OAK VALLEY HEALTH – UXBRIDGE HOSPITAL

Project NO.: 24163

SITE SERVICING AND STORMWATER MANAGEMENT DESIGN BRIEF

4 Campbell Drive
Uxbridge, ON
L9P 1S4

September 19, 2024

REVISION HISTORY

Rev.	Date	Description		Prepared by	Reviewed by	Approved by
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1 INTRODUCTION

1.1 SCOPE

LEA Consulting Ltd. has been retained by Oak Valley Health and Diamond Schmitt Architects (the "Owner"), to prepare a Site Servicing and Stormwater Management Design Brief in support of the Site Plan Application (SPA) submission to the Ministry of Health (MOH) for the redevelopment of the Oak Valley Health - Uxbridge Hospital site located at 4 Campbell Drive, in the Township of Uxbridge (The "Township").

The proposed redevelopment of the project involves the demolition of the existing hospital building is to be and the construction of a new hospital building adjacent to the existing Uxmed Health Centre.

This report shall:

- Review the water supply, storm, and sanitary servicing requirement of the proposed development, and propose a preliminary site servicing plan in accordance with:
  - Township of Uxbridge, Design Criteria and Standard Detail Drawings for Subdivision Developments and Site Plans (2022);
  - Region of Durham, Design and Construction Specifications for Regional Services (2023); and
  - Fire Underwriter Survey Water Supply for Public Fire Protection (2020).
- Examine the potential water quality, water quantity, water balance, volume control, phosphorous control, and stormwater management impacts of the proposed development, and summarize how each will be addressed in accordance with:
  - Township of Uxbridge, Design Criteria and Standard Detail Drawings for Subdivision Developments and Site Plans (2022);
  - Lake Simcoe Region Conservation Authority (LSRCA), Technical Guidelines for Stormwater Management Submissions (2022).

1.2 SITE LOCATION

The Project Site is located at 4 Campbell Drive in Uxbridge, Ontario, within the Regional Municipality of Durham. It is bounded by Victoria Drive to the east, treed area to the west, Campbell Drive to the south, and Uxbridge Brook to the north across institutional/residential developments. The Project Sites contributes to the Uxbridge Brook River watershed and falls under the jurisdiction of LSRCA. As per the LSRCA regulation map, the western portion of the site lies within the LSRCA's regulated area. Currently, the site is accessible via Victoria Drive and Campbell Drive. The site is approximately 5.5 ha in area.

Figure 1 shows the site location.

LEGEND:

SITE LOCATION

Owner/Client: diamond schmitt

Title:

4 CAMPBELL DRIVE
SITE LOCATION PLAN

LEA

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1.3 PRE-DEVELOPMENT CONDITIONS

The project site is currently occupied by three buildings: two-storey Uxbridge Cottage Hospital, two-storey Uxbridge Health Centre, and Emergency Services Building. The site also consists of surface level parking, a paved helipad, an infiltration basin, and treed area in the north-west portion of the site. Based on information received from Diamond Schmitt Architects (“the Architect”), the total GFA of the existing Uxbridge Cottage Hospital and Uxmed Health Centre is estimated to be 3530 m2 and 2446 m2 respectively. Whereas the total number of beds in the Uxbridge Cottage Hospital and Uxmed Health Centre are 20 and 0 respectively. The existing land use of the site is considered institutional.

Please refer to **Appendix A** for the topographic survey of existing conditions.

1.4 EXISTING THIRD-PARTY UTILITIES

There are several third-party utilities located within the Project Site, along Victoria Drive, and along Campbell Drive. These utilities include gas lines, hydro lines, telecommunication lines, etc.

Please refer to **Appendix C** for the subsurface utility investigation drawings prepared by Planview dated March 27, 2024, for details regarding these third-party utilities.

1.5 POST-DEVELOPMENT CONDITIONS

The proposed re-development consists of demolishing the existing Uxbridge Cottage Hospital and constructing a new hospital building adjacent to the Uxmed Health Centre. Per the information received from the Architect, the proposed hospital building will be a 3-storey building having a total GFA of 11,715 m2. The proposed hospital building will include 32 hospital beds. The re-development also includes the demolition of the existing emergency services building, relocation of the helipad to the roof of the proposed hospital building, construction of a new access road on the side of the site, and the addition of new parking lots. The proposed land use of the site will remain institutional.

Please refer to **Appendix B** for the architectural drawings.

2 WATER SERVICING

2.1 WATERMAIN DESIGN CRITERIA

The domestic water demands for the proposed site are based on the following municipal design criteria:

- Average daily consumption rate of 900-1800 L/bed/day for hospital uses
- Average daily demand rate of 364 L/day/cap for residential uses
- Retirement Community/ Nursing Home population unit rate 1.5 person/bedroom
- Peaking Factor – 4.13 (Peak Hour) and 2.75 (Maximum Day).

The demand and peaking factors are based on The Regional Municipality of Durham, *Design and Construction Specifications for Regional Services, April 2019, and the Ontario Ministry of Environment Design Guidelines for Drinking-Water System, May 2023*.

2.2 EXISTING WATER NETWORK

Based on the survey and the subsurface utility investigation conducted by Planview, the existing underground watermains within and around the Project Site are summarized below:

Campbell Drive:

- 300mm dia. watermain line;
- 100mm dia. abandoned watermain line.

Toronto Street South:

- 300mm dia. watermain line.

Victoria Drive:

- 300mm dia. watermain line.

Project Site:

- 200mm dia. fire service connection and 150mm dia. domestic service connection for Uxmed Health Centre connected to the 300mm dia. watermain on Campbell Drive;
- Water Service connection for the Emergency Services Building connected to the 300mm dia. watermain on Campbell Drive;
- Water Service connections for the Uxbridge Cottage Hospital connected to the 300mm dia. watermain on Victoria Drive; and
- Water Service Connections for the four private on-site hydrants.

2.3 PROPOSED WATER NETWORK & APPURTENANCES

The proposed water service connections for the proposed three-storey hospital building are described below:

- Fire Protection Service: A new 200mm dia. fire protection service will be installed along the new northern access road to service the proposed Hospital Building. The new fire protection service will be connected to the existing capped 200mm dia. fire water service on Victoria Drive. The valve on the existing capped 200mm dia. water service will remain under proposed conditions.
- Domestic Water Service: A new 150mm dia. domestic water service connection will be installed along the new northern access road to service the proposed Hospital Building. The new domestic water service will

be connected to the existing capped 150mm dia. water service on Victoria Drive. The valve on the existing capped 150mm dia. water service will remain under proposed conditions.

- Redundant Fire Protection Service: In accordance with the Region of Durham guidelines, a new 200mm dia. redundant fire protection service will be installed to service the proposed Hospital Building. The new redundant fire protection service will be connected at the property line to the existing 200mm dia. fire protection service on Campbell Drive. The valve on the existing 200mm dia. fire protection service will remain under proposed conditions.
- Redundant Domestic Water Service: In accordance with the Region of Durham guidelines, a new 150mm dia. redundant domestic water service will be installed to service the proposed Hospital Building. The new redundant domestic water service will be connected at the property line to the existing 150mm dia. domestic water service on Campbell Drive. The valve on the existing 150mm dia. domestic water service will remain under proposed conditions.

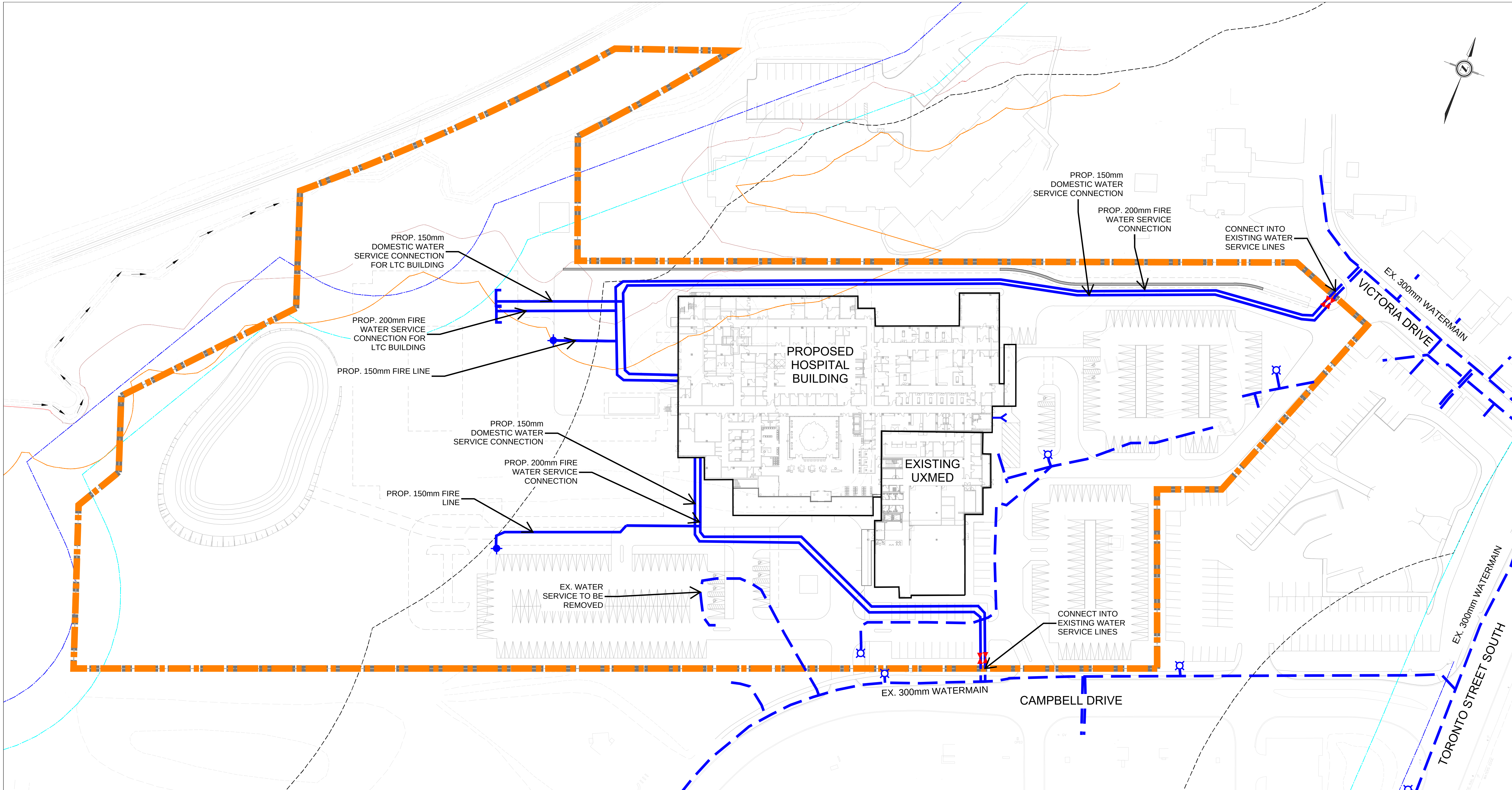
The existing water service connections for the Uxbridge Cottage Hospital, Uxmed Health Centre, and Emergency Services Building will be disconnected and removed. Under proposed conditions, the Uxmed Health Centre will be serviced mechanically by providing a connection internal to the building footprint from the proposed Hospital Building mechanical room. The details of this internal connection can be found in the mechanical drawings.

The sizes of the proposed water service connections will be provided to comply with Region of Durham standards and the Ontario Building Code (OBC). The sizes of the proposed water service connections will be finalized through coordination with the mechanical engineer during the next design stage.

Water meter and check valve will be provided within the building to comply with Region of Durham standards and the Ontario Building Code (OBC), details to be provided by the mechanical engineer.

The requirements for on-site private hydrant will be determined during the next design stage through coordination with the code consultant. The hydrants will be located such that they are within 45m of the two proposed Siamese connections for the hospital building.

Please refer to **Figure 2** for the proposed water network system.



LEGEND:

- PROPERTY LINE
- EX. WATERMAIN
- PROP. WATERMAIN
- EX. FIRE HYDRANT
- PROP. FIRE HYDRANT
- PROP. SIAMESE CONNECTION
- EX. WATER VALVE
- PROP. WATER VALVE
- REGIONAL FLOOD LINE
- REGIONAL FLOOD LINE OFFSET
- MEANDERBELT LIMIT
- MEANDERBELT LIMIT OFFSET
- LSRCA REGULATION LIMIT

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Title: 4 CAMPBELL DRIVE PROPOSED WATER SERVICING PLAN

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DOMESTIC WATER DEMANDS AND FIRE FLOW REQUIREMENT

Based on the expected construction phasing of the site and taking into consideration future on-site development; two worst-case scenarios were utilized to determine the fire flow and domestic water demand for the Project Site. These two scenarios are described below.

Interim Condition: This scenario is based on construction phasing plan found in Architectural drawing A013 called “Phase 2 – New Construction”. Under this scenario, the proposed Hospital Building, the Uxmed Health Centre, and the Uxbridge Cottage Hospital will exist concurrently on site.

Future Condition: This condition considers the scenario under which a potential future Long-Term Care (LTC) facility will added to the site. Under this scenario, the existing Uxbridge Cottage Hospital building will have been demolished, and the following buildings will exist on site: proposed Hospital Building, Uxmed Health Centre, and future LTC building.

For domestic water calculations, the site statistics provided by the Architect were used.

Based on information provided by the Architect, for fire flow calculations, the construction of the existing building was considered to be wood frame per FUS standards. The existing hospital building does not have a sprinkler system.

Based on information provided by the Architect, for fire flow calculations, the construction of the proposed Hospital Building, Uxmed Health Centre, and Future LTC building was considered to be using non-combustible materials per the FUS standards. These three buildings will also have an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards. However, these three buildings will not have protected vertical openings and exterior communications.

For the purposes of fire demand calculations, the Uxmed Health Centre and proposed hospital building were considered to be one building since there is no adequate fire rated wall between them. Whereas the future LTC building was considered as a separate building since it will have a 2-hr fire rated firewall to separate it from the proposed Hospital building.

Since the proposed Hospital Building, Uxmed Health Centre, and Future LTC building are proposed to be connected to the water supply network through a shared service connection, the total domestic rate, plus the maximum of the fire flow demands shall be used when determining the total water demand under each condition. **Table 1** below summarizes the governing Peak Hour, Maximum Day, Fire Flow Demand, and Total Water Demand for each scenario. Detailed calculations for each building/phase are provided in **Appendix D**.

Table 1: Domestic and Fire Water Demand

Building	Peak Hour Demand (L/s)	Governing Fire Flow (L/s)	Maximum Day Demand (L/s)	Total Water Demand (Fire Flow + Max Day) (L/s)
Interim Condition	6.31	300.0	4.20	304.20
Future Condition	13.90	266.7	9.26	275.90

HYDRANT FLOW TEST

To evaluate the adequacy of the existing watermains for the site, two hydrant flow tests were completed by Lakeshore Hydrant Service Inc. on September 10, 2024. One test was completed on Victoria Drive and the other test was completed on Campbell Drive. Reference can be made to the test results in **Appendix D** for more information. Please note that the most conservative results between the two hydrant flow tests have been considered in this report. Results indicate that the hydrant on Victoria Drive provided the conservative results; therefore, results from the test on Victoria Drive have been considered in the water adequacy calculations.

A minimum pressure of 20 psi is required to consider the system to have adequate pressure. Based on the results provided in **Appendix D**, a pressure of 24.2 psi is expected during the interim conditions and a pressure of 33.0 psi is expected during the ultimate conditions. Therefore, sufficient pressure is anticipated for the proposed development.

3 SANITARY SERVICING

SANITARY SEWER DESIGN CRITERIA

The sanitary demands for the proposed site are based on the following municipal design criteria:

- Sanitary demand rate of 364 L/capita/day;
- Retirement Community/ Nursing Home population unit rate 1.5 person/bedroom;
- Infiltration Allowance of 0.26 L/s/ha (assuming that the foundation drains will not be connected to the sanitary sewer); and
- Peaking Factor based on the Harmon Equation, with a maximum of 3.8.

The demand and peaking factors are based on Region of Durham, *Design Specifications for Sanitary Sewers, April 2019*.

EXISTING SANITARY SEWERS

Based on the survey and the subsurface utility investigation conducted by Planview, the existing underground sanitary sewers within and around the Project Site are summarized below:

Campbell Drive:

- 200mm dia. PVC to 250mm dia. PVC sanitary sewer line, flowing from West to East;
- 200mm dia. municipal service connection for the Uxmed Health Centre and Emergency Services Building discharging to the 250mm dia. sanitary sewer.

Toronto Street South:

- 300mm dia. PVC to 375mm dia. concrete sanitary sewer line, flowing from South to North;
- Segments of abandoned sanitary sewers of unknown diameter and material.

Victoria Drive:

- 200mm dia. PVC sanitary sewer line, flowing from West to East;
- Segments of abandoned sanitary sewers of unknown diameter and material; and
- Municipal service connection for the Uxbridge Cottage Hospital discharging to the 200mm dia. sanitary sewer.

Project Site:

- 200mm sanitary service connection for the Uxmed Health Centre;
- 150mm sanitary service connection for the Emergency Services Building;
- Sanitary service connection for the Uxbridge Cottage Hospital; and
- 150mm dia. sanitary sewer line, flowing from west to east through an easement near the northern property line.

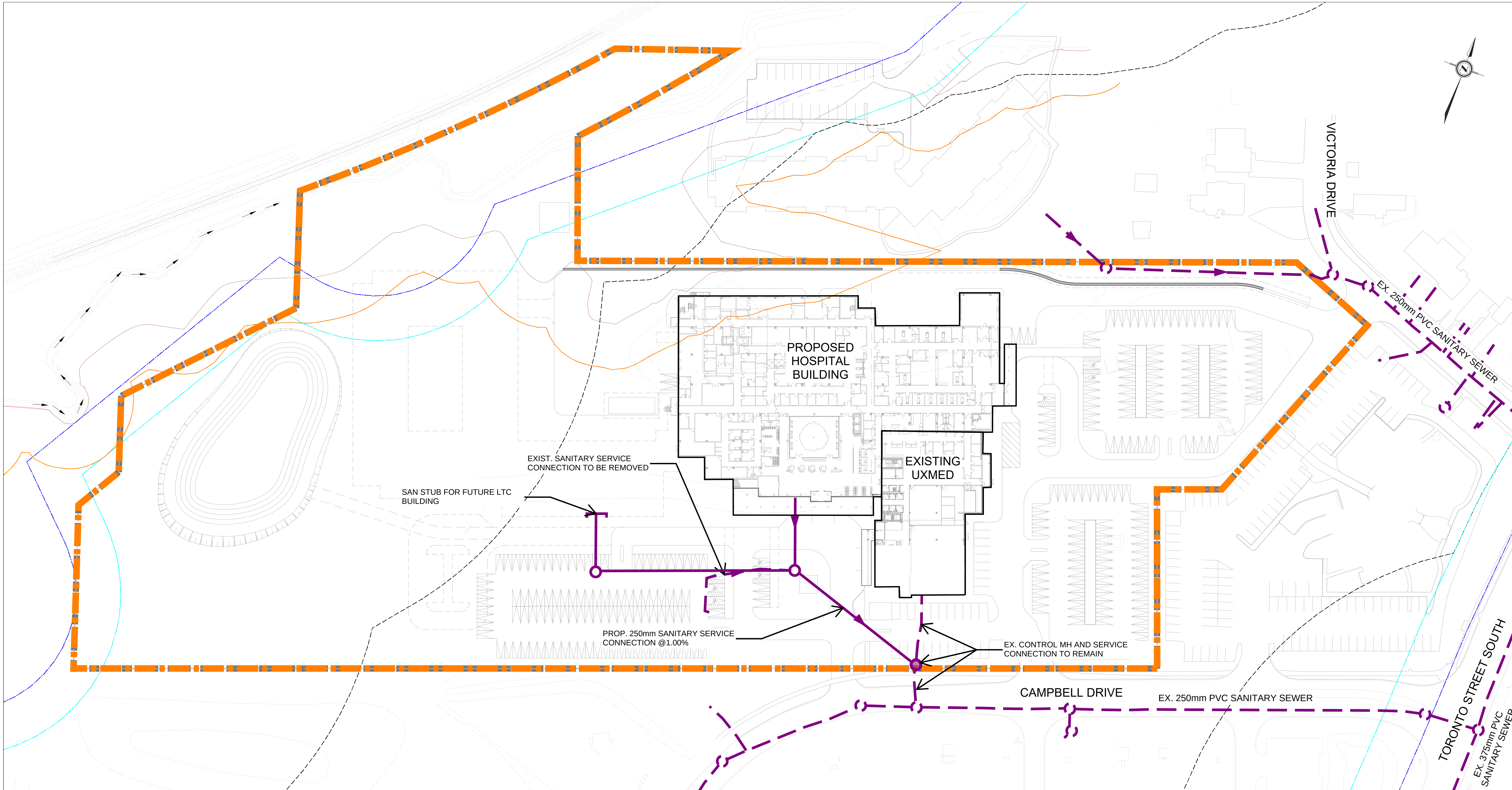
PROPOSED SANITARY SEWERS

A new 200mm dia. PVC sanitary service line will be installed to service the proposed Hospital Building and will be connected to the existing sanitary control manhole at the southern property line. The new sanitary service will eventually discharge to the existing 200mm municipal service connection on Campbell Drive via the existing control manhole.

The actual flow velocity of the 200mm dia. PVC sanitary service at 1.0% is 0.98 m/s, please note this is greater than the minimum required cleansing velocity of 0.6m/s for as per the Durham Region Design Specifications for Service Connections.

The existing sanitary service connection for the Emergency Services Building and Uxbridge Cottage Hospital will be decommissioned and removed. Whereas the existing sanitary service connection for the Uxmed Health Centre will be maintained under ultimate condition.

The location and size of the proposed sanitary service connection will be confirmed through coordination with the mechanical engineer during the next design stage to ensure that it is per Region of Durham standards and Ontario Building Code (OBC). Refer to **Figure 3** for the proposed sanitary servicing system.



LEGEND:

- PROPERTY LINE
- EX. SANITARY SEWER
- PROP. 200mm SANITARY SEWER
- EX. SANITARY CONTROL MANHOLE
- EX. SANITARY MANHOLE
- PROP. SANITARY MANHOLE
- REGIONAL FLOOD LINE
- REGIONAL FLOOD LINE OFFSET
- MEANDERBELT LIMIT
- MEANDERBELT LIMIT OFFSET
- LSRCA REGULATION LIMIT

Owner/Client: diamond schmitt

Title: 4 CAMPBELL DRIVE PROPOSED SANITARY SERVICING PLAN

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PROPOSED SEWAGE FLOWS

Based on the expected construction phasing of the site and taking into consideration future on-site development; two scenarios were considered to determine the sanitary design flow for the Project Site. These two scenarios are described below.

Interim Condition: This condition is based on construction phasing plan found in Architectural drawing **A013** called "Phase 3 – East Site Works". Under this scenario, only the proposed Hospital Building and the Uxmed Health Centre will exist on site.

Future Condition: This condition considers the scenario under which a potential future Long-Term Care (LTC) facility will added to the site. Under this scenario, the following buildings will exist on site: proposed Hospital Building, Uxmed Health Centre, and future LTC building.

Based on existing records, it is assumed that the existing Uxbridge Cottage Hospital is serviced via the municipal sanitary service connection discharging to Victoria Drive and has a demand of 2.06 L/s. Refer to **Appendix E** for detailed calculations.

Whereas, the proposed Hospital Building, Uxmed Health Centre, and Future LTC building are proposed to discharge to the municipal sanitary service connection on Campbell Drive. Based on the statement above, the site statistics provided by the Architect, and the design criteria of Durham Region, sanitary design flow is estimated in **Appendix E** and summarized in **Table 2** below for both interim and future condition.

Table 2: Sanitary Flow Rates

Building	Sanitary Design Flow (L/s)
Interim Condition	5.65
Future Condition	14.22

It is to be noted that long-term and short-term dewatering rates will be estimated based on the hydrogeological and geotechnical reports once they become available during the next design stage.

SANITARY SEWER CAPACITY ANALYSIS

It is currently proposed that all sanitary flow from the Project Site will discharge to the 250mm PVC sanitary sewer on Campbell Drive. The capacity of the existing receiving sanitary sewer system will be assessed during the next design stage.

4 STORM SERVICING

STORM SEWER DESIGN CRITERIA

Storm sewer design will be in accordance with the Township of Uxbridge and the LSRCA design guidelines.

EXISTING STORM SEWERS

Based on the survey and the subsurface utility investigation conducted by Planview, the existing underground storm sewers within and around the Project Site are summarized below:

Campbell Drive:

- 525mm dia. to 600mm dia. storm sewer line, flowing from west to east; and
- 375mm dia. concrete storm service connection for the Project Site discharging to the 600mm municipal storm sewer.

Toronto Street South:

- 675mm dia. storm sewer line, flowing from South to North.

Project Site:

- Storm sewer network comprising of catch basins, manholes, and pipes to capture stormwater runoff within the site;
- One (1) existing storm service connection for the Uxbridge Cottage Hospital Building; and
- One (1) existing storm service connection for the Uxmed Health Centre.

PROPOSED STORM SEWERS

Under existing conditions, the Project Site has two storm outlet points. The west portion of the site discharges to the Uxbridge Brook located to the north of the site. Whereas the east portion of the site discharges to the 375mm municipal storm service connection on Campbell Drive. Under proposed conditions, these existing outlet points along with the existing drainage conditions will be maintained.

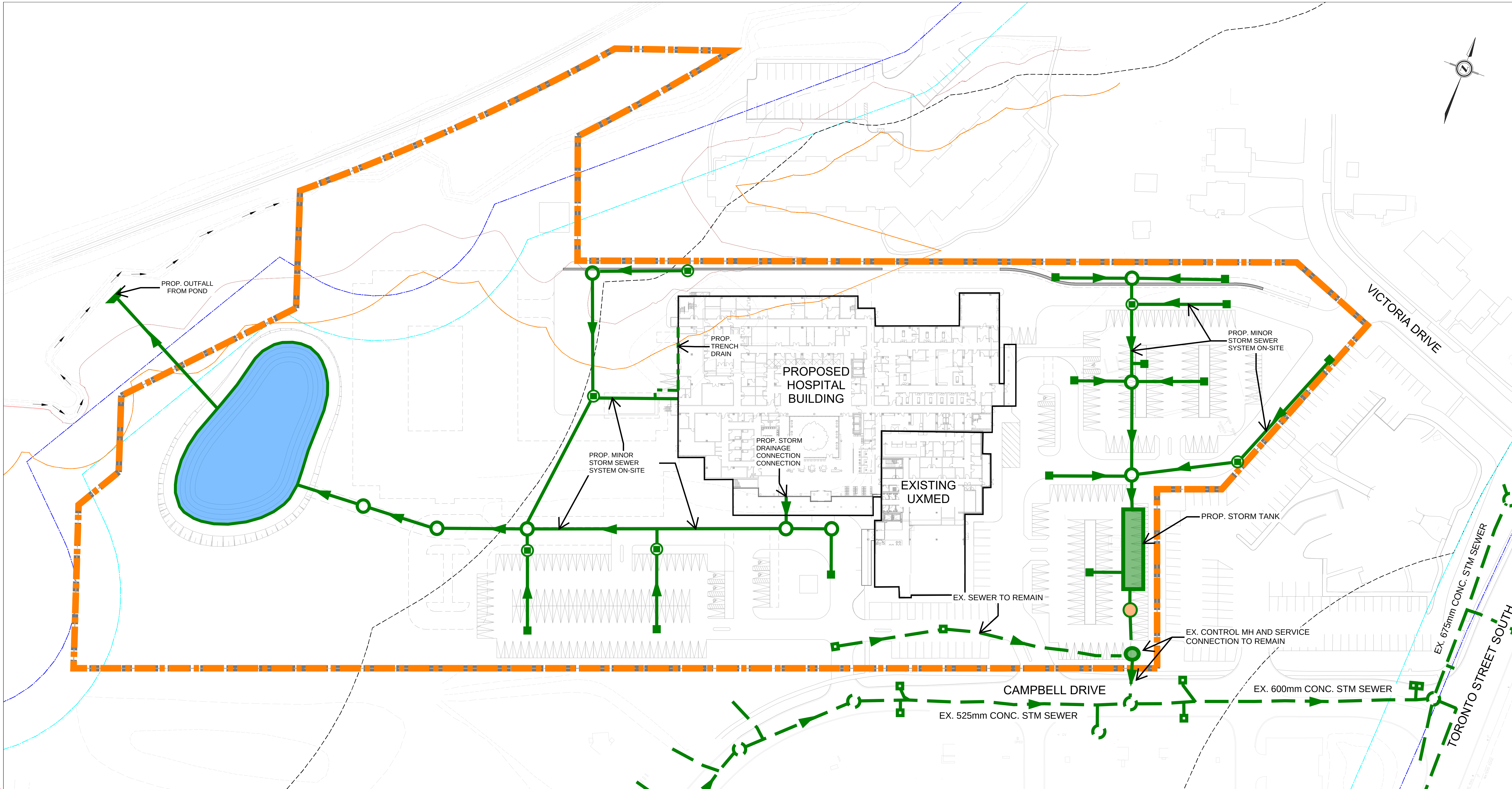
A new storm sewer network comprising of catchbasins, manholes, swales, and pipes will be installed to capture the stormwater run-off generated from the eastern portion of the site under post-development conditions. This stormwater runoff will be collected in a proposed stormwater tank that outlets to the existing control manhole via a new 375mm storm sewer. An 350mm orifice tube will be installed at the outlet of the stormwater tank to control the flow at a controlled release rate of 131.01 L/s. The existing control manhole will eventually discharge to the existing 600mm storm sewer located within the right of way of Campbell Drive via the existing 375mm municipal service connection for the project site. The actual flow velocity of the existing 375mm storm service connection at 1.43% is 1.89 m/s; please note this is greater than the minimum required cleansing velocity of 0.8m/s as per the Town of Uxbridge and LSRCA design guidelines

A new storm sewer network comprising of catchbasins, manholes, swales, and pipes will be installed to capture the stormwater run-off generated from the western portion of the site under post-development conditions. Two new 300mm rooftop leader connections on the west and south face will of the proposed Hospital Building will be installed to capture the rooftop drainage. The stormwater runoff generated from the western portion of the Project Site will be captured in a proposed dry pond which will eventually discharge to Uxbridge Brook. Control structures will be provided at the outlet of the dry pond to control the post-development flows to pre-development flows for all storm events up to the 100-year storm event. The control structures will be designed during the next stages.

Through discussion with the design team mechanical engineer, the location and size of the proposed storm service connection has been determined to satisfy the requirements of the Town of Uxbridge and Ontario Building Code (OBC).

For this design brief, the storm sewer system was sized using the simple rational method approach. Detailed pipe capacity and HGL analysis for the storm sewer system using PCSWMM will be completed in the next design stage.

Figure 4 shows the proposed storm servicing system.



LEGEND:

PROPERTY LINE
EX. STORM SEWER
PROP. STORM SEWER
PROP. STORM MANHOLE
PROP. CATCH BASIN MANHOLE
EX. MANHOLE
PROP. HEADWALL
PROP. CATCHBASIN
EX. CATCHBASIN
EX. CONTROL MANHOLE
PROP. WATER TREATMENT UNIT
PROP. SWALE
PROP. STORM TANK
PROP. TRENCH DRAIN
REGIONAL FLOOD LINE
REGIONAL FLOOD LINE OFFSET
MEANDERBELT LIMIT
MEANDERBELT LIMIT OFFSET
LSRCA REGULATION LIMIT
PROP. STORM POND

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Title: 4 CAMPBELL DRIVE PROPOSED STORMWATER MANAGEMENT PLAN

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5 STORMWATER MANAGEMENT PLAN

STORMWATER MANAGEMENT PLAN OBJECTIVES

The objectives of the stormwater management plan are as follows:

- Determine site specific stormwater management requirements to ensure that the development project is in conformance with the Technical Guidelines for Stormwater Management Submissions (April 2022) and Phosphorus Offsetting Policy (May 2023) issued by the Lake Simcoe Region Conservation Authority; and Lake Simcoe Protection Plan (January 2016) issued by the Ministry of the Environment;
- As per the Lake Simcoe Protection Plan, the site is deemed as a "major development", which is defined as consisting of the construction of a building or buildings with a ground floor area of 500 m^2 or more; and
- Preparing a stormwater management plan documenting the strategy along with the technical information necessary for the sizing of the proposed stormwater management measures.

STORMWATER MANAGEMENT DESIGN CRITERIA

The LSRCA has issued the Technical Guidelines for Stormwater Management Submissions (April 2022) and Phosphorus Offsetting Policy (May 2023) to provide direction on how to manage rainfall and runoff from the Project Site. A summary of the stormwater management criteria applicable to this project is as follows:

- **Water Quantity Control:** Runoff from the 2-year to 100-year design storms must not exceed the peak runoff rate from the site under pre-development conditions for Uxbridge Brook (Western Portion). The allowable release rate to the municipal storm sewer system from the Project Site is the 5-year pre-development flow rate for Campbell Drive (Eastern Portion).
- **Water Quality:** The site is required to provide a long-term removal of 80% of total suspended solids (TSS) on an average annual basis, which corresponds to the MECP Enhanced Protection Level (Level 1). Since there are high phosphorus levels in Lake Simcoe, phosphorus loading must be controlled for any major development.
    - **Phosphorus Offsetting Policies:** A Preliminary Phosphorus Budget is to be completed along with the Functional Servicing or Stormwater Management Report. The Phosphorus Budget is required to demonstrate that the phosphorus load from the development on the site will not exceed pre-development phosphorus loading. In circumstances where the phosphorus load cannot be met or demonstrated in a post-development scenario to achieve the pre-development phosphorus loadings, phosphorus offsetting to the LSRCA is required to be provided:
        - Offset Ratio = 2.5:1
        - Offset Value = $35,7701/kg/year
        - Offset Calculation = (ratio (2.5) x P load difference between pre-development and pre-development in kg x $35,770)
- **Water Balance:** The LSRCA requires to match post-development infiltration/recharge volumes to pre-development levels on an annual basis based on Thornthwaite and Mather approach where surplus is estimated based on precipitation minus evapotranspiration (Steenhuis and Van Der Molen, 1986).
- **Volume Control:** Any new development or redevelopment that results in site disturbance that creates 0.5 hectare or more of new impervious surface, or fully reconstructs 0.5 hectare or more of impervious surface, should demonstrate how volume control will be provided for the development. For this Project Site, it is required to capture and retain/treat on site, the post-construction direct runoff volume from 25mm of rainfall from the new and/or fully reconstructed impervious surfaces.
- **Erosion Control:** For sites less than 2 hectares, erosion control is not required. For larger areas, where an erosion control study is not specified, the authority will require that run-off from a 25mm design storm (4-hour, Chicago distribution) be detained and released over a period of at least 24 hours.

PRE-DEVELOPMENT CONDITIONS

5.1.1 General

The site is currently occupied by a 2 storey Uxbridge Cottage Hospital Building, a two-storey Uxmed Health Centre, Emergency Services Building, helipad, paved parking lots, and an infiltration pond basin.

For the purposes of this SWM analysis, the Project Site is divided into eight (8) sub-catchment areas based on the existing topographic survey, existing drainage patterns, and site record drawings. As mentioned in **Section 4.3** of this design brief, the Project Site has two existing storm drainage outlets, the western portion discharges to the Uxbridge Brook and the eastern portion of the site discharges to the municipal storm sewers located on Campbell Drive. The sub-catchments are categorized and described in this section below based on the two existing outlets.

<u>Eastern Portion (Discharge to Campbell Drive):</u>

- Sub-Catchment EC4: This sub-catchment includes the 2-storey Uxbridge Cottage Hospital Building and associated paved parking lots. The sub catchment is serviced through multiple catch basins, roof drains and storm sewers.
- Sub-Catchment EC5: This is an external drainage area located outside of the property boundary. This sub-catchment is primarily pervious and includes an existing shed. This sub-catchment sheet drains towards existing sub catchment EC4.

Sub-catchment areas and runoff coefficient for the eastern portion of the site are summarized below in **Table 3**. Refer to **Appendix F** for land-use areas and runoff coefficient calculations.

Table 3: Areas of Existing Sub-Catchment – Eastern Portion (Discharge to Campbell Drive)

Sub-catchment ID	Catchment Area (ha)	Runoff Coefficient	Outlet
EC4	1.39	0.72	Campbell Drive
EC5	0.058	0.35	Sub catchment EC-4

Based on our review of topographic survey and site observation, there are no on-site stormwater management facilities and no restrictions on the discharge flow rates towards Campbell Drive under existing conditions. The pre-development drainage area plan is shown on **Figure 5.**

<u>Western Portion (Discharge to Uxbridge Brook):</u>

- Sub-Catchment EC1: This sub-catchment includes the existing helipad, infiltration pond, grassed swales, and landscape area. The sub catchment is serviced through a combination of grassed swales and infiltration basin. This sub-catchment drains to the existing Uxbridge Brook via sheet flow and emergency overflow from the infiltration basin.
- Sub-Catchment EC2: This sub-catchment includes the paved parking lot in the south-west corner of the project site. This sub catchment is serviced through catch basins, storm sewers, filtration trenches and is restricted with a manhole control structure to the flow rate of 11.1 L/s before it outlets to the grassed swale located in the sub catchment EC1.
- Sub-Catchment EC3: This sub-catchment includes the 2-storey Uxmed Health Centre. This sub catchment is serviced through a roof drain that discharges at a restricted flow rate of 11.1 L/s to the infiltration basin located in sub catchment EC1.

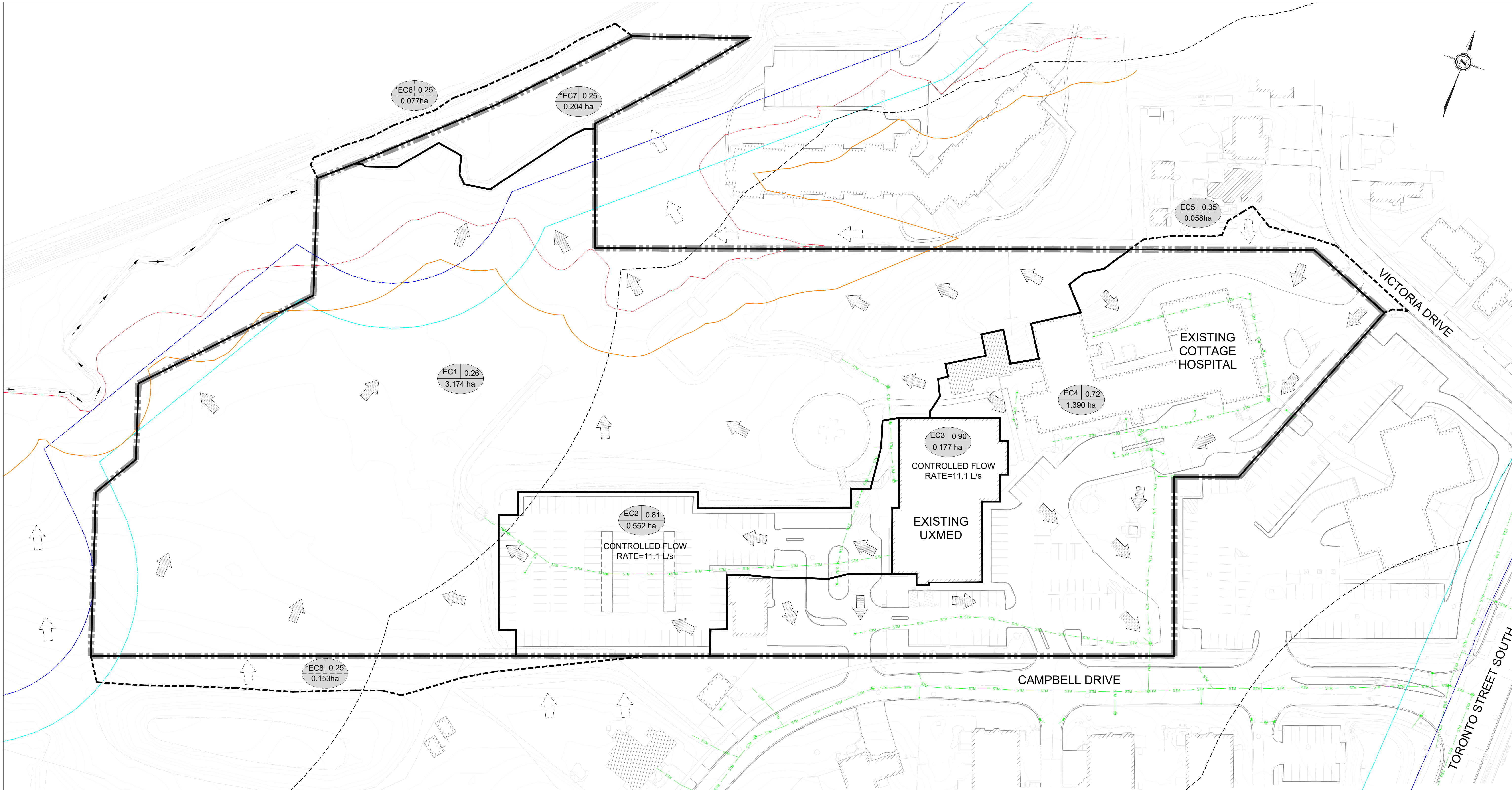
- Sub catchment EC6: This sub-catchment is a pervious external drainage area located near the north-west corner of the site. This sub-catchment sheet drains to Uxbridge Brook via EC7. Since it is located north of the Uxbridge Brook, it is not considered in our pre-development flow rate calculations.
- Sub-catchment EC7: This sub-catchment is a grassed area located in the north-west corner of the Project Site that sheet drains towards the Uxbridge Brook. Since it is located north of the Uxbridge Brook, it is not considered in our pre-development flow rate calculations.
- Sub-Catchment EC8: This is an external drainage area located outside of the property boundary. This sub-catchment is a grassed area that sheet drains towards existing sub catchment EC1.

Sub-catchment areas and runoff coefficients for the western portion of the Project Site are summarized below in **Table 4**. Refer to **Appendix F** for land-use areas and runoff coefficient calculations.

Table 4: Areas of Existing Sub-Catchment – Western Portion (Discharge to Uxbridge Brook)

Sub-catchment ID	Catchment Area (ha)	Runoff Coefficient	Outlet
EC-1	3.174	0.26	Uxbridge Brook
EC-2	0.552	0.81	Sub catchment EC-1
EC-3	0.177	0.90	Sub catchment EC-1
EC-6	0.077	0.25	Uxbridge Brook
EC-7	0.204	0.25	Uxbridge Brook
EC-8	0.153	0.25	Sub catchment EC-1

Based on our review of topographic survey and site observation, there is an existing infiltration basin, filtration trenches, and rooftop detention on site within the western portion. The flow rate towards the Uxbridge Brook is also restricted due to stormwater measures on site under existing conditions. The pre-development drainage area plan is shown on **Figure 5.**



LEGEND:

Symbol	Description
	PROPERTY LINE
	DRAINAGE AREA BOUNDARY
	OVERLAND FLOW DIRECTION
C1 0.25 / 0.388 ha	CATCHMENT ID/RUNOFF COEFFICIENT DRAINAGE AREA (ha)
	EXTERNAL DRAINAGE AREA BOUNDARY
	EXTERNAL OVERLAND FLOW ROUTE
C1 0.95 / 1.00ha	EXTERNAL CATCHMENT ID/RUNOFF COEFFICIENT DRAINAGE AREA (ha)
	REGIONAL FLOOD LINE
	REGIONAL FLOOD LINE OFFSET
	MEANDERBELT LIMIT
	MEANDERBELT LIMIT OFFSET
	LSRCA REGULATION LIMIT

Owner/Client:

diamond schmitt

LEA

Title:

4 CAMPBELL DRIVE
EXISTING DRAINAGE
AREA PLAN

Drawn By:	P.R.	Checked By:	H.B.
Scale:	N.T.S.	Date:	MAY 2024
Project No.:	24163	Figure No.:	5

5.1.2 Rainfall Information

The rainfall runoff and intensity under existing and proposed conditions are calculated using the designs storms based on LSRCA and Town of Uxbridge design guidelines.

Per the LRSCA guidelines, sites with drainage areas greater than 5 hectares can be modelled using acceptable industry standard software. Therefore, PCSWMM 2023 2D, version 5.2.4 modelling software was utilised for hydrologic and hydraulic modelling for the subject development based on the design storm distributions mentioned below:

1. 4- hour Chicago Distribution
2. 12-hour SCS Type II Distribution

The IDF provided in the Township's design criteria was utilized for computing the 4-hour Chicago storm distribution and 12-hour SCS Type II Distribution.

1. EQUATION FOR TYPICAL INTENSITY–DURATION–FREQUENCY CURVES: T–TIME(MINUTES)
I – INTENSITY (mm/hr)

$$I_2 = \frac{645}{(T+5)^{0.786}} \quad I_5 = \frac{904}{(T+5)^{0.788}} \quad I_{10} = \frac{1065}{(T+5)^{0.788}} \quad I_{25} = \frac{1234}{(T+4)^{0.787}} \quad I_{100} = \frac{1799}{(T+5)^{0.810}}$$

2. THE ABOVE EQUATION ARE ONLY VALID FOR T=10 MINUTES TO 1440 MINUTES

Table 5: Rainfall Depth for design storm distributions

Return Period (Year)	Rainfall Depth (mm)	Return Period (Year)	Rainfall Depth (mm)
Erosion Control; Chicago-4hr	25.00	----	----
2 Year Chicago-4hr	34.17	2 Year SCS-12hr	43.60
5-year Chicago-4hr	47.37	5-year SCS-12hr	60.32
10 Year Chicago-4hr	55.81	10 Year SCS-12hr	71.04
25 Year Chicago-4hr	65.23	25 Year SCS-12hr	82.97
100 Year Chicago-4hr	83.53	100 Year SCS-12hr	103.84

Table 6: Sub Catchment Parameters used in PCSWMM Modelling

Mannings "n" for Impervious	Mannings "n" for pervious	Depression Storage Impervious (mm)	Depression Storage Pervious (mm)	Curve Number
0.013	0.15	2.00	5.00	74

The above catchment parameters were utilised based on LSRCA guidelines. The Curve number will compute the infiltration loss into the soil from rainfall events. As the soil is in the hydrological soil group "C" Curve Number value of 74 was assigned. Apart from the above-mentioned parameters catchment areas were assigned impervious percentages, flow lengths and slopes to compute the run-off from the rainfall events. For the modelling purposes, the proposed SWM dry pond surface area was assigned imperviousness of 100% to account for no loss through infiltration.

5.1.3 Peak Flow Rates Under Existing Conditions

Based on the existing site condition and rainfall parameters, the PCSWMM modelling approach is adopted to calculate peak flows at different design storm events.

The calculated peak flow rates for the Eastern and Western portion of the Project Site under pre-development conditions are summarized below in **Table 7 and Table 8** below. Detailed calculations can be found in **Appendix F.**

Table 7: Pre-Development Flow Rates (L/s) – Chicago Storm

Sub-catchment ID	Description	Return Period (Year)				
		2	5	10	25	100
EC4 and EC5	Eastern Portion	210.96	299.41	363.04	461.63	633.53
EC1, EC2, EC3, and EC8	Western Portion	30.22	47.12	68.25	98.48	181.57

Table 8: Pre-Development Flow Rates (L/s) – SCS Storm

Sub-catchment ID	Description	Return Period (Year)				
		2	5	10	25	100
EC4 and EC5	Eastern Portion	163.20	247.23	303.89	365.48	473.31
EC1, EC2, EC3, and EC8	Western Portion	34.35	76.40	118.67	177.74	307.74

For the Western portion of the site, EC6 and EC7 were not considered in the pre-development flow rate calculation since they are located north of the Uxbridge Brook. Additionally, the existing controlled flow rate of 11.1 L/s for EC2 and EC3 was used when calculating the pre-development flow rates. All the pre-development calculations are attached in **Appendix F** of this report.

5.1.4 Allowable Flow Rate

The site will have different land-uses, including hospital building, paved driveways, asphalt parking, and landscaped areas. Relevant policies from the Township's and LSRCA's design criteria and standards restrict flow rates on this site to the allowable flow rates. Below are allowable flow rates for each outlet based on the site conditions and drainage patterns.

Eastern Portion: For the eastern portion, the post-development flow rate for all storm events up to the 100-year design storms must not exceed the 5-yr flow rate from the site under pre-development conditions. Since the SCS storm run-off rate during the 5-yr storm event is more conservative, the allowable release rate from the eastern portion of the site to the municipal storm sewer on Campbell Drive will be 247.23 L/s

Western Portion: For the western portion, the post-development flow rate for all storm events up to the 100-year design storms must not exceed the corresponding peak runoff rate from the site under pre-development conditions. The allowable release rate for each storm event shall be based on the Chicago Storm since it is more conservative and is presented in **Table 7** above.

POST-DEVELOPMENT CONDITIONS

5.1.5 General

The existing drainage patterns and discharge outlet locations as described in **Section 5.3** are to be maintained under the proposed conditions. The post-development sub-catchments are categorized and described in this section below based on the two storm drainage outlets

Eastern Portion (Discharge to Campbell Drive):

- Sub-Catchment PC4: This sub-catchment includes a new access road, paved parking lots, bio swales, and landscaped area. During rainfall events, the rainfall runoff from this sub-catchment will be captured through proposed catch basins and routed through storm sewers discharging into proposed storm water tank located in the southeast corner of the Project Site.
- Sub-Catchment UC1: This sub-catchment includes existing paved and landscape area. During rainfall events, the rainfall runoff from this sub-catchment will be captured through existing catch basins and will eventually drain uncontrolled to existing 600mm storm sewer on Campbell Drive via the existing 375 municipal storm service connection.
- Sub-Catchment PC5: This is an external drainage area located outside of the property boundary. This sub-catchment is primarily pervious and includes an existing shed. This sub-catchment sheet drains towards sub catchment PC4.

Sub-catchment areas and runoff coefficient for the eastern portion of the site are summarized below in **Table 9**. Refer to **Appendix F** for land-use areas and runoff coefficient calculations.

Table 9: Areas of Proposed Sub-Catchment – Eastern Portion (Discharge to Campbell Drive)

Sub-catchment ID	Catchment Area (ha)	Runoff Coefficient	Outlet
PC4	1.104	0.74	Controlled to Campbell Drive
UC1	0.268	0.69	Uncontrolled to Campbell Drive
PC5	0.058	0.35	Sub catchment PC4

Western Portion (Discharge to Uxbridge Brook):

- Sub-Catchment PC1: This sub-catchment includes proposed loading dock and access route located north and west of the proposed hospital building. The PC1 drains through storm sewers to the Dry SWM pond.
- Sub-Catchment PC2: This sub-catchment includes the proposed Hospital Building. The proposed Hospital Building will also have a green roof area. The proposed building will have a rooftop storage of 407m^3 draining to the west of the building and 60m^3 draining to the south of the building. The roof leaders and storage volume are attached in **Appendix F**. The sub catchment will be serviced through proposed roof drains which will eventually discharge to the dry SWM pond.
- Sub-Catchment PC3: This sub-catchment includes existing Uxmed Health Centre with roof top detention. The flow from the Uxmed Health Centre will be discharged mechanically to the Proposed Hospital Building at the existing flow rate of 11.1 L/s and will eventually drain towards the dry SWM pond.
- Sub catchment PC6: This sub catchment contains the future LTC building. The future LTC building was also accounted for when designing the storm sewer infrastructure and storm water pond. The future LTC will

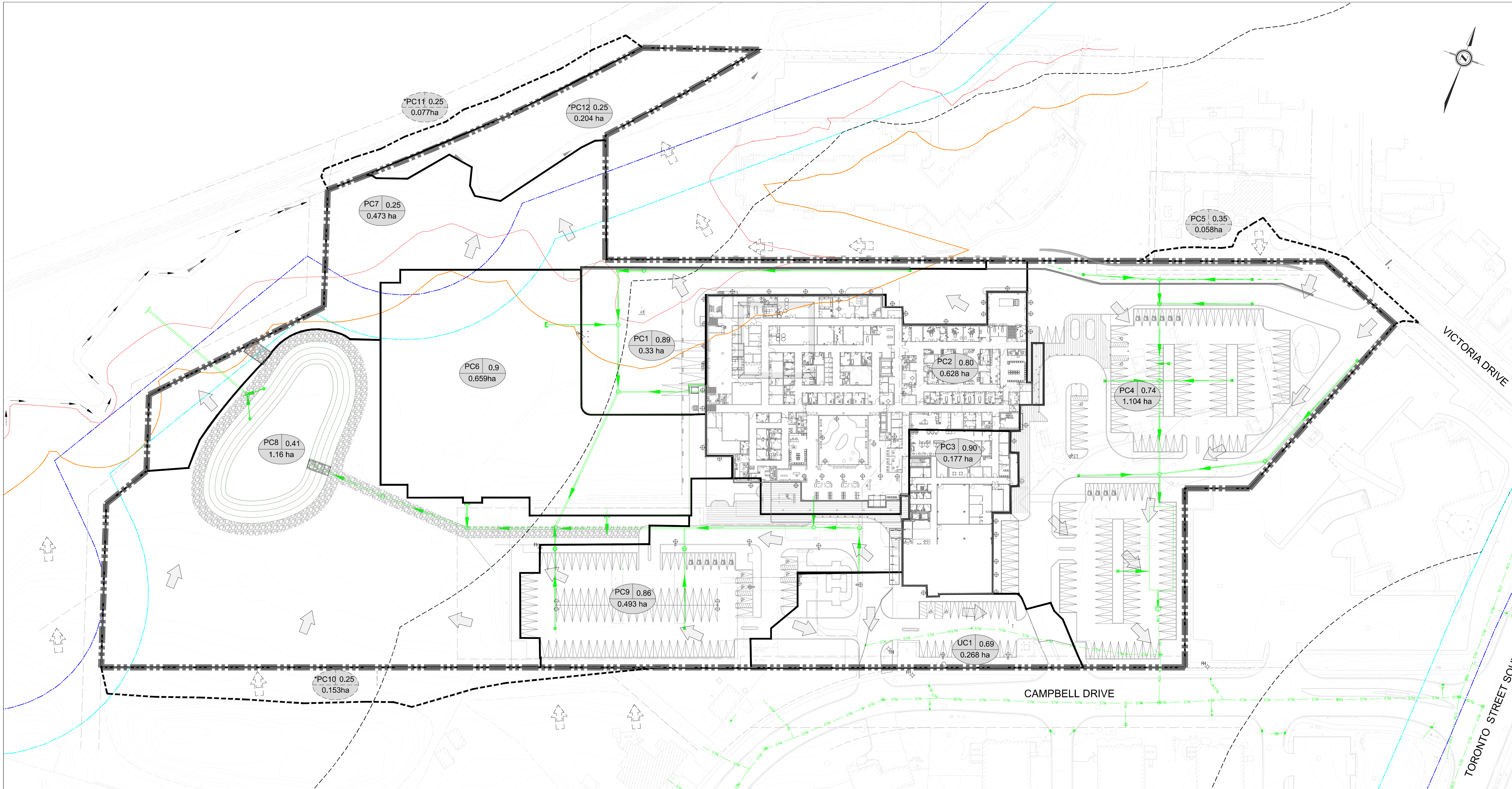
have roof top detention of 264m^3. There are existing storm stubs where the Future LTC buildings will connect and eventually discharging to the SWM pond.

- This catchment will eventually discharge to Uxbridge Brook.
- This sub-catchment is a pervious external drainage area located near the north-west corner of the site. This sub-catchment sheet drains to Uxbridge Brook via PC7. Since it is located north of the Uxbridge Brook, it is not considered in our post-development flow rate calculations.
- Sub-catchment PC7: This sub-catchment is a grassed area located in the north-west corner of the Project Site that sheet drains towards the Uxbridge Brook. Since it is located north of the Uxbridge Brook, it is not considered in our post-development flow rate calculations.
- Sub-catchment PC8: This sub catchment consists of wet land area, dry SWM pond and gravel access route for pond maintenance. All the area eventually sheets drains to the SWM pond.
- Sub-catchment PC9: This sub catchment consists of parking lot and bio swales. For drainage purposes catch basins and storm sewers are provided. The sub catchment drains to the dry SWM pond.
- Sub-Catchment PC10: This is an external drainage area located outside of the property boundary. This sub-catchment is a grassed area that sheet drains towards the dry SWM pond.
- Sub-catchment PC11: This sub-catchment is a grassed area located in the north-west corner of the Project Site that sheet drains towards the Uxbridge Brook. Since it is located north of the Uxbridge Brook, it is not considered in our post-development flow rate calculations.
- Sub-catchment PC12: This sub-catchment is a grassed area located in the north-west corner of the Project Site that sheet drains towards the Uxbridge Brook. Since it is located north of the Uxbridge Brook, it is not considered in our post-development flow rate calculations.

Table 10: Areas of Proposed Sub-Catchment – Western Portion (Discharge to Uxbridge Brook)

Sub-catchment ID	Catchment Area (ha)	Runoff Coefficient	Outlet
PC1	0.33	0.89	Dry SWM Pond
PC2	0.80	0.80	Dry SWM Pond
PC3	0.177	0.90	Dry SWM Pond
PC6	0.659	0.90	Dry SWM Pond
PC7	0.473	0.25	Uxbridge Brook
PC8	1.160	0.41	Dry SWM Pond
PC9	0.493	0.86	Dry SWM Pond
PC10	0.153	0.25	Uxbridge Brook
PC11	0.077	0.25	Uxbridge Brook
PC12	0.204	0.25	Uxbridge Brook

The post-development drainage area plan is shown in **Figure 6.**



LEGEND:

	PROPERTY LINE		EXTERNAL DRAINAGE AREA BOUNDARY		REGIONAL FLOOD LINE
	DRAINAGE AREA BOUNDARY		EXTERNAL OVERLAND FLOW ROUTE		REGIONAL FLOOD LINE OFFSET
	OVERLAND FLOW DIRECTION				MEANDERBELT LIMIT
C1 0.25 0.388 ha	CATCHMENT ID/RUNOFF COEFFICIENT DRAINAGE AREA (ha)	C1 0.95 1.00ha	EXTERNAL CATCHMENT ID/RUNOFF COEFFICIENT DRAINAGE AREA (ha)		MEANDERBELT LIMIT OFFSET
					LSRCA REGULATION LIMIT

Owner/Client:

Title:

LEA

Drawn By:	Checked By:
Scale:	Date:
Project No.:	Figure No.:

5.1.6 Peak Flow Rates Under Proposed Conditions

Based on the proposed site condition and rainfall parameters, the PCSWMM modelling is used to calculate peak flows at different design storm events.

The calculated peak flow rates for the catchment areas under the post-development conditions are summarized in **Table 11 and Table 12** below. Detailed calculations are provided in **Appendix F**.

Table 11: Post-Development Peak Flow Rates (L/s) – Chicago Storm

Sub-catchment ID	Description	Return Period (Year)				
		2	5	10	25	100
PC4, PC5, and UC1	Eastern Portion	220.09	311.21	381.85	487.56	678.57
PC1-3 and PC6, PC7-PC10	Western Portion	377.10	513.96	587.8	700.91	948.32
PC7	Western Portion	1.72	6.12	10.71	17.48	37.53

Table 12: Post-Development Peak Flow Rates (L/s) – SCS Storm

Sub-catchment ID	Description	Return Period (Year)				
		2	5	10	25	100
PC4, PC5, and UC1	Eastern Portion	171.83	255.88	307.80	365.28	466.59
PC1-3 and PC6, PC7-PC10	Western Portion	284.85	416.36	501.70	588.66	781.27
PC7	Western Portion	3.28	13.56	44.15	38.38	67.03

For the Western portion of the site, PC11 and PC12 were not considered in the post-development flow rate and storm water storage calculations since they are located north of the Uxbridge Brook. Also, PC7 based on the current design sheet drains to the Uxbridge Creek and the peak flow is deducted for calculating the controlled discharge for the western portion. Additionally, the existing controlled flow rate of 11.1 L/s for PC2 was used when calculating the post-development flow rates and storm water storage requirements. All the post-development calculations are attached in **Appendix F** of this report.

5.1.7 Impact on Water Environment

Based on the review and analysis for existing and proposed site conditions, **Table 13** summarizes the key hydrologic parameters of the site under the post-development conditions. The lowest pre-development flows between **Table 7 and 8** were compared with highest post development flows in **Table 11 and 12**.

Table 13: Key Hydrologic Parameters

Sub-catchment ID	Description	Area (m^2)		Imperviousness (%)		100-year Peak Flow Rate (L/s)	
		Pre-Dev	Post-Dev	Pre-Dev	Post-Dev	Pre-Dev	Post-Dev
PC4, PC5, and	Eastern	1,448	1,443	69.33	72.33	473.31	678.57

UC1	Portion						
PC1-3 and PC6, PC7-PC10	Western Portion	4,056	4,077	17.75	59.45	307.74	1068.78

Based on the proposed site condition and pre and post development storm flow rate, the stormwater management requirement for each sub-catchment is as follows:

Eastern Portion: As shown in **Table 13,** the imperviousness and runoff coefficient will be increased under post-development conditions. Therefore, mitigation measures will be required for the proposed development in accordance with the Town and LSRCA design criteria.

Western Portion: As shown in **Table 13,** the imperviousness and runoff coefficient will be increased under post-development conditions. Therefore, mitigation measures will be required for the proposed development in accordance with the Town and LSRCA design criteria.

PROPOSED SWM PLAN

5.1.8 Water Quantity Control

Eastern Portion (Discharge to Campbell Drive):

As noted in **Section 5.3.4**, the allowable discharge rates to the municipal sewers from the site are equivalent to the peak runoff rate under pre-development conditions during a 5-year design storm event.

The flow control and stormwater detention requirements for the proposed condition at different storm events are estimated in **Appendix F** and summarized in **Table 14** below.

Table 14: Required Stormwater Storage Volumes Eastern Portion-Drainage to Campbell Drive.

Storm Event	Target Flow (L/s)	Controlled Discharge (L/s)	Required Storage (m^3)	Provided Storage (m^3)
2-Year Chicago	247.23 L/s includes the uncontrolled flow from UC1.	120.87	76	250m^3 of underground storm tank, 150m^3 of parking lot surface ponding. Overall 400m^3.
5-Year Chicago		141.34	142	
10-Year Chicago		155.92	186	
25-Year Chicago		178.31	249	
100-Year Chicago		218.34	363	
2-Year SCS		118.29	65	
5-Year SCS		143.07	132	
10-Year SCS		156.40	185	
25-Year SCS		171.03	240	
100-Year SCS		197.60	339	

Under post-development conditions, the storm runoff from East site sub catchment PC4 and PC5 will be collected and conveyed through the on-site private storm sewer system to the proposed storm water tank. Whereas UC1, will flow uncontrolled to the existing 365mm municipal service connection on Campbell Drive. Therefore, the discharge from the proposed SWM tank was overcontrolled to account for the uncontrolled flow from sub-catchment UC1. The combined release rate from the site (including PC4, PC5, and UC1) under post-development does not exceed the allowable release rate of 247.23 L/s defined in **Section 5.3.4**.

Based on the proposed site condition, the on-site stormwater detention of 363.00m^3 for 100-year Chicago event requires more storage as compared to the SCS storm and will govern the design. The required storage will be accommodated by different conventional quantity control methods like stormwater tanks, parking lot surface storage and bio swale storage. The flow control is achieved through 250mm orifice plate located on the downstream of the underground storage tank.

Western Portion (Discharge to Uxbridge Brook):

As noted in **Section 5.3.4,** the allowable discharge rates to the Uxbridge Brook from the site will be controlled to pre-development levels for storms from 2-Year up to 100-year return period.

Under post-development conditions, the storm runoff from the western portion of the site be collected through catch basins, roof drains, grassed swales and conveyed through the internal storm pipes to the proposed storm water dry pond. Sub catchment PC2 (proposed Hospital Building) will have roof detention of approximately 467m^3. Sub-catchment PC3 (Uxmed Health Centre) has an existing rooftop stormwater storage of 65m^3. The flow from PC3 will be discharged mechanically to the Proposed Hospital Building at the existing flow rate of 11.1 L/s and will eventually drain towards the dry SWM pond. Sub-catchment PC6 (future LTC building) will have roof top detention of 264m^3 and will outlet to the private on-site storm sewer system at a controlled rate of 60 L/s. More detailed information for roof storage for the LTC building will be provided in the next design stages. The roof storage calculation for the proposed hospital building is attached in **Appendix F.**

Based on the 100-year SCS the required rooftop detention storage of 469 m^3 for proposed hospital, existing Uxmed and future LTC building, while an additional 1640 m^3 of stormwater storage is required to control the post-development flows to the pre-development flow levels for the 100-year SCS event. The additional storage required for the 100-yr SCS storm is higher compared to the additional storage required for the 100-yr Chicago storm and thus will govern the design. The required storage will be provided by the SWM dry pond located in the northwest corner of the Project Site, upstream of Uxbridge Brook.

The Dry SWM pond will have a control MH located on the gravel access. There is ditch inlet catch basins located at inverts of 274.80m and 275.65m with 150mm and 200mm outlet pipe at 1.00 slope connected the control manhole. The 150mm outlet pipe will have 125mm diameter orifice plate grouted at the control manhole and will provide restrictions for low flow events while the 200mm outlet pipe will provide restriction up to the 100-year storm event. There is also a 5m wide spill way provided to the Uxbridge Brook from the pond during clogging or regional storm events for the flooding to spill the watercourse.

A free-board of 0.32m is provided between the top of the pond and the 100-yr SCS High Water Level (HWL), thus satisfying the minimum free-board requirement for a SWM pond per the LSRCA criteria.

The flow control and stormwater detention requirements for the western portion of the site under post-development conditions for all storm events up to the 100-yr storm event are estimated in **Appendix F** and summarized in **Table 15** below.

Table 15: Required Stormwater Storage Volumes - Western Portion-Drainage to Uxbridge Brook.

Storm Event	Target Flow (L/s)	Controlled Discharge (L/s)	Uncontrolled Discharge (L/s) PC7	Total Discharge (L/s)	Required Storage (m^3)	Provided Storage (m^3)
2-Year Chicago	30.22	22.45	1.72	24.17	603	Dry SWM Pond Volume: 2249 m^3
5-Year Chicago	47.12	27.33	6.12	33.45	923	
10-Year Chicago	68.25	31.40	10.71	42.11	1134	

25-Year Chicago	98.48	56.23	17.48	73.71	1295	
100-Year Chicago	181.57	84.05	37.53	121.58	1540	
2-Year SCS	30.22	23.80	3.28	27.08	682	
5-Year SCS	47.12	28.47	13.56	42.03	1034	
10-Year SCS	68.25	44.15	24.25	68.40	1228	
25-Year SCS	98.48	69.01	38.38	107.39	1373	
100-Year SCS	181.57	92.64	67.03	159.67	1640	

The dry Pond Stage-Storage Volumes and High-Water Level for different storm events is summarized in **Table 16** below.

Table 16: Dry Pond Stage Storage Volumes and HWL

Stage	Elevation (m)	Contour Area (sqm)	Total Storage (m^3)	HWL (m)
0.00	274.800	1016.344	0.00	**Bottom of the Pond**
0.375	275.170	1243.100	422.893	
0.510	**275.310**	**2 Year Chicago Storm**		
0.570	**275.370**	**2 Year SCS Storm**		
0.740	**275.540**	**5 Year Chicago Storm**		
0.750	275.550	1488.390	934.310	
0.780	**275.580**	**10 Year Chicago Storm**		
0.810	**275.610**	**5 Year SCS Storm**		
0.940	**275.740**	**10 Year SCS Storm**		
0.980	**275.780**	**25 Year Chicago Storm**		
1.030	**275.830**	**25 Year SCS Storm**		
1.120	**275.920**	**100 Year Chicago Storm**		
1.125	275.920	1750.824	1540.939	
1.180	**275.980**	**100 Year SCS Storm**		
1.500	276.300	2030.401	2249.206	**Top of the Pond**

5.1.9 Water Quality Control

Based on the LSRCA and the Township of Uxbridge design guidelines, the required suspended solids removal treatment is MECP Enhanced protection level 1, which corresponds to a long-term average removal of 80% of suspended soils.

For the western portion of the site, water quality treatment methods like OGS/jellyfish, filtration trenches, bioswales and dry pond will be provided to achieve the treatment level.

For the Eastern portion of the site, water quality control will be achieved through an OGS/Jellyfish unit located downstream of the proposed SWM tank. In addition to that, bio-swales will also be provided to achieve water quality control.

The water quality details for the eastern and western portion will be developed in the next design stages.

5.1.10 Phosphorous Offsetting requirements

The Phosphorus Budget is required to demonstrate that the phosphorus load from the development on the site will not exceed pre-development phosphorus loading. In circumstances where the phosphorus load cannot be met or demonstrated in a post-development scenario to achieve the pre-development phosphorus loadings, phosphorus offsetting to the LSRCA is required to be provided:

- Offset Ratio = 2.5:1
- Offset Value = $35,7701/kg/year
- Offset Calculation = (ratio (2.5) x P load difference between pre-development and pre-development in kg x $35,770)

The strategy and details of phosphorous removal will be developed during the next design stage.

5.1.11 Water Balance Requirements

Based on the design guidelines of the Township of Uxbridge and the LSRCA, the water balance criteria dictates that the post-development infiltration/recharge volumes shall be matched to pre-development levels on an annual basis. An increase in annual runoff of 8,705 m^3/year has been identified for the site by the Hydrogeological Investigation Report provided by Englobe (dated August 29, 2024). In order to meet the water balance requirements of the site, a volume of 71.5 m^3 is required to be captured and retained in infiltration or other forms of water re-use. The groundwater across the site has been identified by the Hydrogeological Investigation Report and it is generally within the range of 1.38m to 1.67 from the surface at the locations of the bio-swales. It should be noted that these groundwater readings were not based on the seasonally high groundwater level. The Hydrogeological Investigation Report identified the infiltration rates as having been established through various methods, including in-situ, location specific testing with a Guelph permeameter in the vicinity of each of the bio-swales. The Hydrogeological Investigation Report did not identify the safety factor to use. In lieu of a safety factor provided by the Hydrogeological Investigation Report, a safety factor of 2.5 has been used as the composition of the sub-surface stratum below the depth of the Guelph permeameter testing appears to be consistent. As such, the design infiltration rates for the site are 6.6mm/hr for the north east and south west bio-swales and 18.4mm/hr for the south east bio-swale.

It is proposed to meet the water balance requirement via infiltration through bio-swales. There are 5 total bio-swales proposed on site, which will have a total footprint of 442.0m^2. Each bio-swale will receive surface runoff directly from the parking lot where it will pond below the parking lot surface elevation before seeping into the infiltration media. A drain is placed within each bio-swale at the elevation of the parking lot pavement to prevent water from ponding on the parking lot directly for long periods of time. All bio-swales have a depth of water ponding of 0.15m and a depth of infiltration media of 0.28m, except for the southeast swale which has a depth of infiltration media of 0.48m where the groundwater and infiltration conditions are more favourable. The bio-swales store a total of 33.1m^3 of water in the ponding zone of the bio-swale and 59.2m^3 of water in the infiltration media portion of the bioswale. This results in a total volume of 92.4m^3 stored within the bio-swales. Since the total volume provided within the bio-swales is greater than the required volume, the water balance for the site is met.

For calculations on the draw-down time for each bio-swale and the required and provided volumes for water balance, please refer to **Appendix F** for details.

5.1.12 Volume Control

For this Project Site, it is required to capture retain/treat on site, the post-construction direct runoff volume from 25 mm of rainfall from the new and/or fully reconstructed impervious surfaces. Volume control will be achieved for this site via filtration/infiltration trenches. Due to the groundwater conditions identified in the

Hydrogeological Investigation Report provided by Englobe (dated August 29, 2024), the groundwater conditions are not favourable to infiltration to meet the volume control requirements for the site. Refer to **Section 5.1.11** for discussion on the depth of groundwater and the infiltration rates. Similarly, the volume control will need to be re-assessed when the seasonally high groundwater level and the proper safety factor for the infiltration rate are established. As such, best efforts have been made to provide filtration and other forms of water re-use where possible. Because best efforts are being made, consideration is given to the volume control requirements of 12.5mm and 5mm in addition to the standard 25mm as per the LSRCA guidelines. The 25mm volume control requirement would need a total volume storage of 781m^3 based on an impervious area (from the site) of 3.13ha. The 12.5mm and 5mm volume control requirements would be 390.7m^3 and 156.3m^3 respectively.

In order to meet the volume control requirements, the infiltration from the bio-swales described in **section 5.1.11** are relied upon. The infiltration from the bio-swales counts for 92.4m^3 of infiltration storage.

Additionally, a storage chamber will be provided which will capture the 25mm rainfall event from a portion of the roof of the proposed hospital building and the existing Uxmed Health Centre. This chamber will be used for irrigation of the landscaped areas on site. The volume of this chamber is proposed to be 109m^3 and will accept flow from the roof drains (via a connection from the building mechanical system). There will be a diversion/by-pass manhole which will push the first water of any rainfall event from the roof drains to this tank, and any other flow will bypass this system into the sewer network, eventually draining to the proposed pond. Since this tank is used as irrigation water, it'll be indirectly infiltrated/evapotranspirated. Refer to **Appendix F** for volume control calculations.

The total available infiltration and filtration will thus be 201.4m^3 and will meet the 5mm volume control requirements. It should be noted that due to grading and pipe invert constraints, the remainder of the site is too constrained to support any additional filtration chambers. As such, the site cannot meet the 12.5mm, or 25mm volume control requirements.

5.1.13 Erosion Control

For sites less than 2 hectares, erosion control is not required. For larger areas, where an erosion control study is not specified, the authority will require that run-off from a 25mm design storm (4-hour, Chicago distribution) be detained and released over a period of at least 24 hours.

For the eastern portion of the site, since the total contributing drainage area to Campbell Drive is less than 2 hectares, erosion control is not required.

For the western portion of the site, a 4-hour 25mm Chicago storm was simulated, the required storage was determined to be 399.00m^3 with discharge rate of 18.71 L/s. This required erosion control storage can be accommodated within the active storage volume of the dry SWM Pond. The erosion control storage volume will be detained in the dry SWM Pond and released over a period of 24 hours. Refer to **Appendix F** for the erosion control 25mm storm event.

6 GROUNDWATER DISCHARGE & DEWATERING

HYDROGEOLOGICAL STUDY

In order to obtain updated information about the subsurface conditions, assess any potential subsurface environmental impacts, and investigate the requirement for groundwater discharge from the development site, a hydrogeological review was completed by Englobe Corporation. The Hydrogeological Investigation Report (August 29, 2024) can be found in **Appendix G** for further information.

The hydrogeological study provided the following conclusions with respect to subsurface soil and groundwater conditions:

- The general stratigraphy of the site consists of low permeability meltwater channel silt deposits.
- Groundwater depths at installed monitoring wells ranged from 1.6 to 2.5 meters below ground surface as measured on July 3, 2023. The corresponding geodetic groundwater elevations range from approximate elevations of 273.9 to 276.2 meters above sea level (masl).
- A groundwater sample was collected by Englobe, from monitoring well BH24-7 on July 5, 2024, and analysed by a laboratory accredited by the Canadian Association for Laboratory Accreditation (CALA). Based on the results, the groundwater quality was found to be not suitable for discharge into the Durham sewer system, or to the environment. Elevated levels of metals in the groundwater might not represent actual groundwater quality due to the high amount to sediment load observed during the sampling.

7 EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION

During site construction, it is recommended that all erosion and sediment control Best Management Practices (BMPs) shall be constructed and maintained in accordance with the Greater Golden Horseshoe Area Conservation Authorities' (GGHA CAs) Erosion & Sediment Control Guidelines for Urban Construction (December 2006) and LSRCA Authority's Erosion and Sediment Control Guide.

In brief, the measures below are proposed to be provided on site during the entire period of construction:

- Siltation control fence along the perimeter of the construction site before commencement of construction;
- Sediment control measures to prevent silt entry at all the existing catch basins;
- Granular mud-mats at all construction egress locations (see mud-mat details);

Temporary Erosion and sediment control measures during construction will be determined during the next design stage. A staged erosion and sediment control plan coordinated with the early works and proposed construction staging will be developed and provided in the subsequent design stage submissions.

8 CONCLUSIONS

WATER SERVICING

The proposed water services for the project site will be as follows:

- The proposed water service for the proposed Hospital Building will consist of a 200mm fire protection service and a 150mm domestic water service. The proposed fire and domestic services will be connected to the existing 200mm and 150mm capped water service connection on Victoria Drive respectively.
- In accordance with the Region of Durham guidelines, a redundant 200mm fire protection service and a 150m redundant domestic water service will be provided. The proposed redundant fire and domestic services will be connected to the existing 200mm and 150mm water service connection on Campbell Drive respectively.
- The existing water service connections for the Uxbridge Cottage Hospital, Uxmed Health Centre, and Emergency Services Building will be disconnected and removed. Under proposed conditions, the Uxmed Health Centre will be serviced mechanically by providing a connection internal to the building footprint from the proposed Hospital Building mechanical room. The details of this internal connection can be found in the mechanical drawings.
- The total water demand under interim and future condition will be 304.20 L/s and 275.90 L/s respectively.

SANITARY SERVICING

The proposed sanitary services for the project site will be as follows:

- The proposed Hospital Building will be serviced by a 200mm dia. PVC sanitary line connected to the existing maintenance hole on the site at the property line near Campbell Drive. This existing maintenance hole eventually discharges to the existing 250mm PVC sanitary sewer on Campbell Drive.
- The existing sanitary service connection for the Emergency Services Building and Uxbridge Cottage Hospital will be decommissioned and removed. Whereas the existing sanitary service connection for the Uxmed Health Centre will be maintained under post-development condition.
- The total sanitary flow demand under interim and future condition will be 5.65 L/s and 14.22 L/s respectively.

STORM SERVICING

The proposed storm services for the project site will be as follows:

- Stormwater run-off generated from the eastern half of the Project Site will be collected in a proposed stormwater tank that outlets to the existing control manhole via a new 375mm dia. storm sewer. An orifice plate will be installed at the outlet of the stormwater tank and will be sized to control the flow at the allowable release rate or lower. The eastern portion of the site will eventually discharge to the existing 600mm storm sewer on Campbell Drive via the existing control manhole.
- Stormwater run-off generated from the western half of the project site will be captured in a proposed dry pond that outlets to Uxbridge Brook. Control structures will be provided at the outlet of the dry pond to control the post-development flows to pre-development flows for all storm events up to the 100-year storm event. The control structures will be developed during the next design stage.

STORMWATER MANAGEMENT PLAN

- Water Quantity: For the eastern portion of the site, on-site storage volume of 363 m^3 is required to control the post-development 100-year flow to the pre-development 5-year flow. The on-site storage volume requirement for the eastern portion will be satisfied by providing 150 m^3 of surface ponding in parking lots, and a 250 m^3 underground storm tank.

  For the western portion of the site, an on-site storage volume of 2109m^3 is required to control the post-development stormwater flows to the corresponding pre-development stormwater flows for each storm event. The on-site storage volume requirement for the western portion will be satisfied by providing 796m^3 of rooftop storage, and a 2249 m^3 SWM dry pond.

- Water Quality: For the eastern portion of the site, the water quality control requirement, i.e., 80% of TSS removal will be achieved through an OGS/Jellyfish unit located downstream of the proposed SWM tank. In addition to that, bio-swales will also be provided to achieved water quality control.

  For the western portion of the site, the water quality control requirement, i.e., 80% of TSS removal will be achieved through treatment methods like OGS/Jellyfish units, filtration trenches, bioswales, and dry ponds.

  The water quality details for the eastern and western portion will be developed during the next design stage.

- Phosphorous Offsetting Requirements: The requirements dictate that the phosphorus load from the development site under post-development conditions shall not exceed the pre-development phosphorous loading. The strategy and details for phosphorous removal will be developed during the next design stage.

- Water Balance: The water balance criteria dictates that the post-development infiltration/recharge volumes shall match the pre-development levels on an annual basis. The water balance amount of 8,705m^3/year can be met on site via the proposed bio-swales. This strategy will need to be re-evaluated when the seasonally high groundwater information and infiltration rate safety factors are provided.

- Volume Control: Due to constraints in the groundwater and infiltration rates on site, the standard 25mm volume control requirement cannot be met. The less stringent 5mm volume control requirement can be met with the proposed bio-swales and the proposed irrigation tank. This strategy will need to be re-evaluated when the seasonally high groundwater information and infiltration rate safety factors are provided.

- Erosion Control: For the eastern portion of the site, as the drainage area is less than 2 hectares erosion control is not required.

  For the western portion of the site, a 4-hour 25mm Chicago storm was simulated, the required storage was determined to be 399.00 m^3 with a discharge rate of 18.71 L/s. This required erosion control storage will be provided within the active storage volume of the pond. The erosion control storage volume will be detained in the dry SWM Pond and released over a period of 24 hours.

Table 17: Summary of SWM Design (Eastern Portion)

	Discharge to Campbell Drive
Allowable release rate (L/s)	247.23
Required Detention storage (m^3)	363
Provided Detention Storage (m^3)	450
Roof Storage (m^3)	N/A
Control flow device	250mm Orifice
Water Quality unit size and model	OGS – Next design stage

Table 18: Summary of SWM Design (Western Portion)

	Discharge to Uxbridge Brook
Allowable release rate (L/s)	Pre flows 2 -100-year Chicago Storm
Required Detention storage (m^3)	2109
Provided Dry Pond Storage (m^3)	2249
Provided Rooftop Storage (m^3)	796
Control flow device	125mm Orifice and 200mm Outlet Pipe.
Water Quality unit size and model	OGS – Next design stage

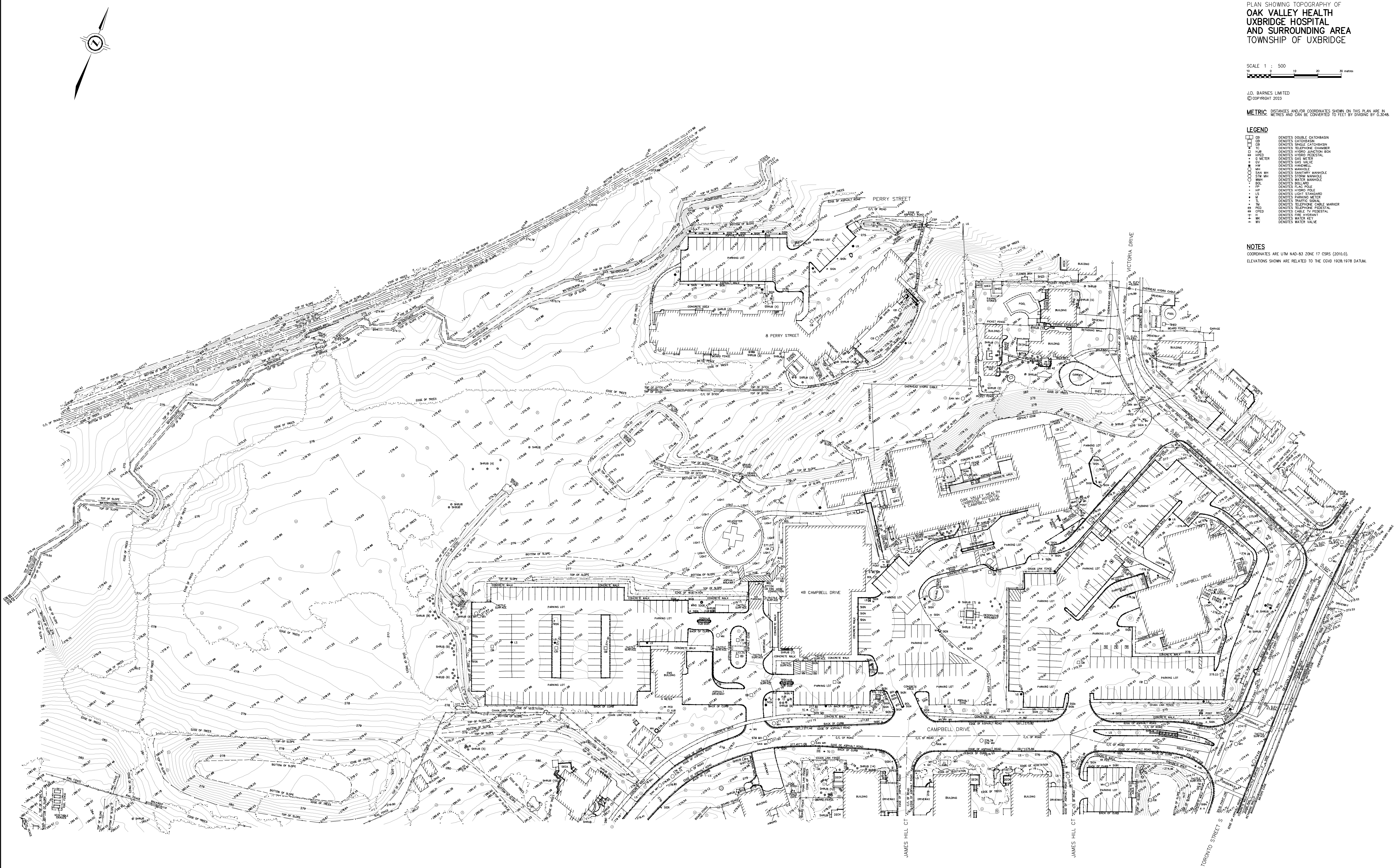
EROSION AND SEDIMENT CONTROL

The temporary erosion and sediment control measures during construction will be in accordance with the TRCA *Erosion & Sediment Control Guide for Urban Construction* (2019).

