOVERY	8 FEET	6 FEET	6 FEET	6 FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	22 FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	60 FEET	12 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS: 06023

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE

1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD

1 ☒ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

TRACTOR: 1 MORILLING ENT LTD | LICENCE NUMBER: 1804

RHAM NOGIRO | LICENCE NUMBER: T-0206

ANYI

ston | SUBMISSION DATE: DAY 6 MO 5 87 YR

OFFICE USE ONLY

DATE RECEIVED: 260587

DATE OF INSPECTION: | INSPECTOR:

REMARKS:

CSS.ES

FORM NO. 0506—4—77 FORM 7

OF THE ENVIRONMENT COPY

UTM 17 Z 548115 E
9 R 4819065 10 N

4 1/4 west

Elev. 9 R 17013

Basin 23

ONTARIO

RECEIVED
JUL 30 1953
GEOLOGICAL BRANCH
DEPARTMENT OF MINES

25 No 876

X

The Well Drillers Act

Department of Mines, Province of Ontario

Water Well Record

County or Territorial District.... Grey .... Township, ~~Village, Town or City~~ Village of Dundalk

Con. — Lot — Street and Number (if in Village, Town or City)....

Owner.... [redacted] Address.... Dundalk Ont.

Date Completed.... 28 (day) June (month) 53 (year) Cost of Well (excluding pump)....

Pipe and Casing Record

Casing diameter(s).... 4" outside

Length(s) of casing(s).... 1.1.9'

Type of screen.... none used

Length of screen....

Distance from top of screen to ground level....

Is well a gravel-wall type?....

Pumping Test

Date....

Static level.... 20'

Pumping level.... 20' how

Pumping rate.... 600 gal. per ~~minute~~

Duration of test.... one hours

Distance from cylinder or bowls to ground level....

Water Record

Kind (fresh or mineral).... fresh

Quality (hard, soft, contains iron, sulphur, etc.) medium hard

Appearance (clear, cloudy, coloured).... clear

For what purpose(s) is the water to be used?.... Domestic

How far is well from possible source of contamination?....

What is the source of contamination?....

Enclose a copy of any mineral analysis that has been made of water....

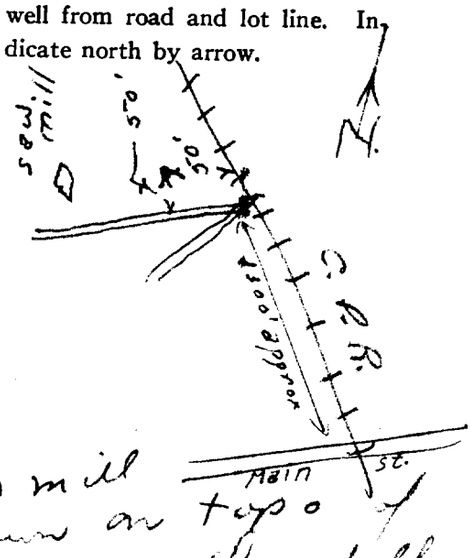
Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises

Well Log

Overburden and Bedrock Record	From	To
clay & boulders	0 ft.	117 ft.
rock	117	141

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



Situation: Is well on upland, in valley, or on hillside?....

Drilling Firm....

Address....

Name of Driller.... M. A. Bellerby Address 19 Melgund Rd. Toronto

Date.... July 28/53 Licence Number.... 48

M. A. Bellerby
Signature of Licensee

FORM 5

4/A/1

UTM 17 Z 548225 E

9 R 4819078 10 N

Elev. 9 R 1707

Basin 23

ONTARIO

The Water-well Drillers Act, 1954

Department of Mines

RECEIVED

FEB 16 1955

GEOLOGICAL BRANCH
DEPARTMENT OF MINES

25 No 882

Water-Well Record

County or Territorial District Grey Township, Village, ~~Town or City~~ Flesherton

Con. — Lot Centre Street and Number (if in Village, Town or City) Flesherton

Owner [redacted] Address

Date completed 13 10 1954
(day) (month) (year)

Pipe and Casing Record

Casing diameter(s) 4" O.D.

Length(s) 100

Type of screen No Screen

Length of screen

Pumping Test

Static level 25' Ft.

Pumping rate 150 Gal per Hour

Pumping level 25 Ft.

Duration of test 1 Hr.

Well Log

Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
Clay & Stones	Ground Level	100	150	125'	Fresh
Limestone Rock	100	150			

For what purpose(s) is the water to be used?

Domestic - house -

Is water clear or cloudy? Clear

Is well on upland, in valley, or on hillside? upland

Drilling firm M. A. Bellerby

Address

Name of Driller M. A. Bellerby

Address 19 Collingwood Rd Owen Sound

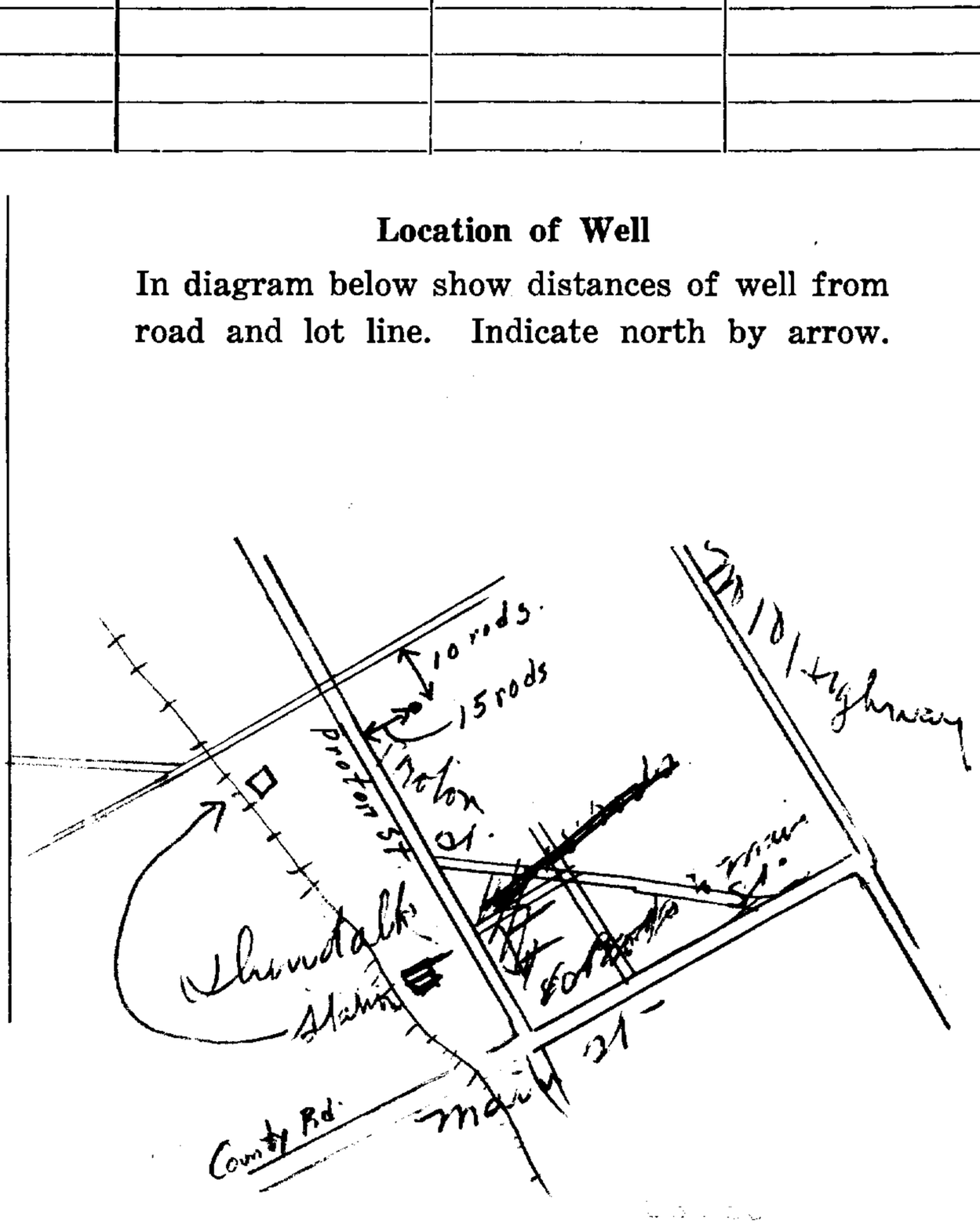
Licence Number 48

I certify that the foregoing statements of fact are true.

Date Oct-15 M. A. Bellerby
Signature of Licensee

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



Form 5

41 A/11 e

UTM | 17 | Z | 541910 | E
| 9 | R | 4891052 | 5 | N
Elev. | 9 | R | 17010 |
Basin | 23 | | |

ONTARIO

The Water-well Drillers Act, 1954
Department of Mines

25 No 888

GROUND WATER BRANCH
APR 17 1957
ONTARIO WATER RESOURCES COMMISSION

Water-Well Record

[redacted] COEY [redacted] Township, Village, ~~Town or City~~ Dundalk
[redacted] Village, Town or City)
[redacted] address
Date completed 1 (day) May (month) 1956 (year)

Pipe and Casing Record

Casing diameter(s) 3 5/8
Length(s) 102
Type of screen
Length of screen

Pumping Test

Static level 13
Pumping rate 15 G.P.M.
Pumping level 13
Duration of test

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
Clay, boulders	0	102			
Limestone	102	158	150	137	Fresh

For what purpose(s) is the water to be used?
Domestic
Is water clear or cloudy? clear
Is well on upland, in valley, or on hillside? upland

Drilling firm M. S. Bellerby
Address

Name of Driller
Address

Licence Number 98

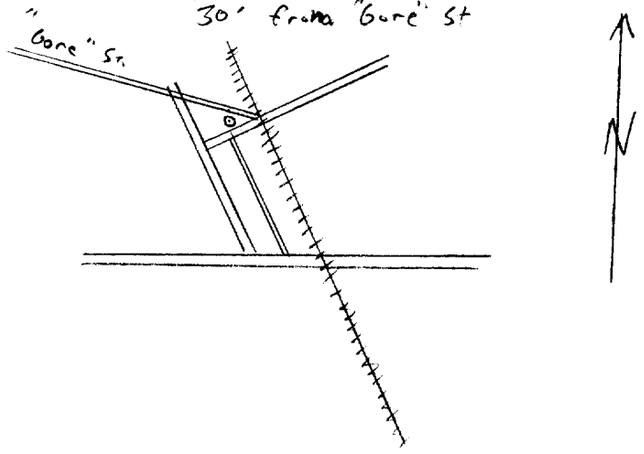
I certify that the foregoing statements of fact are true.

Date Apr 17/57 M. S. Bellerby
Signature of Licensee

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.

40 rds from R.R.
30' from "Gore" St



Form 5

4/A/ ~~Sept~~

UTM 17 Z 548140 E
9 R 4819070 N
Elev. 9 R 1701 4
Basin 23

25 № 897

GROUND WATER BRANCH
JUN 16 1960
ONTARIO WATER RESOURCES COMMISSION

The Ontario Water Resources Commission Act, 1957

WATER WELL RECORD

County ~~or District~~ Grey — Township, (Village) Town or City Village of Dundalk

Con. Block P — Lot T — Date completed 5 (day) May (month) 1960 (year)

Owner Village of Dundalk (print in block letters) — Address Dundalk, Ont.

Casing and Screen Record — Village well # 2

Inside diameter of casing 10"
Total length of casing 99'-10"
Type of screen —
Length of screen —
Depth to top of screen —
Diameter of finished hole 10"

Pumping Test

Static level 23
Test-pumping rate 45 G.P.M.
Pumping level 153'
Duration of test pumping 20 hrs.
Water clear or cloudy at end of test clear
Recommended pumping rate 45 G.P.M.
with pumping level of 175'

Well Log — Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, sulphur)
Fill, -1	0	2			
Sand & gravel	2	12			
hardpan, stoney	12	54			
Sand & clay	54	62			
Sand & gravel	62	98			
Limestone, light brown, hard	98	102			
" , Buff, hard	102	152	104'	81'	Fresh
" , brown, hard	152	195	195	172'	Fresh
" white, hard	195	208			
" Light brown, hard	208	218			
" Buff, hard	218	228	228	205'	Fresh
" Brown, hard	228	248	248	225'	Fresh
" dark Brown, red hard	248	273	—		

For what purpose(s) is the water to be used?
Municipal Supply

Is well on upland, in valley, or on hillside?
upland

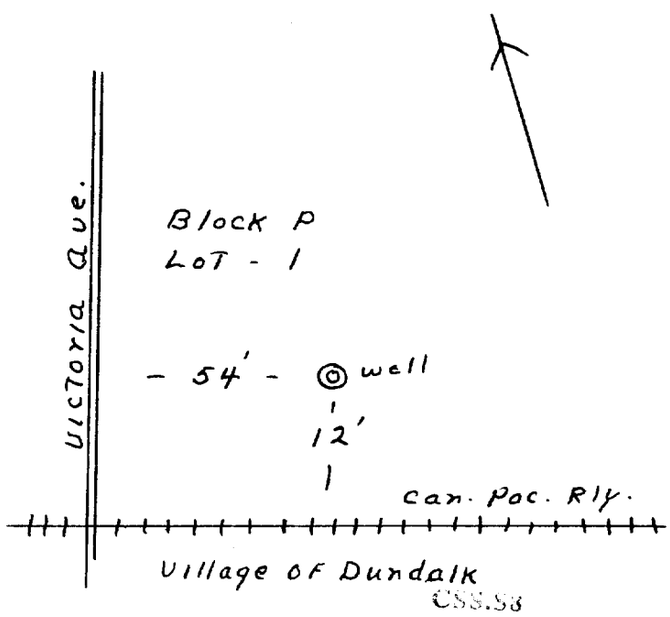
Drilling Firm G. L. Davidson
Address Wingham

Licence Number 593
Name of Driller E. Thompson
Address Wingham
Date May 30

G. L. Davidson
(Signature of Licensed Drilling Contractor)

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



CSS.58

GD

41A/1 ~~East~~

UTM 17 Z 547975 E

9 R 4891085 0 N

Elev. 9 R 1701 4

Basin 23

County or District ~~Grey~~

Con. [redacted] Lot

WATER RESOURCES DIVISION
25 No 100
AUG 26 1965
ONTARIO WATER RESOURCES COMMISSION

The Ontario Water Resources Commission Act

WATER WELL RECORD

~~Township~~, Village, ~~Town or City~~ ~~Proton~~ Dundalk

Date completed 9 (day) June (month) 1965 (year)

ress Dundalk.

Casing and Screen Record

Inside diameter of casing 4"

Total length of casing 114'

Type of screen —

Length of screen —

Depth to top of screen —

Diameter of finished hole 4"

Pumping Test

Static level 40'

Test-pumping rate 5 G.P.M.

Pumping level 50

Duration of test pumping 5 hrs

Water clear or cloudy at end of test Clear

Recommended pumping rate 4 G.P.M.

with pump setting of 80' feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
Hard Pan & Boulders	0	114		
Gravel	114	117		
			115	Fresh
			to	
			117	

For what purpose(s) is the water to be used?

Household

Is well on upland, in valley, or on hillside? Upland

Drilling or Boring Firm Durham Drilling Enterprises Ltd

Address Box 299. Durham

Licence Number 1767

Name of Driller or Borer David Watson

Address Priceville

Date June 10. 1965

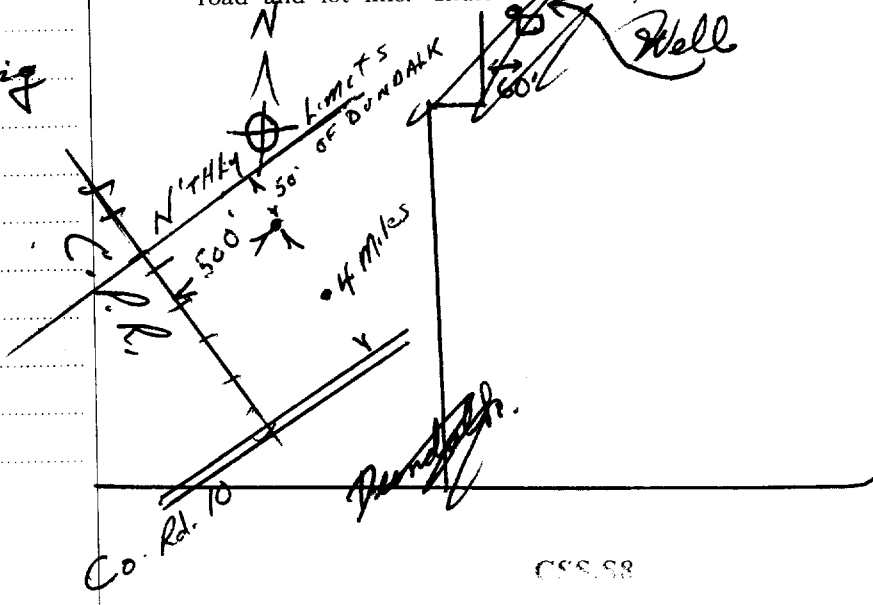
Percy Johnston
(Signature of Licensed Drilling or Boring Contractor)

Form 7 15M-60-4138

OWRC COPY

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



CSS 58

Ontario (https://www.ontario.ca/page/government-ontario)

Map: Well records

This map allows you to search and view well record information from reported wells in Ontario.

Full dataset is available in the Open Data catalogue (https://data.ontario.ca/dataset/well-records) .

Go Back to Map

Well ID

Well ID Number: 2502801
Well Audit Number:
Well Tag Number:
This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location		

Township	DUNDALK VILLAGE
Lot	
Concession	
County/District/Municipality	GREY
City/Town/Village	
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 17 Easting: 548014.30 Northing: 4891073.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To
	LOAM			0 ft	3 ft
	CLAY	MSND		3 ft	20 ft
	GRVL	BLDR		20 ft	30 ft
	CLAY	GRVL		30 ft	40 ft
	GRVL	BLDR		40 ft	50 ft
	CLAY	GRVL		50 ft	127 ft
	ROCK			127 ft	144 ft

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant Used (Material and Type)	Volume Placed

Method of Construction & Well Use

Method of Construction	Well Use
Cable Tool	Domestic
	Livestock

Status of Well

Water Supply

Construction Record - Casing

Inside Diameter	Open Hole or material	Depth From	Depth To
4 inch	STEEL		127 ft
4 inch	OPEN HOLE		144 ft

Construction Record - Screen

Outside Diameter	Material	Depth From	Depth To

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 1804

Results of Well Yield Testing

After test of well yield, water was	CLOUDY
If pumping discontinued, give reason	
Pump intake set at	
Pumping Rate	15 GPM

Duration of Pumping	2 h:0 m
Final water level	60 ft
If flowing give rate	
Recommended pump depth	85 ft
Recommended pump rate	12 GPM
Well Production	PUMP
Disinfected?	

Draw Down & Recovery

Draw Down Time(min)	Draw Down Water level	Recovery Time(min)	Recovery Water level
SWL	35 ft		
1		1	

2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
45		45	
50		50	

60		60	

Water Details

Water Found at Depth	Kind
135 ft	Fresh

Hole Diameter

Depth From	Depth To	Diameter

Audit Number:

Date Well Completed: March 07, 1969

Date Well Record Received by MOE: April 08, 1969

Related

How to use a Ministry of the Environment map (https://www.ontario.ca/page/how-use-ministry-environment-map#wells)

Technical documentation: Metadata record (https://data.ontario.ca/dataset/well-records/resource/3031344e-e3f2-48d5-888c-c1deadfd2f77)

Updated: October 18, 2021
Published: March 20, 2014

The Ontario Water Resources Commission Act

WATER WELL RECORD

41 A 1 W C

Water management in Ontario

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 2503215 | MUNICIP. 2501/2 | CON. SR W C 01

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
GREY	PROTON	1 ~~SWFSR~~ WSR	~~220~~ 221, ~~222~~

[redacted] UNDALE — DATE COMPLETED DAY 01 MO ~~July~~ YR 70

92900 | RC. 4 | ELEVATION 1725 | RC. 5 | BASIN CODE 23

17

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	DEPTH – FEET TO
BLACK	TOPSOIL	BOULDERS	LOOSE	0	2
GREY	CLAY	11	PACKED	2	30
11	11	STONES	11	30	60
11	SAND	CLAY	11	60	100
BROWN	CLAY	BOULDERS	11	100	120
11	ROCK			120	130

31 | 0002802/13 | 0030205/13 | 0060205/12 | 0100209ast | 0120605/13 | 0130626

32

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0125	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
0130	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	DEPTH – FEET TO
~~4~~ 04	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ ~~OPEN HOLE~~	4	0 120	0120 ~~130~~
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			0130
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	DEPTH SET AT – FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☒ BAILER	0015 GPM.	02 HOURS 20 MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
017 FEET	017 FEET	017 FEET	017 FEET	017 FEET	017 FEET

1 ☒ PUMPING 2 ☐ RECOVERY

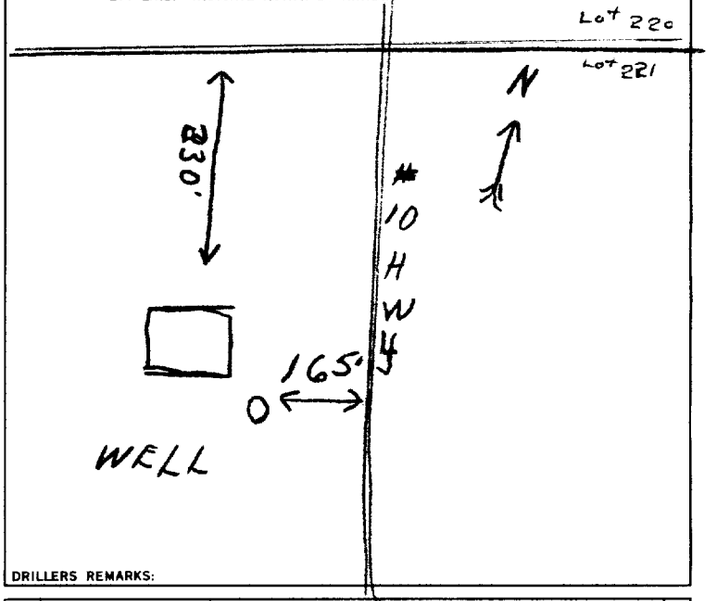
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
X GPM.	60 FEET	1 ☐ CLEAR 2 ☒ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	060 FEET	0015 GPM.

030.0 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 12

1 ☒ DOMESTIC 2 ☒ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING ☐ OTHER 9 ☐ NOT USED

METHOD OF DRILLING

1 ☒ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: ~~ED~~ DURHAM DRILLING & ENTILED — LICENCE NUMBER 1804

ADDRESS: DURHAM ONT BOX 299

NAME OF DRILLER OR BORER: ED HOTCHKISS — LICENCE NUMBER

SIGNATURE OF CONTRACTOR: P Edmonston — SUBMISSION DATE DAY 1 MO July YR 70

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 1804 | DATE RECEIVED 060770

DATE OF INSPECTION 21/6/71 | INSPECTOR PE

REMARKS:

OWRC COPY

41A 1W

The Ontario Water Resources Commission Act

WATER WELL RECORD

Water management in Ontario

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 2503216 | MUNICIP. 25702 | CON.

COUNTY OR DISTRICT: GREY | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: PROTON DUNDALK | CON., BLOCK, TRACT, SURVEY, ETC. | LOT

[redacted] DUNDALK ONT. | DATE COMPLETED 06-53 DAY 26 MO JUNE YR 70

RC. 81200 | RC. 4 | ELEVATION 1720 | RC. 5 | BASIN CODE 23

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	DEPTH – FEET TO
BLACK	TOPSOIL			0	2
BROWN	HARD PAN & STONES.			2	103
BROWN	HARD ROCK			103	123

31 | 0002802 | 0103614/12 | 0123626

32

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0115	1 ☐ FRESH 2 ☒ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
~~70~~	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
~~123~~	1 ☒ ~~FRESH~~ 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	DEPTH – FEET TO
04"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	1/4"	0	~~103~~ 0103
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ ~~OPEN HOLE~~		103	~~123~~ 0123
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☒ BAILER	0010 GPM.	02 HOURS 20 MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
042 FEET	045 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	045 FEET	~~045~~ FEET	~~045~~ FEET	~~045~~ FEET

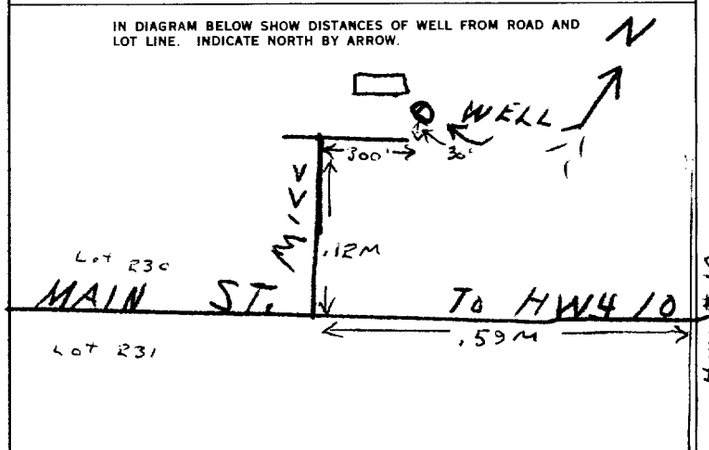
IF FLOWING, GIVE RATE ____ GPM. | PUMP INTAKE SET AT ____ FEET | WATER AT END OF TEST 1 ☐ CLEAR 2 ☒ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING 080' FEET | RECOMMENDED PUMPING RATE 0008 GPM.