Temporary Erosion and sediment control measures during construction will be determined during the next design stage

APPENDIX A

TOPOGRAPHIC SURVEY



PLAN SHOWING TOPOGRAPHY OF

OAK VALLEY HEALTH UXBRIDGE HOSPITAL AND SURROUNDING AREA

TOWNSHIP OF UXBRIDGE

SCALE 1 : 500

10 0 10 20 30 metres

METRIC DISTANCES AND/OR COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

LEGEND

CB	DENOTES DOUBLE CATCHBASIN
CB	DENOTES CATCHBASIN
CB	DENOTES SINGLE CATCHBASIN
TC	DENOTES TELEPHONE CHAMBER
HJB	DENOTES HYDRO JUNCTION BOX
HPED	DENOTES HYDRO PEDESTAL
G METER	DENOTES GAS METER
GV	DENOTES GAS VALVE
HW	DENOTES HANDWELL
MH	DENOTES MANHOLE
SAN MH	DENOTES SANITARY MANHOLE
STM MH	DENOTES STORM MANHOLE
WMH	DENOTES WATER MANHOLE
BOL	DENOTES BOLLARD
FP	DENOTES FLAG POLE
HP	DENOTES HYDRO POLE
LS	DENOTES LIGHT STANDARD
M	DENOTES PARKING METER
TL	DENOTES TRAFFIC SIGNAL
TM	DENOTES TELEPHONE CABLE MARKER
PED	DENOTES TELEPHONE PEDESTAL
CPED	DENOTES CABLE TV PEDESTAL
H	DENOTES FIRE HYDRANT
WK	DENOTES WATER KEY
WV	DENOTES WATER VALVE

NOTES

COORDINATES ARE UTM NAD-83 ZONE 17 CSRS (2010.0).

ELEVATIONS SHOWN ARE RELATED TO THE CGVD 1928:1978 DATUM.

THE SURVEY WAS COMPLETED ON NOVEMBER 3, 2023.

J.D.BARNES LIMITED
SURVEYING MAPPING GIS
LAND INFORMATION SPECIALISTS
140 RENFREW DRIVE, SUITE 100, MARKHAM, ON L3R 6B3
T: (905) 477-3600 F: (905) 477-3882 www.jdbarnes.com

DRAWN BY:	CHECKED BY:	REFERENCE NO.:
TC	MM	23-23-669-01
PLOTTED: 11/28/2023		DATED: 11/27/23

FILE: L:\23-23-669\01\Vision Drawing\2D\23-23-669-01_2D.dgn

APPENDIX B

ARCHITECURAL DRAWINGS

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

03/30/21

SURVEY

CIVIL

C101	Civil Sheet Placeholder

LANDSCAPE

L101	Landscape Sheet Placeholder

ARCHITECTURAL

A001	DRAWING SYMBOLS AND ABBREVIATIONS
A010	SITE SURVEY
A011	SITE PLAN - DEMOLITION
A012	SITE PLAN
A013	PHASING DIAGRAMS
A015	SITE SECTIONS
A020	OBC MATRIX AND LIFE SAFETY SECTIONS
A021	LIFE SAFETY PLANS
A025	ACOUSTIC DETAILS AND STC RATING IDENTIFICATION
A040	EXTERIOR BUILDING ELEMENTS
A041	INTERIOR BUILDING ELEMENTS & DETAILS
A050	DOORS AND SCREENS TYPES
A051	DOORS AND SCREENS SCHEDULE
A055	ROOM FINISHES SCHEDULE
A101	OVERALL FLOOR PLANS
A110	LEVEL 1 - PLAN
A111	LEVEL 1 - PLAN
A112	LEVEL 2 - PLAN
A113	LEVEL 2 - PLAN
A114	PENTHOUSE LEVEL - PLAN
A115	PENTHOUSE LEVEL - PLAN
A116	ROOF LEVEL - PLAN
A117	ROOF LEVEL - PLAN
A301	Exterior Elevations
A302	Exterior Elevations
A401	Overall Building Sections
A402	Overall Building Sections
A701	STAIR A
A702	STAIR B
A703	STAIR C
A704	EXTERIOR STAIR AT LOADING DOCK
A705	EXTERIOR STAIR AT ELECTRICAL RM
A706	EXTERIOR STAIR TO TERRACE
A707	UXMED STAIR
A708	WEST HELOPAD STAIR - ROOF
A709	NORTH HELOPAD STAIR - ROOF
A710	EAST HELOPAD STAIR - ROOF

STRUCTURAL

S101	Structural Sheet Placeholder

MECHANICAL

M101	Mechanical Sheet Placeholder

ELECTRICAL

E101	Electrical Sheet Placeholder

Architect

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Civil

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Markham, ON L3R 9R9
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Mechanical

EXP
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Markham, ON M3T 0A8
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Landscape

GSP Group
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Kitchener, ON N2G 4Y9
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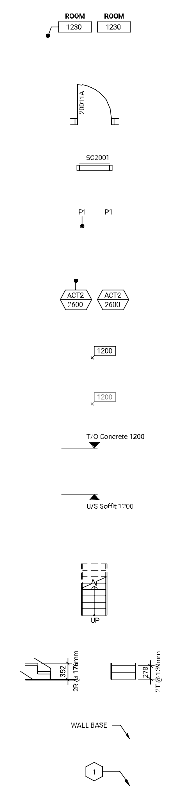
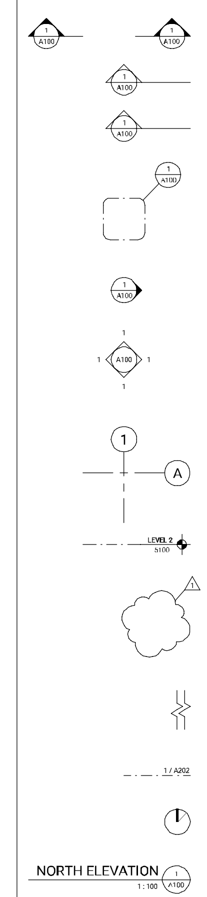
ANNOTATION SYMBOLS LEGEND



- ROOM/AREA TAGS
- DOOR TAGS
- SCREEN TAGS
- ASSEMBLIES/ACCESSORIES/ FURNITURE/WINDOW/EQUIPMENT/FINISHES TAG
- CEILING TAGS
- SPOT ELEVATION - NEW
- SPOT ELEVATION - EXISTING
- SPOT ELEVATION - "TOP OF" ALIGNMENT BENCHMARK
- SPOT ELEVATION - "UNDERSIDE OF" ALIGNMENT BENCHMARK
- STAIR/RAMP DIRECTION TAG
- STAIR RISE/TREAD TAG
- KEYNOTE TAG
- KEYNOTE TAG - DEMOLITION

DRAWING SYMBOLS LEGEND



- BUILDING SECTION
- WALL SECTION
- DETAIL SECTION
- CALLOUTS
- BUILDING ELEVATION
- INTERIOR ELEVATION
- GRIDS
- LEVELS
- REVISION BUBBLES & TAGS
- BREAKLINE
- MATCHLINE
- NORTH ARROW
- VIEW TITLE

ABBREVIATIONS LIST

A	
ABM	AIR BARRIER MEMBRANE
ACONC	ARCHITECTURAL CONCRETE
ACP{#}	ACOUSTIC CEILING PANEL {TYPE NO.}
ACT{#}	ACOUSTIC CEILING TILE {TYPE NO.}
AD	AREA DRAIN
ADD	ADDENDUM
ADJ	ADJUSTABLE
ADO	AUTOMATIC DOOR OPERATOR
AF	ABOVE FLOOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALUM	ALUMINUM
AP	ACCESS PANEL
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
AVBM{#}	AIR VAPOUR BARRIER MEMBRANE
AW	ACID WASTE
AWP{#}	ACOUSTIC WALL PANEL {TYPE NO.}
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
B	
BBD	TILE BACKER BOARD (IN LIEU OF GB BEHIND CT)
BDRM	BEDROOM
BF	BARRIER FREE
BH	BORE HOLE
BM	BENCHMARK
BR	BUMPER RAIL
BSMT	BASEMENT
BT{#}	BASE TYPE {TYPE NO.}
C	
CAM	SECURITY CAMERA
CBD	CEMENT BOARD
CG	CORNER GUARD
CH	COAT HOOK
CJ	CONTROL JOINT
CHB	CHALKBOARD
CL	CENTRE LINE
CLG	CEILING
CM	CONSTRUCTION MANAGER
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
CONC{#}	CONCRETE {TYPE NO.}
CON	CONSTRUCTION
CONJT	CONSTRUCTION JOINT
CONT	CONTINUOUS
CONV	CONVECTOR
CPH	CONCEALED PANIC HARDWARE
CPT{#}	CARPET {TYPE NO.}
CR	CHAIR RAIL
CROD	CURTAIN ROD
CT	CURTAIN TRACK
CTR	CENTRE
CUR{#}	CURTAIN {TYPE NO.}
CW{#}	CURTAIN WALL {TYPE NO.}
D	
DEMO	DEMOLITION
DEPT	DEPARTMENT
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIFF	DIFFUSER
DIM	DIMENSION
DISP	DISPENSER
DIV	DIVISION
DN	DOWN
DWG	DRAWING
E	
EA	EACH
EHO	ELECTRIC HOLD OPEN
ELEC	ELECTRICAL
ELEV	ELEVATOR
EP{#}	EPOXY FLOORING {TYPE NO.}
EPT{#}	EPOXY TERRAZZO
EQ	EQUAL
EQP	EQUIPMENT
ES{#}	EYEWASH STATION {TYPE NO.}
EW{#}	EXTERIOR WALL TYPE
EXG	EXISTING
EXP	EXPOSED
EXPNJT{#}	EXPANSION JOINT
EXPSTR	EXPOSED STRUCTURE
F	
F{#}	GYPSUM BOARD FURRING {TYPE NO.}
FA	FIRE ALARM
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FHY	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FIN{#}	FINISH{TYPE NO.}
FL	FLOOR OR FLOORING
FLGR{#}	FLOOR GRILLE {TYPE NO.}
FLUOR	FLUORESCENT
FN{#}	FENCE {TYPE NO.}
FR	FIRE-RATED
FRR	FIRE RESISTANCE RATING
FRTR	FIRE RETARDANT TREATED
FS	FULL-SIZE
G	
GA	GAUGE
GALV	HOT DIPPED GALVANIZED
GB	GYPSUM BOARD
GBC{#}	GYPSUM BOARD CEILING {TYPE NO.}
GBR	GRAB BAR
GC	GENERAL CONTRACTOR
GDRL{#}	GUARDRAIL {TYPE NO.}
GFRG	GLASS FIBRE REINFORCED GYPSUM
GL{#}	GLASS {TYPE NO.}
GMU	GLASS MASONRY UNIT
GT{#}	GEOTEXTILE FILTER FABRIC {TYPE NO}
H	
HB	HOSE BIB
HDRL{#}	HANDRAIL
HM	HOLLOW METAL
HM{#}	HOLLOW METAL DOOR TYPE
HOR	HORIZONTAL
HP	HIGH POINT
HR	HOUR
HSS	HOLLOW STEEL SECTION
HT	HEIGHT
HVAC	HEATING VENTILATING AND AIR CONDITIONING
I	
ID	INSIDE DIAMETER
IFP	INTUMESCENT FIREPROOFING
INT	INTERIOR
INS{#}	INSULATION TYPE {#}
INV	INVERT
IVT	INTRAVENOUS TRACK
J	
JAN	JANITOR
JT	JOINT
K	
KG	KILOGRAM
KO	KNOCKOUT
L	
LAB	LABORATORY
LAM	LAMINATED
LAV	LAVATORY
LINO	LINOLEUM
LP	LOW POINT
M	
M	METRE
M{#}	CONCRETE MASONRY UNIT WALL {TYPE NO.}
MAX	MAXIMUM
MECH	MECHANICAL
MEZZ	MEZZANINE
MG	MAKE GOOD
MH	MAINTENANCE HOLE
MIC	MICROPHONE
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MISCMTL	MISCELLANEOUS METAL
MR{#}	FIRE RATED CONCRETE MASONRY UNIT WALL {TYPE NO.}
MWK	MILLWORK
MM	MILLIMETRE
MO	MASONRY OPENING
MTL	METAL
N	
NA	NOT APPLICABLE
NBC	NATIONAL BUILDING CODE
NFHB	NON-FREEZE HOSE BIB
NIC	NOT IN CONTRACT
NO	NUMBER
NRC	NOISE REDUCTION COEFFICIENT
NS	NON-SLIP (SLIP RESISTANT)
NTS	NOT TO SCALE
O	
OAA	ONTARIO ASSOCIATION OF ARCHITECTS
OBC	ONTARIO BUILDING CODE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFF	OFFICE
OHD{#}	OVERHEAD DOOR {TYPE NO.}
OPP	OPPOSITE
OWSJ	OPEN WEB STEEL JOIST
P	
P{#}	GYPSUM BOARD PARTITION {TYPE NO.}
PCONC	PRECAST CONCRETE
PE{#}	MOVEABLE PARTITION {TYPE NO}
PERF	PERFORATED
PH	PANIC HARDWARE
PLAS{#}	PLASTER {TYPE NO.}
PLAM{#}	PLASTIC LAMINATE {TYPE NO.}
PLWD	PLYWOOD
POL	POLISHED
PPT	PRIME PAINTED
PR{#}	FIRE RATED GYPSUM BOARD PARTITION {TYPE NO.}
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PROJ	PROJECTION
PS{#}	SHAFT WALL {TYPE NO.}
PSF	POUNDS PER SQUARE FOOT
PSH{#}	HORIZONTAL SHAFT WALL {TYPE NO.}
PSI	POUNDS PER SQUARE INCH
PT{#}	PAINT {TYPE NO.}
PTD	PAPER TOWEL DISPOSAL
PTDD	PAPER TOWEL DISPENSER
PTR	PAPER TOWEL RECEPTOR
PVA	POLYVINYL ACETATE
PVC	POLYVINYL CHLORIDE
R	
R	RADIUS
R{#}	ROOF TYPE {TYPE NO.}
RAD	RADIATOR
RBM	ROOT BARRIER MEMBRANE
RC	REINFORCED CONCRETE
RD	ROOF DRAIN
REF	REFERENCE
REFR	REFRIGERATOR
REV	REVISION
RFS	ROOM FINISH SCHEDULE
RM	ROOM
RO	ROUGH OPENING
RP	REMOVABLE PANEL
RPM	REVOLUTIONS PER MINUTE
RSF {#}	RESILIENT SHEET FLOORING {TYPE NO.}
RSU	ROD & SHELF UNIT
RT {#}	RESILIENT TILE {TYPE NO.}
RTU	ROOF-TOP UNIT
RWL	RAINWATER LEADER
S	
S{#}	SOFFIT TYPE {TYPE NO.}
SBO	SUPPLIED BY OWNER (FOR CONTRACTOR INSTALLATION)
SC	SCREEN
SD	SOAP DISPENSER
SECT	SECTION
SF{#}	SUB FLOOR {TYPE NO.}
SFRM	SPRAYED FIREPROOFING
SHRC	SHOWER ROD & CURTAIN
SIM	SIMILAR
SND	SANITARY NAPKIN DISPENSER
SNR	SANITARY NAPKIN RECEPTOR
SPK	SPEAKER
SP{#}	SPANDREL PANEL TYPE NO.
SPEC	SPECIFICATION
SPLR	SPRINKLER
SQ	SQUARE
SS	STAINLESS STEEL
SSM{#}	SOLID SURFACE MATERIAL {TYPE NO.}
ST	STAIN
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STL	STEEL
STL/D	STEEL DECK
STN {#}	STONE {#}
STRUC	STRUCTURAL
SUSP	SUSPENDED
SVC	SPRINKLER VALVE CABINET
T	
T&G	TONGUE AND GROOVE
TB	TOWEL BAR
TBD	TACK BOARD
TEL	TELEPHONE
TERR	TERRAZZO
TEX{#}	TEXTILE {TYPE NO.}
THR{#}	THRESHOLD {TYPE NO.}
TL{#}	TILE {TYPE NO.}
TOC	TOP OF CURB
TOCS	TOP OF CONCRETE SLAB
TOL	TOP OF LEDGE
TOS	TOP OF STEEL
TOW	TOP OF WALL
TP	TOILET PARTITION
TPH	TOILET PAPER HOLDER
TR{#}	FLOOR TRANSITION TYPE NO.
TT{#}	TRAFFIC TOPPING {TYPE NO.}
TWSI{#}	TACTILE WARNING STRIP INDICATORS {TYPE NO}
TXF	TEXTURED FINISH
TYP	TYPICAL
U	
UC	UNDERCUT
U/S	UNDERSIDE
U/SS	UNDERSIDE SOFFIT
UPS	UNINTERRUPTIBLE POWER SUPPLY
UH	UNIT HEATER
V	
V	VINYL
VERT	VERTICAL
VEST	VESTIBULE
VWC{#}	VINYL WALL COVERING
W	
W	WIDTH
W/	WITH
WA{#}	WASHROOM ACCESSORY {TYPE NO.}
WBD	WHITEBOARD
WC	WATER CLOSET
WD	WOOD FRAME MATERIAL
WD{#}	WOOD DOOR {TYPE NO.}
WDS{#}	SOLID WOOD TYPE NO
WDFL{#}	WOOD FLOORING TYPE NO.
WDP{#}	WOOD PANEL TYPE NO.
WDVN{#}	WOOD VENEER TYPE NO.
WDU	WASTE DISPOSAL UNIT
WM	WIRE MESH
WMD	WIRE MOLD
WP	WALL PROTECTION
WPM	WATERPROOFING MEMBRANE
WR	WASHROOM
WS{#}	WINDOW SHADES {TYPE NO.}
WTS	WATERPROOF TRAFFIC SURFACING
WWF	WELDED WIRE FABRIC

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Issued

No.	Date	Description
1	2024-03-25	SD Costing

NOT FOR CONSTRUCTION

Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

DRAWING SYMBOLS AND ABBREVIATIONS

As indicated

A001

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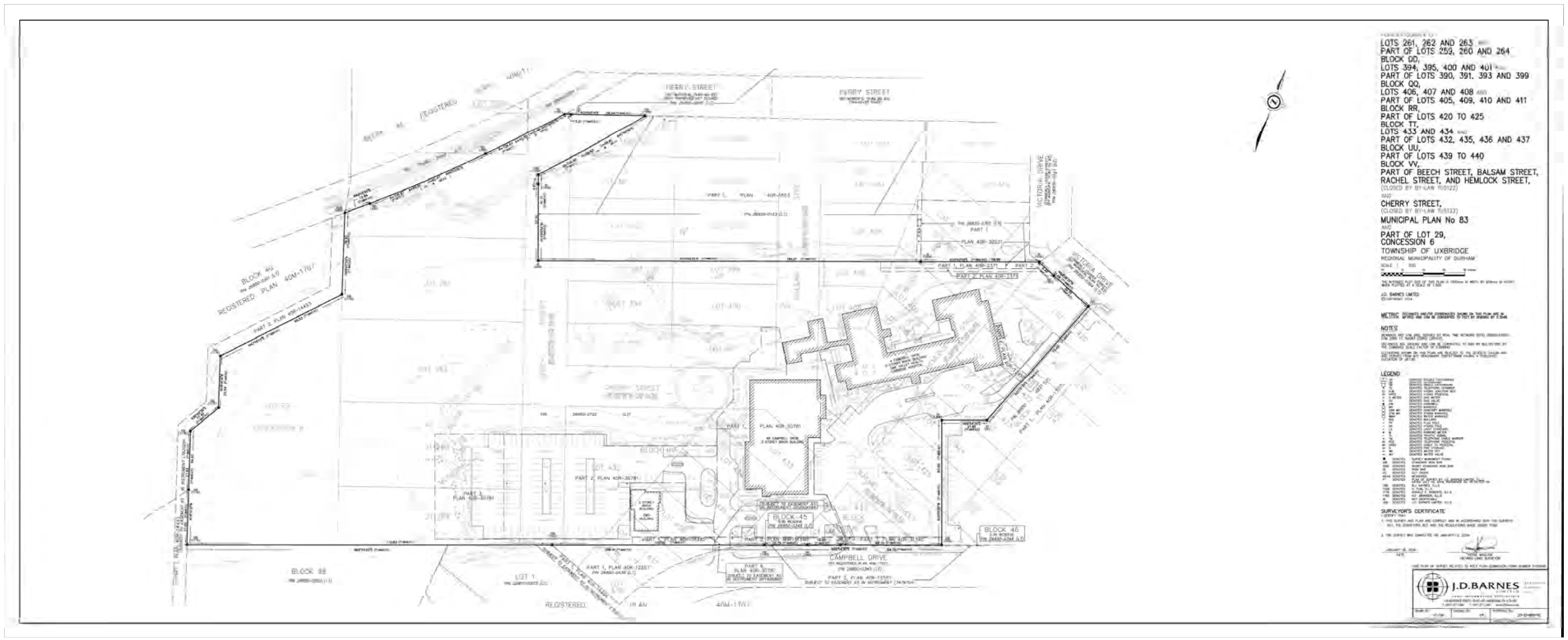


Issued

No.	Date	Description
1	2024-03-25	SD Costing

NOT FOR CONSTRUCTION

Uxbridge Hospital
Oak Valley Health

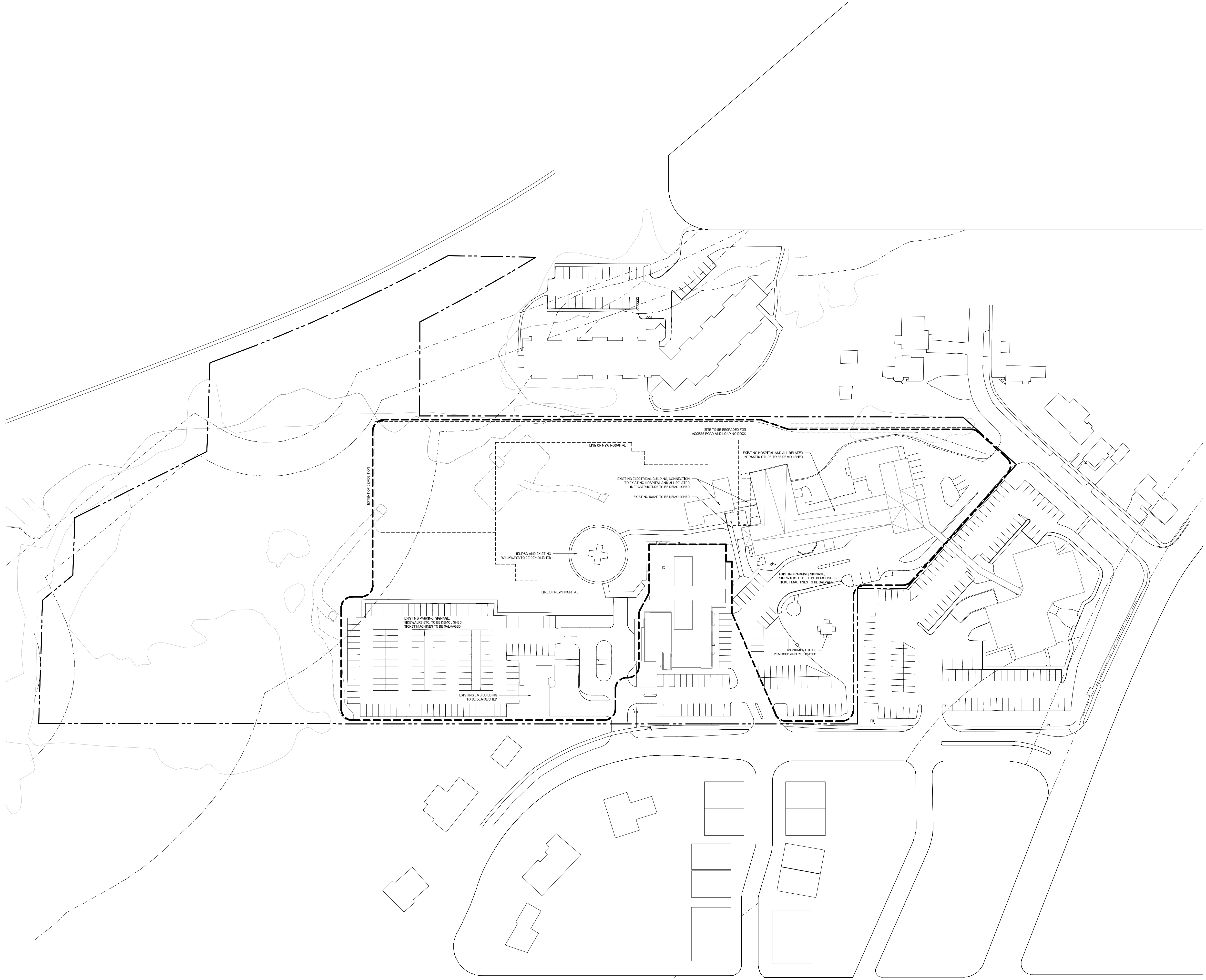
UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

SITE SURVEY

A010

diamond schmitt



NOT FOR CONSTRUCTION

Issued

No.	Date	Description
1	2024-03-25	SD Costing

Uxbridge Hospital
Oak Valley Health

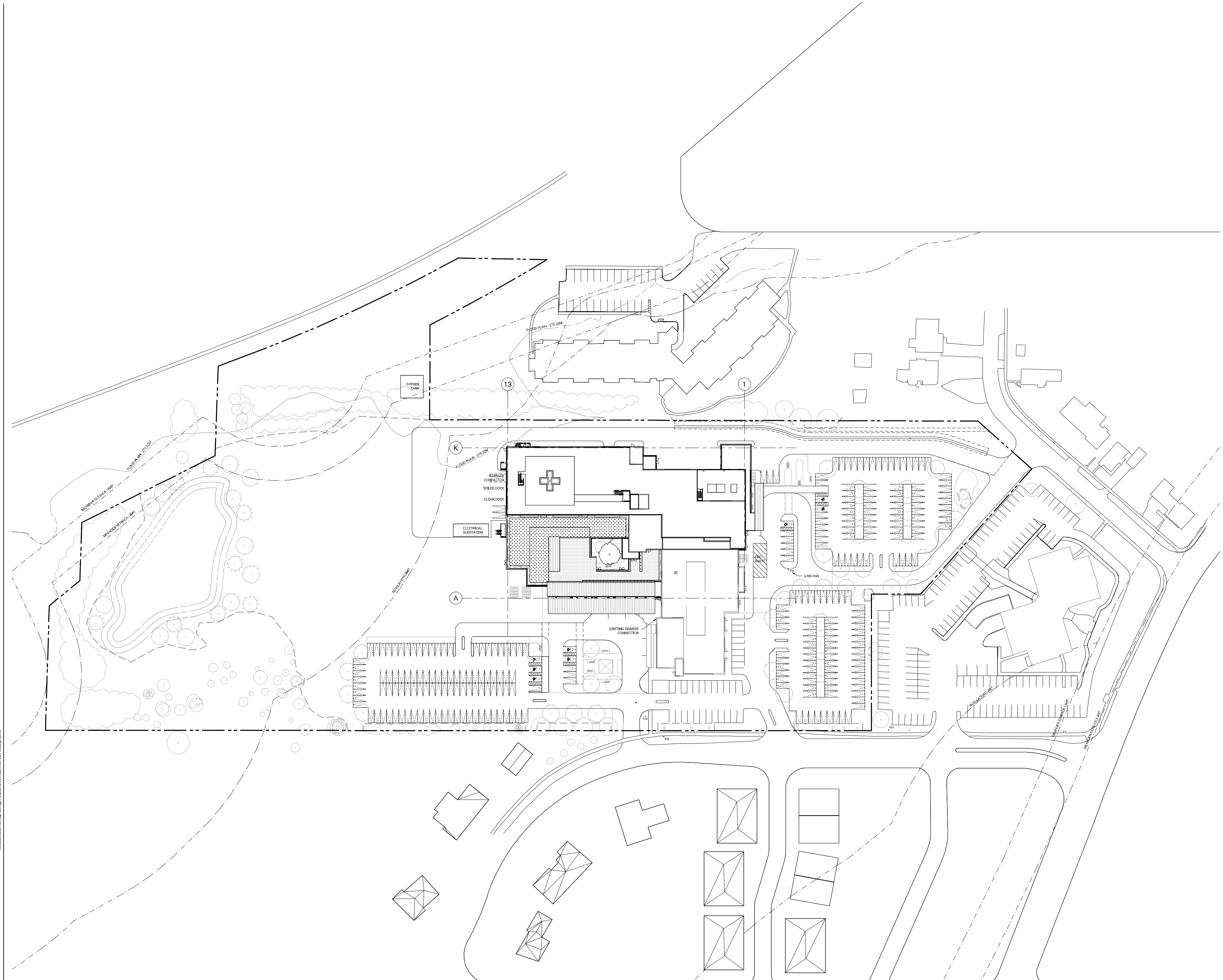
UXBRIDGE HOSPITAL -
OAK VALLEY HEALTH

231022

SITE PLAN - DEMOLITION

1 : 500

A011



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Issued

No.	Date	Description
1	2024-03-25	SD Costing

Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

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SITE PLAN

1 : 500

A012

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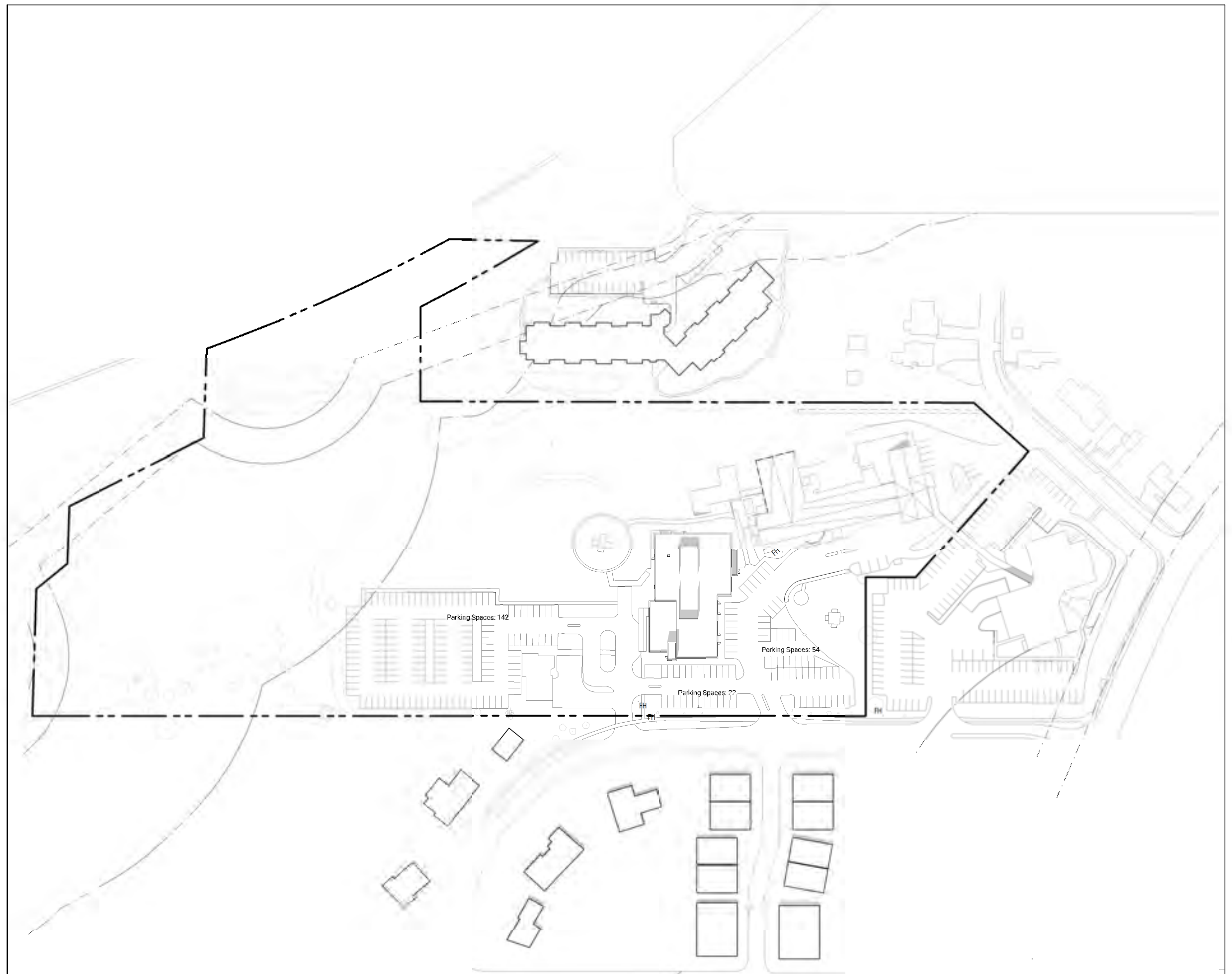
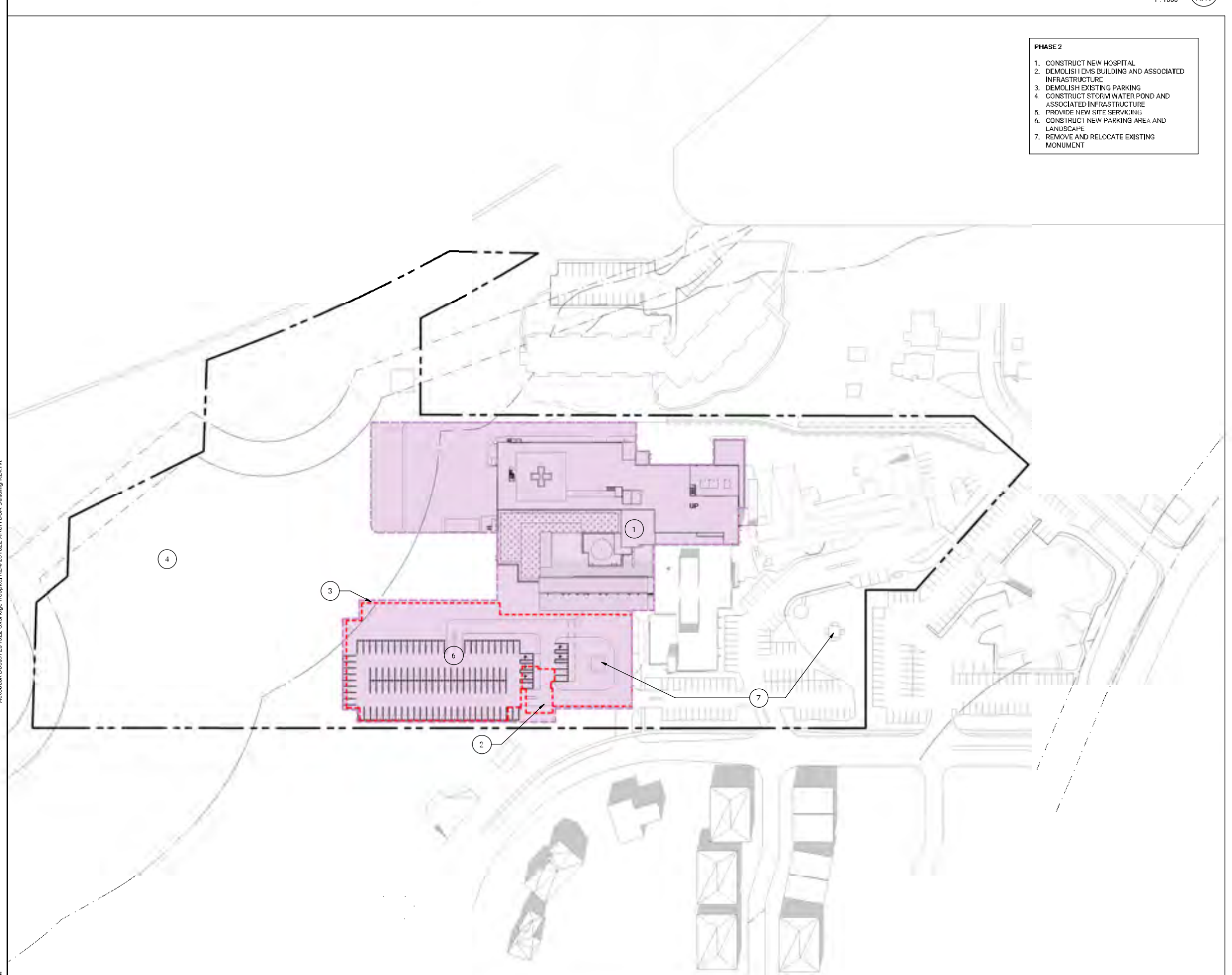


EXISTING SITE PLAN
1 : 1000
2 / A013

PHASE 1

1. RELOCATE EXISTING HOSPITAL HVAC
2. ADD RETAINING WALL FOR NORTH ACCESS ROAD
3. RELOCATE EXISTING HOSPITAL GENERATOR TO SW CORNER OF EXISTING HOSPITAL
4. ADD NEW TRANSFER SWITCH WITH ENCLOSURE TO SW CORNER OF EXISTING HOSPITAL
5. ADD NEW PAD MOUNTED OIL TANK TO SW CORNER OF EXITING HOSPITAL
6. DEMOLISH EXISTING HOSPITAL ELECTRICAL BUILDING INCLUDING RAMP, CONNECTION TO EXISTING HOSPITAL AND ALL RELATED INFRASTRUCTURE
7. REGRADE SLOPE NORTH OF EXISTING HOSPITAL
8. ADD STAIR FROM SECOND FLOOR EXIT OF EXISTING HOSPITAL

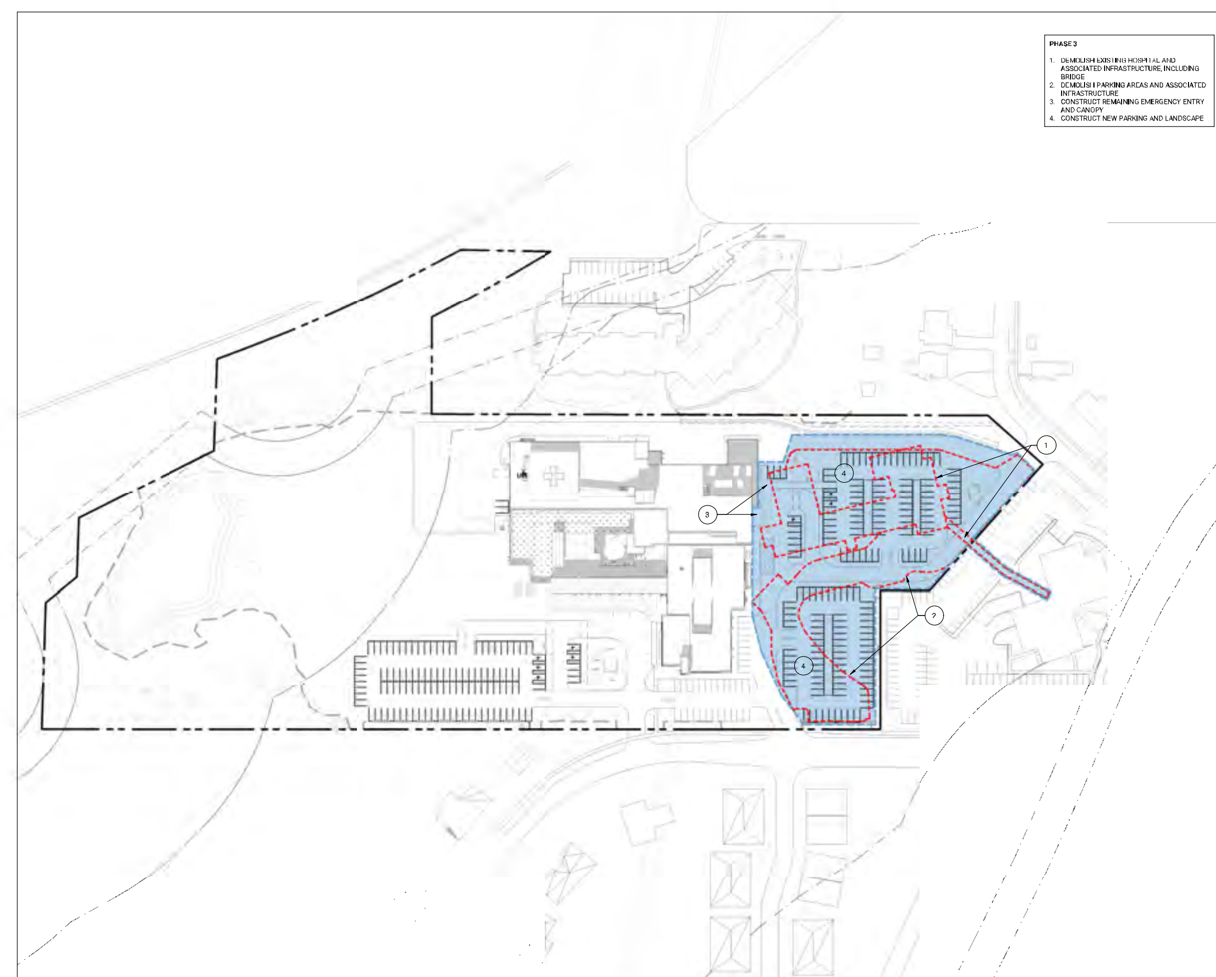
PHASE 1 - EARLY WORKS
1 : 1000
1 / A013



PHASE 2

1. CONSTRUCT NEW HOSPITAL
2. DEMOLISH EMS BUILDING AND ASSOCIATED INFRASTRUCTURE
3. DEMOLISH EXISTING PARKING
4. CONSTRUCT STORM WATER POND AND ASSOCIATED INFRASTRUCTURE
5. PROVIDE NEW SITE SERVICING
6. CONSTRUCT NEW PARKING AREA AND LANDSCAPE
7. REMOVE AND RELOCATE EXISTING MONUMENT

PHASE 2 - NEW CONSTRUCTION
1 : 1000
3 / A013



PHASE 3

1. DEMOLISH EXISTING HOSPITAL AND ASSOCIATED INFRASTRUCTURE, INCLUDING BRIDGE
2. DEMOLISH PARKING AREAS AND ASSOCIATED INFRASTRUCTURE
3. CONSTRUCT REMAINING EMERGENCY ENTRY AND CANOPY
4. CONSTRUCT NEW PARKING AND LANDSCAPE

PHASE 3 - EAST SITE WORKS
1 : 1000
4 / A013

Construction Phases

- Phase 1 (Early Works)
- Phase 2 (New Construction)
- Phase 3 (East Site New Construction)
- Demolished

Issued

No.	Date	Description
1	2024-03-25	SD Costing

Contractor Must Check & Verify all Dimensions on the Job

Do Not Scale Drawings

This Drawing is Not to be Used for Construction Until Signed by the Architect.

Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

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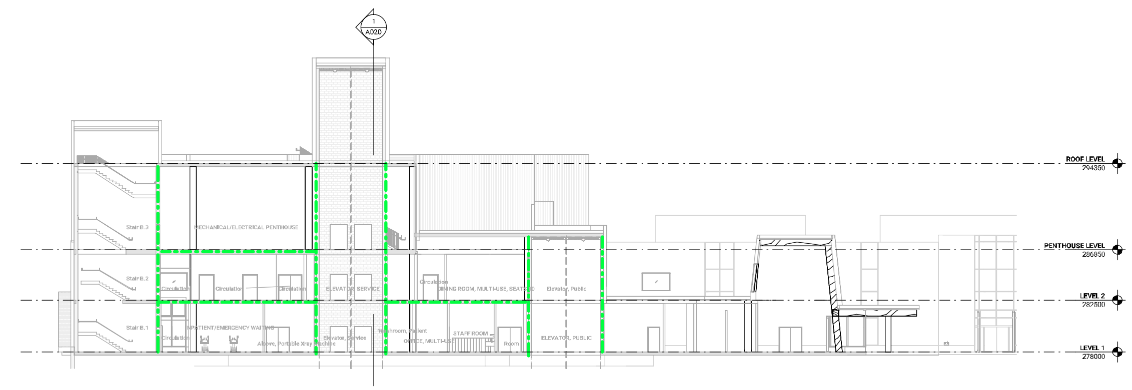
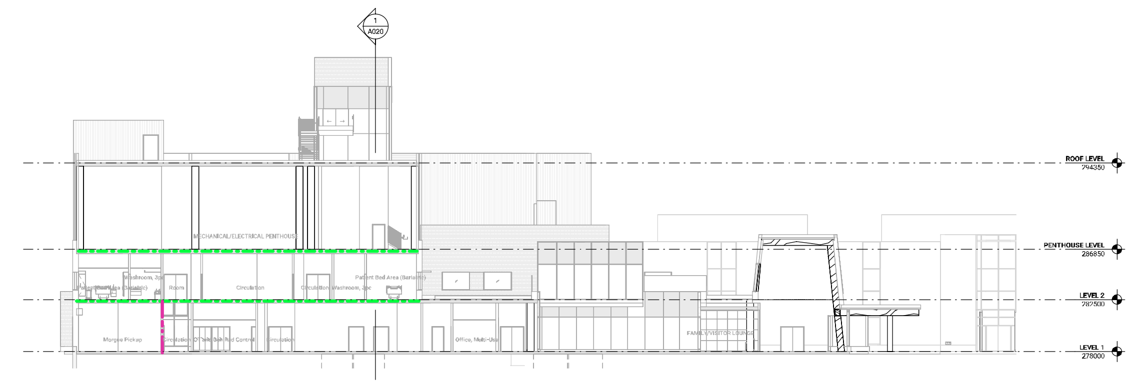
PHASING DIAGRAMS

1 : 1000

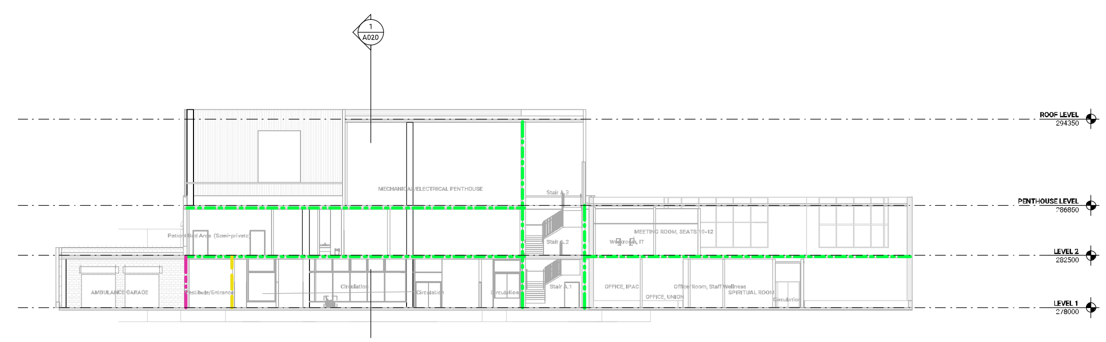
A013



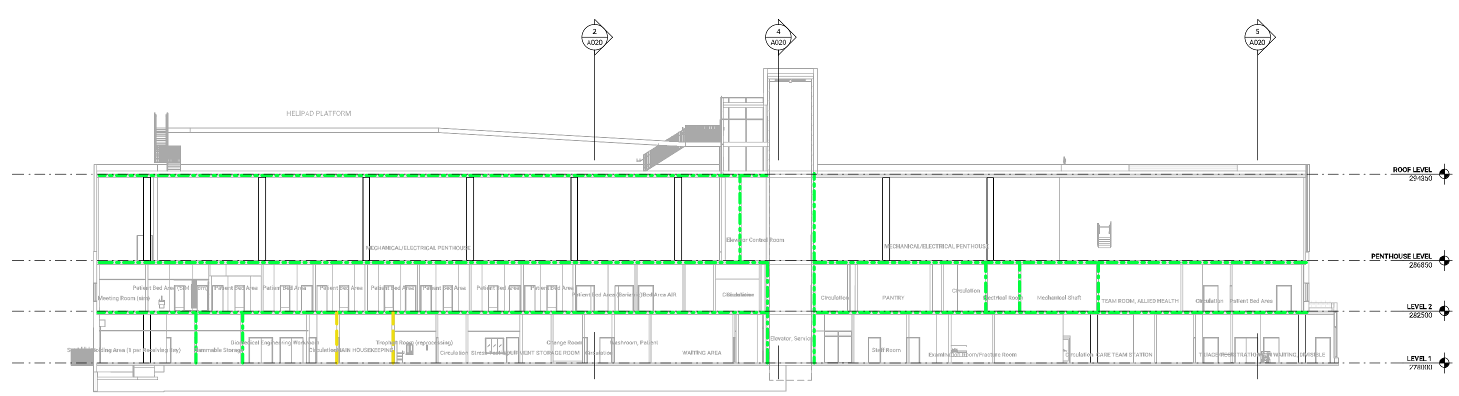
Life Safety Section - North South 3



Life Safety Section - North South 2



Life Safety Section - North South 1



LIFE SAFETY SECTION - EAST WEST

Firm Name: Diamond Schmitt Architects
Certificate of Practice Number:
384 Adelaide St. W, Suite 100
Toronto, ON M5V 1R7
1 (416) 862 8800
The Certificate of Practice Number of the Holder is the Holder's BCDN.

Name of the Project:
Enter Project Name

Location:
Enter Project Address

Date: Enter Date

The Architect Noted Above has Exercised Responsible Control with Respect to Design Activities. The Architect's Seal Number is the Architect's BCDN.

	Ontario Building Code Data Matrix Parts 3		Building Code Reference 1
3.00	Building Code Version:	O.Reg. 332/12 Last Amendment O. Reg. 191/14	
3.01	Project Type:	☐ New ☐ Addition ☐ Renovation ☐ Change of Use ☐ Addition and Renovation Description:-	[A] 1.1.2.
3.02	Major Occupancy Classification:	Occupancy: - Use: -	3.1.2.1.(1)
3.03	Superimposed Major Occupancies:	☐ No ☐ Yes Description:	3.2.2.7.
3.04	Building Area (m²)	Description: / Existing / New / Total - 0 0 0 - 0 0 0 - 0 0 0 - 0 0 0 0 0 0 0 0 0 0 0 0 Total 0 0 0	[A] 1.4.1.2.
3.05	Gross Area (m²)	Description: / Existing / New / Total - 0 0 0 - 0 0 0 - 0 0 0 - 0 0 0 - 0 0 0 - 0 0 0 - 0 0 0 Total 0 0 0	[A] 1.4.1.2.
3.06	Mezzanine Area (m²)	Description: / Existing / New / Total 0 0 0 0 0 0 - 0 0 0 - 0 0 0 - 0 0 0 - 0 0 0 - 0 0 0 Total 0 0 0	3.2.1.1.
3.07	Building Height	0 Storeys Above Grade 0 (m) Above Grade 0 Storeys Below Grade	[A] 1.4.1.2. & 3.2.1.1.
3.08	High Building	☐ No ☐ Yes	3.2.6.
3.09	Number of Streets/ Firefighter Access	0 Street(s)	3.2.2.10. & 3.2.5.
3.10	Building Classification: (Size and Construction Relative to Occupancy)	3.2.2. Group/Div -	3.2.2.20. - 83.
3.11	Sprinkler System	☐ Required ☐ Not Required Proposed: ☐ Entire Building ☐ Selected Compartments ☐ Selected Floor Areas ☐ Basement ☐ In Lieu of Roof Rating ☐ None	3.2.1.5. & 3.2.2.17.
3.12	Standpipe System	☐ Required ☐ Not Required	3.2.9.
3.13	Fire Alarm System	☐ Required ☐ Not Required Proposed: ☐ Single Stage ☐ Two stage ☐ None	3.2.4.
3.14	Water Service / Supply is Adequate	☐ No ☐ Yes	
3.15	Construction Type:	Restriction: ☐ Combustible Permitted ☐ Non-Combustible Required Actual: ☐ Combustible ☐ Non-Combustible ☐ Combination Heavy Timber Construction: ☐ No ☐ Yes	3.2.2.20. - 83. & 3.2.1.4.
3.16	Importance Category:	☐ Low ☐ Low Human Occupancy ☐ Post-Disaster Shelter ☐ Normal ☐ High ☐ Minor Storage Building ☐ Explosive or Hazardous Substances ☐ Post Disaster	4.1.2.1.(3) & T4.1.2.1.B
3.17	Seismic Hazard Index:	(IE Fa Sa (0.2)) = - Seismic Design Required for Table 4.1.8.18. Items 6 to 21: ((IE Fa Sa (0.2)) ≥ 0.35 or Post-Disaster) ☐ No ☐ Yes	4.1.2.1.(3) 4.1.8.18.(2)
3.17	Occupant Load	Floor Level/Area / Occupancy Type / Based On / Occupant Load (Persons) - - - 0 - - - 0 0 0 0 - - - 0	3.1.17.
3.19	Barrier-Free Design	☐ Yes ☐ No Explanation: -	3.8.
3.20	Hazardous Substances:	☐ Yes ☐ No Explanation: -	3.3.1.2. & 3.3.1.19.
3.21	Required Fire Resistance Ratings	Horizontal Assembly / Rating / Supporting Assembly (H) / Non-Combustible in Lieu of Rating? Floors Over Basement 0 0 ☐ No ☐ Yes ☐ N/A Floors 0 0 ☐ No ☐ Yes ☐ N/A Mezzanine 0 0 ☐ No ☐ Yes ☐ N/A Roof 0 0 ☐ No ☐ Yes ☐ N/A	3.2.2.20. - 83. & 3.2.1.4.
3.22	Spatial Separation	Wall / EBF Area (m²) / L.D. (m) / L/H or H/L / Required FRR (H) / Construction Type Required / Cladding Type Required - 0 0 0 0 ☐ Non-Combustible ☐ Combination - 0 0 0 0 ☐ Non-Combustible ☐ Combination - 0 0 0 0 ☐ Non-Combustible ☐ Combination - 0 0 0 0 ☐ Non-Combustible ☐ Combination - 0 0 0 0 ☐ Non-Combustible ☐ Combination - 0 0 0 0 ☐ Non-Combustible ☐ Combination - 0 0 0 0 ☐ Non-Combustible ☐ Combination	3.2.3.
3.23	Plumbing Fixture Requirements	Ratio: Male:Female = 50:50 Except as Noted Otherwise Floor Level/Area / Occupant Load / OBC Reference / Fixtures Required / Fixtures Provided 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3.7.4.
3.24	Energy Efficiency:	Compliance Path: - Climatic Zone: -	
3.25	Notes:	-	

1 *All References are to Division B of the OBC Unless Preceded by [A] for Division A and [C] for Division C.*

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Issued
No. Date Description

LEGEND - FIRE SEPARATION

0-MIN FIRE RATED ASSEMBLY
45-MIN FIRE RATED ASSEMBLY
60-MIN FIRE RATED ASSEMBLY
90-MIN FIRE RATED ASSEMBLY
120-MIN FIRE RATED ASSEMBLY
TRAVEL DISTANCE LINE

GENERAL NOTES - FIRE SEPARATIONS:

1. ALL CLOSURES TO HAVE LABELLED RATINGS (C/W LABELLED FRAMES AND CLOSURES). PROVIDE FIRE DAMPERS AS PER MECHANICAL DRAWINGS.
2. DASHED LINE INDICATES FIRE RESISTANCE RATED ASSEMBLY NOT CONSTRUCTED AS A FIRE SEPARATION
3. TO BE READ IN CONJUNCTION WITH CODE CONSULTANT REPORT

NOT FOR CONSTRUCTION

Contractor Must Check & Verify all Dimensions on the Job

Do Not Scale Drawings

This Drawing is Not to be Used for Construction Until Signed by the Architect.

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OBC MATRIX AND LIFE SAFETY SECTIONS

As indicated

A020

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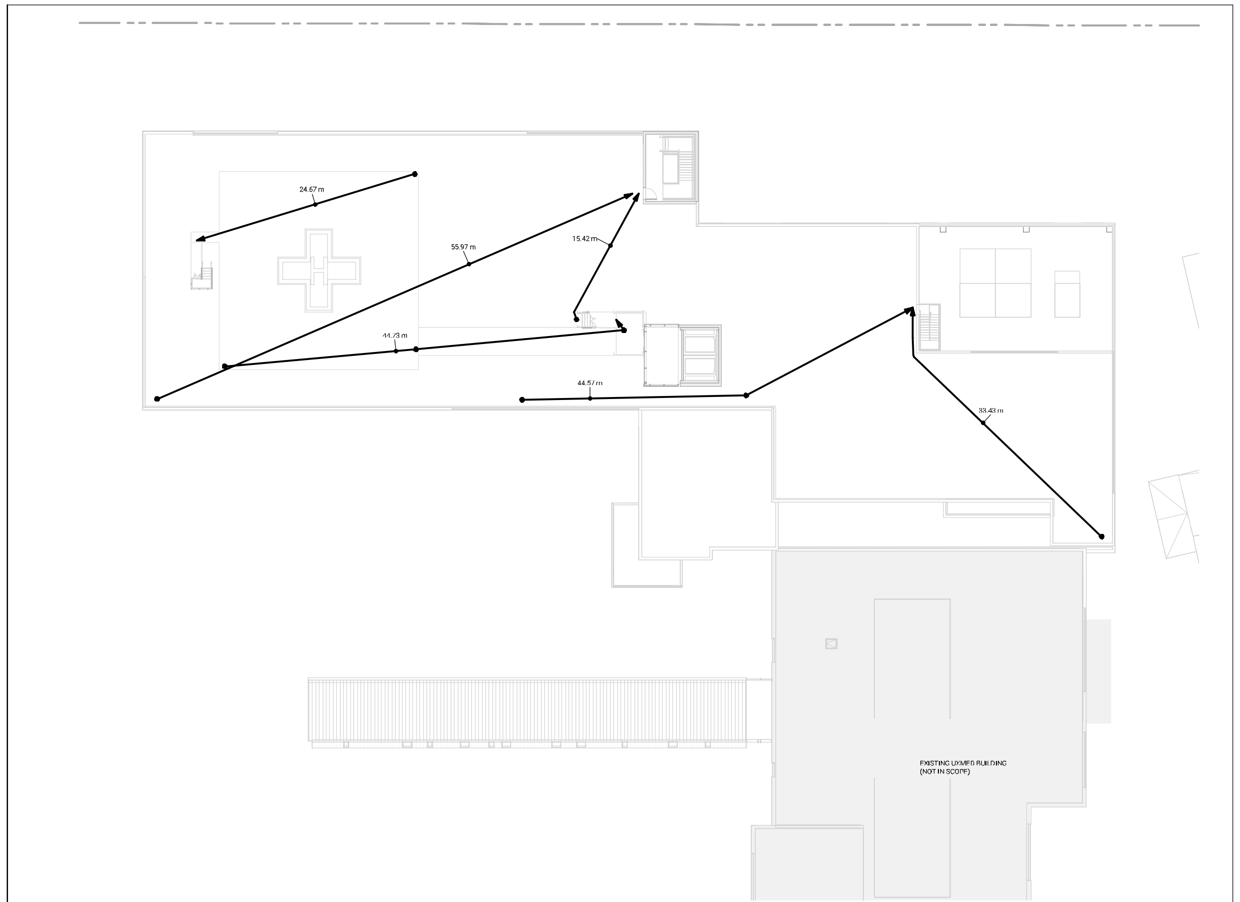
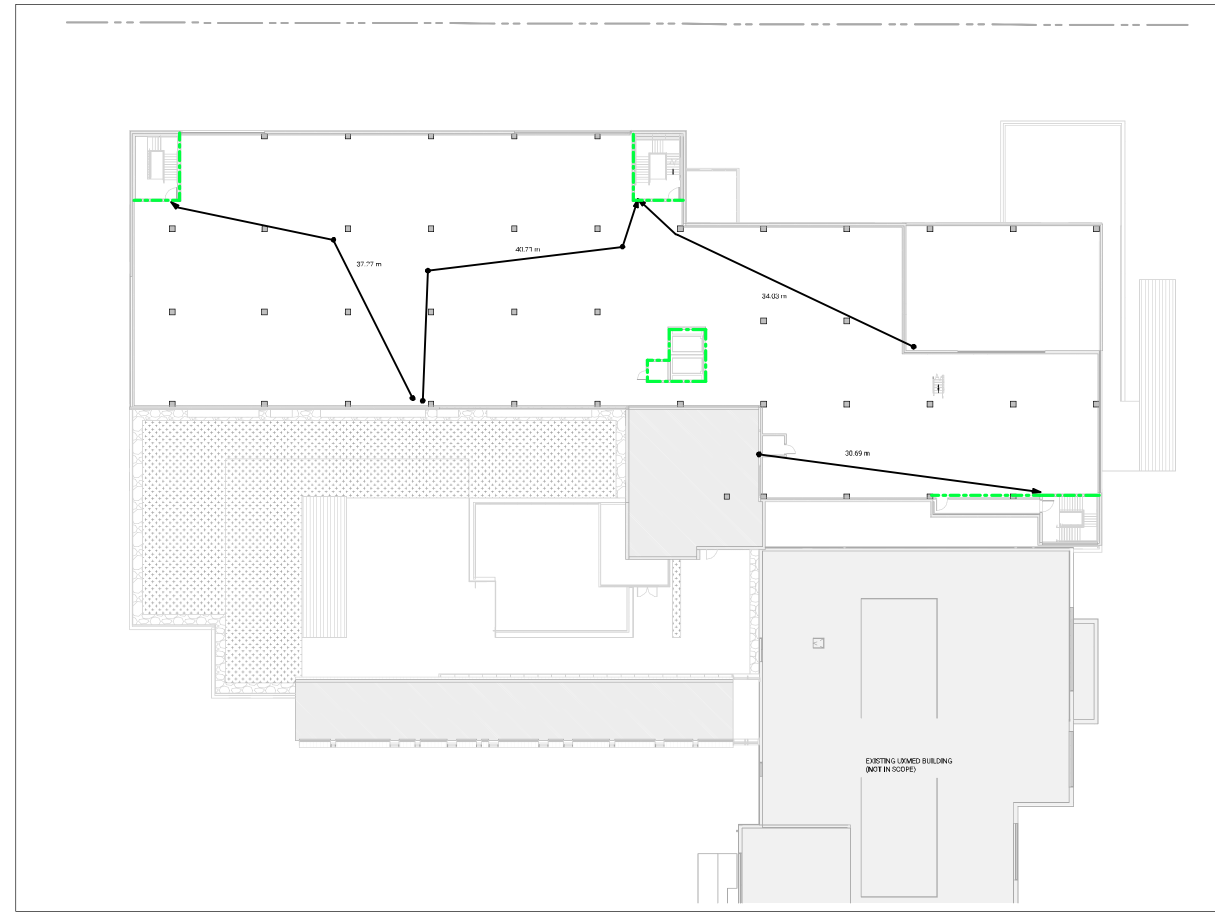
Issued

No. Date Description



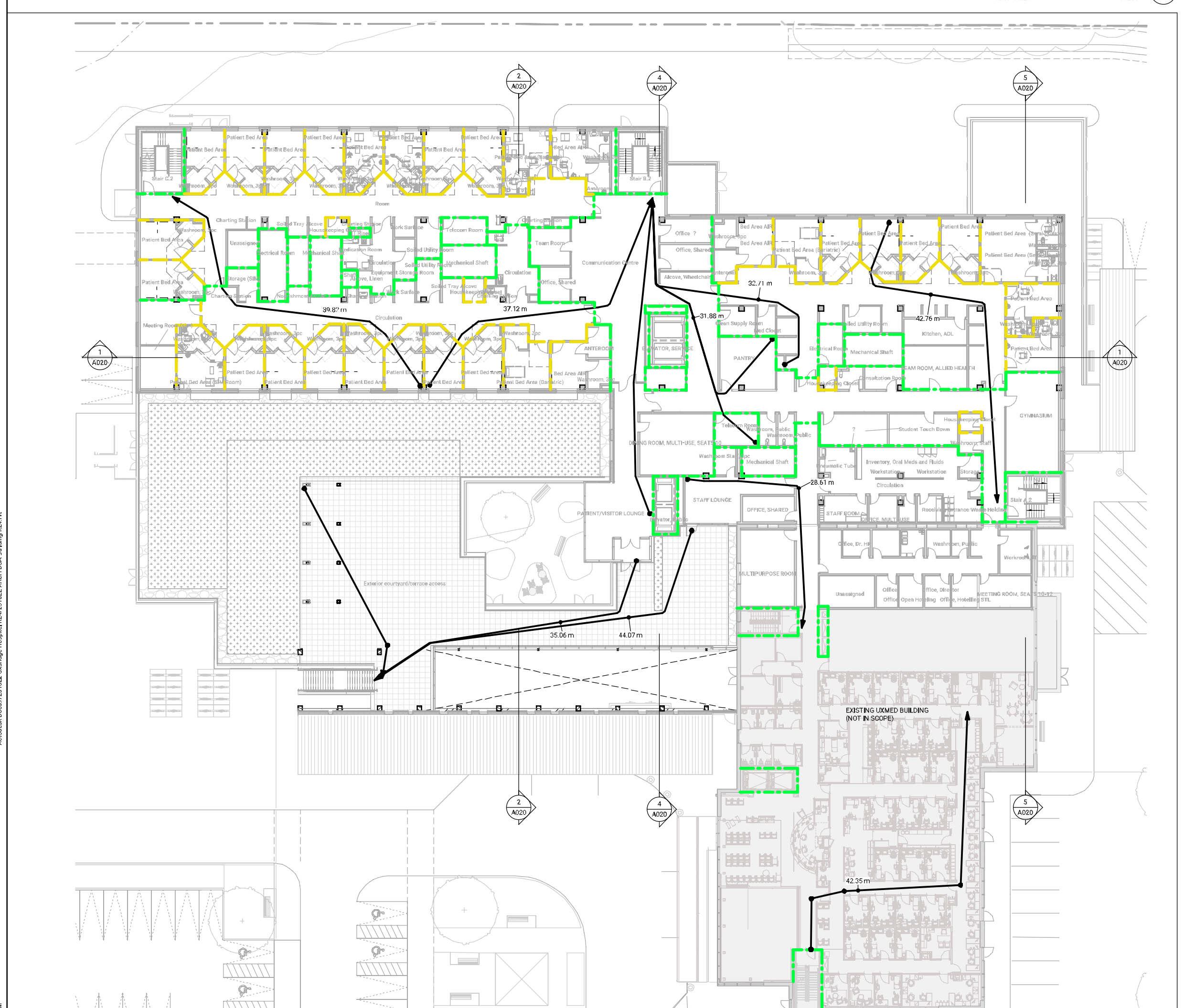
ROOF LEVEL - LIFE SAFETY PLAN 4/A021

ref 1 / A020 1 : 250



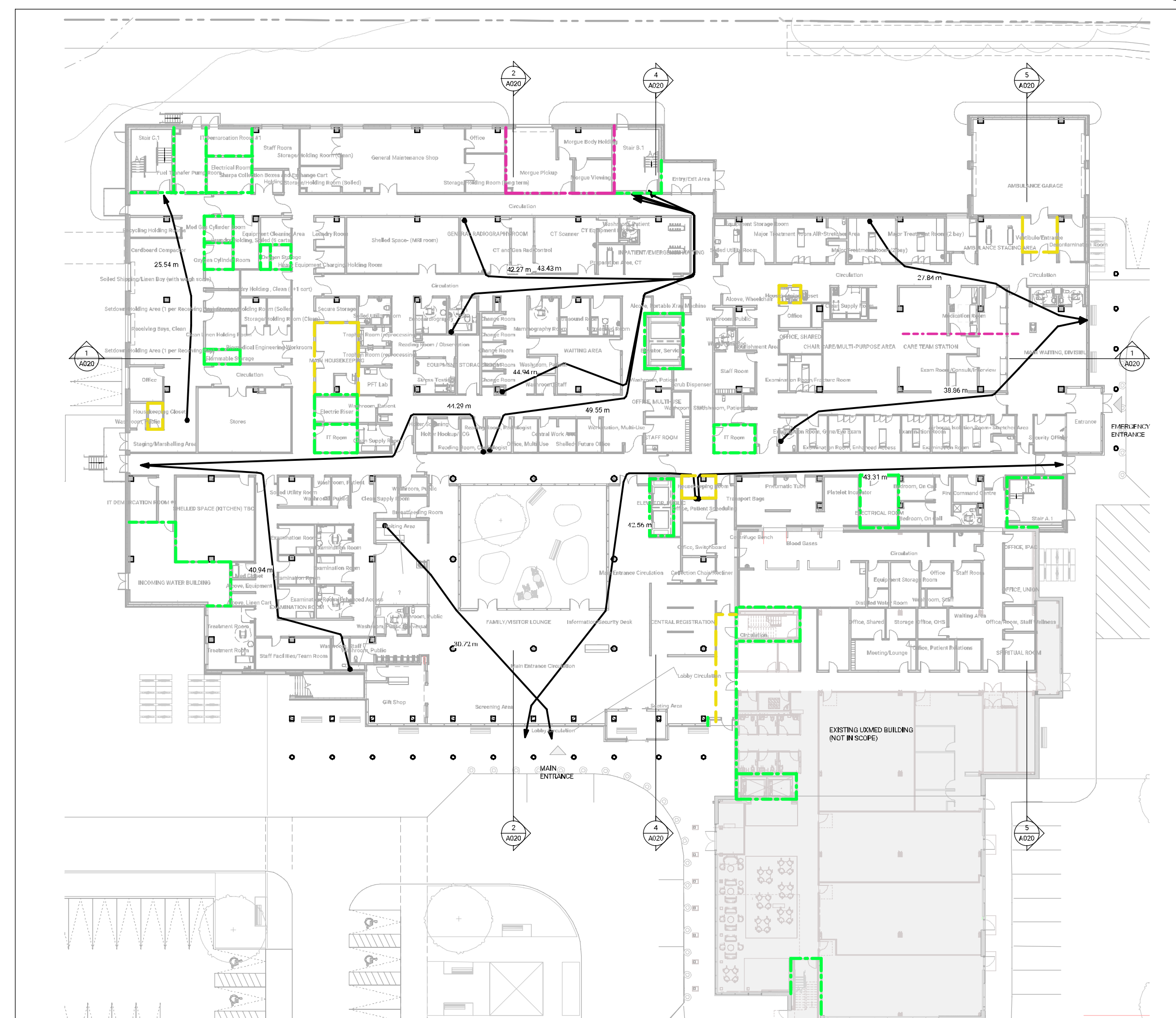
PENTHOUSE LEVEL - LIFE SAFETY PLAN 3/A021

1 : 250



LEVEL 2 - LIFE SAFETY PLAN 2/A021

1 : 250



LEVEL 1 - LIFE SAFETY PLAN 1/A021

ref 1 / A020 1 : 250

LEGEND - FIRE SEPARATION

- 0-MIN FIRE RATED ASSEMBLY
- 45-MIN FIRE RATED ASSEMBLY
- 60-MIN FIRE RATED ASSEMBLY
- 90-MIN FIRE RATED ASSEMBLY
- 120-MIN FIRE RATED ASSEMBLY
- TRAVEL DISTANCE LINE

GENERAL NOTES - FIRE SEPARATIONS:

1. ALL CLOSURES TO HAVE LABELLED RATINGS (C/W LABELLED FRAMES AND CLOSURES). PROVIDE FIRE DAMPERS AS PER MECHANICAL DRAWINGS.
2. DASHED LINE INDICATES FIRE -RESISTANCE RATED ASSEMBLY NOT CONSTRUCTED AS A FIRE SEPARATION
3. TO BE READ IN CONJUNCTION WITH CODE CONSULTANT REPORT

NOT FOR CONSTRUCTION

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Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

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LIFE SAFETY PLANS

1 : 250

A021

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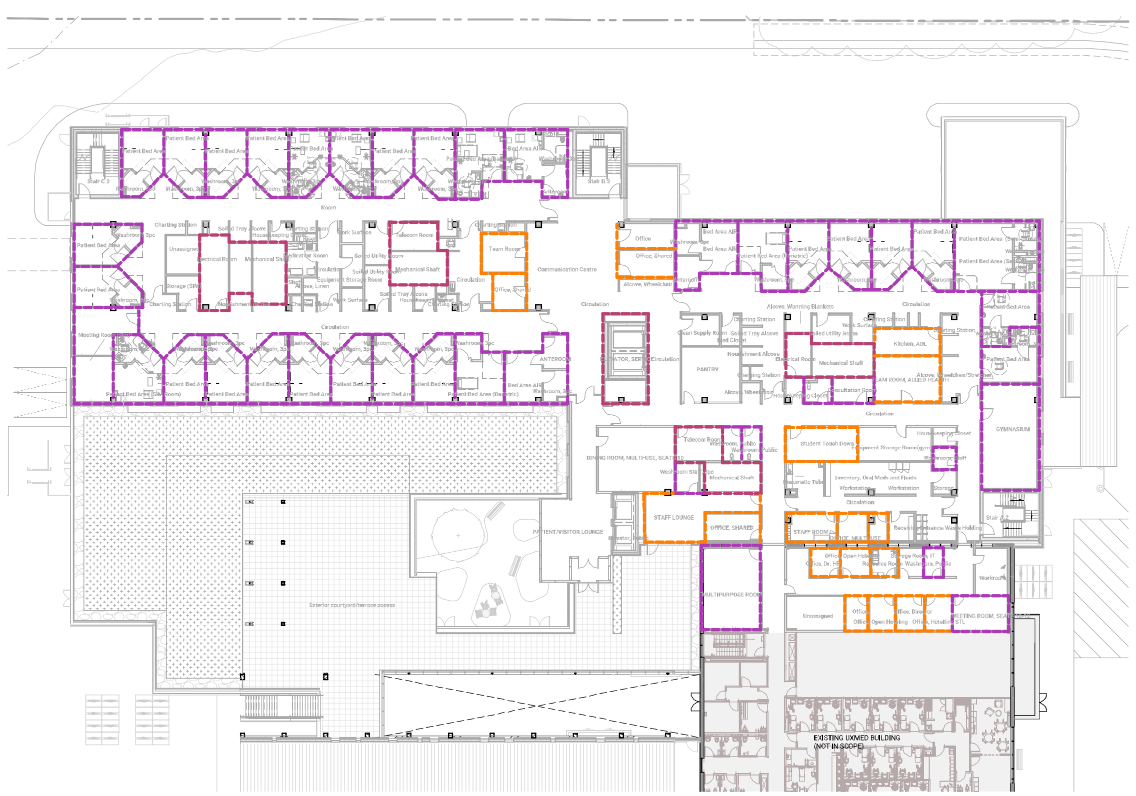
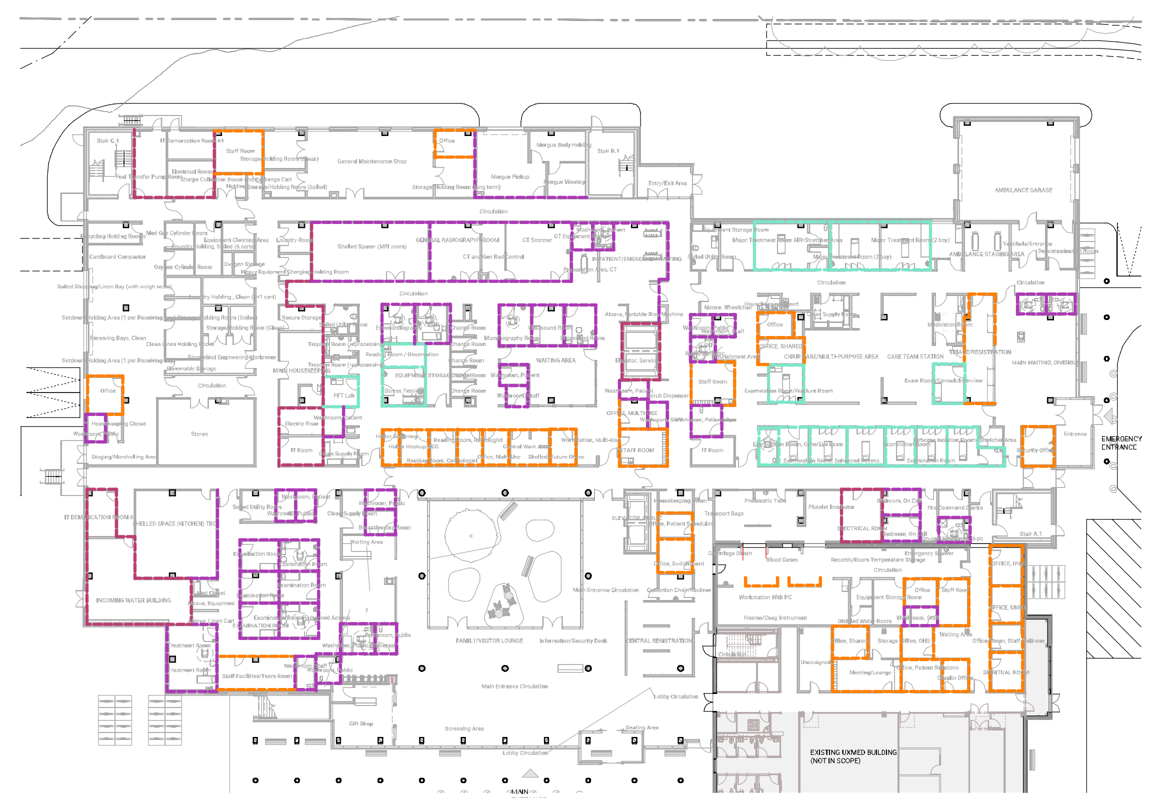
Issued

No.	Date	Description



LEVEL 2 - STC RATING IDENTIFICATION PLAN

ref.1 / A005 1 : 250



LEVEL 1 - STC RATING IDENTIFICATION PLAN

ref.1 / A020 1 : 250

STC RAITING REQUIREMENTS

- STC 45
- STC 50
- STC 55
- STC 60

Uxbridge Hospital
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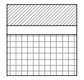
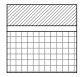
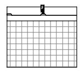
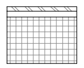
231022

ACOUSTIC DETAILS AND STC RATING IDENTIFICATION

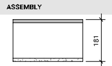
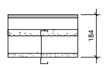
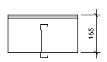
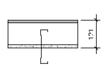
As indicated

A025

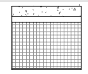
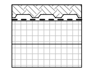
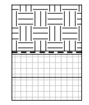
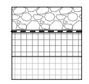
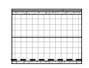
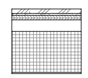
Exterior Wall Types

TYPE	FRR	RSI	ASSEMBLY	DESCRIPTION
EW1				**Masonry Veneer Cladding** 90mm Brick Veneer 40mm Air Space 175mm Semi Rigid Insulation Continuous Air/Vapour Barrier Membrane Support Substrate (Refer to Drawings)
EW1a	-	-		**Masonry Veneer Cladding** 90mm Brick Veneer 25mm Air Space 175mm Semi-Rigid Insulation Continuous Air/Vapour Barrier Membrane Support Substrate (Refer to Drawings)
EW2	-	-		**Standing Seam Metal Cladding** Standing Seam Metal Siding 25mm Air Space 200mm Semi-Rigid Insulation w/ 225mm Thermally Broken Cladding Support Continuous Air/Vapour Barrier Membrane Support Substrate (Refer to Drawings)
EW3	-	-		**Pre-formed Metal Siding** Pre-formed Metal Siding 40mm Air Space 200mm Semi-Rigid Insulation W/ 250mm Thermally Broken Cladding Support Continuous Air/Vapour Barrier Membrane Support Substrate (Refer to Drawings)

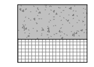
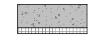
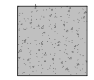
Exterior Wind Bearing Stud Wall Types

TYPE	FRR	RSI	ASSEMBLY	DESCRIPTION
ES1	-	-		**Wind Bearing Metal Stud Backup Wall** 13mm Exterior Sheathing 152mm Engineered Wind Bearing Steel Studs 25mm Spray Foam Insulation 16mm Gypsum Board
ES2				**Wind Bearing Metal Stud Backup Wall - Fire-Rated** 16mm Exterior Sheathing 152mm Engineered Wind Bearing Steel Studs 16mm Fire Rated Gypsum Board
ES3	-	-		**Wind Bearing Metal Stud Backup Wall** 13mm Exterior Sheathing 152mm Engineered Wind Bearing Steel Studs
ES4	-	-		**Wind Bearing Metal Stud Backup Wall - Fire-Rated** 13mm Exterior Sheathing 92mm Engineered Wind Bearing Steel Studs 16mm Fire Rated Gypsum Board

Roof Types

TYPE	FRR	RSI	ASSEMBLY	DESCRIPTION
R1				**Inverted Roof with Pavers** 45mm Concrete Paver on Adjustable Bearing Pads Ballast Reducing Filter Fabric 200mm Rigid Insulation Separation Sheet Modified Bituminous Membrane Primer Concrete Substrate (Refer to Structural Dwgs)
R2				**Inverted Green Roof** Pre-Grown Extensive Green Roof Modules With Integrated Filter Fabric and Water Retention Board - Refer To Landsape Drawings 2 layers of 100mm Rigid Insulation - Staggered Joints Root Barrier Sheet Protection Slip Sheet Leak Locate And Monitoring Grid Roofing Membrane With Primer Concrete Substrate (Refer to Structural Dwgs)
R3				**Inverted Green Roof** Pre-Grown Intensive Green Roof With Integrated Filter Fabric and Water Retention Board - Refer To Landsape Drawings 2 layers of 100mm Rigid Insulation - Staggered Joints Root Barrier Sheet Protection Slip Sheet Leak Locate And Monitoring Grid Roofing Membrane With Primer Concrete Substrate (Refer to Structural Dwgs)
R4				**Inverted Roof With Ballast** Ballast (100mm MIN.) 2 layers of 100mm Rigid Insulation - Staggered Joints Protection Slip Sheet Leak Locate And Monitoring Grid Roofing Membrane With Primer Concrete Substrate (Refer to Structural Dwgs)
R5	-	-		**Conventional Roof** High Albedo 2 Ply SBS - Modified Bitumen Roofing Membrane 13mm Overlay Board 2 Layers of 100mm Polyisocyanurate Insulation - Staggered Joints Vapour Retarder 13mm Exterior Sheathing Concrete Substrate (Refer to Structural Dwgs)
R6				**Standing Seam Metal Cladding Roofing System** Double Lock Standing Seam Metal Cladding Drainage and Air Flow Membrane Air Barrier 19 mm Exterior Grade Plywood 50 mm Wood Batten 50 mm Ventilated Air Space Continuous Air Vapour Barrier Membrane 175 mm Wood Rafter (On NLT Substrate) or 175mm Z-Girt (On Metal Deck) 2 layers (75 mm+100 mm Extruded Polystyrene Rigid Insulation), Mechanically Fastened Water Proofing Membrane Substrate (Refer to Structural Dwgs) Insulation Level: min. R40

Sub-Floor Types

TYPE	FRR	RSI	ASSEMBLY	DESCRIPTION
SF1	-	-		**Concrete Slab on Grade** Concrete Slab on Grade - Refer to Structural Below Slab Vapour Barrier Granular A
SF2	-	-		**Concrete Slab on Grade** Concrete Slab on Grade - Refer to Structural Below Slab Vapour Barrier 25mm Rigid Insulation Granular A
SF3	60			**Suspended Concrete Floor** Cast in Place Concrete - Refer to Structural

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Issued

No.	Date	Description
1	2024-03-25	SD Costing

NOT FOR CONSTRUCTION

Contractor Must Check & Verify all Dimensions on the Job

Do Not Scale Drawings

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Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

EXTERIOR BUILDING ELEMENTS

1 : 10

A040

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PARTITIONS SCHEDULE

MASONRY TYPES

TYPE	STC	FRR	ASSEMBLY	DESCRIPTION
M20	STC 46	- -	140	MASONRY WALL 140mm NOMINAL CONCRETE MASONRY UNIT
M30	STC 50	-	190	**MASONRY WALL** 140mm NOMINAL CONCRETE MASONRY UNIT

RATED MASONRY TYPES

TYPE	STC	FRR	ASSEMBLY	DESCRIPTION
MR30	STC 50 OBC SGB1b	120 MIN ULC U906 -	190	MASONRY WALL 120 MIN. RATED TABLE 2.1.1 OBC SB 2 LIGHTWEIGHT CONCRETE L2 20S 190mm HOLLOW CONCRETE BLOCK (56% SOLID)

INTERIOR PARTITION TYPES

TYPE	STC	FRR	ASSEMBLY	DESCRIPTION
P50	STC 41 OBC SB 3 S7b	- -	184	PARTITION 16mm GYPSUM BOARD 152mm METAL STUDS 16mm GYPSUM BOARD
P51	STC 51 OBC SB 3 S7b	- -	184	PARTITION WITH INSULATION 16mm GYPSUM BOARD 152mm METAL STUDS 150mm ACOUSTIC INSULATION 16mm GYPSUM BOARD
P43	STC 47 OBC SB-3 S4b	- -	124	PARTITION WITH INSULATION 16mm GYPSUM BOARD 92mm METAL STUDS at 400MMOC 89mm ACOUSTIC INSULATION 16mm GYPSUM BOARD
P44	STC 52 OBC SB-3 S5b	- -	140	PARTITION WITH INSULATION 16mm GYPSUM BOARD 16mm GYPSUM BOARD 92mm METAL STUDS at 400MMOC 89mm ACOUSTIC INSULATION 16mm GYPSUM BOARD
P45	STC 56 NRC TL-92-421	- -	156	PARTITION WITH INSULATION 16mm GYPSUM BOARD 16mm GYPSUM BOARD 92mm METAL STUDS at 400MMOC 89mm ACOUSTIC INSULATION 16mm GYPSUM BOARD 16mm GYPSUM BOARD
P46	STC 60 NRC TL-94-020		178	PARTITION WITH INSULATION 16mm GYPSUM BOARD 16mm GYPSUM BOARD 92mm METAL STUDS at 400MMOC 89mm ACOUSTIC INSULATION 22mm RESILIENT CHANNEL 16mm GYPSUM BOARD 16mm GYPSUM BOARD

RATED PARTITION TYPES

TYPE	STC	FRR	ASSEMBLY	DESCRIPTION
PR30	STC 40	60 W453	124	60 min. PARTITION 16mm Fire Rated Gypsum Board 92mm Metal Studs 16mm Fire Rated Gypsum Board
PR31	STC 47	60 MIN. ULC W453	124	60 MIN.PARTITION 16mm FIRE RATED GYPSUM BOARD 92mm METAL STUDS AT 600mm OC 89mm ACOUSTIC INSULATION 16mm FIRE RATED GYPSUM BOARD
PR40	STC 50	60 W453	140	60 min. PARTITION 16mm FIRE RATED GYPSUM BOARD 16mm FIRE RATED GYPSUM BOARD 92mm METAL STUDS AT 600mm OC 89mm ACOUSTICAL INSULATION 16mm FIRE RATED GYPSUM BOARD
PR40	STC 50	60 W453	140	60 min. PARTITION 16mm FIRE RATED GYPSUM BOARD 16mm FIRE RATED GYPSUM BOARD 92mm METAL STUDS AT 600mm OC 89mm ACOUSTICAL INSULATION 16mm FIRE RATED GYPSUM BOARD
PR51	STC 51	60 MIN. ULC W453	184	60 min. PARTITION 16mm FIRE RATED GYPSUM BOARD 152mm METAL STUDS AT 600mm OC 150mm ACOUSTICAL INSULATION 16mm FIRE RATED GYPSUM BOARD
PR52	STC 56 USG 840818	120 MIN. ULC W453	216	60 min. PARTITION 16mm FIRE RATED GYPSUM BOARD 16mm FIRE RATED GYPSUM BOARD 152mm METAL STUDS AT 600mm OC 150mm ACOUSTICAL INSULATION 16mm FIRE RATED GYPSUM BOARD 16mm FIRE RATED GYPSUM BOARD

CEILING TYPES

TYPE	STC	FRR	ASSEMBLY	DESCRIPTION
GBC2	-	-		**Suspended Gypsum Board Ceiling** 38mm Suspended Steel Channels at Max 600mm OC 22mm Steel Furring Channel at Max 400mm OC 16mm Gypsum Board
ACT1	-	-		**Acoustic Ceiling Tile in Tile Suspension System** Acoustic Ceiling Tile (#) T-Bar Suspension System

SHAFTWALL TYPES

TYPE	STC	FRR	ASSEMBLY	DESCRIPTION
PS11	STC 39	60 ULC W452 System A	116	60 MIN. VERTICAL SHAFTWALL PARTITION 16mm FIRE RATED GYPSUM BOARD 102mm MIN. CH STUD 25.4mm GYPSUM LINER PANEL
PS12	STC 39	60 ULC S101	132	60 MIN. HORIZONTAL SHAFTWALL PARTITION 2 LAYERS 16mm FIRE RATED GYPSUM LINER PANELS 102mm MIN. CH STUD 25GA 25.4mm GYPSUM LINER PANEL

INTERIOR FURRING TYPES

TYPE	STC	FRR	ASSEMBLY	DESCRIPTION
F03	-	- -	38	FURRING 16mm GYPSUM BOARD 22mm METAL HAT FURRING CHANNEL SUBSTRATE (REFER TO DRAWINGS)
F10G	-	- -	57	16mm Gypsum Board 41mm Metal Stud Substrate (Refer to Drawings)
F20G	-	- -	80	16mm Gypsum Board 64mm Metal Studs Substrate (Refer to Drawings)

RATED COLUMN TYPES

TYPE	STC	FRR	ASSEMBLY	DESCRIPTION
FCP1	-	60 BXUV.X528	PLAN	Corner Beads 16mm Fire Rated Gypsum Board (or 2 Layers 13mm Fire Rated Gypsum Board Based on Steel Member Size) 41mm x 34mm Steel Stud HSS Column, See Structural

GENERAL NOTES

Partitions

1. Gypsum Board Partitions and Furring:

1.1 Extend Gypsum Board Partitions Full Height to U/S of Floor or Roof Slab Above, Unless Otherwise Indicated.
1.2 At Non-Rated Fire Separations, Acoustic and Fire Rated Partitions, Provide Joint Sealant at Perimeter Joints and All Penetrations Through Gypsum Board.
1.3 Provide Backer Plates for Handrail Support, Bumper Rails, Wall Mounted Millwork etc. Refer to Plans for Extent and Locations.
1.4 At Partitions to Receive Ceramic Tile Wall Finish Provide Tile Backer Board in Lieu of Gypsum Board Behind Tiles. Backer Board to be Fire Rated Type at Fire Rated Partitions.
1.5 At Acoustic Partitions, Recessed Electrical Boxes on Opposite Sides of Partition to be Staggered Minimum 600mm.
1.6 See Room Finish Schedule for Interior Finishes.
1.7 Height of Furring Wall to be 150mm Above Finished Ceiling Unless Otherwise Noted.
1.8 Suffixes for Gypsum Board Partitions and Furring:

Review Suffixes

- '0': Denotes Low Wall - Height Indicated on Floor Plans. Cap with GB Unless Otherwise Indicated.
- '1': Denotes Partition/Furring to Extend Min 150mm Above Finished Ceiling.
- '2': Denotes Partition/Furring to Stop at U/S of Finished Ceiling
- '3': Denotes Partition/Furring to Extend to U/S of Floor or Roof Slab Above.
- '4': Denotes Engineered Metal Support System.
- '5': Denotes Partition Acting as Guard
- '6': Denotes Partition/Furring Replaces GB With Moisture Resistant GB
- '7': Denotes Partition/Furring Replaces GB With Moisture Resistant GB on One Side Only (Refer to RFS)
- '8': Denotes Partition/Furring Replaces GB with Impact Resistant GB on One Side Only (Refer to RFS).

1.9 ULC Listings Provided for Fire Rated Partitions are for Reference Only.
Provide Appropriate Manufacturer Specific ULC Listings for Review as Required in the Specifications.

2. Concrete Masonry Unit Walls and Partitions:

2.1 All Concrete Masonry Unit Walls and Partitions to Extend to U/S of Floor or Roof Slab Above, Unless Noted Otherwise.
2.2 Provide Compressible Joint Filler Continuous at Top of All CMU Walls and Partitions, Seal Joints where Exposed. Provide Firestopping and Smoke Seals at Perimeter Joints and Penetrations in Fire Rated Partitions.
2.3 Provide Lateral Bracing at Top of CMU Walls and Partitions, Refer to Structural for Details.
2.4 Provide Reinforcement of CMU Walls and Partitions as Required by Structural.

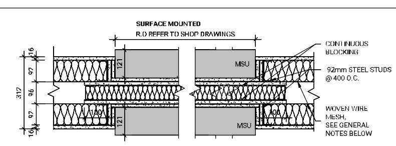
3. Fire Separations:

3.1 Refer to Fire Separation Plans - Fire Separation Requirements.
3.2 At All Fire Rated Partitions: Install Continuous Firestopping and Smoke Seals at All Perimeter Joints and Penetrations.
3.3 At Recessed Panel Installations (Eg. Electrical Panels) Within Rated Walls: Provide Continuity of the Required Rating Behind and Around the Panel.

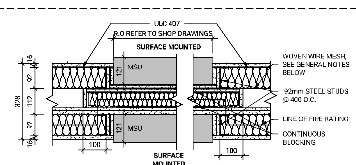
Issued

No.	Date	Description

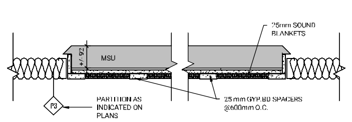
PARTITION TYP. DETAILS



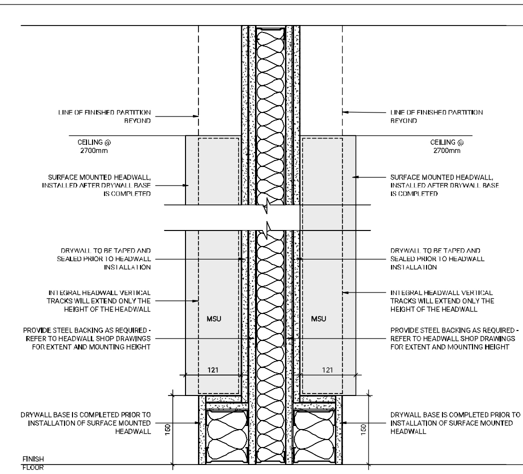
P14 - BOTH SURFACE MOUNTED HEADWALLS
HEADWALL IS ONLY SCHEMATICALLY REPRESENTED REFER TO SHOP DWGS. FOR DETAILS



P14B - FIRE RATED PARTITION - BOTH SURFACE MOUNTED HEADWALLS
HEADWALL IS ONLY SCHEMATICALLY REPRESENTED - REFER TO SHOP DWGS FOR DETAILS



HORIZONTAL HEADWALL - TYPICAL RECESSED PLAN DETAIL



PARTITION SECTIONAL DETAIL - SURFACE MOUNTED HEADWALLS

NOT FOR CONSTRUCTION

Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

INTERIOR BUILDING ELEMENTS & DETAILS

As indicated

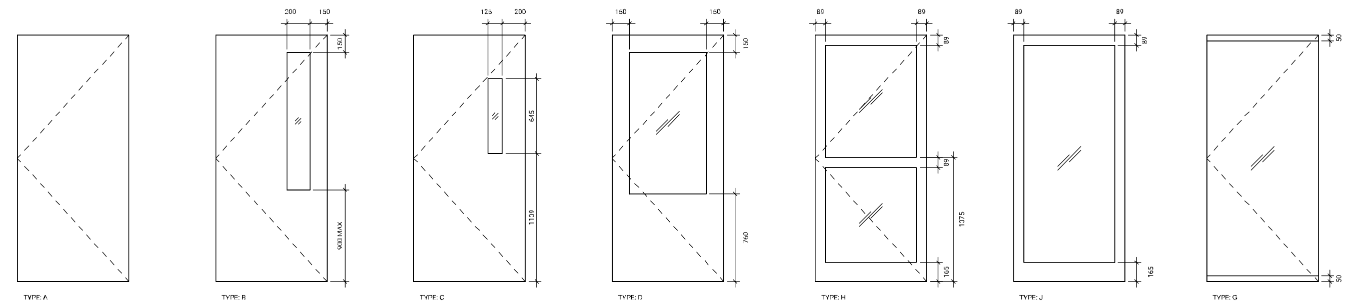
A041

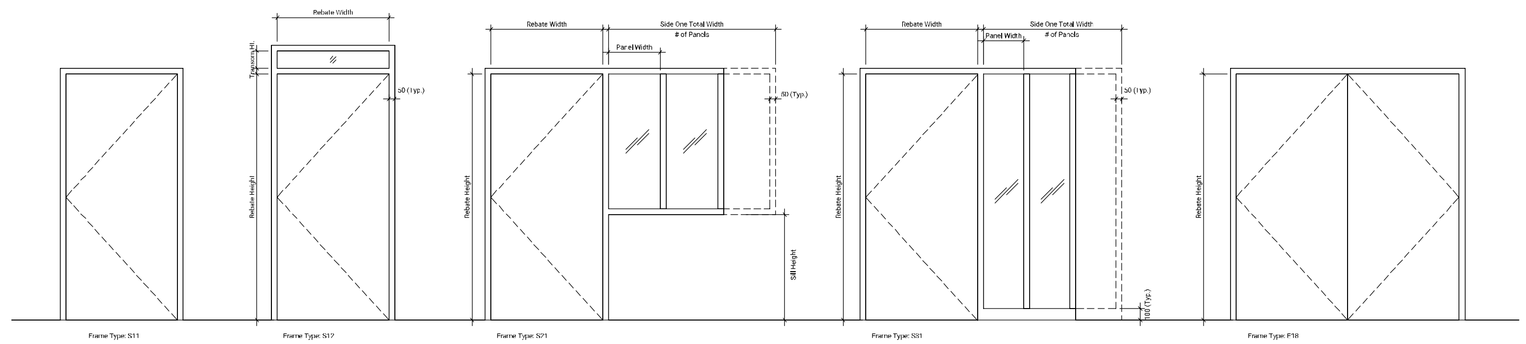
diamond schmitt

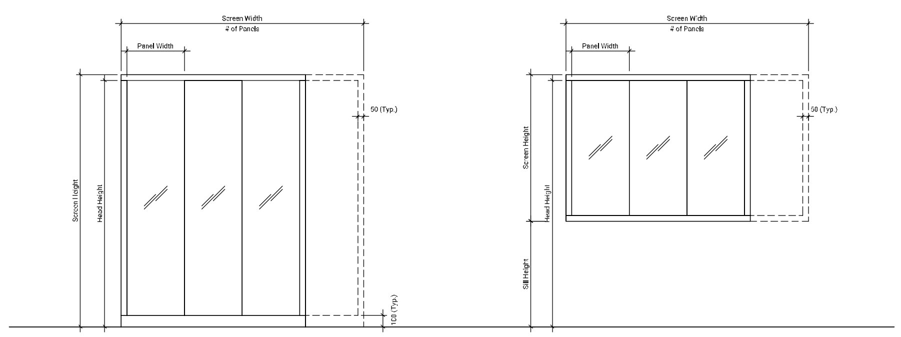
GENERAL NOTES

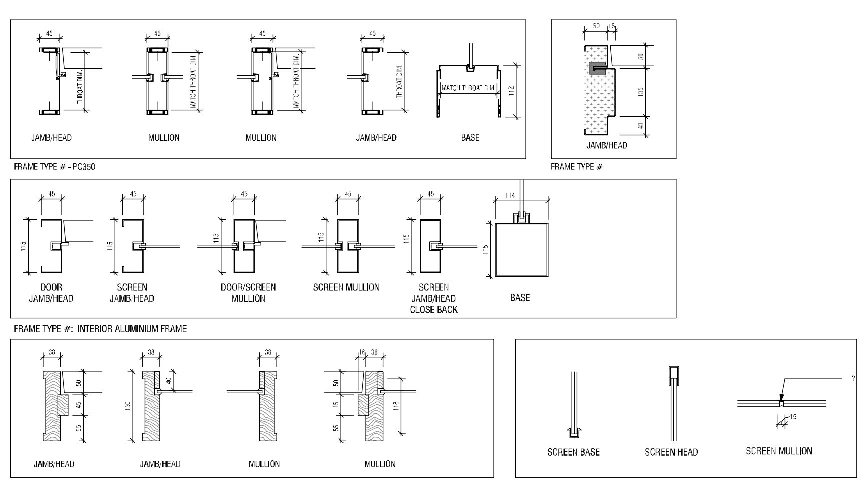
Door and Screen Schedule

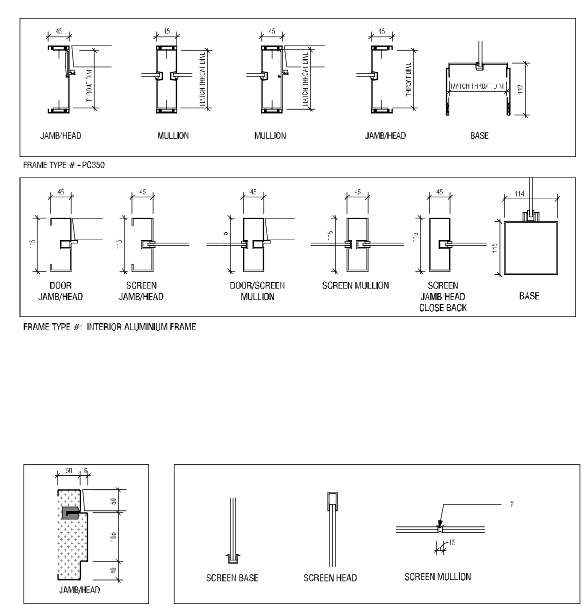
1. All Doors Scheduled to Receive Magnetic Hold Open or Automatic Door Operators Shall Have Frames Predrilled to Take Electrical Wiring.
2. All Glazing Stops to Be Located on Room Side of Frame.
3. Refer to Floor Plans for Configuration of Door & Screen Conditions.
4. Door Sizes are to be Frame Rebate Sizes Less Clearances.
5. Refer to Door Hardware Schedule for Location of Kickplatesand Door Protectors.

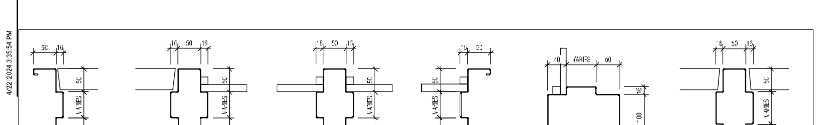












Issued

No.	Date	Description

NOT FOR CONSTRUCTION

Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

DOORS AND SCREENS TYPES

As indicated

A050

231022 DOOR SCHEDULE

Door No.	LOCATION	FIRE RATING	REBATE WIDTH	REBATE HEIGHT	PANEL THICKNESS	DOOR TYPE	DOOR MATERIAL	DOOR FINISH	DOOR GLASS	FRAME MATERIAL	FRAME FINISH	FRAME GLASS	FRAME TYPE	HARDWARE SET	ADO	CARD READER	KICKPLATE	WEATHERSTRIPPING	AS TC	COMMENTS
LEVEL 1																				
	<varies>		2134	2134	38	A/A	HM			HM				(none)						
173	Major Treatment Room AIR-Stretcher Area		2048	2134	44	J	ALUM			ALUM				(none)						
177	Examination Room		2048	2134	44	J	ALUM			ALUM				(none)						
181	Examination Room		2048	2134	44	J	ALUM			ALUM				(none)						
185	Examination Room, Enhanced Access		2048	2134	44	J	ALUM			ALUM				(none)						
201	Examination Room, Enhanced Access		2048	2134	44	J	ALUM			ALUM				(none)						
636	Airborne Isolation Room Stretcher Area		2048	2134	44	J	ALUM			ALUM				(none)						
729	Soiled Utility Room		1220	2134	38	A	HM			HM				(none)						
731	Equipment Storage Room		1220	2134	38	A	HM			HM				(none)						
877	Clean Linen Holding Room		965	2134	38	A	WD			HM				(none)						
1076	Circulation		1930	2134	38	A/A	WD			HM				(none)						
1191	Circulation		1930	2134	38	A/A	WD			HM				(none)						
1296	Ultrasound Room		1220	2134	38	A	HM			HM				(none)						
1302	BMD		1220	2134	38	A	HM			HM				(none)						
1405	GENERAL RADIOGRAPHY ROOM		1930	2134	38	A/A	HM			HM				(none)						
1552	Soiled Shipping/Linen Bay (with weigh scale)													(none)						
1619	Circulation		1930	2134	38	A/A	WD			HM				(none)						
1642	General Maintenance Shop		1930	2134	38	A/A	WD			HM				(none)						
1654	Receiving Bays, Clean													(none)						
1682	Circulation		1930	2134	38	A/A	WD			HM				(none)						
1694	Fuel Transfer Pump Room		965	2134	38	A	WD			HM				(none)						
2043	<varies>		2134	2134	38	A/A	HM			HM				(none)						
2056	Soiled Utility Room		965	2134	38	A	WD			HM				(none)						
2073	Clean Supply Room		965	2134	38	A	WD			HM				(none)						
2075	Examination Room/Fracture Room		2048	2134	44	J	ALUM			ALUM				(none)						
2121	Circulation		1930	2134	38	A/A	WD			HM				(none)						
2124	Examination Room, Gyne/Eye Exam		1220	2134	38	A	HM			HM				(none)						
2126	Staff Room		965	2134	38	A	WD			HM				(none)						
2133	Airborne Isolation Room-Anteroom		965	2134	38	A	WD			HM				(none)						
2135	Airborne Isolation Room-Anteroom		965	2134	38	A	WD			HM				(none)						
2137	Airborne Isolation Room-Washroom,2pc		965	2134	38	A	WD			HM				(none)						
2139	AMBULANCE GARAGE		1930	2134	38	A/A	WD			HM				(none)						
2141	Circulation		1930	2134	38	A/A	WD			HM				(none)						
2180	Stair C.1		1220	2134	38	A	HM			HM				(none)						
2184	Circulation		965	2134	38	A	WD			HM				(none)						
2230	Med Gas Cylinder Room		965	2134	38	A	WD			HM				(none)						
2242	Washroom, Patient		1220	2134	38	A	HM			HM				(none)						
2252	Circulation		1930	2134	38	A/A	WD			HM				(none)						
2257	Room		1930	2134	38	A/A	WD			HM				(none)						
2305	WAITING AREA		1220	2134	38	A	HM			HM				(none)						
2307	STAFF ROOM		965	2134	38	A	WD			HM				(none)						
2309	OFFICE, MULTI-USE		965	2134	38	A	WD			HM				(none)						
2311	Washroom, Staff		965	2134	38	A	WD			HM				(none)						
2323	TRIAGE/REGISTRATION		1220	2134	38	A	HM			HM				(none)						
2325	Security Officer		965	2134	38	A	WD			HM				(none)						
2331	Examination Room, Mental Health		1220	2134	38	A	HM			HM				(none)						
2343	Washroom, 3pc		965	2134	38	A	WD			HM				(none)						
2361	Ultrasound Room		1220	2134	38	A	HM			HM				(none)						
2369	Trophon Room (reprocessing)		965	2134	38	A	WD			HM				(none)						
2371	Trophon Room (reprocessing)		965	2134	38	A	WD			HM				(none)						
2377	Examination Room, Gyne WC		1220	2134	38	A	HM			HM				(none)						
2379	Examination Room, Gyne WC		1220	2134	38	A	HM			HM				(none)						
2381	Circulation		1930	2134	38	A/A	WD			HM				(none)						
2388	OFFICE, SHARED		965	2134	38	A	WD			HM				(none)						
2390	Circulation		1930	2134	38	A/A	WD			HM				(none)						
2395	Major Treatment Room (2 bay)		2048	2134	44	J	ALUM			ALUM				(none)						
2399	Major Treatment Room (2 bay)		2048	2134	44	J	ALUM			ALUM				(none)						
2418	Clean Supply Room		1220	2134	38	A	HM			HM				(none)						
2428	CT Scanner		1930	2134	38	A/A	HM			HM				(none)						
2447	IT Room		965	2134	38	A	WD			HM				(none)						
2453	Circulation		1930	2134	38	A/A	WD			HM				(none)						
2456	Circulation		1930	2134	38	A/A	WD			HM				(none)						
2459	Breastfeeding Room		1220	2134	38	A	HM			HM				(none)						
2465	Washroom, Public		1220	2134	38	A	HM			HM				(none)						
2469	Washroom, Patient		1220	2134	38	A	HM			HM				(none)						
2471	Soiled Utility Room		965	2134	38	A	WD			HM				(none)						
2473	Examination Room		1220	2134	38	A	HM			HM				(none)						
2485	Staff Facilities/Team Room		965	2134	38	A	WD			HM				(none)						
2491	Stress Testing		1220	2134	38	A	HM			HM				(none)						
2495	Circulation		965	2134	38	A	WD			HM				(none)						
2503	Circulation		1930	2134	38	A/A	WD			HM				(none)						
2506	Circulation		1930	2134	38	A/A	HM			HM				(none)						
2509	Holter Hookup/ECG		1220	2134	38	A	HM			HM				(none)						
2511	Reading Room, Cardiologist		965	2134	38	A	WD			HM				(none)						
2513	Reading Room, Radiologist		965	2134	38	A	WD			HM				(none)						
2515	Office, Multi-Use		965	2134	38	A	WD			HM				(none)						
2517	Central Work Area		965	2134	38	A	WD			HM				(none)						
2527	PFT Lab		1220	2134	38	A	HM			HM				(none)						
2544	Room		965	2134	38	A	WD			HM				(none)						
2552	Flammable Storage		965	2134	38	A	WD			HM				(none)						
2558	Oxygen Storage		965	2134	38	A	WD			HM				(none)						
2560	Circulation		965	2134	38	A	WD			HM				(none)						
2562	Oxygen Cylinder Room		965	2134	38	A	WD			HM				(none)						
2564	Circulation		965	2134	38	A	WD			HM				(none)						
2566	Biomedical Engineering Workroom		1930	2134	38	A/A	WD			HM				(none)						
2574	Recycling Holding Rooms		965	2134	38	A	WD			HM				(none)						
2594	Secure Storage		965	2134	38	A	WD			HM				(none)						
2602	Office		965	2134	38	A	WD			HM				(none)						
2603	Refrigeration-Walk-In Cooler: Compost Organics		965	2134	38	A	WD			HM				(none)						
2607	General Maintenance Shop		1930	2134	38	A/A	WD			HM				(none)						
2612	Storage/Holding Room (Clean)		1930	2134	38	A/A	WD			HM				(none)						
2619	General Maintenance Shop		1930	2134	38	A/A	WD			HM				(none)						
2628	Electrical Room		965	2134	38	A	WD			HM				(none)						
2640	Stores		1930	2134	38	A/A	WD			HM				(none)						
2643	General Maintenance Shop		965	2134	38	A	WD			HM				(none)						
2675	<varies>		<varies>	<varies>	<varies>	<varies>	<varies>			<varies>				(none)						
2676	Electric Riser		965	2134	38	A	WD			HM				(none)						
2679	Laundry Room		1930	2134	38	A/A	WD			HM				(none)						
2681	Examination Room		1220	2134	38	A	HM			HM				(none)						
2682	Circulation		1930	2134	38	A/A	WD			HM				(none)						
2683	MAIN HOUSEKEEPING		965	2134	38	A	WD			HM				(none)						
2685	Circulation		1220	2134	38	A	HM			HM				(none)						
2687	Heavy Equipment Charging/Holding Room		1930	2134	38	A/A	WD			HM				(none)						
2710	SHELLED SPACE (KITCHEN) TBC		965	2134	38	A	WD			HM				(none)						
2718	IT DEMARCATION ROOM #1		965	2134	38	A	WD			HM				(none)						
2720	<varies>		965	2134	38	A	WD			HM				(none)						
2722	Reading Room / Observation		965	2134	38	A	WD			HM				(none)						
2726	CARE TEAM STATION		1220	2134	38	A	HM			HM				(none)						
2734	Echocardiography		1220	2134	38	A	HM			HM				(none)						
2736	Holter Scanning		1220	2134	38	A	HM			HM				(none)						
2738	Shelled Future Office		965	2134	38	A	WD			HM				(none)						
2744	Circulation		1220	2134	38	A	HM			HM				(none)						
2764	Washroom, Patient		1220	2134	38	A	HM			HM				(none)						
2770	Circulation		1220	2134	38	A	HM			HM				(none)						
2772	EQUIPMENT STORAGE ROOM		1220	2134	38	A	HM			HM				(none)						
2780	Office, Switchboard		965	2134	38	A	WD			HM				(none)						
2782	Office, Patient Scheduling		965	2134	38	A	WD			HM				(none)						
2786	Circulation		965	2134	38	A	WD			HM				(none)						
2789	OFFICE, UNION		965	2134	38	A	WD			HM				(none)						
2795	Office/Room, Staff Wellness		965	2134	38	A	WD			HM				(none)						
2797	Circulation		965	2134	38	A	WD			HM				(none)						
2799	Office, OHS		965	2134	38	A	WD			HM				(none)						
2801	Chaplin Office		965	2134	38	A	WD			HM				(none)						
2803	Office, Patient Relations		965	2134	38	A	WD			HM				(none)						
2816	Circulation		1930	2134	38	A/A	WD			HM				(none)						
2834	Equipment Storage Room		965	2134	38	A	WD			HM				(none)						
2838	Circulation		965	2134	38	A	WD			HM				(none)						
2840	<varies>		<varies>	2134	38	A	<varies>			HM				(none)						
2842	<varies>		<varies>	2134	38	A	<varies>			HM				(none)						
2844	<varies>		<varies>	2134	38	A	<varies>			HM				(none)						
2846	Change Room		1220	2134	38	A	HM			HM				(none)						
2848	Change Room		1220	2134	38	A	HM			HM				(none)						
2850	Change Room		1220	2134	38	A	HM			HM				(none)						
2852	Change Room		1220	2134	38	A	HM			HM				(none)						
2854	<varies>		<varies>	2134	38	A	<varies>			HM				(none)						
2861	Fuel Transfer Pump Room		965	2134	38	A	WD			HM				(none)						
2871	Circulation		965	2134	38	A	WD			HM				(none)						
2883	Circulation		965	2134	38	A	WD			HM				(none)						
2885	Medication Room		1220	2134	38	A	HM			HM				(none)						
2887	Medication Room		1220	2134	38	A	HM			HM				(none)						
2889	Exam Room/Consult/Interview		1220	2134	38	A	HM			HM				(none)						
2891	Washroom, Public,		1220	2134	38	A	HM			HM				(none)						
2893	Washroom, Public		1220	2134	38	A	HM			HM				(none)						
2897	Major Treatment Room AIR-Washroom 2pc		1220	2134	38	A	HM			HM				(none)						
2899	Major Treatment Room AIR-Stretcher Area		1220	2134	38	A	HM			HM				(none)						
2901	Major Treatment Room AIR-Anteroom		1220	2134	38	A	HM			HM				(none)						
2906	Circulation		2134	2134	38	A/A	HM			HM				(none)						
2913	Circulation		1220	2134	38	A	HM			HM				(none)						
2916	Circulation		2134	2134	38	A/A	HM			HM				(none)						
2922	Morgue Body Holding		1220	2134	38	A	HM			HM				(none)						
2934	Room		1930	2134	38	A/A	HM			HM				(none)						
2936	Housekeeping Room		965	2134	38	A	WD			HM				(none)						
2938	Circulation		965	2134	38	A	WD			HM				(none)						
2940	Collection Chair/Recliner		965	2134	38	A	WD			HM				(none)						
2943	Room		1930	2134	38	A/A	HM			HM				(none)						
2951	Room		1220	2134	38	A	HM			HM				(none)						
2960	Morgue Viewing		1220	2134	38	A	HM			HM				(none)						
2968	<varies>		<varies>	2134	38	A	<varies>			HM				(none)						
2970	Washroom, Public		965	2134	38	A	WD			HM				(none)						
2972	Housekeeping Closet		965	2134	38	A	WD			HM				(none)						
2992	Washroom, Patient		1220	2134	38	A	HM			HM				(none)						
2997	Stair A.1		1220	2134	38	A	HM			HM				(none)						
2999	Stair B.1		1220	2134	38	A	HM			HM				(none)						
3021	Decontamination Room		1220	2134	38	A	HM			HM				(none)						
3025	Elevator, Service													(none)						
3026	Circulation													(none)						
3029	Distilled Water Room		965	2134	38	A	WD			HM				(none)						
3033	Main Entrance Circulation													(none)						
3034	Main Entrance Circulation													(none)						
3035	IT Demarcation Room #1		965	2134	38	A	WD			HM				(none)						
3038	On-call Washroom, 3-pc		965	2134	38	A	WD			HM				(none)						
3040	Examination Room, Enhanced Access		1500	2134	38	A/A	WD			HM				(none)						
3042	Washroom, Public, Universal		1220	2134	38	A	HM			HM				(none)						
3043	CT and Gen Rad Control		965	2134	38	A	WD			HM				(none)						
3047	Meeting/Lounge		965	2134	38	A	WD			HM				(none)						
3049	Meeting/Lounge		965	2134	38	A	WD			HM				(none)						
3051	Unassigned		965	2134	38	A	WD			HM				(none)						
3061	Treatment Room		965	2134	38	A	WD			HM				(none)						
3075	EXAMINATION ROOM		1220	2134	38	A	HM			HM				(none)						
3081	Circulation		1220	2134	38	A	HM			HM				(none)						
3083	Meeting/Lounge		965	2134	38	A	WD			HM				(none)						
3089	Clean Supply Room		1220	2134	38	A	HM			HM				(none)						
3091	Washroom, Public		965	2134	38	A	WD			HM				(none)						
3093	Washroom, Patient, 3pc		1220	2134	38	A	HM			HM				(none)						
3095	Office		965	2134	38	A	WD			HM				(none)						
3109	Circulation		1930	2134	38	A/A	WD			HM				(none)						
3112	Room		1930	2134	38	A/A	WD			HM				(none)						
3117	Washroom, Staff		965	2134	38	A	WD			HM				(none)						
3127	ELECTRICAL ROOM		965	2134	38	A	WD			HM				(none)						
3132	Washroom, Staff		965	2134	38	A	WD			HM				(none)						
3134	CT Equipment Room		965	2134	38	A	WD			HM				(none)						
3169	Circulation		1220	2134	38	A	HM			HM				(none)						
3173	OFFICE, IPAC		965	2134	38	A	WD			HM				(none)						
3252	Sharps Collection Boxes and Exchange Cart Holding		1930	2134	38	A/A	WD			HM				(none)						
3255	Equipment Cleaning Area		965	2134	38	A	WD			HM				(none)						
3257	Storage/Holding Room (Soiled)		1930	2134	38	A/A	WD			HM				(none)						
3260	Storage/Holding Room (Clean)		1930	2134	38	A/A	WD			HM				(none)						
3263	Circulation		965	2134	38	A	WD			HM				(none)						
3303	Washroom, Public		1220	2134	38	A	HM			HM				(none)						
3310	Lobby Circulation		1220	2134	38	A	HM			HM				(none)						
3312	Med Closet		965	2134	38	A	WD			HM				(none)						
3314	IT Room		965	2134	38	A	WD			HM				(none)						
3327	Housekeeping Closet		965	2134	38	A	WD			HM				(none)						
3334	Washroom, Public		1220	2134	38	A	HM			HM				(none)						
3341	Bedroom, On Call		965	2134	38	A	WD			HM				(none)						
3343	Fire Command Centre		965	2134	38	A	WD			HM				(none)						
3468	CT Scanner		965	2134	38	A	WD			HM				(none)						
3470	GENERAL RADIOGRAPHY ROOM		965	2134	38	A	WD			HM				(none)						
LEVEL 2																				
	Staff Facilities		1220	2134	38	A	HM			HM				(none)						
855	Circulation		965	2134	38	A	WD			HM				(none)						
857	Circulation		965	2134	38	A	WD			HM				(none)						
861	Work Counter non HD Extemporaneous Compounding		965	2134	38	A	WD			HM				(none)						
893	Narcotics Vault (Secure Storage) incl. circulation		965	2134	38	A	WD			HM				(none)						
1791	Circulation		1930	2134	38	A/A	WD			HM				(none)						
1794	Circulation		1930	2134	38	A/A	WD			HM				(none)						
1823	Circulation		1930	2134	38	A/A	WD			HM				(none)						
1826	Circulation		1930	2134	38	A/A	WD			HM				(none)						
1841	Housekeeping Closet		1100	2134	38	A	HM			HM				(none)						
1851	Equipment Storage Room(gym)		1100	2134	38	A	HM			HM				(none)						
2054	Washroom, Patient, Enhanced Access		1100	2134	38	A	HM			HM				(none)						
2115	OFFICE, SHARED		1100	2134	38	A	HM			HM				(none)						
2161	Circulation		1930	2134	38	A/A	WD			HM				(none)						
2181	Circulation		1930	2134	38	A/A	WD			HM				(none)						
2339	Circulation		1930	2134	38	A/A	WD			HM				(none)						
2341	Circulation		1930	2134	38	A/A	WD			HM				(none)						
2536	Circulation		2134	2134	38	A/A	HM			HM				(none)						
2580	Telecom Room		1100	2134	38	A	HM			HM				(none)						
2637	PANTRY		1100	2134	38	A	HM			HM				(none)						
2653	GYMNASIUM		1220	2134	38	A	HM			HM				(none)						
2659	TEAM ROOM, ALLIED HEALTH		1220	2134	38	A	HM			HM				(none)						
2661	Student Touch Down		1220	2134	38	A	HM			HM				(none)						
2671	Team Room		1100	2134	38	A	HM			HM				(none)						
2673	Consultation Room		1100	2134	38	A	HM			HM				(none)						
2697	Soiled Utility Room		1220	2134	38	A	HM			HM				(none)						
2788	Med Closet		1220	2134	38	A	HM			HM				(none)						
2798	Housekeeping Closet		1220	2134	38	A	HM			HM				(none)						
2800	Soiled Utility Room		1220	2134	38	A	HM			HM				(none)						
2802	Telecom Room		1220	2134	38	A	HM			HM				(none)						
2806	Equipment Storage Room		1220	2134	38	A	HM			HM				(none)						
2808	Medication Room		1220	2134	38	A	HM			HM				(none)						
2814	Office, Shared		1220	2134	38	A	HM			HM				(none)						
2832	Washroom Staff, 3pc		965	2134	38	A	WD			HM				(none)						
2834	Clean Supply Room		1220	2134	38	A	HM			HM				(none)						
2856	Circulation		1930	2134	38	A/A	WD			HM				(none)						
2903	Washroom, Public		965	2134	38	A	WD			HM				(none)						
2905	Washroom, Public		965	2134	38	A	WD			HM				(none)						
2943	Housekeeping Closet		965	2134	38	A	WD			HM				(none)						
2946	Stair C.2		1220	2134	38	A	HM			HM				(none)						
2964	Office		1220	2134	38	A	HM			HM				(none)						
2966	Office, Shared		1220	2134	38	A	HM			HM				(none)						
2974	Circulation		1220	2134	38	A	HM			HM				(none)						
2976	Storage (SIM)		1220	2134	38	A	HM			HM				(none)						
3002	Stair B.2		1220	2134	38	A	HM			HM				(none)						
3015	Soiled Utility Room		1220	2134	38	A	HM			HM				(none)						
3017	Electrical Room		1100	2134	38	A	HM			HM				(none)						
3023	ELEVATOR, SERVICE													(none)						
3024	Circulation													(none)						
3029	Circulation													(none)						
3030	Circulation													(none)						
3042	Storage		1220	2134	38	A	HM			HM				(none)						
3061	Washroom, Staff		965	2134	38	A	WD			HM				(none)						
3099	Circulation		1930	2134	38	A/A	WD			HM				(none)						
3102	Circulation		1930	2134	38	A/A	WD			HM				(none)						
3107	Electrical Room		1220	2134	38	A	HM			HM				(none)						
3136	Washroom, Public		965	2134	38	A	WD			HM				(none)						
3138	Storage Room, IT		965	2134	38	A	WD			HM				(none)						
3145	Office, Director		965	2134	38	A	WD			HM				(none)						
3147	Housekeeping Closet		965	2134	38	A	WD			HM				(none)						
3150	Office, Dr. HR		965	2134	38	A	WD			HM				(none)						
3157	Workroom, IT		965	2134	38	A	WD			HM				(none)						
3160	MEETING ROOM, SEATS 10-12		965	2134	38	A	WD			HM				(none)						
3163	Office, Open Hoteling		965	2134	38	A	WD			HM				(none)						
3175	DINING ROOM, MULTI-USE, SEATS 10		1100	2134	38	A	HM			HM				(none)						
3177	Circulation		1930	2134	38	A/A	WD			HM				(none)						
3182	Office		965	2134	38	A	WD			HM				(none)						
3236	Kitchen, ADL		1220	2134	38	A	HM			HM				(none)						
3238	Entry/Handwash Sink		1220	2134	38	A	HM			HM				(none)						
3240	Entry/Handwash Sink		1220	2134	38	A	HM			HM				(none)						
3242	Entry/Handwash Sink		1220	2134	38	A	HM			HM				(none)						
3244	Patient Bed Area (Semi-private)		1220	2134	38	A	HM			HM				(none)						
3246	Patient Bed Area (Semi-private)		1220	2134	38	A	HM			HM				(none)						
3248	Patient Bed Area		1220	2134	38	A	HM			HM				(none)						
3250	Patient Bed Area		1220	2134	38	A	HM			HM				(none)						
3315	Entry/Handwash Sink		1220	2134	38	A	HM			HM				(none)						
3317	Entry/Handwash Sink													(none)						
3318	Room		1220	2134	38	A	HM			HM				(none)						
3322	Entry/Handwash Sink		1220	2134	38	A	HM			HM				(none)						
3324	Entry/Handwash Sink													(none)						
3325	Room		1220	2134	38	A	HM			HM				(none)						
3329	Entry/Handwash Sink		1220	2134	38	A	HM			HM				(none)						
3331	Entry/Handwash Sink													(none)						
3332	Room		1220	2134	38	A	HM			HM				(none)						
3336	Entry/Handwash Sink		1220	2134	38	A	HM			HM				(none)						
3338	Entry/Handwash Sink													(none)						
3339	Room		1220	2134	38	A	HM			HM				(none)						
3355	Washroom, 3pc		1500	2134	38	A/A	WD			HM				(none)						
3357	Entry/Handwash Sink		1500	2134	38	A/A	WD			HM				(none)						
3359	Room		1220	2134	38	A	HM			HM				(none)						
3361	Bed Area AIR		1220	2134	38	A	HM			HM				(none)						
3363	Bed Area AIR		1220	2134	38	A	HM			HM				(none)						
3365	Room		1220	2134	38	A	HM			HM				(none)						
3368	Entry/Handwash Sink													(none)						
3369	Entry/Handwash Sink													(none)						
3370	Entry/Handwash Sink													(none)						
3371	Entry/Handwash Sink													(none)						
3372	Entry/Handwash Sink		1220	2134	38	A	HM			HM				(none)						
3374	Entry/Handwash Sink													(none)						
3375	Room		1220	2134	38	A	HM			HM				(none)						
3377	Entry/Handwash Sink													(none)						
3378	Entry/Handwash Sink		1220	2134	38	A	HM			HM				(none)						
3380	Entry/Handwash Sink													(none)						
3381	Circulation		1220	2134	38	A	HM			HM				(none)						
3383	Entry/Handwash Sink													(none)						
3384	Entry/Handwash Sink		1220	2134	38	A	HM			HM				(none)						
3386	Entry/Handwash Sink													(none)						
3387	Circulation		1220	2134	38	A	HM			HM				(none)						
3389	Entry/Handwash Sink													(none)						
3390	Entry/Handwash Sink		1220	2134	38	A	HM			HM				(none)						
3392	Entry/Handwash Sink													(none)						
3393	Circulation		1220	2134	38	A	HM			HM				(none)						
3395	Entry/Handwash Sink													(none)						
3396	Entry/Handwash Sink		1220	2134	38	A	HM			HM				(none)						
3398	Entry/Handwash Sink													(none)						
3399	Circulation		1220	2134	38	A	HM			HM				(none)						
3401	Entry/Handwash Sink													(none)						
3408	Patient Bed Area (Bariatric)		1500	2134	38	A/A	WD			HM				(none)						
3410	Circulation		1500	2134	38	A/A	WD			HM				(none)						
3412	ANTEROOM		1220	2134	38	A	HM			HM				(none)						
3414	ANTEROOM		1220	2134	38	A	HM			HM				(none)						
3416	Washroom, 3pc		1220	2134	38	A	HM			HM				(none)						
3418	Bed Area AIR		1220	2134	38	A	HM			HM				(none)						
3420	Patient Bed Area (Bariatric)		1500	2134	38	A/A	WD			HM				(none)						
3422	Circulation		1500	2134	38	A/A	WD			HM				(none)						
3424	Anteroom		1220	2134	38	A	HM			HM				(none)						
3426	Anteroom		1220	2134	38	A	HM			HM				(none)						
3428	Washroom, 3pc		1220	2134	38	A	HM			HM				(none)						
3430	Bed Area AIR		1220	2134	38	A	HM			HM				(none)						
3432	Entry/Handwash Sink		1220	2134	38	A	HM			HM				(none)						
3434	Entry/Handwash Sink													(none)						
3435	Circulation		1220	2134	38	A	HM			HM				(none)						
3437	Entry/Handwash Sink													(none)						
3438	Entry/Handwash Sink		1220	2134	38	A	HM			HM				(none)						
3440	Entry/Handwash Sink													(none)						
3441	Circulation		1220	2134	38	A	HM			HM				(none)						
3443	Entry/Handwash Sink													(none)						
PENTHOUSE LEVEL																				
1613	Stair C.3		1220	2134	38	A	HM			HM				(none)						
2776	Stair A.3		1220	2134	38	A	HM			HM				(none)						
3004	Stair B.3		1220	2134	38	A	HM			HM				(none)						
3028	MECHANICAL/ELECTRICAL PENTHOUSE													(none)						
3056	MECHANICAL/ELECTRICAL PENTHOUSE		965	2134	38	A	WD			HM				(none)						
3127	MECHANICAL/ELECTRICAL PENTHOUSE		1220	2134	38	A	HM			HM				(none)						
3308	MECHANICAL/ELECTRICAL PENTHOUSE		965	2134	38	A	WD			HM				(none)						

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Issued

No.	Date	Description

NOT FOR CONSTRUCTION

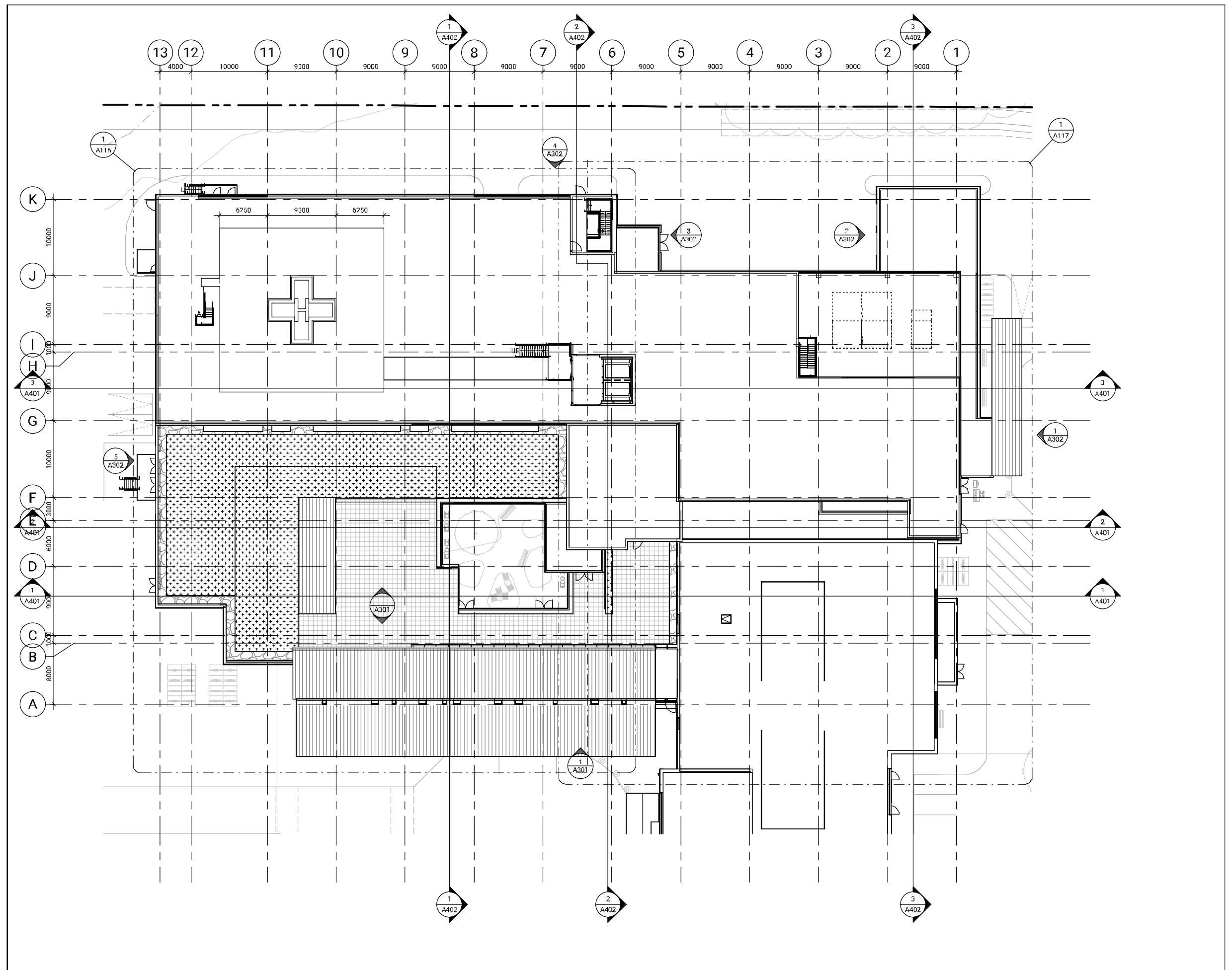
Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

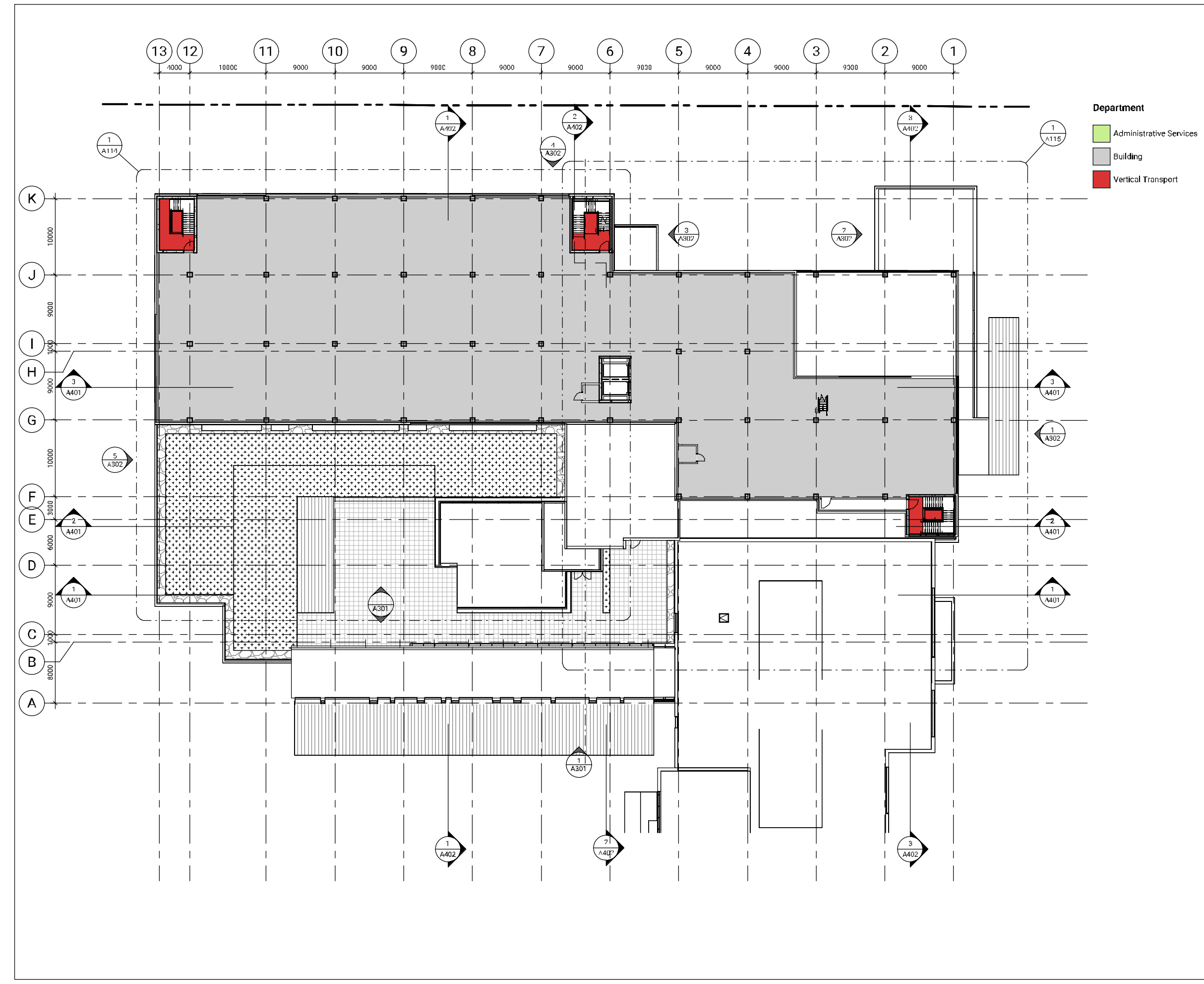
231022

DOORS AND SCREENS SCHEDULE

A051



ROOF LEVEL - OVERALL FLOOR PLAN
1 : 300



PENTHOUSE LEVEL - OVERALL FLOOR PLAN
1 : 300

LEVEL 2 - OVERALL FLOOR PLAN
1 : 300

LEVEL 1 - OVERALL FLOOR PLAN
1 : 300

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Issued

No.	Date	Description
1	2024-03-25	SD Costing

NOT FOR CONSTRUCTION

Contractor Must Check & Verify all Dimensions on the Job

Do Not Scale Drawings

This Drawing is Not to be Used for Construction Until Signed by the Architect.

Uxbridge Hospital
Oak Valley Health

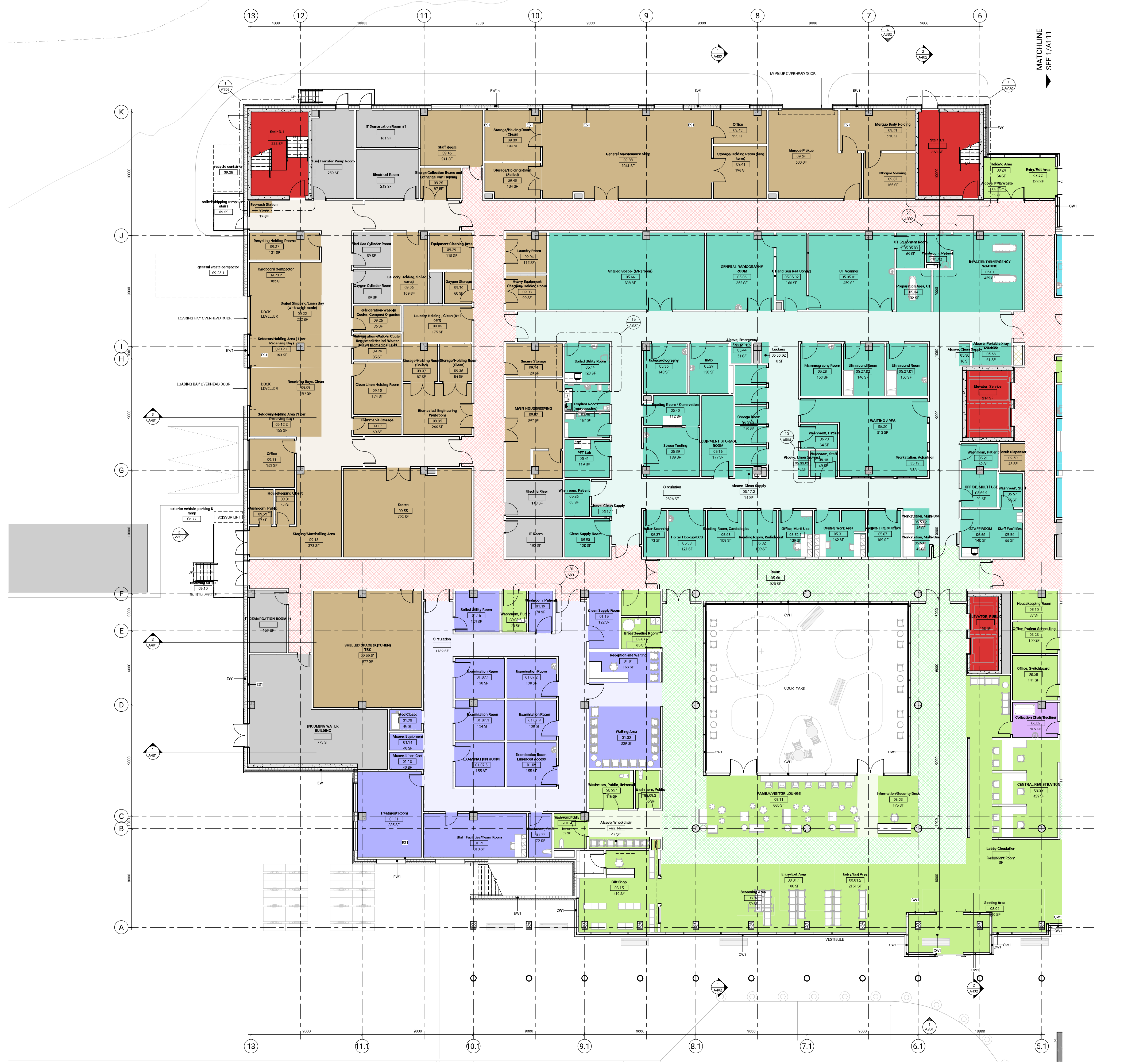
UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

211022

OVERALL FLOOR PLANS

1 : 300

A101



LEVEL 1 FLOOR PLAN - WEST

1 : 100

diamond schmitt

GENERAL NOTES

PLAN SYMBOLS

- DENOTES SLOPED ROOF INSULATION
- RD — DENOTES ROOF DRAIN
- FD — DENOTES FLOOR DRAIN
- AD — DENOTES AREA DRAIN
- HB — DENOTES HOSE BIB LOCATION
- DENOTES PROPOSED SIAMESE CONNECTION LOCATION
- DENOTES PROPOSED GAS METER LOCATION
- RWL — DENOTES RAIN WATER LEADER
- CONVEX MIRROR

GENERAL NOTES

Plans

1. REFER TO BUILDING ELEMENTS SCHEDULE FOR EXTERIOR WALL, PARTITION, ROOF, CEILING, AND SOFFIT TYPES.
2. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL REQUIREMENT.
3. AT LOCATIONS WHERE MECH. DUCTS INTERFERE WITH FULL HEIGHT CONSTRUCTION OF INTERIOR PARTITIONS, OFFSET PARTITION ABOVE CEILING AND BRACE AS REQUIRED. MAINTAIN FIRE SEPARATION/SOUND RATING OF PARTITION. OFFSETTING OF PARTITIONS WILL ONLY BE PERMITTED WHERE DUCTWORK CANNOT BE POSITIONED.
4. ALL DIMENSIONS ARE TAKEN TO FACE OF MASONRY OR CONCRETE AT MASONRY AND CONCRETE WALLS AND PARTITIONS. AT STEEL STUD PARTITIONS, DIMENSIONS ARE TAKEN TO FACE OF GYPSUM BOARD, UNLESS OTHERWISE NOTED.
5. INCREASE THICKNESS OF WALLS OR FURR OUT WALL THICKNESS AS REQUIRED TO ACCOMMODATE MECHANICAL AND ELECTRICAL PANELS AND SERVICES. MAINTAIN FIRE SEPARATION AROUND BACK OF PANELS WHERE APPLICABLE.
6. FOR DIMENSIONS OF CONCRETE REFER TO SLAB EDGE DRAWINGS.

LEGEND - DEPARTMENTS

- 01 - AMBULATORY SERVICES
- 02 - EMERGENCY DEPARTMENT
- 03 - INPATIENT SERVICES
- 05 - DIAGNOSTIC IMAGING AND CARDIORESPIRATORY SERVICES
- 06 - LABORATORY SERVICES
- 07 - PHARMACY
- 08 - ADMINISTRATIVE SERVICES
- 09 - SUPPORT SERVICES
- UNASSIGNED
- CIRCULATION - PUBLIC
- CIRCULATION - SERVICE
- VERTICAL TRANSPORT

Issued

No.	Date	Description
1	2024-03-25	SD Costing

NOT FOR CONSTRUCTION

Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

LEVEL 1 - PLAN

1 : 100

A110

LEVEL 1 FLOOR PLAN - EAST

ref.1 / A020 1 : 100

1 / A111

GENERAL NOTES

PLAN SYMBOLS

- DENOTES SLOPED ROOF INSULATION
- RD — DENOTES ROOF DRAIN
- FD — DENOTES FLOOR DRAIN
- AD — DENOTES AREA DRAIN
- HB — DENOTES HOSE BIB LOCATION
- DENOTES PROPOSED SIAMESE CONNECTION LOCATION
- DENOTES PROPOSED GAS METER LOCATION
- RWL — DENOTES RAIN WATER LEADER
- CONVEX MIRROR

GENERAL NOTES

Plans

1. REFER TO BUILDING ELEMENTS SCHEDULE FOR EXTERIOR WALL, PARTITION, ROOF, CEILING, AND SOFFIT TYPES.
2. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL REQUIREMENT.
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LEGEND - DEPARTMENTS

- 01 - AMBULATORY SERVICES
- 02 - EMERGENCY DEPARTMENT
- 03 - INPATIENT SERVICES
- 05 - DIAGNOSTIC IMAGING AND CARDIORESPIRATORY SERVICES
- 06 - LABORATORY SERVICES
- 07 - PHARMACY
- 08 - ADMINISTRATIVE SERVICES
- 09 - SUPPORT SERVICES
- UNASSIGNED
- CIRCULATION - PUBLIC
- CIRCULATION - SERVICE
- VERTICAL TRANSPORT

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Issued

No.	Date	Description
1	2024-03-25	SD Costing

NOT FOR CONSTRUCTION

Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

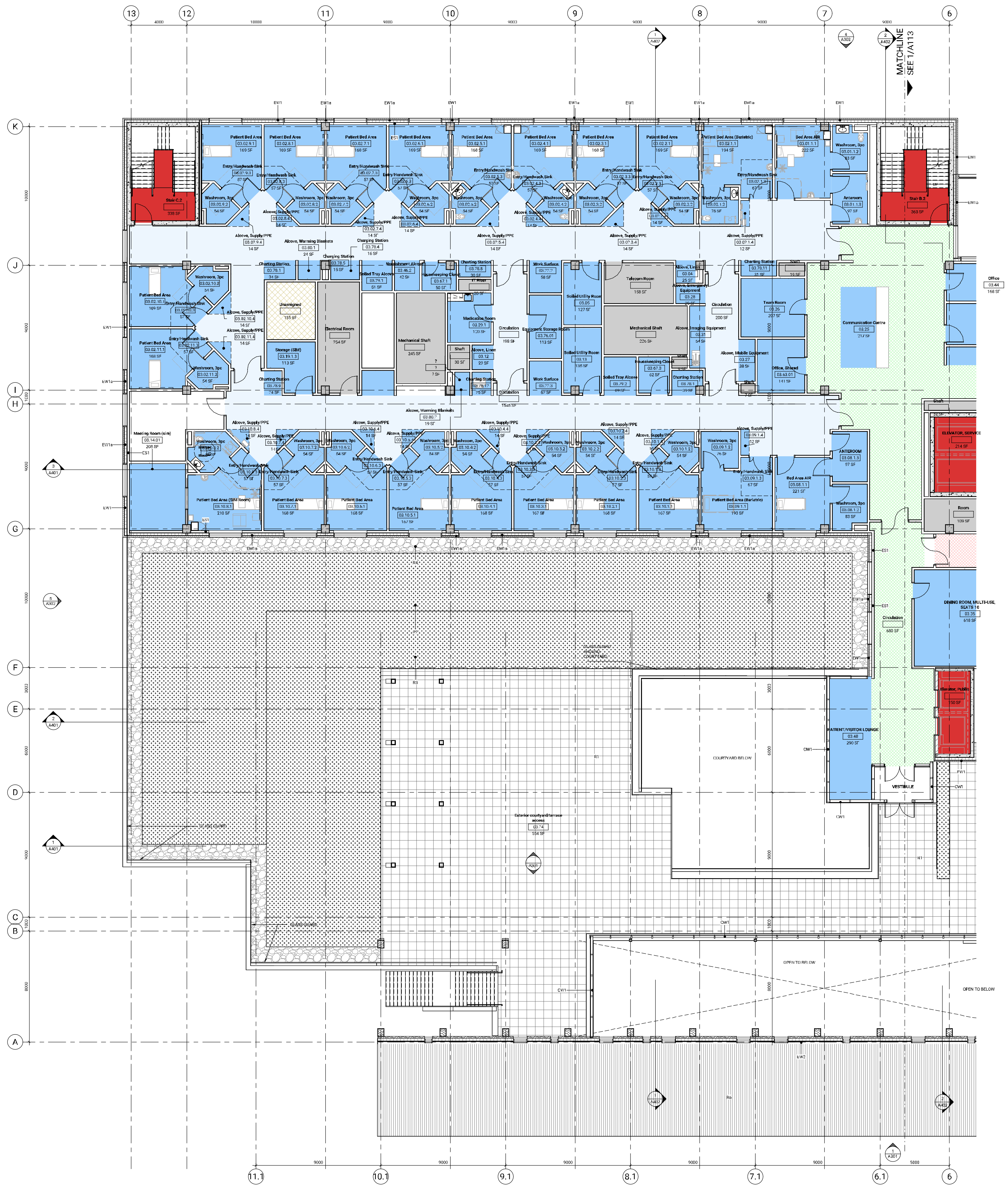
231022

LEVEL 1 - PLAN

1 : 100

A111

diamond schmitt



LEVEL 2 FLOOR PLAN - WEST

ref.1 / A020 1 : 100

GENERAL NOTES

PLAN SYMBOLS

- DENOTES SLOPED ROOF INSULATION
- RD DENOTES ROOF DRAIN
- FD DENOTES FLOOR DRAIN
- AD DENOTES AREA DRAIN
- HB DENOTES HOSE BIB LOCATION
- DENOTES PROPOSED SIAMESE CONNECTION LOCATION
- DENOTES PROPOSED GAS METER LOCATION
- RWL DENOTES RAIN WATER LEADER
- CONVEX MIRROR

GENERAL NOTES

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Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

LEVEL 2 - PLAN

1 : 100

A112

LEVEL 2 FLOOR PLAN - EAST
1 : 100

GENERAL NOTES

PLAN SYMBOLS

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- FD DENOTES FLOOR DRAIN
- AD DENOTES AREA DRAIN
- HB DENOTES HOSE BIB LOCATION
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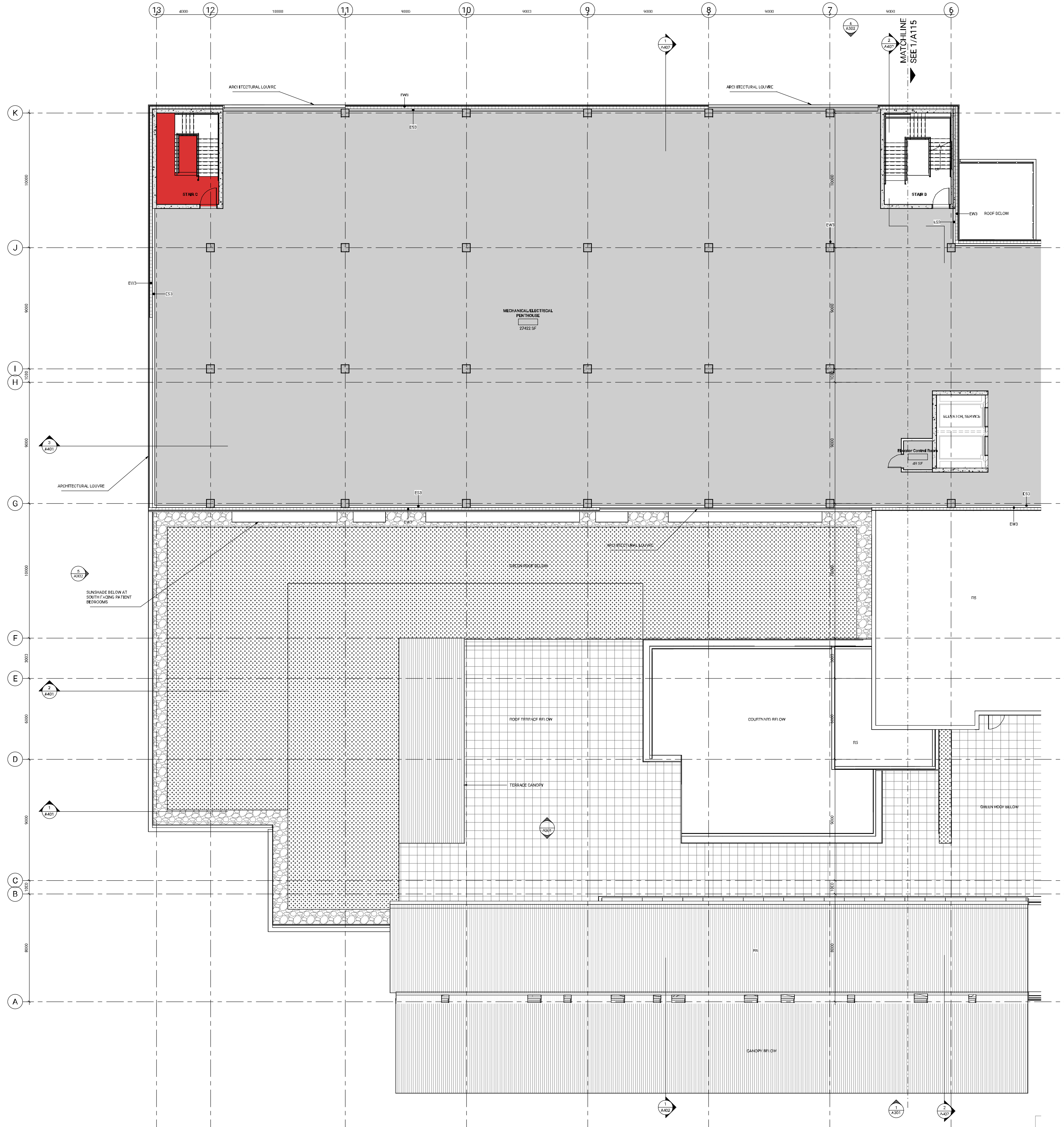
Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

LEVEL 2 - PLAN
1 : 100

A113



PENTHOUSE LEVEL FLOOR PLAN - WEST

ref.1 / A020 1 : 100 1 A114

GENERAL NOTES

PLAN SYMBOLS

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1	2024-03-25	SD Costing

NOT FOR CONSTRUCTION

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Do Not Scale Drawings

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Uxbridge Hospital
Oak Valley Health

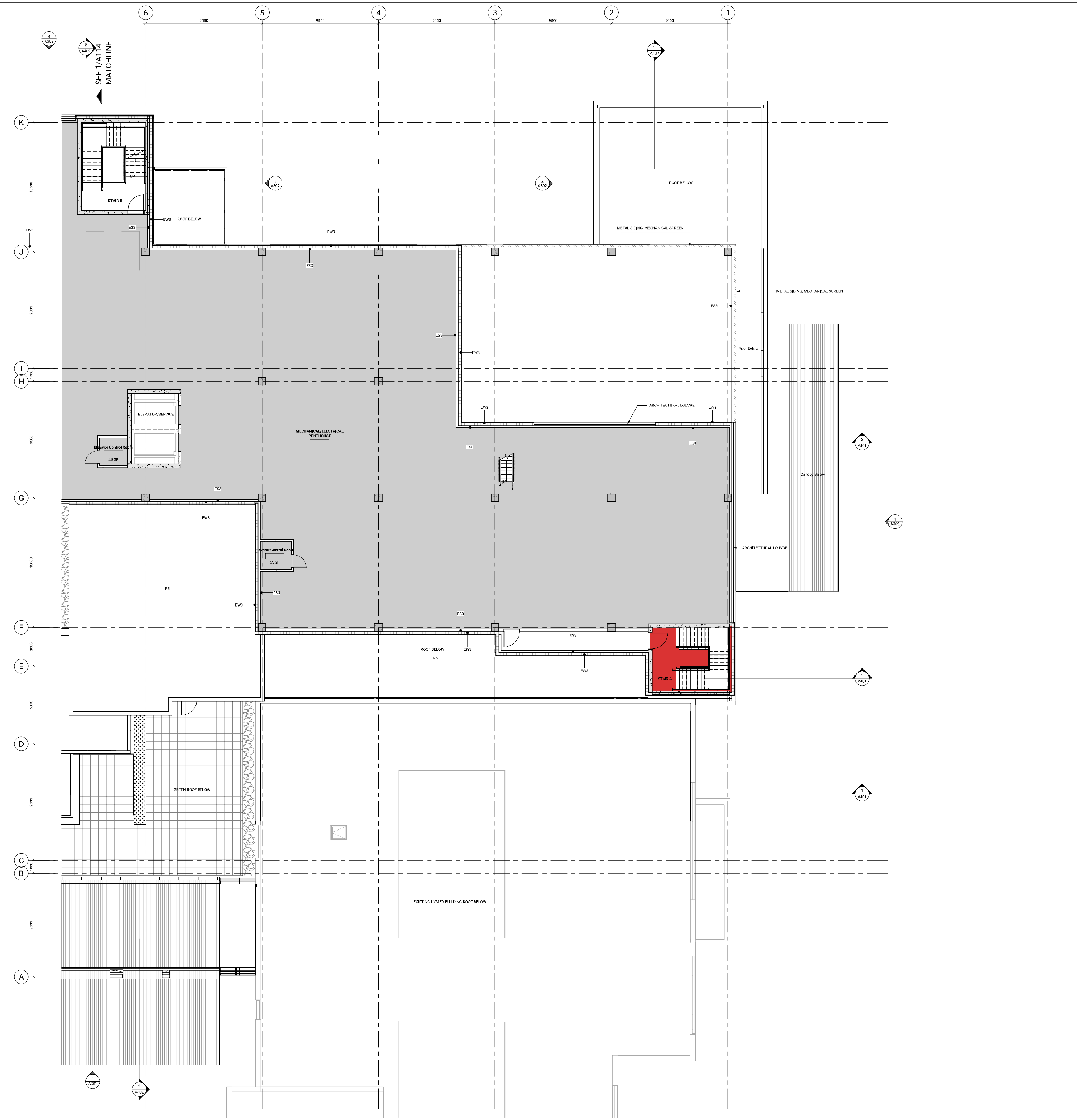
UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

PENTHOUSE LEVEL - PLAN

1 : 100

A114



PENTHOUSE LEVEL FLOOR PLAN - EAST

1 : 100

GENERAL NOTES

PLAN SYMBOLS

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Uxbridge Hospital Oak Valley Health

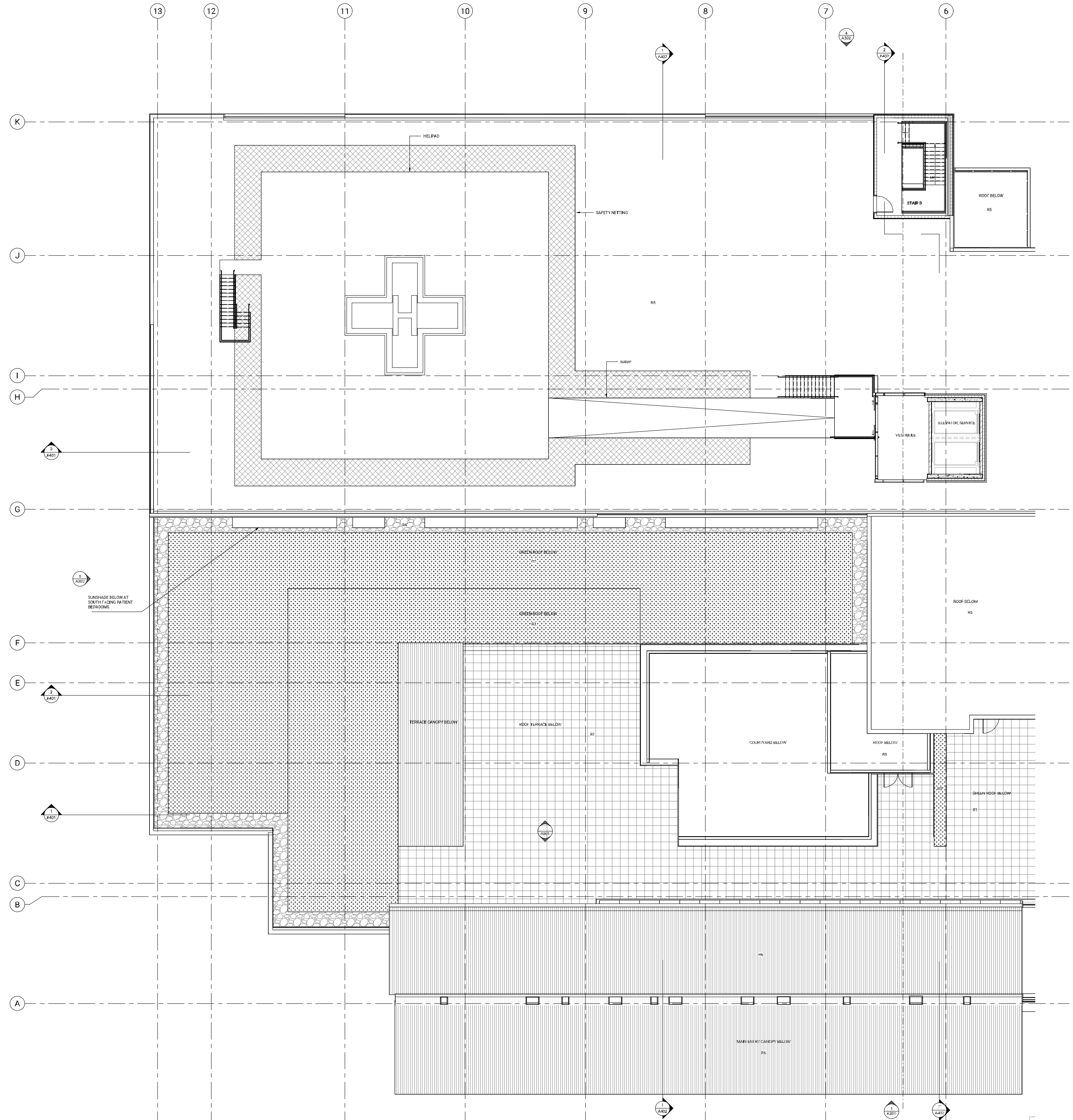
UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

PENTHOUSE LEVEL - PLAN

1 : 100

A115



ROOF LEVEL FLOOR PLAN - WEST

ref.1 / A020 1 : 100 1 A116

GENERAL NOTES

PLAN SYMBOLS

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- RD DENOTES ROOF DRAIN
- FD DENOTES FLOOR DRAIN
- AD DENOTES AREA DRAIN
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- DENOTES PROPOSED SIAMESE CONNECTION LOCATION
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GENERAL NOTES

Plans

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Uxbridge Hospital
Oak Valley Health