003.3 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL 54

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 55-56 12

1 ☒ ~~DOMESTIC~~ 2 ☒ ~~STOCK~~ 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING 57

1 ☒ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: DURHAM DRILLING ENT. LTD | LICENCE NUMBER: 1804

ADDRESS: BOX 299 DURHAM.

NAME OF DRILLER OR BORER: David Watson | LICENCE NUMBER: 1804

SIGNATURE OF CONTRACTOR: P.E. Johnston | SUBMISSION DATE: DAY 26 MO June YR 70

OFFICE USE ONLY

DATA SOURCE 58: 1 | CONTRACTOR 59-62: 1804 | DATE RECEIVED 63-68: 060770

DATE OF INSPECTION: 21/6/71 | INSPECTOR: P/E

REMARKS:

OWRC COPY

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

41 A/1W

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 2505795 | MUNICIP 25012 | CON SR W | 01

COUNTY OR DISTRICT: Grey

TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Proton

CON., BLOCK, TRACT, SURVEY, ETC.: 1 S. Rd W

LOT: A229

[redacted] 11 St. Dundalk

DATE COMPLETED: DAY 17 MO 08 YR 76

UTM ZONE | RC | EASTING 291360 | NORTHING 5 | ELEVATION 1715 | RC 5 | BASIN CODE 23

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Black	Topsoil			0	1
Brown	Hardpan	Boulders, Sand, Gravel		1	67
Grey	Hardpan			67	74
Brown	Hardpan	Boulders		74	104
Grey	Limestone			104	112
Blue	Limestone			112	119
Grey	Limestone	Shale	Hard	119	132

31 | 0001802 | 0006761413 08 | 0007421 14 | 0104611413 | 0112215 | 0119315 | 1

32 | 0132211517 23

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0128	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
04"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	205	0	0106
04"	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		1060	132
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER

PUMPING RATE: 0008 GPM | DURATION OF PUMPING: 01 HOURS 45 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
060 FEET	090 FEET		090 FEET	090 FEET	090 FEET	090 FEET

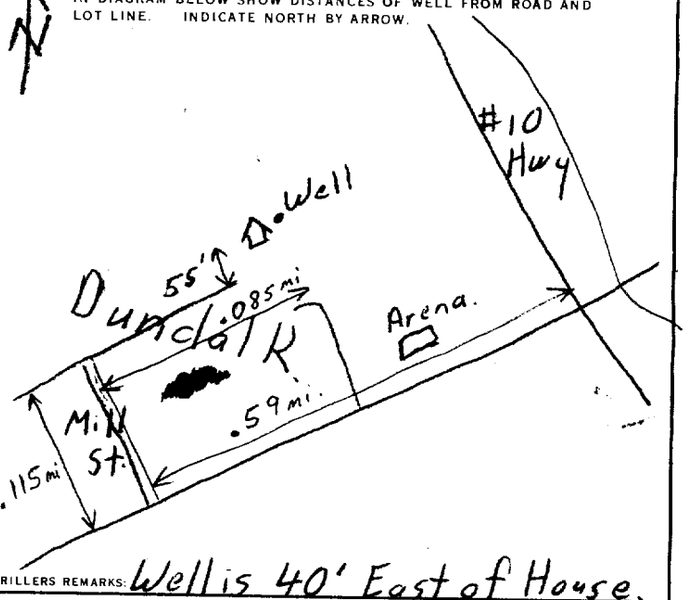
IF FLOWING, GIVE RATE: GPM | PUMP INTAKE SET AT: 90 FEET | WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING: 090 FEET | RECOMMENDED PUMPING RATE: 0005 GPM

GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS: Well is 40' East of House.

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE

01

1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING

2

1 ☐ CABLE TOOL 2 ☒ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Ray Spencer + Son Well Dr. Inc. | LICENCE NUMBER: 4856

ADDRESS: RR #5 Mount Forest.

NAME OF DRILLER OR BORER: Mike Kelly | LICENCE NUMBER:

SIGNATURE OF CONTRACTOR | SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 4856 | DATE RECEIVED: 22 09 76

DATE OF INSPECTION: June 16/77 | INSPECTOR

REMARKS: P/B.S. WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 MOE 07-091

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

Ontario

WATER WELL RECORD

8.P.M. 41A/1W

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

(11) 2506029 | MUNICIP. 25012 | CON. SR W | LOT 01

COUNTY OR DISTRICT: Grey
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Proton
CON., BLOCK, TRACT, SURVEY, ETC.: 1st ~~Range~~ S Rd W
LOT: 229
OWNER (SURNAME FIRST): [redacted]
ADDRESS: 1 Melrose ST. Dundalk.
DATE COMPLETED: DAY 15 MO. 04 YR. 77
NORTHING: 891150 | RC. 5 | ELEVATION: 1705 | RC. 5 | BASIN CODE: 33

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Black	Topsoil			0	1
Brown	Sandy Clay	Gravel		1	27
Brown	Hardpan	Gravel, Boulders.		27	100
Grey	Limestone	Brown Shale.		100	109

(31) 0001802 | 0027605 11 81 | 0100611 11 13 | 0109215 17
(32)

(41) WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
107	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

(51) CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
04"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	205	0	102
04"	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		102	109
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

(61) PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)
10-13	14-17	
18-21	22-25	
26-29	30-33	

(71) PUMPING TEST

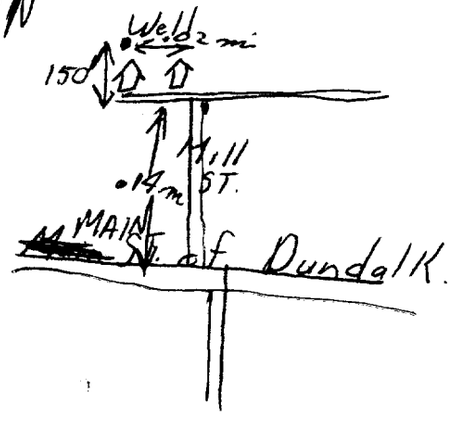
PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0018 GPM	01 HOURS 30 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
038 FEET	060 FEET		060 FEET	060 FEET	060 FEET	060 FEET

IF FLOWING, GIVE RATE: GPM
PUMP INTAKE SET AT: 60 FEET
WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING: 060 FEET
RECOMMENDED PUMPING RATE: 0007 GPM
GPM/FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS: Well is 150' From Rd.

FINAL STATUS OF WELL (54): 1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED POOR QUALITY; 7 ☐ UNFINISHED

WATER USE (55-56) 01: 1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED

METHOD OF DRILLING (57) 2: 1 ☐ CABLE TOOL; 2 ☒ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Ray Spencer & Son Well Dr. Inc. | LICENCE NUMBER: 4856
ADDRESS: RR #5 Mount Forest.
NAME OF DRILLER OR BORER: Mike Kelly | LICENCE NUMBER:
SIGNATURE OF CONTRACTOR | SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE (58): 1 | CONTRACTOR (59-62): 4856 | DATE RECEIVED (63-68): 020577
DATE OF INSPECTION: 12/6/76 | INSPECTOR:
REMARKS:
P
WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 MOE 07-091

Ministry of the Environment

Ontario

The Ontario Water Resources Act

WATER WELL RECORD

4/A/1 W

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 2506475 MUNICIP. 25012 CON. SR W 02

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
GREY	DROTON	II 2 S-Rd W.	~~225~~ 224

[redacted] RR2 Dundalk. DATE COMPLETED DAY 29 MO 04 YR 78

UTM 90800 5 ELEVATION 1700 5 BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Top Soil			0	2
	SANDY CLAY			2	48
	GRAVEL			48	74
BROWN	LIME STONE			74	93

31 0002 02 | 0048 0581 | 0074 11 | 0093 36 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0093	1 ☑ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06 1/4	1 ☑ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0074
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		74	0093
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

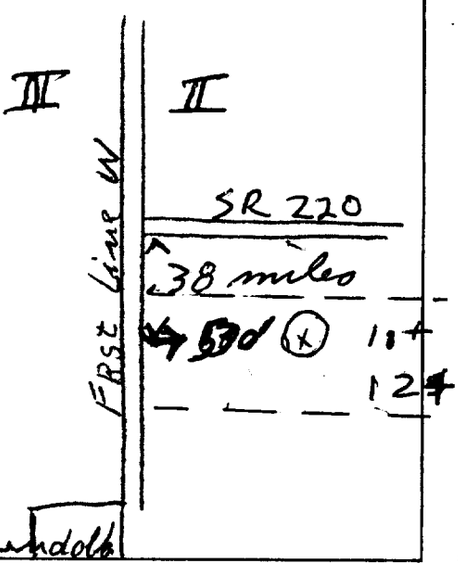
PUMPING TEST METHOD	PUMPING RATE GPM	DURATION OF PUMPING HOURS	MINS
1 ☑ PUMP 2 ☐ BAILER	0020	04	00

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
012 FEET	~~025~~ 030 FEET	1 ☐ PUMPING 2 ☐ RECOVERY	030 FEET	030 FEET	030 FEET	030 FEET

IF FLOWING, GIVE RATE GPM	PUMP INTAKE SET AT FEET	WATER AT END OF TEST	RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING FEET	RECOMMENDED PUMPING RATE GPM
		1 ☑ CLEAR 2 ☐ CLOUDY	☐ SHALLOW ☑ DEEP	060	0020

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS: Dundalk

FINAL STATUS OF WELL 54: 1 ☑ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED — 1

WATER USE 55-56: 1 ☑ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; ☐ OTHER; 9 ☐ NOT USED — 01

METHOD OF DRILLING 57: 1 ☑ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING — 1

CONTRACTOR

NAME OF WELL CONTRACTOR: IMBRO BREBRIC — LICENCE NUMBER: 1458

ADDRESS: Box 382, Dundalk, Ont.

NAME OF DRILLER OR BORER — LICENCE NUMBER

SIGNATURE OF CONTRACTOR: Imbro Brebric — SUBMISSION DATE: DAY 29 MO. 4 YR. 78

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 1458 — DATE RECEIVED 63-68: 170778

DATE OF INSPECTION: 11, 6, 79 — INSPECTOR

REMARKS:

P LL
WI LL

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

41A/1W

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11

2509109

MUNICIP 250.12 | CON CON | 01

COUNTY OR DISTRICT: Grey
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Proton
CON., BLOCK, TRACT, SURVEY, ETC.: I. GVR
LOT: 229
[redacted]
Dundalk
DATE COMPLETED: DAY 15 MO 9 YR 87
89/1/25
ELEVATION: 1700
BASIN CODE:

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Top soil			0	1
	Clay stones & some gravel			1	53
	Hardpan & stones			53	106
	Limestone			106	183

31
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
183	1 ☒ FRESH 2 ☐ SALTY; 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY; 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY; 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY; 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY; 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC	.188	0	107
			107	183
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

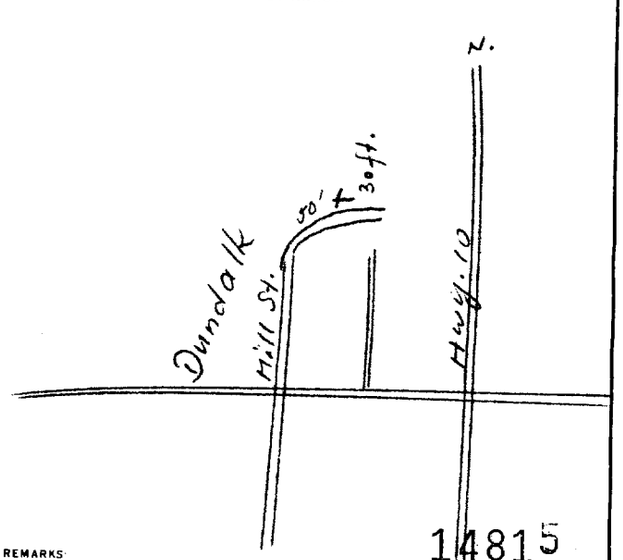
PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER — Compr.
PUMPING RATE: 6 GPM
DURATION OF PUMPING: 0 HOURS ____ MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☒ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
54 FEET	128 FEET	93 FEET	128 FEET	128 FEET	128 FEET

IF FLOWING, GIVE RATE: ____ GPM
PUMP INTAKE SET AT: 150 FEET
WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☐ DEEP
RECOMMENDED PUMP SETTING: 150 FEET
RECOMMENDED PUMPING RATE: 6 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS: 14815

FINAL STATUS OF WELL
1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 8 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED; 9 ☐ DEWATERING

WATER USE
1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED

METHOD OF CONSTRUCTION
1 ☐ CABLE TOOL; 2 ☒ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING; ☐ DIGGING; ☐ OTHER
3813

CONTRACTOR

NAME OF WELL CONTRACTOR: S. Neumann
WELL CONTRACTOR'S LICENCE NUMBER: 3813
ADDRESS: R.R.4 Dundalk Ont.
NAME OF WELL TECHNICIAN: S. Neumann
WELL TECHNICIAN'S LICENCE NUMBER: T-0214
SIGNATURE OF TECHNICIAN/CONTRACTOR: [signature]
SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR | DATE RECEIVED: OCT 06 1987
DATE OF INSPECTION: 11/9/88 | INSPECTOR
REMARKS: Pitless

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 — 2512639 — MUNICIP 25012 — CON SR W — LOT 229

COUNTY OR DISTRICT: [redacted]
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Proton
CON, BLOCK, TRACT, SURVEY, ETC: CON 1 TSW
LOT: 229
ADDRESS OF WELL LOCATION: RR# 1 Proton Station N0C 1L0
DATE COMPLETED: DAY 30 MO 8 YR 94

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Topsoil			0	1
Brown	silty	sand gravel		1	8
Gray	Silt	gravel stones		8	102
Gray	Limestone		Hard	102	138

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
109	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
133	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	.188	+1	104
6	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC		104	138
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE: | DEPTH TO TOP OF SCREEN FEET:

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)
0	30	Bensea l

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☒ BAILER	7 GPM	1 HOURS ___ MINS

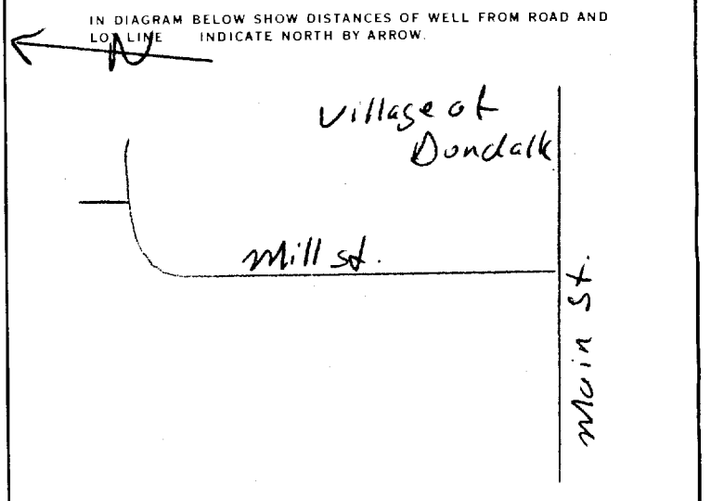
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☐ PUMPING 2 ☐ RECOVERY)	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
56 FEET	FEET		FEET	FEET	FEET	FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	100 FEET	6-7 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS: 131050

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED ☐ DEWATERING

WATER USE

1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF CONSTRUCTION

1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☒ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING ☐ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: Highland Water Wells
WELL CONTRACTOR'S LICENCE NUMBER: 2576
ADDRESS: Box 141 Durham
NAME OF WELL TECHNICIAN: Nigel Poppelton
WELL TECHNICIAN'S LICENCE NUMBER: 72130
SIGNATURE OF TECHNICIAN/CONTRACTOR:
SUBMISSION DATE: DAY 6 MO. 9 YR. 94

OFFICE USE ONLY

DATA SOURCE: | CONTRACTOR: 2576 | DATE RECEIVED: SEP 12 1994
DATE OF INSPECTION: | INSPECTOR:
REMARKS: CSS.ES

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ontario Ministry of the Environment 02-13

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 — 2515004 — Municipality 25702 — Con.

County or District	Township/Borough/City/Town/Village	Con	block	tract	survey, etc.	Lot
GREY	TOWN OF DUNDALK/ANTON TWP	CONC	1	SWTSR		230

Owner's surname	First Name	Address	Date completed (day / month / year)
TOWNSHIP OF SOUTHGATE		RR 1, DUNDALK, ON, N0C 1B0	25 / 03 / 02

21 — UTM: Zone — Easting — Northing — RC — Elevation — RC — Basin Code — ii — iii — iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
BROWN	CLAY	ROCKS	FILL	0	6
BROWN	CLAY	SAND + STONES		6	35
BROWN	GRAVEL	CLAY		35	97
GREY BROWN	LIMESTONE		INTERMIXED	97	154
TAN	LIMESTONE			154	180
BROWN	LIMESTONE			180	211
TAN	LIMESTONE			211	330

31

32

41 WATER RECORD

Water found at - feet	Kind of water
125 / 155	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
215 / 260	NOT TESTED — 1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
300 / 310	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4	1 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.188	+2	105
	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic		105	330
	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet

Material and type — Depth at top of screen feet

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
0	105	BENTONITE

71 PUMPING TEST

Pumping test method: 1 ☐ Pump 2 ☐ Bailer — Pumping rate: GPM — Duration of pumping: Hours Mins

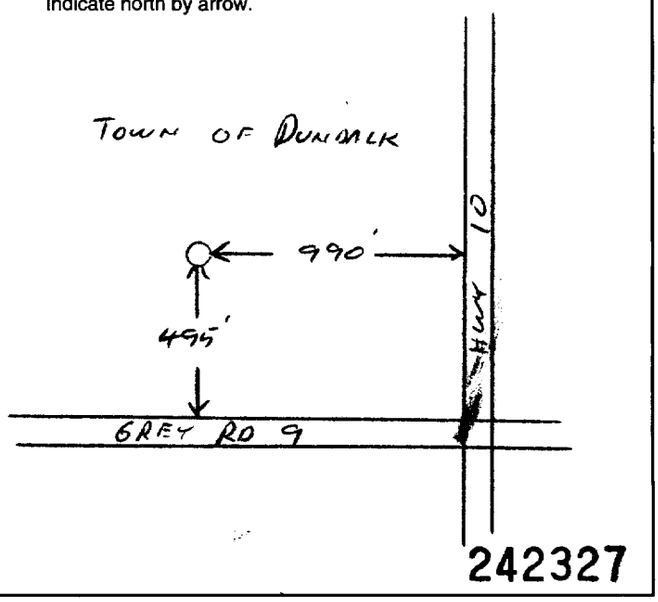
Static level feet	Water level end of pumping feet	Water levels during: 1 ☐ Pumping 2 ☐ Recovery — 15 minutes feet	30 minutes feet	45 minutes feet	60 minutes feet
	TESTING BY		OTHERS		

If flowing give rate: GPM — Pump intake set at: feet — Water at end of test: ☐ Clear ☐ Cloudy

Recommended pump type: ☐ Shallow ☐ Deep — Recommended pump setting: feet — Recommended pump rate: GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.



242327

FINAL STATUS OF WELL

1 ☒ Water supply 2 ☐ Observation well 3 ☒ Test hole 4 ☐ Recharge well 5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering 9 ☐ Unfinished 10 ☐ Replacement well

WATER USE

1 ☐ Domestic 2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial 5 ☐ Commercial 6 ☒ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning 9 ☐ Not use 10 ☐ Other

METHOD OF CONSTRUCTION

1 ☐ Cable tool 2 ☒ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☐ Rotary (air) 5 ☐ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting 9 ☐ Driving 10 ☐ Digging 11 ☐ Other

Name of Well Contractor	Well Contractor's Licence No.
MEADOWBANK DRILLING SERVICES	6865
Address: RR 1 ELORA ONT N0B 1S0	
Name of Well Technician: JIM BROADFOOT	Well Technician's Licence No.: T0370
Signature of Technician/Contractor	Submission date: day mo yr

MINISTRY USE ONLY

Data source — Contractor: 6865 — Date received: JUN 10 2002

Date of inspection — Inspector

Remarks: CSS.ES2

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0506 (07/00) Front Form 9

Ontario Ministry of the Environment

02-18

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 2515005 Municipality 25702 Con.

County or District	Township/Borough/City/Town/Village	Con	block	tract	survey, etc.	Lot
GREY	TOWN OF DUNDALK	CON 1	SW	TSR		PART 230

Owner's surname	First Name	Address	Date completed (day / month / year)
TOWNSHIP OF SOUTHGATE		RR 1, DUNDALK, ON, N0C 1B0	22 / 04 / 02

21 UTM Zone | Easting | Northing | RC | Elevation | RC | Basin Code | ii | iii | iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
BROWN	CLAY	ROCKS	FILL	0	7
BROWN	CLAY	SAND & STONES		7	35
BROWN	GRAVEL	CLAY/ROCK'S	ROCK'S	35	95
GREY & BROWN	LIMESTONE		INTERMIXED	95	154
TAN	LIMESTONE			154	180
BROWN	LIMESTONE			180	211
TAN	LIMESTONE			211	330

31

32

41 WATER RECORD

Water found at - feet	Kind of water
109 / 125	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
154 / 215	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
260 / 300	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
310	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
10 1/4	1 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.250	+2	105
9 7/8	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		105	330
	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet
Material and type	Depth at top of screen feet	

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
0	105	BENTONITE

71 PUMPING TEST

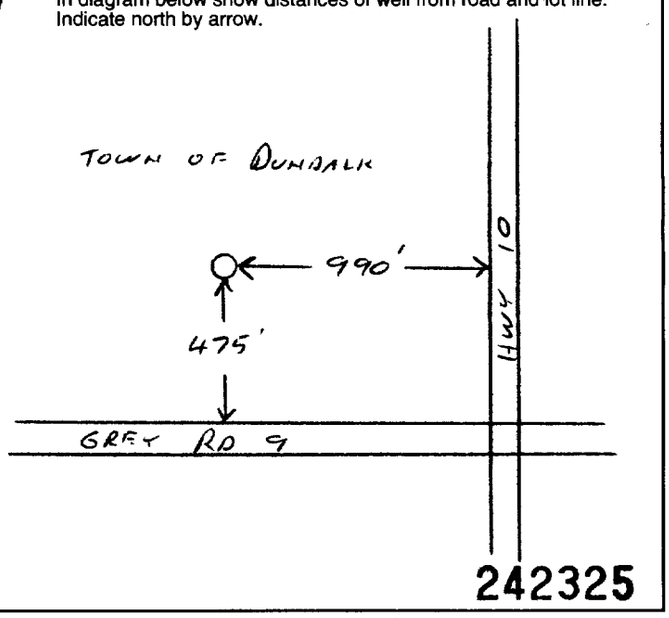
Pumping test method: 1 ☐ Pump 2 ☐ Bailer
Pumping rate: GPM
Duration of pumping: Hours Mins

Static level feet	Water level end of pumping feet	Water levels during: 1 ☐ Pumping 2 ☐ Recovery	15 minutes feet	30 minutes feet	45 minutes feet	60 minutes feet

If flowing give rate: GPM
Pump intake set at: feet
Water at end of test: ☐ Clear ☐ Cloudy
Recommended pump type: ☐ Shallow ☐ Deep
Recommended pump setting: feet
Recommended pump rate: GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.