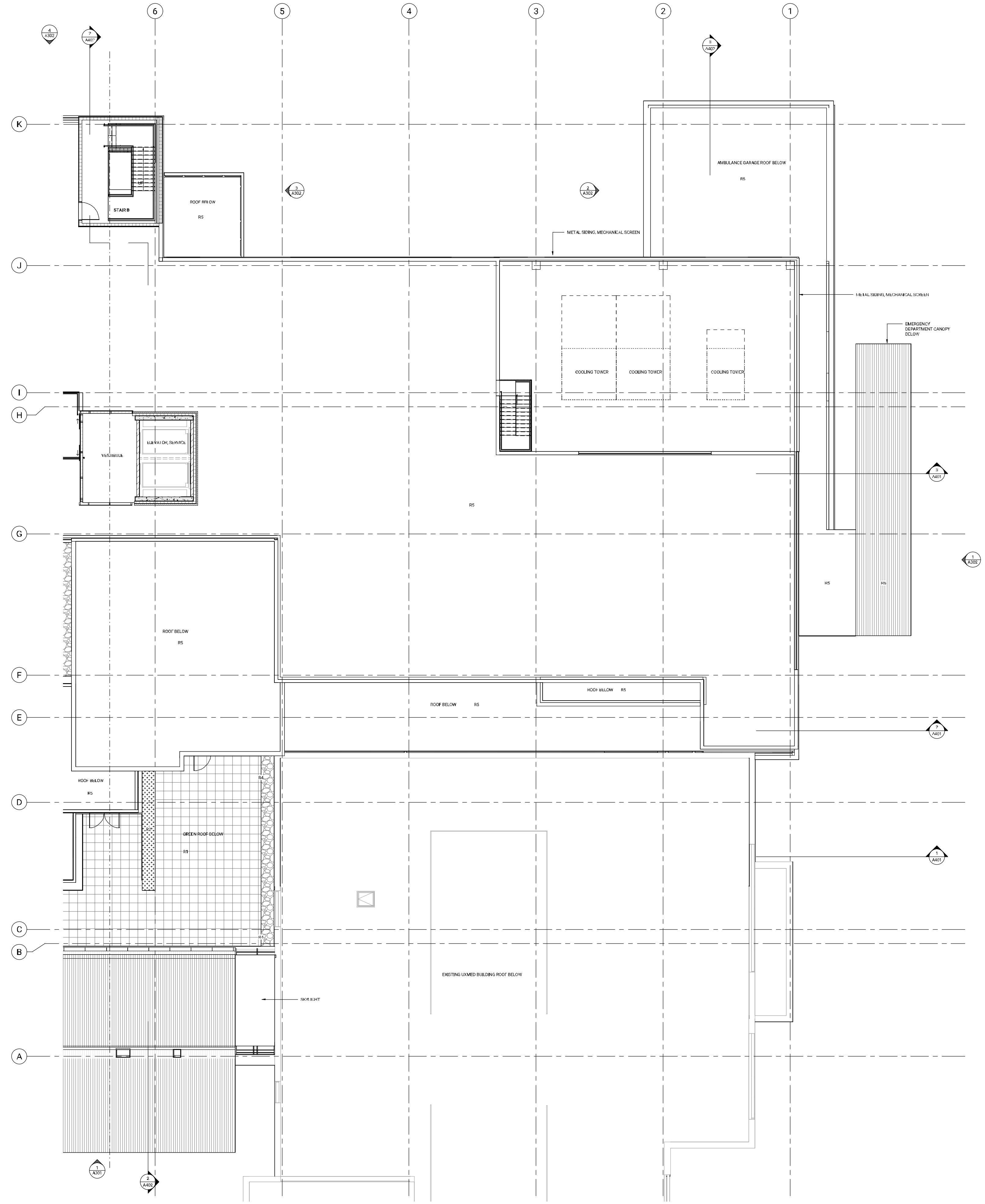
UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

ROOF LEVEL - PLAN

1 : 100

A116



ROOF LEVEL FLOOR PLAN - EAST

ref.1 / A020 1 : 100

1 / A117

GENERAL NOTES

PLAN SYMBOLS

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Uxbridge Hospital
Oak Valley Health

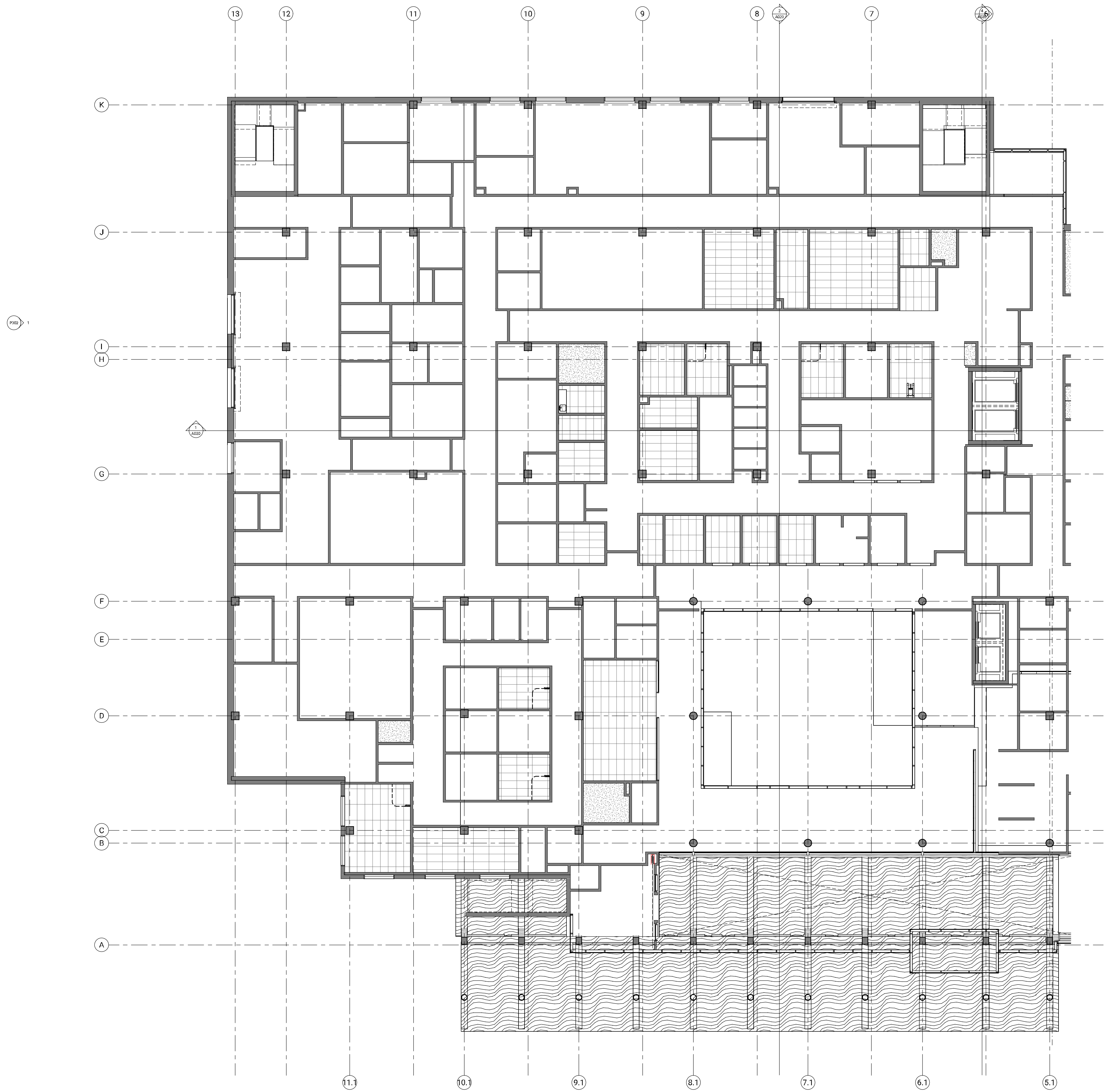
UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

ROOF LEVEL - PLAN

1 : 100

A117



GENERAL NOTES

REVIEW

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5. CONTRACTOR TO PROVIDE BLOCKING AS REQUIRED

CS2 EXPOSED SEALED CONCRETE

GBC1 16mm GYPSUM BOARD

GBC2 16mm GYPSUM BOARD HUMIDITY RESISTANT

GBC 3 2X 16mm GYPSUM BOARD WITH ACOUSTIC INSULATION

ACT1 ACOUSTIC CEILING TILES 24" X 48"

ACT2 ACOUSTIC CEILING TILES 48" X 72"

ACT3 ACOUSTIC CEILING TILES 48" X 96"

ACT4 GEOMETRIC ACOUSTIC CEILING TILES

APN1 ACOUSTIC CEILING BAFFLE

SF1.1 PRE FINISHED METAL SOFFIT PANEL

SF2.1 PARKING GARAGE SOFFIT

WS1 WINDOW ROLLER SHADE MANUAL

WS2 MOTORIZED WINDOW ROLLER SHADES

WS3 DUAL WINDOW MOTORIZED SHADE & BLACKOUT

CEILING TYPE/HEIGHT ABOVE FLOOR LEVEL

SPRINKLER HEAD - UPRIGHT

SPRINKLER HEAD - CONCEALED

SPRINKLER HEAD - PENDANT

SPRINKLER HEAD - SIDE WALL/WINDOW

SUPPLY AIR DIFFUSER

RETURN AIR DIFFUSER

LINEAR DIFFUSER

ACCESS PANEL TYP. X ADX

PROJECTION SCREEN

OCCUPANCY SENSOR

DAYLIGHT SENSOR

SPEAKER - LOW LEVEL PAGING

SPEAKER - AUDIO/VISUAL

FIRE ALARM - XENON STROBE TYPE OR EQUIVALENT

FIRE ALARM - SPEAKER HORN XENON STROBE TYPE OR EQUIVALENT

SMOKE DETECTOR

EXIT SIGN - CEILING MOUNTED

EXIT SIGN - WALL MOUNTED

CAMERA - SECURITY

CAMERA - AUDIO/VISUAL

SUSPENDED PROJECTOR (N.I.C.)

diamond schmitt

Issued

No.	Date	Description

NOT FOR CONSTRUCTION

Uxbridge Hospital
Oak Valley Health

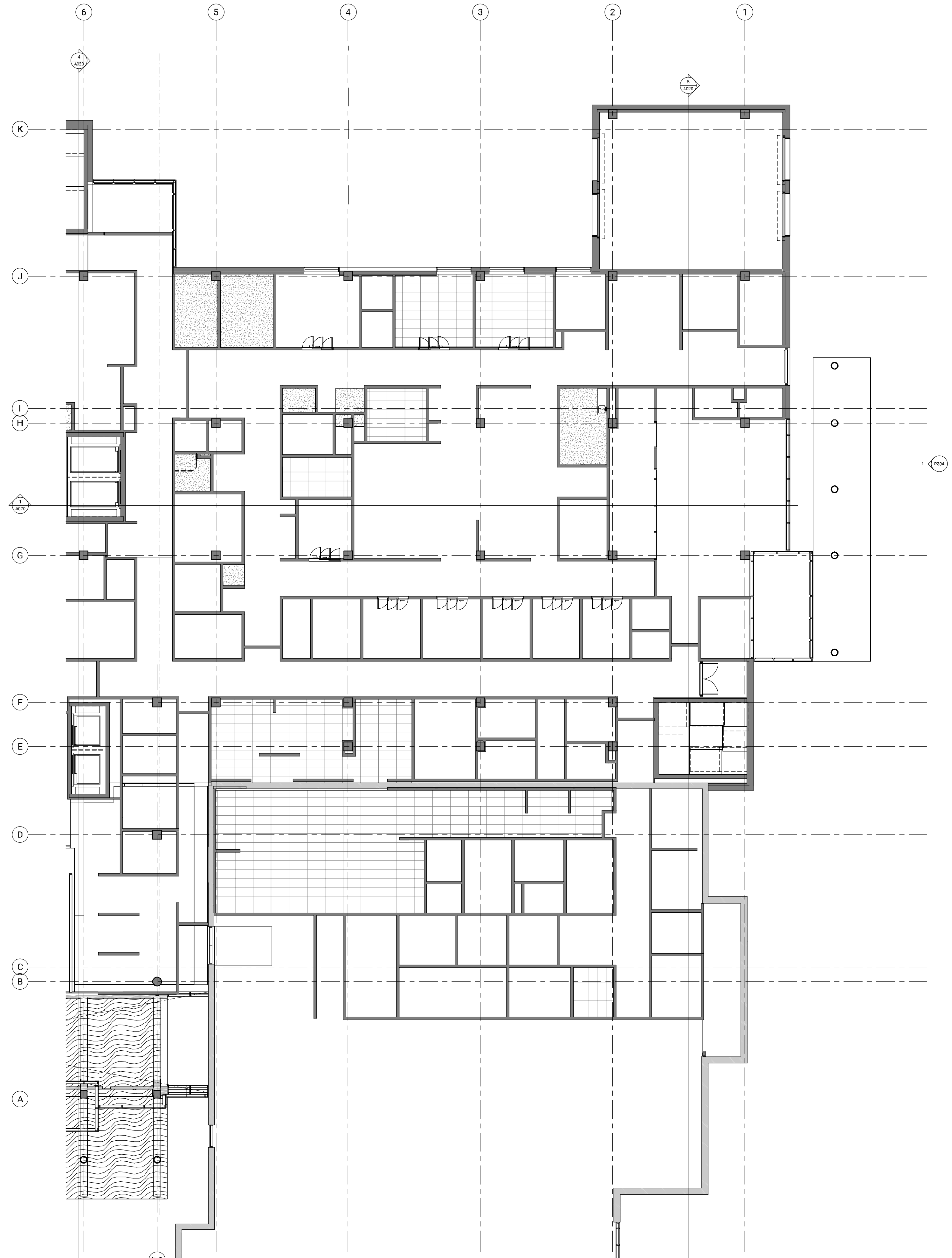
UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

Level 1 - Reflected Ceiling Plan

1 : 100

A201



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Uxbridge Hospital
Oak Valley Health

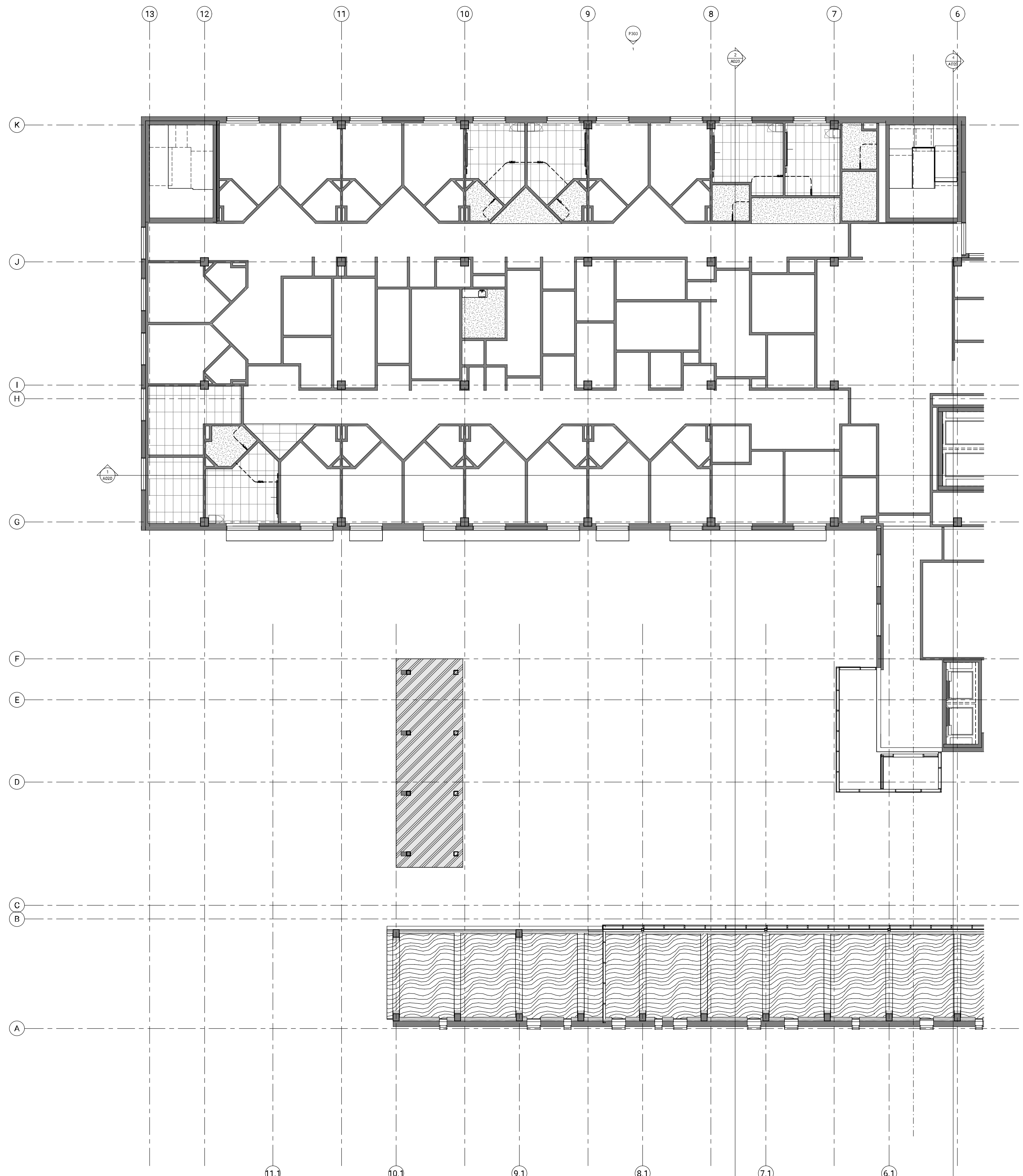
UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

Level 1 - Reflected Ceiling Plan

1 : 100

A202



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CAMERA SECURITY

CAMERA - AUDIO/VISUAL

SUSPENDED PROJECTOR (N.I.C.)

diamond schmitt

Issued

No.	Date	Description

NOT FOR CONSTRUCTION

Uxbridge Hospital
Oak Valley Health

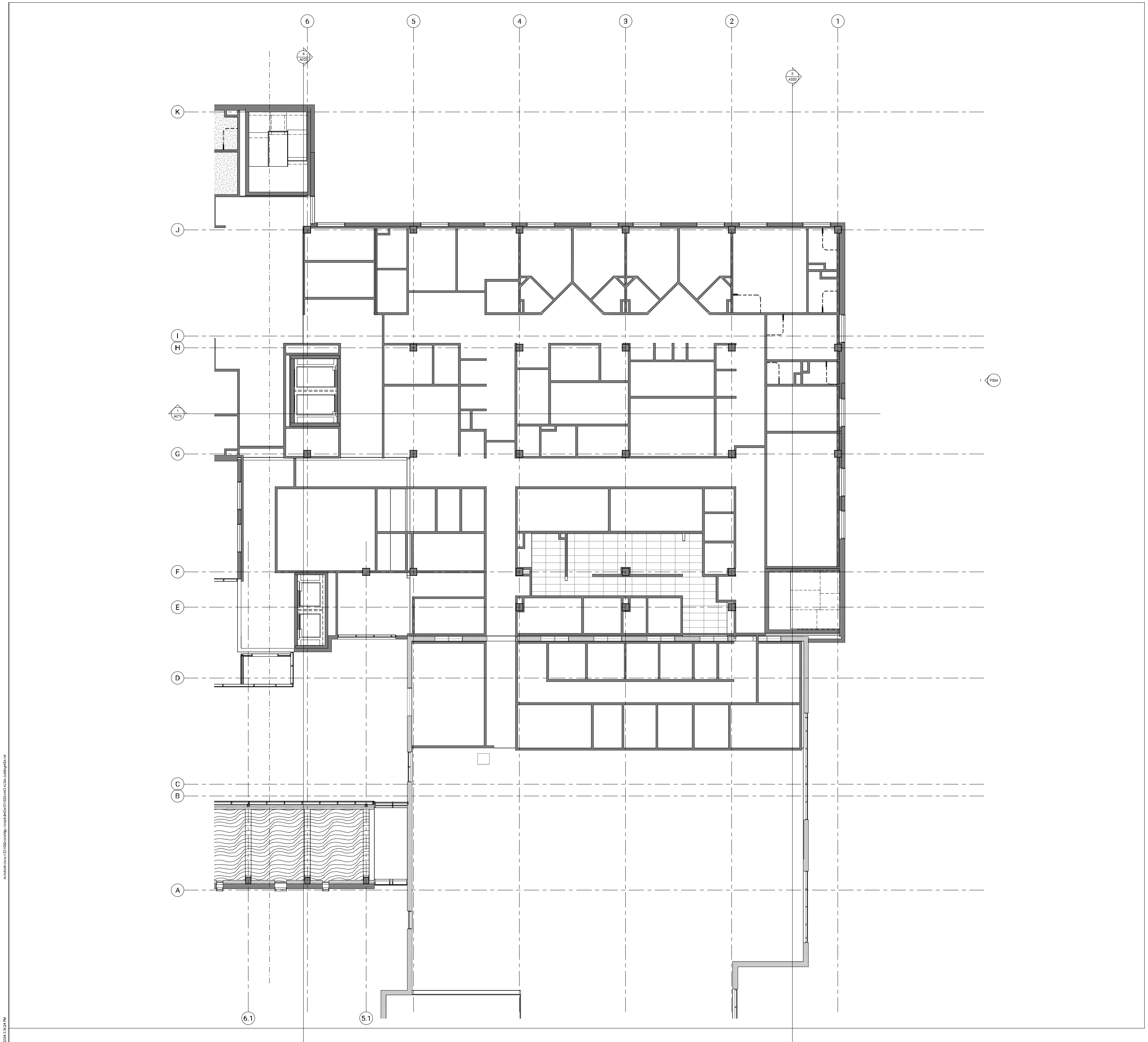
UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

Level 2 - Reflected Ceiling Plan

1 : 100

A203



GENERAL NOTES

REVIEW

REFLECTED CEILING PLANS

1. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL CEILING MOUNTED FIXTURES AND MECHANICAL AND ELECTRICAL EQUIPMENT. POSITIONING OF ALL MECHANICAL AND ELECTRICAL FIXTURES AND EQUIPMENT SHALL BE GOVERNED BY ARCHITECTURAL DRAWINGS SUBJECT TO FULL COMPLIANCE WITH CODE REQUIREMENTS. REPORT ANY DISCREPANCIES BETWEEN ENGINEERING AND ARCHITECTURAL DOCUMENTS PRIOR TO COMMENCEMENT OF WORK.
2. ALL FIXTURE LAYOUT DIMENSIONS PROVIDED ARE TO FACE OF FINISHED WALL UNLESS INDICATED OTHERWISE.
3. REFER TO ROOM FINISH SCHEDULE FOR FINISHES. EXPOSED UNDERSIDE OF SLAB , MECH./ ELECTRICAL AND OTHER ELEMENTS TO BE PAINTED. EXTEND OF PAINTED AREAS ABOVE CEILINGS SHOULD BE ABOUT 2MTS OFFSET FROM THE CEILINGS'S EDGE.
4. ALL CEILING HEIGHT TAGS ARE REFERENCED FROM TOP OF STRUCTURAL SLAB .
5. CONTRACTOR TO PROVIDE BLOCKING AS REQUIRED

CS2 EXPOSED SEALED CONCRETE

GBC1 16mm GYPSUM BOARD

GBC2 16mm GYPSUM BOARD HUMIDITY RESISTANT

GBC 3 2X 16mm GYPSUM BOARD WITH ACOUSTIC INSULATION

ACT1 ACOUSTIC CEILING TILES 24" X 48"

ACT2 ACOUSTIC CEILING TILES 48" X 72"

ACT3 ACOUSTIC CEILING TILES 48" X 96"

ACT4 GEOMETRIC ACOUSTIC CEILING TILES

APN1 ACOUSTIC CEILING BAFFLE

SF1.1 PRE FINISHED METAL SOFFIT PANEL

SF2.1 PARKING GARAGE SOFFIT

WS1 WINDOW ROLLER SHADE MANUAL

WS2 MOTORIZED WINDOW ROLLER SHADES

WS3 DUAL WINDOW MOTORIZED SHADE & BLACKOUT

CEILING TYPE/HEIGHT ABOVE FLOOR LEVEL

SPRINKLER HEAD - UPRIGHT

SPRINKLER HEAD - CONCEALED

SPRINKLER HEAD - PENDANT

SPRINKLER HEAD - SIDE WALL/WINDOW

SUPPLY AIR DIFFUSER

RETURN AIR DIFFUSER

LINEAR DIFFUSER

ACCESS PANEL TYP. X ADX

PROJECTION SCREEN

OCCUPANCY SENSOR

DAYLIGHT SENSOR

SPEAKER - LOW LEVEL PAGING

SPEAKER - AUDIO/VISUAL

FIRE ALARM - XENON STROBE TYPE OR EQUIVALENT

FIRE ALARM - SPEAKER HORN XENON STROBE TYPE OR EQUIVALENT

SMOKE DETECTOR

EXIT SIGN - CEILING MOUNTED

EXIT SIGN - WALL MOUNTED

CAMERA - SECURITY

CAMERA - AUDIO/VISUAL

SUSPENDED PROJECTOR (N.I.C.)

diamond schmitt

Issued

No.	Date	Description

NOT FOR CONSTRUCTION

Contractor Must Check & Verify all Dimensions on the Job

Do Not Scale Drawings

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Uxbridge Hospital
Oak Valley Health

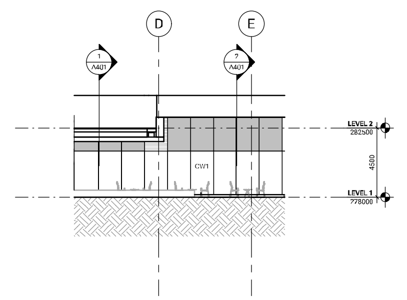
UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

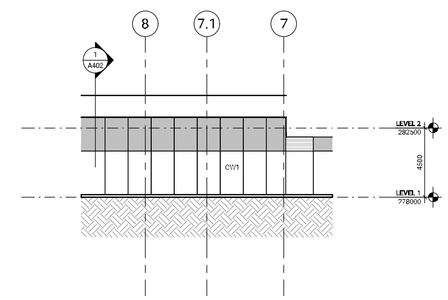
Level 2 - Reflected Ceiling Plan

1 : 100

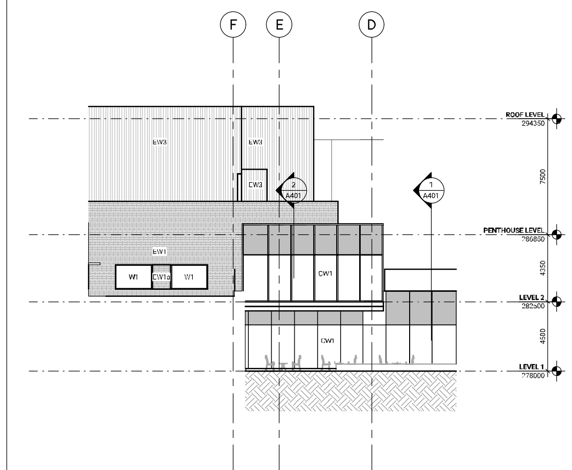
A204



COURTYARD ELEVATION LOOKING WEST
1 : 150



COURTYARD ELEVATION LOOKING NORTH
1 : 150



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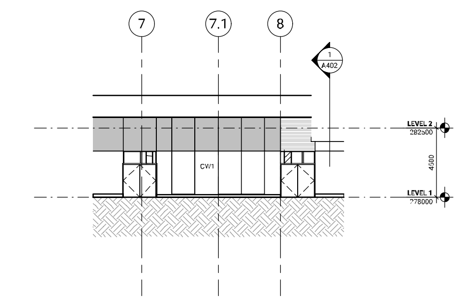

COURTYARD ELEVATION LOOKING SOUTH
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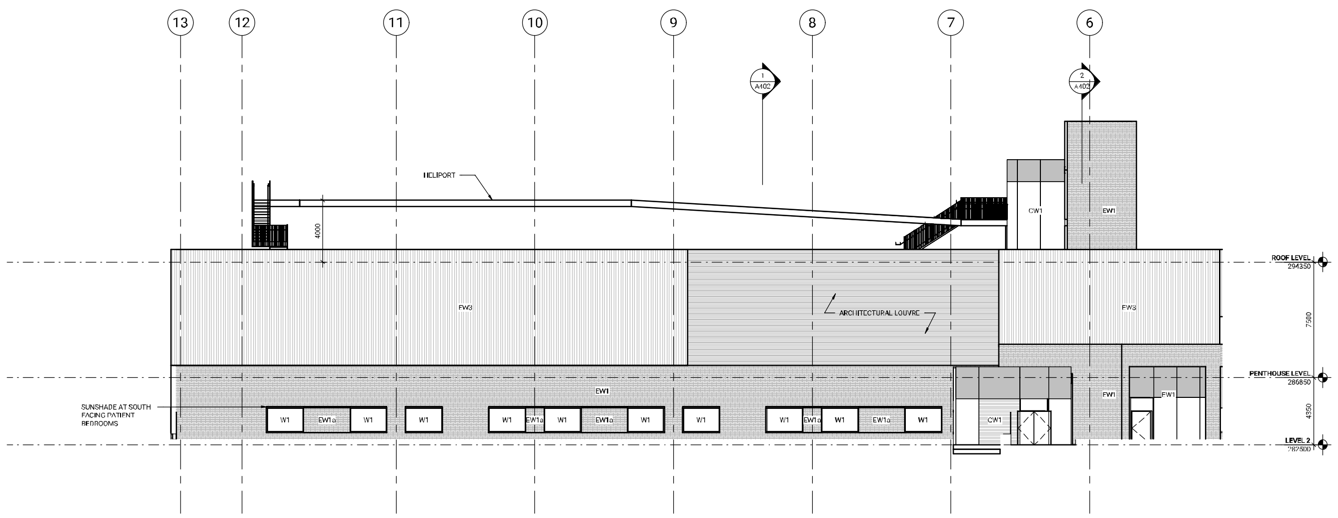
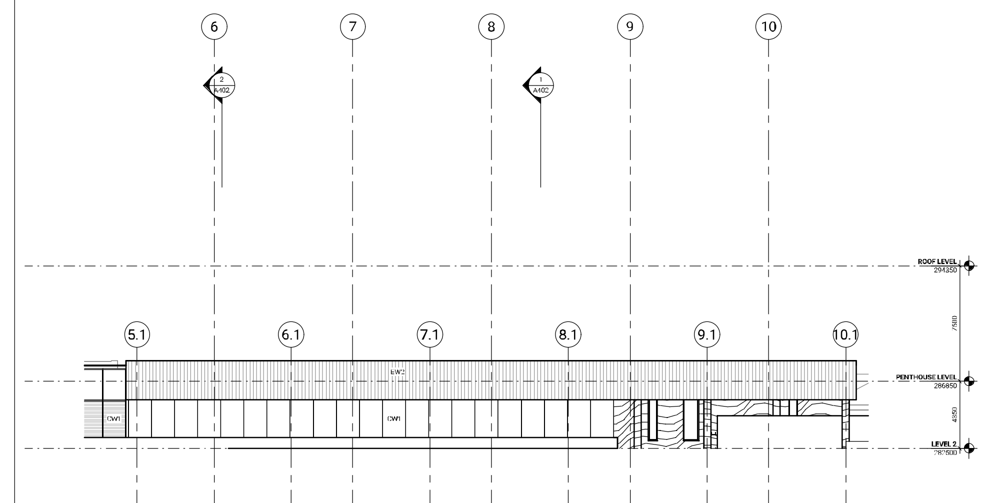


SOUTH ELEVATION AT TERRACE
1 : 150



NORTH ELEVATION AT TERRACE
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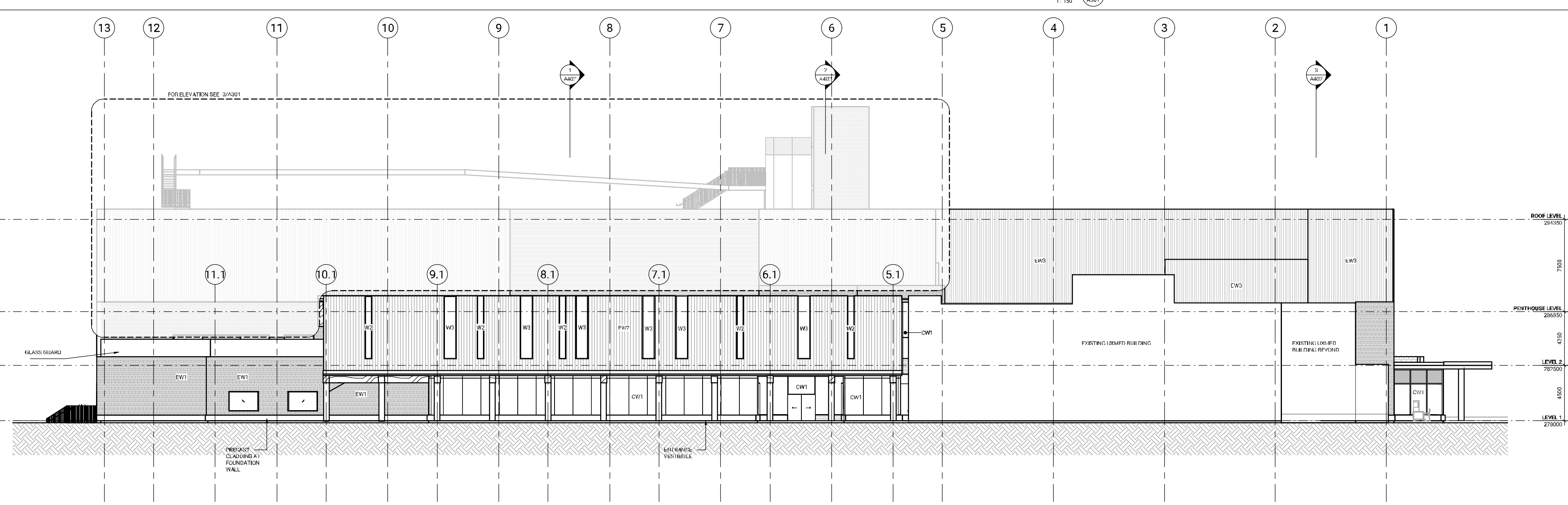

OVERALL SOUTH ELEVATION
1 : 150

Issued

No.	Date	Description
1	2024-03-25	SD Costing

NOT FOR CONSTRUCTION

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Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

Exterior Elevations

1 : 150

A301

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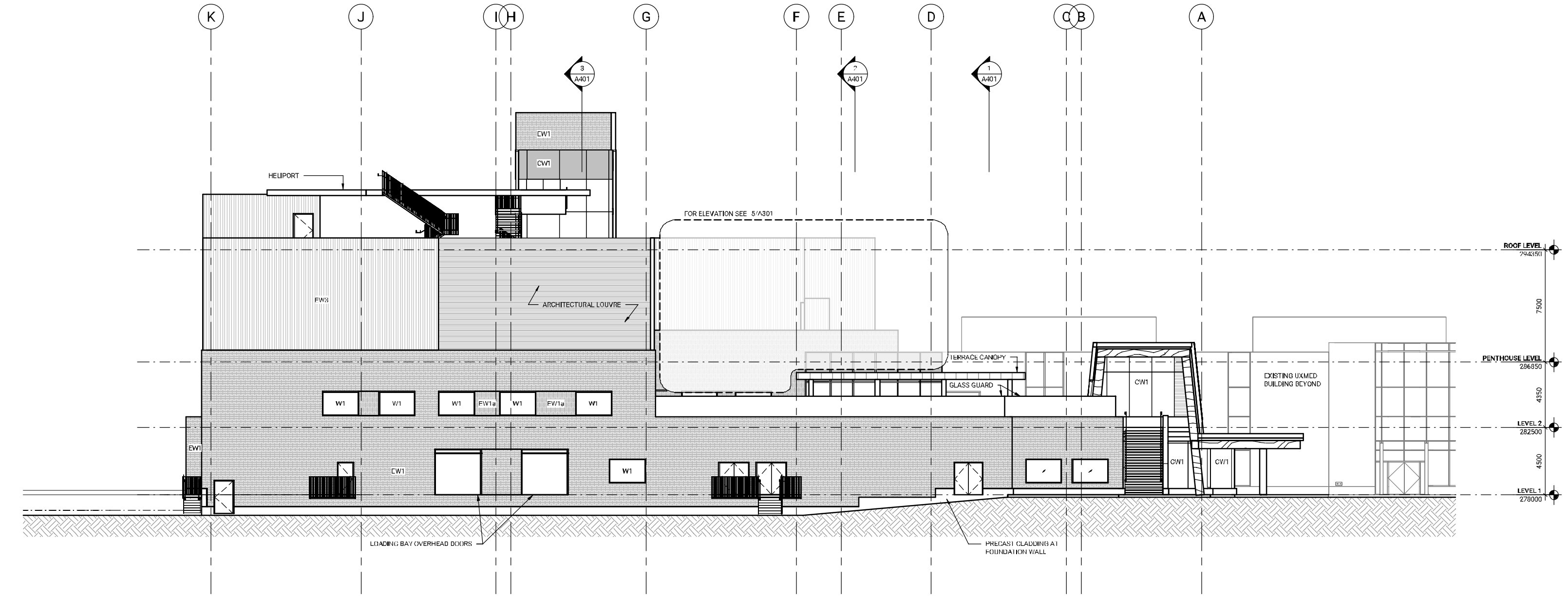
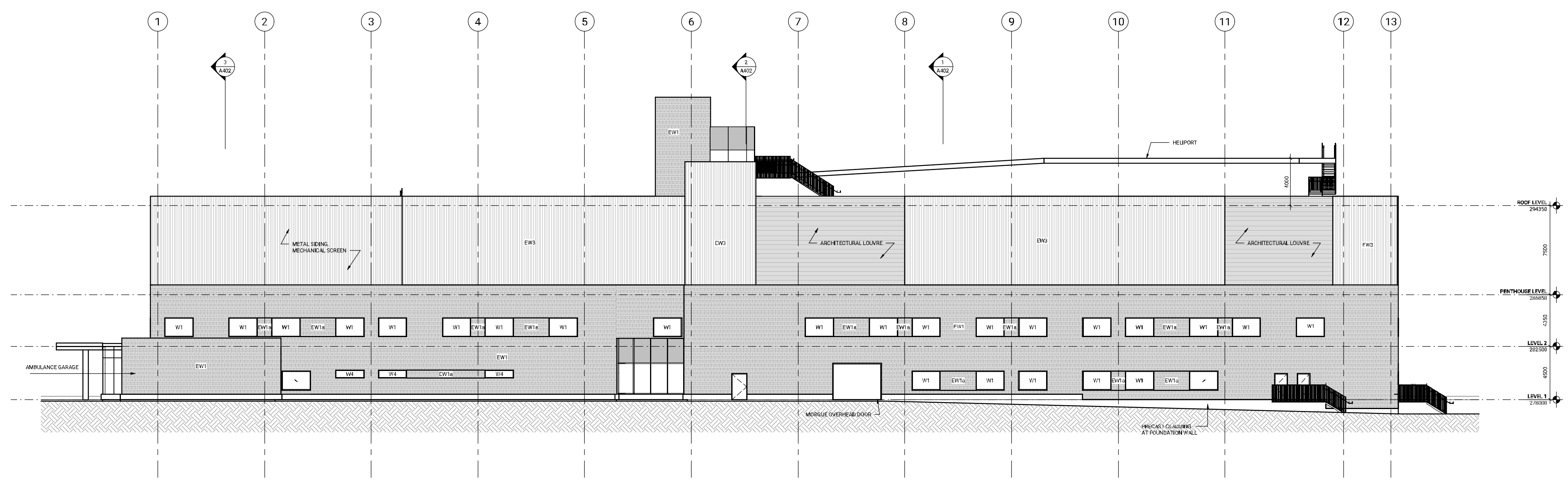
Issued

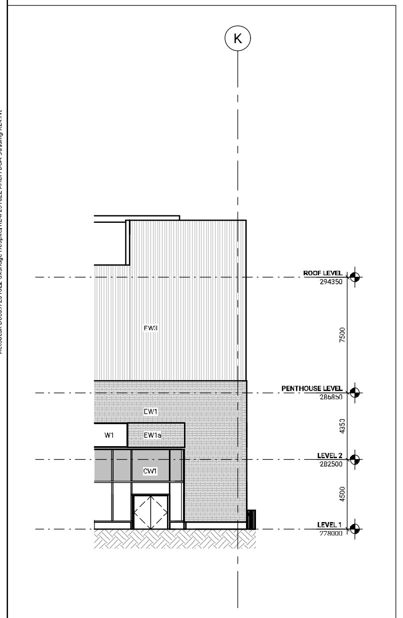
No.	Date	Description
1	2024-03-25	SD Costing



OVERALL WEST ELEVATION 5 A302
1 : 150



OVERALL NORTH ELEVATION 1 A302
1 : 150



ADMINISTRATIVE ENTRY EAST ELEVATION 3 A302
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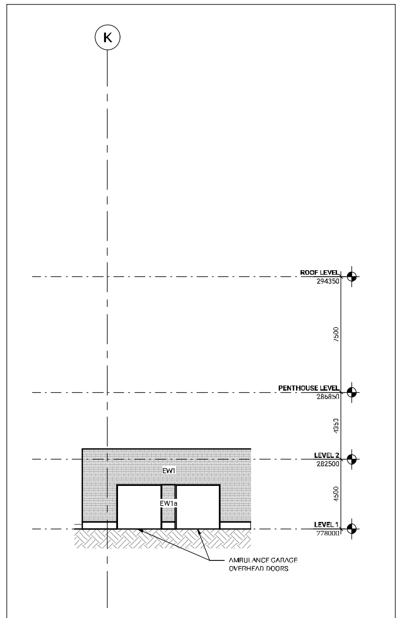

AMBULANCE GARAGE WEST ELEVATION 2 A302
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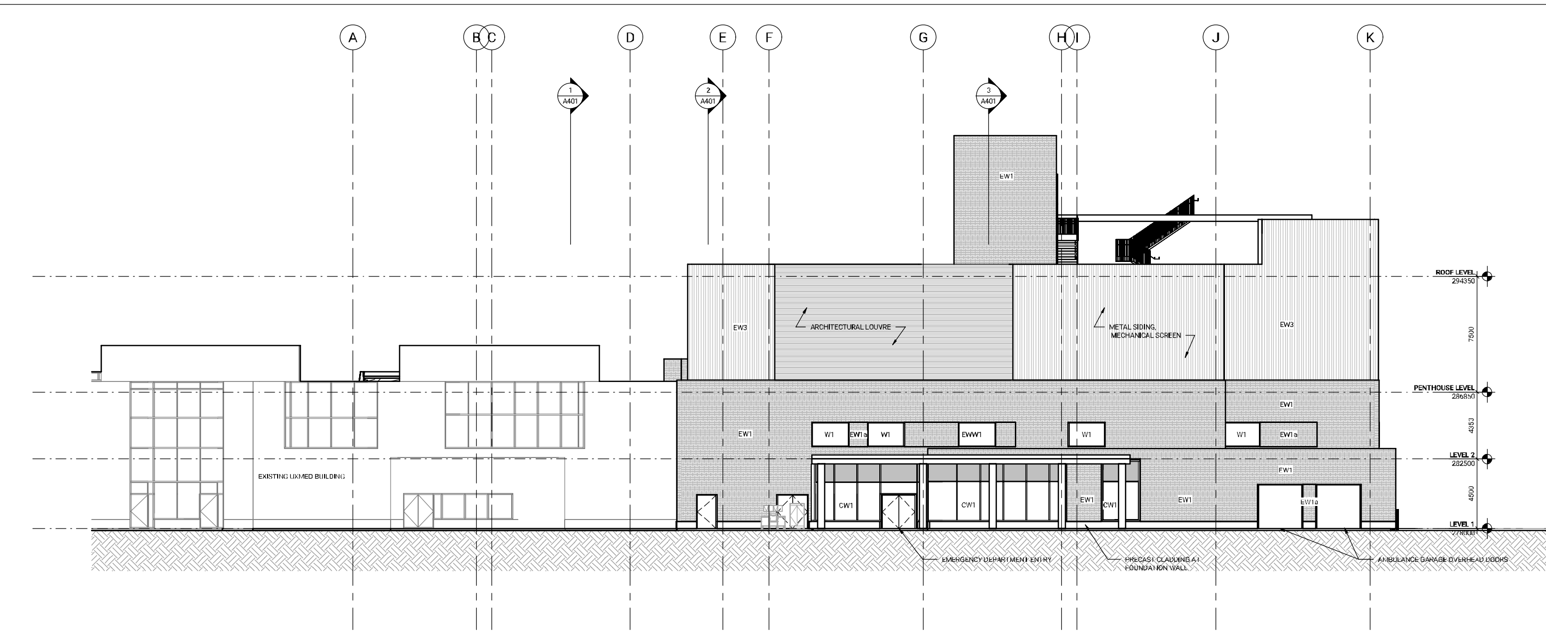

OVERALL EAST ELEVATION 1 A302
1 : 150

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Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

Exterior Elevations

1 : 150

A302

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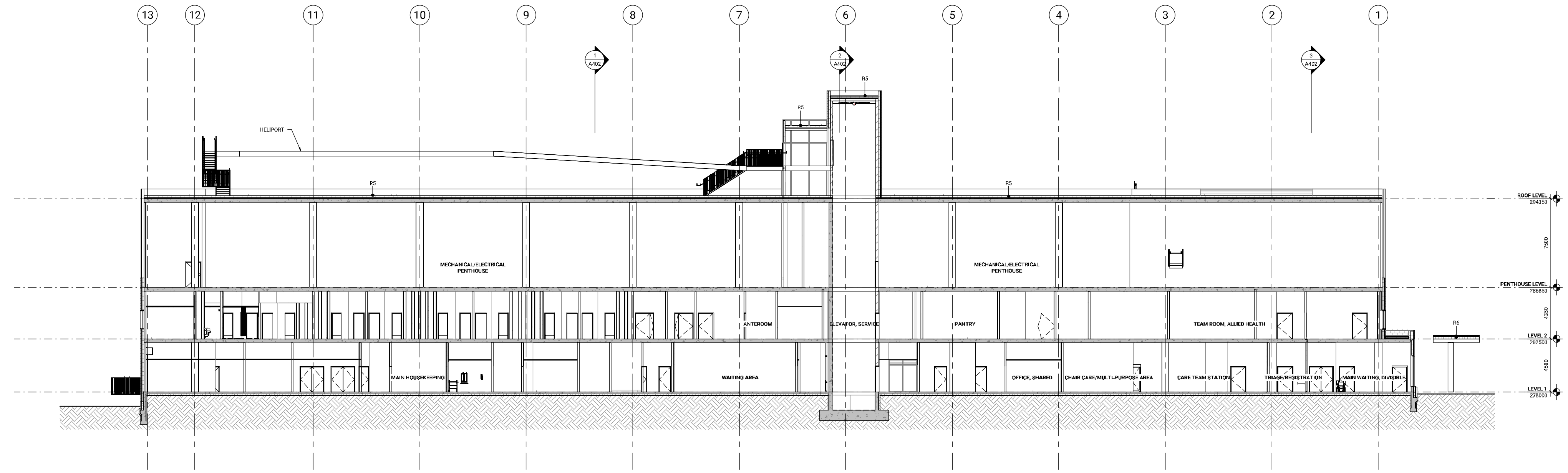
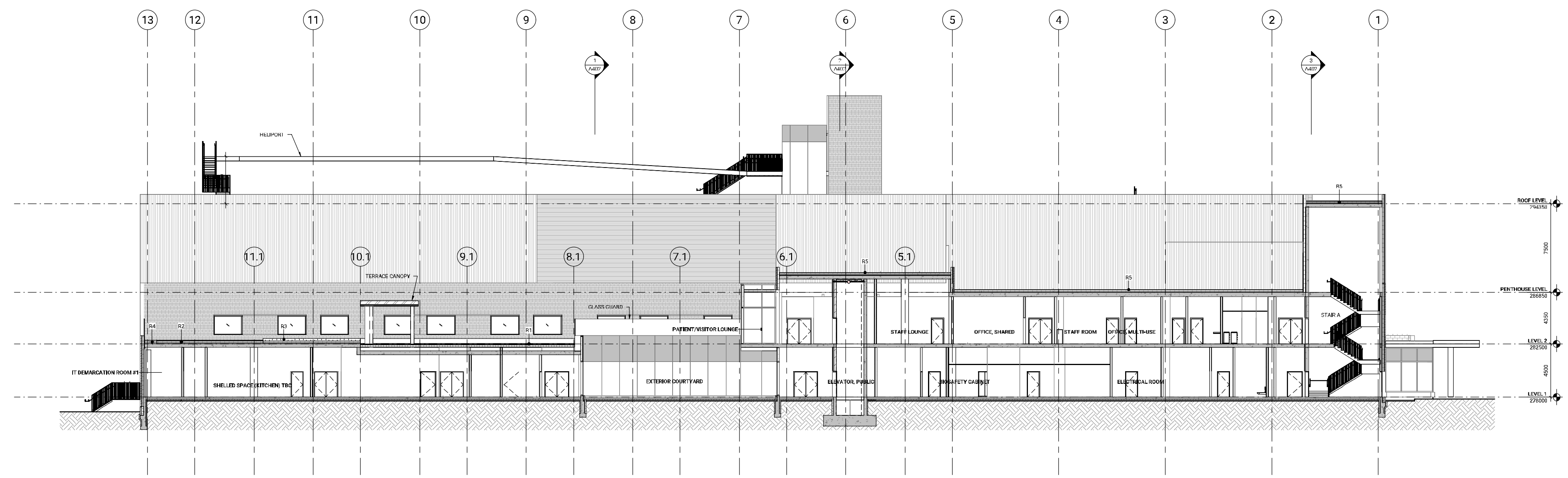
Issued

No.	Date	Description
1	2024-03-25	SD Costing



OVERALL BUILDING SECTION 3
1 : 150



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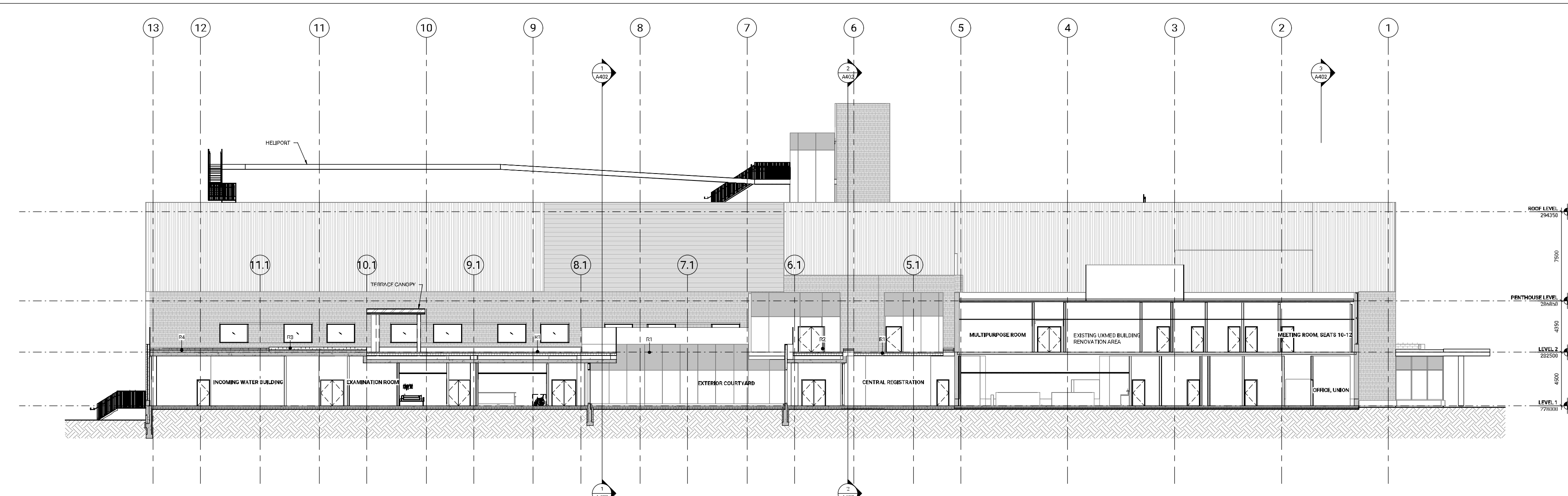

OVERALL BUILDING SECTION 1
1 : 150

NOT FOR CONSTRUCTION

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Uxbridge Hospital
Oak Valley Health

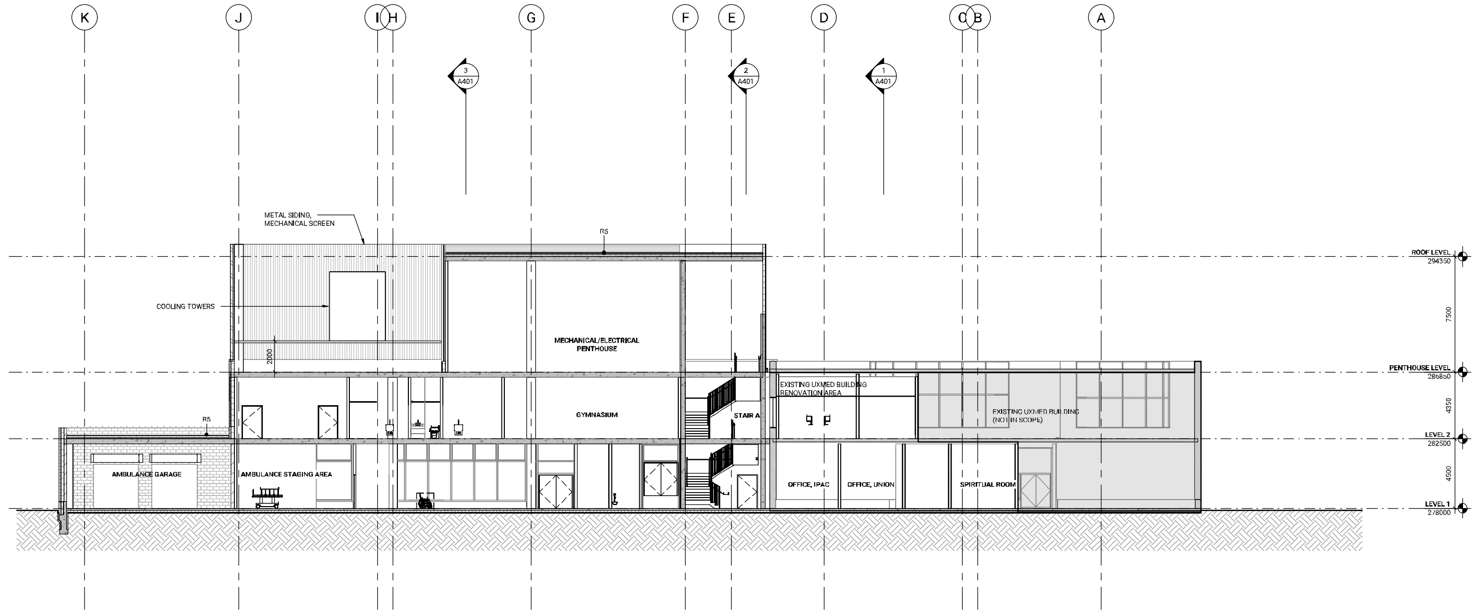
UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

Overall Building Sections

1 : 150

A401



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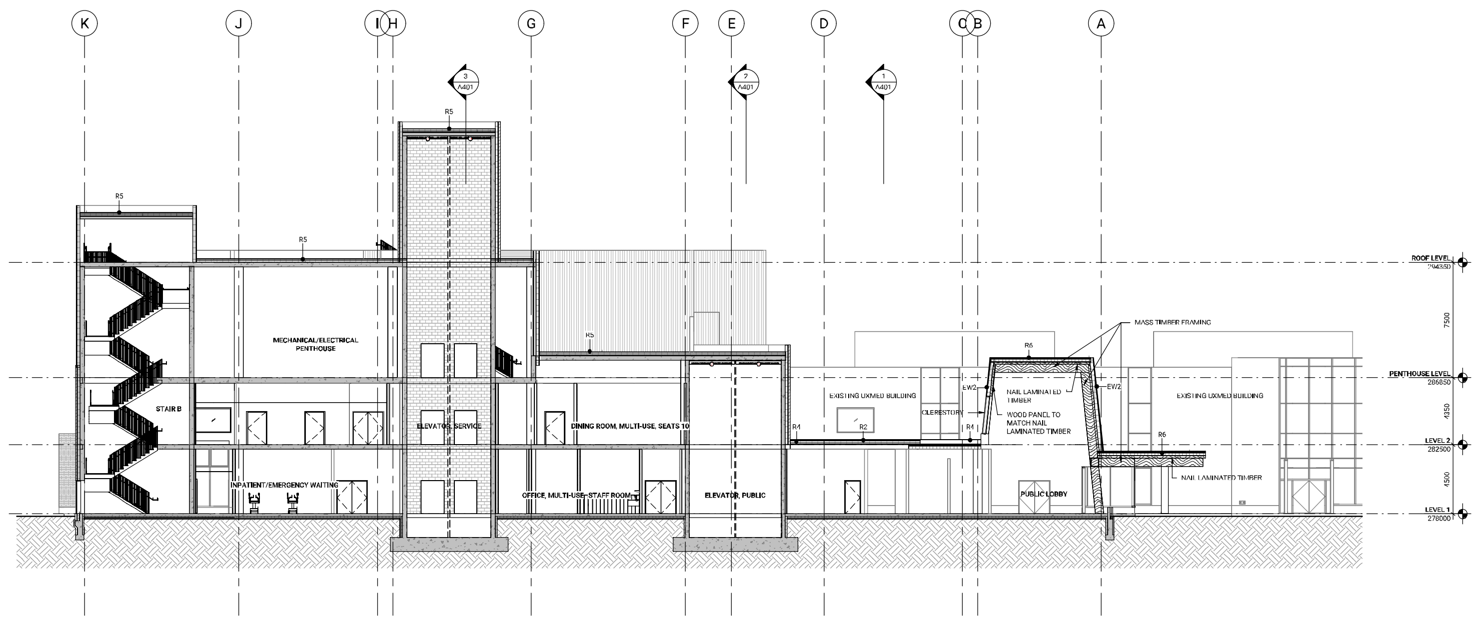

OVERALL BUILDING SECTION 5
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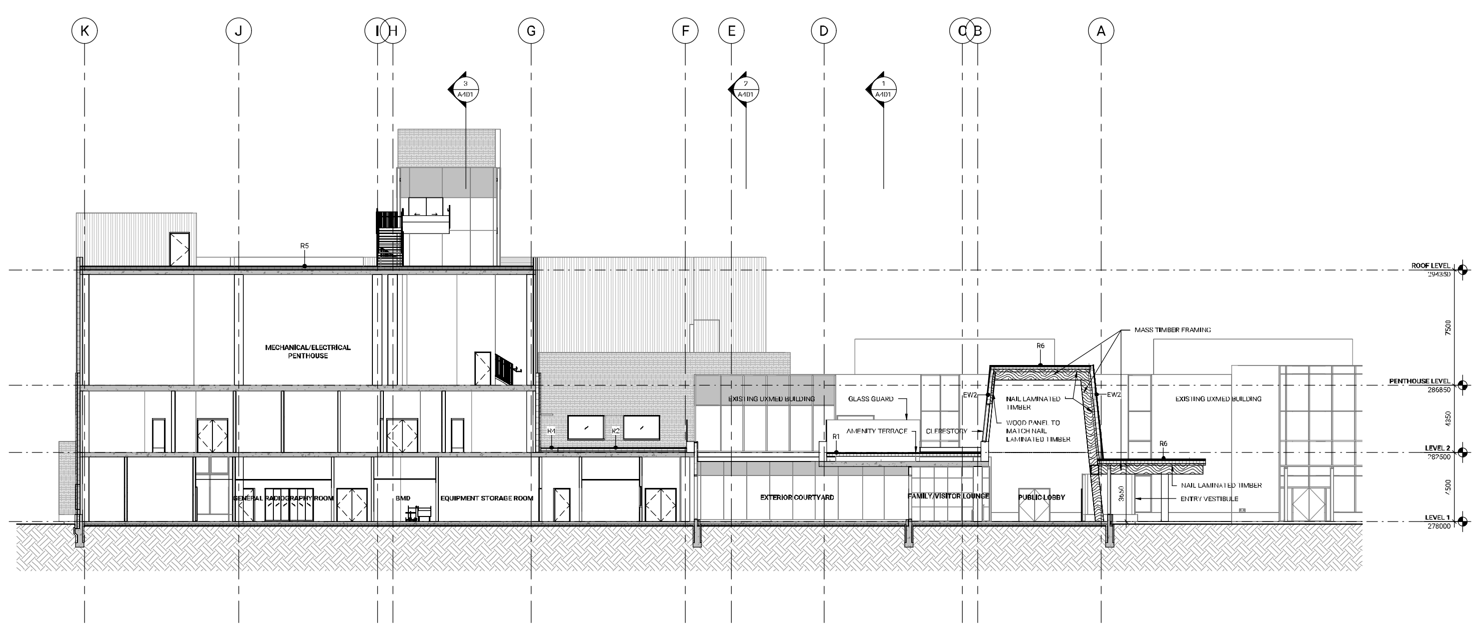

OVERALL BUILDING SECTION 4
1 : 150

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Issued

No.	Date	Description
1	2024-03-25	SD Costing

NOT FOR CONSTRUCTION

Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

Overall Building Sections
1 : 150

A402

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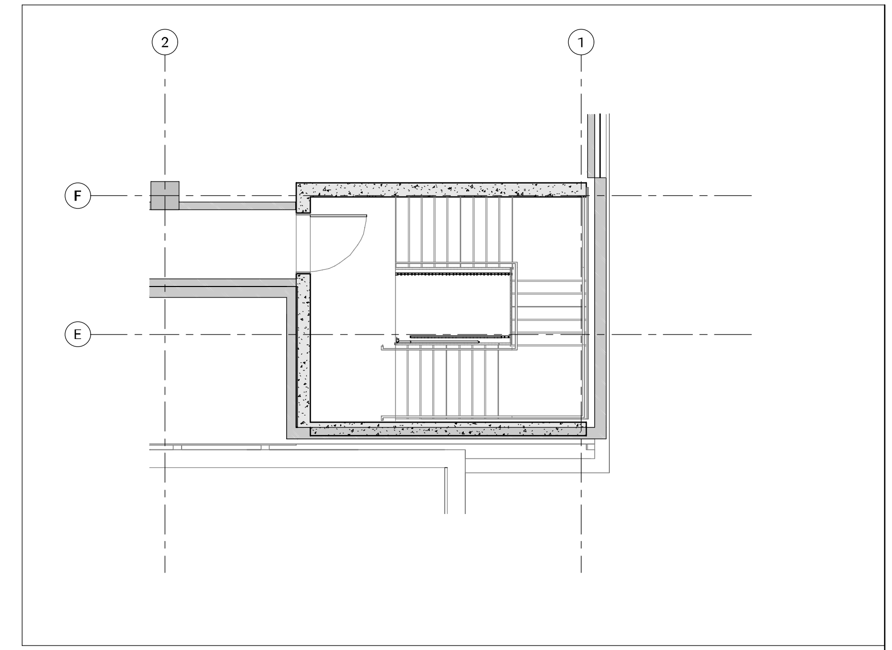
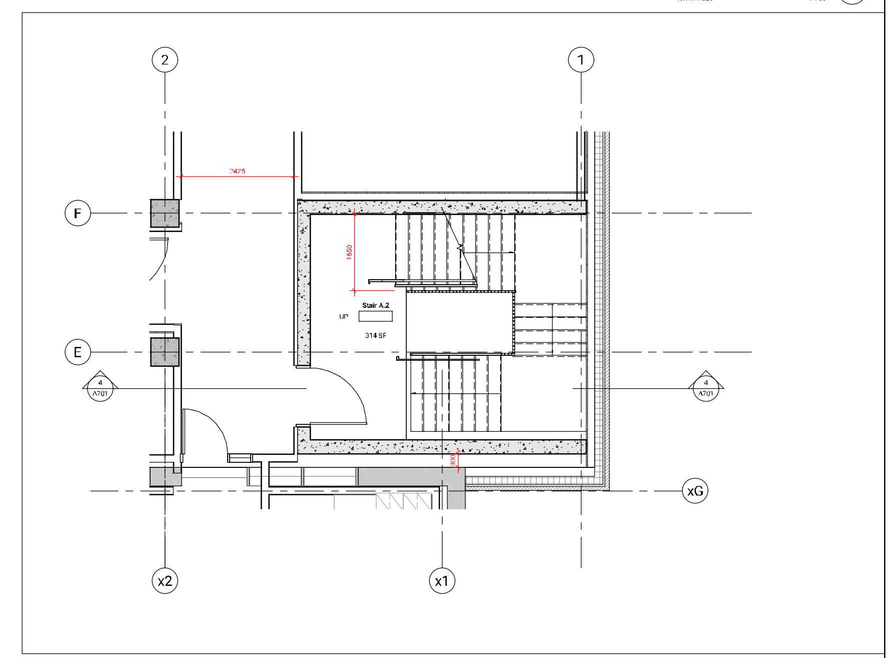
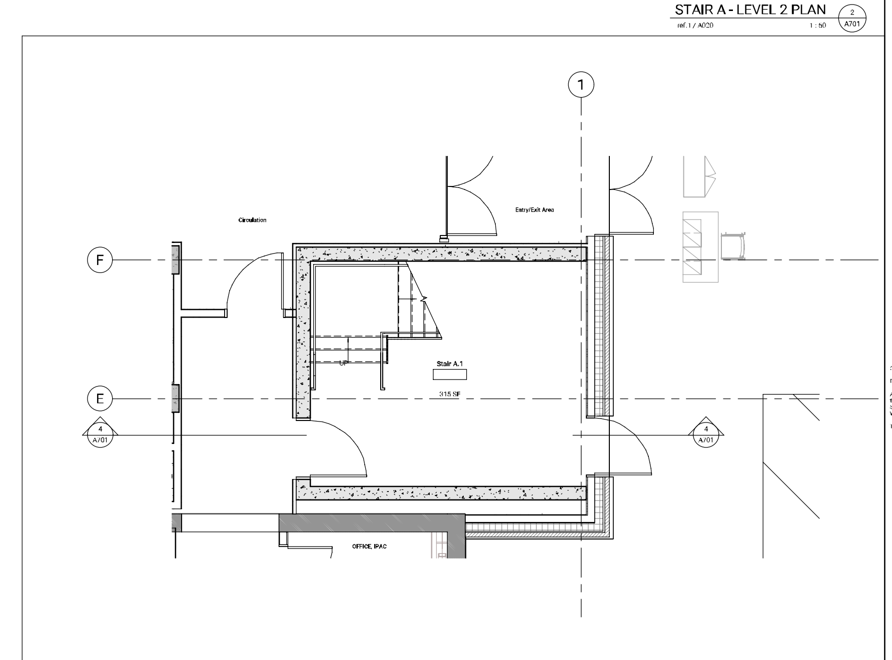


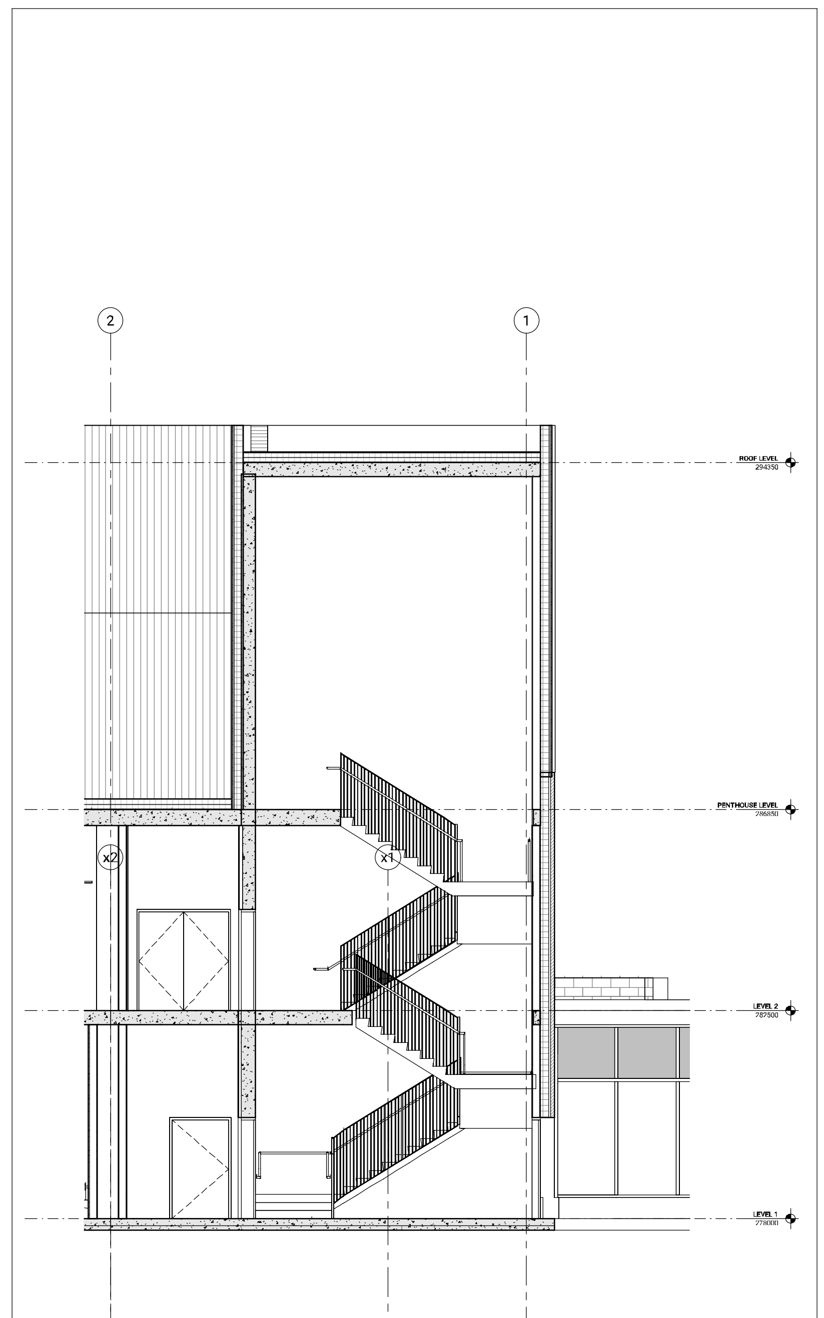
STAIR A - MPH PLAN
ref 1 / A020 1 : 50



STAIR A - LEVEL 2 PLAN
ref 1 / A020 1 : 50



STAIR A - LEVEL 1 PLAN



STAIR A - SECTION
ref 1 / A701 1 : 50

Issued

No.	Date	Description
1	2024-03-25	SD Costing

NOT FOR CONSTRUCTION

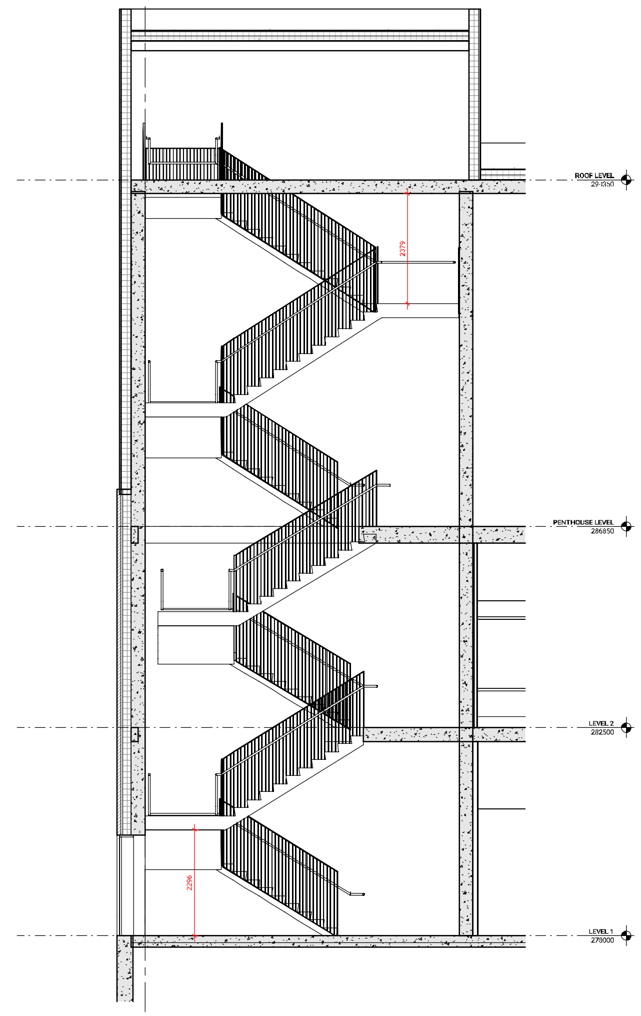
Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

231022

STAIR A
1 : 50

A701



STAIR B - SECTION 4/A702
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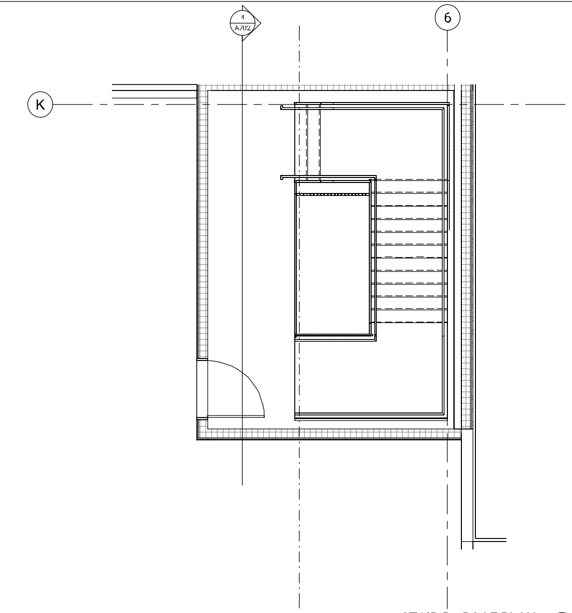
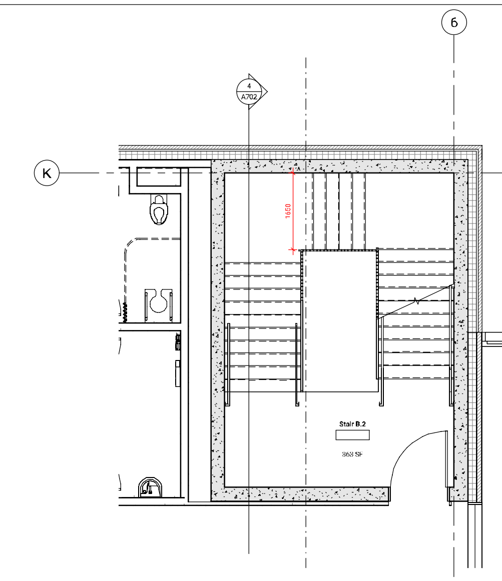


STAIR B - ROOF PLAN 3/A702
ref 1 / A020 1 : 50



STAIR B - LEVEL 2 PLAN 2/A702
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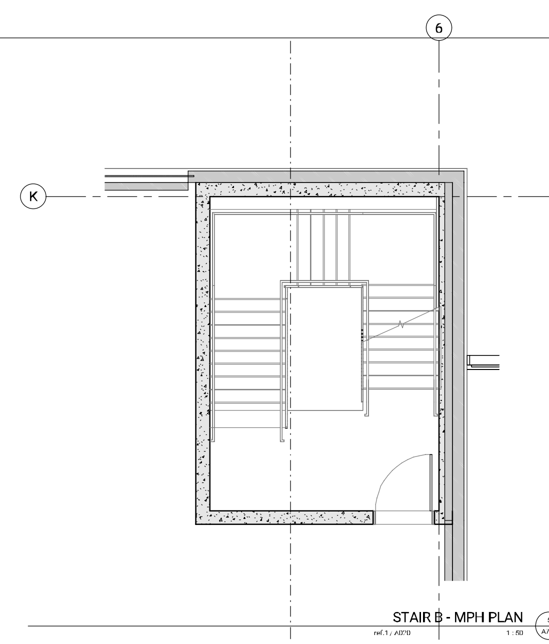
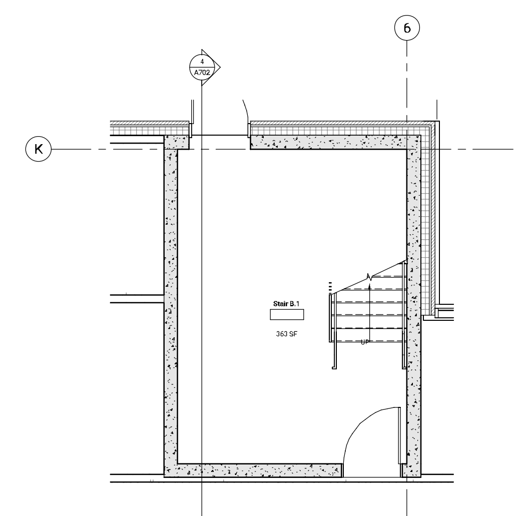


STAIR B - MPH PLAN 5/A702
ref 1 / A020 1 : 50



STAIR B - LEVEL 1 PLAN 1/A702
ref 1 / A020 1 : 50

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Issued

No.	Date	Description
1	2024-03-25	SD Costing

NOT FOR CONSTRUCTION

Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

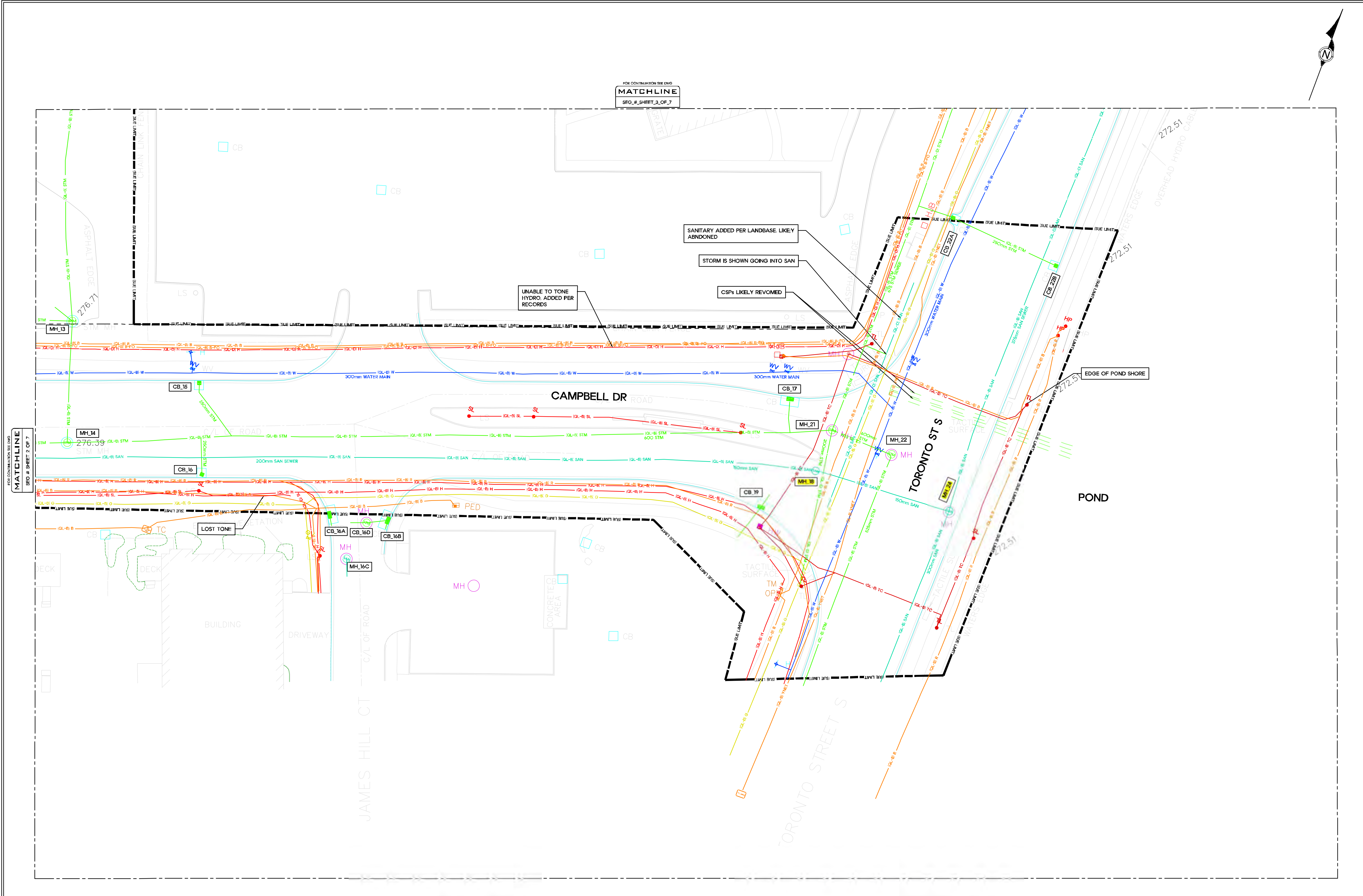
231022

STAIR B
1 : 50

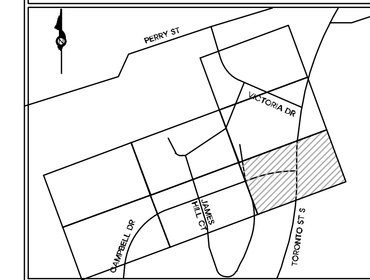
A702

APPENDIX C

SUBSURFACE UTILITY INVESTIGATION DRAWINGS



KEY MAP (N.T.S)



TOWN OF UXBRIDGE

LEGEND

(QL-B) COMB	COMBINATION SEWER
(QL-B) STM	STORM SEWER
(QL-B) SAN	SANITARY SEWER
(QL-B) W	WATER MAIN
(QL-B) WSRV	WATER SERVICE
(QL-B) W ABND	WATER MAIN (ABANDONED)
(QL-B) G	GAS MAIN
(QL-B) GSRV	GAS SERVICE
(QL-B) G ABND	GAS MAIN (ABANDONED)
(QL-B) HONI	HYDRO ONE
(QL-B) H	HYDRO
(QL-B) SL	STREET LIGHTING
(QL-B) TC	TRAFFIC CONTROL
(QL-B) TTC	TORONTO TRANSIT COMMISION
(QL-B) MTO	MINISTRY OF TRANSPORTATION
(QL-B) AP	APTUM TECH
(QL-B) B	BELL CANADA
(QL-B) B-FO	BELL CANADA FIBRE OPTIC
(QL-B) BF	BEANFIELD
(QL-B) CO	COGECO
(QL-B) GT	GROUP TELECOM
(QL-B) GO	GO COMMUNICATIONS
(QL-B) METX	METROLINX
(QL-B) AS	ALLSTREAM
(QL-B) R	ROGERS
(QL-B) R-FO	ROGERS FIBRE OPTIC
(QL-B) T	TELUS
(QL-B) TEL UNKN	UNKNOWN TELECOM
(QL-B) VT	VIDEOTRON
(QL-B) ZG	ZAYO GROUP
(QL-B) 360	360 NETWORK
(QL-B) CN	CN RAIL COMMUNICATIONS
(QL-B) CP	CP RAIL COMMUNICATIONS
(QL-B) TCPL	TRANS-CANADIAN PIPELINE
(QL-B) SCPL	SUN-CANADIAN PIPELINE
(QL-B) STEAM	STEAM PIPE

LEVEL B
LEVEL C
LEVEL D

DISCLAIMERS

GENERAL NOTES

1. THE COLLECTION AND DEPICTION OF INFORMATION SHOWN ON THIS DRAWING CONFORMS TO THE PROVISIONS OF CI/ASCE 38-02, "STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."
2. FIELD INVESTIGATION WAS COMPLETED USING A COMBINATION OF ELECTROMAGNETIC PIPE, CABLE LOCATE EQUIPMENT AND VACUUM EXCAVATION.
3. DESPITE BEST EFFORT, SOME UTILITIES MAY NOT BE LOCATED DUE TO BEING NON-CONDUCTIVE OR INACCESSIBLE.
4. BASE MAP WAS PROVIDED BY CLIENT AND IS SHOWN IN GREY. PLANVIEW IS NOT RESPONSIBLE FOR ITS ACCURACY.
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REVISIONS		REVISIONS
1 ISSED TO FIELD	DATE: 02.27.24	

SCALE(S) 1 : 250 | SHEET SIZE 22x34

K.MIRKHANI 100082345 — LICENSED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

PLANVIEW Utility Services Ltd.

Oak Valley Health

SURVEYOR	T.B.D.
DRAWN	P.M.
CHECKED	P.M.
APPROVED	K.M.

PROJECT:
UXBRIDGE HOSPITAL REDEVELOPMENT

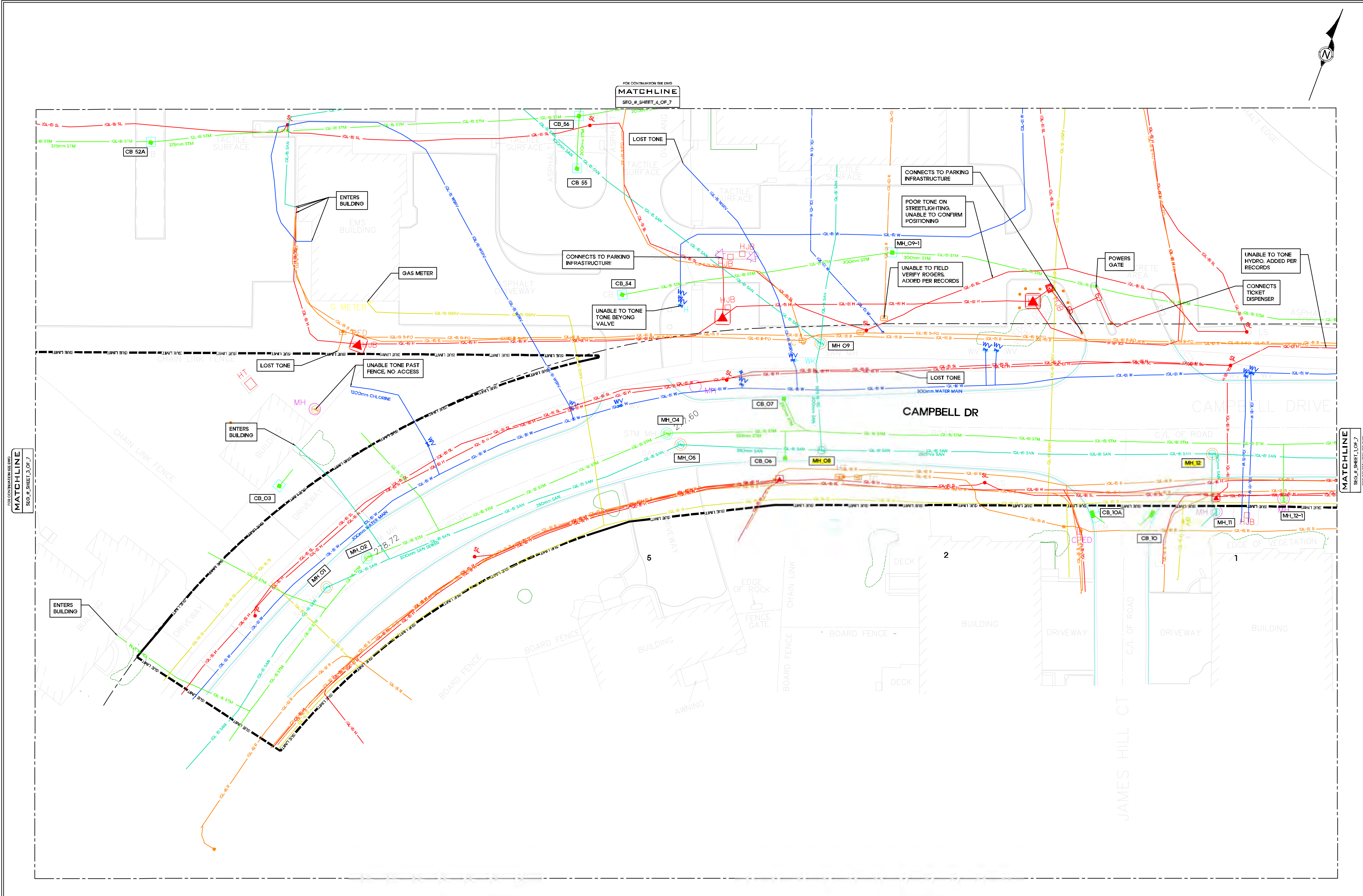
TITLE:
SUBSURFACE UTILITY INVESTIGATION
SUE LEVEL B

Plot Date: 27 March 2024

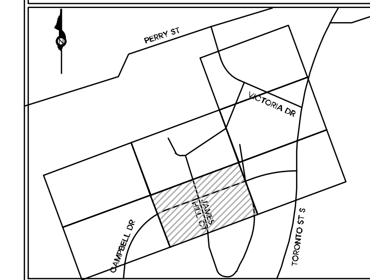
Planview Project #: 24-3-0003

Customer Project #: T.B.D.

Sheet #: S1



KEY MAP (N.T.S)



TOWN OF UXBRIDGE

LEGEND

(QL-B) COMB	COMBINATION SEWER
(QL-B) STM	STORM SEWER
(QL-B) SAN	SANITARY SEWER
(QL-B) W	WATER MAIN
(QL-B) WSRV	WATER SERVICE
(QL-B) W ABND	WATER MAIN (ABANDONED)
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(QL-B) GSRV	GAS SERVICE
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(QL-B) HONI	HYDRO ONE
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(QL-B) SL	STREET LIGHTING
(QL-B) TC	TRAFFIC CONTROL
(QL-B) TTC	TORONTO TRANSIT COMMISION
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(QL-B) ZG	ZAYO GROUP
(QL-B) 360	360 NETWORK
(QL-B) CN	CN RAIL COMMUNICATIONS
(QL-B) CP	CP RAIL COMMUNICATIONS
(QL-B) TCPL	TRANS-CANADIAN PIPELINE
(QL-B) SCPL	SUN-CANADIAN PIPELINE
(QL-B) STEAM	STEAM PIPE

LEVEL B
LEVEL C
LEVEL D

DISCLAIMERS

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REVISIONS			REVISIONS
1	ISSED TO FIELD	DATE: 02.27.24	

SCALE(S) 1 : 250 | SHEET SIZE 22x34

K. MIRKHAN
100082345

PLANVIEW Utility Services Ltd.

Oak Valley Health

SURVEYOR T.B.D.
DRAWN P.M.
CHECKED P.M.
APPROVED K.M.

PROJECT:
UXBRIDGE HOSPITAL REDEVELOPMENT

TITLE:
SUBSURFACE UTILITY INVESTIGATION
SUE LEVEL B

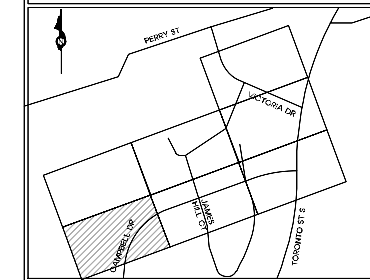
Plot Date:
27 March 2024

Planview Project #:
24-3-0003

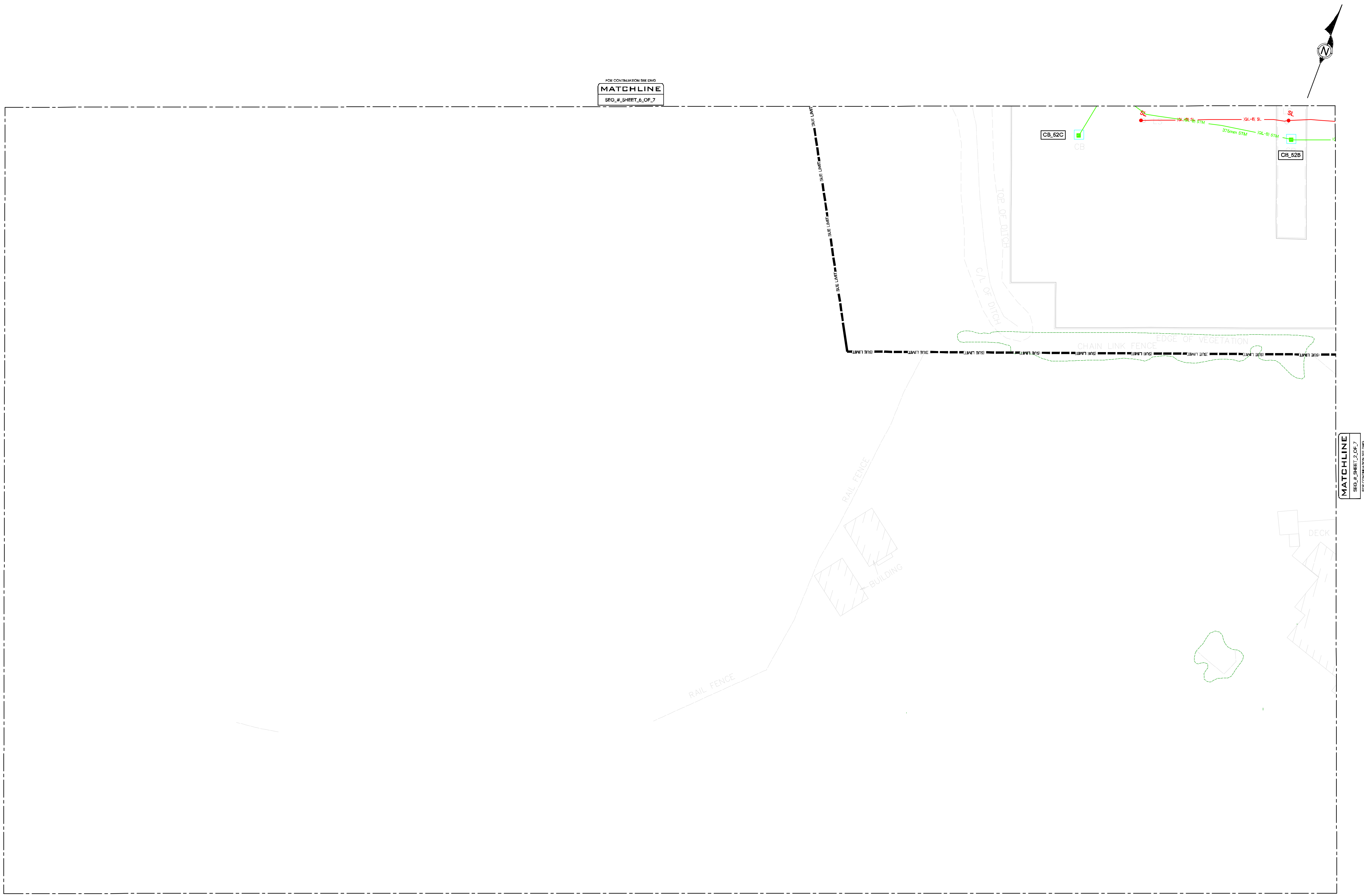
Customer Project #: T.B.D.

Sheet #: S2

KEY MAP (N.T.S)



TOWN OF UXBRIDGE



LEGEND

(QL-B) COMB	COMBINATION SEWER
(QL-B) STM	STORM SEWER
(QL-B) SAN	SANITARY SEWER
(QL-B) W	WATER MAIN
(QL-B) WSRV	WATER SERVICE
(QL-B) W ABND	WATER MAIN (ABANDONED)
(QL-B) G	GAS MAIN
(QL-B) GSRV	GAS SERVICE
(QL-B) G ABND	GAS MAIN (ABANDONED)
(QL-B) HONI	HYDRO ONE
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(QL-B) SL	STREET LIGHTING
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(QL-B) AP	APTUM TECH
(QL-B) B	BELL CANADA
(QL-B) B-FO	BELL CANADA FIBRE OPTIC
(QL-B) BF	BEANFIELD
(QL-B) CO	COGECO
(QL-B) GT	GROUP TELECOM
(QL-B) GO	GO COMMUNICATIONS
(QL-B) METX	METROLINX
(QL-B) AS	ALLSTREAM
(QL-B) R	ROGERS
(QL-B) R-FO	ROGERS FIBRE OPTIC
(QL-B) T	TELUS
(QL-B) TEL UNKN	UNKNOWN TELECOM
(QL-B) VT	VIDEOTRON
(QL-B) ZG	ZAYO GROUP
(QL-B) 360	360 NETWORK
(QL-B) CN	CN RAIL COMMUNICATIONS
(QL-B) CP	CP RAIL COMMUNICATIONS
(QL-B) TCPL	TRANS-CANADIAN PIPELINE
(QL-B) SCPL	SUN-CANADIAN PIPELINE
(QL-B) STEAM	STEAM PIPE

LEVEL B
LEVEL C
LEVEL D

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REVISIONS		REVISIONS
1 ISSED TO FIELD	DATE: 02.27.24	

SCALE(S) 1 : 250 | SHEET SIZE 22x34

K.MIRKHANI
100082345

PLANVIEW Utility Services Ltd.

Oak Valley Health

SURVEYOR	T.B.D.
DRAWN	P.M.
CHECKED	P.M.
APPROVED	K.M.

PROJECT:
UXBRIDGE HOSPITAL REDEVELOPMENT

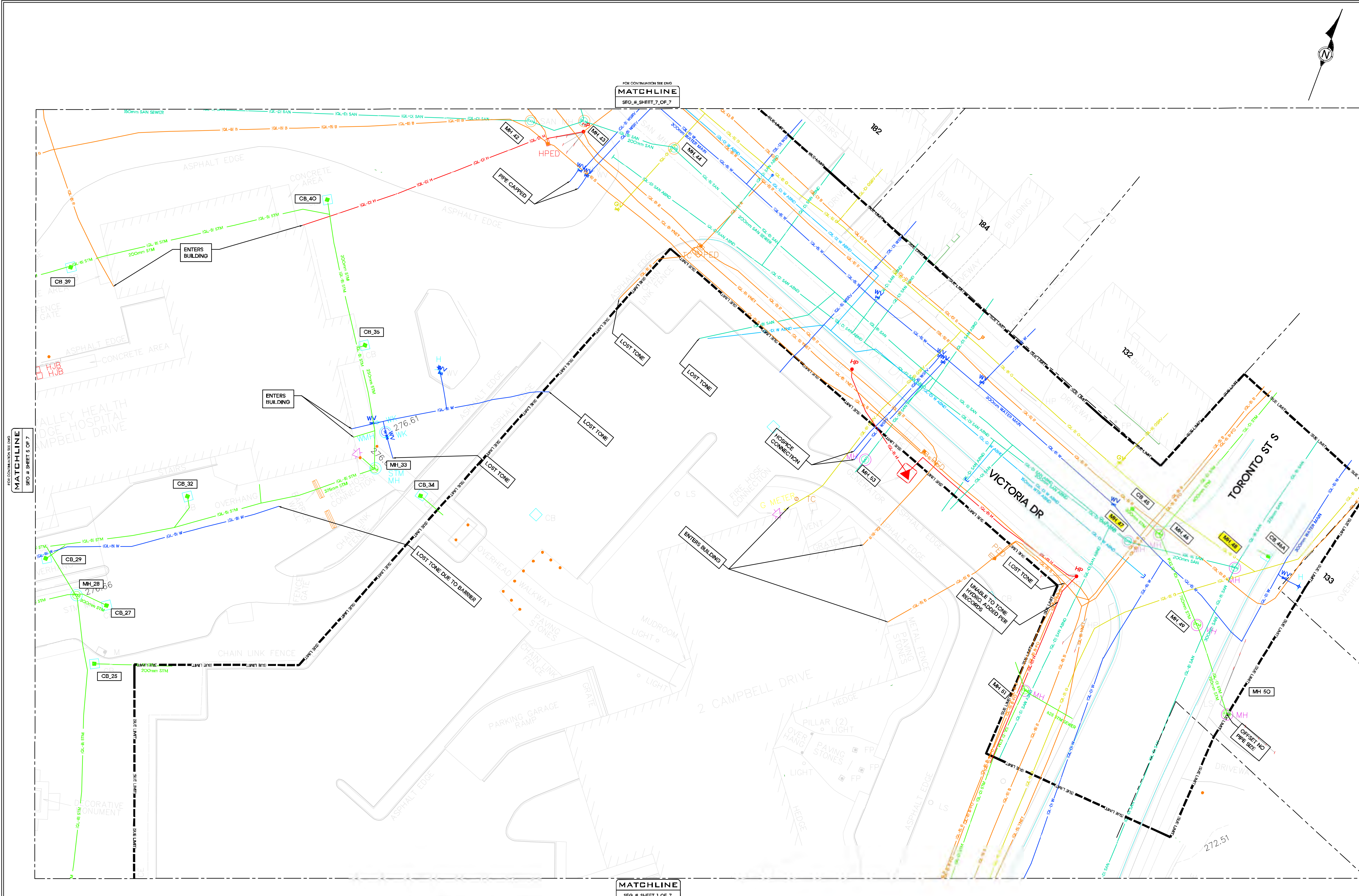
TITLE:
SUBSURFACE UTILITY INVESTIGATION
SUE LEVEL B

Plot Date:
27 March 2024

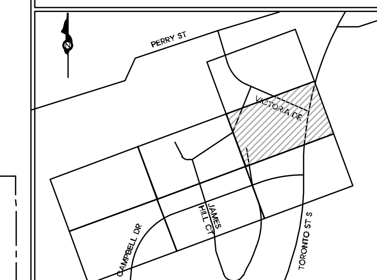
Planview Project #:
24-3-0003

Customer Project #: T.B.D.

Sheet #: S3



KEY MAP (N.T.S)



TOWN OF UXBRIDGE

LEGEND

(QL-B) COMB	COMBINATION SEWER
(QL-B) STM	STORM SEWER
(QL-B) SAN	SANITARY SEWER
(QL-B) W	WATER MAIN
(QL-B) WSRV	WATER SERVICE
(QL-B) W ABND	WATER MAIN (ABANDONED)
(QL-B) G	GAS MAIN
(QL-B) GSRV	GAS SERVICE
(QL-B) G ABND	GAS MAIN (ABANDONED)
(QL-B) HONI	HYDRO ONE
(QL-B) H	HYDRO
(QL-B) SL	STREET LIGHTING
(QL-B) TC	TRAFFIC CONTROL
(QL-B) TTC	TORONTO TRANSIT COMMISION
(QL-B) MTO	MINISTRY OF TRANSPORTATION
(QL-B) AP	APTUM TECH
(QL-B) B	BELL CANADA
(QL-B) B-FO	BELL CANADA FIBRE OPTIC
(QL-B) BF	BEANFIELD
(QL-B) CO	COGECO
(QL-B) GT	GROUP TELECOM
(QL-B) GO	GO COMMUNICATIONS
(QL-B) METX	METROLINX
(QL-B) AS	ALLSTREAM
(QL-B) R	ROGERS
(QL-B) R-FO	ROGERS FIBRE OPTIC
(QL-B) T	TELUS
(QL-B) TEL UNKN	UNKNOWN TELECOM
(QL-B) VT	VIDEOTRON
(QL-B) ZG	ZAYO GROUP
(QL-B) 360	360 NETWORK
(QL-B) CN	CN RAIL COMMUNICATIONS
(QL-B) CP	CP RAIL COMMUNICATIONS
(QL-B) TCPL	TRANS-CANADIAN PIPELINE
(QL-B) SCPL	SUN-CANADIAN PIPELINE
(QL-B) STEAM	STEAM PIPE
———	LEVEL B
— — —	LEVEL C
—·—	LEVEL D

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K.MIRKHANI

PLANVIEW Utility Services Ltd.

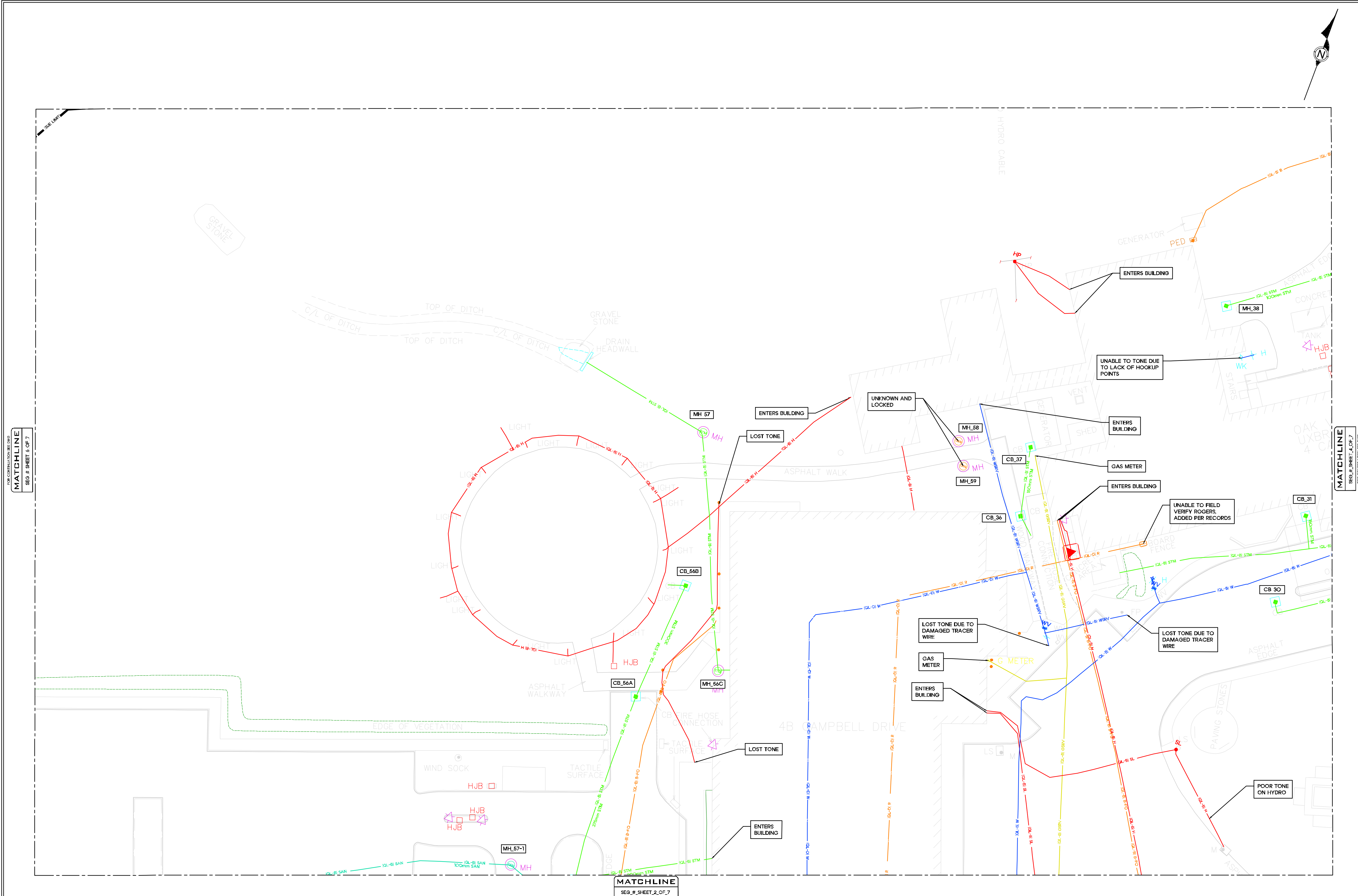
Oak Valley Health

SURVEYOR	T.B.D.
DRAWN	P.M.
CHECKED	P.M.
APPROVED	K.M.

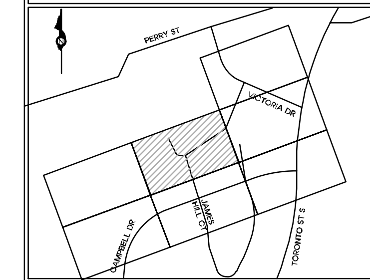
PROJECT: UXBRIDGE HOSPITAL REDEVELOPMENT

TITLE: SUBSURFACE UTILITY INVESTIGATION SUE LEVEL B

Plot Date:	27 March 2024
Planview Project #:	24-3-0003
Customer Project #:	T.B.D.
Sheet #:	S4



KEY MAP (N.T.S)



TOWN OF UXBRIDGE

LEGEND

(QL-B) COMB	COMBINATION SEWER
(QL-B) STM	STORM SEWER
(QL-B) SAN	SANITARY SEWER
(QL-B) W	WATER MAIN
(QL-B) WSRV	WATER SERVICE
(QL-B) W ABND	WATER MAIN (ABANDONED)
(QL-B) G	GAS MAIN
(QL-B) GSRV	GAS SERVICE
(QL-B) G ABND	GAS MAIN (ABANDONED)
(QL-B) HONI	HYDRO ONE
(QL-B) H	HYDRO
(QL-B) SL	STREET LIGHTING
(QL-B) TC	TRAFFIC CONTROL
(QL-B) TTC	TORONTO TRANSIT COMMISION
(QL-B) MTO	MINISTRY OF TRANSPORTATION
(QL-B) AP	APTUM TECH
(QL-B) B	BELL CANADA
(QL-B) B-FO	BELL CANADA FIBRE OPTIC
(QL-B) BF	BEANFIELD
(QL-B) CO	COGECO
(QL-B) GT	GROUP TELECOM
(QL-B) GO	GO COMMUNICATIONS
(QL-B) METX	METROLINX
(QL-B) AS	ALLSTREAM
(QL-B) R	ROGERS
(QL-B) R-FO	ROGERS FIBRE OPTIC
(QL-B) T	TELUS
(QL-B) TEL UNKN	UNKNOWN TELECOM
(QL-B) VT	VIDEOTRON
(QL-B) ZG	ZAYO GROUP
(QL-B) 360	360 NETWORK
(QL-B) CN	CN RAIL COMMUNICATIONS
(QL-B) CP	CP RAIL COMMUNICATIONS
(QL-B) TCPL	TRANS-CANADIAN PIPELINE
(QL-B) SCPL	SUN-CANADIAN PIPELINE
(QL-B) STEAM	STEAM PIPE

LEVEL B
LEVEL C
LEVEL D

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SCALE(S) 1 : 250 | SHEET SIZE 22x34

K. MIRKHANI 100082345

PLANVIEW Utility Services Ltd.

Oak Valley Health

SURVEYOR T.B.D.
DRAWN P.M.
CHECKED P.M.
APPROVED K.M.

PROJECT:
UXBRIDGE HOSPITAL REDEVELOPMENT

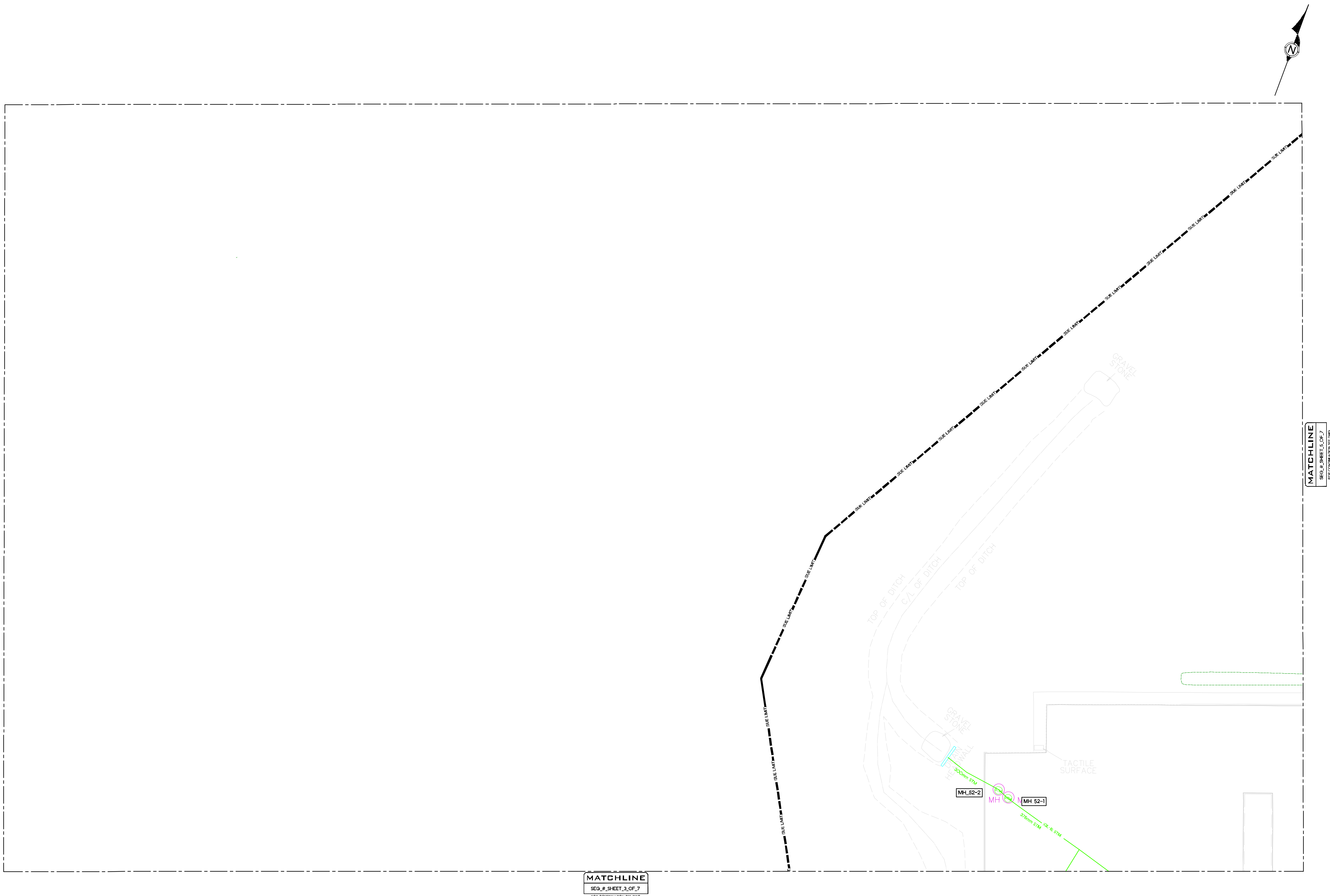
TITLE:
SUBSURFACE UTILITY INVESTIGATION
SUE LEVEL B

Plot Date:
27 March 2024

Planview Project #:
24-3-0003

Customer Project #: T.B.D.

Sheet #: S5



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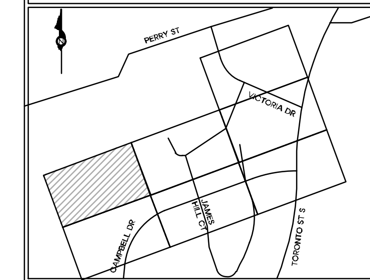

TOWN OF UXBRIDGE

LEGEND

(QL-B) COMB	COMBINATION SEWER
(QL-B) STM	STORM SEWER
(QL-B) SAN	SANITARY SEWER
(QL-B) W	WATER MAIN
(QL-B) WSRV	WATER SERVICE
(QL-B) W ABND	WATER MAIN (ABANDONED)
(QL-B) G	GAS MAIN
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(QL-B) H	HYDRO
(QL-B) SL	STREET LIGHTING
(QL-B) TC	TRAFFIC CONTROL
(QL-B) TTC	TORONTO TRANSIT COMMISION
(QL-B) MTO	MINISTRY OF TRANSPORTATION
(QL-B) AP	APTUM TECH
(QL-B) B	BELL CANADA
(QL-B) B-FO	BELL CANADA FIBRE OPTIC
(QL-B) BF	BEANFIELD
(QL-B) CO	COGECO
(QL-B) GT	GROUP TELECOM
(QL-B) GO	GO COMMUNICATIONS
(QL-B) METX	METROLINX
(QL-B) AS	ALLSTREAM
(QL-B) R	ROGERS
(QL-B) R-FO	ROGERS FIBRE OPTIC
(QL-B) T	TELUS
(QL-B) TEL UNKN	UNKNOWN TELECOM
(QL-B) VT	VIDEOTRON
(QL-B) ZG	ZAYO GROUP
(QL-B) 360	360 NETWORK
(QL-B) CN	CN RAIL COMMUNICATIONS
(QL-B) CP	CP RAIL COMMUNICATIONS
(QL-B) TCPL	TRANS-CANADIAN PIPELINE
(QL-B) SCPL	SUN-CANADIAN PIPELINE
(QL-B) STEAM	STEAM PIPE

LEVEL B
LEVEL C
LEVEL D

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K.MIRKHANI 100082345

PLANVIEW Utility Services Ltd.

Oak Valley Health

SURVEYOR	T.B.D.
DRAWN	P.M.
CHECKED	P.M.
APPROVED	K.M.

PROJECT:
UXBRIDGE HOSPITAL REDEVELOPMENT

TITLE:
SUBSURFACE UTILITY INVESTIGATION
SUE LEVEL B

Plot Date:
27 March 2024

Planview Project #:
24-3-0003

Customer Project #: T.B.D.

Sheet #: S6

KEY MAP (N.T.S)

TOWN OF UXBRIDGE

LEGEND

(QL-B) COMB	COMBINATION SEWER
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(QL-B) SAN	SANITARY SEWER
(QL-B) W	WATER MAIN
(QL-B) WSRV	WATER SERVICE
(QL-B) W ABND	WATER MAIN (ABANDONED)
(QL-B) G	GAS MAIN
(QL-B) GSRV	GAS SERVICE
(QL-B) G ABND	GAS MAIN (ABANDONED)
(QL-B) HONI	HYDRO ONE
(QL-B) H	HYDRO
(QL-B) SL	STREET LIGHTING
(QL-B) TC	TRAFFIC CONTROL
(QL-B) TTC	TORONTO TRANSIT COMMISION
(QL-B) MTO	MINISTRY OF TRANSPORTATION
(QL-B) AP	APTUM TECH
(QL-B) B	BELL CANADA
(QL-B) B-FO	BELL CANADA FIBRE OPTIC
(QL-B) BF	BEANFIELD
(QL-B) CO	COGECO
(QL-B) GT	GROUP TELECOM
(QL-B) GO	GO COMMUNICATIONS
(QL-B) METX	METROLINX
(QL-B) AS	ALLSTREAM
(QL-B) R	ROGERS
(QL-B) R-FO	ROGERS FIBRE OPTIC
(QL-B) T	TELUS
(QL-B) TEL UNKN	UNKNOWN TELECOM
(QL-B) VT	VIDEOTRON
(QL-B) ZG	ZAYO GROUP
(QL-B) 360	360 NETWORK
(QL-B) CN	CN RAIL COMMUNICATIONS
(QL-B) CP	CP RAIL COMMUNICATIONS
(QL-B) TCPL	TRANS-CANADIAN PIPELINE
(QL-B) SCPL	SUN-CANADIAN PIPELINE
(QL-B) STEAM	STEAM PIPE

LEVEL B
LEVEL C
LEVEL D

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REVISIONS		REVISIONS
1 ISSED TO FIELD	DATE: 02.27.24	

SCALE(S) 1 : 250 | SHEET SIZE 22x34

LICENSED PROFESSIONAL ENGINEER
K. MIRKHANI
100082345
PROVINCE OF ONTARIO

PLANVIEW Utility Services Ltd.

Oak Valley Health

SURVEYOR T.B.D.
DRAWN P.M.
CHECKED P.M.
APPROVED K.M.

PROJECT:
UXBRIDGE HOSPITAL REDEVELOPMENT

TITLE:
SUBSURFACE UTILITY INVESTIGATION
SUE LEVEL B

Plot Date:
27 March 2024

Planview Project #:
24-3-0003

Customer Project #: T.B.D.

Sheet #: S7

APPENDIX D

WATER CALCULATIONS AND HYDRANT FLOW TEST RESULTS

LEA Consulting Ltd. Consulting Engineers and Planners	Water Demand Calculation			
	Prepared:	P.R.	Page No.	D-01
	Checked:	F.M.		
Project: Uxbridge Hospital Redevelopment	Proj. #	23375		
Town of Uxbridge	Date:	19-Sep-24		

Existing Building - Interim Conditions

This calculation is following the "Water Supply for Public Fire Protection (2020)" by Fire Underwriters Survey.

Formula: $F = 220C\sqrt{A}$

where
F = the required fire flow in litres per minute
C = Construction Coefficient (CC)
= 1.5 for Type V Wood Frame Construction
A = Effective Area*
With a Construction Coefficient of greater 1.0 or greater, the Effective Area (A) is the sum of all floor area in the building.

According the building stats,		Area (m2)
1stF loor	largest	1765
2nd Floor	adjoining	1765
A		3530

Therefore, F = $220*1.5*\sqrt{3530}$

F = 20000 **l/min**

Occupancy reduction:

Occupancy Type: Limited Combustible Contents

For Limited Combustible Contents, an adjustment of -15% shall be applied

Therefore: F = 17000 l/min

Reduction for sprinkler protection: No Sprinkler

With No Sprinkler system, no reduction is provided here

Therefore: F = 17000 l/min

Separation charge, Calc type: Consider Type

Charge for the separations on each side:

Sprinkler	Separation	description	Charge	Direction	Length	Height	LH factor	Type
☐			0%	South				
☐	25 m	20.1 - 30.1m	4%	North	22 m	2 sty	44	Type V
☐			0%	East				
☑	4 m	3.1 - 10.1m	5%	West	37 m	2 sty	74	Type I-II[2]

Total charge in % 9%

Total charge in l/min 1445

Required Fire Flow: 18000 l/min
or 300.00 l/s
or 4755 US GPM

LEA Consulting Ltd. Consulting Engineers and Planners	**Water Demand Calculation**			
	Prepared:	P.R.	Page No.	D-02
	Checked:	F.M.		
Project: Uxbridge Hospital Redevelopment	Proj. #	23375		
Town of Uxbridge	Date:	19-Sep-24		

Proposed Building and UxMed - Interim Conditions

This calculation is following the "Water Supply for Public Fire Protection (2020)" by Fire Underwriters Survey.

Formula: $F = 220C\sqrt{A}$

where F = the required fire flow in litres per minute

C = Construction Coefficient (CC)

= 0.8 for Type II Noncombustible Construction

A = Effective Area* verticle openings unprotected

With a Construction Coefficient less than 1.0, with unprotected verticle openings, the Effective Area (A) is calculated by summing the largest two floors plus 50% of the area of all above floors up to 8 floors

According the building stats,

		Area (m2)
1stF loor	largest	7442
2nd Floor	adjoining	5019
A		13800

Therefore, F = $220*0.8*\sqrt{13800}$

F = 21000 **l/min**

Occupancy reduction:

Occupancy Type: Limited Combustible Contents

For Limited Combustible Contents, an adjustment of -15% shall be applied

Therefore: F = 17850 l/min

Reduction for sprinkler protection: NFPA Compliant

Using the NFPA sprinkler system, a reduction rate of 30% is used.

Therefore: F = 12495 l/min

Separation charge, Calc type: Consider Type

Charge for the separations on each side:

Sprinkler	Separation	description	Charge	Direction	Length	Height	LH factor	Type
☐			0%	South				
☐	28 m	20.1 - 30.1m	10%	North	86 m	2 sty	172	Type V
☐	4 m	3.1 - 10.1m	18%	East	37 m	2 sty	74	Type V
☐			0%	West				

Total charge in % 28%

Total charge in l/min 4998

Required Fire Flow: 17000 l/min

or 283.33 l/s

or 4491 US GPM

LEA Consulting Ltd. Consulting Engineers and Planners	**Water Demand Calculation**			
	Prepared:	P.R.	Page No.	D-03
	Checked:	F.M.		
Project: Uxbridge Hospital Redevelopment	Proj. #	23375		
Town of Uxbridge	Date:	19-Sep-24		

Proposed Buildings and the UxMed - Future Conditions

This calculation is following the "Water Supply for Public Fire Protection (2020)" by Fire Underwriters Survey.

Formula: F = 220C√A

where F = the required fire flow in litres per minute

C = Construction Coefficient (CC)

= 0.8 for Type II Noncombustible Construction

A = Effective Area* verticle openings unprotected

With a Construction Coefficient less than 1.0, with unprotected verticle openings, the Effective Area (A) is calculated by summing the largest two floors plus 50% of the area of all above floors up to 8 floors

According the building stats,		Area (m2)
1stF loor	largest	7442
2nd Floor	adjoining	5019
A		13800

Therefore, F = 220*0.8*√13800

F = 21000 **l/min**

Occupancy reduction:

Occupancy Type Limited Combustible Contents

For Limited Combustible Contents, an adjustment of -15% shall be applied

Therefore: F = 17850 l/min

Reduction for sprinkler protection: NFPA Compliant

Using the NFPA sprinkler system, a reduction rate of 30% is used.

Therefore: F = 12495 l/min

Separation charge, Calc type: Consider Type

Charge for the separations on each side:

Sprinkler	Separation	description	Charge	Direction	Length	Height	LH factor	Type
☐			0%	South				
☐	28 m	20.1 - 30.1m	10%	North	86 m	2 sty	172	Type V
☐			0%	East				
☐			10%	West	Firewall, Unprotected opening			Type I-II²

Total charge in % 20%

Total charge in l/min 3570

Required Fire Flow: 16000 l/min

or 266.67 l/s

or 4227 US GPM

LEA Consulting Ltd. Consulting Engineers and Planners	**Water Demand Calculation**			
	Prepared:	P.R.	Page No.	D-04
	Checked:	F.M.		
Project: Uxbridge Hospital Redevelopment	Proj. #	23375		
Town of Uxbridge	Date:	19-Sep-24		

ALP-LTC Future Conditions

This calculation is following the "Water Supply for Public Fire Protection (2020)" by Fire Underwriters Survey.

Formula: $F = 220C\sqrt{A}$

where F = the required fire flow in litres per minute
C = Construction Coefficient (CC)
= 0.8 for Type II Noncombustible Construction
A = Effective Area* verticle openings unprotected
With a Construction Coefficient less than 1.0, with unprotected verticle openings, the Effective Area (A) is calculated by summing the largest two floors plus 50% of the area of all above floors up to 8 floors

According the building stats,

		Area (m2)
1stF loor	largest	5400
2nd Floor	adjoining	4032
3rd Floor	Above	2854
3rd Floor	Above	2854
A		17995

Therefore, F = 220*0.8*√17995
F = 24000 **l/min**

Occupancy reduction:

Occupancy Type: Limited Combustible Contents
For Limited Combustible Contents, an adjustment of -15% shall be applied
Therefore: F = 20400 l/min

Reduction for sprinkler protection: NFPA Compliant
Using the NFPA sprinkler system, a reduction rate of 30% is used.

Therefore: F = 14280 l/min

Separation charge, Calc type: Consider Type
Charge for the separations on each side:

Sprinkler	Separation	description	Charge	Direction	Length	Height	LH factor	Type
☐			0%	South				
☐			0%	North				
☐			10%	East	Firewall, Unprotected opening			Type I-II²
☐			0%	West				

Total charge in % 10%
Total charge in l/min 2040

Required Fire Flow: 16000 l/min
or 266.67 l/s
or 4227 US GPM

	LEA Consulting Ltd. Consulting Engineers and Planners	**Water Demand Calculation**			
		Prepared:	P.R.	Page No.	D-05
		Checked:	F.M.		
Project: Uxbridge Hospital Redevelopment		Proj. #	23375		
Town of Uxbridge		Date:	19-Sep-24		

Interim Conditions Demand (including existing cottage hospital)

Total Residential Population:	**0**	people	(See Page B-01)
Total Non-Residential Flow:	**1.11**	L/s	(See Page B-01)

Peak Hour Demand Calculation:		
Average Water Demand is equal to Average Sanitary Demand, refer to E-02		
Residential Per Capita Demand (multi-unit)	364	L/cap/day
Hospital Water Demand	1800	L/bed/day
Residential Peaking Factor (Design Guidelines for Drinking-Water Systems)	4.13	
Average Demand Existing Cottage Hospital Building (From Sanitary E-01)	0.42	L/sec
Average Demand Proposed Building (From Sanitary E-02)	0.67	L/sec
Average Demand UxMed (From Sanitary E-02)	0.44	L/sec
Total Average Demand	1.53	L/sec

Maximum Day Demand Calculation:		
Average Water Demand is equal to Average Sanitary Demand, refer to E-02		
Residential Per Capita Demand (multi-unit)	364	L/cap/day
Hospital Water Demand	1800	L/bed/day
Residential Peaking Factor (Design Guidelines for Drinking-Water Systems)	2.75	
Average Demand Existing Cottage Hospital Building (From Sanitary E-01)	0.42	L/sec
Average Demand Proposed Building (From Sanitary E-02)	0.67	L/sec
Average Demand UxMed (From Sanitary E-02)	0.44	L/sec
Total Average Demand	1.53	L/sec
Max Day Demand	**4.20**	L/sec
Fire Flow for Existing Cottage Hospital Building (D-02):	300.0	L/sec
Fire Flow for Proposed Building (D-02):	283.3	L/sec
Governing Fire Flow:	**300.0**	L/sec
Max. Day Demand plus Fire Flow:	**304.2**	L/sec
Design Water Demand	**304.2**	L/sec
	4821.6	**US GPM**

LEA Consulting Ltd. Consulting Engineers and Planners	**Water Demand Calculation**			
	Prepared:	P.R.	Page No.	D-06
	Checked:	F.M.		
Project: Uxbridge Hospital Redevelopment	Proj. #	23375		
Town of Uxbridge	Date:	19-Sep-24		

Future Conditions Demand

Total Residential Population:	**288**	people	(See Page B-02)
Total Non-Residential Flow:	**2.15**	L/s	(See Page B-02)

Peak Hour Demand Calculation:		
Average Water Demand is equal to Average Sanitary Demand, refer to E-03		
Residential Per Capita Demand (multi-unit)	364	L/cap/day
Hospital Water Demand	1800	L/bed/day
Residential Peaking Factor (Design Guidelines for Drinking-Water Systems)	4.13	
Average Demand Proposed Building (From Sanitary E-03)	1.71	L/sec
Average Demand UxMed (From Sanitary E-03)	0.44	L/sec
Average Demand ALP-LTC (From Sanitary E-03)	1.21	L/sec
Total Average Demand	3.37	L/sec

Maximum Day Demand Calculation:		
Average Water Demand is equal to Average Sanitary Demand, refer to E-03		
Residential Per Capita Demand (multi-unit)	364	L/cap/day
Hospital Water Demand	1800	L/bed/day
Residential Peaking Factor (Design Guidelines for Drinking-Water Systems)	2.75	
Average Demand Proposed Building (From Sanitary E-03)	1.71	L/sec
Average Demand UxMed (From Sanitary E-03)	0.44	L/sec
Average Demand ALP-LTC (From Sanitary E-03)	1.21	L/sec
Total Average Demand	3.37	L/sec
Peak Hour Demand	**9.26**	L/sec

LEA Consulting Ltd. Consulting Engineers and Planners	Watermain Adequacy Calculation Sheet - Interim Conditions			
	Prepared:	J.P.	Page No.	D-06
	Checked:	G.S.		
Project: Uxbridge Hospital Redevelopment Town of Uxbridge	Proj. #	23375		
	Date:	19-Sep-24		

Existing 300mm Watermain
Hydrant Test Results - 132 Victoria Drive, LHS Inc., September 10, 2024

Flow (L/s)	Flow (US GPM)	Residual Pressure (PSI)	
0.0	0	77.4	Static
64.0	1061	72.0	Flow response 1
119.7	1984	69.6	Flow response 2
229.2	3801	20.0	Estimated

Fire Flow + Max Day Demand

Flow (L/s)	Flow (US GPM)	Residual Pressure (PSI)
304.20	4,822	**24.2**

Residual Pressure based on Best Fit Curve

Flow (L/s)	Flow (US GPM)	Residual Pressure (psi)
0.0	**0.0**	**77.4**
16.0	253.6	77.2
32.0	507.1	76.6
48.0	760.7	75.7
64.0	**1,014.2**	**74.4**
77.9	1,234.8	73.1
91.8	1,455.4	71.6
105.7	1,676.0	69.9
119.7	**1,896.5**	**68.0**
138.2	2,190.1	65.1
156.7	2,483.7	61.8
175.2	2,777.3	58.3
193.7	3,070.9	54.4
212.3	3,364.5	50.1
230.8	3,658.1	45.5
249.3	3,951.7	40.6
267.8	4,245.3	35.4
286.4	4,538.9	29.9
304.2	**4,821.7**	**24.2**
304.9	4,832.4	24.0
323.4	5,126.0	17.9
341.9	5,419.6	11.4

LEA Consulting Ltd. Consulting Engineers and Planners	Watermain Adequacy Calculation Sheet - Interim Conditions			
	Prepared:	J.P.	Page No.	D-06
	Checked:	G.S.		
Project: Uxbridge Hospital Redevelopment	Proj. #	23375		
Town of Uxbridge	Date:	19-Sep-24		

Existing 300mm Watermain
Hydrant Test Results - 132 Victoria Drive, LHS Inc., September 10, 2024

Flow (L/s)	Flow (US GPM)	Residual Pressure (PSI)	
0.0	0	77.4	Static
64.0	1061	72.0	Flow response 1
119.7	1984	69.6	Flow response 2
229.2	3801	20.0	Estimated

Fire Flow + Max Day Demand

Flow (L/s)	Flow (US GPM)	Residual Pressure (PSI)
275.92	4,373	**33.0**

Residual Pressure based on Best Fit Curve

Flow (L/s)	Flow (US GPM)	Residual Pressure (psi)
0.0	**0.0**	**77.4**
16.0	253.6	77.2
32.0	507.1	76.6
48.0	760.7	75.7
64.0	**1,014.2**	**74.4**
77.9	1,234.8	73.1
91.8	1,455.4	71.6
105.7	1,676.0	69.9
119.7	**1,896.5**	**68.0**
138.2	2,190.1	65.1
156.7	2,483.7	61.8
175.2	2,777.3	58.3
193.7	3,070.9	54.4
212.3	3,364.5	50.1
230.8	3,658.1	45.5
249.3	3,951.7	40.6
267.8	4,245.3	35.4
275.9	**4,373.5**	**33.0**
286.4	4,538.9	29.9
304.9	4,832.4	24.0
323.4	5,126.0	17.9
341.9	5,419.6	11.4

LHS INC.

P.O. Box 712 Cobourg ON K9A 4R5
905-377-0715 / 1-866-622-4022
Email: info@lhsinc.com

Client	Lea Consulting Ltd Uxbridge	**Site**	4 Campbell Drive Uxbridge ON
		Site Contact **Phone**	

FIRE FLOW TEST

Fire Flow Date	**September 10, 2024 - 10:58 am**
Site	**4 Campbell Drive Uxbridge ON**
Static Hydrant	**132 Victoria Drive**
Flow Hydrant	**Perry St & Victoria Drive**

Hydrant Colours

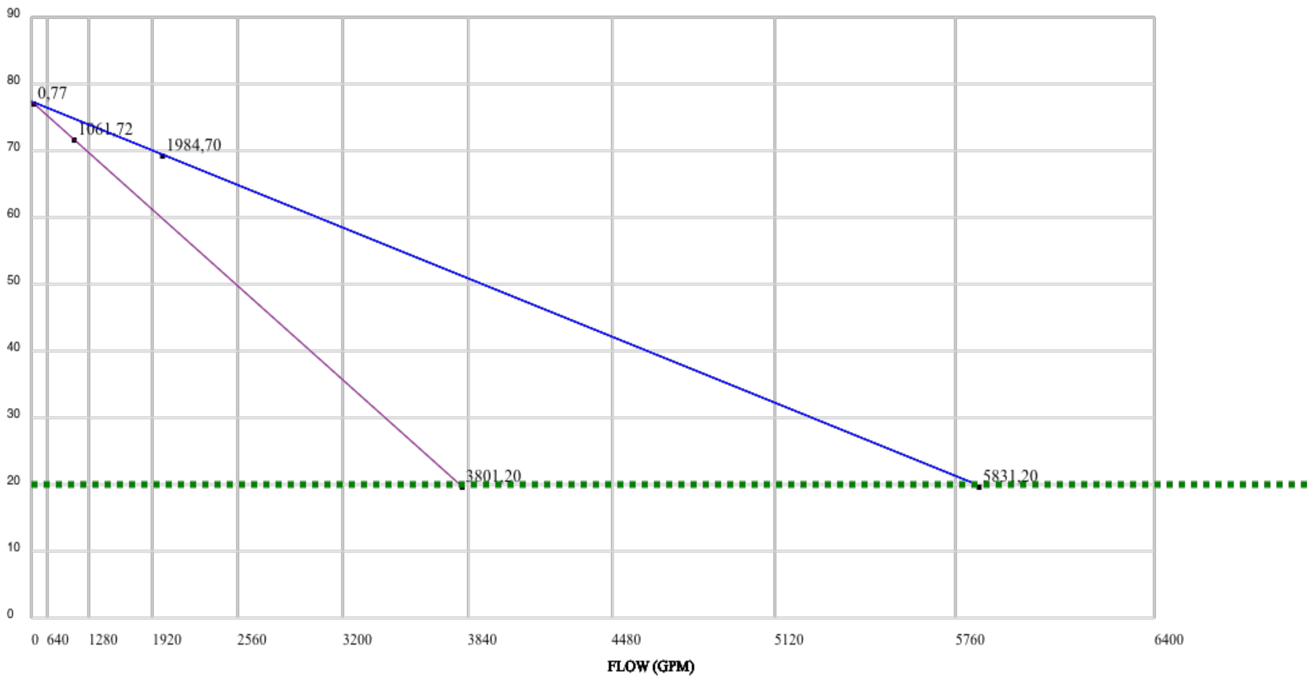
RED - C	0-500
ORANGE - B	500-1000
GREEN - A	1000-1500
BLUE - AA	>1500

Single Port

Static	77.4 psi
Residual 1	72 psi
Flow	40 psi
Observed	**1061 US GPM** 883 IMP GPM 4015 L / MIN
Projected @ 20psi	**3801 US GPM** 3165 IMP GPM 14388 l/min.

Two Port

Static	77.4 psi
Residual 2	69.6 psi
Flow 2 (x2)	35 psi
Observed	**1984 US GPM** 1652IMP GPM 7512 L / MIN
Projected @ 20psi	**5831 US GPM** 4855 IMP GPM 22073 l/min.



LHS INC.

P.O. Box 712 Cobourg ON K9A 4R5

905-377-0715 / 1-866-622-4022

Email: info@lhsinc.com

Client	Lea Consulting Ltd Uxbridge	**Site**	4 Campbell Drive Uxbridge ON
		Site Contact **Phone**	

FIRE FLOW TEST

Fire Flow Date	**September 10, 2024 - 10:54 am**
Site	**4 Campbell Drive Uxbridge ON**
Static Hydrant	**5 Campbell Drive**
Flow Hydrant	**Campbell Drive & James Hill Ct**

Hydrant Colours

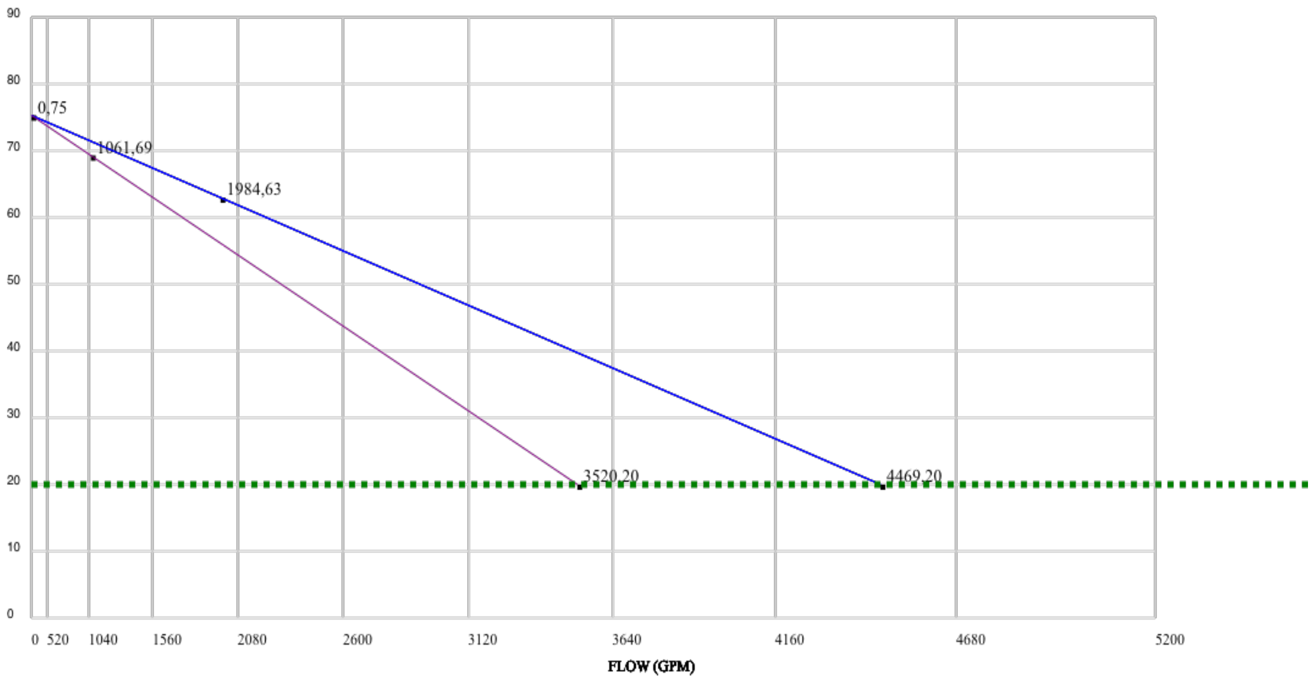
RED - C	0-500
ORANGE - B	500-1000
GREEN - A	1000-1500
BLUE - AA	>1500

Single Port

Static	75.3 psi
Residual 1	69.3 psi
Flow	40 psi
Observed	**1061 US GPM** 883 IMP GPM 4015 L / MIN
Projected @ 20psi	**3520 US GPM** 2931 IMP GPM 13325 l/min.

Two Port

Static	75.3 psi
Residual 2	63 psi
Flow 2 (x2)	35 psi
Observed	**1984 US GPM** 1652IMP GPM 7512 L / MIN
Projected @ 20psi	**4469 US GPM** 3721 IMP GPM 16917 l/min.



APPENDIX E

SANITARY FLOW CALCULATIONS

LEA Consulting Ltd. Consulting Engineers and Planners	Sanitary Flow Rate Calculation			
	Prepared:	P.R.	Page No.	E-01
	Checked:	F.M.		
Project: Uxbridge Hospital Redevelopment	Proj. #	23375		
Town of Uxbridge	Date:	19-Sep-24		

Existing Cottage Hospital

POPULATION CALCULATION

(Based on the Statistics and Email Correspondance from Diamond Schmitt Architects. dated April 22)

Site/Lot Area	54943.0	m^2
Existing Hospital Building Total GFA	3530.3	m^2
Existing Hospital Beds	20	Beds

Population Units			**Demand Rate**	**Equivalent Population**	**Equivalent Population**	**Non-Res Demand**	**Equivalent Population**
Type	Units	GFA (m^2)	(L/day/bed)	m3/ha/day	(pop/unit)	(L/s)	
Existing Beds	20		1800			0.42	99
Total	**20**					**0.42**	**99**

SANITARY FLOW DEMAND CALCULATION

Harmon Peaking Factor:	$M=1+14/(4+(P/1000)^{0.5})$		
Calculated Peaking Factor			
As per Harmon Peaking Factor Formula and Equivalent Population Calculation		4.2	
Maximum Peaking Factor			
As per Region of Durham Design Specifications for Sanitary Sewers		3.8	
Wastewater Generation Rate per capita		364	L/Day/cap
Existing Cottage Hospital Building			
Average Wastewater Flow (based on Hospital Bed Count)		0.42	L/sec
peak daily flow		**1.58**	L/sec
Overall Site			
Average Wastewater Flow (max of buildings)		0.42	L/sec
peak daily flow		**1.58**	L/sec
Infiltration Allowance (@ 0.26 L/sec/ha)*		0.48	L/sec
*Dewatering Groundwater Flow Discharge Rate***		0.00	L/sec
Ultimate Design Flow		**2.06**	L/sec

*Infiltration for the existing building is estimated at 1/3 of the total site area.
**Groundwater Dewatering Rate to be provided as per hydrogeological report when prepared

	LEA Consulting Ltd. Consulting Engineers and Planners	Sanitary Flow Rate Calculation			
		Prepared:	P.R.	Page No.	E-02
		Checked:	F.M.		
Project: Uxbridge Hospital Redevelopment		Proj. #	23375		
Town of Uxbridge		Date:	19-Sep-24		

INTERIM CONDITIONS

POPULATION CALCULATION

(Based on the Statistics and Email Correspondance from Diamond Schmitt Architects. dated April 22)

Site/Lot Area	54943.0	m^2
Proposed Hospital Building (PHB) Total GFA	15139.0	m^2
Proposed Hospital Building Beds	32	Beds
UxMed GFA	3424.4	m^2
UxMed Beds	0	Beds

Population Units Type	Units	GFA (m^2)	Demand Rate (L/day/bed)	Equivalent Population m3/ha/day	Equivalent Population (pop/unit)	Non-Res Demand (L/s)	Equivalent Population
UxMed GFA		3424.4		112		0.44	105
Total	**32**					**1.11**	**264**

SANITARY FLOW DEMAND CALCULATION

Harmon Peaking Factor: $M=1+14/(4+(P/1000)^{0.5})$		
Calculated Peaking Factor		
As per Harmon Peaking Factor Formula and Equivalent Population Calculation	4.1	
Maximum Peaking Factor		
As per Region of Durham Design Specifications for Sanitary Sewers	3.8	
Wastewater Generation Rate per capita	364	L/Day/cap
Proposed Hospital Building		
Average Wastewater Flow (based on Hospital Bed Count)	0.67	L/sec
peak daily flow	**2.53**	L/sec
UxMed		
Average Institutional Daily Wastewater Flow (based on Institutional Flow Rate)	0.44	L/sec
peak daily flow	**1.69**	L/sec
Overall Site		
Average Wastewater Flow (max of buildings)	1.11	L/sec
peak daily flow	**4.22**	L/sec
Infiltration Allowance (@ 0.26 L/sec/ha)	1.43	L/sec
*Dewatering Groundwater Flow Discharge Rate**	0.00	L/sec
Interim Design Flow	**5.65**	L/sec
Service Connection Size	**200**	mm
Service Connection Slope	**0.01**	m/m
Service Connection Velocity	**1.04**	m/s
Service Connection Capacity	**32.80**	L/s
Service Connection Percent Full	**17.2**	%
Service Connection Actual Velocity	**0.69**	m/s

*Groundwater Dewatering Rate to be provided as per hydrogeological report when prepared

LEA Consulting Ltd. Consulting Engineers and Planners	Sanitary Flow Rate Calculation			
	Prepared:	P.R.	Page No.	E-03
	Checked:	F.M.		
Project: Uxbridge Hospital Redevelopment	Proj. #	23375		
Town of Uxbridge	Date:	19-Sep-24		

FUTURE CONDITIONS

POPULATION CALCULATION

(Based on the Statistics and Email Correspondance from Diamond Schmitt Architects. dated April 22)

Site/Lot Area	54943.0	m^2
Proposed Hospital Building (PHB) Total GFA	15139.0	m^2
Proposed Hospital Building Beds	82	Beds
UxMed GFA	3424.4	m^2
UxMed Beds	0	Beds
ALP-LTC GFA	17994.8	m^2
ALP-LTC Beds	192	Beds

Population Units			**Demand Rate**	**Equivalent Population**	**Equivalent Population**	**Non-Res Demand**	**Equivalent Population**
Type	Units	GFA (m^2)	(L/day/bed)	m3/ha/day	(pop/unit)	(L/s)	
PHB Beds	82		1800			1.71	405
UxMed GFA		3424.4		112		0.44	105
ALP-LTC Units	192				1.5		288
Total	**82**					**2.15**	**799**

*Population equivalent for non-residential uses has been calculated by dividing the calculated average flow by the Generation Rate per capita

SANITARY FLOW DEMAND CALCULATION

Harmon Peaking Factor: $M=1+14/(4+(P/1000)^{0.5})$

Calculated Peaking Factor		
As per Harmon Peaking Factor Formula and Equivalent Population Calculation	3.9	
Maximum Peaking Factor		
As per Region of Durham Design Specifications for Sanitary Sewers	3.8	
Wastewater Generation Rate per capita	364	L/Day/cap
Proposed Hospital Building		
Average Wastewater Flow (based on Hospital Bed Count)	1.71	L/sec
peak daily flow	**6.49**	L/sec
UxMed		
Average Institutional Daily Wastewater Flow (based on Institutional Flow Rate)	0.44	L/sec
peak daily flow	**1.69**	L/sec
ALP-LTC		
Average Retirement Residence/Nursing Home Flow Rate	1.21	L/sec
peak daily flow	**4.61**	L/sec
Overall Site		
Average Wastewater Flow (max of buildings)	3.37	L/sec
peak daily flow	**12.79**	L/sec
Infiltration Allowance (@ 0.26 L/sec/ha)	1.43	L/sec
*Dewatering Groundwater Flow Discharge Rate**	0.00	L/sec
Ultimate Design Flow	**14.22**	L/sec
Service Connection Size	**200**	mm
Service Connection Slope	**0.01**	m/m
Service Connection Velocity	**1.04**	m/s
Service Connection Capacity	**32.80**	L/s
Service Connection Percent Full	**43.3**	%
Service Connection Actual Velocity	**0.98**	m/s

*Groundwater Dewatering Rate to be provided as per hydrogeological report when prepared

SANITARY SEWER DESIGN SHEET

Project: **24163**

Date:	19-Sep-24
Designed by:	H.R.
Checked by:	G.S.

SHEET No.:	C-01
Existing sanitary flow (L/s)*	2.06
Proposed sanitary flow (L/s)*	15.00
Mannings 'n':	0.013
Minimum Cover:	1.5

From	**To**	**Flow**	**Pipe Selection**							**% Full**
US MH	DS MH	Total Q l/s	Pipe Material	S %	Size mm	L m	V m/sec	Q_{full} m3/sec	Q_{full} l/s	Q_t/Q_f %
Prop. LTC Building	MH3A	15.00	PVC	1.0	200	12.8	1.04	0.03	32.80	46%
Prop. MH3A	Ex. MH2A	15.00	PVC	0.4	200	67.1	0.66	0.02	20.74	72%
Prop. Hospital building	Existing MH2A	15.00	PVC	1.0	200	24.5	1.04	0.03	32.80	46%
Exisitng MH2A	Existing MH1A	15.00	PVC	0.4	200	51.4	0.66	0.02	20.74	72%
Existing building	Existing MH1A	2.06	PVC	1.0	200	22.9	1.04	0.03	32.80	6%
Ex. MH1A	EX. MH	17.06	PVC	0.4	200	12.8	0.66	0.02	20.74	82%

APPENDIX F

SWM CALCULATIONS

LEA Consulting Ltd. Consulting Engineers and Planners	Land Use			
	Prepared:	H.B.	Page No.	F-01
	Checked:	F.F.		
Project: Oak Valley Health Uxbridge Hospital, Uxbridge, ON	Proj. #	24163		
	Date:	20-Sep-24		

EXISTING CONDITION:

	Existing Land Use	Area (m^2)
EC1	Outlet to Existing Uxbridge Brook	
	Paved Area	625.8
	Landscape Area	31110.8
	Total Subcatchment Area:	**31736.7**
EC2	Outlet to Existing Uxbridge Brook (Parking Lot)	
	Paved Area	4794.1
	Landscape Area	726.5
	Total Subcatchment Area:	**5520.6**
EC3	Outlet to Existing Uxbridge Brook (Uxmed Health Centre)	
	Building Area	1773.6
	Total Subcatchment Area:	**1773.6**
EC4	Outlet to Campbell Drive	
	Paved Area	9946.5
	Landscape Area	3948.7
	Total Subcatchment Area:	**13895.1**
EC5	External Drainage Area - Outlet to Campbell Drive	
	Landscape Area	494.5
	Paved Area	89.3
	Total Subcatchment Area:	**583.8**
EC6	External Drainage Area - Outlet to Existing Uxbridge Brook	
	Landscape Area	767.2
	Total Subcatchment Area:	**767.2**
EC7	External Draiange Area - Outlet to Existing Uxbridge Brook	
	Landscape Area	2043.5
	Total Subcatchment Area:	**2043.5**
EC8	External Drainage Area - Outlet to Existing Uxbridge Brook	
	Landscape Area	1529.7
	Total Subcatchment Area:	**1529.7**

PROPOSED CONDITION:

	Proposed Land Use	Area (m^2)
PC1	Controlled Area - Outlet to Uxbridge Brook	
	Paved Area	3302.3
	Landscape Area	32.1
	Total Subcatchment Area:	**3334.4**
PC2	Controlled Area - Outlet to Uxbridge Brook (Proposed Hospital Building)	
	Roof Area - Hardscape	5314.8
	Roof Area - Softscape	962.1
	Total Subcatchment Area:	**6276.8**
PC3	Controlled Area - Outlet to Existing Uxbridge Brook (Uxmed Health Centre)	
	Building Area	1773.6
	Total Subcatchment Area:	**1773.6**
PC4	Controlled Area - Outlet to Campbell Drive	
	Paved Area	8393.5
	Landscape Area	2641.7
	Total Subcatchment Area:	**11035.2**
PC5	External Area (Controlled) - Outlet to Campbell Drive	
	Landscape Area	494.5
	Paved Area	2641.7
	Total Subcatchment Area:	**583.8**
PC6	LTC building	
	Building	6594.7
	Total Subcatchment Area:	**6594.7**
PC7	North Flow	
	Landscape	4733.5
	Total Subcatchment Area:	**4733.5**
PC8	Pond Area	
	Landscape	8431.1
	Pond	2031.8
	Gravel	1158.4
	Total Subcatchment Area:	**11621.4**
PC9	South Parking Lot	
	Landscape	271.8
	Paved	4661.3
	Total Subcatchment Area:	**4933.1**
UC1	Uncontrolled Area - Proposed Hospital Building - Outlet to Uxbridge Brook	
	Paved Area	1832.3
	Landscape Area	847.8
	Total Subcatchment Area:	**2680.1**
PC10	South Flow	
	Landscape	1529.7
	Total Subcatchment Area:	**1529.7**
PC11	North Flow	
	Landscape	767.2
	Total Subcatchment Area:	**767.2**
PC12	North Flow	
	Landscape	2043.5
	Total Subcatchment Area:	**2043.5**

LEA Consulting Ltd. Consulting Engineers and Planners	Composite "C" Calculation			
	Prepared:	H.B.	Page No.	F-02
	Checked:	F.F.		
Project: Oak Valley Health Uxbridge Hospital, Uxbridge, ON	Proj. #	24163		
	Date:	20-Sep-24		

EC1 Outlet to Existing Uxbridge Brook
Pre-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Paved Area	0.063	0.90
Landscape Area	3.111	0.25
Total	**3.174**	**0.26**
Imperviousness Percent:		**2.0**

EC2 Outlet to Existing Uxbridge Brook (Parking Lot)
Pre-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Paved Area	0.479	0.90
Landscape Area	0.073	0.25
Total	**0.552**	**0.81**
Imperviousness Percent:		**86.8**

EC3 Outlet to Existing Uxbridge Brook (Uxmed Health Centre)
Pre-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Building Area	0.177	0.90
Total	**0.177**	**0.90**
Imperviousness Percent:		**100.0**

EC4 Outlet to Campbell Drive
Pre-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Paved Area	0.995	0.90
Landscape Area	0.395	0.25
Total	**1.390**	**0.72**
Imperviousness Percent:		**71.6**

EC5 External Drainage Area - Outlet to Campbell Drive
Pre-Development Composite Runoff Coefficient "C"
*Not considered to determine pre-development flow toward Campbell Drive

Location	Area (ha)	C
Landscape Area	0.049	0.25
Paved Area	0.009	0.90
Total	**0.058**	**0.35**
Imperviousness Percent:		**15.3**

EC6 External Drainage Area - Outlet to Existing Uxbridge Brook
Pre-Development Composite Runoff Coefficient "C"
*Not considered to determine pre-development flow toward Uxbridge Brook

Location	Area (ha)	C
Landscape Area	0.077	0.25
Total	**0.077**	**0.25**
Imperviousness Percent:		**0.0**

EC7 External Draiange Area - Outlet to Existing Uxbridge Brook
Pre-Development Composite Runoff Coefficient "C"
*Not considered to determine pre-development flow toward Uxbridge Brook

Location	Area (ha)	C
Landscape Area	0.204	0.25
Total	**0.204**	**0.25**
Imperviousness Percent:		**0.0**

EC8 External Drainage Area - Outlet to Existing Uxbridge Brook
Pre-Development Composite Runoff Coefficient "C"
*Not considered to determine pre-development flow toward Uxbridge Brook

Location	Area (ha)	C
Landscape Area	0.153	0.25
Total	**0.153**	**0.25**
Imperviousness Percent:		**0.0**

PC1 Controlled Area - Outlet to Uxbridge Brook
Post-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Paved Area	0.330	0.90
Landscape Area	0.003	0.25
Total Site Area	**0.333**	**0.89**
Imperviousness Percent:		**99.0**

PC2 Controlled Area - Outlet to Uxbridge Brook (Proposed Hospital Building)
Post-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Roof Area - Hardscape	0.531	0.90
Roof Area - Softscape	0.096	0.25
Total Site Area	**0.628**	**0.80**
Imperviousness Percent:		**84.7**

PC3 Controlled Area - Outlet to Existing Uxbridge Brook (Uxmed Health Centre)
Post-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Building Area	0.177	0.90
Total Site Area	**0.177**	**0.90**
Imperviousness Percent:		**100.0**

PC4 Controlled Area - Outlet to Campbell Drive
Post-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Paved Area	0.8394	0.90
Landscape Area	0.2642	0.25
Total Site Area	**1.104**	**0.74**
Imperviousness Percent:		**76.1**

PC5 External Area (Controlled) - Outlet to Campbell Drive
Post-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Landscape Area	0.0495	0.90
Paved Area	0.2642	0.25
Total Site Area	**0.314**	**0.74**
Imperviousness Percent:		**15.8**

PC6 LTC Building
Post-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Building	0.6595	0.90
Total Site Area	**0.659**	**0.90**
Imperviousness Percent:		**100.0**

PC7 North Flow
Post-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Landscape	0.4734	0.25
Total Site Area	**0.473**	**0.25**
Imperviousness Percent:		**0.0**

PC8 Pond Area
Post-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Landscape	0.8431	0.25
Pond	0.2032	0.9
Gravel	0.1158	0.7
Total Site Area	**1.162**	**0.41**
Imperviousness Percent:		**27.5**

PC9 South Parking Lot
Post-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Landscape	0.0272	0.25
Paved	0.4661	0.9
Total Site Area	**0.493**	**0.86**
Imperviousness Percent:		**94.5**

UC1 Uncontrolled Area - Proposed Hospital Building - Outlet to Uxbridge Brook
Post-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Paved Area	0.1832	0.90
Landscape Area	0.0848	0.25
Total Site Area	**0.268**	**0.69**
Imperviousness Percent:		**68.4**

PC10 South Flow
Post-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Landscape	0.1530	0.25
Total Site Area	**0.153**	**0.25**
Imperviousness Percent:		**0.0**

PC11 North Flow
Post-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Landscape	0.0767	0.25
Total Site Area	**0.077**	**0.25**
Imperviousness Percent:		**0.0**

PC12 North Flow
Post-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C
Landscape	0.2043	0.25
Total Site Area	**0.204**	**0.25**
Imperviousness Percent:		**0.0**

LEA Consulting Ltd. Consulting Engineers and Planners	Recharge Calculation (Water Balance)			
	Prepared:	H.B.	Page No.	F-03
	Checked:	F.F.		
Project: Oak Valley Health Uxbridge Hospital, Uxbridge, ON	Proj. #	24163		
	Date:	20-Sep-24		

Based on the hydrogeological investigation
Conducted by Englobe (dated August 29, 2024)

Required Water Balance Volume

The below calculation describes the required volume to meet the water balance on site.

Required Water Balance:	8705	m^3/year
72 hour periods per year:	121.7	/year
Retention Volume Required:	71.55	m^3

Calculation of available volume within the Bio-swales

Footprint of Bioswales in PC9:	152.18	m^2
Footprint of Bioswales in PC4:	289.80	m^2
Footprint area of bio-swales:	442.0	m^2
Depth of ponding before capture:	15	cm
Volume within the ponding zone:	33.1	m^3
required depth of bio-swale infiltration media*:	8.7	cm
Void Ratio	0.4	
Minimum Depth of bio-swale infiltration media:	21.7	cm
Provided stone for bio-swale infiltration media**:	28.0	cm

*Water depth only

** minimum provided depth of infiltration media in all bio-swales on site.

Bioswale Location:	SW	SE	NE	Total
Footprint of bio-swale:	152.2m^2	121.8m^2	168.0m^2	442.0m^2
Depth of media:	0.28m	0.48m	0.28m	N/A
Volume provided in media:	17.0m^3	23.4m^3	18.8m^3	59.2m^3
Volume provided in ponding:	11.4m^3	9.1m^3	12.6m^3	33.1m^3
	Total Infiltration Volume Provided:			**92.4m^3**

LEA Consulting Ltd. Consulting Engineers and Planners		**Bioswales - Drawdown Time Calculation**			
		Prepared:	H.B.	Table No.	F-04
		Checked:	F.F.		
Project: Oak Valley Health Uxbridge Hospital, Uxbridge, ON		Proj. #	24163		
		Date	20-Sep-24		

Drawdown calculations for the South West bio-swale

Based on the hydrogeological investigation

Conducted by Englobe (dated August 29, 2024)

Hydraulic Conductivity (K):	2.10E-06	m/s
Infiltration Rate Estimated from Hydraulic Conductivity:	16.5	mm/hr
Safety factor:	2.5	*
Design Infiltration Rate	6.6	mm/hr

* Safety factor has been assumed at 2.5 in lieu of a detailed safety factor by the hydrogeological engineer.

Clear Stone Detention Design Parameters:

Depth of Granular Stones:	280	mm
Depth of Water:	150	mm
Porosity (n):	0.40	m^3/m^3
Granular Area (A):	152.2	m^2
Distance to Water Table (D_{WT}):	1.1	m
Water Storage Volume (V):	**28.46**	**m³**

A = (1000V) / Pnt

Drawdown time (t)	**70.83**	**hrs**

A = Bottom Area   n = Porosity

LEA Consulting Ltd. Consulting Engineers and Planners	**Bioswales - Drawdown Time Calculation**			
	Prepared:	H.B.	Table No.	F-05
	Checked:	F.F.		
Project: Oak Valley Health Uxbridge Hospital, Uxbridge, ON	Proj. #	24163		
	Date	20-Sep-24		

Drawdown calculations for the South East bio-swale
Based on the hydrogeological investigation
Conducted by Englobe (dated August 29, 2024)

Hydraulic Conductivity (K):	2.10E-06	m/s
Infiltration Rate Estimated from Hydraulic Conductivity:	46	mm/hr
Safety factor:	2.5	*
Design Infiltration Rate	18.4	mm/hr

* Safety factor has been assumed at 2.5 in lieu of a detailed safety factor by the hydrogeological engineer.

Clear Stone Detention Design Parameters:

Depth of Granular Stones:	480	mm
Depth of Water:	150	mm
Porosity (n):	0.40	m^3/m^3
Granular Area (A):	121.8	m^2
Distance to Water Table (D_{WT}):	1.0	m
Water Storage Volume (V):	**32.52**	**m^3**

A = (1000V) / Pnt

Drawdown time (t)	**36.28**	**hrs**

A = Bottom Area   n = Porosity

LEA Consulting Ltd. Consulting Engineers and Planners	**Bioswales - Drawdown Time Calculation**			
	Prepared:	H.B.	Table No.	F-06
	Checked:	F.F.		
Project: Oak Valley Health Uxbridge Hospital, Uxbridge, ON	Proj. #	24163		
	Date	20-Sep-24		

Drawdown calculations for the North East bio-swale
Based on the hydrogeological investigation
Conducted by Englobe (dated August 29, 2024)

Hydraulic Conductivity (K):	2.10E-06	m/s
Infiltration Rate Estimated from Hydraulic Conductivity:	16.5	mm/hr
Safety factor:	2.5	*
Design Infiltration Rate	6.6	mm/hr

* Safety factor has been assumed at 2.5 in lieu of a detailed safety factor by the hydrogeological engineer.

Clear Stone Detention Design Parameters:

Depth of Granular Stones:	280	mm
Depth of Water:	150	mm
Porosity (n):	0.40	m^3/m^3
Granular Area (A):	168.0	m^2
Distance to Water Table (D_{WT}):	1.12	m
Water Storage Volume (V):	**31.42**	**m^3**

A = (1000V) / Pnt
Drawdown time (t) **70.83 hrs**

A = Bottom Area n = Porosity

LEA Consulting Ltd. Consulting Engineers and Planners	**Recharge Calculation (Water Balance)**			
	Prepared:	P.R.	Page No.	F-07
	Checked:	F.M.		
Project: 835 Gorham Street	Proj. #	24245		
Town of Newmarket	Date:	19-Sep-24		

Volume Control for the site cannot be addressed through infiltration trenches due to the seasonally high groundwater. As such, all volume control shall be provided through filtration and permeable pavement.

Volume control, require volume by storm depth

paved and building area (Uxbridge Brook Outlet)	22863.8	m^2
paved and building area (Campbell Drive Outlet)	8393.5	m^2
Total area for Volume Control	31257.3	m^2

Storm Depth	25.0mm	12.5mm	5.0mm
Volume Required	781.4m³	390.7m³	156.3m³

Roof Drain Filtration Chambers

Calculations below describe the volume provided in an irrigation/filtration chamber which drains water from a portion of the proposed hospital building roof and the Uxmed Health Centre building roof.