242325

FINAL STATUS OF WELL 54

1 ☒ Water supply 2 ☐ Observation well 3 ☒ Test hole 4 ☐ Recharge well 5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering 9 ☐ Unfinished 10 ☐ Replacement well

WATER USE 55-56

1 ☐ Domestic 2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial 5 ☐ Commercial 6 ☒ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning 9 ☐ Not use 10 ☐ Other

METHOD OF CONSTRUCTION 57

1 ☐ Cable tool 2 ☒ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☐ Rotary (air) 5 ☐ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting 9 ☐ Driving 10 ☐ Digging 11 ☐ Other

Name of Well Contractor	Well Contractor's Licence No.
MEADOWBANK DRILLING SERVICES	6865
Address: RR 1, EZORA, ON, N0B 1S0	
Name of Well Technician: JIM BRADFOOT	Well Technician's Licence No.: T0370
Signature of Technician/Contractor: J Bradfoot	Submission date: day mo yr

MINISTRY USE ONLY

Data source 58	Contractor 59-62	Date received 63-68	80
	6865	JUN 10 2002	
Date of inspection	Inspector		
Remarks: CSS.ES2			

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Ontario **Ministry of the Environment**

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 — 2515188 — Municipality 25012 — Con. SR W — 01

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
GREY	PROTON	CON 1 SRW	228

Address [redacted] — Date completed 25 (day) 9 (month) 02 (year)

21 — UTM — Northing — RC — Elevation — RC — Basin Code — ii — iii — iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
	TOPSOIL			0	1
BRN	CLAY	STONES, GRAVEL		1	97
GREY	LIMESTONE			97	150
BRN	LIMESTONE			150	241

31

32

41 WATER RECORD

Water found at - feet	Kind of water
210	1 [X] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas
230	1 [ ] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas
	1 [ ] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas
	1 [ ] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas
	1 [ ] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4	1 [X] Steel 2 [ ] Galvanized 3 [ ] Concrete 4 [ ] Open hole 5 [ ] Plastic	.188	+2	99
6	1 [ ] Steel 2 [ ] Galvanized 3 [ ] Concrete 4 [X] Open hole 5 [ ] Plastic		99	241
	1 [ ] Steel 2 [ ] Galvanized 3 [ ] Concrete 4 [ ] Open hole 5 [ ] Plastic			

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet

Material and type — Depth at top of screen feet

61 PLUGGING & SEALING RECORD

[X] Annular space [ ] Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
0	50	Bentonite Grout

PUMPING TEST

71 — Pumping test method 1 [ ] Pump 2 [ ] Bailer — Pumping rate 5 GPM — Duration of pumping 1 Hours Mins

Static level	Water level end of pumping	Water levels during 25	15 minutes	30 minutes	45 minutes	60 minutes
92 feet	173 feet	1 [X] Pumping 2 [ ] Recovery	173 feet	173 feet	173 feet	173 feet

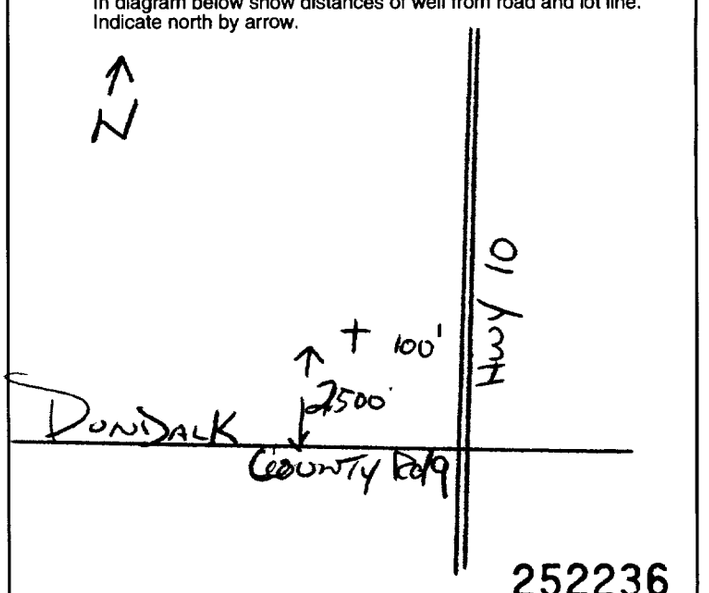
If flowing give rate GPM — Pump intake set at feet — Water at end of test [X] Clear [ ] Cloudy

Recommended pump type [ ] Shallow [X] Deep — Recommended pump setting 220 feet — Recommended pump rate 5 GPM

50-53

LOCATION OF WELL

In diagram below show distances of well from road and lot line.
Indicate north by arrow.



252236

FINAL STATUS OF WELL 54

1 [X] Water supply 2 [ ] Observation well 3 [ ] Test hole 4 [ ] Recharge well 5 [ ] Abandoned, insufficient supply 6 [ ] Abandoned, poor quality 7 [ ] Abandoned (Other) 8 [ ] Dewatering 9 [ ] Unfinished 10 [ ] Replacement well

WATER USE 55-56

1 [X] Domestic 2 [ ] Stock 3 [ ] Irrigation 4 [ ] Industrial 5 [ ] Commercial 6 [ ] Municipal 7 [ ] Public supply 8 [ ] Cooling & air conditioning 9 [ ] Not use 10 [ ] Other

METHOD OF CONSTRUCTION 57

1 [ ] Cable tool 2 [X] Rotary (conventional) 3 [ ] Rotary (reverse) 4 [ ] Rotary (air) 5 [X] Air percussion 6 [ ] Boring 7 [ ] Diamond 8 [ ] Jetting 9 [ ] Driving 10 [ ] Digging 11 [ ] Other

Name of Well Contractor	Well Contractor's Licence No.
NEUMANN WELL DRILLING	7015
Address: RR#4 DUNDALK	
Name of Well Technician: TOM GILLIES	Well Technician's Licence No.: T-1958
Signature of Technician/Contractor	Submission date: day mo yr

MINISTRY USE ONLY

Data source 58	Contractor 59-62	Date received 63-68 80
	7015	OCT 28 2002
Date of inspection	Inspector	
Remarks		

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Ontario — Ministry of Environment and Energy

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 — 2515624 — Municipality 25012 — Con. SR W — 02

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
[redacted]	PROTON	CON 2 SRW	227
	Address of Well Location	Date completed: 4 day, 6 month, 03 year	

21 — UTM: Zone — Easting — Northing — RC — Elevation — RC — Basin Code — ii — iii — iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
	TOPSOIL			0	1
BEN	CLAY	HARDPAN, STONES		1	116
	LIMESTONE			116	142

31

32

41 WATER RECORD

Water found at - feet	Kind of water
121	1 [X] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas
133	1 [ ] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas
	1 [ ] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas
	1 [ ] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas
	1 [ ] Fresh 2 [ ] Salty 3 [ ] Sulphur 4 [ ] Minerals 6 [ ] Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4	1 [X] Steel 2 [ ] Galvanized 3 [ ] Concrete 4 [ ] Open hole 5 [ ] Plastic	.188	+2	118
6	1 [ ] Steel 2 [ ] Galvanized 3 [ ] Concrete 4 [X] Open hole 5 [ ] Plastic		118	142
	1 [ ] Steel 2 [ ] Galvanized 3 [ ] Concrete 4 [ ] Open hole 5 [ ] Plastic			

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet
Material and type	Depth at top of screen feet	

61 PLUGGING & SEALING RECORD

[X] Annular space [ ] Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
0	35	Bentonite Grout

AIR LIFT 25 GPM

71 PUMPING TEST

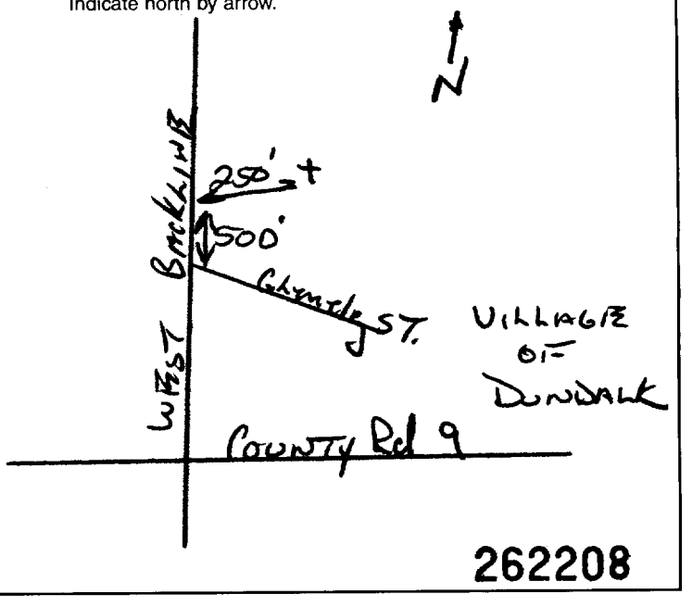
Pumping test method: 1 [X] Pump 2 [ ] Bailer — Pumping rate: 12 GPM — Duration of pumping: 2 Hours ... Mins

Static level	Water level end of pumping	Water levels during: 1 [X] Pumping 2 [ ] Recovery			
		15 minutes	30 minutes	45 minutes	60 minutes
27 feet	31 feet	31 feet	31 feet	31 feet	31 feet

If flowing give rate	Pump intake set at	Water at end of test	Recommended pump type	Recommended pump setting	Recommended pump rate
GPM	feet	[X] Clear [ ] Cloudy	[ ] Shallow [X] Deep	60 feet	10-12 GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.



262208

FINAL STATUS OF WELL

1 [X] Water supply; 2 [ ] Observation well; 3 [ ] Test hole; 4 [ ] Recharge well; 5 [ ] Abandoned, insufficient supply; 6 [ ] Abandoned, poor quality; 7 [ ] Abandoned (Other); 8 [ ] Dewatering; 9 [ ] Unfinished; 10 [ ] Replacement well

WATER USE

1 [X] Domestic; 2 [ ] Stock; 3 [ ] Irrigation; 4 [ ] Industrial; 5 [ ] Commercial; 6 [ ] Municipal; 7 [ ] Public supply; 8 [ ] Cooling & air conditioning; 9 [ ] Not use; 10 [ ] Other

METHOD OF CONSTRUCTION

1 [ ] Cable tool; 2 [X] Rotary (conventional); 3 [ ] Rotary (reverse); 4 [ ] Rotary (air); 5 [X] Air percussion; 6 [ ] Boring; 7 [ ] Diamond; 8 [ ] Jetting; 9 [ ] Driving; 10 [ ] Digging; 11 [ ] Other

Name of Well Contractor	Well Contractor's Licence No.
NEUMANN WELL DRILLING	7015
Address: RR#4 DUNDALK	
Name of Well Technician: TOM GILLIES	Well Technician's Licence No.: 1-1958
Signature of Technician/Contractor	Submission date: day mo yr

MINISTRY USE ONLY

Data source	Contractor	Date received
	7015	JUL 16 2003
Date of inspection	Inspector	
Remarks		

CSS.ESS

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0506 (06/02) Front Form 9

Ontario Ministry of the Environment

Well Tag Number (Place Sticker and/or Print Number below) A027686

Amec # 050626 June 8/05

Well Record

Regulation 903 Ontario Water Resources Act

[redacted]

page ___ of ___

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

[redacted]

Address of Well Location (County/District/Municipality) | Township | Lot | Concession

RR#/Street Number/Name: 185 Proton St. W. | City/Town/Village: Dundalk | Site/Compartment/Block/Tract etc.

GPS Reading: NAD 83 | Zone 17 | Easting 548212 | Northing 4890953 | Unit Make/Model: Magellan | Mode of Operation: ☐ Undifferentiated ☑ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
Grey	gravel			0	.11
brown	sand	gravel		.11	.9
brown	sand	silt		.9	2.1
light brown	silt	sand	Rocky	2.1	6

Hole Diameter

Depth From	Depth To (Metres)	Diameter Centimetres
0	6.	21

Water Record

Water found at ___ Metres / Kind of Water

1.5 m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: ___

___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: ___

___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: ___

After test of well yield, water was
☐ Clear and sediment free
☐ Other, specify ___

Chlorinated ☐ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
5	☐ Steel ☐ Fibreglass ☑ Plastic ☐ Concrete ☐ Galvanized	.7	0	1.2
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☑ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
6.4		10	1.2	6
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level			
Pumping rate - (litres/min)	1		1	
Duration of pumping ___hrs +___ min	2		2	
Final water level end of pumping ___metres	3		3	
Recommended pump type. ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___metres	5		5	
Recommended pump rate. (litres/min)	10		10	
	15		15	
If flowing give rate - (litres/min)	20		20	
	25		25	
If pumping discontinued, give reason.	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record ☑ Annular space ☐ Abandonment

Depth set at - Metres From	Depth set at - Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	.15	Concrete	
.15	1.1	bentonite	

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☑ Boring ☐ Driving

Water Use

☐ Domestic ☐ Industrial ☐ Public Supply ☑ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☑ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor: Geo-Environmental Drilling | Well Contractor's Licence No.: 6607

Business Address (street name, number, city etc.): 340 Market Dr. Milton

Name of Well Technician (last name, first name): Hails, Ryan | Well Technician's Licence No.: T3212

Signature of Technician/Contractor: X [signature] | Date Submitted YYYY MM DD: 2005 06 09

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.

see map

Audit No. Z 28263 | Date Well Completed YYYY MM DD: 2005 06 09

Was the well owner's information package delivered? ☐ Yes ☐ No | Date Delivered YYYY MM DD

Ministry Use Only

Data Source | Contractor 6607

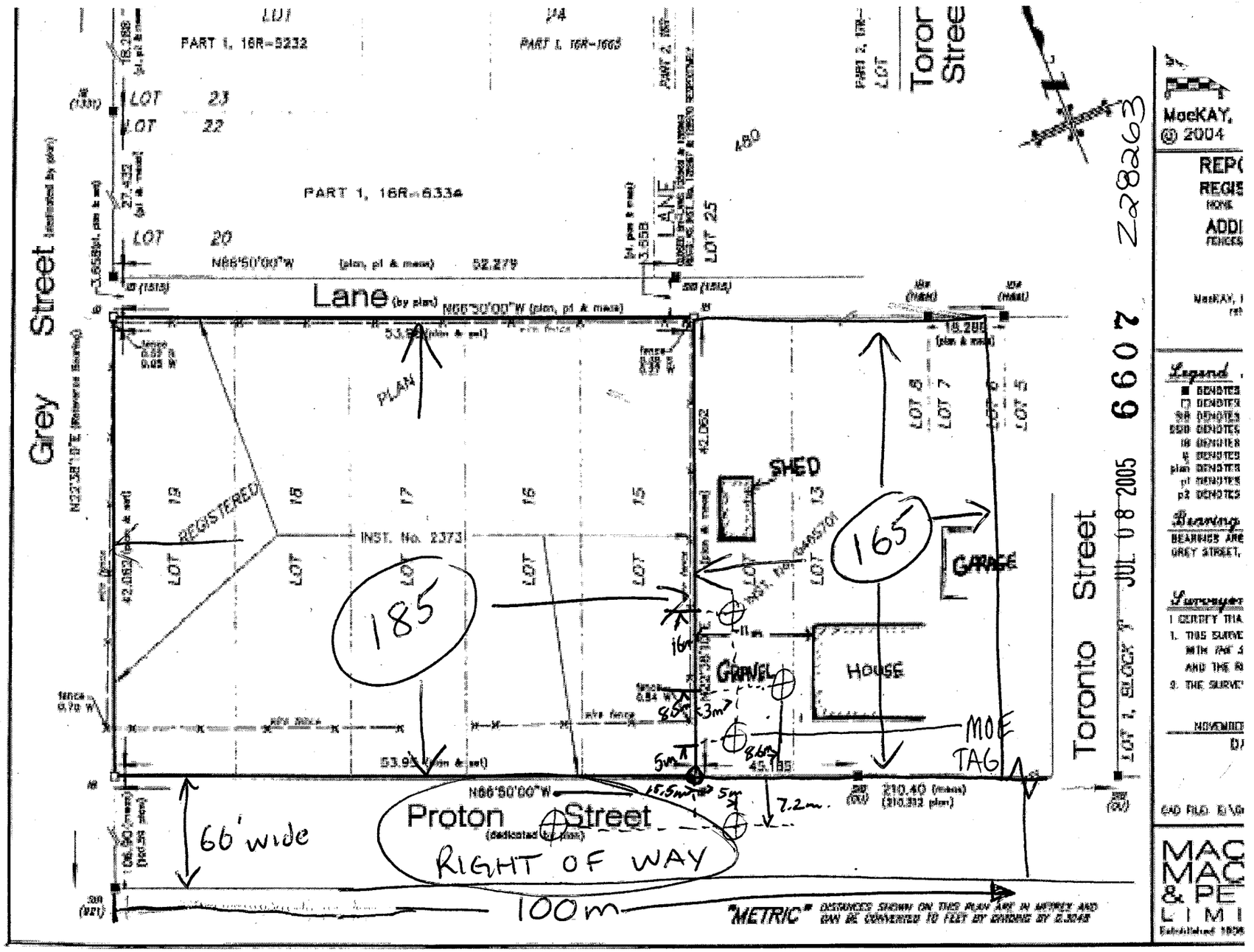
Date Received YYYY MM DD: JUL 08 2005 | Date of Inspection YYYY MM DD

Remarks | Well Record Number

0506E (09/03)

Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐

Cette formule est disponible en français


PART 1, 16R-5232
PART 1, 16R-6334
LOT 23
LOT 22
LOT 20
LOT 25
LANE
Lane (by plan)
N66°50'00"W (plan, p1 & meas) 52.279
Grey Street
Toronto Street
Proton Street
(dedicated by plan)
RIGHT OF WAY
66' wide
100m
SHED
HOUSE
GARAGE
GRAVEL
INST. No. 2373
REGISTERED PLAN
185
165
MOE TAG
7.2m
5m
"METRIC" DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048
MacKAY,
© 2004
Z28263
6607
JUL 08 2005
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Ontario Ministry of the Environment

Well Tag (Number below) A 005365

A 005365

Well Record

Regulation 903 Ontario Water Resources Act

page 1 of 1

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

[redacted]

Address of Well Location (County/District/Municipality): 165 PROTON ST

Township: DUNDALK

Lot | Concession

RR#/Street Number/Name

City/Town/Village: TOWNSHIP SOUTHGATE

Site/Compartment/Block/Tract etc.: COUNTY OF GREY

GPS Reading: NAD 83 | Zone 17 | Easting 548228 | Northing 4690907

Unit Make/Model: GARMIN

Mode of Operation: ☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
Black	topsoil	sand	Loose	0	.3
Brown	silt	Cobbles, Sand	Dense	.3	4.57
	AMEC				

Hole Diameter

Depth From	Metres To	Diameter Centimetres
0	4.57	20

Water Record

Water found at ___ Metres / Kind of Water

- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was
☐ Clear and sediment free
☐ Other, specify

Chlorinated ☐ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
.5	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	SCH40	0	1.52.
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam		Slot No.		
.6	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	10	4.57	1.52
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level			
Pumping rate - (litres/min)	1		1	
Duration of pumping ___hrs +___ min	2		2	
Final water level end of pumping ___metres	3		3	
Recommended pump type. ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___metres	5		5	
Recommended pump rate. (litres/min)	10		10	
If flowing give rate - (litres/min)	15		15	
	20		20	
	25		25	
If pumping discontinued, give reason.	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	.3	Cement	
.3	1.0	Bentonite Chips	

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☒ Boring ☐ Driving

Water Use

☐ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☒ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☒ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor: ATCOST DRILLING | Well Contractor's Licence No.: 6032.

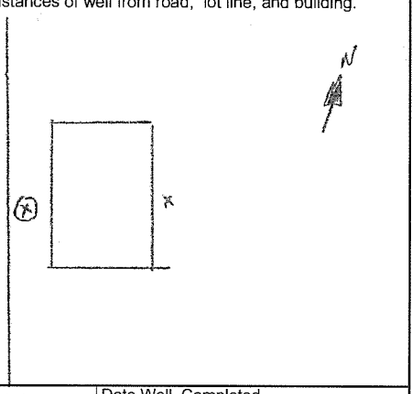
Business Address (street name, number, city etc.): 2160 HWY #7 CONCORD

Name of Well Technician (last name, first name): MONETTE CHRIS | Well Technician's Licence No.: T685

Signature of Technician/Contractor: X [signature] | Date Submitted: YYYY 2006 MM 11 DD 30

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No. Z 46561

Date Well Completed: YYYY 2006 MM 11 DD 30

Was the well owner's information package delivered? ☐ Yes ☒ No

Date Delivered: YYYY MM DD

Ministry Use Only

Data Source | Contractor 6032

Date Received: YYYY MM DD FEB 26 2007 | Date of Inspection: YYYY MM DD

Remarks | Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☒ Well Owner's Copy ☐ *Cette formule est disponible en français*

Ontario Ministry of the Environment

Well Tag Number (Place sticker and print number below)
A 047429
A047429

Well Record
Regulation 903 Ontario Water Resources Act

page 1 of 1

Instructions for Completing Form

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- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only
MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR, Lot, Concession)
IMPERIAL	OIL	90 WYNFORD DRIVE

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
	TORONTO	Ontario		416441-7866

Address of Well Location (County/District/Municipality)	Township	Lot	Concession

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
185 PROTON ST	DUNDALK	

GPS Reading: NAD 83 | Zone 17 | Easting 0548236 | Northing 4890905 | Unit Make/Model GARMIN eTREX | Mode of Operation: ☒ Undifferentiated ☐ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
BROWN	SILT	SAND		0	1.2
BROWN	SILT	SAND TRACE GRAVEL & CLAY		1.2	4.6

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)
0	4.3M	20.32cm

Water Record

Water found at ___ Metres / Kind of Water

- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was
☐ Clear and sediment free
☐ Other, specify

Chlorinated ☐ Yes ☐ No

Construction Record

Casing

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
5.1cm	☐ Steel ☐ Fibreglass ☒ Plastic ☐ Concrete ☐ Galvanized	0.48cm	0	1.2m
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			

Screen

Outside diam	Material	Slot No.	Depth From	Depth To (Metres)
6.0cm	☐ Steel ☐ Fibreglass ☒ Plastic ☐ Concrete ☐ Galvanized	10	1.2m	4.3M

No Casing or Screen

☐ Open hole

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level			
Pumping rate - (litres/min)	1		1	
Duration of pumping ___hrs +___ min	2		2	
Final water level end of pumping ___metres	3		3	
Recommended pump type. ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___metres	5		5	
Recommended pump rate. (litres/min)	10		10	
	15		15	
If flowing give rate - (litres/min)	20		20	
	25		25	
If pumping discontinued, give reason.	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres From	Depth set at - Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	1	HOLE PLUG	0.02976

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☒ Other AUGER
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☐ Domestic ☐ Industrial ☐ Public Supply ☒ Other TESTING
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☒ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
KODIAK ENVIRONMENTAL	6988

Business Address (street name, number, city etc.): 871 EQUESTRIAN CT. OAKVILLE, ON.

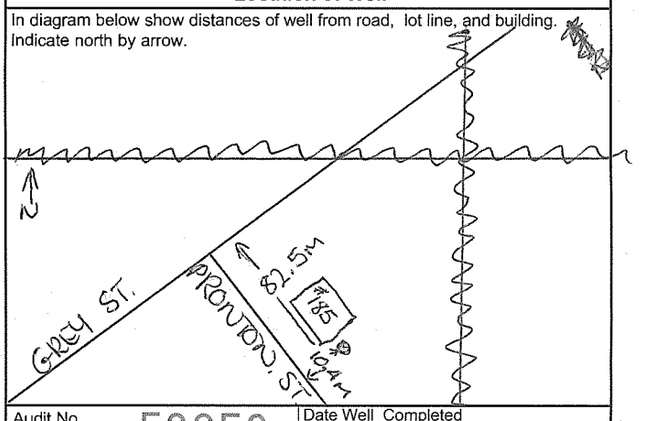
Name of Well Technician (last name, first name)	Well Technician's Licence No.
RITCEY DOUG	T-2656

Signature of Technician/Contractor: X

Date Submitted: 2007 / 10 / 24 (YYYY MM DD)

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No. Z 53653

Date Well Completed: 2007 / 04 / 07 (YYYY MM DD)

Was the well owner's information package delivered? ☐ Yes ☒ No

Date Delivered (YYYY MM DD)

Ministry Use Only

Data Source | Contractor 6988

Date Received: SEP 10 2007 (YYYY MM DD) | Date of Inspection (YYYY MM DD)

Remarks | Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☒ Well Owner's Copy ☐

Cette formule est disponible en français

Ontario — Ministry of the Environment

Well Tag No. *(Place Sticker and/or Print Below)*
DECOMMISSION
NO TAG PRESENT

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: [X] Metric [ ] Imperial

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	
	IMPERIAL OIL		[ ] Well Constructed by Well Owner

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
111 ST. CLAIR AVENUE W.	TORONTO	ONTARIO	M5W1K3	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
165 PROTON STREET NORTH	PROTON	229	RANGE 2W

County/District/Municipality	City/Town/Village	Province	Postal Code
GREY	DUNDALK	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	548200	4890909		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
			- WELLS DECOMMISSIONED PER REG 903.21		
			- ALL WELL MATERIALS REMOVED FROM BOREHOLE		
			- BOREHOLES SEALED W/ BENTONITE		
			- NO WELL TAG PRESENT.		