Roof going east (PC1)	4274.31	m^2
Total Chamber Volume	109	m

Bio-Swales in PC9 (South West)

Calculations below define the volume within the bio-swales for PC9

Footprint area of bio-swales:	152.2	m^2
Porosity:	0.4	
detph of ponding storage:	0.15	m
Depth of Infiltration Storage:	0.28	m
Storage Volume within the bio-swale infiltration zone:	17.0	m³
Storage Volume within the bio-swale ponding zone:	11.4	m³
Total Volume to be infiltrated/evaporated:	28.5	m³

Bio-Swale in PC4 (South East and North East)

Calculations below define the volume within the bio-swales for PC4

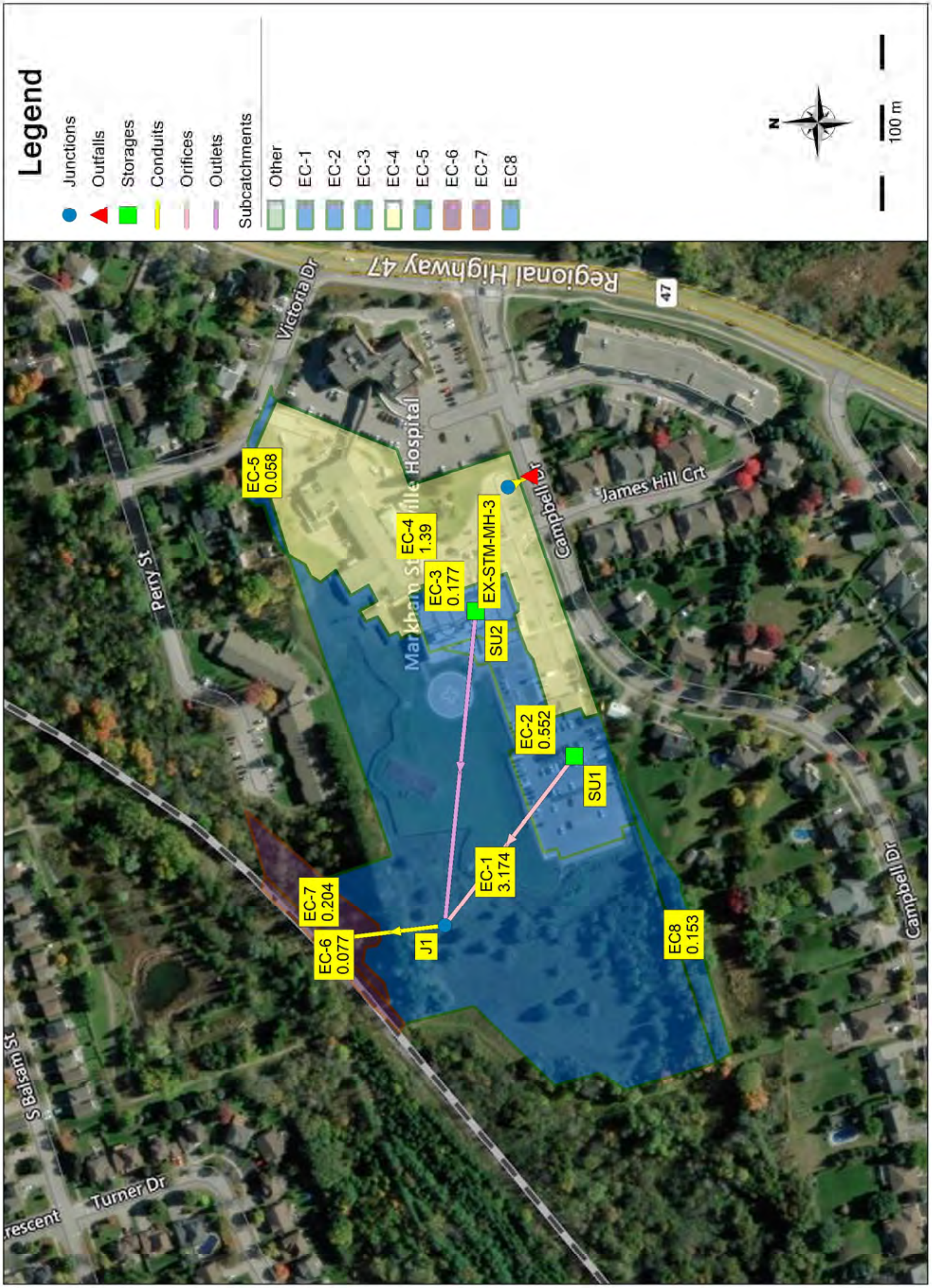
bioswale location:	SE	NE 1	NE 2	
Footprint area of bio-swales:	121.80m²	84.00m²	84.00m²	
Porosity:			0.4	
detph of ponding storage:			0.15	m
Depth of Infiltration Storage:	0.48m	0.28m	0.28m	
Storage Volume within the bio-swale infiltration zone:			42.2	m³
Storage Volume within the bio-swale ponding zone:			21.7	m³
Total Volume to be infiltrated/evaporated:			63.9	m³

Total Volume Control Provided

Total filtration from roof lead chambers and permeable pavement

Rooftop Irrigation Chamber	109	m³
PC9 bio-swales	28.5	m³
PC4 bio-swales	63.9	m³
Total Volume Control	**201.4**	**m³**

PRE-DEVELOPMENT SCHEMATIC



PREDEVELOPMENT - INPUT REPORT

```
[TITLE]
;;Project Title/Notes

[OPTIONS]
;;Option             Value
FLOW_UNITS           LPS
INFILTRATION         CURVE_NUMBER
FLOW_ROUTING         DYNWAVE
LINK_OFFSETS         ELEVATION
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           04/24/2024
START_TIME           00:00:00
REPORT_START_DATE    04/24/2024
REPORT_START_TIME    00:00:00
END_DATE             04/24/2024
END_TIME             23:48:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          00:01:00
WET_STEP             00:05:00
DRY_STEP             00:05:00
ROUTING_STEP         5
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
MAX_TRIALS           8
HEAD_TOLERANCE       0.0015
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              14

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
CONSTANT         0.0
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- -------- -------- ----------
Raingage         INTENSITY 0:10     1.0      TIMESERIES SCS-2YR

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %
Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -----
--- -------- ----------------
EC-1             Raingage         J1               3.174    2        144.273  2
```

```
EC-2             Raingage         SU1              0.552    86.8     77.746   1.5
0
EC-3             Raingage         SU2              0.177    100      118      1
0
EC-4             Raingage         EX-STM-MH-3      1.39     71.6     185.333  1.5
0
EC-5             Raingage         EC-4             0.058    15.3     42.213   1
0
EC-6             Raingage         OF1              0.077    0        48.125   2
0
EC-7             Raingage         OF1              0.204    0        34       2
0
EC8              Raingage         EC-1             0.153    0        20.276   1
0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo
PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ----------
----------
EC-1             0.013      0.15       2          5          0          OUTLET
EC-2             0.013      0.15       2          5          0          OUTLET
EC-3             0.013      0.15       2          5          0          OUTLET
EC-4             0.013      0.15       2          5          0          OUTLET
EC-5             0.013      0.15       2          5          0          OUTLET
EC-6             0.013      0.15       2          5          0          OUTLET
EC-7             0.013      0.15       2          5          0          OUTLET
EC8              0.013      0.15       2          5          0          OUTLET

[INFILTRATION]
;;Subcatchment   Param1     Param2     Param3     Param4     Param5
;;-------------- ---------- ---------- ---------- ---------- ----------
EC-1             74         0.5        7          0          0
EC-2             74         0.5        7          0          0
EC-3             74         0.5        7          0          0
EC-4             74         0.5        7          0          0
EC-5             74         0.5        7          0          0
EC-6             74         0.5        7          0          0
EC-7             74         0.5        7          0          0
EC8              74         0.5        7          0          0

[JUNCTIONS]
;;Name           Elevation  MaxDepth   InitDepth  SurDepth   Aponded
;;-------------- ---------- ---------- ---------- ---------- ----------
EX-STM-MH-3      273.55     3.13       0          0          0
J1               274.95     1.05       0          0          0

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
EX-STMH-4        273.07     FREE                        NO
OF1              274.85     FREE                        YES

[STORAGE]
;;Name           Elev.    MaxDepth   InitDepth  Shape      Curve Name/Params
SurDepth Fevap    Psi      Ksat     IMD
;;-------------- -------- ---------- ---------- ---------- ----------------------
----- -------- -------- -------- -------- --------
```

```
SU1              275.95   1.75       0          TABULAR     1
0        0
SU2              285      0.2        0          TABULAR     3
0        0

[CONDUITS]
;;Name           From Node        To Node          Length     Roughness  InOffset
OutOffset  InitFlow   MaxFlow
;;-------------- ---------------- ---------------- ---------- ---------- ----------
---------- ---------- ----------
C1               J1               OF1              10         0.013      274.95
274.85     0          0
C2               EX-STM-MH-3      EX-STMH-4        13.474     0.013      273.55
273.37     0          0

[ORIFICES]
;;Name           From Node        To Node          Type         Offset     Qcoeff
Gated    CloseTime
;;-------------- ---------------- ---------------- ------------ ---------- --------
-- -------- ----------
OR1              SU1              J1               SIDE         275.95     0.63
NO       0

[OUTLETS]
;;Name           From Node        To Node          Offset     Type
QTable/Qcoeff    Qexpon     Gated
;;-------------- ---------------- ---------------- ---------- --------------- ----
------------ ---------- --------
OL1              SU2              J1               285        TABULAR/DEPTH    2
NO

[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4
Barrels    Culvert
;;-------------- ------------ ---------------- ---------- ---------- ---------- ---
------- ----------
C1               RECT_OPEN    1                1          0          0          1
C2               CIRCULAR     0.375            0          0          0          1
OR1              CIRCULAR     0.062            0          0          0

[LOSSES]
;;Link           Kentry     Kexit      Kavg       Flap Gate  Seepage
;;-------------- ---------- ---------- ---------- ---------- ----------

[CURVES]
;;Name           Type       X-Value    Y-Value
;;-------------- ---------- ---------- ----------
2                Rating     0          0
2                           0.15       11.1

1                Storage    0          0.72
1                           1.45       0.72
1                           1.75       2500

3                Storage    0          1
3                           0.075      400
3                           0.15       1000
3                           0.2        1000
```

```
[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
100Yr-Chicago               0:00       4.556
100Yr-Chicago               0:10       5.133
100Yr-Chicago               0:20       5.902
100Yr-Chicago               0:30       6.982
100Yr-Chicago               0:40       8.62
100Yr-Chicago               0:50       11.426
100Yr-Chicago               1:00       17.443
100Yr-Chicago               1:10       40.809
100Yr-Chicago               1:20       200.631
100Yr-Chicago               1:30       58.942
100Yr-Chicago               1:40       29.219
100Yr-Chicago               1:50       19.526
100Yr-Chicago               2:00       14.775
100Yr-Chicago               2:10       11.954
100Yr-Chicago               2:20       10.083
100Yr-Chicago               2:30       8.749
100Yr-Chicago               2:40       7.747
100Yr-Chicago               2:50       6.967
100Yr-Chicago               3:00       6.34
100Yr-Chicago               3:10       5.826
100Yr-Chicago               3:20       5.395
100Yr-Chicago               3:30       5.029
100Yr-Chicago               3:40       4.714
100Yr-Chicago               3:50       4.439
100Yr-Chicago               4:00       0

10yr-Chicago                0:00       3.355
10yr-Chicago                0:10       3.764
10yr-Chicago                0:20       4.305
10yr-Chicago                0:30       5.06
10yr-Chicago                0:40       6.195
10yr-Chicago                0:50       8.115
10yr-Chicago                1:00       12.157
10yr-Chicago                1:10       27.321
10yr-Chicago                1:20       126.064
10yr-Chicago                1:30       38.882
10yr-Chicago                1:40       19.9
10yr-Chicago                1:50       13.546
10yr-Chicago                2:00       10.378
10yr-Chicago                2:10       8.475
10yr-Chicago                2:20       7.2
10yr-Chicago                2:30       6.284
10yr-Chicago                2:40       5.592
10yr-Chicago                2:50       5.05
10yr-Chicago                3:00       4.612
10yr-Chicago                3:10       4.252
10yr-Chicago                3:20       3.949
10yr-Chicago                3:30       3.69
10yr-Chicago                3:40       3.467
10yr-Chicago                3:50       3.272
10yr-Chicago                4:00       0

25yr-Chicago                0:00       3.881
25yr-Chicago                0:10       4.347
```

25yr-Chicago	0:20	4.963
25yr-Chicago	0:30	5.818
25yr-Chicago	0:40	7.096
25yr-Chicago	0:50	9.245
25yr-Chicago	1:00	13.738
25yr-Chicago	1:10	30.61
25yr-Chicago	1:20	154.637
25yr-Chicago	1:30	43.623
25yr-Chicago	1:40	22.306
25yr-Chicago	1:50	15.276
25yr-Chicago	2:00	11.766
25yr-Chicago	2:10	9.648
25yr-Chicago	2:20	8.224
25yr-Chicago	2:30	7.196
25yr-Chicago	2:40	6.418
25yr-Chicago	2:50	5.806
25yr-Chicago	3:00	5.311
25yr-Chicago	3:10	4.902
25yr-Chicago	3:20	4.558
25yr-Chicago	3:30	4.264
25yr-Chicago	3:40	4.009
25yr-Chicago	3:50	3.787
25yr-Chicago	4:00	0
2-Yr-Chicago	0:00	2.072
2-Yr-Chicago	0:10	2.323
2-Yr-Chicago	0:20	2.656
2-Yr-Chicago	0:30	3.12
2-Yr-Chicago	0:40	3.817
2-Yr-Chicago	0:50	4.995
2-Yr-Chicago	1:00	7.471
2-Yr-Chicago	1:10	16.731
2-Yr-Chicago	1:20	76.763
2-Yr-Chicago	1:30	23.779
2-Yr-Chicago	1:40	12.204
2-Yr-Chicago	1:50	8.321
2-Yr-Chicago	2:00	6.382
2-Yr-Chicago	2:10	5.216
2-Yr-Chicago	2:20	4.434
2-Yr-Chicago	2:30	3.872
2-Yr-Chicago	2:40	3.447
2-Yr-Chicago	2:50	3.114
2-Yr-Chicago	3:00	2.845
2-Yr-Chicago	3:10	2.623
2-Yr-Chicago	3:20	2.437
2-Yr-Chicago	3:30	2.278
2-Yr-Chicago	3:40	2.141
2-Yr-Chicago	3:50	2.021
2-Yr-Chicago	4:00	0
5yr-Chicago	0:00	2.848
5yr-Chicago	0:10	3.195
5yr-Chicago	0:20	3.655
5yr-Chicago	0:30	4.295
5yr-Chicago	0:40	5.258
5yr-Chicago	0:50	6.888
5yr-Chicago	1:00	10.32

5yr-Chicago	1:10	23.191
5yr-Chicago	1:20	107.006
5yr-Chicago	1:30	33.004
5yr-Chicago	1:40	16.892
5yr-Chicago	1:50	11.498
5yr-Chicago	2:00	8.81
5yr-Chicago	2:10	7.194
5yr-Chicago	2:20	6.112
5yr-Chicago	2:30	5.334
5yr-Chicago	2:40	4.747
5yr-Chicago	2:50	4.286
5yr-Chicago	3:00	3.915
5yr-Chicago	3:10	3.609
5yr-Chicago	3:20	3.352
5yr-Chicago	3:30	3.132
5yr-Chicago	3:40	2.943
5yr-Chicago	3:50	2.777
5yr-Chicago	4:00	0

;Date/TimeRainfall

SCS-100yr	0:00	2.25959
SCS-100yr	0:15	2.31899
SCS-100yr	0:30	2.38334
SCS-100yr	0:45	2.44274
SCS-100yr	1:00	2.507084
SCS-100yr	1:15	2.56648016
SCS-100yr	1:30	2.63083
SCS-100yr	1:45	2.69023013
SCS-100yr	2:00	2.88327
SCS-100yr	2:15	3.18026185
SCS-100yr	2:30	3.50199819
SCS-100yr	2:45	3.798986
SCS-100yr	3:00	3.95986
SCS-100yr	3:15	3.95986
SCS-100yr	3:30	4.217248
SCS-100yr	3:45	4.692432
SCS-100yr	4:00	5.33591
SCS-100yr	4:15	6.048678
SCS-100yr	4:30	7.078244
SCS-100yr	4:45	8.266204
SCS-100yr	5:00	10.4540224
SCS-100yr	5:15	13.3051224
SCS-100yr	5:30	54.23767
SCS-100yr	5:45	133.855545
SCS-100yr	6:00	21.2050362
SCS-100yr	6:15	14.4336805
SCS-100yr	6:30	9.929342
SCS-100yr	6:45	8.384998
SCS-100yr	7:00	7.098044
SCS-100yr	7:15	6.26647234
SCS-100yr	7:30	5.494298
SCS-100yr	7:45	4.900322
SCS-100yr	8:00	4.467212
SCS-100yr	8:15	4.25932
SCS-100yr	8:30	4.03163
SCS-100yr	8:45	3.823738
SCS-100yr	9:00	3.600996

SCS-100yr	9:15	3.393104
SCS-100yr	9:30	3.16541
SCS-100yr	9:45	2.957518
SCS-100yr	10:00	2.80654788
SCS-100yr	10:15	2.732304
SCS-100yr	10:30	2.650626
SCS-100yr	10:45	2.57638216
SCS-100yr	11:00	2.49718785
SCS-100yr	11:15	2.422936
SCS-100yr	11:30	2.341266
SCS-100yr	11:45	1.37110209
SCS-100yr	12:00	0
SCS-10yr	0:00	1.545914
SCS-10yr	0:15	1.58655
SCS-10yr	0:30	1.630574
SCS-10yr	0:45	1.67120993
SCS-10yr	1:00	1.71523392
SCS-10yr	1:15	1.755874
SCS-10yr	1:30	1.799894
SCS-10yr	1:45	1.840534
SCS-10yr	2:00	1.972608
SCS-10yr	2:15	2.175792
SCS-10yr	2:30	2.39590788
SCS-10yr	2:45	2.599096
SCS-10yr	3:00	2.70916
SCS-10yr	3:15	2.70916
SCS-10yr	3:30	2.885248
SCS-10yr	3:45	3.210352
SCS-10yr	4:00	3.650586
SCS-10yr	4:15	4.138234
SCS-10yr	4:30	4.842614
SCS-10yr	4:45	5.655362
SCS-10yr	5:00	7.15217
SCS-10yr	5:15	9.102762
SCS-10yr	5:30	37.1069679
SCS-10yr	5:45	91.5779343
SCS-10yr	6:00	14.5075283
SCS-10yr	6:15	9.874872
SCS-10yr	6:30	6.793208
SCS-10yr	6:45	5.736636
SCS-10yr	7:00	4.85616
SCS-10yr	7:15	4.28724
SCS-10yr	7:30	3.758954
SCS-10yr	7:45	3.352578
SCS-10yr	8:00	3.056264
SCS-10yr	8:15	2.914036
SCS-10yr	8:30	2.75826
SCS-10yr	8:45	2.616028
SCS-10yr	9:00	2.46364212
SCS-10yr	9:15	2.32140613
SCS-10yr	9:30	2.165634
SCS-10yr	9:45	2.023398
SCS-10yr	10:00	1.920114
SCS-10yr	10:15	1.869318
SCS-10yr	10:30	1.813442
SCS-10yr	10:45	1.762646

SCS-10yr	11:00	1.708464
SCS-10yr	11:15	1.657668
SCS-10yr	11:30	1.601792
SCS-10yr	11:45	0.938044
SCS-10yr	12:00	0

;Date/TimeRainfall

SCS-25yr	0:00	1.805372
SCS-25yr	0:15	1.852832
SCS-25yr	0:30	1.904242
SCS-25yr	0:45	1.951702
SCS-25yr	1:00	2.003112
SCS-25yr	1:15	2.050572
SCS-25yr	1:30	2.101986
SCS-25yr	1:45	2.149442
SCS-25yr	2:00	2.30367613
SCS-25yr	2:15	2.540972
SCS-25yr	2:30	2.798036
SCS-25yr	2:45	3.03532386
SCS-25yr	3:00	3.16385
SCS-25yr	3:15	3.16385
SCS-25yr	3:30	3.369502
SCS-25yr	3:45	3.749166
SCS-25yr	4:00	4.263292
SCS-25yr	4:15	4.832788
SCS-25yr	4:30	5.655384
SCS-25yr	4:45	6.604544
SCS-25yr	5:00	8.352572
SCS-25yr	5:15	10.6305437
SCS-25yr	5:30	43.3348923
SCS-25yr	5:45	106.948105
SCS-25yr	6:00	16.9424324
SCS-25yr	6:15	11.5322447
SCS-25yr	6:30	7.933362
SCS-25yr	6:45	6.699458
SCS-25yr	7:00	5.671208
SCS-25yr	7:15	5.006796
SCS-25yr	7:30	4.38984776
SCS-25yr	7:45	3.915268
SCS-25yr	8:00	3.56922
SCS-25yr	8:15	3.40312
SCS-25yr	8:30	3.221198
SCS-25yr	8:45	3.055094
SCS-25yr	9:00	2.877126
SCS-25yr	9:15	2.711026
SCS-25yr	9:30	2.529108
SCS-25yr	9:45	2.363004
SCS-25yr	10:00	2.24238
SCS-25yr	10:15	2.18306
SCS-25yr	10:30	2.117806
SCS-25yr	10:45	2.058482
SCS-25yr	11:00	1.995204
SCS-25yr	11:15	1.935884
SCS-25yr	11:30	1.870626
SCS-25yr	11:45	1.09548593
SCS-25yr	12:00	0

;0:150.973768

SCS-2YR	0:00	0.948824
SCS-2YR	0:15	0.973768
SCS-2YR	0:30	1.000788
SCS-2YR	0:45	1.025728
SCS-2YR	1:00	1.052752
SCS-2YR	1:15	1.077688
SCS-2YR	1:30	1.104712
SCS-2YR	1:45	1.129652
SCS-2YR	2:00	1.210714
SCS-2YR	2:15	1.33542192
SCS-2YR	2:30	1.470524
SCS-2YR	2:45	1.595232
SCS-2YR	3:00	1.66278
SCS-2YR	3:15	1.66278
SCS-2YR	3:30	1.770862
SCS-2YR	3:45	1.97039807
SCS-2YR	4:00	2.240598
SCS-2YR	4:15	2.539902
SCS-2YR	4:30	2.972224
SCS-2YR	4:45	3.47106
SCS-2YR	5:00	4.389746
SCS-2YR	5:15	5.5869503
SCS-2YR	5:30	22.7749233
SCS-2YR	5:45	56.20724
SCS-2YR	6:00	8.9042
SCS-2YR	6:15	6.060844
SCS-2YR	6:30	4.169428
SCS-2YR	6:45	3.52094
SCS-2YR	7:00	2.98053813
SCS-2YR	7:15	2.631354
SCS-2YR	7:30	2.307112
SCS-2YR	7:45	2.057692
SCS-2YR	8:00	1.875824
SCS-2YR	8:15	1.788532
SCS-2YR	8:30	1.692918
SCS-2YR	8:45	1.605626
SCS-2YR	9:00	1.512092
SCS-2YR	9:15	1.424796
SCS-2YR	9:30	1.329188
SCS-2YR	9:45	1.241888
SCS-2YR	10:00	1.178498
SCS-2YR	10:15	1.14732194
SCS-2YR	10:30	1.113028
SCS-2YR	10:45	1.081848
SCS-2YR	11:00	1.048592
SCS-2YR	11:15	1.017412
SCS-2YR	11:30	0.983118
SCS-2YR	11:45	0.575738
SCS-2YR	12:00	0

SCS-5YR	0:00	1.312504
SCS-5YR	0:15	1.347008
SCS-5YR	0:30	1.384382
SCS-5YR	0:45	1.41888607
SCS-5YR	1:00	1.456262
SCS-5YR	1:15	1.490766

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SCS-5YR                     1:30        1.528142
SCS-5YR                     1:45        1.562642
SCS-5YR                     2:00        1.67477393
SCS-5YR                     2:15        1.847286
SCS-5YR                     2:30        2.034164
SCS-5YR                     2:45        2.206676
SCS-5YR                     3:00        2.30012
SCS-5YR                     3:15        2.30012
SCS-5YR                     3:30        2.449626
SCS-5YR                     3:45        2.725642
SCS-5YR                     4:00        3.099408
SCS-5YR                     4:15        3.513432
SCS-5YR                     4:30        4.111464
SCS-5YR                     4:45        4.8015
SCS-5YR                     5:00        6.072316
SCS-5YR                     5:15        7.7284
SCS-5YR                     5:30        31.5044441
SCS-5YR                     5:45        77.7512054
SCS-5YR                     6:00        12.3171358
SCS-5YR                     6:15        8.383936
SCS-5YR                     6:30        5.767544
SCS-5YR                     6:45        4.870504
SCS-5YR                     7:00        4.122962
SCS-5YR                     7:15        3.639938
SCS-5YR                     7:30        3.19141388
SCS-5YR                     7:45        2.84639788
SCS-5YR                     8:00        2.594824
SCS-5YR                     8:15        2.474068
SCS-5YR                     8:30        2.341812
SCS-5YR                     8:45        2.221056
SCS-5YR                     9:00        2.09167
SCS-5YR                     9:15        1.970914
SCS-5YR                     9:30        1.838656
SCS-5YR                     9:45        1.7179
SCS-5YR                     10:00       1.630208
SCS-5YR                     10:15       1.58708
SCS-5YR                     10:30       1.53964
SCS-5YR                     10:45       1.496516
SCS-5YR                     11:00       1.450514
SCS-5YR                     11:15       1.407386
SCS-5YR                     11:30       1.359944
SCS-5YR                     11:45       0.796416
SCS-5YR                     12:00       0

[REPORT]
;;Reporting Options
INPUT      YES
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS       649538.29995     4884778.80275    649970.20505     4885089.77825
UNITS            Meters
```

```
[COORDINATES]
;;Node           X-Coord            Y-Coord           
;;-------------- ------------------ ------------------
EX-STM-MH-3      649896.693         4884926.05        
J1               649648.636         4884955.95        
EX-STMH-4        649903.118         4884914.218       
OF1              649640.333         4885011.948       
SU1              649745.505         4884885.132       
SU2              649826.305         4884942.488       

[VERTICES]
;;Link           X-Coord            Y-Coord           
;;-------------- ------------------ ------------------

[POLYGONS]
;;Subcatchment   X-Coord            Y-Coord           
;;-------------- ------------------ ------------------
EC-1             649574.662         4884801.343       
EC-1             649557.932         4884852.228       
EC-1             649567.507         4884867.026       
EC-1             649559.56          4884891.787       
EC-1             649603.302         4884938.481       
EC-1             649592.67          4884977.18        
EC-1             649603.788         4884986.892       
EC-1             649605.124         4884986.134       
EC-1             649615.337         4884989.257       
EC-1             649626.658         4885001.602       
EC-1             649635.391         4885000.223       
EC-1             649636.319         4884994.201       
EC-1             649639.535         4884991.909       
EC-1             649648.203         4884993.42        
EC-1             649666.881         4885018.544       
EC-1             649670.727         4885023.362       
EC-1             649673.608         4885024.215       
EC-1             649687.375         4884986.952       
EC-1             649855.843         4885048.647       
EC-1             649850.068         4885039.098       
EC-1             649843.921         4885035.742       
EC-1             649840.591         4885030.154       
EC-1             649847.465         4885021.812       
EC-1             649833.375         4885012.992       
EC-1             649839.359         4885003.251       
EC-1             649830.641         4884998.216       
EC-1             649824.994         4885007.874       
EC-1             649818.877         4885004.129       
EC-1             649821.865         4884997.758       
EC-1             649811.168         4884990.819       
EC-1             649813.34          4884986.233       
EC-1             649810.029         4884984.097       
EC-1             649812.741         4884978.493       
EC-1             649811.285         4884974.339       
EC-1             649813.151         4884971.806       
EC-1             649802.446         4884967.875       
EC-1             649804.571         4884961.758       
EC-1             649801.327         4884943.275       
EC-1             649795.833         4884940.566       
```

EC-1	649797.46	4884934.143
EC-1	649748.96	4884916.799
EC-1	649747.362	4884921.93
EC-1	649691.157	4884901.273
EC-1	649693.736	4884893.764
EC-1	649687.673	4884891.596
EC-1	649700.708	4884855.902
EC-1	649706.224	4884857.688
EC-1	649709.012	4884849.077
EC-1	649574.662	4884801.343
EC-2	649709.013	4884849.068
EC-2	649706.224	4884857.679
EC-2	649700.708	4884855.893
EC-2	649687.673	4884891.587
EC-2	649693.736	4884893.755
EC-2	649691.158	4884901.264
EC-2	649747.362	4884921.921
EC-2	649748.96	4884916.789
EC-2	649797.461	4884934.134
EC-2	649795.833	4884940.557
EC-2	649801.327	4884943.266
EC-2	649804.572	4884961.749
EC-2	649802.447	4884967.866
EC-2	649812.13	4884939.991
EC-2	649810.588	4884938.915
EC-2	649817.21	4884918.33
EC-2	649804.401	4884913.403
EC-2	649800.091	4884909.699
EC-2	649766.998	4884898.903
EC-2	649772.803	4884882.294
EC-2	649767.696	4884879.603
EC-2	649769.949	4884871.413
EC-2	649709.013	4884849.068
EC-3	649817.21	4884918.33
EC-3	649810.589	4884938.906
EC-3	649812.13	4884939.982
EC-3	649802.447	4884967.857
EC-3	649834.162	4884979.753
EC-3	649837.426	4884972.616
EC-3	649839.739	4884973.184
EC-3	649843.325	4884963.221
EC-3	649841.035	4884961.624
EC-3	649844.058	4884953.709
EC-3	649837.9	4884951.766
EC-3	649847.796	4884925.722
EC-3	649831.388	4884919.94
EC-3	649830.9	4884918.641
EC-3	649827.026	4884918.553
EC-3	649824.907	4884920.823
EC-3	649817.21	4884918.33
EC-4	649769.95	4884871.403
EC-4	649767.696	4884879.594
EC-4	649772.803	4884882.285
EC-4	649766.999	4884898.893
EC-4	649800.092	4884909.69
EC-4	649804.401	4884913.394
EC-4	649817.211	4884918.321

EC-4	649824.907	4884920.814
EC-4	649827.026	4884918.544
EC-4	649830.901	4884918.632
EC-4	649831.388	4884919.931
EC-4	649847.796	4884925.713
EC-4	649837.9	4884951.757
EC-4	649844.059	4884953.7
EC-4	649841.036	4884961.615
EC-4	649843.325	4884963.212
EC-4	649839.739	4884973.174
EC-4	649837.426	4884972.607
EC-4	649834.162	4884979.744
EC-4	649813.151	4884971.797
EC-4	649811.285	4884974.33
EC-4	649812.741	4884978.484
EC-4	649810.029	4884984.088
EC-4	649813.34	4884986.223
EC-4	649811.168	4884990.81
EC-4	649821.865	4884997.749
EC-4	649818.877	4885004.12
EC-4	649824.994	4885007.864
EC-4	649830.641	4884998.206
EC-4	649839.359	4885003.242
EC-4	649833.375	4885012.983
EC-4	649847.465	4885021.802
EC-4	649840.591	4885030.145
EC-4	649843.921	4885035.733
EC-4	649850.068	4885039.089
EC-4	649855.844	4885048.638
EC-4	649914.506	4885068.823
EC-4	649942.93	4885057.383
EC-4	649916.711	4884988.904
EC-4	649896.531	4884981.319
EC-4	649916.508	4884925.314
EC-4	649769.95	4884871.403
EC-5	649855.843	4885048.647
EC-5	649858.843	4885052.909
EC-5	649869.842	4885058.397
EC-5	649879.549	4885061.541
EC-5	649883.428	4885062.969
EC-5	649883.189	4885068.08
EC-5	649889.007	4885075.643
EC-5	649896.686	4885071.189
EC-5	649920.047	4885072.751
EC-5	649930.596	4885069.08
EC-5	649931.952	4885066.992
EC-5	649950.573	4885060.425
EC-5	649945.484	4885059.728
EC-5	649942.93	4885057.392
EC-5	649932.301	4885061.67
EC-5	649914.506	4885068.832
EC-5	649855.843	4885048.647
EC-6	649592.67	4884977.189
EC-6	649587.955	4884980.314
EC-6	649602.713	4884995.49
EC-6	649610.508	4885003.192
EC-6	649621.215	4885012.005

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EC-6             649625.29          4885017.324
EC-6             649651.583         4885041.75
EC-6             649658.312         4885050.264
EC-6             649667.961         4885059.471
EC-6             649674.297         4885057.525
EC-6             649638.25          4885019.29
EC-6             649603.788         4884986.902
EC-6             649592.67          4884977.189
EC-7             649605.124         4884986.144
EC-7             649603.788         4884986.911
EC-7             649638.25          4885019.299
EC-7             649674.297         4885057.534
EC-7             649710.938         4885069.645
EC-7             649673.608         4885024.225
EC-7             649670.726         4885023.371
EC-7             649666.881         4885018.554
EC-7             649648.203         4884993.429
EC-7             649639.535         4884991.918
EC-7             649636.319         4884994.21
EC-7             649635.391         4885000.233
EC-7             649626.658         4885001.611
EC-7             649615.336         4884989.266
EC-7             649605.124         4884986.144
EC8              649750.136         4884864.157
EC8              649707.061         4884843.296
EC8              649695.103         4884836.366
EC8              649678.038         4884823.674
EC8              649671.212         4884823.02
EC8              649659.966         4884818.607
EC8              649644.581         4884812.771
EC8              649634.472         4884809.714
EC8              649609.95          4884802.09
EC8              649596.782         4884797.801
EC8              649580.373         4884792.938
EC8              649574.662         4884801.352
EC8              649750.136         4884864.157

;;Storage Node   X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
```

PRE - 2 YR CHICAGO

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****

Number of rain gages 1
Number of subcatchments ... 8
Number of nodes 6
Number of links 4
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	2-Yr-Chicago	INTENSITY	10 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
EC-1	3.17	144.27	2.00	2.0000	Raingage	J1
EC-2	0.55	77.75	86.80	1.5000	Raingage	SU1
EC-3	0.18	118.00	100.00	1.0000	Raingage	SU2
EC-4	1.39	185.33	71.60	1.5000	Raingage	EX-STM-MH-3
EC-5	0.06	42.21	15.30	1.0000	Raingage	EC-4
EC-6	0.08	48.12	0.00	2.0000	Raingage	OF1
EC-7	0.20	34.00	0.00	2.0000	Raingage	OF1
EC8	0.15	20.28	0.00	1.0000	Raingage	EC-1

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
EX-STM-MH-3	JUNCTION	273.55	3.13	0.0	
J1	JUNCTION	274.95	1.05	0.0	

EX-STMH-4	OUTFALL	273.07	0.68	0.0
OF1	OUTFALL	274.85	1.00	0.0
SU1	STORAGE	275.95	1.75	0.0
SU2	STORAGE	285.00	0.20	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	% Slope	Roughness
C1	J1	OF1	CONDUIT	10.0	1.0001	0.0130
C2	EX-STM-MH-3	EX-STMH-4	CONDUIT	13.5	1.3360	0.0130
OR1	SU1	J1	ORIFICE			
OL1	SU2	J1	OUTLET			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	RECT_OPEN	1.00	1.00	0.33	1.00	1	3698.39
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	202.67

****
Analysis Options
****

```
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/24/2024 00:00:00
Ending Date .............. 04/24/2024 23:48:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:05:00
Dry Time Step ............ 00:05:00
Routing Time Step ........ 5.00 sec
```

```
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m
```

```
**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.198        34.177
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.124        21.390
Surface Runoff ...........         0.066        11.402
Final Storage ............         0.008         1.463
Continuity Error (%) .....        -0.227


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.066         0.660
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.066         0.660
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....        -0.007
```

```
***************************
Time-Step Critical Elements
***************************
Link C2 (4.72%)


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*********************************
Most Frequent Nonconverging Nodes
*********************************
Node EX-STMH-4 (0.01%)
Node OF1 (0.01%)
Node SU1 (0.01%)


*************************
Routing Time Step Summary
*************************
```

```
Minimum Time Step            :     2.48 sec
Average Time Step            :     4.94 sec
Maximum Time Step            :     5.00 sec
% of Time in Steady State    :     0.00
Average Iterations per Step  :     2.00
% of Steps Not Converging    :     0.01
Time Step Frequencies        :
    5.000 -  3.155 sec       :    98.60 %
    3.155 -  1.991 sec       :     1.40 %
    1.991 -  1.256 sec       :     0.00 %
    1.256 -  0.792 sec       :     0.00 %
    0.792 -  0.500 sec       :     0.00 %
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
EC-1	34.18	0.14	0.00	30.18	0.65	2.23	2.88	0.09	13.54	0.084
EC-2	34.18	0.00	0.00	3.81	28.17	0.54	28.71	0.16	100.52	0.840
EC-3	34.18	0.00	0.00	0.00	32.35	0.00	32.35	0.06	37.74	0.947
EC-4	34.18	0.35	0.00	8.30	23.48	1.18	24.66	0.34	211.16	0.714
EC-5	34.18	0.00	0.00	24.59	4.93	3.36	8.28	0.00	1.89	0.242
EC-6	34.18	0.00	0.00	29.03	0.00	3.97	3.97	0.00	0.52	0.116
EC-7	34.18	0.00	0.00	29.65	0.00	3.31	3.31	0.01	0.88	0.097
EC8	34.18	0.00	0.00	30.09	0.00	2.85	2.85	0.00	0.53	0.083

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
EX-STM-MH-3	JUNCTION	0.02	0.33	273.88	0 01:30	0.33
J1	JUNCTION	0.01	0.04	274.99	0 01:30	0.04
EX-STMH-4	OUTFALL	0.00	0.00	273.07	0 00:00	0.00

OF1	OUTFALL	0.01	0.04	274.89	0	01:30	0.04
SU1	STORAGE	0.29	1.59	277.54	0	02:04	1.59
SU2	STORAGE	0.01	0.10	285.10	0	01:44	0.10

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days	hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
EX-STM-MH-3	JUNCTION	211.16	211.16	0	01:30	0.343	0.343	-0.001
J1	JUNCTION	13.54	30.23	0	01:30	0.0913	0.307	0.002
EX-STMH-4	OUTFALL	0.00	210.96	0	01:30	0	0.343	0.000
OF1	OUTFALL	1.32	30.22	0	01:30	0.00981	0.317	0.000
SU1	STORAGE	100.52	100.52	0	01:30	0.158	0.158	-0.033
SU2	STORAGE	37.74	37.74	0	01:30	0.0572	0.0572	-0.000

****
Node Surcharge Summary
****

No nodes were surcharged.

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

	Average Volume	Avg Pcnt	Evap Pcnt	Exfil Pcnt	Maximum Volume	Max Pcnt	Time of Max Occurrence	Maximum Outflow

Storage Unit	1000 m^3	Full	Loss	Loss	1000 m^3	Full	days	hr:min	LPS
SU1	0.009	2.3	0.0	0.0	0.080	21.4	0	02:04	10.51
SU2	0.002	1.7	0.0	0.0	0.027	23.2	0	01:44	7.36

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
EX-STMH-4	26.10	20.89	210.96	0.343
OF1	24.00	16.42	30.22	0.317
System	25.05	37.31	241.18	0.660

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days	hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	30.22	0	01:30	0.82	0.01	0.04
C2	CONDUIT	210.96	0	01:30	2.11	1.04	0.88
OR1	ORIFICE	10.51	0	02:05			1.00
OL1	DUMMY	7.36	0	01:44			

****
Flow Classification Summary
****

	Adjusted	---------- Fraction of Time in Flow Class ----------								
Conduit	/Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C1	1.00	0.11	0.00	0.00	0.69	0.20	0.00	0.00	0.11	0.00
C2	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00

****
Conduit Surcharge Summary
****

Conduit	Hours Full Both Ends	Hours Full Upstream	Hours Full Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C2	0.01	0.01	0.01	0.03	0.01

Analysis begun on: Thu Apr 25 21:19:34 2024
Analysis ended on: Thu Apr 25 21:19:34 2024
Total elapsed time: < 1 sec

PRE - 5 YR CHICAGO

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****

Number of rain gages 1
Number of subcatchments ... 8
Number of nodes 6
Number of links 4
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	5yr-Chicago	INTENSITY	10 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
EC-1	3.17	144.27	2.00	2.0000	Raingage	J1
EC-2	0.55	77.75	86.80	1.5000	Raingage	SU1
EC-3	0.18	118.00	100.00	1.0000	Raingage	SU2
EC-4	1.39	185.33	71.60	1.5000	Raingage	EX-STM-MH-3
EC-5	0.06	42.21	15.30	1.0000	Raingage	EC-4
EC-6	0.08	48.12	0.00	2.0000	Raingage	OF1
EC-7	0.20	34.00	0.00	2.0000	Raingage	OF1
EC8	0.15	20.28	0.00	1.0000	Raingage	EC-1

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
EX-STM-MH-3	JUNCTION	273.55	3.13	0.0	
J1	JUNCTION	274.95	1.05	0.0	

EX-STMH-4	OUTFALL	273.07	0.68	0.0
OF1	OUTFALL	274.85	1.00	0.0
SU1	STORAGE	275.95	1.75	0.0
SU2	STORAGE	285.00	0.20	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	% Slope	Roughness
C1	J1	OF1	CONDUIT	10.0	1.0001	0.0130
C2	EX-STM-MH-3	EX-STMH-4	CONDUIT	13.5	1.3360	0.0130
OR1	SU1	J1	ORIFICE			
OL1	SU2	J1	OUTLET			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	RECT_OPEN	1.00	1.00	0.33	1.00	1	3698.39
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	202.67

****
Analysis Options
****

```
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/24/2024 00:00:00
Ending Date .............. 04/24/2024 23:48:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:05:00
Dry Time Step ............ 00:05:00
Routing Time Step ........ 5.00 sec
```

```
  Variable Time Step ....... YES
  Maximum Trials ........... 8
  Number of Threads ........ 1
  Head Tolerance ........... 0.001500 m


  **************************        Volume         Depth
  Runoff Quantity Continuity     hectare-m            mm
  **************************     ---------       -------
  Total Precipitation ......         0.274        47.377
  Evaporation Loss .........         0.000         0.000
  Infiltration Loss ........         0.153        26.361
  Surface Runoff ...........         0.114        19.706
  Final Storage ............         0.008         1.432
  Continuity Error (%) .....        -0.258


  **************************        Volume        Volume
  Flow Routing Continuity        hectare-m      10^6 ltr
  **************************     ---------     ---------
  Dry Weather Inflow .......         0.000         0.000
  Wet Weather Inflow .......         0.114         1.140
  Groundwater Inflow .......         0.000         0.000
  RDII Inflow ..............         0.000         0.000
  External Inflow ..........         0.000         0.000
  External Outflow .........         0.114         1.140
  Flooding Loss ............         0.000         0.000
  Evaporation Loss .........         0.000         0.000
  Exfiltration Loss ........         0.000         0.000
  Initial Stored Volume ....         0.000         0.000
  Final Stored Volume ......         0.000         0.000
  Continuity Error (%) .....         0.003


  ***************************
  Time-Step Critical Elements
  ***************************
  Link C1 (8.37%)
  Link C2 (6.17%)


  ********************************
  Highest Flow Instability Indexes
  ********************************
  All links are stable.


  *********************************
  Most Frequent Nonconverging Nodes
  *********************************
  Convergence obtained at all time steps.


  *************************
  Routing Time Step Summary
  *************************
  Minimum Time Step           :     1.71 sec
```

```
  Average Time Step           :      4.87 sec
  Maximum Time Step           :      5.00 sec
  % of Time in Steady State   :      0.00
  Average Iterations per Step :      2.00
  % of Steps Not Converging   :      0.01
  Time Step Frequencies       :
      5.000 -  3.155 sec      :     97.95 %
      3.155 -  1.991 sec      :      0.97 %
      1.991 -  1.256 sec      :      1.09 %
      1.256 -  0.792 sec      :      0.00 %
      0.792 -  0.500 sec      :      0.00 %
```

```
  ***************************
  Subcatchment Runoff Summary
  ***************************
```

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
EC-1	47.38	0.45	0.00	37.31	0.92	8.42	9.33	0.30	28.51	0.195
EC-2	47.38	0.00	0.00	4.65	39.71	1.47	41.18	0.23	142.44	0.869
EC-3	47.38	0.00	0.00	0.00	45.58	0.00	45.58	0.08	52.61	0.962
EC-4	47.38	0.68	0.00	10.11	33.24	3.23	36.47	0.51	299.48	0.759
EC-5	47.38	0.00	0.00	29.98	6.95	9.26	16.21	0.01	3.21	0.342
EC-6	47.38	0.00	0.00	35.30	0.00	10.95	10.95	0.01	2.33	0.231
EC-7	47.38	0.00	0.00	36.19	0.00	10.03	10.03	0.02	3.28	0.212
EC8	47.38	0.00	0.00	36.78	0.00	9.36	9.36	0.01	1.87	0.198

```
  ******************
  Node Depth Summary
  ******************
```

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
EX-STM-MH-3	JUNCTION	0.02	0.59	274.14	0 01:30	0.59
J1	JUNCTION	0.01	0.05	275.00	0 02:20	0.05
EX-STMH-4	OUTFALL	0.00	0.00	273.07	0 00:00	0.00
OF1	OUTFALL	0.01	0.05	274.90	0 02:20	0.05

SU1	STORAGE	0.42	1.63	277.58	0	02:21	1.63
SU2	STORAGE	0.01	0.12	285.12	0	01:45	0.12

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
EX-STM-MH-3	JUNCTION	299.48	299.48	0 01:30	0.507	0.507	-0.003
J1	JUNCTION	28.51	47.12	0 02:20	0.296	0.604	0.003
EX-STMH-4	OUTFALL	0.00	299.41	0 01:30	0	0.507	0.000
OF1	OUTFALL	5.22	50.84	0 02:20	0.0289	0.633	0.000
SU1	STORAGE	142.44	142.44	0 01:30	0.227	0.227	0.010
SU2	STORAGE	52.61	52.61	0 01:30	0.0807	0.0807	0.005

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
EX-STM-MH-3	JUNCTION	0.13	0.215	2.540

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
SU1	0.021	5.5	0.0	0.0	0.131	34.7	0 02:21	10.64
SU2	0.004	3.1	0.0	0.0	0.040	34.4	0 01:45	8.81

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
EX-STMH-4	27.99	33.18	299.41	0.507
OF1	28.92	28.33	50.84	0.633
System	28.45	61.51	340.84	1.140

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	47.12	0 02:20	0.97	0.01	0.05
C2	CONDUIT	299.41	0 01:30	2.71	1.48	1.00
OR1	ORIFICE	10.64	0 02:21			1.00
OL1	DUMMY	8.81	0 01:45			

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl

```
  ---------------------------------------------------------------------------------
----
  C1                        1.00    0.11   0.00   0.00   0.63   0.27   0.00   0.00   0.19
0.00
  C2                        1.00    0.02   0.00   0.00   0.00   0.00   0.00   0.98   0.00
0.00


  ************************
  Conduit Surcharge Summary
  ************************

  ----------------------------------------------------------------------------
                                                           Hours        Hours
                       --------- Hours Full --------   Above Full   Capacity
  Conduit              Both Ends  Upstream  Dnstream   Normal Flow   Limited
  ----------------------------------------------------------------------------
  C2                        0.02      0.13      0.02       0.16          0.02


  Analysis begun on:  Thu Apr 25 21:23:24 2024
  Analysis ended on:  Thu Apr 25 21:23:24 2024
  Total elapsed time: < 1 sec
```

PRE - 10 YR CHICAGO

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****

Number of rain gages 1
Number of subcatchments ... 8
Number of nodes 6
Number of links 4
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	10yr-Chicago	INTENSITY	10 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
EC-1	3.17	144.27	2.00	2.0000	Raingage	J1
EC-2	0.55	77.75	86.80	1.5000	Raingage	SU1
EC-3	0.18	118.00	100.00	1.0000	Raingage	SU2
EC-4	1.39	185.33	71.60	1.5000	Raingage	EX-STM-MH-3
EC-5	0.06	42.21	15.30	1.0000	Raingage	EC-4
EC-6	0.08	48.12	0.00	2.0000	Raingage	OF1
EC-7	0.20	34.00	0.00	2.0000	Raingage	OF1
EC8	0.15	20.28	0.00	1.0000	Raingage	EC-1

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
EX-STM-MH-3	JUNCTION	273.55	3.13	0.0	
J1	JUNCTION	274.95	1.05	0.0	

EX-STMH-4	OUTFALL	273.07	0.68	0.0
OF1	OUTFALL	274.85	1.00	0.0
SU1	STORAGE	275.95	1.75	0.0
SU2	STORAGE	285.00	0.20	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
C1	J1	OF1	CONDUIT	10.0	1.0001	0.0130
C2	EX-STM-MH-3	EX-STMH-4	CONDUIT	13.5	1.3360	0.0130
OR1	SU1	J1	ORIFICE			
OL1	SU2	J1	OUTLET			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	RECT_OPEN	1.00	1.00	0.33	1.00	1	3698.39
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	202.67

****
Analysis Options
****

```
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/24/2024 00:00:00
Ending Date .............. 04/24/2024 23:48:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
```

```
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m

**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.323        55.814
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.167        28.895
Surface Runoff ...........         0.147        25.446
Final Storage ............         0.009         1.486
Continuity Error (%) .....        -0.024


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.147         1.472
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.147         1.472
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000

***************************
Time-Step Critical Elements
***************************
None


*********************************
Highest Flow Instability Indexes
*********************************
All links are stable.


*********************************
Most Frequent Nonconverging Nodes
*********************************
Convergence obtained at all time steps.


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.00 sec
```

```
Maximum Time Step            :     1.00 sec
% of Time in Steady State    :     0.00
Average Iterations per Step  :     2.00
% of Steps Not Converging    :     0.00
Time Step Frequencies        :
   1.000 -  0.871 sec        :   100.00 %
   0.871 -  0.758 sec        :     0.00 %
   0.758 -  0.660 sec        :     0.00 %
   0.660 -  0.574 sec        :     0.00 %
   0.574 -  0.500 sec        :     0.00 %
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
EC-1	55.81	0.68	0.00	40.90	1.09	13.23	14.32	0.45	48.28	0.253
EC-2	55.81	0.00	0.00	5.10	46.74	2.11	48.84	0.27	171.12	0.875
EC-3	55.81	0.00	0.00	0.00	53.87	0.00	53.87	0.10	61.98	0.965
EC-4	55.81	0.90	0.00	11.07	39.20	4.68	43.88	0.61	363.09	0.774
EC-5	55.81	0.00	0.00	32.83	8.24	13.38	21.62	0.01	5.23	0.387
EC-6	55.81	0.00	0.00	38.76	0.00	15.81	15.81	0.01	3.95	0.283
EC-7	55.81	0.00	0.00	39.65	0.00	14.91	14.91	0.03	5.79	0.267
EC8	55.81	0.00	0.00	40.37	0.00	14.19	14.19	0.02	3.23	0.254

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
EX-STM-MH-3	JUNCTION	0.02	0.77	274.32	0 01:30	0.77
J1	JUNCTION	0.01	0.06	275.01	0 02:10	0.06
EX-STMH-4	OUTFALL	0.00	0.00	273.07	0 00:00	0.00
OF1	OUTFALL	0.01	0.06	274.91	0 02:10	0.06
SU1	STORAGE	0.47	1.65	277.60	0 02:30	1.65

SU2	STORAGE	0.02	0.13	285.13	0	01:50	0.13

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days	Time of Max Occurrence hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
EX-STM-MH-3	JUNCTION	363.09	363.09	0	01:30	0.61	0.61	-0.002
J1	JUNCTION	48.28	68.25	0	02:10	0.455	0.82	0.001
EX-STMH-4	OUTFALL	0.00	363.04	0	01:30	0	0.61	0.000
OF1	OUTFALL	9.62	74.77	0	02:00	0.0426	0.862	0.000
SU1	STORAGE	171.12	171.12	0	01:30	0.27	0.27	0.002
SU2	STORAGE	61.98	61.98	0	01:30	0.0954	0.0954	-0.001

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
EX-STM-MH-3	JUNCTION	0.16	0.400	2.355

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
SU1	0.028	7.5	0.0	0.0	0.163	43.4	0 02:30	10.71
SU2	0.004	3.4	0.0	0.0	0.049	41.6	0 01:50	9.60

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
EX-STMH-4	26.47	26.89	363.04	0.610
OF1	31.57	31.87	74.77	0.862
System	29.02	58.76	422.68	1.472

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	68.25	0 02:10	1.11	0.02	0.06
C2	CONDUIT	363.04	0 01:30	3.29	1.79	1.00
OR1	ORIFICE	10.71	0 02:30			1.00
OL1	DUMMY	9.60	0 01:50			

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	---------- Fraction of Time in Flow Class ---------- Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl

```
  C1                        1.00   0.08  0.00  0.00  0.61  0.31  0.00  0.00  0.22
0.00
  C2                        1.00   0.02  0.00  0.00  0.00  0.00  0.00  0.98  0.00
0.00


  ************************
  Conduit Surcharge Summary
  ************************

  ----------------------------------------------------------------------------
                                                               Hours        Hours
                       --------- Hours Full --------   Above Full   Capacity
  Conduit              Both Ends  Upstream  Dnstream   Normal Flow   Limited
  ----------------------------------------------------------------------------
  C2                        0.12      0.16      0.12       0.18          0.12


  Analysis begun on:  Thu Apr 25 21:30:37 2024
  Analysis ended on:  Thu Apr 25 21:30:37 2024
  Total elapsed time: < 1 sec
```

PRE - 25 YR CHICAGO

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****

Number of rain gages 1
Number of subcatchments ... 8
Number of nodes 6
Number of links 4
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	25yr-Chicago	INTENSITY	10 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
EC-1	3.17	144.27	2.00	2.0000	Raingage	J1
EC-2	0.55	77.75	86.80	1.5000	Raingage	SU1
EC-3	0.18	118.00	100.00	1.0000	Raingage	SU2
EC-4	1.39	185.33	71.60	1.5000	Raingage	EX-STM-MH-3
EC-5	0.06	42.21	15.30	1.0000	Raingage	EC-4
EC-6	0.08	48.12	0.00	2.0000	Raingage	OF1
EC-7	0.20	34.00	0.00	2.0000	Raingage	OF1
EC8	0.15	20.28	0.00	1.0000	Raingage	EC-1

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
EX-STM-MH-3	JUNCTION	273.55	3.13	0.0	
J1	JUNCTION	274.95	1.05	0.0	

EX-STMH-4	OUTFALL	273.07	0.68	0.0
OF1	OUTFALL	274.85	1.00	0.0
SU1	STORAGE	275.95	1.75	0.0
SU2	STORAGE	285.00	0.20	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	% Slope	Roughness
C1	J1	OF1	CONDUIT	10.0	1.0001	0.0130
C2	EX-STM-MH-3	EX-STMH-4	CONDUIT	13.5	1.3360	0.0130
OR1	SU1	J1	ORIFICE			
OL1	SU2	J1	OUTLET			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	RECT_OPEN	1.00	1.00	0.33	1.00	1	3698.39
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	202.67

****
Analysis Options
****

```
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/24/2024 00:00:00
Ending Date .............. 04/24/2024 23:48:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
```

```
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m

**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.377        65.238
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.182        31.409
Surface Runoff ...........         0.187        32.370
Final Storage ............         0.009         1.479
Continuity Error (%) .....        -0.031


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.187         1.873
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.187         1.873
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000

***************************
Time-Step Critical Elements
***************************
None


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*********************************
Most Frequent Nonconverging Nodes
*********************************
Convergence obtained at all time steps.


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.00 sec
```

```
Maximum Time Step            :     1.00 sec
% of Time in Steady State    :     0.00
Average Iterations per Step :     2.00
% of Steps Not Converging    :     0.00
Time Step Frequencies        :
    1.000 -  0.871 sec       :   100.00 %
    0.871 -  0.758 sec       :     0.00 %
    0.758 -  0.660 sec       :     0.00 %
    0.660 -  0.574 sec       :     0.00 %
    0.574 -  0.500 sec       :     0.00 %
```

****

Subcatchment Runoff Summary

****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
EC-1	65.24	0.97	0.00	44.45	1.29	19.20	20.49	0.65	77.32	0.310
EC-2	65.24	0.00	0.00	5.55	54.93	2.90	57.83	0.32	214.20	0.887
EC-3	65.24	0.00	0.00	0.00	63.32	0.00	63.32	0.11	76.03	0.971
EC-4	65.24	1.18	0.00	12.04	46.15	6.47	52.62	0.73	461.72	0.792
EC-5	65.24	0.00	0.00	35.72	9.69	18.49	28.18	0.02	8.63	0.432
EC-6	65.24	0.00	0.00	42.16	0.00	21.84	21.84	0.02	7.69	0.335
EC-7	65.24	0.00	0.00	43.10	0.00	20.89	20.89	0.04	9.96	0.320
EC8	65.24	0.00	0.00	43.86	0.00	20.12	20.12	0.03	5.30	0.308

****

Node Depth Summary

****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
EX-STM-MH-3	JUNCTION	0.02	1.13	274.68	0 01:30	1.13
J1	JUNCTION	0.01	0.08	275.03	0 02:00	0.08
EX-STMH-4	OUTFALL	0.00	0.00	273.07	0 00:00	0.00
OF1	OUTFALL	0.01	0.08	274.93	0 02:00	0.08
SU1	STORAGE	0.56	1.67	277.62	0 02:40	1.67

SU2	STORAGE	0.02	0.14	285.14	0	01:50	0.14

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days	hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
EX-STM-MH-3	JUNCTION	461.72	461.72	0	01:30	0.731	0.731	-0.001
J1	JUNCTION	77.32	98.49	0	02:00	0.65	1.08	0.001
EX-STMH-4	OUTFALL	0.00	461.63	0	01:30	0	0.731	0.000
OF1	OUTFALL	15.55	109.78	0	01:50	0.0594	1.14	0.000
SU1	STORAGE	214.20	214.20	0	01:30	0.319	0.319	0.001
SU2	STORAGE	76.03	76.03	0	01:30	0.112	0.112	0.001

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
EX-STM-MH-3	JUNCTION	0.19	0.757	1.998

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
SU1	0.041	10.9	0.0	0.0	0.204	54.2	0 02:40	10.79
SU2	0.005	4.5	0.0	0.0	0.060	50.8	0 01:50	10.50

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
EX-STMH-4	26.79	31.86	461.63	0.731
OF1	36.81	36.18	109.78	1.141
System	31.80	68.04	556.37	1.873

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	98.48	0 02:00	1.27	0.03	0.08
C2	CONDUIT	461.63	0 01:30	4.18	2.28	1.00
OR1	ORIFICE	10.79	0 02:40			1.00
OL1	DUMMY	10.50	0 01:50			

****
Flow Classification Summary
****

	Adjusted	---------- Fraction of Time in Flow Class ----------								
Conduit	/Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl

C1	1.00	0.08	0.00	0.00	0.56	0.36	0.00	0.00	0.24	0.00
C2	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00

****

Conduit Surcharge Summary

****

Conduit	--------- Hours Full -------- Both Ends	Upstream	Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C2	0.16	0.19	0.16	0.21	0.16

Analysis begun on: Thu Apr 25 21:54:29 2024
Analysis ended on: Thu Apr 25 21:54:29 2024
Total elapsed time: < 1 sec

PRE - 10 YR CHICAGO

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****
Number of rain gages 1
Number of subcatchments ... 8
Number of nodes 6
Number of links 4
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	100Yr-Chicago	INTENSITY	10 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
EC-1	3.17	144.27	2.00	2.0000	Raingage	J1
EC-2	0.55	77.75	86.80	1.5000	Raingage	SU1
EC-3	0.18	118.00	100.00	1.0000	Raingage	SU2
EC-4	1.39	185.33	71.60	1.5000	Raingage	EX-STM-MH-3
EC-5	0.06	42.21	15.30	1.0000	Raingage	EC-4
EC-6	0.08	48.12	0.00	2.0000	Raingage	OF1
EC-7	0.20	34.00	0.00	2.0000	Raingage	OF1
EC8	0.15	20.28	0.00	1.0000	Raingage	EC-1

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
EX-STM-MH-3	JUNCTION	273.55	3.13	0.0	
J1	JUNCTION	274.95	1.05	0.0	

EX-STMH-4	OUTFALL	273.07	0.68	0.0
OF1	OUTFALL	274.85	1.00	0.0
SU1	STORAGE	275.95	1.75	0.0
SU2	STORAGE	285.00	0.20	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	% Slope	Roughness
C1	J1	OF1	CONDUIT	10.0	1.0001	0.0130
C2	EX-STM-MH-3	EX-STMH-4	CONDUIT	13.5	1.3360	0.0130
OR1	SU1	J1	ORIFICE			
OL1	SU2	J1	OUTLET			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	RECT_OPEN	1.00	1.00	0.33	1.00	1	3698.39
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	202.67

****
Analysis Options
****

```
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/24/2024 00:00:00
Ending Date .............. 04/24/2024 23:48:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
```

```
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m

**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.483        83.535
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.204        35.344
Surface Runoff ...........         0.270        46.733
Final Storage ............         0.009         1.485
Continuity Error (%) .....        -0.032


**************************        Volume        Volume
Flow Routing Continuity        hectare-m     10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.270         2.704
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.270         2.703
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.002


***************************
Time-Step Critical Elements
***************************
None


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*********************************
Most Frequent Nonconverging Nodes
*********************************
Convergence obtained at all time steps.


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.00 sec
```

Maximum Time Step : 1.00 sec
% of Time in Steady State : 0.00
Average Iterations per Step : 2.01
% of Steps Not Converging : 0.00
Time Step Frequencies :

1.000 - 0.871 sec	:	100.00 %
0.871 - 0.758 sec	:	0.00 %
0.758 - 0.660 sec	:	0.00 %
0.660 - 0.574 sec	:	0.00 %
0.574 - 0.500 sec	:	0.00 %

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
EC-1	83.53	1.58	0.00	49.97	1.66	32.21	33.87	1.08	159.60	0.398
EC-2	83.53	0.00	0.00	6.27	70.83	4.60	75.42	0.42	284.76	0.903
EC-3	83.53	0.00	0.00	0.00	81.65	0.00	81.65	0.14	98.64	0.977
EC-4	83.53	1.75	0.00	13.61	59.68	10.26	69.94	0.97	633.68	0.820
EC-5	83.53	0.00	0.00	40.38	12.49	29.34	41.83	0.02	15.39	0.501
EC-6	83.53	0.00	0.00	47.65	0.00	34.65	34.65	0.03	16.58	0.415
EC-7	83.53	0.00	0.00	48.64	0.00	33.65	33.65	0.07	19.88	0.403
EC8	83.53	0.00	0.00	49.43	0.00	32.86	32.86	0.05	11.37	0.393

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
EX-STM-MH-3	JUNCTION	0.03	1.96	275.51	0 01:30	1.96
J1	JUNCTION	0.02	0.11	275.06	0 01:50	0.11
EX-STMH-4	OUTFALL	0.00	0.00	273.07	0 00:00	0.00
OF1	OUTFALL	0.02	0.11	274.96	0 01:50	0.11
SU1	STORAGE	0.74	1.71	277.66	0 02:55	1.71

SU2	STORAGE	0.02	0.17	285.17	0	01:52	0.17

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days	hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
EX-STM-MH-3	JUNCTION	633.68	633.68	0	01:30	0.972	0.972	0.000
J1	JUNCTION	159.60	181.58	0	01:50	1.08	1.64	0.001
EX-STMH-4	OUTFALL	0.00	633.53	0	01:30	0	0.972	0.000
OF1	OUTFALL	35.37	208.40	0	01:40	0.0953	1.73	0.000
SU1	STORAGE	284.76	284.76	0	01:30	0.416	0.416	0.005
SU2	STORAGE	98.64	98.64	0	01:30	0.145	0.145	0.005

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
EX-STM-MH-3	JUNCTION	0.30	1.584	1.171

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
SU1	0.074	19.6	0.0	0.0	0.290	77.2	0 02:55	10.93
SU2	0.008	7.2	0.0	0.0	0.083	70.4	0 01:52	11.10

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
EX-STMH-4	27.14	41.79	633.53	0.972
OF1	47.01	42.98	208.40	1.731
System	37.08	84.78	818.60	2.703

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	181.57	0 01:50	1.58	0.05	0.11
C2	CONDUIT	633.53	0 01:30	5.74	3.13	1.00
OR1	ORIFICE	10.93	0 02:55			1.00
OL1	DUMMY	11.10	0 01:30			

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl

C1	1.00	0.07	0.00	0.00	0.46	0.47	0.00	0.00	0.26	0.00
C2	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00

****
Conduit Surcharge Summary
****

Conduit	Hours Full Both Ends	Hours Full Upstream	Hours Full Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C2	0.20	0.30	0.20	0.33	0.20

Analysis begun on: Thu Apr 25 21:57:45 2024
Analysis ended on: Thu Apr 25 21:57:45 2024
Total elapsed time: < 1 sec

PRE-SCS TYPE II - 2YEAR

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****

Number of rain gages 1
Number of subcatchments ... 8
Number of nodes 6
Number of links 4
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	SCS-2YR	INTENSITY	15 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
EC-1	3.17	144.27	2.00	2.0000	Raingage	J1
EC-2	0.55	77.75	86.80	1.5000	Raingage	SU1
EC-3	0.18	118.00	100.00	1.0000	Raingage	SU2
EC-4	1.39	185.33	71.60	1.5000	Raingage	EX-STM-MH-3
EC-5	0.06	42.21	15.30	1.0000	Raingage	EC-4
EC-6	0.08	48.12	0.00	2.0000	Raingage	OF1
EC-7	0.20	34.00	0.00	2.0000	Raingage	OF1
EC8	0.15	20.28	0.00	1.0000	Raingage	EC-1

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
EX-STM-MH-3	JUNCTION	273.55	3.13	0.0	
J1	JUNCTION	274.95	1.05	0.0	

```
  EX-STMH-4            OUTFALL              273.07       0.68        0.0
  OF1                  OUTFALL              274.85       1.00        0.0
  SU1                  STORAGE              275.95       1.75        0.0
  SU2                  STORAGE              285.00       0.20        0.0


  ************
  Link Summary
  ************
  Name             From Node        To Node          Type            Length    %
Slope Roughness
  ---------------------------------------------------------------------------------
------------
  C1               J1               OF1              CONDUIT           10.0
1.0001    0.0130
  C2               EX-STM-MH-3      EX-STMH-4        CONDUIT           13.5
1.3360    0.0130
  OR1              SU1              J1               ORIFICE
  OL1              SU2              J1               OUTLET


  *********************
  Cross Section Summary
  *********************
                                        Full     Full     Hyd.     Max.   No. of
Full
  Conduit          Shape               Depth     Area     Rad.    Width  Barrels
Flow
  ---------------------------------------------------------------------------------
------
  C1               RECT_OPEN            1.00     1.00     0.33     1.00        1
3698.39
  C2               CIRCULAR             0.38     0.11     0.09     0.38        1
202.67


  ****************
  Analysis Options
  ****************
  Flow Units ............... LPS
  Process Models:
    Rainfall/Runoff ........ YES
    RDII ................... NO
    Snowmelt ............... NO
    Groundwater ............ NO
    Flow Routing ........... YES
    Ponding Allowed ........ NO
    Water Quality .......... NO
  Infiltration Method ...... CURVE_NUMBER
  Flow Routing Method ...... DYNWAVE
  Surcharge Method ......... EXTRAN
  Starting Date ............ 04/24/2024 00:00:00
  Ending Date .............. 04/24/2024 23:48:00
  Antecedent Dry Days ...... 0.0
  Report Time Step ......... 00:01:00
  Wet Time Step ............ 00:05:00
  Dry Time Step ............ 00:05:00
  Routing Time Step ........ 5.00 sec
```

```
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m

**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.252        43.606
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.131        22.718
Surface Runoff ...........         0.105        18.134
Final Storage ............         0.016         2.817
Continuity Error (%) .....        -0.143


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.105         1.049
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.105         1.049
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.004

***************************
Time-Step Critical Elements
***************************
Link C2 (4.78%)


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*********************************
Most Frequent Nonconverging Nodes
*********************************
Convergence obtained at all time steps.


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :     2.34 sec
Average Time Step           :     4.94 sec
```

Maximum Time Step	:	5.00 sec
% of Time in Steady State	:	0.00
Average Iterations per Step	:	2.00
% of Steps Not Converging	:	0.00
Time Step Frequencies	:	
5.000 - 3.155 sec	:	98.43 %
3.155 - 1.991 sec	:	1.57 %
1.991 - 1.256 sec	:	0.00 %
1.256 - 0.792 sec	:	0.00 %
0.792 - 0.500 sec	:	0.00 %

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
EC-1	43.61	0.41	0.00	31.71	0.84	8.10	8.94	0.28	16.81	0.203
EC-2	43.61	0.00	0.00	4.27	36.27	1.22	37.48	0.21	76.87	0.860
EC-3	43.61	0.00	0.00	0.00	41.75	0.00	41.75	0.07	27.63	0.958
EC-4	43.61	0.59	0.00	9.19	30.34	2.73	33.06	0.46	163.32	0.748
EC-5	43.61	0.00	0.00	27.41	6.37	7.72	14.09	0.01	2.51	0.323
EC-6	43.61	0.00	0.00	32.36	0.00	9.12	9.12	0.01	1.80	0.209
EC-7	43.61	0.00	0.00	32.36	0.00	8.72	8.72	0.02	1.81	0.200
EC8	43.61	0.00	0.00	32.36	0.00	8.43	8.43	0.01	0.99	0.193

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days	Time of Max Occurrence hr:min	Reported Max Depth Meters
EX-STM-MH-3	JUNCTION	0.03	0.26	273.81	0	06:00	0.26
J1	JUNCTION	0.01	0.04	274.99	0	06:00	0.04
EX-STMH-4	OUTFALL	0.00	0.00	273.07	0	00:00	0.00
OF1	OUTFALL	0.01	0.04	274.89	0	06:00	0.04
SU1	STORAGE	0.32	1.59	277.54	0	06:22	1.59

SU2	STORAGE	0.01	0.10	285.10	0 06:04	0.10

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
EX-STM-MH-3	JUNCTION	163.32	163.32	0 06:00	0.46	0.46	-0.000
J1	JUNCTION	16.81	34.35	0 06:00	0.284	0.565	0.002
EX-STMH-4	OUTFALL	0.00	163.20	0 06:00	0	0.46	0.000
OF1	OUTFALL	3.34	37.68	0 06:00	0.0248	0.589	0.000
SU1	STORAGE	76.87	76.87	0 06:00	0.207	0.207	0.015
SU2	STORAGE	27.63	27.63	0 05:55	0.0739	0.0739	-0.000

****
Node Surcharge Summary
****

No nodes were surcharged.

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS

SU1	0.008	2.2	0.0	0.0	0.079	21.0	0	06:22	10.51
SU2	0.002	1.7	0.0	0.0	0.028	23.8	0	06:04	7.46

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
EX-STMH-4	53.64	12.37	163.20	0.460
OF1	64.88	10.98	37.68	0.589
System	59.26	23.36	200.84	1.049

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days	hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	34.35	0	06:00	0.86	0.01	0.04
C2	CONDUIT	163.20	0	06:00	2.05	0.81	0.68
OR1	ORIFICE	10.51	0	06:22			1.00
OL1	DUMMY	7.46	0	06:04			

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
		---------- Fraction of Time in Flow Class ----------								
C1	1.00	0.08	0.00	0.00	0.39	0.53	0.00	0.00	0.33	0.00
C2	1.00	0.08	0.00	0.00	0.00	0.00	0.00	0.92	0.00	0.00

```
*************************
Conduit Surcharge Summary
*************************

No conduits were surcharged.


Analysis begun on:  Thu Apr 25 21:16:35 2024
Analysis ended on:  Thu Apr 25 21:16:35 2024
Total elapsed time: < 1 sec
```

PRE-SCS TYPE II - 5 YEAR

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****
Number of rain gages 1
Number of subcatchments ... 8
Number of nodes 6
Number of links 4
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	SCS-5YR	INTENSITY	15 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
EC-1	3.17	144.27	2.00	2.0000	Raingage	J1
EC-2	0.55	77.75	86.80	1.5000	Raingage	SU1
EC-3	0.18	118.00	100.00	1.0000	Raingage	SU2
EC-4	1.39	185.33	71.60	1.5000	Raingage	EX-STM-MH-3
EC-5	0.06	42.21	15.30	1.0000	Raingage	EC-4
EC-6	0.08	48.12	0.00	2.0000	Raingage	OF1
EC-7	0.20	34.00	0.00	2.0000	Raingage	OF1
EC8	0.15	20.28	0.00	1.0000	Raingage	EC-1

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
EX-STM-MH-3	JUNCTION	273.55	3.13	0.0	
J1	JUNCTION	274.95	1.05	0.0	

EX-STMH-4	OUTFALL	273.07	0.68	0.0
OF1	OUTFALL	274.85	1.00	0.0
SU1	STORAGE	275.95	1.75	0.0
SU2	STORAGE	285.00	0.20	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	% Slope	Roughness
C1	J1	OF1	CONDUIT	10.0	1.0001	0.0130
C2	EX-STM-MH-3	EX-STMH-4	CONDUIT	13.5	1.3360	0.0130
OR1	SU1	J1	ORIFICE			
OL1	SU2	J1	OUTLET			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	RECT_OPEN	1.00	1.00	0.33	1.00	1	3698.39
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	202.67

****
Analysis Options
****

```
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/24/2024 00:00:00
Ending Date .............. 04/24/2024 23:48:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:05:00
Dry Time Step ............ 00:05:00
Routing Time Step ........ 5.00 sec
```

```
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m

**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.349        60.320
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.160        27.618
Surface Runoff ...........         0.174        30.049
Final Storage ............         0.016         2.755
Continuity Error (%) .....        -0.169


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.174         1.738
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.174         1.738
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


***************************
Time-Step Critical Elements
***************************
Link C1 (11.45%)
Link C2 (4.72%)


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*********************************
Most Frequent Nonconverging Nodes
*********************************
Node EX-STMH-4 (0.01%)
Node OF1 (0.01%)
Node EX-STM-MH-3 (0.01%)
Node SU1 (0.01%)


*************************
```

```
Routing Time Step Summary
*************************
Minimum Time Step           :     2.01 sec
Average Time Step           :     4.84 sec
Maximum Time Step           :     5.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.00
% of Steps Not Converging   :     0.01
Time Step Frequencies       :
    5.000 -  3.155 sec      :    97.52 %
    3.155 -  1.991 sec      :     2.48 %
    1.991 -  1.256 sec      :     0.00 %
    1.256 -  0.792 sec      :     0.00 %
    0.792 -  0.500 sec      :     0.00 %
```

```
***************************
Subcatchment Runoff Summary
***************************
```

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
EC-1	60.32	0.88	0.00	38.55	1.18	18.18	19.36	0.61	57.28	0.316
EC-2	60.32	0.00	0.00	5.19	50.84	2.55	53.39	0.29	110.36	0.885
EC-3	60.32	0.00	0.00	0.00	58.50	0.00	58.50	0.10	38.22	0.970
EC-4	60.32	1.05	0.00	11.17	42.69	5.71	48.40	0.67	247.26	0.789
EC-5	60.32	0.00	0.00	33.32	8.93	16.26	25.19	0.01	6.08	0.418
EC-6	60.32	0.00	0.00	39.34	0.00	19.20	19.20	0.01	6.59	0.318
EC-7	60.32	0.00	0.00	39.34	0.00	18.67	18.67	0.04	8.34	0.310
EC8	60.32	0.00	0.00	39.34	0.00	18.33	18.33	0.03	3.96	0.304

```
******************
Node Depth Summary
******************
```

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
EX-STM-MH-3	JUNCTION	0.04	0.43	273.98	0 06:00	0.43

J1	JUNCTION	0.02	0.07	275.02	0	06:00	0.07
EX-STMH-4	OUTFALL	0.00	0.00	273.07	0	00:00	0.00
OF1	OUTFALL	0.02	0.07	274.92	0	06:00	0.07
SU1	STORAGE	0.50	1.62	277.57	0	06:34	1.62
SU2	STORAGE	0.02	0.12	285.12	0	06:04	0.12

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min		Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
EX-STM-MH-3	JUNCTION	247.26	247.26	0	06:00	0.673	0.673	-0.002
J1	JUNCTION	57.28	76.28	0	06:00	0.615	1.01	0.004
EX-STMH-4	OUTFALL	0.00	247.23	0	06:00	0	0.673	0.000
OF1	OUTFALL	14.93	91.24	0	06:00	0.0529	1.07	0.000
SU1	STORAGE	110.36	110.36	0	06:00	0.295	0.295	-0.015
SU2	STORAGE	38.22	38.22	0	05:55	0.104	0.104	0.000

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
EX-STM-MH-3	JUNCTION	0.11	0.056	2.699

****
Node Flooding Summary
****

No nodes were flooded.

****

Storage Volume Summary
****

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
SU1	0.022	5.8	0.0	0.0	0.127	33.8	0 06:34	10.64
SU2	0.004	3.3	0.0	0.0	0.041	35.0	0 06:04	8.88

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
EX-STMH-4	56.95	19.58	247.23	0.673
OF1	69.11	20.19	91.24	1.066
System	63.03	39.77	338.27	1.738

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	76.40	0 06:00	1.16	0.02	0.07
C2	CONDUIT	247.23	0 06:00	2.27	1.22	0.96
OR1	ORIFICE	10.64	0 06:34			1.00
OL1	DUMMY	8.88	0 06:04			

****
Flow Classification Summary
****

	Adjusted /Actual	---------- Fraction of Time in Flow Class ---------- Up	Down	Sub	Sup	Up	Down	Norm

Conduit	Length	Dry	Dry	Dry	Crit	Crit	Crit	Crit	Ltd	Ctrl
C1	1.00	0.06	0.00	0.00	0.36	0.58	0.00	0.00	0.37	0.00
C2	1.00	0.06	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00

****
Conduit Surcharge Summary
****

Conduit	Hours Full Both Ends	Hours Full Upstream	Hours Full Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C2	0.01	0.11	0.01	0.19	0.01

Analysis begun on: Thu Apr 25 21:21:39 2024
Analysis ended on: Thu Apr 25 21:21:39 2024
Total elapsed time: < 1 sec

PRE-SCS TYPE II - 10 YEAR

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****

Number of rain gages 1
Number of subcatchments ... 8
Number of nodes 6
Number of links 4
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	SCS-10yr	INTENSITY	15 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
EC-1	3.17	144.27	2.00	2.0000	Raingage	J1
EC-2	0.55	77.75	86.80	1.5000	Raingage	SU1
EC-3	0.18	118.00	100.00	1.0000	Raingage	SU2
EC-4	1.39	185.33	71.60	1.5000	Raingage	EX-STM-MH-3
EC-5	0.06	42.21	15.30	1.0000	Raingage	EC-4
EC-6	0.08	48.12	0.00	2.0000	Raingage	OF1
EC-7	0.20	34.00	0.00	2.0000	Raingage	OF1
EC8	0.15	20.28	0.00	1.0000	Raingage	EC-1

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
EX-STM-MH-3	JUNCTION	273.55	3.13	0.0	
J1	JUNCTION	274.95	1.05	0.0	

EX-STMH-4	OUTFALL	273.07	0.68	0.0
OF1	OUTFALL	274.85	1.00	0.0
SU1	STORAGE	275.95	1.75	0.0
SU2	STORAGE	285.00	0.20	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	% Slope	Roughness
C1	J1	OF1	CONDUIT	10.0	1.0001	0.0130
C2	EX-STM-MH-3	EX-STMH-4	CONDUIT	13.5	1.3360	0.0130
OR1	SU1	J1	ORIFICE			
OL1	SU2	J1	OUTLET			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	RECT_OPEN	1.00	1.00	0.33	1.00	1	3698.39
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	202.67

****
Analysis Options
****

```
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/24/2024 00:00:00
Ending Date .............. 04/24/2024 23:48:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
```

```
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.411        71.047
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.175        30.179
Surface Runoff ...........         0.221        38.124
Final Storage ............         0.016         2.753
Continuity Error (%) .....        -0.012


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.221         2.205
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.221         2.205
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


***************************
Time-Step Critical Elements
***************************
None


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*********************************
Most Frequent Nonconverging Nodes
*********************************
Convergence obtained at all time steps.


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.00 sec
```

```
Maximum Time Step            :     1.00 sec
% of Time in Steady State    :     0.00
Average Iterations per Step  :     2.00
% of Steps Not Converging    :     0.00
Time Step Frequencies        :
   1.000 -  0.871 sec        :   100.00 %
   0.871 -  0.758 sec        :     0.00 %
   0.758 -  0.660 sec        :     0.00 %
   0.660 -  0.574 sec        :     0.00 %
   0.574 -  0.500 sec        :     0.00 %
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
EC-1	71.05	1.22	0.00	42.13	1.41	25.42	26.82	0.85	98.58	0.371
EC-2	71.05	0.00	0.00	5.67	59.95	3.46	63.41	0.35	131.55	0.893
EC-3	71.05	0.00	0.00	0.00	69.08	0.00	69.08	0.12	45.03	0.972
EC-4	71.05	1.37	0.00	12.21	50.43	7.79	58.22	0.81	303.91	0.804
EC-5	71.05	0.00	0.00	36.41	10.57	22.16	32.73	0.02	8.34	0.461
EC-6	71.05	0.00	0.00	42.99	0.00	26.16	26.16	0.02	9.60	0.368
EC-7	71.05	0.00	0.00	42.99	0.00	25.73	25.73	0.05	14.34	0.362
EC8	71.05	0.00	0.00	42.99	0.00	25.38	25.38	0.04	7.17	0.357

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
EX-STM-MH-3	JUNCTION	0.03	0.60	274.15	0 06:00	0.60
J1	JUNCTION	0.02	0.09	275.04	0 06:00	0.09
EX-STMH-4	OUTFALL	0.00	0.00	273.07	0 00:00	0.00
OF1	OUTFALL	0.02	0.09	274.94	0 06:00	0.09
SU1	STORAGE	0.57	1.64	277.59	0 06:40	1.64

SU2	STORAGE	0.02	0.13	285.13	0	06:04	0.13

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days	Time of Max Occurrence hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
EX-STM-MH-3	JUNCTION	303.91	303.91	0	06:00	0.809	0.809	-0.001
J1	JUNCTION	98.58	118.64	0	06:00	0.851	1.32	0.001
EX-STMH-4	OUTFALL	0.00	303.89	0	06:00	0	0.809	0.000
OF1	OUTFALL	23.94	142.48	0	06:00	0.0726	1.4	0.000
SU1	STORAGE	131.55	131.55	0	06:00	0.35	0.35	0.001
SU2	STORAGE	45.03	45.03	0	06:00	0.122	0.122	-0.001

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
EX-STM-MH-3	JUNCTION	0.21	0.226	2.529

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
SU1	0.030	8.0	0.0	0.0	0.159	42.2	0 06:40	10.70
SU2	0.004	3.5	0.0	0.0	0.049	42.1	0 06:04	9.65

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
EX-STMH-4	56.41	16.74	303.89	0.809
OF1	69.64	23.40	142.48	1.396
System	63.02	40.14	446.05	2.205

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	118.67	0 06:00	1.36	0.03	0.09
C2	CONDUIT	303.89	0 06:00	2.75	1.50	1.00
OR1	ORIFICE	10.70	0 06:40			1.00
OL1	DUMMY	9.65	0 06:04			

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl

(Columns Dry through Inlet Ctrl under: ---------- Fraction of Time in Flow Class ----------)

```
  C1                        1.00   0.05  0.00  0.00  0.35  0.60  0.00  0.00  0.40
0.00
  C2                        1.00   0.05  0.00  0.00  0.00  0.00  0.00  0.95  0.00
0.00
```

```
  *************************
  Conduit Surcharge Summary
  *************************

  ----------------------------------------------------------------------------
                                                           Hours        Hours 
                         --------- Hours Full --------   Above Full   Capacity
  Conduit                Both Ends  Upstream  Dnstream   Normal Flow   Limited
  ----------------------------------------------------------------------------
  C2                          0.06      0.21      0.06       0.23         0.06


  Analysis begun on:  Thu Apr 25 21:25:41 2024
  Analysis ended on:  Thu Apr 25 21:25:41 2024
  Total elapsed time: < 1 sec
```

PRE-SCS TYPE II - 25 YEAR

```
  EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)
  ------------------------------------------------------------


  *************
  Element Count
  *************
  Number of rain gages ...... 1
  Number of subcatchments ... 8
  Number of nodes ........... 6
  Number of links ........... 4
  Number of pollutants ...... 0
  Number of land uses ....... 0


  ****************
  Raingage Summary
  ****************
                                                               Data          Recording
  Name                 Data Source                             Type          Interval 
  -------------------------------------------------------------------------------------
  Raingage             SCS-25yr                                INTENSITY       15 min.


  ********************
  Subcatchment Summary
  ********************
  Name                       Area      Width    %Imperv     %Slope Rain Gage
Outlet
  ---------------------------------------------------------------------------------
--------------------------
  EC-1                       3.17     144.27       2.00     2.0000 Raingage
J1
  EC-2                       0.55      77.75      86.80     1.5000 Raingage
SU1
  EC-3                       0.18     118.00     100.00     1.0000 Raingage
SU2
  EC-4                       1.39     185.33      71.60     1.5000 Raingage
EX-STM-MH-3
  EC-5                       0.06      42.21      15.30     1.0000 Raingage
EC-4
  EC-6                       0.08      48.12       0.00     2.0000 Raingage
OF1
  EC-7                       0.20      34.00       0.00     2.0000 Raingage
OF1
  EC8                        0.15      20.28       0.00     1.0000 Raingage
EC-1


  ************
  Node Summary
  ************
                                                   Invert      Max.     Ponded    External
  Name                 Type                         Elev.     Depth       Area    Inflow
  -------------------------------------------------------------------------------
  EX-STM-MH-3          JUNCTION                    273.55      3.13        0.0
  J1                   JUNCTION                    274.95      1.05        0.0
```

EX-STMH-4	OUTFALL	273.07	0.68	0.0
OF1	OUTFALL	274.85	1.00	0.0
SU1	STORAGE	275.95	1.75	0.0
SU2	STORAGE	285.00	0.20	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	% Slope	Roughness
C1	J1	OF1	CONDUIT	10.0	1.0001	0.0130
C2	EX-STM-MH-3	EX-STMH-4	CONDUIT	13.5	1.3360	0.0130
OR1	SU1	J1	ORIFICE			
OL1	SU2	J1	OUTLET			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	RECT_OPEN	1.00	1.00	0.33	1.00	1	3698.39
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	202.67

****
Analysis Options
****

```
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/24/2024 00:00:00
Ending Date .............. 04/24/2024 23:48:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
```

```
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m
```

```
**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.480        82.971
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.189        32.622
Surface Runoff ...........         0.275        47.588
Final Storage ............         0.016         2.772
Continuity Error (%) .....        -0.013


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.275         2.753
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.275         2.753
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000
```

```
***************************
Time-Step Critical Elements
***************************
None


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*********************************
Most Frequent Nonconverging Nodes
*********************************
Convergence obtained at all time steps.


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :      0.50 sec
Average Time Step           :      1.00 sec
```

```
Maximum Time Step            :     1.00 sec
% of Time in Steady State    :     0.00
Average Iterations per Step  :     2.00
% of Steps Not Converging    :     0.00
Time Step Frequencies        :
   1.000 -  0.871 sec        :   100.00 %
   0.871 -  0.758 sec        :     0.00 %
   0.758 -  0.660 sec        :     0.00 %
   0.660 -  0.574 sec        :     0.00 %
   0.574 -  0.500 sec        :     0.00 %
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
EC-1	82.97	1.63	0.00	45.54	1.65	34.05	35.71	1.13	156.71	0.422
EC-2	82.97	0.00	0.00	6.13	70.30	4.58	74.88	0.41	154.95	0.903
EC-3	82.97	0.00	0.00	0.00	81.02	0.00	81.02	0.14	52.58	0.976
EC-4	82.97	1.74	0.00	13.20	59.24	10.30	69.53	0.97	365.50	0.821
EC-5	82.97	0.00	0.00	39.36	12.40	29.33	41.73	0.02	10.76	0.503
EC-6	82.97	0.00	0.00	46.47	0.00	34.63	34.63	0.03	12.78	0.417
EC-7	82.97	0.00	0.00	46.47	0.00	34.17	34.17	0.07	21.78	0.412
EC8	82.97	0.00	0.00	46.47	0.00	33.82	33.82	0.05	11.45	0.408

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
EX-STM-MH-3	JUNCTION	0.04	0.78	274.33	0 06:00	0.78
J1	JUNCTION	0.02	0.11	275.06	0 06:00	0.11
EX-STMH-4	OUTFALL	0.00	0.00	273.07	0 00:00	0.00
OF1	OUTFALL	0.02	0.11	274.96	0 06:00	0.11
SU1	STORAGE	0.68	1.67	277.62	0 06:50	1.67

SU2	STORAGE	0.02	0.14	285.14	0	06:04	0.14

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days	Time of Max Occurrence hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
EX-STM-MH-3	JUNCTION	365.50	365.50	0	06:00	0.967	0.967	-0.001
J1	JUNCTION	156.71	177.64	0	06:00	1.13	1.69	0.001
EX-STMH-4	OUTFALL	0.00	365.48	0	06:00	0	0.967	0.000
OF1	OUTFALL	34.57	212.11	0	06:00	0.0964	1.79	0.000
SU1	STORAGE	154.95	154.95	0	06:00	0.413	0.413	0.001
SU2	STORAGE	52.58	52.58	0	06:00	0.143	0.143	-0.001

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
EX-STM-MH-3	JUNCTION	0.25	0.406	2.349

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
SU1	0.045	11.9	0.0	0.0	0.197	52.4	0 06:50	10.78
SU2	0.005	4.6	0.0	0.0	0.059	50.5	0 06:04	10.47

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
EX-STMH-4	57.25	19.70	365.48	0.967
OF1	71.18	29.29	212.11	1.786
System	64.22	48.99	577.15	2.753

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	177.74	0 06:00	1.57	0.05	0.11
C2	CONDUIT	365.48	0 06:00	3.31	1.80	1.00
OR1	ORIFICE	10.78	0 06:50			1.00
OL1	DUMMY	10.47	0 06:04			

****
Flow Classification Summary
****

	Adjusted	---------- Fraction of Time in Flow Class ----------								
Conduit	/Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl

C1	1.00	0.04	0.00	0.00	0.34	0.62	0.00	0.00	0.41	0.00
C2	1.00	0.04	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.00

****
Conduit Surcharge Summary
****

Conduit	Hours Full Both Ends	Hours Full Upstream	Hours Full Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C2	0.20	0.25	0.20	0.26	0.20

Analysis begun on: Thu Apr 25 21:52:32 2024
Analysis ended on: Thu Apr 25 21:52:33 2024
Total elapsed time: 00:00:01

PRE-SCS TYPE II - 100 YEAR

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****

Number of rain gages 1
Number of subcatchments ... 8
Number of nodes 6
Number of links 4
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	SCS-100yr	INTENSITY	15 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
EC-1	3.17	144.27	2.00	2.0000	Raingage	J1
EC-2	0.55	77.75	86.80	1.5000	Raingage	SU1
EC-3	0.18	118.00	100.00	1.0000	Raingage	SU2
EC-4	1.39	185.33	71.60	1.5000	Raingage	EX-STM-MH-3
EC-5	0.06	42.21	15.30	1.0000	Raingage	EC-4
EC-6	0.08	48.12	0.00	2.0000	Raingage	OF1
EC-7	0.20	34.00	0.00	2.0000	Raingage	OF1
EC8	0.15	20.28	0.00	1.0000	Raingage	EC-1

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
EX-STM-MH-3	JUNCTION	273.55	3.13	0.0	
J1	JUNCTION	274.95	1.05	0.0	

EX-STMH-4	OUTFALL	273.07	0.68	0.0
OF1	OUTFALL	274.85	1.00	0.0
SU1	STORAGE	275.95	1.75	0.0
SU2	STORAGE	285.00	0.20	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	% Slope	Roughness
C1	J1	OF1	CONDUIT	10.0	1.0001	0.0130
C2	EX-STM-MH-3	EX-STMH-4	CONDUIT	13.5	1.3360	0.0130
OR1	SU1	J1	ORIFICE			
OL1	SU2	J1	OUTLET			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	RECT_OPEN	1.00	1.00	0.33	1.00	1	3698.39
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	202.67

****
Analysis Options
****

```
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/24/2024 00:00:00
Ending Date .............. 04/24/2024 23:48:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
```

```
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m

**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.601       103.846
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.209        36.122
Surface Runoff ...........         0.375        64.903
Final Storage ............         0.016         2.836
Continuity Error (%) .....        -0.014


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.375         3.755
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.375         3.755
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.001


***************************
Time-Step Critical Elements
***************************
None


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*********************************
Most Frequent Nonconverging Nodes
*********************************
Convergence obtained at all time steps.


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.00 sec
```

```
  Maximum Time Step            :     1.00 sec
  % of Time in Steady State    :     0.00
  Average Iterations per Step  :     2.00
  % of Steps Not Converging    :     0.00
  Time Step Frequencies        :
      1.000 -  0.871 sec       :   100.00 %
      0.871 -  0.758 sec       :     0.00 %
      0.758 -  0.660 sec       :     0.00 %
      0.660 -  0.574 sec       :     0.00 %
      0.574 -  0.500 sec       :     0.00 %
```

```
  ***************************
  Subcatchment Runoff Summary
  ***************************
```

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
EC-1	103.85	2.39	0.00	50.42	2.09	50.27	52.36	1.66	285.67	0.493
EC-2	103.85	0.00	0.00	6.79	88.43	6.68	95.10	0.52	195.99	0.916
EC-3	103.85	0.00	0.00	0.00	101.91	0.00	101.91	0.18	65.81	0.981
EC-4	103.85	2.43	0.00	14.61	74.69	14.99	89.68	1.25	473.34	0.844
EC-5	103.85	0.00	0.00	43.58	15.59	42.76	58.35	0.03	14.99	0.562
EC-6	103.85	0.00	0.00	51.45	0.00	50.49	50.49	0.04	18.38	0.486
EC-7	103.85	0.00	0.00	51.45	0.00	50.00	50.00	0.10	35.95	0.481
EC8	103.85	0.00	0.00	51.45	0.00	49.63	49.63	0.08	20.27	0.478

```
  ******************
  Node Depth Summary
  ******************
```

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days	Time of Max Occurrence hr:min	Reported Max Depth Meters
EX-STM-MH-3	JUNCTION	0.05	1.18	274.73	0	06:00	1.18
J1	JUNCTION	0.03	0.16	275.11	0	06:00	0.16
EX-STMH-4	OUTFALL	0.00	0.00	273.07	0	00:00	0.00
OF1	OUTFALL	0.03	0.16	275.01	0	06:00	0.16
SU1	STORAGE	0.88	1.70	277.65	0	07:10	1.70

SU2	STORAGE	0.03	0.16	285.16	0	06:06	0.16

```
******************
Node Inflow Summary
******************
```

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
EX-STM-MH-3	JUNCTION	473.34	473.34	0 06:00	1.25	1.25	0.000
J1	JUNCTION	285.67	307.57	0 06:00	1.66	2.37	0.002
EX-STMH-4	OUTFALL	0.00	473.31	0 06:00	0	1.25	0.000
OF1	OUTFALL	54.33	361.74	0 06:00	0.141	2.51	0.000
SU1	STORAGE	195.99	195.99	0 06:00	0.525	0.525	0.001
SU2	STORAGE	65.81	65.81	0 06:00	0.18	0.18	-0.000

```
*********************
Node Surcharge Summary
*********************
```

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
EX-STM-MH-3	JUNCTION	0.28	0.803	1.952

```
********************
Node Flooding Summary
********************
```

No nodes were flooded.

```
*********************
Storage Volume Summary
*********************
```

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
SU1	0.079	21.0	0.0	0.0	0.270	71.7	0 07:10	10.90
SU2	0.008	6.9	0.0	0.0	0.077	65.7	0 06:06	11.10

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
EX-STMH-4	58.30	24.95	473.31	1.247
OF1	73.43	39.86	361.74	2.508
System	65.87	64.81	834.46	3.755

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	307.76	0 06:00	1.90	0.08	0.16
C2	CONDUIT	473.31	0 06:00	4.29	2.34	1.00
OR1	ORIFICE	10.90	0 07:10			1.00
OL1	DUMMY	11.10	0 05:58			

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl

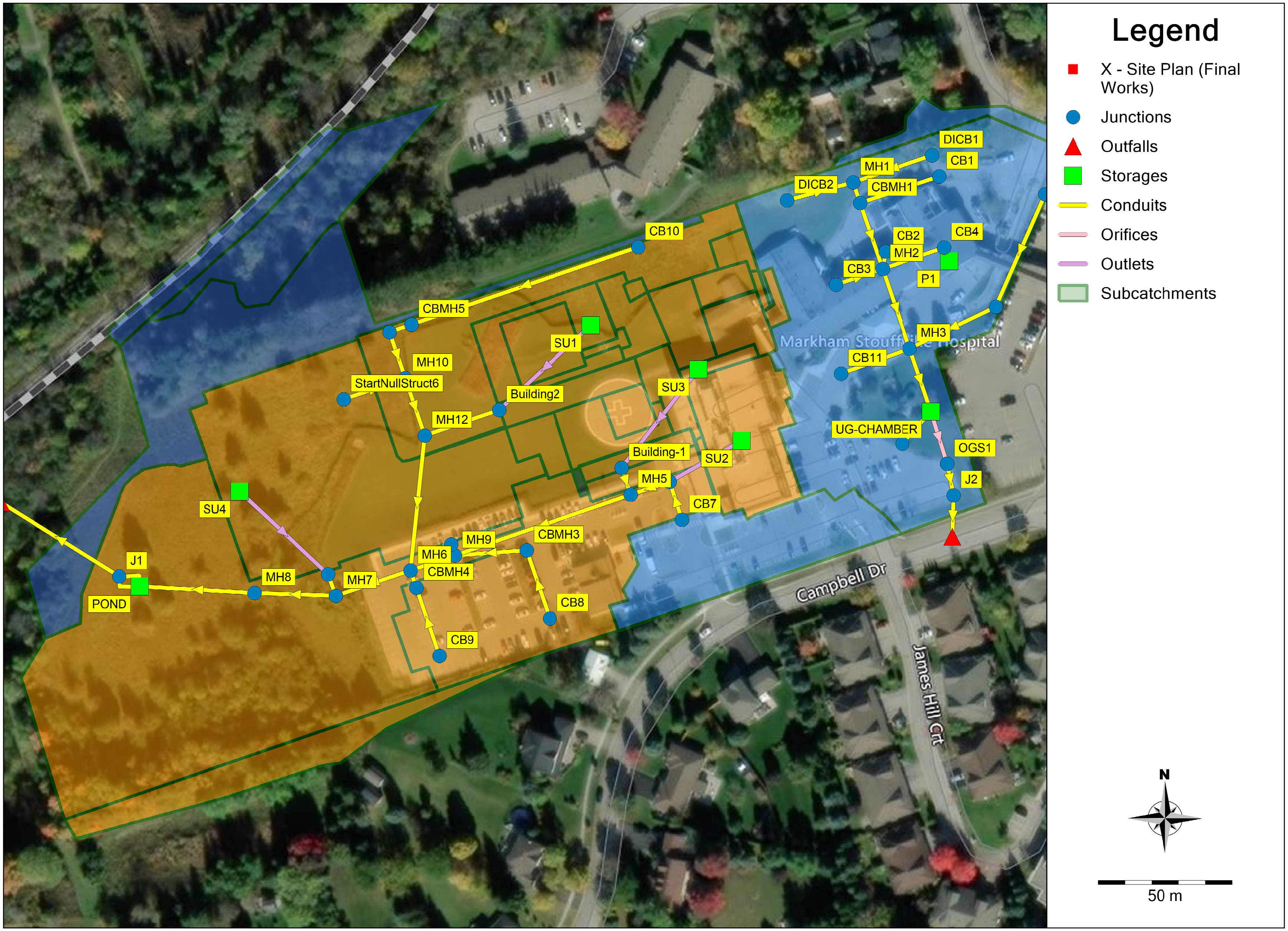
---------- Fraction of Time in Flow Class ----------

C1	1.00	0.04	0.00	0.00	0.30	0.67	0.00	0.00	0.45
0.00									
C2	1.00	0.04	0.00	0.00	0.00	0.00	0.00	0.96	0.00
0.00									

****
Conduit Surcharge Summary
****

Conduit	Hours Full Both Ends	Hours Full Upstream	Hours Full Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C2	0.25	0.28	0.25	0.29	0.25

Analysis begun on: Thu Apr 25 21:55:56 2024
Analysis ended on: Thu Apr 25 21:55:57 2024
Total elapsed time: 00:00:01


Legend
X - Site Plan (Final Works)
Junctions
Outfalls
Storages
Conduits
Orifices
Outlets
Subcatchments
N
50 m
DICB1
CB1
MH1
CBMH1
DICB2
CB2
CB4
MH2
CB3
P1
MH3
CB11
UG-CHAMBER
OGS1
J2
Markham Stouffville Hospital
Campbell Dr
James Hill Crt
CB10
CBMH5
SU1
MH10
StartNullStruct6
Building2
SU3
MH12
Building-1
SU2
MH5
CB7
MH9
CBMH3
MH6
CBMH4
CB8
CB9
SU4
MH8
MH7
J1
POND

Erosion Control Output

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****

Number of rain gages 1
Number of subcatchments ... 32
Number of nodes 48
Number of links 46
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	ErsoionControl	INTENSITY	10 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
PC1	0.34	34.37	99.00	1.5000	Raingage	Building2
PC10	0.15	20.40	0.00	1.0000	Raingage	PC8
PC11	0.08	48.12	0.00	2.0000	Raingage	HW2_(PROP._STM)
PC12	0.20	33.57	0.00	2.0000	Raingage	HW2_(PROP._STM)
PC-2.1	0.03	15.71	100.00	1.5000	Raingage	PC-2.5
PC2.10	0.01	6.19	100.00	1.5000	Raingage	SU1
PC2.11	0.05	58.89	100.00	1.5000	Raingage	Building2
PC2.12	0.02	14.29	100.00	1.5000	Raingage	SU3
PC2.13	0.01	28.00	100.00	1.5000	Raingage	SU3
PC2.14	0.07	26.04	100.00	1.5000	Raingage	Building2
PC2.15	0.04	14.45	100.00	1.5000	Raingage	SU1
PC2.16	0.01	6.80	100.00	1.5000	Raingage	Building2
PC2.17	0.04	14.10	100.00	1.5000	Raingage	SU1
PC2.18	0.09	29.79	100.00	1.5000	Raingage	SU1
PC2.19	0.02	17.82	100.00	1.5000	Raingage	Building2
PC-2.2	0.03	37.88	100.00	1.5000	Raingage	Building-1
PC2.20	0.04	18.96	100.00	1.5000	Raingage	SU1
PC-2.3	0.03	13.75	100.00	1.5000	Raingage	Building-1
PC-2.4	0.03	47.00	100.00	1.5000	Raingage	Building-1
PC-2.5	0.06	26.57	100.00	1.5000	Raingage	Building-1
PC2.6	0.02	1.70	25.00	0.5000	Raingage	Building-1
PC2.7	0.00	5.69	100.00	1.5000	Raingage	SU1
PC2.8	0.01	12.91	100.00	1.5000	Raingage	SU1
PC2.9	0.00	2.60	100.00	1.5000	Raingage	SU1
PC-3	0.18	118.00	100.00	1.0000	Raingage	SU2
PC4	1.10	368.00	76.10	1.5000	Raingage	CB4
PC-5	0.06	42.21	15.80	1.0000	Raingage	MH1
PC6	0.66	87.99	100.00	1.0000	Raingage	SU4
PC7	0.47	57.68	0.00	1.5000	Raingage	HW2_(PROP._STM)
PC8	1.16	130.57	27.50	5.0000	Raingage	POND
PC9	0.49	117.38	94.50	1.5000	Raingage	MH9
UC-1	0.27	76.57	68.40	1.5000	Raingage	J2

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
Building-1	JUNCTION	275.99	2.02	0.0	
Building2	JUNCTION	276.00	2.00	0.0	
CB1	JUNCTION	275.22	1.45	0.0	
CB10	JUNCTION	276.94	0.65	0.0	
CB11	JUNCTION	275.61	1.68	0.0	
CB2	JUNCTION	275.25	1.52	0.0	
CB3	JUNCTION	275.71	1.74	0.0	
CB4	JUNCTION	275.00	1.50	0.0	
CB5	JUNCTION	275.23	1.66	0.0	
CB6	JUNCTION	274.85	1.55	0.0	
CB7	JUNCTION	276.10	1.44	0.0	
CB8	JUNCTION	276.60	0.72	0.0	
CB9	JUNCTION	275.89	1.55	0.0	
CBMH1	JUNCTION	274.78	1.97	0.0	
CBMH2	JUNCTION	274.73	1.49	0.0	
CBMH3	JUNCTION	275.65	1.66	0.0	
CBMH4	JUNCTION	275.60	1.71	0.0	
CBMH5	JUNCTION	276.00	0.76	0.0	
DICB1	JUNCTION	276.40	1.30	0.0	
DICB2	JUNCTION	276.75	2.15	0.0	
J1	JUNCTION	274.62	1.70	0.0	
J2	JUNCTION	273.58	3.13	0.0	
MH1	JUNCTION	275.59	3.83	0.0	
MH10	JUNCTION	275.79	1.29	0.0	
MH11	JUNCTION	275.90	0.94	0.0	

MH12	JUNCTION	275.54	1.64	0.0
MH2	JUNCTION	274.63	2.21	0.0
MH3	JUNCTION	274.40	2.49	0.0
MH4	JUNCTION	275.87	1.98	0.0
MH5	JUNCTION	275.60	2.13	0.0
MH6	JUNCTION	275.13	1.99	0.0
MH7	JUNCTION	274.99	1.83	0.0
MH8	JUNCTION	274.88	1.62	0.0
MH9	JUNCTION	275.28	2.03	0.0
OGS1	JUNCTION	274.02	2.50	0.0
OGS1_(PROP._STM)	JUNCTION	274.27	2.25	0.0
StartNullStruct4	JUNCTION	275.31	2.69	0.0
StartNullStruct5	JUNCTION	0.00	276.70	0.0
StartNullStruct6	JUNCTION	0.00	276.33	0.0
HW2_(PROP._STM)	OUTFALL	274.00	0.95	0.0
OF2	OUTFALL	273.07	0.68	0.0
P1	STORAGE	276.40	0.30	0.0
POND	STORAGE	274.80	1.50	0.0
SU1	STORAGE	285.00	0.15	0.0
SU2	STORAGE	285.00	0.20	0.0
SU3	STORAGE	285.00	0.15	0.0
SU4	STORAGE	285.00	0.15	0.0
UG-CHAMBER	STORAGE	274.33	1.50	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
C1	MH8	POND	CONDUIT	27.2	0.3015	0.0130
C10	J1	HW2_(PROP._STM)	CONDUIT	43.7	0.2700	0.0130
C2	J2	OF2	CONDUIT	15.5	1.3535	0.0130
C3	POND	J1	CONDUIT	8.2	1.0001	0.0130
C4	CBMH3	MH9	CONDUIT	6.7	1.0001	0.0130
C5	CB2	MH2	CONDUIT	2.9	1.0001	0.0130
C6	MH3	UG-CHAMBER	CONDUIT	10.8	0.4074	0.0130
C7	CB6	UG-CHAMBER	CONDUIT	10.5	1.0001	0.0130
C8	OGS1_(PROP._STM)	J2	CONDUIT	11.9	5.7866	0.0130
C9	POND	J1	CONDUIT	6.6	1.0001	0.0130
Pipe_-_(1)_(PROP._STM)	DICB2	MH1	CONDUIT	25.6	0.9977	0.0130
Pipe_-_(2)_(PROP._STM)	MH12	MH6	CONDUIT	50.4	0.5395	0.0130
Pipe_-_(3)_(PROP._STM)	StartNullStruct4	MH7	CONDUIT	8.5	1.0002	0.0130
Pipe_-_(4)_(PROP._STM)	StartNullStruct5	MH9	CONDUIT	4.3	0.9984	0.0130
Pipe_-_(47)_(PROP._STM)	CB5	CBMH2	CONDUIT	45.7	1.0006	0.0130
Pipe_-_(48)_(PROP._STM)	CBMH2	MH3	CONDUIT	35.6	0.4994	0.0130
Pipe_-_(5)_(PROP._STM)	StartNullStruct6	MH10	CONDUIT	24.3	0.9992	0.0130
Pipe_-_(51)_(PROP._STM)	CB1	CBMH1	CONDUIT	31.1	0.9998	0.0130
Pipe_-_(52)_(PROP._STM)	CBMH1	MH2	CONDUIT	25.9	0.5015	0.0130
Pipe_-_(53)_(PROP._STM)	MH2	MH3	CONDUIT	31.2	0.4995	0.0130
Pipe_-_(56)_(PROP._STM)	CB4	MH2	CONDUIT	24.3	1.0003	0.0130
Pipe_-_(57)_(PROP._STM)	CB3	MH2	CONDUIT	18.3	1.0079	0.0130
Pipe_-_(58)_(PROP._STM)	CB11	MH3	CONDUIT	27.1	0.9986	0.0130
Pipe_-_(59)_(PROP._STM)	CB10	CBMH5	CONDUIT	89.2	0.9994	0.0130
Pipe_-_(60)_(PROP._STM)	CBMH5	MH11	CONDUIT	8.6	0.4991	0.0130
Pipe_-_(61)_(1)_(PROP._STM)	Building2	MH12	CONDUIT	29.4	0.9974	0.0130
Pipe_-_(61)_(2)_(PROP._STM)	MH10	MH12	CONDUIT	22.5	0.4040	0.0130
Pipe_-_(61)_(PROP._STM)	MH11	MH10	CONDUIT	18.1	0.4986	0.0130
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	MH9	MH6	CONDUIT	17.5	0.4010	0.0130
Pipe_-_(65)_(2)(0)_(PROP._STM)	MH5	MH9	CONDUIT	69.3	0.4042	0.0130
Pipe_-_(66)_(PROP._STM)	MH6	MH7	CONDUIT	29.4	0.2996	0.0130
Pipe_-_(67)_(PROP._STM)	MH7	MH8	CONDUIT	30.3	0.3005	0.0130
Pipe_-_(68)	Building-1	MH5	CONDUIT	10.5	0.9993	0.0130
Pipe_-_(69)_(PROP._STM)	CBMH4	MH6	CONDUIT	6.8	1.0009	0.0130
Pipe_-_(70)_(PROP._STM)	CB8	CBMH3	CONDUIT	26.7	0.9962	0.0130
Pipe_-_(76)_(PROP._STM)	MH1	CBMH1	CONDUIT	8.0	0.9953	0.0130
Pipe_-_(78)_(PROP._STM)	DICB1	MH1	CONDUIT	31.1	0.9999	0.0130
Pipe_-_(79)_(PROP._STM)	CB7	MH4	CONDUIT	14.9	1.0011	0.0130
Pipe_-_(80)_(PROP._STM)	MH4	MH5	CONDUIT	15.3	0.9989	0.0130
Pipe_-_(81)_(PROP._STM)	CB9	CBMH4	CONDUIT	26.7	1.0006	0.0130
OR2	UG-CHAMBER	OGS1_(PROP._STM)	ORIFICE			
OR3	P1	CB4	ORIFICE			
OL1	SU2	MH4	OUTLET			
OL2	SU3	Building-1	OUTLET			
OL3	SU1	Building2	OUTLET			
OL4	SU4	StartNullStruct4	OUTLET			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	CIRCULAR	0.60	0.28	0.15	0.60	1	337.15
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	148.16
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	203.99
C3	CIRCULAR	0.12	0.01	0.03	0.12	1	9.37
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	96.71
C5	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C6	CIRCULAR	0.45	0.16	0.11	0.45	1	181.99
C7	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C8	CIRCULAR	0.38	0.11	0.09	0.38	1	421.79
C9	CIRCULAR	0.20	0.03	0.05	0.20	1	32.80
Pipe_-_(1)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.40

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Pipe_-_(2)_(PROP._STM) CIRCULAR            0.45     0.16     0.11     0.45        1   209.42
Pipe_-_(3)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.71
Pipe_-_(4)_(PROP._STM) CIRCULAR            0.20     0.03     0.05     0.20        1    32.77
Pipe_-_(47)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.49
Pipe_-_(48)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.34
Pipe_-_(5)_(PROP._STM) CIRCULAR            0.20     0.03     0.05     0.20        1    32.79
Pipe_-_(51)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(52)_(PROP._STM) CIRCULAR            0.38     0.11     0.09     0.38        1   124.17
Pipe_-_(53)_(PROP._STM) CIRCULAR            0.38     0.11     0.09     0.38        1   123.93
Pipe_-_(56)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.48
Pipe_-_(57)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.71
Pipe_-_(58)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.43
Pipe_-_(59)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.45
Pipe_-_(60)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.32
Pipe_-_(61)_(1)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.58
Pipe_-_(61)_(2)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    61.47
Pipe_-_(61)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.28
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM) CIRCULAR            0.53     0.22     0.13     0.53        1   272.35
Pipe_-_(65)_(2)(0)_(PROP._STM) CIRCULAR            0.53     0.22     0.13     0.53        1   273.44
Pipe_-_(66)_(PROP._STM) CIRCULAR            0.60     0.28     0.15     0.60        1   336.12
Pipe_-_(67)_(PROP._STM) CIRCULAR            0.60     0.28     0.15     0.60        1   336.60
Pipe_-_(68)      CIRCULAR            0.30     0.07     0.07     0.30        1    96.67
Pipe_-_(69)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(70)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.36
Pipe_-_(76)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.48
Pipe_-_(78)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(79)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(80)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.44
Pipe_-_(81)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.49


****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/08/2024 00:00:00
Ending Date .............. 04/09/2024 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.145        24.998
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.052         8.932
Surface Runoff ...........         0.083        14.375
Final Storage ............         0.010         1.701
Continuity Error (%) .....        -0.042


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.083         0.832
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.082         0.816
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.001         0.015
Continuity Error (%) .....         0.117


*************************
Highest Continuity Errors
*************************
Node CBMH2 (4.13%)


***************************
Time-Step Critical Elements
```

```
***************************
None


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*********************************
Most Frequent Nonconverging Nodes
*********************************
Convergence obtained at all time steps.


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.00 sec
Maximum Time Step           :     1.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.00
% of Steps Not Converging   :     0.00
Time Step Frequencies       :
    1.000 -  0.871 sec      :   100.00 %
    0.871 -  0.758 sec      :     0.00 %
    0.758 -  0.660 sec      :     0.00 %
    0.660 -  0.574 sec      :     0.00 %
    0.574 -  0.500 sec      :     0.00 %


***************************
Subcatchment Runoff Summary
***************************
```

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
PC1	25.00	0.00	0.00	0.23	22.77	0.00	22.78	0.08	48.29	0.911
PC10	25.00	0.00	0.00	23.69	0.00	0.04	0.04	0.00	0.04	0.002
PC11	25.00	0.00	0.00	23.57	0.00	0.17	0.17	0.00	0.08	0.007
PC12	25.00	0.00	0.00	23.66	0.00	0.07	0.07	0.00	0.08	0.003
PC-2.1	25.00	0.00	0.00	0.00	23.02	0.00	23.02	0.01	4.16	0.921
PC2.10	25.00	0.00	0.00	0.00	23.02	0.00	23.02	0.00	2.03	0.921
PC2.11	25.00	0.00	0.00	0.00	23.03	0.00	23.03	0.01	8.27	0.921
PC2.12	25.00	0.00	0.00	0.00	23.02	0.00	23.02	0.01	3.79	0.921
PC2.13	25.00	0.00	0.00	0.00	23.03	0.00	23.03	0.00	2.18	0.921
PC2.14	25.00	0.00	0.00	0.00	23.02	0.00	23.02	0.01	10.14	0.921
PC2.15	25.00	0.00	0.00	0.00	23.01	0.00	23.01	0.01	6.96	0.921
PC2.16	25.00	0.00	0.00	0.00	23.03	0.00	23.03	0.00	1.06	0.921
PC2.17	25.00	0.00	0.00	0.00	23.01	0.00	23.01	0.01	6.58	0.921
PC2.18	25.00	0.00	0.00	0.00	23.01	0.00	23.01	0.02	13.44	0.921
PC2.19	25.00	0.00	0.00	0.00	24.97	0.00	24.97	0.00	3.06	0.999
PC-2.2	25.00	0.00	0.00	0.00	23.03	0.00	23.03	0.01	4.73	0.921
PC2.20	25.00	0.00	0.00	0.00	24.97	0.00	24.97	0.01	6.79	0.999
PC-2.3	25.00	0.00	0.00	0.00	23.02	0.00	23.02	0.01	5.14	0.921
PC-2.4	25.00	0.00	0.00	0.00	23.03	0.00	23.03	0.01	4.40	0.921
PC-2.5	25.00	11.01	0.00	0.00	34.03	0.00	34.03	0.02	12.85	0.945
PC2.6	25.00	0.00	0.00	17.78	5.75	0.02	5.77	0.00	0.66	0.231
PC2.7	25.00	0.00	0.00	0.00	23.03	0.00	23.03	0.00	0.58	0.921
PC2.8	25.00	0.00	0.00	0.00	23.02	0.00	23.02	0.00	2.21	0.921
PC2.9	25.00	0.00	0.00	0.00	23.03	0.00	23.03	0.00	0.41	0.921
PC-3	25.00	0.00	0.00	0.00	23.02	0.00	23.02	0.04	27.59	0.921
PC4	25.00	0.00	0.00	5.62	17.52	0.06	17.57	0.19	130.88	0.703

PC-5	25.00	0.00	0.00	19.85	3.64	0.14	3.78	0.00	1.43	0.151
PC6	25.00	0.00	0.00	0.00	23.00	0.00	23.00	0.15	96.28	0.920
PC7	25.00	0.00	0.00	23.69	0.00	0.04	0.04	0.00	0.12	0.002
PC8	25.00	0.01	0.00	17.14	6.33	0.07	6.40	0.07	49.84	0.256
PC9	25.00	0.00	0.00	1.29	21.75	0.02	21.76	0.11	72.06	0.871
UC-1	25.00	0.00	0.00	7.44	15.74	0.06	15.80	0.04	28.55	0.632

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Node Depth Summary
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Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
Building-1	JUNCTION	0.01	0.11	276.10	0 01:30	0.11
Building2	JUNCTION	0.01	0.20	276.20	0 01:30	0.20
CB1	JUNCTION	0.00	0.00	275.22	0 00:00	0.00
CB10	JUNCTION	0.00	0.00	276.94	0 00:00	0.00
CB11	JUNCTION	0.00	0.00	275.61	0 00:00	0.00
CB2	JUNCTION	0.00	0.00	275.25	0 00:00	0.00
CB3	JUNCTION	0.00	0.00	275.71	0 00:00	0.00
CB4	JUNCTION	0.02	1.18	276.18	0 01:30	1.18
CB5	JUNCTION	0.00	0.00	275.23	0 00:00	0.00
CB6	JUNCTION	0.00	0.00	274.85	0 00:00	0.00
CB7	JUNCTION	0.00	0.00	276.10	0 00:00	0.00
CB8	JUNCTION	0.00	0.00	276.60	0 00:00	0.00
CB9	JUNCTION	0.00	0.00	275.89	0 00:00	0.00
CBMH1	JUNCTION	0.00	0.16	274.94	0 01:29	0.16
CBMH2	JUNCTION	0.00	0.03	274.76	0 01:31	0.03
CBMH3	JUNCTION	0.00	0.00	275.65	0 00:00	0.00
CBMH4	JUNCTION	0.00	0.00	275.60	0 00:00	0.00
CBMH5	JUNCTION	0.00	0.00	276.00	0 00:00	0.00
DICB1	JUNCTION	0.00	0.00	276.40	0 00:00	0.00
DICB2	JUNCTION	0.00	0.00	276.75	0 00:00	0.00
J1	JUNCTION	0.06	0.11	274.73	0 03:21	0.11
J2	JUNCTION	0.01	0.19	273.77	0 01:30	0.19
MH1	JUNCTION	0.00	0.03	275.62	0 01:30	0.03
MH10	JUNCTION	0.00	0.00	275.79	0 00:00	0.00
MH11	JUNCTION	0.00	0.00	275.90	0 00:00	0.00
MH12	JUNCTION	0.02	0.19	275.73	0 01:30	0.19
MH2	JUNCTION	0.01	0.31	274.94	0 01:30	0.31
MH3	JUNCTION	0.01	0.35	274.76	0 01:32	0.35
MH4	JUNCTION	0.01	0.07	275.95	0 01:27	0.07
MH5	JUNCTION	0.01	0.14	275.74	0 01:30	0.14
MH6	JUNCTION	0.02	0.30	275.43	0 01:30	0.30
MH7	JUNCTION	0.04	0.33	275.32	0 01:30	0.32
MH8	JUNCTION	0.07	0.32	275.20	0 01:31	0.32
MH9	JUNCTION	0.01	0.23	275.51	0 01:30	0.23
OGS1	JUNCTION	0.00	0.00	274.02	0 00:00	0.00
OGS1_(PROP._STM)	JUNCTION	0.01	0.11	274.38	0 01:32	0.11
StartNullStruct4	JUNCTION	0.01	0.11	275.42	0 01:42	0.11
StartNullStruct5	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
StartNullStruct6	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
HW2_(PROP._STM)	OUTFALL	0.00	0.00	274.00	0 00:00	0.00
OF2	OUTFALL	0.00	0.00	273.07	0 00:00	0.00
P1	STORAGE	0.00	0.00	276.40	0 00:00	0.00
POND	STORAGE	0.11	0.36	275.16	0 03:20	0.36
SU1	STORAGE	0.01	0.04	285.04	0 01:58	0.04
SU2	STORAGE	0.00	0.09	285.09	0 01:33	0.09
SU3	STORAGE	0.00	0.04	285.04	0 01:40	0.04
SU4	STORAGE	0.00	0.07	285.07	0 01:42	0.07
UG-CHAMBER	STORAGE	0.02	0.42	274.75	0 01:32	0.42

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Node Inflow Summary
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Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
Building-1	JUNCTION	27.77	29.45	0 01:30	0.041	0.0499	0.000
Building2	JUNCTION	70.81	74.49	0 01:30	0.11	0.169	0.001
CB1	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB10	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB11	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB2	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB3	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB4	JUNCTION	130.88	130.88	0 01:30	0.194	0.194	0.004
CB5	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB6	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB7	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB8	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB9	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr

CBMH1	JUNCTION	0.00	7.02	0	01:22	0	0.00255	0.129
CBMH2	JUNCTION	0.00	1.66	0	01:30	0	0.000151	4.312
CBMH3	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CBMH4	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CBMH5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
DICB1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
DICB2	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J1	JUNCTION	0.00	18.71	0	03:20	0	0.578	0.011
J2	JUNCTION	28.55	102.62	0	01:30	0.0424	0.238	-0.002
MH1	JUNCTION	1.43	1.43	0	01:30	0.00219	0.00219	0.023
MH10	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
MH11	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
MH12	JUNCTION	0.00	74.20	0	01:30	0	0.169	-0.002
MH2	JUNCTION	0.00	132.56	0	01:30	0	0.197	0.585
MH3	JUNCTION	0.00	132.12	0	01:29	0	0.195	-0.255
MH4	JUNCTION	0.00	11.10	0	01:27	0	0.0407	0.007
MH5	JUNCTION	0.00	40.54	0	01:30	0	0.0906	-0.353
MH6	JUNCTION	0.00	185.80	0	01:30	0	0.367	0.527
MH7	JUNCTION	0.00	209.64	0	01:30	0	0.517	-0.004
MH8	JUNCTION	0.00	209.52	0	01:30	0	0.517	-0.252
MH9	JUNCTION	72.06	112.55	0	01:30	0.107	0.198	0.207
OGS1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
OGS1_(PROP._STM)	JUNCTION	0.00	77.04	0	01:32	0	0.196	-0.003
StartNullStruct4	JUNCTION	0.00	28.61	0	01:42	0	0.152	0.009
StartNullStruct5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
StartNullStruct6	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
HW2_(PROP._STM)	OUTFALL	0.27	18.83	0	04:00	0.00047	0.578	0.000
OF2	OUTFALL	0.00	102.44	0	01:30	0	0.238	0.000
P1	STORAGE	0.00	0.00	0	00:00	0	0	0.000 ltr
POND	STORAGE	49.84	275.67	0	01:29	0.0744	0.592	0.017
SU1	STORAGE	38.99	38.99	0	01:30	0.0585	0.0585	-0.003
SU2	STORAGE	27.59	27.59	0	01:30	0.0407	0.0407	-0.003
SU3	STORAGE	5.97	5.97	0	01:30	0.00882	0.00882	-0.004
SU4	STORAGE	96.28	96.28	0	01:30	0.152	0.152	-0.007
UG-CHAMBER	STORAGE	0.00	130.04	0	01:29	0	0.196	-0.223

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Node Surcharge Summary
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Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
CB4	JUNCTION	0.16	0.784	0.318
OGS1	JUNCTION	24.00	0.000	2.500

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Node Flooding Summary
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No nodes were flooded.

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Storage Volume Summary
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Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
P1	0.000	0.0	0.0	0.0	0.000	0.0	0 00:00	0.00
POND	0.121	5.4	0.0	0.0	0.399	17.7	0 03:20	18.71
SU1	0.004	1.0	0.0	0.0	0.033	8.5	0 01:58	4.44
SU2	0.000	0.3	0.0	0.0	0.012	15.5	0 01:33	11.10
SU3	0.000	0.2	0.0	0.0	0.003	5.6	0 01:40	1.78
SU4	0.002	0.8	0.0	0.0	0.054	20.4	0 01:42	28.61
UG-CHAMBER	0.001	0.2	0.0	0.0	0.045	8.4	0 01:32	77.04

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Outfall Loading Summary
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Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
HW2_(PROP._STM)	95.02	7.04	18.83	0.578
OF2	23.04	11.96	102.44	0.238
System	59.03	19.00	112.97	0.816

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Link Flow Summary
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Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days	Time of Max Occurrence hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	229.62	0	01:30	2.67	0.68	0.52
C10	CONDUIT	18.71	0	03:21	0.70	0.13	0.22
C2	CONDUIT	102.44	0	01:30	1.85	0.50	0.50
C3	CONDUIT	18.71	0	03:20	1.53	2.00	0.98
C4	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C5	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C6	CONDUIT	130.04	0	01:29	1.36	0.71	0.83
C7	CONDUIT	0.00	0	00:00	0.00	0.00	0.01
C8	CONDUIT	77.04	0	01:32	2.03	0.18	0.39
C9	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(1)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	CONDUIT	73.74	0	01:30	1.20	0.35	0.41
Pipe_-_(3)_(PROP._STM)	CONDUIT	28.61	0	01:43	1.19	0.30	0.37
Pipe_-_(4)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(48)_(PROP._STM)	CONDUIT	1.66	0	01:30	0.07	0.02	0.39
Pipe_-_(5)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(51)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.07
Pipe_-_(52)_(PROP._STM)	CONDUIT	10.48	0	01:30	0.19	0.08	0.61
Pipe_-_(53)_(PROP._STM)	CONDUIT	132.12	0	01:29	1.45	1.07	0.77
Pipe_-_(56)_(PROP._STM)	CONDUIT	130.88	0	01:30	2.67	2.20	1.00
Pipe_-_(57)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(60)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(61)_(1)_(PROP._STM)	CONDUIT	74.20	0	01:30	1.51	0.77	0.66
Pipe_-_(61)_(2)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.06
Pipe_-_(61)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	CONDUIT	112.31	0	01:30	1.26	0.41	0.43
Pipe_-_(65)_(2)(0)_(PROP._STM)	CONDUIT	40.50	0	01:30	0.75	0.15	0.31
Pipe_-_(66)_(PROP._STM)	CONDUIT	185.83	0	01:30	1.37	0.55	0.49
Pipe_-_(67)_(PROP._STM)	CONDUIT	209.52	0	01:30	1.42	0.62	0.52
Pipe_-_(68)	CONDUIT	29.44	0	01:30	1.20	0.30	0.38
Pipe_-_(69)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(70)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(76)_(PROP._STM)	CONDUIT	1.43	0	01:30	0.49	0.01	0.08
Pipe_-_(78)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(80)_(PROP._STM)	CONDUIT	11.11	0	01:27	0.93	0.19	0.29
Pipe_-_(81)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OR2	ORIFICE	77.04	0	01:32			1.00
OR3	ORIFICE	0.00	0	00:00			
OL1	DUMMY	11.10	0	01:27			
OL2	DUMMY	1.78	0	01:40			
OL3	DUMMY	4.44	0	01:58			
OL4	DUMMY	28.61	0	01:42			

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Flow Classification Summary
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Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
		---------- Fraction of Time in Flow Class ----------								
C1	1.00	0.01	0.00	0.00	0.94	0.05	0.00	0.00	0.55	0.00
C10	1.00	0.04	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.00
C2	1.00	0.04	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.00
C3	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
C4	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C5	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C6	1.00	0.04	0.00	0.00	0.04	0.00	0.00	0.92	0.00	0.00
C7	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C8	1.00	0.04	0.01	0.00	0.73	0.23	0.00	0.00	0.96	0.00
C9	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(1)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Pipe_-_(3)_(PROP._STM)	1.00	0.04	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.00
Pipe_-_(4)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(48)_(PROP._STM)	1.00	0.06	0.01	0.00	0.02	0.00	0.00	0.92	0.01	0.00
Pipe_-_(5)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(51)_(PROP._STM)	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(52)_(PROP._STM)	1.00	0.04	0.00	0.00	0.14	0.00	0.00	0.82	0.13	0.00
Pipe_-_(53)_(PROP._STM)	1.00	0.04	0.00	0.00	0.01	0.00	0.00	0.95	0.01	0.00
Pipe_-_(56)_(PROP._STM)	1.00	0.04	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.00
Pipe_-_(57)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(60)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(61)_(1)_(PROP._STM)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Pipe_-_(61)_(2)_(PROP._STM)	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(61)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	1.00	0.04	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.00
Pipe_-_(65)_(2)(0)_(PROP._STM)	1.00	0.04	0.00	0.00	0.02	0.00	0.00	0.94	0.01	0.00
Pipe_-_(66)_(PROP._STM)	1.00	0.00	0.00	0.00	0.20	0.00	0.00	0.79	0.15	0.00
Pipe_-_(67)_(PROP._STM)	1.00	0.01	0.00	0.00	0.36	0.00	0.00	0.64	0.12	0.00
Pipe_-_(68)	1.00	0.04	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.00

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Pipe_-_(69)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
Pipe_-_(70)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
Pipe_-_(76)_(PROP._STM)    1.00   0.04  0.00  0.00  0.00  0.00  0.00  0.96  0.00  0.00
Pipe_-_(78)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
Pipe_-_(79)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
Pipe_-_(80)_(PROP._STM)    1.00   0.04  0.00  0.00  0.00  0.00  0.00  0.96  0.00  0.00
Pipe_-_(81)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00


*************************
Conduit Surcharge Summary
*************************

----------------------------------------------------------------------------
                                                          Hours        Hours
                      --------- Hours Full --------   Above Full   Capacity
Conduit               Both Ends  Upstream  Dnstream   Normal Flow   Limited
----------------------------------------------------------------------------
C3                         0.01      8.06      0.01      8.82          0.01
Pipe_-_(53)_(PROP._STM)       0.01      0.01      0.01      0.09          0.01
Pipe_-_(56)_(PROP._STM)       0.13      0.19      0.13      0.20          0.13


Analysis begun on:  Thu Sep 19 19:56:28 2024
Analysis ended on:  Thu Sep 19 19:56:30 2024
Total elapsed time: 00:00:02
```

2 Year Chicago Storm - Output

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****
Number of rain gages 1
Number of subcatchments ... 32
Number of nodes 48
Number of links 46
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	2-Yr-Chicago-Storm	INTENSITY	10 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
PC1	0.34	34.37	99.00	1.5000	Raingage	Building2
PC10	0.15	20.40	0.00	1.0000	Raingage	PC8
PC11	0.08	48.12	0.00	2.0000	Raingage	HW2_(PROP._STM)
PC12	0.20	33.57	0.00	2.0000	Raingage	HW2_(PROP._STM)
PC-2.1	0.03	15.71	100.00	1.5000	Raingage	PC-2.5
PC2.10	0.01	6.19	100.00	1.5000	Raingage	SU1
PC2.11	0.05	58.89	100.00	1.5000	Raingage	Building2
PC2.12	0.02	14.29	100.00	1.5000	Raingage	SU3
PC2.13	0.01	28.00	100.00	1.5000	Raingage	SU3
PC2.14	0.07	26.04	100.00	1.5000	Raingage	Building2
PC2.15	0.04	14.45	100.00	1.5000	Raingage	SU1
PC2.16	0.01	6.80	100.00	1.5000	Raingage	Building2
PC2.17	0.04	14.10	100.00	1.5000	Raingage	SU1
PC2.18	0.09	29.79	100.00	1.5000	Raingage	SU1
PC2.19	0.02	17.82	100.00	1.5000	Raingage	Building2
PC-2.2	0.03	37.88	100.00	1.5000	Raingage	Building-1
PC2.20	0.04	18.96	100.00	1.5000	Raingage	SU1
PC-2.3	0.03	13.75	100.00	1.5000	Raingage	Building-1
PC-2.4	0.03	47.00	100.00	1.5000	Raingage	Building-1
PC-2.5	0.06	26.57	100.00	1.5000	Raingage	Building-1
PC2.6	0.02	1.70	25.00	0.5000	Raingage	Building-1
PC2.7	0.00	5.69	100.00	1.5000	Raingage	SU1
PC2.8	0.01	12.91	100.00	1.5000	Raingage	SU1
PC2.9	0.00	2.60	100.00	1.5000	Raingage	SU1
PC-3	0.18	118.00	100.00	1.0000	Raingage	SU2
PC4	1.10	368.00	76.10	1.5000	Raingage	CB4
PC-5	0.06	42.21	15.80	1.0000	Raingage	MH1
PC6	0.66	87.99	100.00	1.0000	Raingage	SU4
PC7	0.47	57.68	0.00	1.5000	Raingage	HW2_(PROP._STM)
PC8	1.16	130.57	27.50	5.0000	Raingage	POND
PC9	0.49	117.38	94.50	1.5000	Raingage	MH9
UC-1	0.27	76.57	68.40	1.5000	Raingage	J2

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
Building-1	JUNCTION	275.99	2.02	0.0	
Building2	JUNCTION	276.00	2.00	0.0	
CB1	JUNCTION	275.22	1.45	0.0	
CB10	JUNCTION	276.94	0.65	0.0	
CB11	JUNCTION	275.61	1.68	0.0	
CB2	JUNCTION	275.25	1.52	0.0	
CB3	JUNCTION	275.71	1.74	0.0	
CB4	JUNCTION	275.00	1.50	0.0	
CB5	JUNCTION	275.23	1.66	0.0	
CB6	JUNCTION	274.85	1.55	0.0	
CB7	JUNCTION	276.10	1.44	0.0	
CB8	JUNCTION	276.60	0.72	0.0	
CB9	JUNCTION	275.89	1.55	0.0	
CBMH1	JUNCTION	274.78	1.97	0.0	
CBMH2	JUNCTION	274.73	1.49	0.0	
CBMH3	JUNCTION	275.65	1.66	0.0	
CBMH4	JUNCTION	275.60	1.71	0.0	
CBMH5	JUNCTION	276.00	0.76	0.0	
DICB1	JUNCTION	276.40	1.30	0.0	
DICB2	JUNCTION	276.75	2.15	0.0	
J1	JUNCTION	274.62	1.70	0.0	
J2	JUNCTION	273.58	3.13	0.0	
MH1	JUNCTION	275.59	3.83	0.0	
MH10	JUNCTION	275.79	1.29	0.0	
MH11	JUNCTION	275.90	0.94	0.0	

MH12	JUNCTION	275.54	1.64	0.0
MH2	JUNCTION	274.63	2.21	0.0
MH3	JUNCTION	274.40	2.49	0.0
MH4	JUNCTION	275.87	1.98	0.0
MH5	JUNCTION	275.60	2.13	0.0
MH6	JUNCTION	275.13	1.99	0.0
MH7	JUNCTION	274.99	1.83	0.0
MH8	JUNCTION	274.88	1.62	0.0
MH9	JUNCTION	275.28	2.03	0.0
OGS1	JUNCTION	274.02	2.50	0.0
OGS1_(PROP._STM)	JUNCTION	274.27	2.25	0.0
StartNullStruct4	JUNCTION	275.31	2.69	0.0
StartNullStruct5	JUNCTION	0.00	276.70	0.0
StartNullStruct6	JUNCTION	0.00	276.33	0.0
HW2_(PROP._STM)	OUTFALL	274.00	0.95	0.0
OF2	OUTFALL	273.07	0.68	0.0
P1	STORAGE	276.40	0.30	0.0
POND	STORAGE	274.80	1.50	0.0
SU1	STORAGE	285.00	0.15	0.0
SU2	STORAGE	285.00	0.20	0.0
SU3	STORAGE	285.00	0.15	0.0
SU4	STORAGE	285.00	0.15	0.0
UG-CHAMBER	STORAGE	274.33	1.50	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
C1	MH8	POND	CONDUIT	27.2	0.3015	0.0130
C10	J1	HW2_(PROP._STM)	CONDUIT	43.7	0.2700	0.0130
C2	J2	OF2	CONDUIT	15.5	1.3535	0.0130
C3	POND	J1	CONDUIT	8.2	1.0001	0.0130
C4	CBMH3	MH9	CONDUIT	6.7	1.0001	0.0130
C5	CB2	MH2	CONDUIT	2.9	1.0001	0.0130
C6	MH3	UG-CHAMBER	CONDUIT	10.8	0.4074	0.0130
C7	CB6	UG-CHAMBER	CONDUIT	10.5	1.0001	0.0130
C8	OGS1_(PROP._STM)	J2	CONDUIT	11.9	5.7866	0.0130
C9	POND	J1	CONDUIT	6.6	1.0001	0.0130
Pipe_-_(1)_(PROP._STM)	DICB2	MH1	CONDUIT	25.6	0.9977	0.0130
Pipe_-_(2)_(PROP._STM)	MH12	MH6	CONDUIT	50.4	0.5395	0.0130
Pipe_-_(3)_(PROP._STM)	StartNullStruct4	MH7	CONDUIT	8.5	1.0002	0.0130
Pipe_-_(4)_(PROP._STM)	StartNullStruct5	MH9	CONDUIT	4.3	0.9984	0.0130
Pipe_-_(47)_(PROP._STM)	CB5	CBMH2	CONDUIT	45.7	1.0006	0.0130
Pipe_-_(48)_(PROP._STM)	CBMH2	MH3	CONDUIT	35.6	0.4994	0.0130
Pipe_-_(5)_(PROP._STM)	StartNullStruct6	MH10	CONDUIT	24.3	0.9992	0.0130
Pipe_-_(51)_(PROP._STM)	CB1	CBMH1	CONDUIT	31.1	0.9998	0.0130
Pipe_-_(52)_(PROP._STM)	CBMH1	MH2	CONDUIT	25.9	0.5015	0.0130
Pipe_-_(53)_(PROP._STM)	MH2	MH3	CONDUIT	31.2	0.4995	0.0130
Pipe_-_(56)_(PROP._STM)	CB4	MH2	CONDUIT	24.3	1.0003	0.0130
Pipe_-_(57)_(PROP._STM)	CB3	MH2	CONDUIT	18.3	1.0079	0.0130
Pipe_-_(58)_(PROP._STM)	CB11	MH3	CONDUIT	27.1	0.9986	0.0130
Pipe_-_(59)_(PROP._STM)	CB10	CBMH5	CONDUIT	89.2	0.9994	0.0130
Pipe_-_(60)_(PROP._STM)	CBMH5	MH11	CONDUIT	8.6	0.4991	0.0130
Pipe_-_(61)_(1)_(PROP._STM)	Building2	MH12	CONDUIT	29.4	0.9974	0.0130
Pipe_-_(61)_(2)_(PROP._STM)	MH10	MH12	CONDUIT	22.5	0.4040	0.0130
Pipe_-_(61)_(PROP._STM)	MH11	MH10	CONDUIT	18.1	0.4986	0.0130
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	MH9	MH6	CONDUIT	17.5	0.4010	0.0130
Pipe_-_(65)_(2)(0)_(PROP._STM)	MH5	MH9	CONDUIT	69.3	0.4042	0.0130
Pipe_-_(66)_(PROP._STM)	MH6	MH7	CONDUIT	29.4	0.2996	0.0130
Pipe_-_(67)_(PROP._STM)	MH7	MH8	CONDUIT	30.3	0.3005	0.0130
Pipe_-_(68)	Building-1	MH5	CONDUIT	10.5	0.9993	0.0130
Pipe_-_(69)_(PROP._STM)	CBMH4	MH6	CONDUIT	6.8	1.0009	0.0130
Pipe_-_(70)_(PROP._STM)	CB8	CBMH3	CONDUIT	26.7	0.9962	0.0130
Pipe_-_(76)_(PROP._STM)	MH1	CBMH1	CONDUIT	8.0	0.9953	0.0130
Pipe_-_(78)_(PROP._STM)	DICB1	MH1	CONDUIT	31.1	0.9999	0.0130
Pipe_-_(79)_(PROP._STM)	CB7	MH4	CONDUIT	14.9	1.0011	0.0130
Pipe_-_(80)_(PROP._STM)	MH4	MH5	CONDUIT	15.3	0.9989	0.0130
Pipe_-_(81)_(PROP._STM)	CB9	CBMH4	CONDUIT	26.7	1.0006	0.0130
OR2	UG-CHAMBER	OGS1_(PROP._STM)	ORIFICE			
OR3	P1	CB4	ORIFICE			
OL1	SU2	MH4	OUTLET			
OL2	SU3	Building-1	OUTLET			
OL3	SU1	Building2	OUTLET			
OL4	SU4	StartNullStruct4	OUTLET			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	CIRCULAR	0.60	0.28	0.15	0.60	1	337.15
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	148.16
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	203.99
C3	CIRCULAR	0.12	0.01	0.03	0.12	1	9.37
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	96.71
C5	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C6	CIRCULAR	0.45	0.16	0.11	0.45	1	181.99
C7	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C8	CIRCULAR	0.38	0.11	0.09	0.38	1	421.79
C9	CIRCULAR	0.20	0.03	0.05	0.20	1	32.80
Pipe_-_(1)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.40

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Pipe_-_(2)_(PROP._STM) CIRCULAR            0.45     0.16     0.11     0.45        1   209.42
Pipe_-_(3)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.71
Pipe_-_(4)_(PROP._STM) CIRCULAR            0.20     0.03     0.05     0.20        1    32.77
Pipe_-_(47)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.49
Pipe_-_(48)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.34
Pipe_-_(5)_(PROP._STM) CIRCULAR            0.20     0.03     0.05     0.20        1    32.79
Pipe_-_(51)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(52)_(PROP._STM) CIRCULAR            0.38     0.11     0.09     0.38        1   124.17
Pipe_-_(53)_(PROP._STM) CIRCULAR            0.38     0.11     0.09     0.38        1   123.93
Pipe_-_(56)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.48
Pipe_-_(57)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.71
Pipe_-_(58)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.43
Pipe_-_(59)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.45
Pipe_-_(60)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.32
Pipe_-_(61)_(1)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.58
Pipe_-_(61)_(2)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    61.47
Pipe_-_(61)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.28
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM) CIRCULAR            0.53     0.22     0.13     0.53        1   272.35
Pipe_-_(65)_(2)(0)_(PROP._STM) CIRCULAR            0.53     0.22     0.13     0.53        1   273.44
Pipe_-_(66)_(PROP._STM) CIRCULAR            0.60     0.28     0.15     0.60        1   336.12
Pipe_-_(67)_(PROP._STM) CIRCULAR            0.60     0.28     0.15     0.60        1   336.60
Pipe_-_(68)      CIRCULAR            0.30     0.07     0.07     0.30        1    96.67
Pipe_-_(69)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(70)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.36
Pipe_-_(76)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.48
Pipe_-_(78)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(79)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(80)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.44
Pipe_-_(81)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.49


****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/08/2024 00:00:00
Ending Date .............. 04/09/2024 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.198        34.177
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.064        11.143
Surface Runoff ...........         0.124        21.348
Final Storage ............         0.010         1.701
Continuity Error (%) .....        -0.046


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.124         1.236
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.122         1.217
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.002         0.018
Continuity Error (%) .....         0.048


***************************
Time-Step Critical Elements
***************************
None


********************************
Highest Flow Instability Indexes
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********************************
All links are stable.


*********************************
Most Frequent Nonconverging Nodes
*********************************
Node CB4 (0.07%)
Node HW2_(PROP._STM) (0.07%)
Node OF2 (0.07%)
Node P1 (0.00%)


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.00 sec
Maximum Time Step           :     1.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.01
% of Steps Not Converging   :     0.07
Time Step Frequencies       :
    1.000 -  0.871 sec      :    99.92 %
    0.871 -  0.758 sec      :     0.02 %
    0.758 -  0.660 sec      :     0.02 %
    0.660 -  0.574 sec      :     0.01 %
    0.574 -  0.500 sec      :     0.04 %


***************************
Subcatchment Runoff Summary
***************************
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Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
PC1	34.18	0.00	0.00	0.29	31.87	0.04	31.91	0.11	67.77	0.934
PC10	34.18	0.00	0.00	30.07	0.00	2.85	2.85	0.00	0.53	0.084
PC11	34.18	0.00	0.00	28.96	0.00	3.96	3.96	0.00	0.52	0.116
PC12	34.18	0.00	0.00	29.61	0.00	3.31	3.31	0.01	0.87	0.097
PC-2.1	34.18	0.00	0.00	0.00	32.21	0.00	32.21	0.01	5.69	0.942
PC2.10	34.18	0.00	0.00	0.00	32.21	0.00	32.21	0.00	2.77	0.942
PC2.11	34.18	0.00	0.00	0.00	32.22	0.00	32.22	0.02	11.30	0.943
PC2.12	34.18	0.00	0.00	0.00	32.21	0.00	32.21	0.01	5.18	0.942
PC2.13	34.18	0.00	0.00	0.00	32.23	0.00	32.23	0.00	2.99	0.943
PC2.14	34.18	0.00	0.00	0.00	32.20	0.00	32.20	0.02	13.87	0.942
PC2.15	34.18	0.00	0.00	0.00	32.20	0.00	32.20	0.01	9.54	0.942
PC2.16	34.18	0.00	0.00	0.00	32.22	0.00	32.22	0.00	1.45	0.943
PC2.17	34.18	0.00	0.00	0.00	32.20	0.00	32.20	0.01	9.01	0.942
PC2.18	34.18	0.00	0.00	0.00	32.20	0.00	32.20	0.03	18.40	0.942
PC2.19	34.18	0.00	0.00	0.00	34.17	0.00	34.17	0.01	4.18	1.000
PC-2.2	34.18	0.00	0.00	0.00	32.22	0.00	32.22	0.01	6.46	0.943
PC2.20	34.18	0.00	0.00	0.00	34.15	0.00	34.15	0.01	9.29	0.999
PC-2.3	34.18	0.00	0.00	0.00	32.20	0.00	32.20	0.01	7.03	0.942
PC-2.4	34.18	0.00	0.00	0.00	32.23	0.00	32.23	0.01	6.01	0.943
PC-2.5	34.18	15.41	0.00	0.00	47.62	0.00	47.62	0.03	17.58	0.960
PC2.6	34.18	0.00	0.00	22.78	8.05	1.91	9.95	0.00	0.90	0.291
PC2.7	34.18	0.00	0.00	0.00	32.22	0.00	32.22	0.00	0.79	0.943
PC2.8	34.18	0.00	0.00	0.00	32.22	0.00	32.22	0.00	3.03	0.943
PC2.9	34.18	0.00	0.00	0.00	32.22	0.00	32.22	0.00	0.55	0.943
PC-3	34.18	0.00	0.00	0.00	32.21	0.00	32.21	0.06	37.74	0.942
PC4	34.18	0.00	0.00	6.88	24.51	0.99	25.50	0.28	179.07	0.746
PC-5	34.18	0.00	0.00	24.38	5.09	3.33	8.42	0.00	1.95	0.246

PC6	34.18	0.00	0.00	0.00	32.19	0.00	32.19	0.21	134.83 0.942
PC7	34.18	0.00	0.00	29.96	0.00	2.95	2.95	0.01	1.72 0.086
PC8	34.18	0.38	0.00	21.35	8.96	2.78	11.74	0.14	68.14 0.340
PC9	34.18	0.00	0.00	1.57	30.43	0.24	30.66	0.15	98.92 0.897
UC-1	34.18	0.00	0.00	9.13	22.03	1.27	23.30	0.06	39.07 0.682

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
Building-1	JUNCTION	0.01	0.13	276.12	0 01:30	0.13
Building2	JUNCTION	0.02	0.26	276.27	0 01:30	0.26
CB1	JUNCTION	0.00	0.00	275.22	0 00:00	0.00
CB10	JUNCTION	0.00	0.00	276.94	0 00:00	0.00
CB11	JUNCTION	0.00	0.00	275.61	0 00:00	0.00
CB2	JUNCTION	0.00	0.00	275.25	0 00:00	0.00
CB3	JUNCTION	0.00	0.00	275.71	0 00:00	0.00
CB4	JUNCTION	0.03	1.56	276.56	0 01:30	1.56
CB5	JUNCTION	0.00	0.00	275.23	0 00:00	0.00
CB6	JUNCTION	0.00	0.00	274.85	0 01:35	0.00
CB7	JUNCTION	0.00	0.00	276.10	0 00:00	0.00
CB8	JUNCTION	0.00	0.00	276.60	0 00:00	0.00
CB9	JUNCTION	0.00	0.00	275.89	0 00:00	0.00
CBMH1	JUNCTION	0.00	0.26	275.04	0 01:32	0.25
CBMH2	JUNCTION	0.00	0.14	274.87	0 01:33	0.14
CBMH3	JUNCTION	0.00	0.00	275.65	0 00:00	0.00
CBMH4	JUNCTION	0.00	0.00	275.60	0 00:00	0.00
CBMH5	JUNCTION	0.00	0.00	276.00	0 00:00	0.00
DICB1	JUNCTION	0.00	0.00	276.40	0 00:00	0.00
DICB2	JUNCTION	0.00	0.00	276.75	0 00:00	0.00
J1	JUNCTION	0.07	0.12	274.74	0 03:56	0.12
J2	JUNCTION	0.01	0.21	273.79	0 01:30	0.21
MH1	JUNCTION	0.00	0.03	275.62	0 01:30	0.03
MH10	JUNCTION	0.00	0.00	275.79	0 00:00	0.00
MH11	JUNCTION	0.00	0.00	275.90	0 00:00	0.00
MH12	JUNCTION	0.02	0.22	275.77	0 01:30	0.22
MH2	JUNCTION	0.02	0.41	275.04	0 01:32	0.40
MH3	JUNCTION	0.02	0.46	274.86	0 01:33	0.46
MH4	JUNCTION	0.01	0.07	275.95	0 01:24	0.07
MH5	JUNCTION	0.01	0.15	275.75	0 01:30	0.15
MH6	JUNCTION	0.04	0.37	275.50	0 01:30	0.37
MH7	JUNCTION	0.08	0.39	275.38	0 01:30	0.39
MH8	JUNCTION	0.13	0.43	275.31	0 03:54	0.43
MH9	JUNCTION	0.01	0.28	275.56	0 01:30	0.28
OGS1	JUNCTION	0.00	0.00	274.02	0 00:00	0.00
OGS1_(PROP._STM)	JUNCTION	0.01	0.12	274.39	0 01:35	0.12
StartNullStruct4	JUNCTION	0.01	0.13	275.43	0 01:43	0.13
StartNullStruct5	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
StartNullStruct6	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
HW2_(PROP._STM)	OUTFALL	0.00	0.00	274.00	0 00:00	0.00
OF2	OUTFALL	0.00	0.00	273.07	0 00:00	0.00
P1	STORAGE	0.00	0.10	276.50	0 01:30	0.10
POND	STORAGE	0.18	0.51	275.31	0 03:55	0.51
SU1	STORAGE	0.01	0.05	285.05	0 02:01	0.05
SU2	STORAGE	0.01	0.11	285.11	0 01:40	0.11
SU3	STORAGE	0.00	0.04	285.04	0 01:40	0.04
SU4	STORAGE	0.01	0.09	285.09	0 01:43	0.09
UG-CHAMBER	STORAGE	0.02	0.52	274.85	0 01:35	0.52

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
Building-1	JUNCTION	37.99	40.03	0 01:30	0.0577	0.0701	0.000
Building2	JUNCTION	98.57	103.04	0 01:30	0.154	0.236	0.002
CB1	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB10	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB11	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB2	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB3	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB4	JUNCTION	179.07	179.07	0 01:30	0.281	0.294	-0.108
CB5	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB6	JUNCTION	0.00	0.18	0 01:34	0	5.74e-06	0.723 ltr
CB7	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB8	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB9	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CBMH1	JUNCTION	0.00	14.67	0 01:21	0	0.00569	0.251
CBMH2	JUNCTION	0.00	3.85	0 01:30	0	0.000968	0.920

CBMH3	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CBMH4	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CBMH5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
DICB1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
DICB2	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J1	JUNCTION	0.00	22.45	0	03:55	0	0.844	0.012
J2	JUNCTION	39.07	121.07	0	01:30	0.0624	0.349	-0.002
MH1	JUNCTION	1.95	1.95	0	01:30	0.00488	0.00488	0.010
MH10	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
MH11	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
MH12	JUNCTION	0.00	102.57	0	01:30	0	0.236	0.003
MH2	JUNCTION	0.00	151.64	0	01:27	0	0.288	0.514
MH3	JUNCTION	0.00	150.66	0	01:27	0	0.286	-0.303
MH4	JUNCTION	0.00	11.10	0	01:24	0	0.057	0.005
MH5	JUNCTION	0.00	51.12	0	01:30	0	0.127	-0.315
MH6	JUNCTION	0.00	251.75	0	01:30	0	0.514	0.359
MH7	JUNCTION	0.00	281.23	0	01:30	0	0.724	0.033
MH8	JUNCTION	0.00	281.95	0	01:30	0	0.724	-0.228
MH9	JUNCTION	98.92	149.99	0	01:30	0.151	0.279	0.265
OGS1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
OGS1_(PROP._STM)	JUNCTION	0.00	89.23	0	01:35	0	0.287	-0.002
StartNullStruct4	JUNCTION	0.00	35.26	0	01:43	0	0.212	0.007
StartNullStruct5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
StartNullStruct6	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
HW2_(PROP._STM)	OUTFALL	2.95	25.08	0	03:27	0.0237	0.868	0.000
OF2	OUTFALL	0.00	120.87	0	01:30	0	0.349	0.000
P1	STORAGE	0.00	111.07	0	01:21	0	0.0121	-1.102
POND	STORAGE	68.14	377.10	0	01:29	0.136	0.862	0.014
SU1	STORAGE	53.38	53.38	0	01:30	0.0816	0.0816	-0.001
SU2	STORAGE	37.74	37.74	0	01:30	0.057	0.057	-0.001
SU3	STORAGE	8.17	8.17	0	01:30	0.0123	0.0123	-0.001
SU4	STORAGE	134.83	134.83	0	01:30	0.212	0.212	-0.005
UG-CHAMBER	STORAGE	0.00	147.18	0	01:26	0	0.286	-0.153

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Node Surcharge Summary
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Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
CB4	JUNCTION	0.24	1.162	0.000
OGS1	JUNCTION	24.00	0.000	2.500

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Node Flooding Summary
****

No nodes were flooded.

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Storage Volume Summary
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Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
P1	0.000	0.0	0.0	0.0	0.012	5.0	0 01:30	55.42
POND	0.206	9.1	0.0	0.0	0.603	26.8	0 03:55	22.45
SU1	0.006	1.6	0.0	0.0	0.049	12.3	0 02:01	5.36
SU2	0.001	0.8	0.0	0.0	0.019	25.4	0 01:40	11.10
SU3	0.000	0.4	0.0	0.0	0.005	8.4	0 01:40	2.18
SU4	0.004	1.5	0.0	0.0	0.083	31.1	0 01:43	35.26
UG-CHAMBER	0.002	0.4	0.0	0.0	0.064	12.0	0 01:35	89.35

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
HW2_(PROP._STM)	95.70	10.49	25.08	0.868
OF2	23.91	17.02	120.87	0.349
System	59.80	27.52	133.89	1.217

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Link Flow Summary
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Maximum Time of Max Maximum Max/ Max/

Link	Type	|Flow| LPS	Occurrence days	hr:min	|Veloc| m/sec	Full Flow	Full Depth
C1	CONDUIT	312.23	0	01:30	2.71	0.93	0.79
C10	CONDUIT	22.45	0	03:56	0.74	0.15	0.25
C2	CONDUIT	120.87	0	01:30	1.93	0.59	0.55
C3	CONDUIT	22.45	0	03:55	1.83	2.40	1.00
C4	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C5	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C6	CONDUIT	147.18	0	01:26	1.43	0.81	1.00
C7	CONDUIT	0.18	0	01:34	0.02	0.00	0.23
C8	CONDUIT	89.23	0	01:35	2.13	0.21	0.43
C9	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(1)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	CONDUIT	102.40	0	01:30	1.30	0.49	0.50
Pipe_-_(3)_(PROP._STM)	CONDUIT	35.26	0	01:43	1.26	0.36	0.47
Pipe_-_(4)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.19
Pipe_-_(48)_(PROP._STM)	CONDUIT	3.85	0	01:30	0.09	0.06	0.73
Pipe_-_(5)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(51)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.28
Pipe_-_(52)_(PROP._STM)	CONDUIT	12.78	0	01:21	0.26	0.10	0.85
Pipe_-_(53)_(PROP._STM)	CONDUIT	150.66	0	01:27	1.48	1.22	1.00
Pipe_-_(56)_(PROP._STM)	CONDUIT	149.95	0	01:29	3.05	2.52	1.00
Pipe_-_(57)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(60)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(61)_(1)_(PROP._STM)	CONDUIT	102.57	0	01:30	1.61	1.06	0.85
Pipe_-_(61)_(2)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.12
Pipe_-_(61)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	CONDUIT	149.59	0	01:30	1.31	0.55	0.54
Pipe_-_(65)_(2)(0)_(PROP._STM)	CONDUIT	51.08	0	01:30	0.76	0.19	0.38
Pipe_-_(66)_(PROP._STM)	CONDUIT	251.34	0	01:30	1.46	0.75	0.59
Pipe_-_(67)_(PROP._STM)	CONDUIT	281.95	0	01:30	1.56	0.84	0.62
Pipe_-_(68)	CONDUIT	40.02	0	01:30	1.31	0.41	0.45
Pipe_-_(69)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(70)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(76)_(PROP._STM)	CONDUIT	1.95	0	01:30	0.55	0.02	0.10
Pipe_-_(78)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(80)_(PROP._STM)	CONDUIT	11.11	0	01:24	0.93	0.19	0.29
Pipe_-_(81)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OR2	ORIFICE	89.23	0	01:35			1.00
OR3	ORIFICE	111.07	0	01:21			
OL1	DUMMY	11.10	0	01:24			
OL2	DUMMY	2.18	0	01:40			
OL3	DUMMY	5.36	0	02:01			
OL4	DUMMY	35.26	0	01:43			

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Flow Classification Summary
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Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
		---------- Fraction of Time in Flow Class ----------								
C1	1.00	0.01	0.00	0.00	0.94	0.05	0.00	0.00	0.42	0.00
C10	1.00	0.04	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.00
C2	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
C3	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00
C4	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C5	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C6	1.00	0.03	0.00	0.00	0.05	0.00	0.00	0.91	0.00	0.00
C7	1.00	0.06	0.00	0.00	0.01	0.00	0.00	0.93	0.01	0.00
C8	1.00	0.03	0.01	0.00	0.73	0.23	0.00	0.00	0.97	0.00
C9	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(1)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00
Pipe_-_(3)_(PROP._STM)	1.00	0.03	0.00	0.00	0.12	0.01	0.00	0.84	0.11	0.00
Pipe_-_(4)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(48)_(PROP._STM)	1.00	0.06	0.00	0.00	0.02	0.00	0.00	0.92	0.01	0.00
Pipe_-_(5)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(51)_(PROP._STM)	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(52)_(PROP._STM)	1.00	0.03	0.00	0.00	0.15	0.00	0.00	0.82	0.13	0.00
Pipe_-_(53)_(PROP._STM)	1.00	0.03	0.00	0.00	0.02	0.00	0.00	0.95	0.01	0.00
Pipe_-_(56)_(PROP._STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
Pipe_-_(57)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(60)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(61)_(1)_(PROP._STM)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Pipe_-_(61)_(2)_(PROP._STM)	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(61)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	1.00	0.03	0.00	0.00	0.16	0.00	0.00	0.81	0.13	0.00
Pipe_-_(65)_(2)(0)_(PROP._STM)	1.00	0.03	0.00	0.00	0.03	0.00	0.00	0.94	0.02	0.00
Pipe_-_(66)_(PROP._STM)	1.00	0.00	0.00	0.00	0.35	0.00	0.00	0.64	0.11	0.00
Pipe_-_(67)_(PROP._STM)	1.00	0.01	0.00	0.00	0.50	0.00	0.00	0.50	0.11	0.00
Pipe_-_(68)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
Pipe_-_(69)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(70)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pipe_-_(76)_(PROP._STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
Pipe_-_(78)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(80)_(PROP._STM)	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
Pipe_-_(81)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Conduit Surcharge Summary
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Conduit	--------- Hours Full -------- Both Ends	Upstream	Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C3	5.28	11.27	5.28	12.02	5.28
C6	0.09	0.09	0.19	0.01	0.01
Pipe_-_(48)_(PROP._STM)	0.01	0.01	0.10	0.01	0.01
Pipe_-_(52)_(PROP._STM)	0.01	0.01	0.02	0.01	0.01
Pipe_-_(53)_(PROP._STM)	0.02	0.08	0.10	0.18	0.02
Pipe_-_(56)_(PROP._STM)	0.21	0.28	0.21	0.31	0.21
Pipe_-_(61)_(1)_(PROP._STM)	0.01	0.01	0.01	0.06	0.01

Analysis begun on: Thu Sep 19 18:16:01 2024
Analysis ended on: Thu Sep 19 18:16:03 2024
Total elapsed time: 00:00:02

2 Year SCS OUTPUT

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EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)
------------------------------------------------------------


*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 32
Number of nodes ........... 48
Number of links ........... 46
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                   Data       Recording
Name                 Data Source                   Type       Interval
------------------------------------------------------------------------
Raingage             SCS-2YR                       INTENSITY   15 min.