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
0.0	0.2	CONCRETE	
0.2	6.1	BENSEAL	
	6.1	EOM	

Method of Construction

[ ] Cable Tool [ ] Diamond
[ ] Rotary (Conventional) [ ] Jetting
[ ] Rotary (Reverse) [ ] Driving
[ ] Boring [ ] Digging
[ ] Air percussion
[ ] Other, *specify*

Well Use

[ ] Public [ ] Commercial [ ] Not used
[ ] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[ ] Industrial
[ ] Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
5.0	PVC		0.0	6.0

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
6.3	PVC		5.0	6.1

Status of Well

[ ] Water Supply
[ ] Replacement Well
[ ] Test Hole
[ ] Recharge Well
[ ] Dewatering Well
[ ] Observation and/or Monitoring Hole
[ ] Alteration (Construction)
[ ] Abandoned, Insufficient Supply
[ ] Abandoned, Poor Water Quality
[X] Abandoned, other, *specify*
[ ] Other, *specify*

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
1.2	[ ]	[X] Fresh [ ] Untested	
	[ ]	[ ] Fresh [ ] Untested	
	[ ]	[ ] Fresh [ ] Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)

Results of Well Yield Testing

After test of well yield, water was:
[ ] Clear and sand free
[ ] Other, *specify*

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping ____ hrs + ____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)*

Recommended pump rate *(l/min / GPM)*

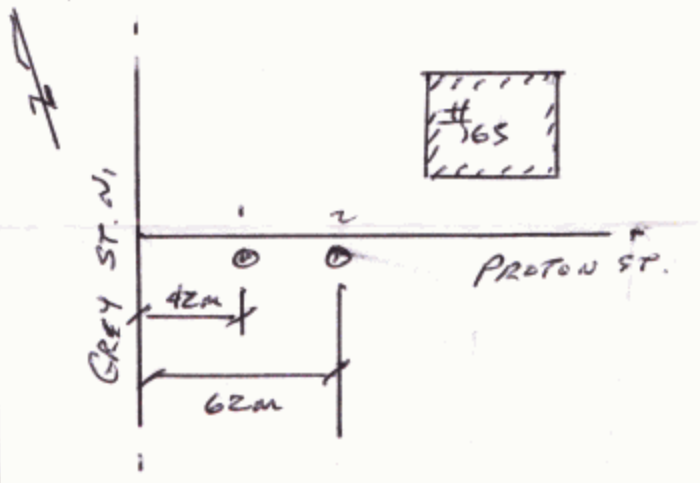
Well production *(l/min / GPM)*

Disinfected? [ ] Yes [ ] No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:
MAP ATTACHED

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
SONIC SOIL SAMPLING INC.	7147

Business Address (Street Number/Name)	Municipality
668 MILLWAY AVENUE	YORK

Province	Postal Code	Business E-mail Address
ONTARIO	L4K 3V2	sonic@sonicsoil.com

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
9056600501	ARCHIBALD, ALAN

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
2881	per Sec	2008/12/05

Well owner's information package delivered	Date Package Delivered	Date Work Completed
[ ] Yes [X] No		2008/12/25

Ministry Use Only
Audit No. Z 85200
DEC 17 2008
Received

Ministry's Copy

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)*: NO TAG FOUND

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Imperial Oil Ltd		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
90 Wynford Drive	Toronto	Ont	M3C1K5	4164417862

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
165 Proton St. W.	Grey		

County/District/Municipality	City/Town/Village	Province	Postal Code
GREY	Dundalk	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	543260	4890289		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Hole No	EASTING	NORTHING	SEALANT		
1	17/543260	4890289	Bentonite	0'	15'
2	17/543263	4890285	Bentonite	0'	15'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☐ Air percussion ☐ Other, *specify*

Well Use

☐ Public ☐ Commercial ☐ Not used ☐ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☐ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To

Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☒ Abandoned, other, *specify*: Not in Use ☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

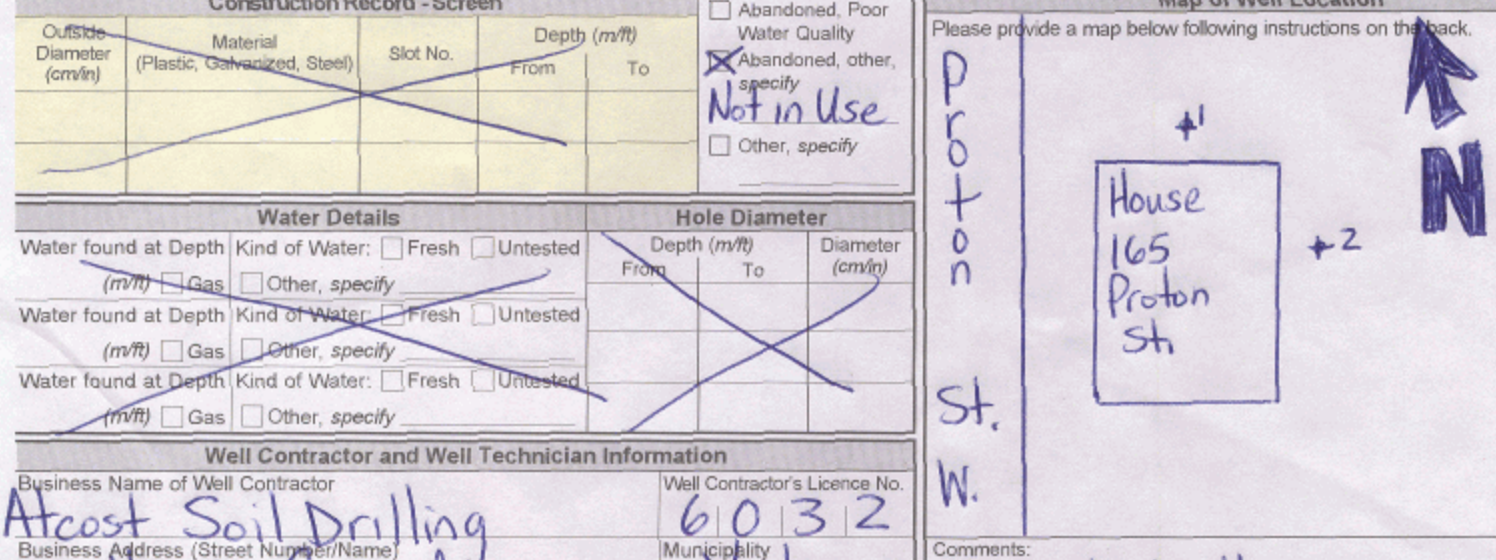
Well production (l/min / GPM)

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments: Consultant Hazco

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Atcost Soil Drilling	6032

Business Address (Street Number/Name)	Municipality
2160 Hwy 7 Concord	York

Province	Postal Code	Business E-mail Address
Ont	L4K1W6	

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
9056691253	Green Wayne

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
	Wayne Green	2010/11/09

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☒ No		2010/09/02

Ministry Use Only

Audit No. z121173

Received DEC 03 2010

Ministry's Copy

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☑ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* DECOM

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	IMPERIAL OIL LTD		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
90 WYNFORD DR	TORONTO	ONT	M3C1K5	4164417862

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
165 PROTON ST. W.	GREY		

County/District/Municipality	City/Town/Village	Province	Postal Code
GREY	DUNDALK	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	543264	4890283		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
		1) DECOM			
(1)			PULL 2 INNER PLASTIC PIPES, CHLORINATE, BACK FILL FROM 140' - 37'6" WITH SAND, 1" BENTONITE CHIPS, GROUT UP TO 5' & FILL TOP 5' WITH BENTONITE CHIPS STATIC WATER TABLE AT 37'6"	0'	140'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
		BENTONITE CHIPS (5) DECOM	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, *specify*

DECOM

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
	DECOM			

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
	DECOM			

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☒ Abandoned, other, *specify*, NOT USED
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
		☐ Fresh ☐ Untested	
		☐ Fresh ☐ Untested	
		☐ Fresh ☐ Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

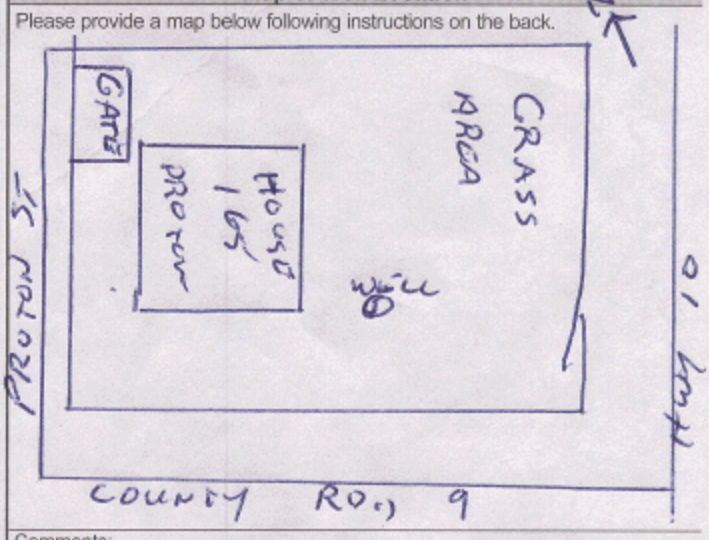
Well production (l/min / GPM)

Disinfected? ☑ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments: HARCO 10A 202

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
ATCOST DRILLING	6032

Business Address (Street Number/Name)	Municipality
2160 HWY 7 CONCORD	VAUGHAN

Province	Postal Code	Business E-mail Address
ONT	L4K1W6	info@atcostdrilling.com

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
9056691253	TRUSCOTT ORLA

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
7394	O. Truscott	20100920

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☑ No		20100920

Ministry Use Only

Audit No. Z108898

DEC 03 2010

Received

0506E (12/2007)

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Ontario — Ministry of the Environment

A117947

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☐ Imperial

Well Tag No. *(Place Sticker and)* A 117947

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Imperial Oil		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
90 Wynford Drive	Toronto	Ont	M3C 1K5	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
185 Proton St			

County/District/Municipality	City/Town/Village	Province	Postal Code
	Dundalk	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	561586	4830612		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Brown	Fill	Sandy	moist	0	8
Brown	Cobble	Till	dry	8	15

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
15	8	Sand	
8	1	Bentonite	
1	0	Sand / Flushmount / Concrete	

Method of Construction

☐ Cable Tool ☐ Diamond
☑ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, *specify*

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☑ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
2	Plastic	40	10	0

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
2	Plastic	10	15	10

Status of Well

☐ Water Supply
☐ Replacement Well
☑ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	
☐ Gas	☐ Fresh ☐ Untested	☐ Other, *specify*
☐ Gas	☐ Fresh ☐ Untested	☐ Other, *specify*
☐ Gas	☐ Fresh ☐ Untested	☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
15	0	8

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

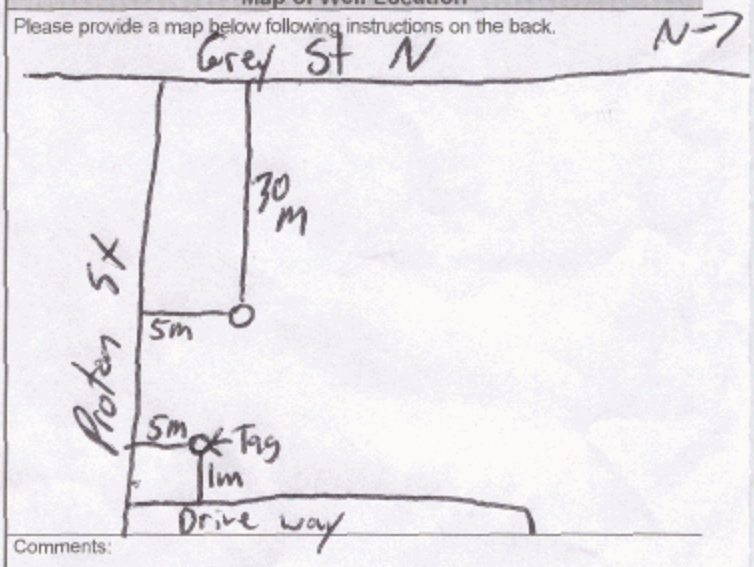
Well production (l/min / GPM)

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Profile Drilling	7215

Business Address (Street Number/Name)	Municipality	Province	Postal Code	Business E-mail Address
6525 Northam Drive	Mississauga	ON	L4V 1J2	Jason@Profiledrilling.com

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)	Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
4166506444	Slocki, Jason	2978		2011 07 29

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No	Y Y Y Y M M D D	2011 06 29

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Audit No. z133646

Received AUG 09 2011

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Measurements recorded in: ☒ Metric ☐ Imperial

Well Tag No. **A 089996**

A089996

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
772418	PROTON	220	1

County/District/Municipality	City/Town/Village	Province	Postal Code
GREY	DUNDALK	Ontario	N0C1B0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	547578	4892878		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
	TOP SOIL			0	.3
BROWN	CLAY	STONES & ROCKS		.3	15.9
GREY	CLAY	STONES		15.9	29.6
GREY/BROWN	LIMESTONE		INTERMIXED	29.6	32.3

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	13	BENTONITE SLURRY	.3

Method of Construction

☐ Cable Tool ☐ Diamond ☒ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☐ Air percussion ☐ Other, *specify*

Well Use

☐ Public ☐ Commercial ☐ Not used ☒ Domestic ☐ Municipal ☐ Dewatering ☒ Livestock ☐ Test Hole ☐ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
16.0	STEEL	.5	+.8	30.7
			30.7	32.3

Status of Well

☒ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, *specify* ☐ Other, *specify*

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To

Water Details

Water found at Depth (m/ft)	Kind of Water	
32	☐ Fresh ☒ Untested	☐ Gas ☐ Other, *specify*
	☐ Fresh ☐ Untested	☐ Gas ☐ Other, *specify*
	☐ Fresh ☐ Untested	☐ Gas ☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	6.4	25.0
6.4	30.7	20.0
30.7	32.3	15.6

Results of Well Yield Testing

After test of well yield, water was: ☒ Clear and sand free ☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft) 12.2

Pumping rate (l/min / GPM) 45

Duration of pumping 1 hrs + 0 min

Final water level end of pumping (m/ft) 9.16

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft) 12.2 m (40')

Recommended pump rate (l/min / GPM) 40L (10GPM)

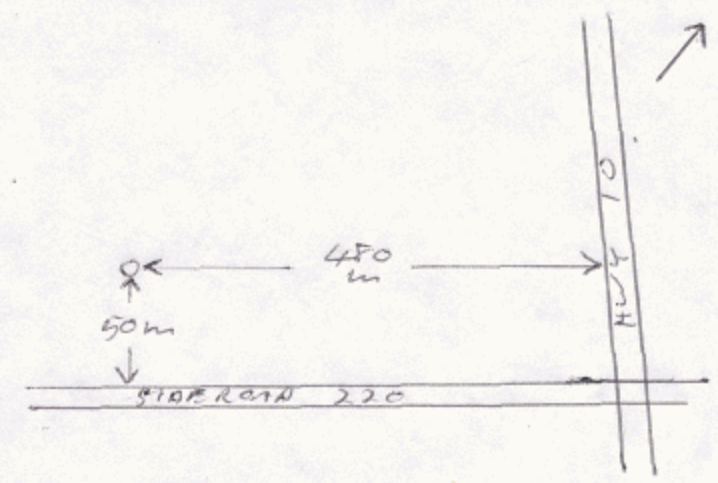
Well production (l/min / GPM)

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	7.28		9.16
1	8.18	1	8.18
2	8.36	2	8.08
3	8.46	3	8.02
4	8.56	4	7.95
5	8.62	5	7.92
10	8.79	10	7.75
15	8.89	15	7.68
20	8.96	20	7.62
25	8.99	25	7.57
30	9.02	30	7.53
40	9.10	40	7.49
50	9.12	50	7.46
60	9.16	60	7.44

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
WELL INITIATIVES	7221

Business Address (Street Number/Name)	Municipality
15 TOWNLINE	ORANGEVILLE

Province	Postal Code	Business E-mail Address
ONT	N0B1S0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
5198468289	BROADFOOT JIM

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0370	Jim Broadfoot	2011 07 12

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered: Y Y Y Y M M D D

Date Work Completed: 2011 07 20

Ministry Use Only

Audit No. z118780

Received AUG 19 2011

0506E (2007/12)

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Ontario — Ministry of the Environment

Well Tag No. *(Place Sticker and/or Print Below)*
Tag #: A166231

Well Record
Regulation 903 Ontario Water Resources Act

Page 1 of 1

Measurements recorded in: ☐ Metric ☒ Imperial

Well Owner's Information

First Name	Last Name / Organization	E-mail
	WHITE ROSE PARK DIV TO 2127107 ONTARIO INC	[redacted]

Mailing Address (Street Number/Name)	Municipality	Province
138 KALE CRESCENT	MAPLE	[redacted]

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
~~LOT 227;~~ 7SHP of SOUTHGATE, former tshp of PROTON		227	RANGE 2W

County/District/Municipality	City/Town/Village	Province	Postal Code
COUNTY of GREY	DUNDALK	Ontario	N0C 1B0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	17	~~541418~~	~~4889445~~	E 547975, N 4891096	

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Brown	silty sand and gravel	clay	Compact to v. dense.	0	20

"cluster of 10 piezometer installations"

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
20	8	Sand	
8	0	Bentonite	

Method of Construction

☐ Cable Tool ☐ Diamond
☑ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, *specify*

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☑ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
2	Plastic		+2.5	10

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
2	Plastic		10	20

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☒ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
5	☑ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	20	6

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping ____ hrs + ____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)*

Recommended pump rate *(l/min / GPM)*

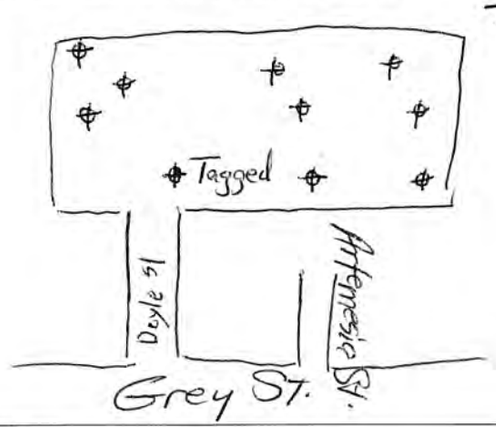
Well production *(l/min / GPM)*

Disinfected? ☐ Yes ☐ No

Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level			
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
50		50	
60		60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
LONDON SOIL TEST LTD	7190

Business Address (Street Number/Name)	Municipality
R.R.6	DUNDALK

Province	Postal Code	Business E-mail Address
ON	N0C 1B0	info@londonsoil.com

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
5194555777	Ross, Ryan

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3576		2014/12/15

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No		2014/12/03

Ministry Use Only
Audit No: Z 186058
Received FEB 09 2015

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Ontario (https://www.ontario.ca/page/government-ontario)

Map: Well records

This map allows you to search and view well record information from reported wells in Ontario.

Full dataset is available in the Open Data catalogue (https://data.ontario.ca/dataset/well-records) .

Go Back to Map

Well ID

Well ID Number: 7285238
Well Audit Number: *Z251816*
Well Tag Number: *A210321*
This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location	231 GLENELG DR	

Township	PROTON TOWNSHIP
Lot	
Concession	
County/District/Municipality	GREY
City/Town/Village	Southgate
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 17 Easting: 547796.00 Northing: 4890661.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To
BRWN	SAND	SLTY		0 ft	15 ft
BRWN	SAND	SLTY	CLAY	15 ft	20 ft
GREY	CLAY	BLDR		20 ft	25 ft

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant Used (Material and Type)	Volume Placed
13 ft	0 ft	BENTONITE	

Method of Construction & Well Use

Method of Construction	Well Use
Other Method	

AUGER	Monitoring

Status of Well

Observation Wells

Construction Record - Casing

Inside Diameter	Open Hole or material	Depth From	Depth To
2 inch	PLASTIC	0 ft	15 ft

Construction Record - Screen

Outside Diameter	Material	Depth From	Depth To
2.5 inch	PLASTIC	15 ft	25 ft

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 7360

Results of Well Yield Testing

After test of well yield, water was	
If pumping discontinued, give reason	
Pump intake set at	
Pumping Rate	
Duration of Pumping	
Final water level	
If flowing give rate	
Recommended pump depth	

Recommended pump rate	
Well Production	
Disinfected?	

Draw Down & Recovery

Draw Down Time(min)	Draw Down Water level	Recovery Time(min)	Recovery Water level
SWL			
1		1	
2		2	
3		3	
4		4	
5		5	

10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
45		45	
50		50	
60		60	

Water Details

Water Found at Depth	Kind	

13 ft	Untested

Hole Diameter

Depth From	Depth To	Diameter
0 ft	25 ft	3 inch

Audit Number: Z251816

Date Well Completed: November 17, 2016

Date Well Record Received by MOE: April 13, 2017

Related

How to use a Ministry of the Environment map (https://www.ontario.ca/page/how-use-ministry-environment-map#wells)

Technical documentation: Metadata record (https://data.ontario.ca/dataset/well-records/resource/3031344e-e3f2-48d5-888c-c1deadfd2f77)

Updated: October 18, 2021
Published: March 20, 2014

Ontario (https://www.ontario.ca/page/government-ontario)

Map: Well records

This map allows you to search and view well record information from reported wells in Ontario.

Full dataset is available in the Open Data catalogue (https://data.ontario.ca/dataset/well-records) .

Go Back to Map

Well ID

Well ID Number: 7285242
Well Audit Number: *Z251811*
Well Tag Number: *A210296*
This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location	231 GLENELG ST	

Township	PROTON TOWNSHIP
Lot	
Concession	
County/District/Municipality	GREY
City/Town/Village	Southgate
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 17 Easting: 547335.00 Northing: 4891170.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To
GREY	SAND	SILT	SOFT	0 ft	15 ft
BRWN	SAND	GRVL	HARD	15 ft	25 ft

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant Used (Material and Type)	Volume Placed
12 ft	0 ft	BENTONITE	

Method of Construction & Well Use

Method of Construction	Well Use
Other Method	
AUGER	Monitoring

Status of Well

Observation Wells

Construction Record - Casing

Inside Diameter	Open Hole or material	Depth From	Depth To
2 inch	PLASTIC		

Construction Record - Screen

Outside Diameter	Material	Depth From	Depth To
2.5 inch	PLASTIC		

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 7360

Results of Well Yield Testing

After test of well yield, water was	
If pumping discontinued, give reason	
Pump intake set at	
Pumping Rate	
Duration of Pumping	
Final water level	
If flowing give rate	
Recommended pump depth	
Recommended pump rate	

Well Production	
Disinfected?	

Draw Down & Recovery

Draw Down Time(min)	Draw Down Water level	Recovery Time(min)	Recovery Water level
SWL			
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	

15		15	
20		20	
25		25	
30		30	
40		40	
45		45	
50		50	
60		60	

Water Details

Water Found at Depth	Kind	

Hole Diameter

Depth From	Depth To	Diameter
0 ft	25 ft	6 inch

Audit Number: Z251811

Date Well Completed: November 15, 2016

Date Well Record Received by MOE: April 13, 2017

Related

How to use a Ministry of the Environment map (https://www.ontario.ca/page/how-use-ministry-environment-map#wells)

Technical documentation: Metadata record (https://data.ontario.ca/dataset/well-records/resource/3031344e-e3f2-48d5-888c-c1deadfd2f77)

Updated: October 18, 2021
Published: March 20, 2014

Ontario (https://www.ontario.ca/page/government-ontario)

Map: Well records

This map allows you to search and view well record information from reported wells in Ontario.

Full dataset is available in the Open Data catalogue (https://data.ontario.ca/dataset/well-records) .

Go Back to Map

Well ID

Well ID Number: 7305297
Well Audit Number: *Z243695*
Well Tag Number: *A213693*
This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location	231 GLENENG ST	

Township	PROTON TOWNSHIP
Lot	
Concession	
County/District/Municipality	GREY
City/Town/Village	DUNDALK
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 17 Easting: 547926.00 Northing: 4890744.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant Used (Material and Type)	Volume Placed
135 ft	-12 ft	HOLEPLUG	

Method of Construction & Well Use

Method of Construction	Well Use
	Not Used

Status of Well

Abandoned-Other

Construction Record - Casing

Inside Diameter	Open Hole or material	Depth From	Depth To

Construction Record - Screen

Outside Diameter	Material	Depth From	Depth To

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 6634

Results of Well Yield Testing

After test of well yield, water was	
If pumping discontinued, give reason	
Pump intake set at	
Pumping Rate	
Duration of Pumping	
Final water level	
If flowing give rate	
Recommended pump depth	
Recommended pump rate	
Well Production	

Disinfected?	

Draw Down & Recovery

Draw Down Time(min)	Draw Down Water level	Recovery Time(min)	Recovery Water level
SWL			
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	

20		20	
25		25	
30		30	
40		40	
45		45	
50		50	
60		60	

Water Details

Water Found at Depth	Kind

Hole Diameter

Depth From	Depth To	Diameter

Audit Number: Z243695

Date Well Completed: March 07, 2017

Date Well Record Received by MOE: February 13, 2018

Related

How to use a Ministry of the Environment map (https://www.ontario.ca/page/how-use-ministry-environment-map#wells)

Technical documentation: Metadata record (https://data.ontario.ca/dataset/well-records/resource/3031344e-e3f2-48d5-888c-c1deadfd2f77)

Updated: October 18, 2021
Published: March 20, 2014

Ontario

Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☐ Imperial

Well Tag No. (Place Sticker and/or Print Below)
Tag#: A 213692
TAG# A213692

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
J.T.	EXCAVATING		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
DURHAM		ONTARIO	N0G1R0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
231 GLENELG STREET	PROTON		

County/District/Municipality	City/Town/Village	Province	Postal Code
	DUNDALK	Ontario	N0C1B0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	17	514791 25	4819017 411		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	SEALED OFF 5 INCH WELL 35 FEET DEEP				

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
35	-12FT	3/8 HOLEPLUG	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☑ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☑ Abandoned, other, *specify* NOT USED
☐ Other, *specify*

Water Details

Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify* _____

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping _____ hrs + _____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

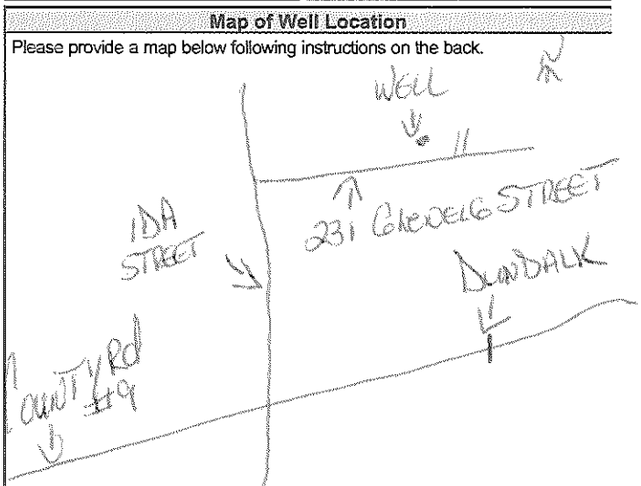
Well production (l/min / GPM)

Disinfected? ☐ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
KAUFMAN INVESTMENTS LTD	6613

Business Address (Street Number/Name)	Municipality
314023 HWY #6 RR#1 DURHAM	WESTGREY

Province	Postal Code	Business E-mail Address
ONTARIO	N0G1R0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
519 369 3344	KAUFMAN, PAUL

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
1912		2018/02/08

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
☐ Yes ☑ No	2017/03/07	Audit No. Z243696
	Date Work Completed	FEB 13 2018
	2017/03/07	Received

7331881

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A264297

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

[redacted]

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
END OF BRADLEY ST		PT LOT 221	2 SWTSR
County/District/Municipality	**City/Town/Village**	**Province**	**Postal Code**
Grey County	DUNDALK	Ontario	
UTM Coordinates Zone	Easting	Northing	**Municipal Plan and Sublot Number** / **Other**
NAD 8 3 17	548151	4889468	

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
Black	Peat	Some Silt	Saturated, Swampy	0	1
Grey	Silt	Some Sand	Saturated, Water bearing	1	15

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*
15	8	SILICA SAND	
8	0	HYDRATED Bentonite	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☒ Other, *specify* AUGER

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☒ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
2"	PVC	3/10	10	+3
4X4	Steel	1/8"	-1	+3

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
2"	PVC	.010	15	10

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☒ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water: Fresh / Untested / Other, specify
2	☐	
	☐	
	☐	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	15	8"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

Well production (l/min / GPM)

Disinfected? ☐ Yes ☒ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		2"		
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.

SEE ATTACHED MAP

Comments: STEEL STICK UP CASING

Well Contractor and Well Technician Information

LONDON SOIL TEST LTD.
712078 Southgate Sdrd. 71
Dundalk, ON N0C 1B0
519-455-5777 info@londonsoil.com

Well Contractor's Licence No. 7190

Municipality

Bus.Telephone No. *(inc. area code)* | Name of Well Technician (Last Name, First Name): WATTS MIKE

Well Technician's Licence No. 7190 | Signature of Technician and/or Contractor | Date Submitted: 2019/04/05

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered

Date Work Completed: 2019/04/05

Ministry Use Only
Audit No. Z305990
Received APR 23 2019

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A264297
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A264297
A264296
A264295
A264294
A264293
A264292
Wilson Crescent
Highpoint St
Pine Ct
Bradley St
Grey St N
Google Earth
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200 m
N

7331882

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A264292

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

2570970 ONTARIO INC.

Address of Well Location (Street Number/Name)	Township	Lot	Concession
Vacant property - End of Bradley St.		PT LOT 22	2 SWTSR
County/District/Municipality	**City/Town/Village**	**Province**	**Postal Code**
Grey County		Ontario	
UTM Coordinates Zone / Easting / Northing	**Municipal Plan and Sublot Number**	**Other**	
NAD 8 3 / 17 548052 / 4891270		4207090005052 00	

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
Brown	Silt	Some Sand	Soft	0	10
Brown	Silt	Gravel & Sand	very Dense	10	20

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
20	8	SILICA SAND	
8	0	HYDRATED Bentonite	

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☐ Air percussion ☒ Other, *specify* Auger

Well Use

☐ Public ☐ Commercial ☐ Not used ☐ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☒ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
2"	PVC	3/16"	10	+3
4x4	Steel	1/8"	-1	+3

Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☒ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, *specify* ☐ Other, *specify*

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
2"	PVC	.010	20	10

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

Well production (l/min / GPM)

Disinfected? ☐ Yes ☒ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Water Details

Water found at Depth (m/ft)	Kind of Water	
	☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*
	☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*
	☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	20'	8"

Map of Well Location

Please provide a map below following instructions on the back.

SEE ATTACHED MAP.

Comments: STEEL STICK UP CASING

Well Contractor and Well Technician Information

LONDON SOIL TEST LTD.
712078 Southgate Sdrd. 71
Dundalk, ON N0C 1B0
519-455-5777 info@londonsoil.com

Well Contractor's Licence No. 7190

Municipality

Email Address

Bus. Telephone No. *(inc. area code)* | Name of Well Technician (Last Name, First Name): WATTS Mike

Well Technician's Licence No. | Signature of Technician and/or Contractor | Date Submitted: 2019/04/05

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered

Date Work Completed 2019/04/05

Ministry Use Only

Audit No. Z305986

Received APR 23 2019

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Wilson Crescent
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Pine Ct
Bradley St
Grey St N
N
200 m
Google Earth
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7331883

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A264294

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

2570970 ONTARIO INC.

Address of Well Location (Street Number/Name)	Township	Lot	Concession
END OF BRADLEY ST		PT LOT 22	2 SWTSR
County/District/Municipality	**City/Town/Village**	**Province**	**Postal Code**
Grey County.	DUNDALK	Ontario	
UTM Coordinates Zone	Easting	Northing	**Municipal Plan and Sublot Number**	**Other**
NAD 8 3	17 548 064	4 891 347		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
Brown	Silt		Very Silty Soil	0	5
Brown	Silt	Gravel & Sand	Water bearing gravel material	5	15

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
15	8	SILICA SAND	
8	0	HYDRATED Bentonite	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☒ Other, *specify* AUGER

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☑ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
2"	PVC	3/16"	10	+3

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
2"	PVC	.010	15	10

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☑ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Hole Diameter Depth From	To	Diameter (cm/in)
7. ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*	0	15	8"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

Well production (l/min / GPM)

Disinfected? ☐ Yes ☒ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		7		
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.

SEE ATTACHED MAP.

Comments:

Well Contractor and Well Technician Information

LONDON SOIL TEST LTD.
712078 Southgate Sdrd. 71
Dundalk, ON N0C 1B0
519-455-5777 info@londonsoil.com

Well Contractor's Licence No. 7190

Municipality

Email Address

Bus. Telephone No. *(inc. area code)*

Name of Well Technician (Last Name, First Name) WATTS Mike

Well Technician's Licence No. 1671

Signature of Technician and/or Contractor

Date Submitted 2019/04/05

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered

Date Work Completed 2019/04/05

Ministry Use Only

Audit No. Z305989

Received APR 23 2019

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A264294
Z305989
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A264293
A264292
Wilson Crescent
Highpoint St
Pine Ct
Bradley St
Grey St N
N
200 m
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7331884

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A264296

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

2570970 ONTARIO INC.

Address of Well Location (Street Number/Name)	Township	Lot	Concession
END OF BAILEY ST	SOUTHGATE	PT LOT 27	2 SWTSR
County/District/Municipality	**City/Town/Village**	**Province**	**Postal Code**
Grey County	DUNDALK	Ontario	
UTM Coordinates Zone / Easting / Northing	**Municipal Plan and Sublot Number**	**Other**	
NAD 8 3 17 5 9 8 0 9 0 4 8 9 1 4 3 3		420709000505200	

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
Dark Brown	Silt	Some Sand	Soft Topsoil Soil type	0	3
Brown	Gravel	Silt & Sand	Compact Water Bearing	3	20

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
20	8	SILICA SAND	
8	0	HYDRATED Bentonite	

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☐ Air percussion ☒ Other, *specify* AUGER

Well Use

☐ Public ☐ Commercial ☐ Not used ☐ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☑ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
2"	PVC	3/16"	+0	13

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
2"	PVC	.010	20	10

Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☑ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, *specify* ☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Hole Diameter Depth From	To	Diameter (cm/in)
7 ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*	0	20	8"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

Well production (l/min / GPM)

Disinfected? ☐ Yes ☒ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		7'		
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.

SEE ATTACHED MAP.

Comments:

Well Contractor and Well Technician Information

LONDON SOIL TEST LTD.
712078 Southgate Sdrd. 71
Dundalk, ON N0C 1B0
519-455-5777 info@londonsoil.com

Well Contractor's Licence No. 7190

Municipality

il Address

Bus. Telephone No. *(inc. area code)* | Name of Well Technician (Last Name, First Name): WATTS Mike

Well Technician's Licence No. 7190 | Signature of Technician and/or Contractor | Date Submitted: 2019/04/15

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered

Date Work Completed 2019/04/05

Ministry Use Only

Audit No. Z305988

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MW
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A264294
A264293
A264292
Wilson Crescent
Pine Ct
Highpoint St
Bradley St
Grey St N
N
200 m
Google Earth
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7331885

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A264295

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

2570970 ONTARIO INC.

Address of Well Location (Street Number/Name)	Township	Lot	Concession
End of BRADLEY ST.		PT LOT 22	2 SWTSR
County/District/Municipality	**City/Town/Village**	**Province**	**Postal Code**
Grey County	DUNDALK	Ontario	
UTM Coordinates Zone / Easting / Northing	**Municipal Plan and Sublot Number**	**Other**	
NAD 8 3 17548715 4891359			

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
Brown	Silt	Some Sand	Soft, loose	0	5
Brown	Silt	Gravel & Sand	Water bearing & Compact	5	20

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
20	8	SILICA SAND	
8	0	HYDRATED Bentonite	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☒ Other, *specify* Auger

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☒ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
2"	PVC	3/110"	20	+3

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
2"	PVC		20	10

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☒ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Hole Diameter Depth From	To	Diameter (cm/in)
7 ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*	0	20	8"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping ____ hrs + ____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)*

Recommended pump rate *(l/min / GPM)*

Well production *(l/min / GPM)*

Disinfected? ☐ Yes ☒ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	7'		
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
50		50	
60		60	

Map of Well Location

Please provide a map below following instructions on the back.

SEE ATTACHED MAP.

Comments:

Well Contractor and Well Technician Information

LONDON SOIL TEST LTD.
712078 Southgate Sdrd. 71
Dundalk, ON N0C 1B0
519-455-5777 info@londonsoil.com

Well Contractor's Licence No. 7190

Municipality

Email Address

Bus. Telephone No. *(inc. area code)*

Name of Well Technician (Last Name, First Name) WATTS, Mike

Well Technician's Licence No. 7179

Signature of Technician and/or Contractor

Date Submitted 2019/04/15

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered

Date Work Completed 2019/04/05

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Audit No. Z305996

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Wilson Crescent
Highpoint St
Pine Ct
Bradley St
Grey St N
N
200 m
Google Earth
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7331886

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A264293

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

2570970 ONTARIO INC.

Address of Well Location (Street Number/Name)	Township	Lot	Concession
End of BRADLEY ST.		PT LOT 22	2 SWTSR

County/District/Municipality	City/Town/Village	Province	Postal Code
Grey County	Dundalk	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	17	547960	4891287		420709000505206

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
Dark Brown	Silt	Some Sand	Loose Topsoil on surface	0	4
Brown/Grey	Gravel	Silt & Sand	Perched water	4	10
Brown	Silt	Some Gravel, Sand	Very Compact	10	20

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*
20	8	SILICA SAND	
8	0	HYDRATED Bentonite	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☒ Other, *specify* AUGER.

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☒ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
2"	PVC	3/10"	10	+3

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
2"	PVC	010	20	10

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☒ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*
4		

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	20	8"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping ____ hrs + ____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)*

Recommended pump rate *(l/min / GPM)*

Well production *(l/min / GPM)*

Disinfected? ☐ Yes ☒ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		21		
1			1	
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60			60	

Map of Well Location

Please provide a map below following instructions on the back.

SEE ATTACHED MAP.

Comments:

Well Contractor and Well Technician Information

LONDON SOIL TEST LTD.
712078 Southgate Sdrd. 71
Dundalk, ON N0C 1B0
519-455-5777 info@londonsoil.com

Well Contractor's Licence No. 7119 16

Municipality

il Address

Bus.Telephone No. *(inc. area code)*

Name of Well Technician (Last Name, First Name) WATT, Mike

Well Technician's Licence No. 1071

Signature of Technician and/or Contractor

Date Submitted 2019/04/15

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered

Date Work Completed 2019/04/05

Ministry Use Only

Audit No. Z305987

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A264294
A264293
A264292
Wilson Crescent
Highpoint St
Pine Ct
Bradley St
N
200 m
Google Earth
© 2018 Google
Image © 2019 DigitalGlobe

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A258125

Tag#:A258125

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
159155 HWY 10	MELANCTHON	223	1 SRE
County/District/Municipality	**City/Town/Village**	**Province**	**Postal Code**
DUFFERIN		Ontario	
UTM Coordinates NAD 83 Zone 17 Easting 548395 Northing 4893013	**Municipal Plan and Sublot Number**	**Other**	

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	TOPSOIL			0	1
BRN	CLAY	STONES		1	15
BRN	STONES	CLAY GRAVEL		15	64
	STONES	CLAY, GRAVEL		64	81
	LIMESTONE			81	102

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	60'	Bentonite Grout	.5 m³

Method of Construction

☐ Cable Tool ☐ Diamond
☒ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☒ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4	STEEL	.188	+3	84
6"	OPEN HOLE		84	102

Status of Well

☑ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify* _____
☐ Other, *specify* _____

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Results of Well Yield Testing

After test of well yield, water was:
☑ Clear and sand free
☐ Other, *specify* _____

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)* 15 GPM

Duration of pumping 2 hrs + _____ min

Final water level end of pumping *(m/ft)* 9

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)* 45 FT

Recommended pump rate *(l/min / GPM)* 10-15 GPM

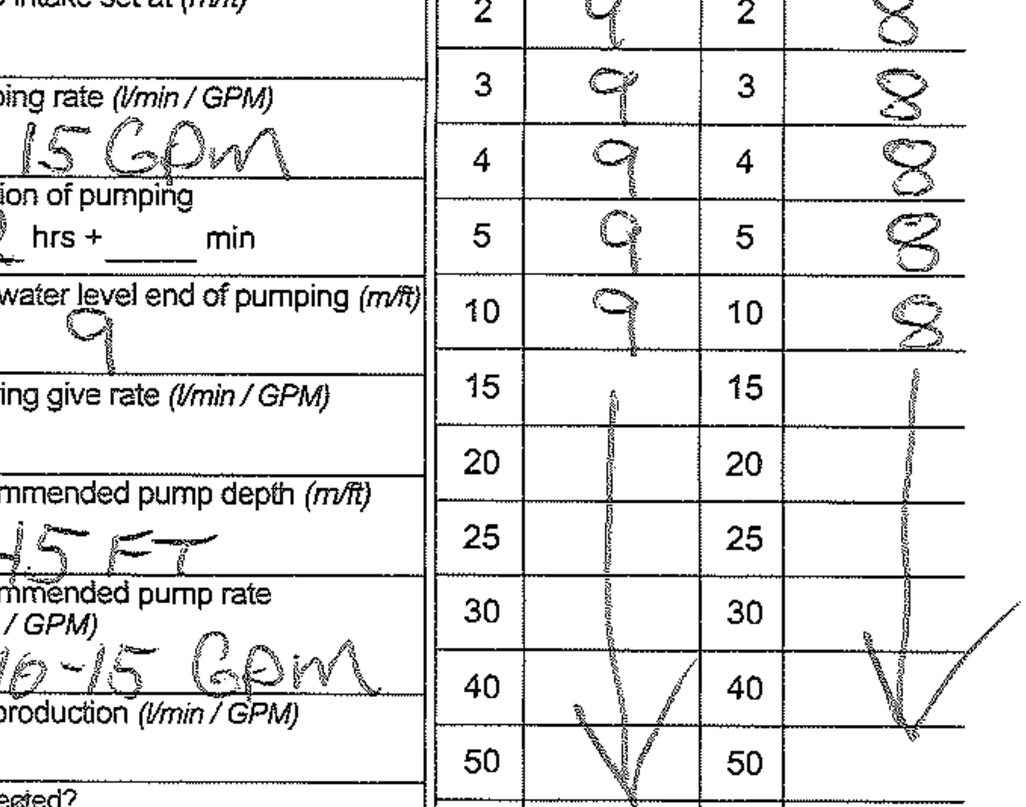
Well production *(l/min / GPM)*

Disinfected? ☑ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	8		9
1	9	1	8
2	9	2	8
3	9	3	8
4	9	4	8
5	9	5	8
10	9	10	8
15		15	
20		20	
25		25	
30		30	
40		40	
50		50	
60		60	

Map of Well Location

Please provide a map below following instructions on the back.



Water Details

Water found at Depth	Kind of Water	
99 (m/ft) ☐ Gas	☑ Fresh ☐ Untested	☐ Other, *specify* _____
(m/ft) ☐ Gas	☐ Fresh ☐ Untested	☐ Other, *specify* _____
(m/ft) ☐ Gas	☐ Fresh ☐ Untested	☐ Other, *specify* _____

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)

Comments: AIR LIFT 40 GPM.

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
NEUMANN WELL DRILLING LTD	7015
Business Address (Street Number/Name)	**Municipality**
453022 GREY Rd 2 BOX 180	DUNDALK
Province	**Postal Code**
ONT	N0C 1B0
Business E-mail Address	
Bus. Telephone No. (inc. area code)	**Name of Well Technician (Last Name, First Name)**
519 923 3203	GILLIES TOM
Well Technician's Licence No.	**Signature of Technician and/or Contractor**
1958	Tom Gillies

Date Submitted Y Y Y Y M M D D

Well owner's information package delivered ☑ Yes ☐ No

Date Package Delivered Y Y Y Y M M D D

Date Work Completed 20190507

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Ontario (https://www.ontario.ca/page/government-ontario)

Map: Well records

This map allows you to search and view well record information from reported wells in Ontario.

Full dataset is available in the Open Data catalogue (https://data.ontario.ca/dataset/well-records) .

Go Back to Map

Well ID

Well ID Number: 7367321
Well Audit Number: *C47994*
Well Tag Number: *A295208*
This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location		

Township	PROTON TOWNSHIP
Lot	
Concession	
County/District/Municipality	GREY
City/Town/Village	
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 17 Easting: 547875.00 Northing: 4890860.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant Used (Material and Type)	Volume Placed

Method of Construction & Well Use

Method of Construction	Well Use

Status of Well

Construction Record - Casing

Inside Diameter	Open Hole or material	Depth From	Depth To

Construction Record - Screen

Outside Diameter	Material	Depth From	Depth To

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 7215

Results of Well Yield Testing

After test of well yield, water was		
If pumping discontinued, give reason		
Pump intake set at		
Pumping Rate		
Duration of Pumping		
Final water level		
If flowing give rate		
Recommended pump depth		
Recommended pump rate		
Well Production		
Disinfected?		

Draw Down & Recovery

Draw Down Time(min)	Draw Down Water level	Recovery Time(min)	Recovery Water level
SWL			
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	

25		25	
30		30	
40		40	
45		45	
50		50	
60		60	

Water Details

Water Found at Depth	Kind

Hole Diameter

Depth From	Depth To	Diameter

Audit Number: C47994

Date Well Completed: May 29, 2020

Date Well Record Received by MOE: September 10, 2020

Related

How to use a Ministry of the Environment map (https://www.ontario.ca/page/how-use-ministry-environment-map#wells)

Technical documentation: Metadata record (https://data.ontario.ca/dataset/well-records/resource/3031344e-e3f2-48d5-888c-c1deadfd2f77)

Updated: October 18, 2021
Published: March 20, 2014

Ontario

Ministry of the Environment, Conservation and Parks

Well Record - Regulation 903

Ontario Water Resources Act

Notice of Collection of Personal Information

Personal information contained on this form is collected pursuant to sections 35-50 and 75(2) of the *Ontario Water Resources Act* and section 16.3 of the Wells Regulation. This information will be used for the purpose of maintaining a public record of wells in Ontario. This form and the information contained on the form will be stored in the Ministry's well record database and made publicly available. Questions about this collection should be directed to the Water Well Customer Service Representative at the Wells Help Desk, 125 Resources Road, Toronto Ontario M9P 3V6, at 1-888-396-9355 or wellshelpdesk@ontario.ca.

Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
No Tag on Well

Type *

☐ Construction ☑ Abandonment

Measurement recorded in: *

☑ Metric ☐ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name
[redacted]	
Organization	**Email Address**
Southgate Meadows Inc.	[redacted]

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
		[redacted]	

Country	Province	Postal Code	Telephone Number
Canada	Ontario	[redacted]	

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	231	Glenelg Street	Proton

Lot	Concession	County/District/Municipality
224	Range 2	Grey County

City/Town	Province	Postal Code
Dundalk	Ontario	N0C 1B0

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	547333	4891206	Test UTM in Map	

Other

3. Abandonment and Sealing

Well Depth 4.6 (m)

Provide information of well (e.g. construction date, original contractor). **Do not** enter private information

Original Owner

General Description	Depth From (m)	Depth To (m)

4. Annular Space

Depth From (m)	Depth To (m)	Type of Sealant Used (Material and Type)	Volume Placed (cubic metres)
0	4.6	Bentonite	0.01

5. Method of Construction

☐ Cable Tool ☐ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Diamond
☐ Jetting ☐ Driving ☐ Digging ☐ Rotary (Air) ☐ Augering ☐ Direct Push
☐ Other (specify)

6. Well Use

☐ Public ☐ Industrial ☐ Cooling & Air Conditioning
☐ Domestic ☐ Commercial ☐ Not Used
☐ Livestock ☐ Municipal ☐ Monitoring
☐ Irrigation ☐ Test Hole ☐ Dewatering
☐ Other (specify)

7. Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole
☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole
☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality
☑ Abandoned, other (specify) customer request
☐ Other (specify)

8. Construction Record - Casing (use negative number(s) to indicate depth above ground surface)

Inside Diameter (cm)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (m)	Depth To (m)
5	Plastic		0	1.5

9. Construction Record - Screen

Outside Diameter (cm)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (m)	Depth To (m)
6.3	Plastic		1.5	4.6

10. Water Details

Water found at Depth (m)	☐ Gas	Kind of water ☐ Fresh	☐ Untested	☐ Other

11. Hole Diameter

Depth From (m)	Depth To (m)	Diameter (cm)
0		

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (L/min)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (m)														

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (m)													

After test of well yield, water was

☐ Clear and sand free ☐ Other (specify)

Pump intake set at (m)	Pumping rate (L/min)	Duration of pumping hrs + min	Final water level end of pumping (m)	Disinfected?
				☐ Yes ☑ No

Recommended pump depth (m)	Recommended pump rate (L/min)	Well production (L/min)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☐ Make map area bigger

14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☐ Yes ☑ No		2021/03/17

Comments
MW1 on map

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
SL Sonic Soil Limited	7732

Business Address

Unit Number	Street Number	Street Name *
	441	Carlingview Drive

City/Town/Village *	Province	Postal Code *
Etobicoke	Ontario	M9W 5G8

Business Telephone Number	Business Email Address
905-660-0501	sonic@sonicsoil.com

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
Osborne	Tim	4078

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
Archibald	Alan	sonic@sonicsoil.com

Signature	Date Submitted (yyyy/mm/dd)
Alan Archibald Digitally signed by Alan Archibald DN: C=CA, O=SL Sonic Soil Limited, CN=Alan Archibald, E=sonic@sonicsoil.com Reason: I am the author of this document Location: Date: 2021-04-14 14:42:01 Foxit PhantomPDF Version: 9.4.1	2021/04/14

17. Ministry Use Only

Audit Number
UKPZ BS7B

Ontario

Ministry of the Environment, Conservation and Parks

Well Record - Regulation 903

Ontario Water Resources Act

Notice of Collection of Personal Information

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Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
No Tag on Well

Type *

☐ Construction ☑ Abandonment

Measurement recorded in: *

☑ Metric ☐ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name
[redacted]	
Organization: Southgate Meadows Inc.	Email Address: [redacted]

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
		[redacted]	

Country	Province	Postal Code	Telephone Number
Canada	Ontario	[redacted]	

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	231	Glenelg Street	Proton

Lot	Concession	County/District/Municipality
227	Range 2	Grey County

City/Town	Province	Postal Code
Dundalk	Ontario	N0C 1B0

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	547746	4891026	Test UTM in Map	

Other

3. Abandonment and Sealing

Well Depth 4.9 (m)

Provide information of well (e.g. construction date, original contractor). **Do not** enter private information

Original Owner

General Description	Depth From (m)	Depth To (m)

4. Annular Space

Depth From (m)	Depth To (m)	Type of Sealant Used (Material and Type)	Volume Placed (cubic metres)
0	4.9	Bentonite	0.01

5. Method of Construction

☐ Cable Tool ☐ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Diamond
☐ Jetting ☐ Driving ☐ Digging ☐ Rotary (Air) ☐ Augering ☐ Direct Push
☐ Other (specify)

6. Well Use

☐ Public ☐ Industrial ☐ Cooling & Air Conditioning
☐ Domestic ☐ Commercial ☐ Not Used
☐ Livestock ☐ Municipal ☐ Monitoring
☐ Irrigation ☐ Test Hole ☐ Dewatering
☐ Other (specify)

7. Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole
☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole
☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality
☑ Abandoned, other (specify) customer request
☐ Other (specify)

8. Construction Record - Casing (use negative number(s) to indicate depth above ground surface)

Inside Diameter (cm)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (m)	Depth To (m)
5	Plastic		0	1.8

9. Construction Record - Screen

Outside Diameter (cm)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (m)	Depth To (m)
6.3	Plastic		1.8	4.9

10. Water Details

Water found at Depth (m)	☐ Gas	Kind of water ☐ Fresh	☐ Untested	☐ Other

11. Hole Diameter

Depth From (m)	Depth To (m)	Diameter (cm)
0		

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (L/min)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (m)														

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (m)													

After test of well yield, water was

☐ Clear and sand free ☐ Other (specify)

Pump intake set at (m)	Pumping rate (L/min)	Duration of pumping hrs + min	Final water level end of pumping (m)	Disinfected?
				☐ Yes ☑ No

Recommended pump depth (m)	Recommended pump rate (L/min)	Well production (L/min)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☐ Make map area bigger

14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☐ Yes ☑ No		2021/03/17

Comments
MW2 on map

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
SL Sonic Soil Limited	7732

Business Address

Unit Number	Street Number	Street Name *
	441	Carlingview Drive

City/Town/Village *	Province	Postal Code *
Etobicoke	Ontario	M9W 5G8

Business Telephone Number	Business Email Address
905-660-0501	sonic@sonicsoil.com

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
Osborne	Tim	4078

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
Archibald	Alan	sonic@sonicsoil.com

Signature	Date Submitted (yyyy/mm/dd)
Alan Archibald Digitally signed by Alan Archibald DN: C=CA, O=SL Sonic Soil Limited, CN=Alan Archibald, E=sonic@sonicsoil.com Reason: I am the author of this document Location: Date: 2021-04-14 14:41:00 Foxit PhantomPDF Version: 9.4.1	2021/04/14

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Ontario

Ministry of the Environment, Conservation and Parks

Well Record - Regulation 903

Ontario Water Resources Act

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Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
No Tag on Well

Type *

☐ Construction ☑ Abandonment

Measurement recorded in: *

☑ Metric ☐ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name
[redacted]	
Organization	**Email Address**
Southgate Meadows Inc.	[redacted]

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
		[redacted]	

Country	Province	Postal Code	Telephone Number
Canada	Ontario	[redacted]	

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	231	Glenelg Street	Proton

Lot	Concession	County/District/Municipality
228	Range 2	Grey County

City/Town	Province	Postal Code
Dundalk	Ontario	N0C 1B0

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	548027	4890884	Test UTM in Map	

Other

3. Abandonment and Sealing

Well Depth 5.2 (m)

Provide information of well (e.g. construction date, original contractor). **Do not** enter private information

Original Owner

General Description	Depth From (m)	Depth To (m)

4. Annular Space

Depth From (m)	Depth To (m)	Type of Sealant Used (Material and Type)	Volume Placed (cubic metres)
0	5.2	Bentonite	0.0104

5. Method of Construction

☐ Cable Tool ☐ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Diamond
☐ Jetting ☐ Driving ☐ Digging ☐ Rotary (Air) ☐ Augering ☐ Direct Push
☐ Other (specify)

6. Well Use

☐ Public ☐ Industrial ☐ Cooling & Air Conditioning
☐ Domestic ☐ Commercial ☐ Not Used
☐ Livestock ☐ Municipal ☐ Monitoring
☐ Irrigation ☐ Test Hole ☐ Dewatering
☐ Other (specify)

7. Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole
☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole
☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality
☑ Abandoned, other (specify) customer request
☐ Other (specify)

8. Construction Record - Casing (use negative number(s) to indicate depth above ground surface)

Inside Diameter (cm)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (m)	Depth To (m)
5	Plastic		0	2.1

9. Construction Record - Screen

Outside Diameter (cm)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (m)	Depth To (m)
6.3	Plastic		2.1	5.2

10. Water Details

Water found at Depth (m)	☐ Gas	Kind of water ☐ Fresh	☐ Untested	☐ Other

11. Hole Diameter

Depth From (m)	Depth To (m)	Diameter (cm)
0		

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (L/min)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (m)														

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (m)													

After test of well yield, water was

☐ Clear and sand free ☐ Other (specify)

Pump intake set at (m)	Pumping rate (L/min)	Duration of pumping hrs + min	Final water level end of pumping (m)	Disinfected?
				☐ Yes ☑ No

Recommended pump depth (m)	Recommended pump rate (L/min)	Well production (L/min)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☐ Make map area bigger

14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☐ Yes ☑ No		2021/03/17

Comments
MW3 on map

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
SL Sonic Soil Limited	7732

Business Address

Unit Number	Street Number	Street Name *
	441	Carlingview Drive

City/Town/Village *	Province	Postal Code *
Etobicoke	Ontario	M9W 5G8

Business Telephone Number	Business Email Address
905-660-0501	sonic@sonicsoil.com

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
Osborne	Tim	4078

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
Archibald	Alan	sonic@sonicsoil.com

Signature	Date Submitted (yyyy/mm/dd)
Alan Archibald Digitally signed by Alan Archibald DN: C=CA, O=SL Sonic Soil Limited, CN=Alan Archibald, E=sonic@sonicsoil.com Reason: I am the author of this document Location: Date: 2021-04-14 14:41:28 Foxit PhantomPDF Version: 9.4.1	2021/04/14

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Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
No Tag on Well

Type *

☐ Construction ☑ Abandonment

Measurement recorded in: *

☑ Metric ☐ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name
[redacted]	
Organization	Email Address
Southgate Meadows Inc.	[redacted]

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
		[redacted]	

Country	Province	Postal Code	Telephone Number
Canada	Ontario	[redacted]	

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	231	Glenelg Street	Proton

Lot	Concession	County/District/Municipality
225	Range 2	Grey County

City/Town	Province	Postal Code
Dundalk	Ontario	N0C 1B0

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	547965	4890795	Test UTM in Map	

Other

3. Abandonment and Sealing

Well Depth 5.2 (m)

Provide information of well (e.g. construction date, original contractor). **Do not** enter private information

Original Owner

General Description	Depth From (m)	Depth To (m)
	0	5.2

4. Annular Space

Depth From (m)	Depth To (m)	Type of Sealant Used (Material and Type)	Volume Placed (cubic metres)
0	5.2	Bentonite	0.0104

5. Method of Construction

☐ Cable Tool ☐ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Diamond
☐ Jetting ☐ Driving ☐ Digging ☐ Rotary (Air) ☐ Augering ☐ Direct Push
☐ Other (specify)

6. Well Use

☐ Public ☐ Industrial ☐ Cooling & Air Conditioning
☐ Domestic ☐ Commercial ☐ Not Used
☐ Livestock ☐ Municipal ☐ Monitoring
☐ Irrigation ☐ Test Hole ☐ Dewatering
☐ Other (specify)

7. Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole
☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole
☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality
☑ Abandoned, other (specify) customer request
☐ Other (specify)

8. Construction Record - Casing (use negative number(s) to indicate depth above ground surface)

Inside Diameter (cm)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (m)	Depth To (m)
5	Plastic		0	5.2

9. Construction Record - Screen

Outside Diameter (cm)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (m)	Depth To (m)
6.3	Plastic		0	5.2

10. Water Details

Water found at Depth (m)	☐ Gas	Kind of water ☐ Fresh	☐ Untested	☐ Other

11. Hole Diameter

Depth From (m)	Depth To (m)	Diameter (cm)
0		

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (L/min)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (m)														

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (m)													

After test of well yield, water was

☐ Clear and sand free ☐ Other (specify)

Pump intake set at (m)	Pumping rate (L/min)	Duration of pumping hrs + min	Final water level end of pumping (m)	Disinfected?
				☐ Yes ☑ No

Recommended pump depth (m)	Recommended pump rate (L/min)	Well production (L/min)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☐ Make map area bigger

14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☐ Yes ☑ No		2021/03/17

Comments
MW4 on map

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
SL Sonic Soil Limited	7732

Business Address

Unit Number	Street Number	Street Name *
	441	Carlingview Drive

City/Town/Village *	Province	Postal Code *
Etobicoke	Ontario	M9W 5G8

Business Telephone Number	Business Email Address
905-660-0501	sonic@sonicsoil.com

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
Osborne	Tim	4078

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
Archibald	Alan	sonic@sonicsoil.com

Signature
Alan Archibald
Digitally signed by Alan Archibald
DN: C=CA, O=SL Sonic Soil Limited, CN=Alan Archibald, E=sonic@sonicsoil.com
Reason: I am the author of this document
Location:
Date: 2021-04-14 14:41:44
Foxit PhantomPDF Version: 9.4.1

Date Submitted (yyyy/mm/dd)
2021/04/14

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Audit Number
6CW4 L4DH

Ontario (https://www.ontario.ca/page/government-ontario)

Map: Well records

This map allows you to search and view well record information from reported wells in Ontario.

Full dataset is available in the Open Data catalogue (https://data.ontario.ca/dataset/well-records) .

Go Back to Map

Well ID

Well ID Number: 7389879
Well Audit Number: *C49299*
Well Tag Number: *A294344*
This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location		

Township	PROTON TOWNSHIP
Lot	
Concession	
County/District/Municipality	GREY
City/Town/Village	
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 17 Easting: 547332.00 Northing: 4891207.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant Used (Material and Type)	Volume Placed

Method of Construction & Well Use

Method of Construction	Well Use

Status of Well

Construction Record - Casing

Inside Diameter	Open Hole or material	Depth From	Depth To

Construction Record - Screen

Outside Diameter	Material	Depth From	Depth To

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 6988

Results of Well Yield Testing

After test of well yield, water was		
If pumping discontinued, give reason		
Pump intake set at		
Pumping Rate		
Duration of Pumping		
Final water level		
If flowing give rate		
Recommended pump depth		
Recommended pump rate		
Well Production		
Disinfected?		

Draw Down & Recovery

Draw Down Time(min)	Draw Down Water level	Recovery Time(min)	Recovery Water level
SWL			
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	

25		25	
30		30	
40		40	
45		45	
50		50	
60		60	

Water Details

Water Found at Depth	Kind

Hole Diameter

Depth From	Depth To	Diameter

Audit Number: C49299

Date Well Completed: February 24, 2021

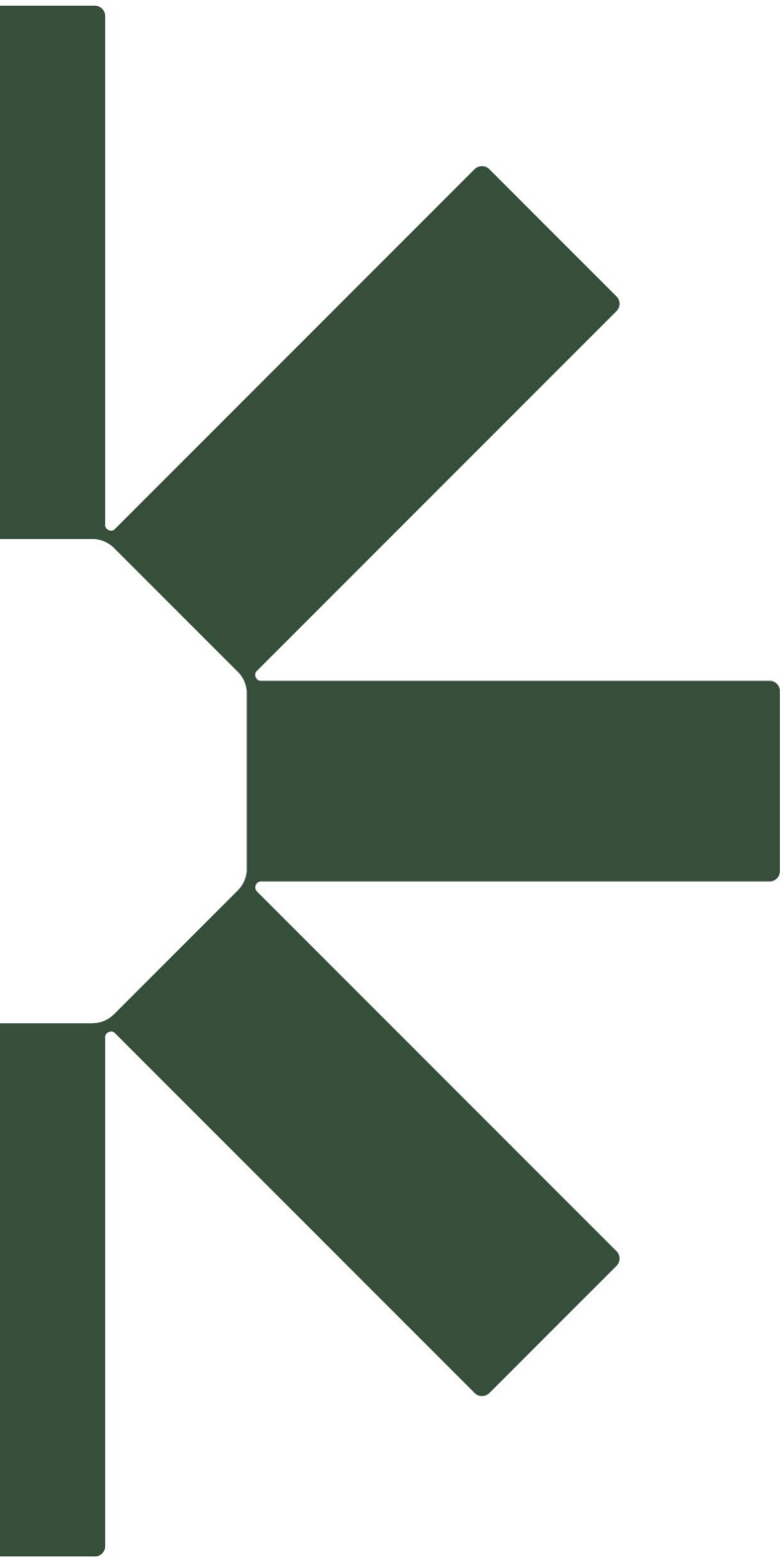
Date Well Record Received by MOE: June 21, 2021

Related

How to use a Ministry of the Environment map (https://www.ontario.ca/page/how-use-ministry-environment-map#wells)

Technical documentation: Metadata record (https://data.ontario.ca/dataset/well-records/resource/3031344e-e3f2-48d5-888c-c1deadfd2f77)

Updated: October 18, 2021
Published: March 20, 2014



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Soil Engineers Ltd.
CONSULTING ENGINEERS
GEOTECHNICAL • ENVIRONMENTAL • HYDROGEOLOGICAL • BUILDING SCIENCE
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TEL: (705) 721-7863	TEL: (905) 542-7605	TEL: (905) 440-2040	TEL: (905) 853-0647	TEL: (705) 684-4242	TEL: (905) 777-7956
FAX: (705) 721-7864	FAX: (905) 542-2769	FAX: (905) 725-1315	FAX: (905) 881-8335	FAX: (705) 684-8522	FAX: (905) 542-2769

A REPORT TO
FLATO DEVELOPMENTS INC.

A GEOTECHNICAL INVESTIGATION FOR PROPOSED RESIDENTIAL DEVELOPMENT

PART OF LOTS 225 AND 226 CONCESSION 2
TOWNSHIP OF SOUTHGATE (DUNDALK)

REFERENCE NO. 2210-S028C

JANUARY 2023

DISTRIBUTION

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-

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Details of the Underfloor Weepers ..... Drawing No. 3

1.0 INTRODUCTION

In accordance with a written authorization from Ms. Nazy Majidi of Flato Developments Inc. dated September 20, 2022, Soil Engineers Ltd. was retained to carry out a geotechnical review based on the monitoring well logs and groundwater monitoring data prepared by SLR Consulting (Canada) Ltd. (SLR) at a land parcel with the legal description of "Part of Lots 225 and 226, Concession 2, Southwest of the Toronto and Sydenham Road, Geographic Township of Proton, Township of Southgate, County of Grey".

The purpose of this review was to evaluate the subsurface conditions and determine the engineering properties of the disclosed soils from SLR boreholes for the design and construction of the proposed residential development. The geotechnical findings and resulting recommendations are presented in this report.

2.0 SITE AND PROJECT DESCRIPTION

The Township of Southgate (Dundalk) is situated in the physiographic region known as Dundalk Till Plain, where moraines and eskers occur in areas that have been partly eroded by glacial Lake Algonquin and filled with lacustrine sands, silts, and reworked till.

The subject site, approximately 32 hectares in area, is currently a vacant farm field with a wooded area occupying the eastern portion of the site. It is located to the north of the Grey County CP Rail Trail and northwest of Todd Crescent, in the Township of Southgate. The existing site gradient is undulating, with a slight drop towards the west and centre of the site.

Based on the Draft Plan of Subdivision prepared by MHBC Planning dated August 18, 2022, the subject site will be developed into a residential subdivision with a park block and a stormwater management (SWM) pond. The subdivision will be serviced with municipal sewers and roadways meeting urban standards.

3.0 FIELD WORK AND LABORATORY TESTS

The field work, consisting of five (5) boreholes extending to depths of 5.33 to 12.95 m, was supervised by SLR between April 19 and May 5, 2022. Upon the completion of drilling and sampling, six (6) monitoring wells, including a pair of nested wells, were installed in all borehole locations to facilitate groundwater monitoring and hydrogeological study. All

borehole and monitoring well locations are shown on the Borehole and Monitoring Well Location Plan, Drawing No. 1.

Standard Penetration Tests (SPT) were performed at regular sample interval to determine the Standard Penetration Resistance (or 'N' values) of the subsoil. The relative density of the non-cohesive strata is inferred from the 'N' values. The results of the SPT were documented in the Monitoring Well Logs in Appendix A of this report.

Aside from the SPT during the field work, grain size analyses were also performed on selected soil samples to determine the gradation of the subsoils. The gradation graphs were presented in Appendix B of this report.

4.0 SUBSURFACE CONDITIONS

The investigation revealed that beneath a topsoil veneer, the site is underlain by strata of sandy silt till/silty sand till, and sand deposits.

Detailed descriptions of the encountered subsurface conditions are presented on SLR Monitoring Well Logs attached in the Appendix A. The engineering properties of the disclosed soils are discussed herein.

4.1 Topsoil

The topsoil veneer, 13 to 46 cm in thickness, was contacted at the ground surface in all boreholes. Thicker topsoil may be found in areas beyond the borehole locations, especially in low-lying areas and treed areas.

4.2 Silty Sand Till/Sandy Silt Till

The native silty sand till/sandy silt till predominates the soil stratigraphy within the depth of the investigation. The tills consist of a random mixture of soil particle sizes ranging from clay to gravel, with silt and sand being the dominant influence on its soil properties. Two (2) grainsize analyses were performed on the till deposits and their gradations were presented in Appendix B of this report.

The obtained 'N' values of the till samples range from 6 to over 50, with a median of over 50 blows per 30 cm of penetration, indicating the till deposit is loose to very dense, being

generally very dense in relative density. Occasional cobbles, boulders and rock fragments were identified within the till samples by SLR.

SLR indicated that the till samples were generally in moist conditions, with localized wet sand layers at various depths.

The engineering properties of the till deposit are listed below:

- High frost susceptibility and low water erodibility.
- The till will be stable in relatively steep excavation; however, localized sheet collapse may occur under prolonged exposure.

4.3 Sand

The sand deposit was generally found near the ground surface or between the till deposits in MW22-312, MW22-314 and MW22-315. It is generally fine to coarse grained and contains a trace of gravel to being gravelly. One (1) grain size was carried out in the sand and gravel deposit and the gradation is presented in Appendix B of this report.

The obtained 'N' values of the sand range between 4 and over 50 blows per 30 cm of penetration, indicating the sand is very loose to very dense in relative density. The low 'N' value of 4 was contacted near the ground surface, likely being disturbed by farming activities or weakened by weathering process.

According to SLR's sample examination, the sand deposit near the ground surface was in moist condition, while the sand deposit at deeper depths is wet.

The engineering properties of the sand deposit are given below:

- Low frost-susceptibility and high water erodibility
- In excavation, the sand will slough to its angle of repose, run with water seepage and boil with a piezometric head of about 0.3 m.

5.0 GROUNDWATER CONDITION

Groundwater levels were recorded in the monitoring wells on May 13, 2022, and the records are presented on the logs and summarized in Table 1.

Table 1 - Groundwater Level in Monitoring Wells

Monitoring Well No.	Well Depth (m)	Ground Elevation (m)	May 13, 2022	
			Depth (m)	Elevation (m)
MW22-312	4.57	520.61	0.20	520.41
MW22-313D	10.67	520.00	4.87	515.13
MW22-313S	5.94	520.03	0.37	519.66
MW22-314	6.10	517.28	0.58	516.70
MW22-315	12.19	518.81	2.97	515.84
MW22-316	9.14	520.07	1.40	518.67

Groundwater was recorded at a depth of 0.20 to 4.87 m from the prevailing ground surface, or between El. 515.13 m and El. 520.41 m. On-going groundwater monitoring will be completed by SLR and presented in the hydrogeological report under separate cover.

6.0 DISCUSSION AND RECOMMENDATIONS

The investigation revealed that beneath a topsoil veneer, the site is underlain by strata of sandy silt till/silty sand till, sand deposits.

Groundwater was recorded at a depth of 0.20 to 4.87 m from the prevailing ground surface, or between El. 515.13 m and El. 520.41 m.

It is understood that subject site will be developed into a residential subdivision with a park block and a stormwater management (SWM) pond. The geotechnical findings warranting special consideration for the proposed development are presented below:

- The topsoil must be removed for site development. The topsoil can be re-used for landscaping only. Any surplus should be removed off-site
- Where the surface soil is weathered or disturbed, it should be subexcavated and inspected before reusing for structural backfill.
- In areas where the site will be regraded with additional fill, the earth fill can be placed in an engineered manner for foundation, site services and pavement construction.
- The proposed residential houses can be supported on conventional spread and strip footings founded on engineered fill or undisturbed native subsoil. The foundation subgrade must be inspected by a geotechnical engineer, or a senior geotechnical

technician, to ensure that the revealed conditions are compatible with the design of foundations.

- For conventional basement design, the foundation wall should be damp-proofed and provided with perimeter subdivisions at wall base. Where wet subgrade is evident below the basement slab, underfloor weepers must be considered.
- A Class 'B' bedding, consisting of compacted 19-mm Crusher-Run Limestone (CRL), or equivalent, is recommended for the construction of the underground utilities. Where wet subgrade or dewatering is required, A Class 'A' concrete bedding should be used instead.

The recommendations appropriate for the project are presented herein. One must be aware that the subsurface conditions may vary. Should this become apparent during construction, a geotechnical engineer must be consulted to determine whether the following recommendations require revision.

6.1 Site Preparation

In areas where the site will be regraded with additional fill, the earth fill should be place in an engineered manner for foundation, site services and pavement construction. The engineering requirements for a certifiable fill are presented below:

1. All the existing topsoil must be removed. Any weathered/disturbed soil encountered on the ground surface should be subexcavated, sorted free of organics or deleterious material, if any, aerated before reusing for structural backfill. The exposed subgrade must be inspected and proof-rolled prior to any fill placement.
2. Inorganic soils must be used, and they must be uniformly compacted in 20 cm thick lifts to at least 98% Standard Proctor dry density (SPDD) up to the proposed finished grade. The soil moisture must be properly controlled near the optimum. If the foundations are to be built soon after the fill placement, the densification process for the engineered fill must be increased to 100% SPDD.
3. If the engineered fill is compacted with the moisture content on the wet side of the optimum, the underground services and pavement construction should not begin until the pore pressure within the fill mantle has completely dissipated. This must be further assessed at the time of the engineered fill construction.
4. If imported fill is to be used, it should be inorganic soils, free of deleterious or any material with environmental issue (contamination). Any potential imported earth fill from off site must be reviewed for geotechnical and environmental quality by the

appropriate personnel as authorized by the developer or agency, before it is hauled to the site.

5. The engineered fill must not be placed during the period where freezing ambient temperatures occur either persistently or intermittently. This is to ensure that the fill is free of frozen soils, ice and snow. If the engineered fill is to be left over the winter months, adequate earth cover, or equivalent, must be provided for protection against frost action.
6. The fill operation must be supervised and monitored on a full-time basis by a technician under the direction of a geotechnical engineer.
7. The engineered fill envelope and finished elevations must be clearly and accurately defined in the field, and they must be precisely documented.
8. The foundations and underground services subgrade must be inspected by the geotechnical consulting firm that inspected the engineered fill placement. This is to ensure that the foundations are placed within the engineered fill envelope, and the integrity of the fill has not been compromised by interim construction, environmental degradation and/or disturbance by the footing excavation.
9. Any excavation carried out in certified engineered fill must be reported to the geotechnical consultant who supervised the fill placement in order to document the locations of the excavation and/or to supervise reinstatement of the excavated areas to engineered fill status. If construction on the engineered fill does not commence within a period of 2 years from the date of certification, the condition of the engineered fill must be assessed for re-certification.
10. Despite stringent control in the placement of the engineered fill, variations in soil type and density may occur in the engineered fill. Therefore, the foundations must be reinforced and designed by a structural engineer.
11. In sewer construction, the engineered fill is considered to have the same structural proficiency as a natural inorganic soil.

6.2 **Foundations**

The proposed residential dwellings can be constructed on conventional footings founded on the undisturbed native soil or engineered fill. The recommended bearing pressures for conventional footing design are presented below:

- Maximum Soil Bearing Pressure at Serviceability Limit State (SLS) = 150 kPa
- Factored Ultimate Bearing Pressure at Ultimate Limit State (ULS) = 250 kPa

The total and differential settlements of the conventional spread and strip footings, designed for the bearing pressure at SLS, are estimated to be 25 mm and 20 mm, respectively.

The footing subgrade must be inspected by a geotechnical engineer, or a geotechnical technician under the supervision of a geotechnical engineer; this is to ensure that the subgrade conditions are compatible with the foundation design requirements.

Where water seepage is encountered during footing excavations, or where the subgrade of the foundations is found to be wet, the subgrade should be protected by a concrete mud-slab immediately after exposure and inspection. This will prevent construction disturbance and costly rectification.

Footings exposed to weathering or in unheated areas, should have at least 1.6 m of earth cover for protection against frost action or must be adequately insulated.

The foundations shall meet the requirements specified in the latest Ontario Building Code. The proposed development should be designed to resist an earthquake force using Site Classification 'D' (stiff soil).

6.3 Basement Construction

The basement walls should be designed to sustain a lateral earth pressure calculated using the soil parameters stated in Section 6.8. Any applicable surcharge loads beside the basement must also be included in the design of underground structure.

In conventional design, perimeter subdrains and damp-proofing of the foundation walls will be required. The subdrains should be encased in a fabric filter to protect them against blockage by silting and connected to a positive outlet. Typical details of the perimeter subdrain are illustrated on Drawing No. 2.

Where wet subgrade is evident below the basement, underfloor weepers should be implemented. In addition, a vapour barrier should also be placed between the concrete slab and the granular bedding to prevent upfiltration of water vapour. Details of the underfloor weepers are illustrated on Drawing No. 3. The necessity of the underfloor weepers should be further verified once the basement elevation is available for review.

The subgrade must consist of sound native soils or properly compacted inorganic fill. Any weak or wet soil should be subexcavated and replaced with suitable inorganic soil compacted

to at least 98% SPDD. The final subgrade must be inspected and assessed by proof-rolling prior to placement of granular bedding.

The basement floor slab should be constructed on a granular bedding, at least 20 cm in thickness, consisting of 19-mm CRL, or equivalent, compacted to 100% SPDD. Where underfloor weepers are required, the thickness of the granular bedding should be increased to 30 cm in thickness.

The exterior grading around the buildings must be such that it directs runoff away from the structures.

6.4 Underground Services

The subgrade for underground services should consist of properly compacted inorganic earth fill or sound native soils. Where weak or wet subgrade is encountered, it can be further subexcavated to competent soil and replaced with bedding material compacted to 98% SPDD in lifts no more than 20 cm in thickness.

A Class 'B' bedding, consisting of compacted 19-mm CRL or equivalent, is recommended for the design of the underground services construction. Where saturated soils and/or dewatering is required for the construction of the underground services, Class 'A' concrete bedding should be used instead.

In order to prevent pipe floatation when the sewer trench is deluged with water, a soil cover with a thickness equal to two times the pipe diameter should be in place at all times after completion of the pipe installation.

The pipe joints connecting into manholes and catch basins should be leak-proof or wrapped with a waterproof membrane. Openings to subdrains should be shielded by a fabric filter to prevent blockage by silting.

All metal fittings for the underground services should be protected against soil corrosion. The in-situ soils have moderately high corrosivity to buried metal. In determining the mode of protection, an estimated electrical resistivity of the disclosed soil should be used and must meet the minimum requirement as specified by the Municipality.

6.5 Backfilling in Trenches and Excavation

The on-site inorganic soils are suitable in general to be reused for structural backfill. However, the wet soils, if any, should be spread thinly on the ground to allow aeration in warm and dry weather prior to be reused for structural backfill. They should be free of deleterious materials or oversized (over 15 cm) boulders and cobbles.

The backfill in service trenches or beside foundation walls should be compacted to at least 95% SPDD. In zone within 1.0 m below the pavement subgrade or floor slab, the subgrade must be compacted to at least 98% SPDD. The lift thickness should be limited to 20 cm, or the lift thickness should be determined by test strips.

In normal construction practice, the problem areas of pavement settlement largely occur adjacent to foundation walls, manholes, catch basins and services crossings. In areas which are inaccessible to a heavy compactor, granular backfill should be used in order to achieve the compaction with a light equipment.

One must be aware of the possible consequences during trench backfilling and exercise caution as described below:

- When construction is carried out in freezing winter weather, allowance should be made for these following conditions. Despite stringent backfill monitoring, frozen soil layers may inadvertently be mixed with the structural trench backfill. Should the in-situ soils have a water content on the dry side of the optimum, it would be impossible to wet the soils due to the freezing condition, rendering difficulties in obtaining uniform and proper compaction. Furthermore, the freezing condition will prevent wetting of the backfill when it is required, such as in a narrow vertical trench section, or when the trench box is removed. The above will invariably cause backfill settlement that may become evident within 1 to several years, depending on the depth of the trench which has been backfilled.
- In areas where the construction is carried out during the winter months, prolonged exposure of the trench walls will result in frost heave within the soil mantle of the walls. This may result in some settlement as the frost recedes, and repair costs will be incurred prior to final surfacing of the new pavement and the slab-on-grade construction.
- In deep trench backfill, one must be aware that future settlement may occur, unless the side of the cut is flattened to at least 2H:1V, and the lifts of the fill and its moisture content are stringently controlled; i.e., lifts should be no more than 20 cm (or less if the

backfilling conditions dictate) and uniformly compacted to achieve at least 98% SPDD, with the moisture content controlled near the optimum.

- It is often difficult to achieve uniform compaction of the backfill in the lower vertical section of a trench which is stabilized by a trench box. These sectors must be backfilled with sand or non shrinkable fill, and the compaction must be carried out diligently prior to the placement of the backfill above this sector; i.e., in the upper sloped trench section. This measure is necessary in order to prevent consolidation of inadvertent voids and loose backfill which will compromise the compaction of the backfill in the upper section.
- In areas where groundwater movement is expected in the trench backfill, anti-seepage collars (OPSS 802.095) should be provided.

6.6 Garages and Driveways

Due to the frost susceptible characteristics of the subgrade soils, heaving of the pavement is anticipated during cold weather and the surface structures should be designed to tolerate the movement.

The driveway leading to the garage should be backfilled with non-frost susceptible granular material with a frost taper at a slope of 1H:1V or gentler. The subgrade of the garage floor and the interior garage foundation walls should be insulated with 75-mm Styrofoam, or its thermal equivalent.

The ground surface must be graded to direct water away from the structures to minimize the frost heave phenomenon generally associated with the disclosed soil.

6.7 Pavement Design

The recommended pavement design for both Local Road and Collectors is presented in Table 2.

Table 2 - Pavement Design

Course	Thickness (mm)	OPS Specifications
Asphalt Surface	40	HL3
Asphalt Binder - Local Road - Collectors	 50 70	HL4
Granular Base	150	Granular 'A' or equivalent
Granular Sub-base	450	Granular 'B' or equivalent

In preparation of the pavement subgrade, the subgrade must be proof-rolled. Any soft spot identified must be subexcavated, and replaced with inorganic material and properly compacted to at least 98% SPDD, with the water content 2% to 3% drier than the optimum in 20 cm layers, or the lift thickness should be determined by test strips. All the granular bases should be compacted to 100% SPDD.

The pavement subgrade will suffer a strength regression if water is allowed to infiltrate prior to paving. The following measures should be incorporated in the construction procedures and pavement design:

- The lot areas adjacent to the pavement should be properly graded to prevent ponding of water.
- The pavement subgrade should be properly crowned and smooth-rolled to allow interim precipitation to be properly drained.
- Fabric filter-encased curb subdrains on both sides of the roadway are required to meet the Town's requirements.
- If the pavement is to be constructed during the wet seasons and extremely soft subgrade occurs, the granular sub-base may require thickening. This can be further assessed during construction.

6.8 Stormwater Management Area (Block 396)

Details of the SWM facility was not provided for review at the time of preparation of this report. Due to the presence of wet silty sand and/or sand deposit in the overburden of the nearby boreholes, where the pond is constructed with sub-excavation into the native ground, a clay liner will likely be required.

Further recommendations can be provided once details of the SWM facility was provided for our review. Additional borehole and laboratory tests may be required to evaluate the need of clay liner and its thickness.

6.9 Soil Parameters

The recommended soil parameters for the project design are given in Table 3.

Table 3 - Soil Parameters

Unit Weight and Bulk Factor	**Unit Weight (kN/m^3)**		**Estimated Bulk Factor**	
	Bulk	**Submerged**	**Loose**	**Compacted**
Silty Sand/Sand	20.5	10.5	1.20	1.00
Silty Sand Till/Sandy Silt Till	22.5	12.5	1.25	1.03

Lateral Earth Pressure Coefficients	**Active K_a**	**At Rest K_0**	**Passive K_p**
Sand	0.29	0.46	3.36
Silty Sand Till/Sandy Silt Till/Silty Sand	0.30	0.40	3.33

Estimated Coefficient of Permeability (K) and Percolation Time (T)	**K (cm/sec)**	**T (min/cm)**
Sand	10^{-2} to 10^{-3}	4 to 8
Silty Sand	10^{-4}	15
Silty Sand Till/Sandy Silt Till	10^{-4} to 10^{-6}	15 to 50

Estimated California Bearing Ratio	
Sand	15%
Silty Sand/Silty Sand Till/Sandy Sit Till	5% to 8%

Estimated Electrical Resistivity	
Sand	5500 ohm·cm
Silty Sand/Silty Sand Till/Sandy Silt Till	4500 ohm·cm

Maximum Allowable Soil Pressure (SLS) For Thrust Block Design	
Engineered Fill and Sound Native Soils	75 kPa

Coefficients of Friction	
Between Concrete and Granular Base	0.50
Between Concrete and Sound Native Soil	0.35

6.10 Excavation

Excavation should be carried out in accordance with Ontario Regulation 213/91. The types of excavated soils are classified in Table 4.

Table 4 - Classification of Soils for Excavation

Material	Type
Silty Sand Till/Sandy Silt Till	2
Weathered/disturbed Soils, drained Soils	3
Saturated Soils	4

For excavation within the till deposit, water seepage, if any, is expected to be low in rate and limited in quantity. The seepage can be removed by conventional pumping from sumps. Where the excavation extends into the saturated soils, the water seepage will be appreciable and likely persistent. Dewatering from closely spaced sumps and sump wells may be required. Details related to the rate and volume of dewatering will be discussed in the hydrogeological assessment. The method of dewatering should be confirmed with the hydrogeological consultant and the dewatering contractor.

Prospective contractors should assess the in situ subsurface conditions for excavation by digging test pits to at least 0.5 m below the intended bottom of excavation prior to excavating. These test pits may be allowed to remain open for a few hours to assess its seepage and stability conditions.

7.0 LIMITATIONS OF REPORT

This report was prepared by Soil Engineers Ltd. for the account of Flato Developments Inc. and for review by the designated consultants, financial institutions, and government agencies. Use of the report is subject to the conditions and limitations of the contractual agreement.

The material in the report reflects the judgment of Poh Fung Kwok and Kin Fung Li, P.Eng., in light of the information available to it at the time of preparation. Any use which a Third Party makes of this report, and/or any reliance on decisions to be made based on it are the responsibility of such Third Parties. Soil Engineers Ltd. accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

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APPENDIX A

MONITORING WELL LOGS

REFERENCE NO. 2210-S028C

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-312
SURFACE ELEVATION: 520.61 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE ID	% Recovery	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80 100)	WELL COMPLETION NOTES	ELEVATION (m)
0	520.61	**TOPSOIL**	0-2	91.7	4		
	520.15	**Silty SAND TILL** Fine to medium sand, trace silt, trace gravel (sub-angular-angular), brown, orange mottling, loose, soft, wet					520
1	519.54	Fine sand, brown-grey, compact/hard, moist-wet	2.5-4.5	62.5	10	bentonite seal	
	519.09	No orange mottling onward					519
2			5-7	20.8	15		
			7.5-9.5	37.5	18		518
3	517.56	**SAND and GRAVEL** Fine sand, trace coarse sand, trace cobble, trace silt, brown-grey, soft, dense, wet	10-12	20.8	38	silica sand 50 mm 010 slot PVC pipe	517
4			12.5-14.5	66.7	37		
	516.04 516.01	Trace gravel, trace silt, grey, dense, moist **Silty SAND TILL** Trace gravel, grey, very dense, very hard, moist	15-17	16.7	>50	end cap silica sand	516
5						bentonite seal	

End of monitoring well at 515.28 m

Well Completion Details:
Screened interval from 517.56 m to 516.04 m
Elevation at top of pipe (TOP) = 521.66 m

Groundwater Information:
Depth to groundwater from TOP = 1.25 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 20, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-313D
SURFACE ELEVATION: 520.00 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	520.00	**TOPSOIL**									
	519.87	Fine sandy silt, organics (rootlets), trace clay, dark brown, soft, moist								silica sand	
	519.24	**Sandy SILT TILL**									
1		Silty, trace medium-coarse sand, trace clay, brown, dark brown mottling, soft, moist, high plasticity									519
		Trace gravel (sub-angular/sub-rounded), increased gravel with depth, trace cobbles, saturated									
2											518
	517.56	Silty fine sand, firm-hard, moist									
3	516.95	Orange mottling/staining (oxidation)									517
	516.19	No recovery									
4											516
	515.43	**Silty SAND TILL**								bentonite seal	
5		Silty fine sand, some gravel (sub-rounded/sub-angular), firm-hard, moist							▼		515
6	513.90	Silty, cobble chips, wet		20-22	37.5		>50				514
	513.14	Coarse sand, silty, gravel (angular), cobble chips, trace clay, light brown, dense, wet-moist		22.5-24.5	33.3		>50				
7											513
				25-27	83.3		>50				
8											512
				27.5-29.5	70.8		>50				
9											511
				30-32	33.3		>50				
10	510.09	No Recovery			0.0		>50			silica sand 50 mm 010 slot PVC pipe	510
	509.33	**Sandy SILT TILL**								end cap silica sand	
11		Fine sand, clay, gravel, light brown, wet		35-37	20.8		>50			bentonite seal	509
		End of monitoring well at 508.57 m									
		Well Completion Details: Screened interval from 510.86 m to 509.33 m Elevation at top of pipe (TOP) = 521.06 m									
		Groundwater Information: Depth to groundwater from TOP = 5.93 m (May 13, 2022)									
		* denotes soil sample taken for lab analysis									

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 5, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON
NO RECOVERY

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_MG_2022.08.30.GPJ SLR_CAN V5.2 MOISTURE.GDT 11/17/22

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-313S
SURFACE ELEVATION: 520.03 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE ID	% Recovery	TEST DATA: SPT Count / % Moisture	WELL COMPLETION NOTES	ELEVATION (m)
	520.03						
	519.90	**TOPSOIL** Fine sandy silt, organics (rootlets), trace clay, dark brown, soft, moist	0-2	25.0	10		
		Sandy SILT TILL Silty, trace medium-coarse sand, trace clay, brown, dark brown mottling, soft, moist, high plasticity					
	519.27	Trace gravel (sub-angular/sub-rounded), increased gravel with depth, trace cobbles, saturated					
1			2.5-4.5	58.3	13		519
			5-7	54.2	14	bentonite seal	
2							518
	517.59	Silty fine sand, firm-hard, moist	8-9.5	79.2	34		
3	516.98	Orange mottling/staining (oxidation)	10-12	25.0	>50		517
	516.22	No recovery		0.0	>50		
4							516
	515.46	**Silty SAND TILL** Silty fine sand, some gravel (sub-rounded/sub-angular), firm-hard, moist	15-17	25.0	>50	silica sand	
5						50 mm 010 slot PVC pipe	515
				4.2	>50		
						end cap	

End of monitoring well at 514.09 m

Well Completion Details:
Screened interval from 515.61 m to 514.09 m
Elevation at top of pipe (TOP) = 520.85 m

Groundwater Information:
Depth to groundwater from TOP = 1.19 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 27, 2022
LOGGED BY: AW
DRILLED BY: Orbit Garrant

Notes: SPLIT SPOON; NO RECOVERY

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-314
SURFACE ELEVATION: 517.28 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	517.28	**TOPSOIL**								cement	517
	517.13	**SAND** Silty, occasional medium sand, trace gravel, brown, orange-black mottling, loose, frim, moist		0-2	70.8		■4				
	516.52	**Silty SAND TILL** Fine sand, some cobbles, brown-grey, loose, firm, wet		2.5-4.5	41.7		■14				516
1	515.76										
	515.65	Some silt, occasional coarse sand, trace gravel, brown/grey - orange mottling, loose, soft-firm, wet Orange mottling, loose, firm, wet		5-7	41.7		■6				
2	514.99	fine-medium sand, some gravel (angular), trace cobble, trace clay, brown-grey, dense, firm, moist-dry, increasing gravel content with depth		7.5-9.5	41.7		■>50			bentonite seal	515
3				10-12	41.7		■39				514
4				12.5-14.5	33.3		■>50				513
	512.71	loose, sands and gravel layer		15-17	33.3		■>50				
5										silica sand 50 mm 010 slot PVC pipe	512
				17.5-19.5	66.7		■>50				
6										end cap silica sand	511
				20-22	37.5		■>50			bentonite seal	

End of monitoring well at 510.42 m

Well Completion Details:
Screened interval from 512.71 m to 511.18 m
Elevation at top of pipe (TOP) = 518.25 m

Groundwater Information:
Depth to groundwater from TOP = 1.55 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 20, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-315
SURFACE ELEVATION: 518.81 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: ■SPT Count (10 20 30 40 50) ◆ % Moisture (20 40 60 80 100)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	518.81	**TOPSOIL**		*0-0.4 / DUP-3B	50.0		5			cement	518
	518.61	**Sandy SILT TILL** Some clay, trace gravel, orange-black mottling, brown, firm, loose, moist									
1	518.05	Trace medium sand, hard, moist, increasing density and gravel content with depth		2.5-5	33.3		9				517
	517.29	Firm, compact, moist		5-7.5	66.7		15				
2				7.5-10	100.0		48				516
3				10-12.5	41.7		>50				515
4				12.5-15	62.5		>50				514
5				15-17.5	83.3		49			bentonite seal	513
6				17.5-20	79.2		>50				512
7				20-22.5	79.2		34				511
8				22.5-25	54.2		>50				510
9				25-27.5	37.5		>50				509
10				27.5-30	54.2		>50				508
11				30-32.5	16.7		>50				507
12				32.5-35	8.3		>50			silica sand 50 mm 010 slot PVC pipe	506
	506.41	**SAND** Fine-medium sand, gravel (angular), light grey, firm, compact, wet		35-37.5	20.8		>50			end cap silica sand	
				37.5-40	33.3		>50			bentonite seal	
				40-42.5	41.7		>50				

End of monitoring well at 505.86 m

Well Completion Details:
Screened interval from 508.14 m to 506.62 m
Elevation at top of pipe (TOP) = 519.73 m

Groundwater Information:
Depth to groundwater from TOP = 3.89 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: April 28, 2022
LOGGED BY: MJ
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON

SLR CONSULTING (CANADA) LTD.

CLIENT: **Dundalk Village Two Inc.**
PROJECT:
ADDRESS: **Dundalk Northeast Southgate, ON**
SLR JOB NO: **209.30125.00003**

Monitoring Well LOG

BOREHOLE NO: MW22-316
SURFACE ELEVATION: 520.07 m

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA: SPT Count / % Moisture	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
0	520.07	**TOPSOIL**									520
	519.84	Organics, dark brown, moist									
		Silty SAND TILL Fine sand, silt, gravel (angular), trace clay, light brown, soft, moist		0-2	37.5		6			silica sand	
1				*2.5-4.5 / DUP-3E	37.5		12				519
				*5-7	33.3		13				
2	517.78	Cobbles, light brown, dense/hard, dry		7.5-9.5	83.3		35				518
3				10-12	58.3		>50				517
	516.26	**COBBLE** Cobble chips, dry		12.5-14.5	20.8		>50			bentonite seal	
4				15-17			>50				516
5	514.74	No Recovery			0.0						515
6	513.97	**Silty SAND TILL** Fine sand, gravel (angular), light brown-grey, dense/hard, dry		20-22	45.8		>50				514
7				22.5-24.5	50.0		>50				513
	512.45	Wet from 7.62 to EOH									
8				25-27	45.8		>50				512
				27.5-29.5	37.5		>50			silica sand 50 mm 010 slot PVC pipe	
9										end cap	511

End of monitoring well at 510.93 m

Well Completion Details:
Screened interval from 512.45 m to 510.93 m
Elevation at top of pipe (TOP) = 521.04 m

Groundwater Information:
Depth to groundwater from TOP = 2.37 m (May 13, 2022)

* denotes soil sample taken for lab analysis

DRILLING METHOD: Hollow Stem Auger Drilling
BOREHOLE DIAMETER: 0.2 m (OD)
DRILL DATE: May 4, 2022
LOGGED BY: RH
DRILLED BY: Geo-Environmental

Notes: SPLIT SPOON
NO RECOVERY

SLR BOREHOLE LOG (MOISTURE) 209.30125.00003_MG_2022.08.30.GPJ SLR_CAN V5.2 MOISTURE.GDT 11/17/22

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BARRIE	MISSISSAUGA	OSHAWA	NEWMARKET	GRAVENHURST	HAMILTON
TEL: (705) 721-7863	TEL: (905) 542-7605	TEL: (905) 440-2040	TEL: (905) 853-0647	TEL: (705) 684-4242	TEL: (905) 777-7956
FAX: (705) 721-7864	FAX: (905) 542-2769	FAX: (905) 725-1315	FAX: (905) 881-8335	FAX: (705) 684-8522	FAX: (905) 542-2769

APPENDIX B

GRAIN SIZE DISTRIBUTION GRAPHS

REFERENCE NO. 2210-S028C

Soil Engineers Ltd.

GRAIN SIZE DISTRIBUTION

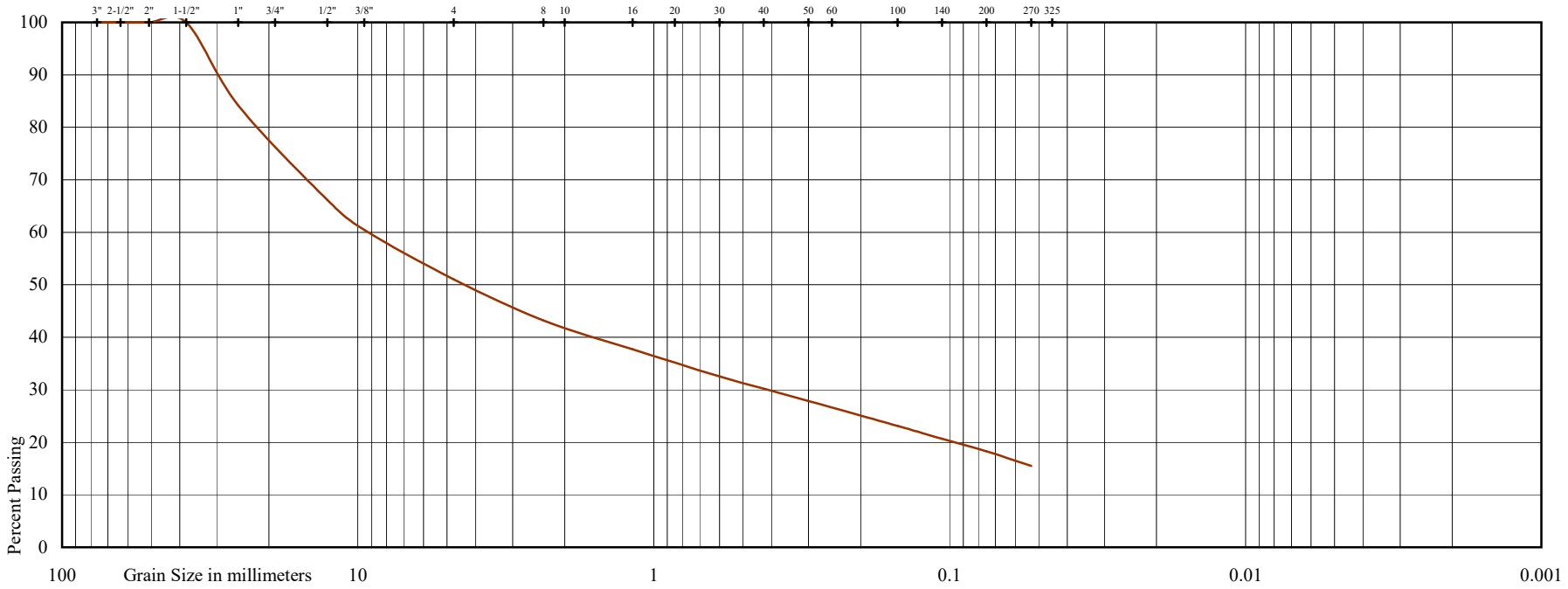
Reference No: 2210-S028C

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Proposed Residential Development

Location: Part of Lots 225 & 226 Concession 2, Township of Southgate (Dundalk)

Borehole No: MW22 - 312

Sample No: 10 - 12

Depth (m): 3.4

Elevation (m): 517.3

Liquid Limit (%) = -

Plastic Limit (%) = -

Plasticity Index (%) = -

Moisture Content (%) = -

Estimated Permeability (cm./sec.) = 10^{-3}

Classification of Sample [& Group Symbol]: SANDY GRAVEL some silt

Figure: 1

Soil Engineers Ltd.

GRAIN SIZE DISTRIBUTION

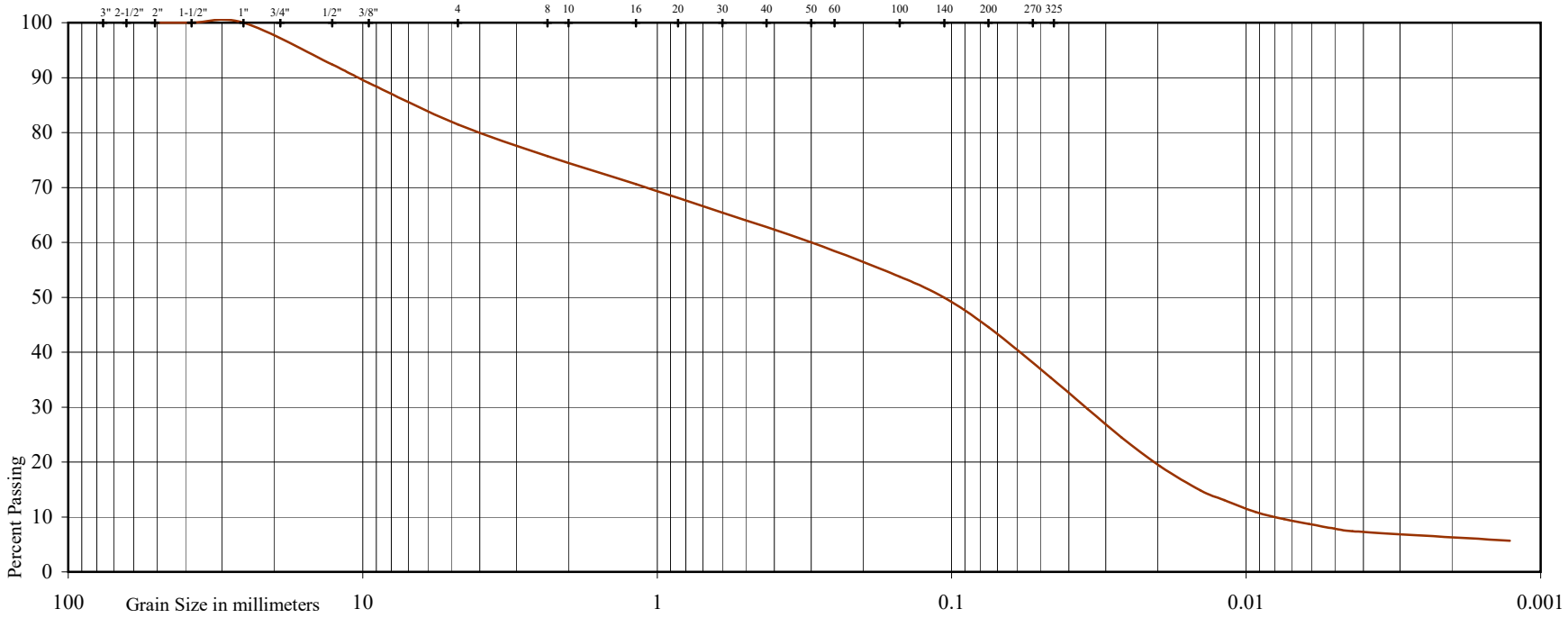
Reference No: 2210-S028C

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Proposed Residential Development

Location: Part of Lots 225 & 226 Concession 2, Township of Southgate (Dundalk)

Borehole No: MW22 - 314

Sample No: 12.5 - 14.5

Depth (m): 4.1

Elevation (m): 513.2

Liquid Limit (%) = -

Plastic Limit (%) = -

Plasticity Index (%) = -

Moisture Content (%) = -

Estimated Permeability (cm./sec.) = 10^{-4}

Classification of Sample [& Group Symbol]: SANDY SILT, TILL
some gravel, a trace of clay

Figure: 2

Soil Engineers Ltd.

GRAIN SIZE DISTRIBUTION

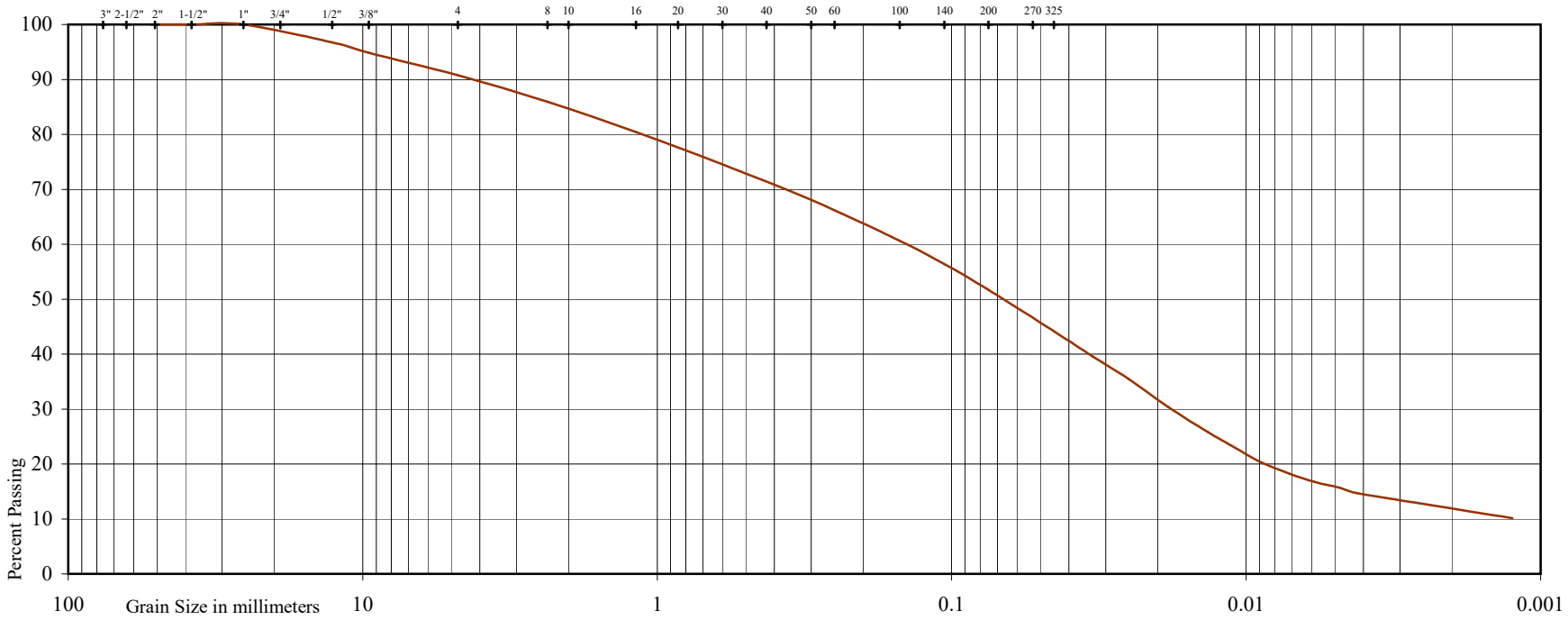
Reference No: 2210-S028C

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Proposed Residential Development

Location: Part of Lots 225 & 226 Concession 2, Township of Southgate (Dundalk)

Borehole No: MW22 - 315

Sample No: 7.5 - 10

Depth (m): 2.7

Elevation (m): 516.1

Liquid Limit (%) = -

Plastic Limit (%) = -

Plasticity Index (%) = -

Moisture Content (%) = -

Estimated Permeability (cm./sec.) = 10^{-6}

Classification of Sample [& Group Symbol]: SANDY SILT, TILL
some clay, a trace of gravel

Figure: 3

MW22-315

MW22-313-S/D

MW22-314

MW22-316

MW22-312

STREET A
STREET B
STREET C
STREET D
STREET E
STREET F
STREET H
STREET I
BRADLEY STREET EXTENSION
TODD CRES.
BRADLEY ST.
MACKENZIE ST.
GREY COUNTY CP RAIL TRAIL
ADJACENT LANDS OWNED BY APPLICANT
SETTLEMENT BOUNDARY
RESIDENTIAL
FUTURE RESIDENTIAL
CROPLAND
WOODED AREA
SWM AREA
LOT 227, CONCESSION 2, SOUTHWEST OF THE TORONTO AND SYDENHAM ROAD

LAND USE SUMMARY

LAND USE	LOT / BLOCK #	UNITS	AREA
SINGLE DETACHED - 10.1m LOTS	001-369	369	13.14ha
SEMI DETACHED - 8.1m UNITS	370-378	18	0.48ha
TOWNHOUSE - 6.5m UNITS	379-394	72	1.66ha
Park	395		1.37ha
STORMWATER MANAGEMENT AREA	396		1.39ha
WALKWAY	397-398		0.09ha
DRAINAGE / WALKWAY	399-401		0.29ha
OPEN SPACE	402-403		6.94ha
FUTURE RIGHT OF WAY	404-405		0.50ha
RIGHT OF WAY	A, B, C, D, E, F, G H, I, BRADLEY STREET EXTENSION		7.46ha
TOTALS		459	33.27ha

LEGEND

SLR Borehole/Monitoring Well

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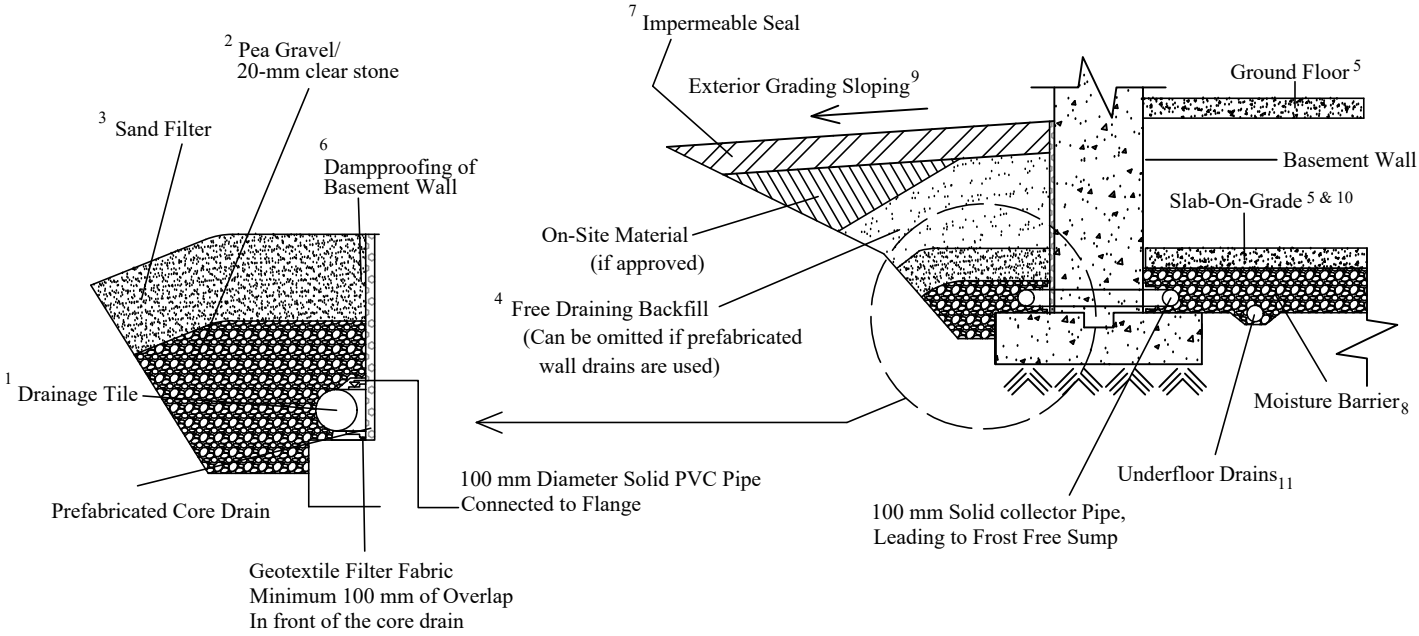
Borehole and Monitoring Well Location Plan

SITE: Part of Lots 225 & 226 Concession 2 Southgate, ON (Dundalk North)

DESIGNED BY: D.K.	CHECKED BY: K.L.	DWG NO.: 1	
SCALE: 1:4000	REF. NO.: 2210-S028C	DATE: January 2023	REV -



NOTES:

1. **Drainage tile**: consists of 100 mm (4") diameter weeping tile or equivalent perforated pipe leading to a positive sump or outlet. Invert to be at minimum of 150 mm (6") below underside of basement floor slab.

2. **Pea gravel**: at 150 mm (6") on the top and sides of drain. If drain is not placed on concrete footing, provide 100 mm (4") of pea gravel below drain. The pea gravel may be replaced by 20 mm clear stone provided that the drain is covered by a porous geotextile membrane of Terrafix 270R or equivalent.

3. **Filter material**: consists of C.S.A. fine concrete aggregate. A minimum of 300 mm (12") on the top and sides of gravel. This may be replaced by an approved porous geotextile membrane of Terrafix 270R or equivalent.

4. **Free-draining backfill**: OPSS Granular 'B' or equivalent, compacted to 95% to 98% (maximum) Standard Proctor dry density. Do not compact closer than 1.8 m (6') from wall with heavy equipment. This may be replaced by on-site material if prefabricated wall drains (Miradrain) extending from the finished grade to the bottom of the basement wall are used.

5. **Do not backfill** until the wall is supported by the basement floor slab and ground floor framing, or adquate bracing.

6. **Dampproofing** of the basement wall is required before backfilling

7. **Impermeable backfill seal** of compacted clay, clayey silt or equivalent. If the original soil in the vicinity is a free-draining sand, the seal may be omitted.

8. **Moisture barrier**: 20-mm clear stone or compacted OPSS Granular 'A', or equivalent. The thickness of this layer should be 150 mm (6") minimum.

9. **Exterior Grade**: slope away from basement wall on all the sides of the building.

10. **Slab-On-Grade** should not be structurally connected to walls or foundations.

11. **Underfloor drains*** should be placed in parallel rows at 6 to 8 m (20'-25') centre, on 100 mm (4") of pea gravel with 150 mm (6") of pea gravel on top and sides. The invert should be at least 300 mm (12") below the underside of the floor slab. The drains should be connected to positive sumps or outlets. Do not connect the underfloor drains to the perimeter drains.

* Underfloor drains can be deleted where not required.

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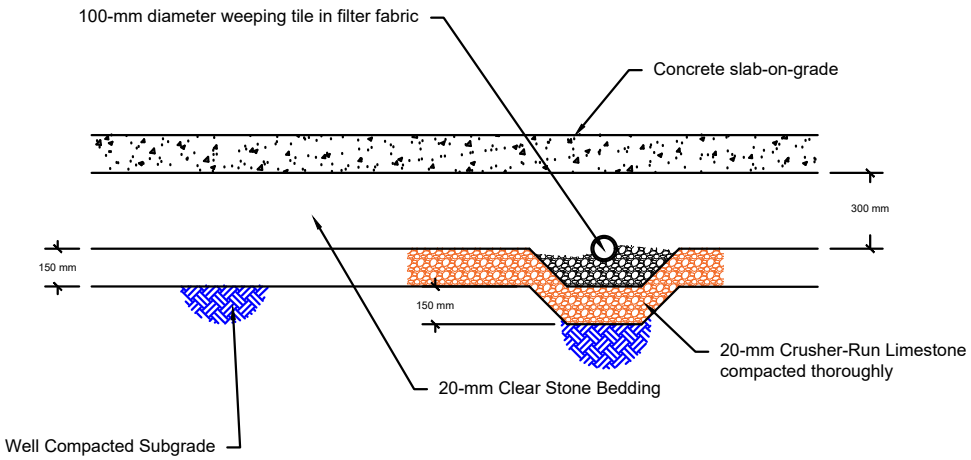
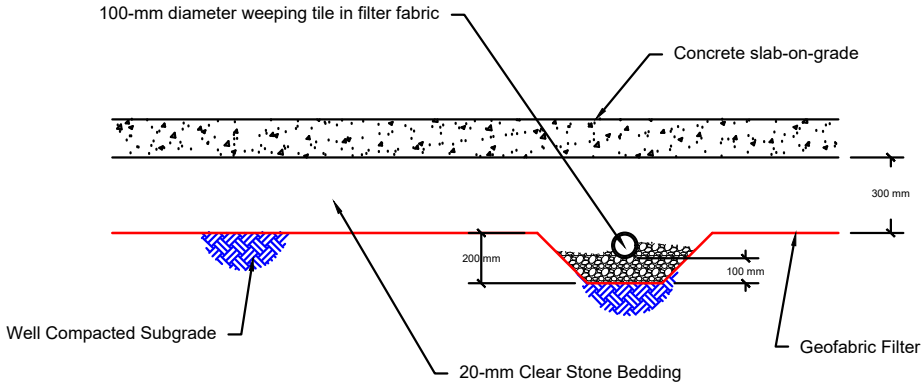
Details of Permanent Perimeter Drainage System

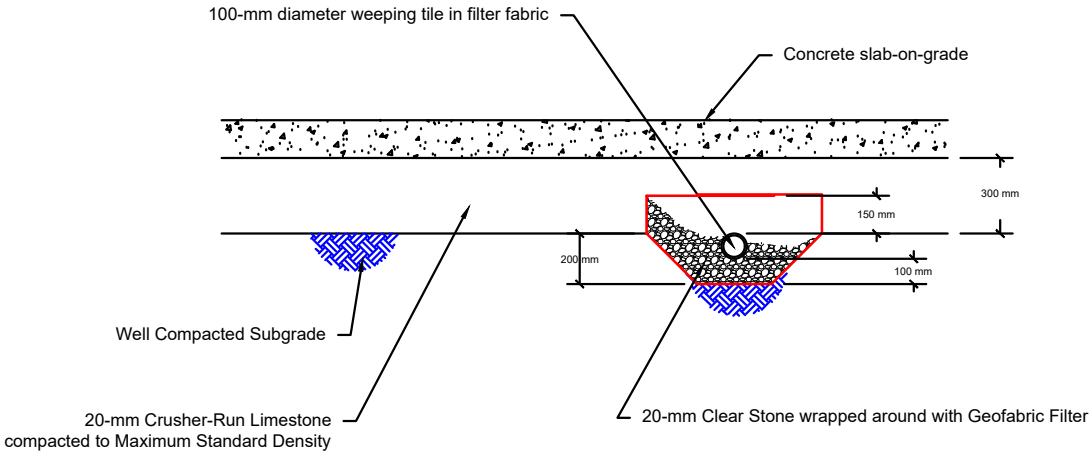
SITE Part of Lots 225 & 226 Concession 2, Township of Southgate (Dundalk)			
DESIGNED BY K.L.	**CHECKED BY** B.S.	**DWG NO.** 2	
SCALE N.T.S.	**REF. NO.** 2210-S028C	**DATE** January 2023	**REV** -



Option 'A'



Option 'B'



Option 'C'

Note:

1. Weepers should be placed in 6 m grids, draining in a positive gradient towards an outlet or a sump pit for removal by pumping.
2. A 10-mil polyethylene sheet should be specified between the gravel bedding and concrete slab.

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Underfloor Subdrain Details

SITE: Part of Lots 225 & 226 Concession 2, Township of Southgate (Dundalk)			
DESIGNED BY: K.L.	**CHECKED BY:** B.L.	**DWG NO.:** 3	
SCALE: N.T.S.	**REF. NO.:** 2210-S028C	**DATE:** January 2023	**REV** -