********************
Subcatchment Summary
********************
Name                       Area     Width   %Imperv    %Slope Rain Gage            Outlet
-----------------------------------------------------------------------------------------------------------
PC1                        0.34     34.37     99.00    1.5000 Raingage             Building2
PC10                       0.15     20.40      0.00    1.0000 Raingage             PC8
PC11                       0.08     48.12      0.00    2.0000 Raingage             HW2_(PROP._STM)
PC12                       0.20     33.57      0.00    2.0000 Raingage             HW2_(PROP._STM)
PC-2.1                     0.03     15.71    100.00    1.5000 Raingage             PC-2.5
PC2.10                     0.01      6.19    100.00    1.5000 Raingage             SU1
PC2.11                     0.05     58.89    100.00    1.5000 Raingage             Building2
PC2.12                     0.02     14.29    100.00    1.5000 Raingage             SU3
PC2.13                     0.01     28.00    100.00    1.5000 Raingage             SU3
PC2.14                     0.07     26.04    100.00    1.5000 Raingage             Building2
PC2.15                     0.04     14.45    100.00    1.5000 Raingage             SU1
PC2.16                     0.01      6.80    100.00    1.5000 Raingage             Building2
PC2.17                     0.04     14.10    100.00    1.5000 Raingage             SU1
PC2.18                     0.09     29.79    100.00    1.5000 Raingage             SU1
PC2.19                     0.02     17.82    100.00    1.5000 Raingage             Building2
PC-2.2                     0.03     37.88    100.00    1.5000 Raingage             Building-1
PC2.20                     0.04     18.96    100.00    1.5000 Raingage             SU1
PC-2.3                     0.03     13.75    100.00    1.5000 Raingage             Building-1
PC-2.4                     0.03     47.00    100.00    1.5000 Raingage             Building-1
PC-2.5                     0.06     26.57    100.00    1.5000 Raingage             Building-1
PC2.6                      0.02      1.70     25.00    0.5000 Raingage             Building-1
PC2.7                      0.00      5.69    100.00    1.5000 Raingage             SU1
PC2.8                      0.01     12.91    100.00    1.5000 Raingage             SU1
PC2.9                      0.00      2.60    100.00    1.5000 Raingage             SU1
PC-3                       0.18    118.00    100.00    1.0000 Raingage             SU2
PC4                        1.10    368.00     76.10    1.5000 Raingage             CB4
PC-5                       0.06     42.21     15.80    1.0000 Raingage             MH1
PC6                        0.66     87.99    100.00    1.0000 Raingage             SU4
PC7                        0.47     57.68      0.00    1.5000 Raingage             HW2_(PROP._STM)
PC8                        1.16    130.57     27.50    5.0000 Raingage             POND
PC9                        0.49    117.38     94.50    1.5000 Raingage             MH9
UC-1                       0.27     76.57     68.40    1.5000 Raingage             J2


************
Node Summary
************
                                         Invert      Max.    Ponded    External
Name                 Type                 Elev.     Depth      Area    Inflow
-------------------------------------------------------------------------------
Building-1           JUNCTION            275.99      2.02       0.0
Building2            JUNCTION            276.00      2.00       0.0
CB1                  JUNCTION            275.22      1.45       0.0
CB10                 JUNCTION            276.94      0.65       0.0
CB11                 JUNCTION            275.61      1.68       0.0
CB2                  JUNCTION            275.25      1.52       0.0
CB3                  JUNCTION            275.71      1.74       0.0
CB4                  JUNCTION            275.00      1.50       0.0
CB5                  JUNCTION            275.23      1.66       0.0
CB6                  JUNCTION            274.85      1.55       0.0
CB7                  JUNCTION            276.10      1.44       0.0
CB8                  JUNCTION            276.60      0.72       0.0
CB9                  JUNCTION            275.89      1.55       0.0
CBMH1                JUNCTION            274.78      1.97       0.0
CBMH2                JUNCTION            274.73      1.49       0.0
CBMH3                JUNCTION            275.65      1.66       0.0
CBMH4                JUNCTION            275.60      1.71       0.0
CBMH5                JUNCTION            276.00      0.76       0.0
DICB1                JUNCTION            276.40      1.30       0.0
DICB2                JUNCTION            276.75      2.15       0.0
J1                   JUNCTION            274.62      1.70       0.0
J2                   JUNCTION            273.58      3.13       0.0
MH1                  JUNCTION            275.59      3.83       0.0
MH10                 JUNCTION            275.79      1.29       0.0
MH11                 JUNCTION            275.90      0.94       0.0
```

MH12	JUNCTION	275.54	1.64	0.0
MH2	JUNCTION	274.63	2.21	0.0
MH3	JUNCTION	274.40	2.49	0.0
MH4	JUNCTION	275.87	1.98	0.0
MH5	JUNCTION	275.60	2.13	0.0
MH6	JUNCTION	275.13	1.99	0.0
MH7	JUNCTION	274.99	1.83	0.0
MH8	JUNCTION	274.88	1.62	0.0
MH9	JUNCTION	275.28	2.03	0.0
OGS1	JUNCTION	274.02	2.50	0.0
OGS1_(PROP._STM)	JUNCTION	274.27	2.25	0.0
StartNullStruct4	JUNCTION	275.31	2.69	0.0
StartNullStruct5	JUNCTION	0.00	276.70	0.0
StartNullStruct6	JUNCTION	0.00	276.33	0.0
HW2_(PROP._STM)	OUTFALL	274.00	0.95	0.0
OF2	OUTFALL	273.07	0.68	0.0
P1	STORAGE	276.40	0.30	0.0
POND	STORAGE	274.80	1.50	0.0
SU1	STORAGE	285.00	0.15	0.0
SU2	STORAGE	285.00	0.20	0.0
SU3	STORAGE	285.00	0.15	0.0
SU4	STORAGE	285.00	0.15	0.0
UG-CHAMBER	STORAGE	274.33	1.50	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
C1	MH8	POND	CONDUIT	27.2	0.3015	0.0130
C10	J1	HW2_(PROP._STM)	CONDUIT	43.7	0.2700	0.0130
C2	J2	OF2	CONDUIT	15.5	1.3535	0.0130
C3	POND	J1	CONDUIT	8.2	1.0001	0.0130
C4	CBMH3	MH9	CONDUIT	6.7	1.0001	0.0130
C5	CB2	MH2	CONDUIT	2.9	1.0001	0.0130
C6	MH3	UG-CHAMBER	CONDUIT	10.8	0.4074	0.0130
C7	CB6	UG-CHAMBER	CONDUIT	10.5	1.0001	0.0130
C8	OGS1_(PROP._STM)	J2	CONDUIT	11.9	5.7866	0.0130
C9	POND	J1	CONDUIT	6.6	1.0001	0.0130
Pipe_-_(1)_(PROP._STM)	DICB2	MH1	CONDUIT	25.6	0.9977	0.0130
Pipe_-_(2)_(PROP._STM)	MH12	MH6	CONDUIT	50.4	0.5395	0.0130
Pipe_-_(3)_(PROP._STM)	StartNullStruct4	MH7	CONDUIT	8.5	1.0002	0.0130
Pipe_-_(4)_(PROP._STM)	StartNullStruct5	MH9	CONDUIT	4.3	0.9984	0.0130
Pipe_-_(47)_(PROP._STM)	CB5	CBMH2	CONDUIT	45.7	1.0006	0.0130
Pipe_-_(48)_(PROP._STM)	CBMH2	MH3	CONDUIT	35.6	0.4994	0.0130
Pipe_-_(5)_(PROP._STM)	StartNullStruct6	MH10	CONDUIT	24.3	0.9992	0.0130
Pipe_-_(51)_(PROP._STM)	CB1	CBMH1	CONDUIT	31.1	0.9998	0.0130
Pipe_-_(52)_(PROP._STM)	CBMH1	MH2	CONDUIT	25.9	0.5015	0.0130
Pipe_-_(53)_(PROP._STM)	MH2	MH3	CONDUIT	31.2	0.4995	0.0130
Pipe_-_(56)_(PROP._STM)	CB4	MH2	CONDUIT	24.3	1.0003	0.0130
Pipe_-_(57)_(PROP._STM)	CB3	MH2	CONDUIT	18.3	1.0079	0.0130
Pipe_-_(58)_(PROP._STM)	CB11	MH3	CONDUIT	27.1	0.9986	0.0130
Pipe_-_(59)_(PROP._STM)	CB10	CBMH5	CONDUIT	89.2	0.9994	0.0130
Pipe_-_(60)_(PROP._STM)	CBMH5	MH11	CONDUIT	8.6	0.4991	0.0130
Pipe_-_(61)_(1)_(PROP._STM)	Building2	MH12	CONDUIT	29.4	0.9974	0.0130
Pipe_-_(61)_(2)_(PROP._STM)	MH10	MH12	CONDUIT	22.5	0.4040	0.0130
Pipe_-_(61)_(PROP._STM)	MH11	MH10	CONDUIT	18.1	0.4986	0.0130
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	MH9	MH6	CONDUIT	17.5	0.4010	0.0130
Pipe_-_(65)_(2)(0)_(PROP._STM)	MH5	MH9	CONDUIT	69.3	0.4042	0.0130
Pipe_-_(66)_(PROP._STM)	MH6	MH7	CONDUIT	29.4	0.2996	0.0130
Pipe_-_(67)_(PROP._STM)	MH7	MH8	CONDUIT	30.3	0.3005	0.0130
Pipe_-_(68)	Building-1	MH5	CONDUIT	10.5	0.9993	0.0130
Pipe_-_(69)_(PROP._STM)	CBMH4	MH6	CONDUIT	6.8	1.0009	0.0130
Pipe_-_(70)_(PROP._STM)	CB8	CBMH3	CONDUIT	26.7	0.9962	0.0130
Pipe_-_(76)_(PROP._STM)	MH1	CBMH1	CONDUIT	8.0	0.9953	0.0130
Pipe_-_(78)_(PROP._STM)	DICB1	MH1	CONDUIT	31.1	0.9999	0.0130
Pipe_-_(79)_(PROP._STM)	CB7	MH4	CONDUIT	14.9	1.0011	0.0130
Pipe_-_(80)_(PROP._STM)	MH4	MH5	CONDUIT	15.3	0.9989	0.0130
Pipe_-_(81)_(PROP._STM)	CB9	CBMH4	CONDUIT	26.7	1.0006	0.0130
OR2	UG-CHAMBER	OGS1_(PROP._STM)	ORIFICE			
OR3	P1	CB4	ORIFICE			
OL1	SU2	MH4	OUTLET			
OL2	SU3	Building-1	OUTLET			
OL3	SU1	Building2	OUTLET			
OL4	SU4	StartNullStruct4	OUTLET			

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Cross Section Summary
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Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	CIRCULAR	0.60	0.28	0.15	0.60	1	337.15
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	148.16
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	203.99
C3	CIRCULAR	0.12	0.01	0.03	0.12	1	9.37
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	96.71
C5	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C6	CIRCULAR	0.45	0.16	0.11	0.45	1	181.99
C7	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C8	CIRCULAR	0.38	0.11	0.09	0.38	1	421.79
C9	CIRCULAR	0.20	0.03	0.05	0.20	1	32.80
Pipe_-_(1)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.40

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Pipe_-_(2)_(PROP._STM) CIRCULAR            0.45     0.16     0.11     0.45        1   209.42
Pipe_-_(3)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.71
Pipe_-_(4)_(PROP._STM) CIRCULAR            0.20     0.03     0.05     0.20        1    32.77
Pipe_-_(47)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.49
Pipe_-_(48)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.34
Pipe_-_(5)_(PROP._STM) CIRCULAR            0.20     0.03     0.05     0.20        1    32.79
Pipe_-_(51)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(52)_(PROP._STM) CIRCULAR            0.38     0.11     0.09     0.38        1   124.17
Pipe_-_(53)_(PROP._STM) CIRCULAR            0.38     0.11     0.09     0.38        1   123.93
Pipe_-_(56)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.48
Pipe_-_(57)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.71
Pipe_-_(58)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.43
Pipe_-_(59)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.45
Pipe_-_(60)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.32
Pipe_-_(61)_(1)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.58
Pipe_-_(61)_(2)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    61.47
Pipe_-_(61)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.28
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM) CIRCULAR            0.53     0.22     0.13     0.53        1   272.35
Pipe_-_(65)_(2)(0)_(PROP._STM) CIRCULAR            0.53     0.22     0.13     0.53        1   273.44
Pipe_-_(66)_(PROP._STM) CIRCULAR            0.60     0.28     0.15     0.60        1   336.12
Pipe_-_(67)_(PROP._STM) CIRCULAR            0.60     0.28     0.15     0.60        1   336.60
Pipe_-_(68)      CIRCULAR            0.30     0.07     0.07     0.30        1    96.67
Pipe_-_(69)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(70)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.36
Pipe_-_(76)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.48
Pipe_-_(78)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(79)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(80)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.44
Pipe_-_(81)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.49


****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/08/2024 00:00:00
Ending Date .............. 04/09/2024 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.252        43.606
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.071        12.250
Surface Runoff ...........         0.169        29.217
Final Storage ............         0.012         2.149
Continuity Error (%) .....        -0.024


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.169         1.691
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.165         1.647
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.004         0.043
Continuity Error (%) .....         0.057


***************************
Time-Step Critical Elements
***************************
None


********************************
Highest Flow Instability Indexes
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*******************************
All links are stable.


********************************
Most Frequent Nonconverging Nodes
********************************
Node CB4 (0.02%)
Node HW2_(PROP._STM) (0.02%)
Node OF2 (0.02%)


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :     0.40 sec
Average Time Step           :     1.00 sec
Maximum Time Step           :     1.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.00
% of Steps Not Converging   :     0.02
Time Step Frequencies       :
    1.000 -  0.871 sec      :    99.95 %
    0.871 -  0.758 sec      :     0.01 %
    0.758 -  0.660 sec      :     0.01 %
    0.660 -  0.574 sec      :     0.01 %
    0.574 -  0.500 sec      :     0.02 %


***************************
Subcatchment Runoff Summary
***************************
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Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
PC1	43.61	0.00	0.00	0.32	41.19	0.09	41.28	0.14	51.75	0.947
PC10	43.61	0.00	0.00	32.41	0.00	8.42	8.42	0.01	0.99	0.193
PC11	43.61	0.00	0.00	32.41	0.00	9.05	9.05	0.01	1.81	0.208
PC12	43.61	0.00	0.00	32.41	0.00	8.69	8.69	0.02	1.79	0.199
PC-2.1	43.61	0.00	0.00	0.00	41.63	0.00	41.63	0.01	4.17	0.955
PC2.10	43.61	0.00	0.00	0.00	41.62	0.00	41.62	0.01	2.03	0.955
PC2.11	43.61	0.00	0.00	0.00	41.63	0.00	41.63	0.02	8.28	0.955
PC2.12	43.61	0.00	0.00	0.00	41.63	0.00	41.63	0.01	3.79	0.955
PC2.13	43.61	0.00	0.00	0.00	41.64	0.00	41.64	0.01	2.19	0.955
PC2.14	43.61	0.00	0.00	0.00	41.62	0.00	41.62	0.03	10.16	0.955
PC2.15	43.61	0.00	0.00	0.00	41.62	0.00	41.62	0.02	6.99	0.954
PC2.16	43.61	0.00	0.00	0.00	41.63	0.00	41.63	0.00	1.06	0.955
PC2.17	43.61	0.00	0.00	0.00	41.62	0.00	41.62	0.02	6.60	0.954
PC2.18	43.61	0.00	0.00	0.00	41.62	0.00	41.62	0.04	13.49	0.954
PC2.19	43.61	0.00	0.00	0.00	43.58	0.00	43.58	0.01	3.06	0.999
PC-2.2	43.61	0.00	0.00	0.00	41.63	0.00	41.63	0.01	4.73	0.955
PC2.20	43.61	0.00	0.00	0.00	43.57	0.00	43.57	0.02	6.81	0.999
PC-2.3	43.61	0.00	0.00	0.00	41.62	0.00	41.62	0.01	5.15	0.955
PC-2.4	43.61	0.00	0.00	0.00	41.64	0.00	41.64	0.01	4.40	0.955
PC-2.5	43.61	19.92	0.00	0.00	61.54	0.00	61.54	0.03	12.88	0.969
PC2.6	43.61	0.00	0.00	24.31	10.40	6.14	16.54	0.00	0.70	0.379
PC2.7	43.61	0.00	0.00	0.00	41.64	0.00	41.64	0.00	0.58	0.955
PC2.8	43.61	0.00	0.00	0.00	41.63	0.00	41.63	0.01	2.22	0.955
PC2.9	43.61	0.00	0.00	0.00	41.63	0.00	41.63	0.00	0.41	0.955
PC-3	43.61	0.00	0.00	0.00	41.63	0.00	41.63	0.07	27.64	0.955
PC4	43.61	0.00	0.00	7.75	31.68	2.19	33.86	0.37	140.87	0.777
PC-5	43.61	0.00	0.00	27.29	6.58	7.62	14.20	0.01	2.56	0.326
PC6	43.61	0.00	0.00	0.00	41.61	0.00	41.61	0.27	102.13	0.954

PC7	43.61	0.00	0.00	32.41	0.00	8.48	8.48	0.04	3.28	0.194
PC8	43.61	1.11	0.00	23.50	11.75	7.16	18.91	0.22	59.10	0.423
PC9	43.61	0.00	0.00	1.78	39.33	0.51	39.84	0.20	74.31	0.914
UC-1	43.61	0.00	0.00	10.24	28.47	2.87	31.34	0.08	30.96	0.719

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Node Depth Summary
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Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
Building-1	JUNCTION	0.01	0.11	276.10	0 06:00	0.11
Building2	JUNCTION	0.03	0.21	276.21	0 06:00	0.21
CB1	JUNCTION	0.00	0.00	275.22	0 00:00	0.00
CB10	JUNCTION	0.00	0.00	276.94	0 00:00	0.00
CB11	JUNCTION	0.00	0.00	275.61	0 00:00	0.00
CB2	JUNCTION	0.00	0.00	275.25	0 00:00	0.00
CB3	JUNCTION	0.00	0.00	275.71	0 00:00	0.00
CB4	JUNCTION	0.04	1.41	276.41	0 06:00	1.41
CB5	JUNCTION	0.00	0.00	275.23	0 00:00	0.00
CB6	JUNCTION	0.00	0.01	274.86	0 06:01	0.01
CB7	JUNCTION	0.00	0.00	276.10	0 00:00	0.00
CB8	JUNCTION	0.00	0.00	276.60	0 00:00	0.00
CB9	JUNCTION	0.00	0.00	275.89	0 00:00	0.00
CBMH1	JUNCTION	0.01	0.28	275.06	0 06:00	0.28
CBMH2	JUNCTION	0.00	0.14	274.87	0 06:00	0.14
CBMH3	JUNCTION	0.00	0.00	275.65	0 00:00	0.00
CBMH4	JUNCTION	0.00	0.00	275.60	0 00:00	0.00
CBMH5	JUNCTION	0.00	0.00	276.00	0 00:00	0.00
DICB1	JUNCTION	0.00	0.00	276.40	0 00:00	0.00
DICB2	JUNCTION	0.00	0.00	276.75	0 00:00	0.00
J1	JUNCTION	0.08	0.12	274.74	0 08:02	0.12
J2	JUNCTION	0.02	0.21	273.79	0 06:00	0.21
MH1	JUNCTION	0.00	0.03	275.62	0 06:00	0.03
MH10	JUNCTION	0.00	0.00	275.79	0 00:00	0.00
MH11	JUNCTION	0.00	0.00	275.90	0 00:00	0.00
MH12	JUNCTION	0.03	0.19	275.74	0 06:00	0.19
MH2	JUNCTION	0.03	0.43	275.06	0 06:00	0.42
MH3	JUNCTION	0.03	0.47	274.87	0 06:00	0.47
MH4	JUNCTION	0.01	0.07	275.95	0 05:49	0.07
MH5	JUNCTION	0.02	0.14	275.74	0 06:00	0.14
MH6	JUNCTION	0.08	0.32	275.45	0 06:00	0.32
MH7	JUNCTION	0.14	0.38	275.37	0 08:00	0.38
MH8	JUNCTION	0.20	0.49	275.37	0 08:00	0.49
MH9	JUNCTION	0.03	0.24	275.52	0 06:00	0.24
OGS1	JUNCTION	0.00	0.00	274.02	0 00:00	0.00
OGS1_(PROP._STM)	JUNCTION	0.02	0.12	274.39	0 06:02	0.12
StartNullStruct4	JUNCTION	0.02	0.13	275.43	0 06:06	0.13
StartNullStruct5	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
StartNullStruct6	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
HW2_(PROP._STM)	OUTFALL	0.00	0.00	274.00	0 00:00	0.00
OF2	OUTFALL	0.00	0.00	273.07	0 00:00	0.00
P1	STORAGE	0.00	0.00	276.40	0 06:00	0.00
POND	STORAGE	0.25	0.57	275.37	0 08:01	0.57
SU1	STORAGE	0.01	0.05	285.05	0 06:16	0.05
SU2	STORAGE	0.01	0.11	285.11	0 06:01	0.11
SU3	STORAGE	0.00	0.04	285.04	0 06:01	0.04
SU4	STORAGE	0.01	0.09	285.09	0 06:06	0.09
UG-CHAMBER	STORAGE	0.03	0.53	274.86	0 06:02	0.53

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
Building-1	JUNCTION	27.87	30.06	0 06:00	0.0752	0.0912	0.000
Building2	JUNCTION	74.31	79.51	0 06:00	0.2	0.305	0.001
CB1	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB10	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB11	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB2	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB3	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB4	JUNCTION	140.87	140.87	0 06:00	0.374	0.374	-0.001
CB5	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB6	JUNCTION	0.00	0.27	0 06:01	0	8.75e-06	0.745 ltr
CB7	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB8	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB9	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CBMH1	JUNCTION	0.00	6.37	0 05:46	0	0.00883	0.106
CBMH2	JUNCTION	0.00	2.79	0 05:56	0	0.00103	0.856
CBMH3	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr

CBMH4	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CBMH5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
DICB1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
DICB2	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J1	JUNCTION	0.00	23.80	0	08:01	0	1.12	0.027
J2	JUNCTION	30.96	118.47	0	06:00	0.084	0.466	-0.001
MH1	JUNCTION	2.56	2.56	0	06:00	0.00823	0.00823	0.007
MH10	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
MH11	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
MH12	JUNCTION	0.00	79.43	0	06:00	0	0.305	0.060
MH2	JUNCTION	0.00	140.38	0	05:59	0	0.383	0.326
MH3	JUNCTION	0.00	137.36	0	06:00	0	0.382	-0.280
MH4	JUNCTION	0.00	11.10	0	05:49	0	0.0737	0.004
MH5	JUNCTION	0.00	41.15	0	06:00	0	0.165	-0.175
MH6	JUNCTION	0.00	194.44	0	06:00	0	0.665	0.203
MH7	JUNCTION	0.00	227.97	0	06:00	0	0.939	0.102
MH8	JUNCTION	0.00	227.48	0	06:00	0	0.938	-0.221
MH9	JUNCTION	74.31	115.43	0	06:00	0.196	0.362	0.183
OGS1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
OGS1_(PROP._STM)	JUNCTION	0.00	89.48	0	06:02	0	0.382	-0.001
StartNullStruct4	JUNCTION	0.00	35.54	0	06:06	0	0.275	0.028
StartNullStruct5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
StartNullStruct6	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
HW2_(PROP._STM)	OUTFALL	6.00	27.71	0	07:00	0.0646	1.18	0.000
OF2	OUTFALL	0.00	118.29	0	06:00	0	0.466	0.000
P1	STORAGE	0.00	0.62	0	06:00	0	5.65e-06	-0.029 ltr
POND	STORAGE	59.10	284.85	0	06:00	0.22	1.16	0.025
SU1	STORAGE	39.12	39.12	0	06:00	0.105	0.105	-0.001
SU2	STORAGE	27.64	27.64	0	06:00	0.0737	0.0737	-0.002
SU3	STORAGE	5.98	5.98	0	06:00	0.0159	0.0159	-0.002
SU4	STORAGE	102.13	102.13	0	06:00	0.275	0.275	-0.002
UG-CHAMBER	STORAGE	0.00	133.63	0	06:00	0	0.382	-0.064

****
Node Surcharge Summary
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Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
CB4	JUNCTION	0.25	1.008	0.094
OGS1	JUNCTION	24.00	0.000	2.500

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Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
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Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
P1	0.000	0.0	0.0	0.0	0.000	0.0	0 06:00	0.12
POND	0.289	12.8	0.0	0.0	0.682	30.3	0 08:01	23.80
SU1	0.007	1.9	0.0	0.0	0.050	12.8	0 06:16	5.47
SU2	0.001	0.7	0.0	0.0	0.019	25.1	0 06:01	11.10
SU3	0.000	0.4	0.0	0.0	0.005	8.7	0 06:01	2.22
SU4	0.004	1.5	0.0	0.0	0.084	31.6	0 06:06	35.54
UG-CHAMBER	0.003	0.5	0.0	0.0	0.065	12.1	0 06:02	89.62

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
HW2_(PROP._STM)	89.68	15.24	27.71	1.181
OF2	51.64	10.48	118.29	0.466
System	70.66	25.73	142.37	1.647

****
Link Flow Summary
****

Maximum |Flow| Time of Max Occurrence Maximum |Veloc| Max/ Full Max/ Full

Link	Type	LPS	days	hr:min	m/sec	Flow	Depth
C1	CONDUIT	226.55	0	06:00	1.60	0.67	0.89
C10	CONDUIT	23.80	0	08:02	0.75	0.16	0.25
C2	CONDUIT	118.29	0	06:00	1.92	0.58	0.55
C3	CONDUIT	23.80	0	08:01	1.94	2.54	1.00
C4	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C5	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C6	CONDUIT	133.63	0	06:00	1.22	0.73	1.00
C7	CONDUIT	0.27	0	06:01	0.03	0.00	0.24
C8	CONDUIT	89.48	0	06:02	2.14	0.21	0.43
C9	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(1)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	CONDUIT	79.31	0	06:00	1.23	0.38	0.43
Pipe_-_(3)_(PROP._STM)	CONDUIT	35.54	0	06:06	1.26	0.37	0.42
Pipe_-_(4)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.20
Pipe_-_(48)_(PROP._STM)	CONDUIT	2.87	0	06:04	0.07	0.04	0.74
Pipe_-_(5)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(51)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.31
Pipe_-_(52)_(PROP._STM)	CONDUIT	18.30	0	06:00	0.22	0.15	0.88
Pipe_-_(53)_(PROP._STM)	CONDUIT	137.36	0	06:00	1.44	1.11	1.00
Pipe_-_(56)_(PROP._STM)	CONDUIT	140.38	0	05:59	2.86	2.36	1.00
Pipe_-_(57)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(60)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(61)_(1)_(PROP._STM)	CONDUIT	79.43	0	06:00	1.53	0.82	0.69
Pipe_-_(61)_(2)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.07
Pipe_-_(61)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	CONDUIT	115.17	0	06:00	1.25	0.42	0.45
Pipe_-_(65)_(2)(0)_(PROP._STM)	CONDUIT	41.13	0	06:00	0.75	0.15	0.32
Pipe_-_(66)_(PROP._STM)	CONDUIT	194.25	0	06:00	1.36	0.58	0.52
Pipe_-_(67)_(PROP._STM)	CONDUIT	227.48	0	06:00	1.43	0.68	0.71
Pipe_-_(68)	CONDUIT	30.05	0	06:00	1.21	0.31	0.38
Pipe_-_(69)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(70)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(76)_(PROP._STM)	CONDUIT	2.53	0	06:00	0.59	0.03	0.11
Pipe_-_(78)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(80)_(PROP._STM)	CONDUIT	11.11	0	05:49	0.93	0.19	0.29
Pipe_-_(81)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OR2	ORIFICE	89.48	0	06:02			1.00
OR3	ORIFICE	0.62	0	06:00			
OL1	DUMMY	11.10	0	05:49			
OL2	DUMMY	2.22	0	06:01			
OL3	DUMMY	5.47	0	06:16			
OL4	DUMMY	35.54	0	06:06			

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Flow Classification Summary
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Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
		---------- Fraction of Time in Flow Class ----------								
C1	1.00	0.01	0.00	0.00	0.83	0.16	0.00	0.00	0.13	0.00
C10	1.00	0.09	0.00	0.00	0.00	0.00	0.00	0.91	0.00	0.00
C2	1.00	0.08	0.00	0.00	0.00	0.00	0.00	0.92	0.00	0.00
C3	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
C4	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C5	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C6	1.00	0.08	0.00	0.00	0.05	0.00	0.00	0.87	0.00	0.00
C7	1.00	0.25	0.00	0.00	0.01	0.00	0.00	0.74	0.01	0.00
C8	1.00	0.08	0.00	0.00	0.40	0.51	0.00	0.00	0.92	0.00
C9	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(1)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	1.00	0.01	0.00	0.00	0.17	0.00	0.00	0.82	0.17	0.00
Pipe_-_(3)_(PROP._STM)	1.00	0.08	0.00	0.00	0.26	0.01	0.00	0.65	0.15	0.00
Pipe_-_(4)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(48)_(PROP._STM)	1.00	0.23	0.01	0.00	0.02	0.00	0.00	0.73	0.01	0.00
Pipe_-_(5)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(51)_(PROP._STM)	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(52)_(PROP._STM)	1.00	0.08	0.00	0.00	0.42	0.00	0.00	0.49	0.40	0.00
Pipe_-_(53)_(PROP._STM)	1.00	0.08	0.00	0.00	0.02	0.00	0.00	0.90	0.01	0.00
Pipe_-_(56)_(PROP._STM)	1.00	0.08	0.00	0.00	0.00	0.00	0.00	0.92	0.00	0.00
Pipe_-_(57)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(60)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(61)_(1)_(PROP._STM)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Pipe_-_(61)_(2)_(PROP._STM)	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(61)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	1.00	0.08	0.00	0.00	0.30	0.00	0.00	0.62	0.12	0.00
Pipe_-_(65)_(2)(0)_(PROP._STM)	1.00	0.08	0.00	0.00	0.14	0.00	0.00	0.78	0.12	0.00
Pipe_-_(66)_(PROP._STM)	1.00	0.01	0.00	0.00	0.46	0.00	0.00	0.53	0.09	0.00
Pipe_-_(67)_(PROP._STM)	1.00	0.01	0.00	0.00	0.60	0.00	0.00	0.39	0.11	0.00
Pipe_-_(68)	1.00	0.08	0.00	0.00	0.00	0.00	0.00	0.92	0.00	0.00
Pipe_-_(69)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(70)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(76)_(PROP._STM)	1.00	0.08	0.00	0.00	0.00	0.00	0.00	0.92	0.00	0.00

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Pipe_-_(78)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
Pipe_-_(79)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
Pipe_-_(80)_(PROP._STM)    1.00   0.08  0.00  0.00  0.00  0.00  0.00  0.92  0.00  0.00
Pipe_-_(81)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00


*************************
Conduit Surcharge Summary
*************************

----------------------------------------------------------------------------
                                                           Hours        Hours
                       --------- Hours Full --------   Above Full   Capacity
Conduit                Both Ends  Upstream  Dnstream   Normal Flow   Limited
----------------------------------------------------------------------------
C3                         8.24     14.24      8.24     15.33         8.24
C6                         0.06      0.06      0.15      0.01         0.01
Pipe_-_(48)_(PROP._STM)       0.01      0.01      0.07      0.01         0.01
Pipe_-_(52)_(PROP._STM)       0.01      0.01      0.03      0.01         0.01
Pipe_-_(53)_(PROP._STM)       0.03      0.04      0.07      0.19         0.03
Pipe_-_(56)_(PROP._STM)       0.23      0.28      0.23      0.29         0.23


Analysis begun on:  Thu Sep 19 20:08:01 2024
Analysis ended on:  Thu Sep 19 20:08:03 2024
Total elapsed time: 00:00:02
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EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****

Number of rain gages 1
Number of subcatchments ... 32
Number of nodes 48
Number of links 46
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	5-Yr-Chicago-Storm	INTENSITY	10 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
PC1	0.34	34.37	99.00	1.5000	Raingage	Building2
PC10	0.15	20.40	0.00	1.0000	Raingage	PC8
PC11	0.08	48.12	0.00	2.0000	Raingage	HW2_(PROP._STM)
PC12	0.20	33.57	0.00	2.0000	Raingage	HW2_(PROP._STM)
PC-2.1	0.03	15.71	100.00	1.5000	Raingage	PC-2.5
PC2.10	0.01	6.19	100.00	1.5000	Raingage	SU1
PC2.11	0.05	58.89	100.00	1.5000	Raingage	Building2
PC2.12	0.02	14.29	100.00	1.5000	Raingage	SU3
PC2.13	0.01	28.00	100.00	1.5000	Raingage	SU3
PC2.14	0.07	26.04	100.00	1.5000	Raingage	Building2
PC2.15	0.04	14.45	100.00	1.5000	Raingage	SU1
PC2.16	0.01	6.80	100.00	1.5000	Raingage	Building2
PC2.17	0.04	14.10	100.00	1.5000	Raingage	SU1
PC2.18	0.09	29.79	100.00	1.5000	Raingage	SU1
PC2.19	0.02	17.82	100.00	1.5000	Raingage	Building2
PC-2.2	0.03	37.88	100.00	1.5000	Raingage	Building-1
PC2.20	0.04	18.96	100.00	1.5000	Raingage	SU1
PC-2.3	0.03	13.75	100.00	1.5000	Raingage	Building-1
PC-2.4	0.03	47.00	100.00	1.5000	Raingage	Building-1
PC-2.5	0.06	26.57	100.00	1.5000	Raingage	Building-1
PC2.6	0.02	1.70	25.00	0.5000	Raingage	Building-1
PC2.7	0.00	5.69	100.00	1.5000	Raingage	SU1
PC2.8	0.01	12.91	100.00	1.5000	Raingage	SU1
PC2.9	0.00	2.60	100.00	1.5000	Raingage	SU1
PC-3	0.18	118.00	100.00	1.0000	Raingage	SU2
PC4	1.10	368.00	76.10	1.5000	Raingage	CB4
PC-5	0.06	42.21	15.80	1.0000	Raingage	MH1
PC6	0.66	87.99	100.00	1.0000	Raingage	SU4
PC7	0.47	57.68	0.00	1.5000	Raingage	HW2_(PROP._STM)
PC8	1.16	130.57	27.50	5.0000	Raingage	POND
PC9	0.49	117.38	94.50	1.5000	Raingage	MH9
UC-1	0.27	76.57	68.40	1.5000	Raingage	J2

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Node Summary
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Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
Building-1	JUNCTION	275.99	2.02	0.0	
Building2	JUNCTION	276.00	2.00	0.0	
CB1	JUNCTION	275.22	1.45	0.0	
CB10	JUNCTION	276.94	0.65	0.0	
CB11	JUNCTION	275.61	1.68	0.0	
CB2	JUNCTION	275.25	1.52	0.0	
CB3	JUNCTION	275.71	1.74	0.0	
CB4	JUNCTION	275.00	1.50	0.0	
CB5	JUNCTION	275.23	1.66	0.0	
CB6	JUNCTION	274.85	1.55	0.0	
CB7	JUNCTION	276.10	1.44	0.0	
CB8	JUNCTION	276.60	0.72	0.0	
CB9	JUNCTION	275.89	1.55	0.0	
CBMH1	JUNCTION	274.78	1.97	0.0	
CBMH2	JUNCTION	274.73	1.49	0.0	
CBMH3	JUNCTION	275.65	1.66	0.0	
CBMH4	JUNCTION	275.60	1.71	0.0	
CBMH5	JUNCTION	276.00	0.76	0.0	
DICB1	JUNCTION	276.40	1.30	0.0	
DICB2	JUNCTION	276.75	2.15	0.0	
J1	JUNCTION	274.62	1.70	0.0	
J2	JUNCTION	273.58	3.13	0.0	
MH1	JUNCTION	275.59	3.83	0.0	
MH10	JUNCTION	275.79	1.29	0.0	
MH11	JUNCTION	275.90	0.94	0.0	

MH12	JUNCTION	275.54	1.64	0.0
MH2	JUNCTION	274.63	2.21	0.0
MH3	JUNCTION	274.40	2.49	0.0
MH4	JUNCTION	275.87	1.98	0.0
MH5	JUNCTION	275.60	2.13	0.0
MH6	JUNCTION	275.13	1.99	0.0
MH7	JUNCTION	274.99	1.83	0.0
MH8	JUNCTION	274.88	1.62	0.0
MH9	JUNCTION	275.28	2.03	0.0
OGS1	JUNCTION	274.02	2.50	0.0
OGS1_(PROP._STM)	JUNCTION	274.27	2.25	0.0
StartNullStruct4	JUNCTION	275.31	2.69	0.0
StartNullStruct5	JUNCTION	0.00	276.70	0.0
StartNullStruct6	JUNCTION	0.00	276.33	0.0
HW2_(PROP._STM)	OUTFALL	274.00	0.95	0.0
OF2	OUTFALL	273.07	0.68	0.0
P1	STORAGE	276.40	0.30	0.0
POND	STORAGE	274.80	1.50	0.0
SU1	STORAGE	285.00	0.15	0.0
SU2	STORAGE	285.00	0.20	0.0
SU3	STORAGE	285.00	0.15	0.0
SU4	STORAGE	285.00	0.15	0.0
UG-CHAMBER	STORAGE	274.33	1.50	0.0

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Link Summary
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Name	From Node	To Node	Type	Length	%Slope	Roughness
C1	MH8	POND	CONDUIT	27.2	0.3015	0.0130
C10	J1	HW2_(PROP._STM)	CONDUIT	43.7	0.2700	0.0130
C2	J2	OF2	CONDUIT	15.5	1.3535	0.0130
C3	POND	J1	CONDUIT	8.2	1.0001	0.0130
C4	CBMH3	MH9	CONDUIT	6.7	1.0001	0.0130
C5	CB2	MH2	CONDUIT	2.9	1.0001	0.0130
C6	MH3	UG-CHAMBER	CONDUIT	10.8	0.4074	0.0130
C7	CB6	UG-CHAMBER	CONDUIT	10.5	1.0001	0.0130
C8	OGS1_(PROP._STM)	J2	CONDUIT	11.9	5.7866	0.0130
C9	POND	J1	CONDUIT	6.6	1.0001	0.0130
Pipe_-_(1)_(PROP._STM)	DICB2	MH1	CONDUIT	25.6	0.9977	0.0130
Pipe_-_(2)_(PROP._STM)	MH12	MH6	CONDUIT	50.4	0.5395	0.0130
Pipe_-_(3)_(PROP._STM)	StartNullStruct4	MH7	CONDUIT	8.5	1.0002	0.0130
Pipe_-_(4)_(PROP._STM)	StartNullStruct5	MH9	CONDUIT	4.3	0.9984	0.0130
Pipe_-_(47)_(PROP._STM)	CB5	CBMH2	CONDUIT	45.7	1.0006	0.0130
Pipe_-_(48)_(PROP._STM)	CBMH2	MH3	CONDUIT	35.6	0.4994	0.0130
Pipe_-_(5)_(PROP._STM)	StartNullStruct6	MH10	CONDUIT	24.3	0.9992	0.0130
Pipe_-_(51)_(PROP._STM)	CB1	CBMH1	CONDUIT	31.1	0.9998	0.0130
Pipe_-_(52)_(PROP._STM)	CBMH1	MH2	CONDUIT	25.9	0.5015	0.0130
Pipe_-_(53)_(PROP._STM)	MH2	MH3	CONDUIT	31.2	0.4995	0.0130
Pipe_-_(56)_(PROP._STM)	CB4	MH2	CONDUIT	24.3	1.0003	0.0130
Pipe_-_(57)_(PROP._STM)	CB3	MH2	CONDUIT	18.3	1.0079	0.0130
Pipe_-_(58)_(PROP._STM)	CB11	MH3	CONDUIT	27.1	0.9986	0.0130
Pipe_-_(59)_(PROP._STM)	CB10	CBMH5	CONDUIT	89.2	0.9994	0.0130
Pipe_-_(60)_(PROP._STM)	CBMH5	MH11	CONDUIT	8.6	0.4991	0.0130
Pipe_-_(61)_(1)_(PROP._STM)	Building2	MH12	CONDUIT	29.4	0.9974	0.0130
Pipe_-_(61)_(2)_(PROP._STM)	MH10	MH12	CONDUIT	22.5	0.4040	0.0130
Pipe_-_(61)_(PROP._STM)	MH11	MH10	CONDUIT	18.1	0.4986	0.0130
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	MH9	MH6	CONDUIT	17.5	0.4010	0.0130
Pipe_-_(65)_(2)(0)_(PROP._STM)	MH5	MH9	CONDUIT	69.3	0.4042	0.0130
Pipe_-_(66)_(PROP._STM)	MH6	MH7	CONDUIT	29.4	0.2996	0.0130
Pipe_-_(67)_(PROP._STM)	MH7	MH8	CONDUIT	30.3	0.3005	0.0130
Pipe_-_(68)	Building-1	MH5	CONDUIT	10.5	0.9993	0.0130
Pipe_-_(69)_(PROP._STM)	CBMH4	MH6	CONDUIT	6.8	1.0009	0.0130
Pipe_-_(70)_(PROP._STM)	CB8	CBMH3	CONDUIT	26.7	0.9962	0.0130
Pipe_-_(76)_(PROP._STM)	MH1	CBMH1	CONDUIT	8.0	0.9953	0.0130
Pipe_-_(78)_(PROP._STM)	DICB1	MH1	CONDUIT	31.1	0.9999	0.0130
Pipe_-_(79)_(PROP._STM)	CB7	MH4	CONDUIT	14.9	1.0011	0.0130
Pipe_-_(80)_(PROP._STM)	MH4	MH5	CONDUIT	15.3	0.9989	0.0130
Pipe_-_(81)_(PROP._STM)	CB9	CBMH4	CONDUIT	26.7	1.0006	0.0130
OR2	UG-CHAMBER	OGS1_(PROP._STM)	ORIFICE			
OR3	P1	CB4	ORIFICE			
OL1	SU2	MH4	OUTLET			
OL2	SU3	Building-1	OUTLET			
OL3	SU1	Building2	OUTLET			
OL4	SU4	StartNullStruct4	OUTLET			

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Cross Section Summary
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Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	CIRCULAR	0.60	0.28	0.15	0.60	1	337.15
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	148.16
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	203.99
C3	CIRCULAR	0.12	0.01	0.03	0.12	1	9.37
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	96.71
C5	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C6	CIRCULAR	0.45	0.16	0.11	0.45	1	181.99
C7	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C8	CIRCULAR	0.38	0.11	0.09	0.38	1	421.79
C9	CIRCULAR	0.20	0.03	0.05	0.20	1	32.80
Pipe_-_(1)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.40

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Pipe_-_(2)_(PROP._STM) CIRCULAR            0.45     0.16     0.11     0.45        1   209.42
Pipe_-_(3)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.71
Pipe_-_(4)_(PROP._STM) CIRCULAR            0.20     0.03     0.05     0.20        1    32.77
Pipe_-_(47)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.49
Pipe_-_(48)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.34
Pipe_-_(5)_(PROP._STM) CIRCULAR            0.20     0.03     0.05     0.20        1    32.79
Pipe_-_(51)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(52)_(PROP._STM) CIRCULAR            0.38     0.11     0.09     0.38        1   124.17
Pipe_-_(53)_(PROP._STM) CIRCULAR            0.38     0.11     0.09     0.38        1   123.93
Pipe_-_(56)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.48
Pipe_-_(57)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.71
Pipe_-_(58)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.43
Pipe_-_(59)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.45
Pipe_-_(60)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.32
Pipe_-_(61)_(1)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.58
Pipe_-_(61)_(2)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    61.47
Pipe_-_(61)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.28
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM) CIRCULAR            0.53     0.22     0.13     0.53        1   272.35
Pipe_-_(65)_(2)(0)_(PROP._STM) CIRCULAR            0.53     0.22     0.13     0.53        1   273.44
Pipe_-_(66)_(PROP._STM) CIRCULAR            0.60     0.28     0.15     0.60        1   336.12
Pipe_-_(67)_(PROP._STM) CIRCULAR            0.60     0.28     0.15     0.60        1   336.60
Pipe_-_(68)      CIRCULAR            0.30     0.07     0.07     0.30        1    96.67
Pipe_-_(69)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(70)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.36
Pipe_-_(76)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.48
Pipe_-_(78)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(79)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(80)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.44
Pipe_-_(81)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.49


****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/08/2024 00:00:00
Ending Date .............. 04/09/2024 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.274        47.377
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.079        13.607
Surface Runoff ...........         0.186        32.096
Final Storage ............         0.010         1.699
Continuity Error (%) .....        -0.053


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.186         1.858
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.183         1.830
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.003         0.027
Continuity Error (%) .....         0.051


*************************
Highest Continuity Errors
*************************
Node MH10 (8.34%)


***************************
Time-Step Critical Elements
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****
None

****
Highest Flow Instability Indexes
****
All links are stable.

****
Most Frequent Nonconverging Nodes
****
Node HW2_(PROP._STM) (0.07%)
Node OF2 (0.07%)
Node CB4 (0.07%)
Node Building2 (0.00%)
Node P1 (0.00%)

****
Routing Time Step Summary
****

Minimum Time Step	:	0.50 sec
Average Time Step	:	1.00 sec
Maximum Time Step	:	1.00 sec
% of Time in Steady State	:	0.00
Average Iterations per Step	:	2.01
% of Steps Not Converging	:	0.07
Time Step Frequencies	:	
1.000 - 0.871 sec	:	99.96 %
0.871 - 0.758 sec	:	0.01 %
0.758 - 0.660 sec	:	0.01 %
0.660 - 0.574 sec	:	0.01 %
0.574 - 0.500 sec	:	0.02 %

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
PC1	47.38	0.00	0.00	0.35	44.94	0.11	45.05	0.15	96.55	0.951
PC10	47.38	0.00	0.00	36.78	0.00	9.34	9.34	0.01	1.87	0.197
PC11	47.38	0.00	0.00	35.31	0.00	10.82	10.82	0.01	2.34	0.228
PC12	47.38	0.00	0.00	36.12	0.00	9.99	9.99	0.02	3.24	0.211
PC-2.1	47.38	0.00	0.00	0.00	45.43	0.00	45.43	0.01	7.94	0.959
PC2.10	47.38	0.00	0.00	0.00	45.42	0.00	45.42	0.01	3.86	0.959
PC2.11	47.38	0.00	0.00	0.00	45.44	0.00	45.44	0.02	15.75	0.959
PC2.12	47.38	0.00	0.00	0.00	45.43	0.00	45.43	0.01	7.22	0.959
PC2.13	47.38	0.00	0.00	0.00	45.45	0.00	45.45	0.01	4.16	0.959
PC2.14	47.38	0.00	0.00	0.00	45.42	0.00	45.42	0.03	19.35	0.959
PC2.15	47.38	0.00	0.00	0.00	45.41	0.00	45.41	0.02	13.31	0.959
PC2.16	47.38	0.00	0.00	0.00	45.44	0.00	45.44	0.00	2.02	0.959
PC2.17	47.38	0.00	0.00	0.00	45.41	0.00	45.41	0.02	12.57	0.959
PC2.18	47.38	0.00	0.00	0.00	45.42	0.00	45.42	0.04	25.67	0.959
PC2.19	47.38	0.00	0.00	0.00	47.39	0.00	47.39	0.01	5.83	1.000
PC-2.2	47.38	0.00	0.00	0.00	45.44	0.00	45.44	0.01	9.01	0.959
PC2.20	47.38	0.00	0.00	0.00	47.37	0.00	47.37	0.02	12.96	1.000
PC-2.3	47.38	0.00	0.00	0.00	45.42	0.00	45.42	0.01	9.81	0.959
PC-2.4	47.38	0.00	0.00	0.00	45.45	0.00	45.45	0.01	8.38	0.959
PC-2.5	47.38	21.74	0.00	0.00	67.16	0.00	67.16	0.04	24.52	0.972
PC2.6	47.38	0.00	0.00	27.97	11.35	6.63	17.98	0.00	1.28	0.379
PC2.7	47.38	0.00	0.00	0.00	45.45	0.00	45.45	0.00	1.10	0.959
PC2.8	47.38	0.00	0.00	0.00	45.44	0.00	45.44	0.01	4.22	0.959
PC2.9	47.38	0.00	0.00	0.00	45.44	0.00	45.44	0.00	[illegible]	[illegible]

PC-3	47.38	0.00	0.00	0.00	45.43	0.00	45.43	0.08	52.61 0.959
PC4	47.38	0.00	0.00	8.39	34.57	2.64	37.20	0.41	255.48 0.785
PC-5	47.38	0.00	0.00	29.73	7.18	9.10	16.28	0.01	3.30 0.344
PC6	47.38	0.00	0.00	0.00	45.40	0.00	45.40	0.30	191.18 0.958
PC7	47.38	0.00	0.00	36.62	0.00	9.49	9.49	0.04	6.12 0.200
PC8	47.38	1.23	0.00	26.08	12.83	8.26	21.09	0.25	99.15 0.434
PC9	47.38	0.00	0.00	1.92	42.91	0.62	43.53	0.21	139.69 0.919
UC-1	47.38	0.00	0.00	11.13	31.07	3.44	34.51	0.09	55.73 0.728

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Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
Building-1	JUNCTION	0.01	0.16	276.15	0 01:30	0.16
Building2	JUNCTION	0.02	0.65	276.65	0 01:23	0.63
CB1	JUNCTION	0.00	0.00	275.22	0 00:00	0.00
CB10	JUNCTION	0.00	0.00	276.94	0 00:00	0.00
CB11	JUNCTION	0.00	0.00	275.61	0 00:00	0.00
CB2	JUNCTION	0.00	0.00	275.25	0 00:00	0.00
CB3	JUNCTION	0.00	0.00	275.71	0 00:00	0.00
CB4	JUNCTION	0.04	1.70	276.70	0 01:30	1.70
CB5	JUNCTION	0.00	0.00	275.23	0 00:00	0.00
CB6	JUNCTION	0.00	0.13	274.98	0 01:45	0.13
CB7	JUNCTION	0.00	0.00	276.10	0 00:00	0.00
CB8	JUNCTION	0.00	0.00	276.60	0 00:00	0.00
CB9	JUNCTION	0.00	0.00	275.89	0 00:00	0.00
CBMH1	JUNCTION	0.01	0.40	275.18	0 01:43	0.40
CBMH2	JUNCTION	0.01	0.27	275.00	0 01:43	0.27
CBMH3	JUNCTION	0.00	0.00	275.65	0 00:00	0.00
CBMH4	JUNCTION	0.00	0.00	275.60	0 00:00	0.00
CBMH5	JUNCTION	0.00	0.00	276.00	0 00:00	0.00
DICB1	JUNCTION	0.00	0.00	276.40	0 00:00	0.00
DICB2	JUNCTION	0.00	0.00	276.75	0 00:00	0.00
J1	JUNCTION	0.09	0.13	274.75	0 04:03	0.13
J2	JUNCTION	0.02	0.23	273.81	0 01:30	0.23
MH1	JUNCTION	0.00	0.04	275.63	0 01:30	0.04
MH10	JUNCTION	0.00	0.03	275.82	0 01:30	0.03
MH11	JUNCTION	0.00	0.00	275.90	0 00:00	0.00
MH12	JUNCTION	0.02	0.28	275.82	0 01:30	0.28
MH2	JUNCTION	0.02	0.55	275.18	0 01:43	0.55
MH3	JUNCTION	0.03	0.59	275.00	0 01:43	0.59
MH4	JUNCTION	0.01	0.07	275.95	0 01:23	0.07
MH5	JUNCTION	0.01	0.18	275.78	0 01:30	0.18
MH6	JUNCTION	0.11	0.46	275.59	0 01:30	0.46
MH7	JUNCTION	0.18	0.55	275.54	0 04:00	0.55
MH8	JUNCTION	0.25	0.66	275.54	0 04:04	0.66
MH9	JUNCTION	0.06	0.36	275.64	0 01:30	0.36
OGS1	JUNCTION	0.00	0.00	274.02	0 00:00	0.00
OGS1_(PROP._STM)	JUNCTION	0.01	0.13	274.40	0 01:45	0.13
StartNullStruct4	JUNCTION	0.05	0.24	275.54	0 04:00	0.24
StartNullStruct5	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
StartNullStruct6	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
HW2_(PROP._STM)	OUTFALL	0.00	0.00	274.00	0 00:00	0.00
OF2	OUTFALL	0.00	0.00	273.07	0 00:00	0.00
P1	STORAGE	0.00	0.16	276.56	0 01:31	0.16
POND	STORAGE	0.31	0.74	275.54	0 04:03	0.74
SU1	STORAGE	0.01	0.06	285.06	0 02:05	0.06
SU2	STORAGE	0.01	0.14	285.14	0 01:41	0.14
SU3	STORAGE	0.00	0.05	285.05	0 01:40	0.05
SU4	STORAGE	0.01	0.10	285.10	0 01:44	0.10
UG-CHAMBER	STORAGE	0.03	0.65	274.98	0 01:45	0.65

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
Building-1	JUNCTION	52.99	55.47	0 01:30	0.0821	0.0995	-0.000
Building2	JUNCTION	139.49	144.93	0 01:30	0.218	0.332	-0.003
CB1	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB10	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB11	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB2	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB3	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB4	JUNCTION	255.48	255.48	0 01:30	0.411	0.459	0.030
CB5	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr

CB6	JUNCTION	0.00	0.53	0	01:32	0	0.000163	0.604
CB7	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB8	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB9	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CBMH1	JUNCTION	0.00	21.89	0	01:21	0	0.0106	0.169
CBMH2	JUNCTION	0.00	4.18	0	01:28	0	0.00222	0.426
CBMH3	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CBMH4	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CBMH5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
DICB1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
DICB2	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J1	JUNCTION	0.00	27.33	0	04:03	0	1.24	0.013
J2	JUNCTION	55.73	141.62	0	01:30	0.0925	0.513	-0.001
MH1	JUNCTION	3.30	3.30	0	01:30	0.00944	0.00944	0.005
MH10	JUNCTION	0.00	0.44	0	01:24	0	7.27e-05	9.101
MH11	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
MH12	JUNCTION	0.00	144.92	0	01:30	0	0.333	0.124
MH2	JUNCTION	0.00	159.53	0	01:24	0	0.421	0.310
MH3	JUNCTION	0.00	156.86	0	01:26	0	0.421	-0.257
MH4	JUNCTION	0.00	11.10	0	01:22	0	0.0804	0.003
MH5	JUNCTION	0.00	66.56	0	01:30	0	0.18	0.106
MH6	JUNCTION	0.00	350.07	0	01:30	0	0.726	0.178
MH7	JUNCTION	0.00	385.80	0	01:30	0	1.02	0.079
MH8	JUNCTION	0.00	384.89	0	01:30	0	1.02	-0.224
MH9	JUNCTION	139.69	206.20	0	01:30	0.215	0.394	0.109
OGS1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
OGS1_(PROP._STM)	JUNCTION	0.00	102.37	0	01:45	0	0.42	-0.001
StartNullStruct4	JUNCTION	0.00	43.33	0	01:44	0	0.3	0.021
StartNullStruct5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
StartNullStruct6	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
HW2_(PROP._STM)	OUTFALL	10.85	33.98	0	02:10	0.0733	1.32	0.000
OF2	OUTFALL	0.00	141.34	0	01:30	0	0.513	0.000
P1	STORAGE	0.00	146.66	0	01:20	0	0.0483	-0.121
POND	STORAGE	99.15	513.96	0	01:28	0.245	1.27	0.013
SU1	STORAGE	74.46	74.46	0	01:30	0.115	0.115	-0.000
SU2	STORAGE	52.61	52.61	0	01:30	0.0804	0.0804	-0.000
SU3	STORAGE	11.38	11.38	0	01:30	0.0174	0.0174	-0.001
SU4	STORAGE	191.18	191.18	0	01:30	0.3	0.3	-0.003
UG-CHAMBER	STORAGE	0.00	152.59	0	01:25	0	0.42	-0.087

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
Building2	JUNCTION	0.13	0.347	1.351
CB4	JUNCTION	0.44	1.302	0.000
MH8	JUNCTION	2.01	0.040	0.962
OGS1	JUNCTION	24.00	0.000	2.500

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
P1	0.000	0.2	0.0	0.0	0.048	19.9	0 01:31	77.38
POND	0.362	16.1	0.0	0.0	0.923	41.0	0 04:03	27.33
SU1	0.011	2.8	0.0	0.0	0.071	18.1	0 02:05	6.50
SU2	0.001	1.8	0.0	0.0	0.032	42.6	0 01:41	11.10
SU3	0.000	0.7	0.0	0.0	0.008	12.6	0 01:40	2.68
SU4	0.007	2.6	0.0	0.0	0.126	47.5	0 01:44	43.33
UG-CHAMBER	0.003	0.6	0.0	0.0	0.094	17.5	0 01:45	102.53

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
HW2_(PROP._STM)	96.41	15.81	33.98	1.317
OF2	24.68	24.11	141.34	0.513
System	60.54	39.92	160.02	1.830

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days	hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	418.23	0	01:28	2.78	1.24	1.00
C10	CONDUIT	27.33	0	04:03	0.78	0.18	0.27
C2	CONDUIT	141.34	0	01:30	2.00	0.69	0.61
C3	CONDUIT	27.33	0	04:03	2.23	2.92	1.00
C4	CONDUIT	0.00	0	00:00	0.00	0.00	0.10
C5	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C6	CONDUIT	152.59	0	01:25	1.44	0.84	1.00
C7	CONDUIT	0.53	0	01:32	0.06	0.01	0.73
C8	CONDUIT	102.37	0	01:45	2.22	0.24	0.46
C9	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(1)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	CONDUIT	144.31	0	01:30	1.30	0.69	0.66
Pipe_-_(3)_(PROP._STM)	CONDUIT	43.33	0	01:44	1.33	0.45	0.90
Pipe_-_(4)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.45
Pipe_-_(48)_(PROP._STM)	CONDUIT	4.18	0	01:28	0.10	0.06	0.95
Pipe_-_(5)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(51)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
Pipe_-_(52)_(PROP._STM)	CONDUIT	19.30	0	01:21	0.33	0.16	1.00
Pipe_-_(53)_(PROP._STM)	CONDUIT	156.86	0	01:26	1.51	1.27	1.00
Pipe_-_(56)_(PROP._STM)	CONDUIT	154.74	0	01:28	3.15	2.60	1.00
Pipe_-_(57)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(60)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(61)_(1)_(PROP._STM)	CONDUIT	144.92	0	01:30	2.07	1.50	0.96
Pipe_-_(61)_(2)_(PROP._STM)	CONDUIT	1.18	0	01:30	0.10	0.02	0.26
Pipe_-_(61)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.01
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	CONDUIT	205.76	0	01:29	1.35	0.76	0.70
Pipe_-_(65)_(2)(0)_(PROP._STM)	CONDUIT	66.51	0	01:30	0.76	0.24	0.47
Pipe_-_(66)_(PROP._STM)	CONDUIT	349.03	0	01:30	1.56	1.04	0.76
Pipe_-_(67)_(PROP._STM)	CONDUIT	384.89	0	01:30	1.74	1.14	0.96
Pipe_-_(68)	CONDUIT	55.46	0	01:30	1.42	0.57	0.54
Pipe_-_(69)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.12
Pipe_-_(70)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(76)_(PROP._STM)	CONDUIT	3.26	0	01:30	0.63	0.03	0.13
Pipe_-_(78)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(80)_(PROP._STM)	CONDUIT	11.11	0	01:23	0.93	0.19	0.29
Pipe_-_(81)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OR2	ORIFICE	102.37	0	01:45			1.00
OR3	ORIFICE	146.66	0	01:20			
OL1	DUMMY	11.10	0	01:22			
OL2	DUMMY	2.68	0	01:40			
OL3	DUMMY	6.50	0	02:05			
OL4	DUMMY	43.33	0	01:44			

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Flow Classification Summary
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Conduit	Adjusted /Actual Length	---------- Fraction of Time in Flow Class ---------- Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C1	1.00	0.01	0.00	0.00	0.94	0.05	0.00	0.00	0.25	0.00
C10	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
C2	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
C3	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00
C4	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C5	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C6	1.00	0.03	0.00	0.00	0.08	0.00	0.00	0.90	0.00	0.00
C7	1.00	0.06	0.00	0.00	0.02	0.00	0.00	0.91	0.01	0.00
C8	1.00	0.02	0.01	0.00	0.73	0.24	0.00	0.00	0.97	0.00
C9	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(1)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	1.00	0.00	0.00	0.00	0.31	0.00	0.00	0.69	0.30	0.00
Pipe_-_(3)_(PROP._STM)	1.00	0.02	0.00	0.00	0.34	0.01	0.00	0.63	0.07	0.00
Pipe_-_(4)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(48)_(PROP._STM)	1.00	0.05	0.01	0.00	0.04	0.00	0.00	0.90	0.01	0.00
Pipe_-_(5)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(51)_(PROP._STM)	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(52)_(PROP._STM)	1.00	0.03	0.00	0.00	0.15	0.00	0.00	0.82	0.12	0.00
Pipe_-_(53)_(PROP._STM)	1.00	0.02	0.00	0.00	0.03	0.00	0.00	0.94	0.01	0.00
Pipe_-_(56)_(PROP._STM)	1.00	0.02	0.00	0.00	0.02	0.00	0.00	0.95	0.01	0.00
Pipe_-_(57)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(60)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(61)_(1)_(PROP._STM)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Pipe_-_(61)_(2)_(PROP._STM)	1.00	0.06	0.00	0.00	0.01	0.00	0.00	0.93	0.01	0.00

Pipe_-_(61)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	1.00	0.02	0.00	0.00	0.37	0.00	0.00	0.61	0.06	0.00
Pipe_-_(65)_(2)(0)_(PROP._STM)	1.00	0.02	0.00	0.00	0.29	0.00	0.00	0.69	0.28	0.00
Pipe_-_(66)_(PROP._STM)	1.00	0.00	0.00	0.00	0.52	0.00	0.00	0.48	0.08	0.00
Pipe_-_(67)_(PROP._STM)	1.00	0.00	0.00	0.00	0.66	0.00	0.00	0.33	0.11	0.00
Pipe_-_(68)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
Pipe_-_(69)_(PROP._STM)	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(70)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(76)_(PROP._STM)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
Pipe_-_(78)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(80)_(PROP._STM)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
Pipe_-_(81)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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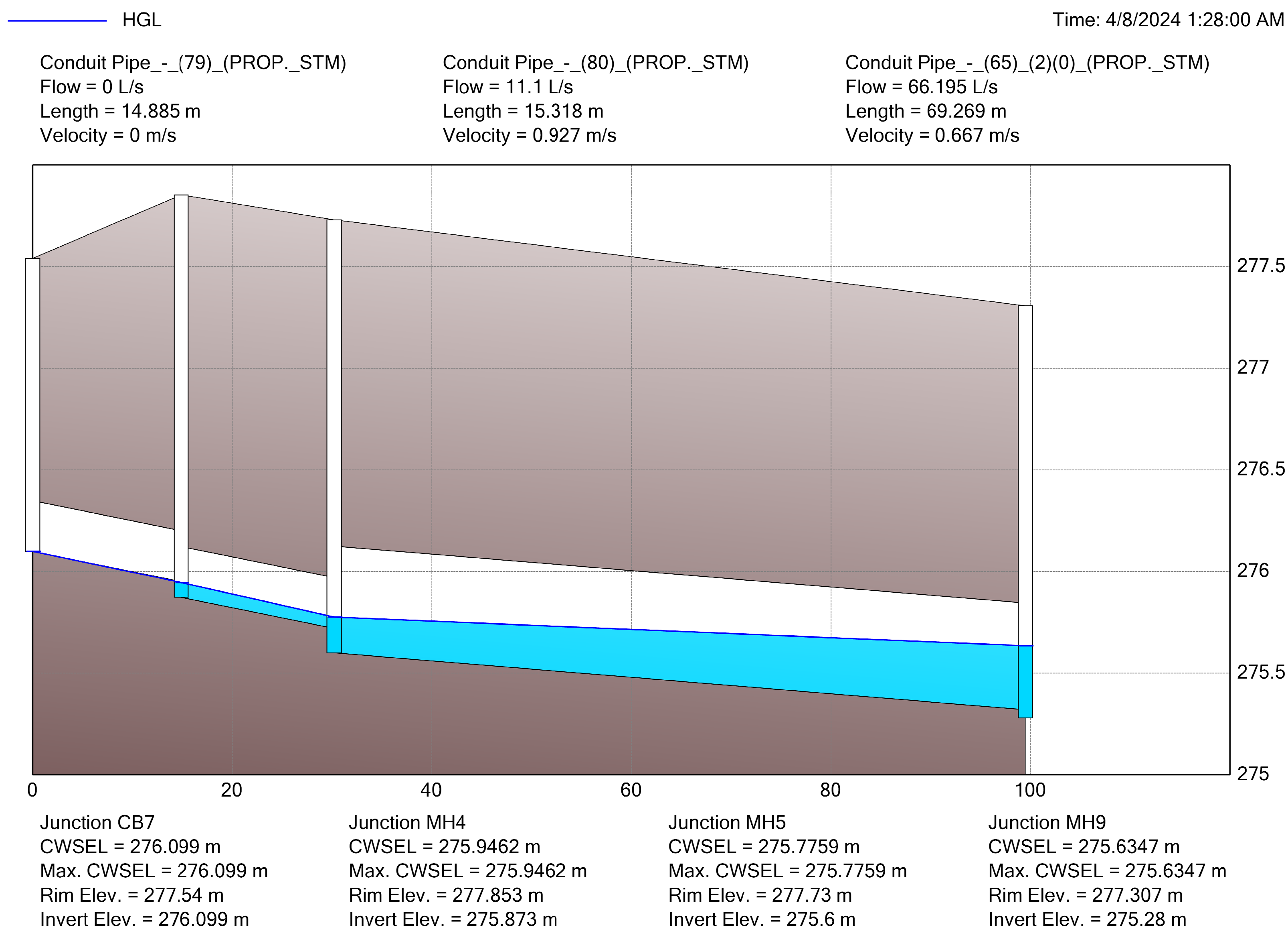
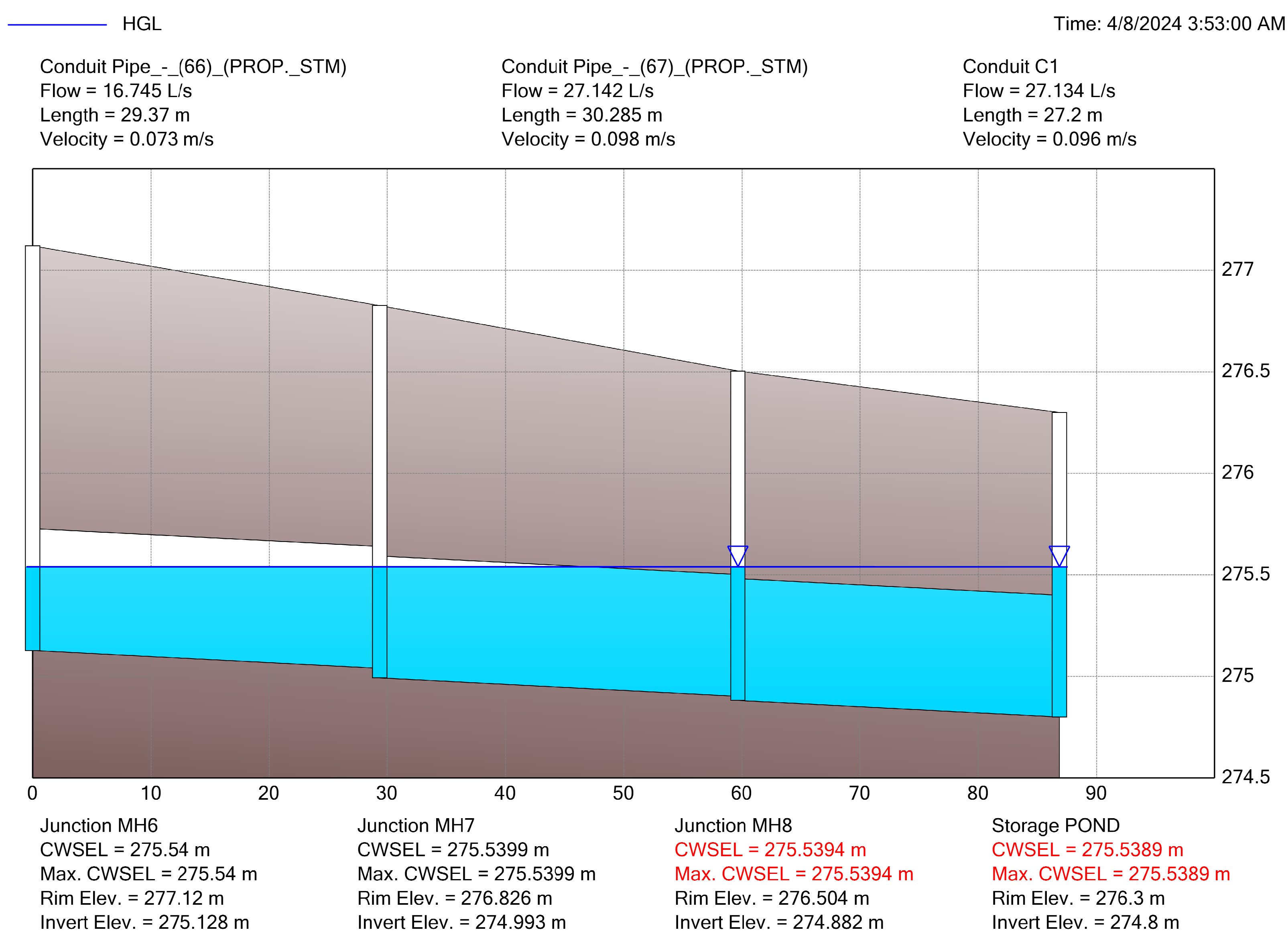
Conduit Surcharge Summary
****

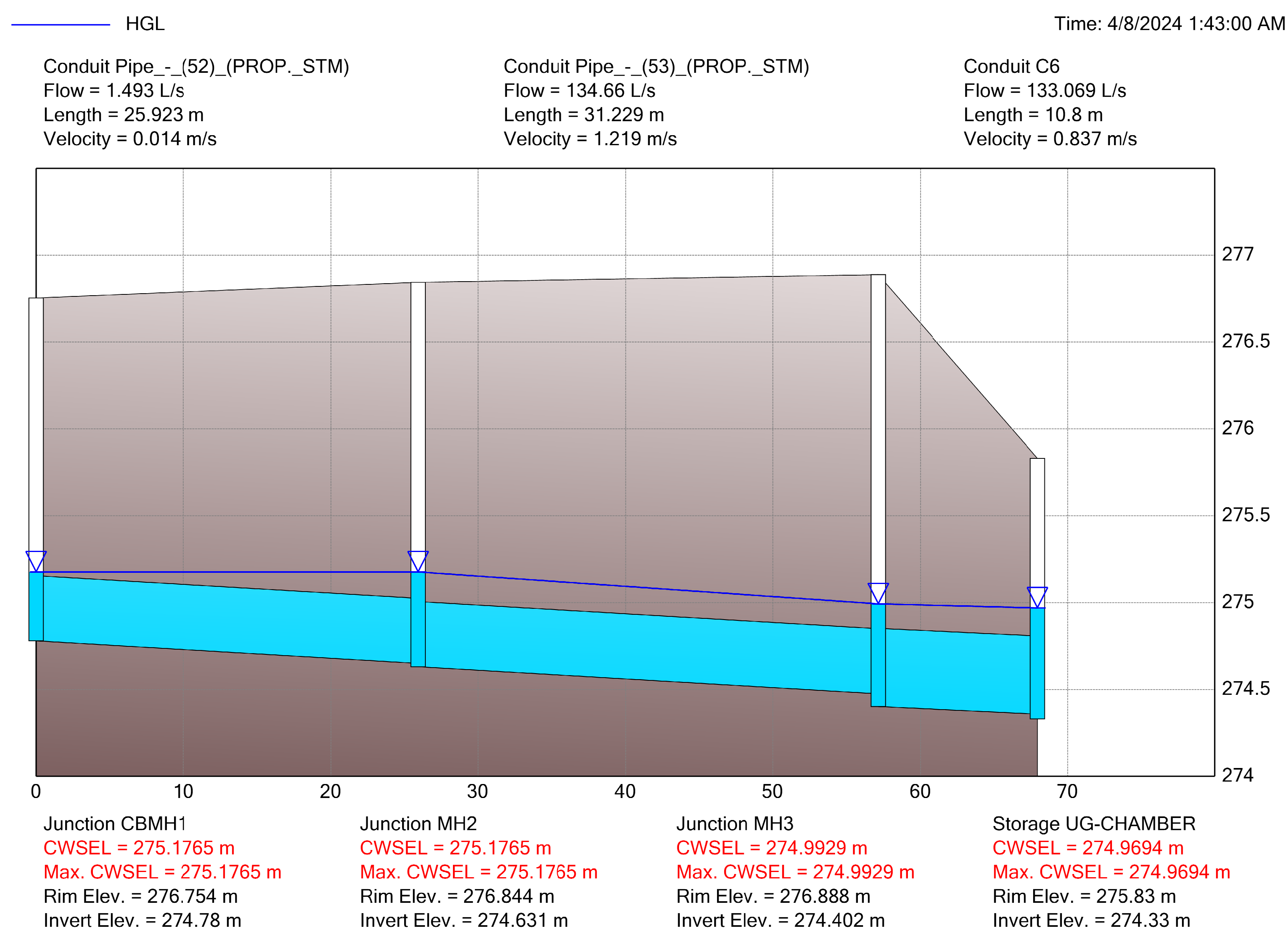
Conduit	--------- Hours Full -------- Both Ends	Upstream	Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C1	2.61	2.61	4.70	0.10	0.01
C3	9.59	15.26	9.59	16.03	9.59
C6	0.47	0.47	0.54	0.01	0.01
Pipe_-_(3)_(PROP._STM)	0.01	0.01	1.39	0.01	0.01
Pipe_-_(48)_(PROP._STM)	0.01	0.01	0.47	0.01	0.01
Pipe_-_(52)_(PROP._STM)	0.08	0.08	0.36	0.01	0.01
Pipe_-_(53)_(PROP._STM)	0.32	0.42	0.47	0.37	0.23
Pipe_-_(56)_(PROP._STM)	0.47	0.47	0.47	0.48	0.46
Pipe_-_(61)_(1)_(PROP._STM)	0.01	0.13	0.01	0.16	0.01
Pipe_-_(66)_(PROP._STM)	0.01	0.01	0.01	0.06	0.01
Pipe_-_(67)_(PROP._STM)	0.01	0.01	2.01	0.10	0.01

Analysis begun on: Thu Sep 19 18:28:46 2024
Analysis ended on: Thu Sep 19 18:28:48 2024
Total elapsed time: 00:00:02


HGL
Time: 4/8/2024 1:28:00 AM
Conduit Pipe_-_(79)_(PROP._STM)
Flow = 0 L/s
Length = 14.885 m
Velocity = 0 m/s
Conduit Pipe_-_(80)_(PROP._STM)
Flow = 11.1 L/s
Length = 15.318 m
Velocity = 0.927 m/s
Conduit Pipe_-_(65)_(2)(0)_(PROP._STM)
Flow = 66.195 L/s
Length = 69.269 m
Velocity = 0.667 m/s
277.5
277
276.5
276
275.5
275
0
20
40
60
80
100
Junction CB7
CWSEL = 276.099 m
Max. CWSEL = 276.099 m
Rim Elev. = 277.54 m
Invert Elev. = 276.099 m
Junction MH4
CWSEL = 275.9462 m
Max. CWSEL = 275.9462 m
Rim Elev. = 277.853 m
Invert Elev. = 275.873 m
Junction MH5
CWSEL = 275.7759 m
Max. CWSEL = 275.7759 m
Rim Elev. = 277.73 m
Invert Elev. = 275.6 m
Junction MH9
CWSEL = 275.6347 m
Max. CWSEL = 275.6347 m
Rim Elev. = 277.307 m
Invert Elev. = 275.28 m



HGL
Time: 4/8/2024 3:53:00 AM
Conduit Pipe_-_(66)_(PROP._STM)
Flow = 16.745 L/s
Length = 29.37 m
Velocity = 0.073 m/s
Conduit Pipe_-_(67)_(PROP._STM)
Flow = 27.142 L/s
Length = 30.285 m
Velocity = 0.098 m/s
Conduit C1
Flow = 27.134 L/s
Length = 27.2 m
Velocity = 0.096 m/s
277
276.5
276
275.5
275
274.5
0
10
20
30
40
50
60
70
80
90
Junction MH6
CWSEL = 275.54 m
Max. CWSEL = 275.54 m
Rim Elev. = 277.12 m
Invert Elev. = 275.128 m
Junction MH7
CWSEL = 275.5399 m
Max. CWSEL = 275.5399 m
Rim Elev. = 276.826 m
Invert Elev. = 274.993 m
Junction MH8
CWSEL = 275.5394 m
Max. CWSEL = 275.5394 m
Rim Elev. = 276.504 m
Invert Elev. = 274.882 m
Storage POND
CWSEL = 275.5389 m
Max. CWSEL = 275.5389 m
Rim Elev. = 276.3 m
Invert Elev. = 274.8 m


HGL
Time: 4/8/2024 1:43:00 AM
Conduit Pipe_-_(52)_(PROP._STM)
Flow = 1.493 L/s
Length = 25.923 m
Velocity = 0.014 m/s
Conduit Pipe_-_(53)_(PROP._STM)
Flow = 134.66 L/s
Length = 31.229 m
Velocity = 1.219 m/s
Conduit C6
Flow = 133.069 L/s
Length = 10.8 m
Velocity = 0.837 m/s
277
276.5
276
275.5
275
274.5
274
0
10
20
30
40
50
60
70
Junction CBMH1
CWSEL = 275.1765 m
Max. CWSEL = 275.1765 m
Rim Elev. = 276.754 m
Invert Elev. = 274.78 m
Junction MH2
CWSEL = 275.1765 m
Max. CWSEL = 275.1765 m
Rim Elev. = 276.844 m
Invert Elev. = 274.631 m
Junction MH3
CWSEL = 274.9929 m
Max. CWSEL = 274.9929 m
Rim Elev. = 276.888 m
Invert Elev. = 274.402 m
Storage UG-CHAMBER
CWSEL = 274.9694 m
Max. CWSEL = 274.9694 m
Rim Elev. = 275.83 m
Invert Elev. = 274.33 m

5 Yr SCS Output

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****
Number of rain gages 1
Number of subcatchments ... 32
Number of nodes 48
Number of links 46
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	SCS-5YR	INTENSITY	15 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
PC1	0.34	34.37	99.00	1.5000	Raingage	Building2
PC10	0.15	20.40	0.00	1.0000	Raingage	PC8
PC11	0.08	48.12	0.00	2.0000	Raingage	HW2_(PROP._STM)
PC12	0.20	33.57	0.00	2.0000	Raingage	HW2_(PROP._STM)
PC-2.1	0.03	15.71	100.00	1.5000	Raingage	PC-2.5
PC2.10	0.01	6.19	100.00	1.5000	Raingage	SU1
PC2.11	0.05	58.89	100.00	1.5000	Raingage	Building2
PC2.12	0.02	14.29	100.00	1.5000	Raingage	SU3
PC2.13	0.01	28.00	100.00	1.5000	Raingage	SU3
PC2.14	0.07	26.04	100.00	1.5000	Raingage	Building2
PC2.15	0.04	14.45	100.00	1.5000	Raingage	SU1
PC2.16	0.01	6.80	100.00	1.5000	Raingage	Building2
PC2.17	0.04	14.10	100.00	1.5000	Raingage	SU1
PC2.18	0.09	29.79	100.00	1.5000	Raingage	SU1
PC2.19	0.02	17.82	100.00	1.5000	Raingage	Building2
PC-2.2	0.03	37.88	100.00	1.5000	Raingage	Building-1
PC2.20	0.04	18.96	100.00	1.5000	Raingage	SU1
PC-2.3	0.03	13.75	100.00	1.5000	Raingage	Building-1
PC-2.4	0.03	47.00	100.00	1.5000	Raingage	Building-1
PC-2.5	0.06	26.57	100.00	1.5000	Raingage	Building-1
PC2.6	0.02	1.70	25.00	0.5000	Raingage	Building-1
PC2.7	0.00	5.69	100.00	1.5000	Raingage	SU1
PC2.8	0.01	12.91	100.00	1.5000	Raingage	SU1
PC2.9	0.00	2.60	100.00	1.5000	Raingage	SU1
PC-3	0.18	118.00	100.00	1.0000	Raingage	SU2
PC4	1.10	368.00	76.10	1.5000	Raingage	CB4
PC-5	0.06	42.21	15.80	1.0000	Raingage	MH1
PC6	0.66	87.99	100.00	1.0000	Raingage	SU4
PC7	0.47	57.68	0.00	1.5000	Raingage	HW2_(PROP._STM)
PC8	1.16	130.57	27.50	5.0000	Raingage	POND
PC9	0.49	117.38	94.50	1.5000	Raingage	MH9
UC-1	0.27	76.57	68.40	1.5000	Raingage	J2

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
Building-1	JUNCTION	275.99	2.02	0.0	
Building2	JUNCTION	276.00	2.00	0.0	
CB1	JUNCTION	275.22	1.45	0.0	
CB10	JUNCTION	276.94	0.65	0.0	
CB11	JUNCTION	275.61	1.68	0.0	
CB2	JUNCTION	275.25	1.52	0.0	
CB3	JUNCTION	275.71	1.74	0.0	
CB4	JUNCTION	275.00	1.50	0.0	
CB5	JUNCTION	275.23	1.66	0.0	
CB6	JUNCTION	274.85	1.55	0.0	
CB7	JUNCTION	276.10	1.44	0.0	
CB8	JUNCTION	276.60	0.72	0.0	
CB9	JUNCTION	275.89	1.55	0.0	
CBMH1	JUNCTION	274.78	1.97	0.0	
CBMH2	JUNCTION	274.73	1.49	0.0	
CBMH3	JUNCTION	275.65	1.66	0.0	
CBMH4	JUNCTION	275.60	1.71	0.0	
CBMH5	JUNCTION	276.00	0.76	0.0	
DICB1	JUNCTION	276.40	1.30	0.0	
DICB2	JUNCTION	276.75	2.15	0.0	
J1	JUNCTION	274.62	1.70	0.0	
J2	JUNCTION	273.58	3.13	0.0	
MH1	JUNCTION	275.59	3.83	0.0	
MH10	JUNCTION	275.79	1.29	0.0	
MH11	JUNCTION	275.90	0.94	0.0	

MH12	JUNCTION	275.54	1.64	0.0
MH2	JUNCTION	274.63	2.21	0.0
MH3	JUNCTION	274.40	2.49	0.0
MH4	JUNCTION	275.87	1.98	0.0
MH5	JUNCTION	275.60	2.13	0.0
MH6	JUNCTION	275.13	1.99	0.0
MH7	JUNCTION	274.99	1.83	0.0
MH8	JUNCTION	274.88	1.62	0.0
MH9	JUNCTION	275.28	2.03	0.0
OGS1	JUNCTION	274.02	2.50	0.0
OGS1_(PROP._STM)	JUNCTION	274.27	2.25	0.0
StartNullStruct4	JUNCTION	275.31	2.69	0.0
StartNullStruct5	JUNCTION	0.00	276.70	0.0
StartNullStruct6	JUNCTION	0.00	276.33	0.0
HW2_(PROP._STM)	OUTFALL	274.00	0.95	0.0
OF2	OUTFALL	273.07	0.68	0.0
P1	STORAGE	276.40	0.30	0.0
POND	STORAGE	274.80	1.50	0.0
SU1	STORAGE	285.00	0.15	0.0
SU2	STORAGE	285.00	0.20	0.0
SU3	STORAGE	285.00	0.15	0.0
SU4	STORAGE	285.00	0.15	0.0
UG-CHAMBER	STORAGE	274.33	1.50	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
C1	MH8	POND	CONDUIT	27.2	0.3015	0.0130
C10	J1	HW2_(PROP._STM)	CONDUIT	43.7	0.2700	0.0130
C2	J2	OF2	CONDUIT	15.5	1.3535	0.0130
C3	POND	J1	CONDUIT	8.2	1.0001	0.0130
C4	CBMH3	MH9	CONDUIT	6.7	1.0001	0.0130
C5	CB2	MH2	CONDUIT	2.9	1.0001	0.0130
C6	MH3	UG-CHAMBER	CONDUIT	10.8	0.4074	0.0130
C7	CB6	UG-CHAMBER	CONDUIT	10.5	1.0001	0.0130
C8	OGS1_(PROP._STM)	J2	CONDUIT	11.9	5.7866	0.0130
C9	POND	J1	CONDUIT	6.6	1.0001	0.0130
Pipe_-_(1)_(PROP._STM)	DICB2	MH1	CONDUIT	25.6	0.9977	0.0130
Pipe_-_(2)_(PROP._STM)	MH12	MH6	CONDUIT	50.4	0.5395	0.0130
Pipe_-_(3)_(PROP._STM)	StartNullStruct4	MH7	CONDUIT	8.5	1.0002	0.0130
Pipe_-_(4)_(PROP._STM)	StartNullStruct5	MH9	CONDUIT	4.3	0.9984	0.0130
Pipe_-_(47)_(PROP._STM)	CB5	CBMH2	CONDUIT	45.7	1.0006	0.0130
Pipe_-_(48)_(PROP._STM)	CBMH2	MH3	CONDUIT	35.6	0.4994	0.0130
Pipe_-_(5)_(PROP._STM)	StartNullStruct6	MH10	CONDUIT	24.3	0.9992	0.0130
Pipe_-_(51)_(PROP._STM)	CB1	CBMH1	CONDUIT	31.1	0.9998	0.0130
Pipe_-_(52)_(PROP._STM)	CBMH1	MH2	CONDUIT	25.9	0.5015	0.0130
Pipe_-_(53)_(PROP._STM)	MH2	MH3	CONDUIT	31.2	0.4995	0.0130
Pipe_-_(56)_(PROP._STM)	CB4	MH2	CONDUIT	24.3	1.0003	0.0130
Pipe_-_(57)_(PROP._STM)	CB3	MH2	CONDUIT	18.3	1.0079	0.0130
Pipe_-_(58)_(PROP._STM)	CB11	MH3	CONDUIT	27.1	0.9986	0.0130
Pipe_-_(59)_(PROP._STM)	CB10	CBMH5	CONDUIT	89.2	0.9994	0.0130
Pipe_-_(60)_(PROP._STM)	CBMH5	MH11	CONDUIT	8.6	0.4991	0.0130
Pipe_-_(61)_(1)_(PROP._STM)	Building2	MH12	CONDUIT	29.4	0.9974	0.0130
Pipe_-_(61)_(2)_(PROP._STM)	MH10	MH12	CONDUIT	22.5	0.4040	0.0130
Pipe_-_(61)_(PROP._STM)	MH11	MH10	CONDUIT	18.1	0.4986	0.0130
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	MH9	MH6	CONDUIT	17.5	0.4010	0.0130
Pipe_-_(65)_(2)(0)_(PROP._STM)	MH5	MH9	CONDUIT	69.3	0.4042	0.0130
Pipe_-_(66)_(PROP._STM)	MH6	MH7	CONDUIT	29.4	0.2996	0.0130
Pipe_-_(67)_(PROP._STM)	MH7	MH8	CONDUIT	30.3	0.3005	0.0130
Pipe_-_(68)	Building-1	MH5	CONDUIT	10.5	0.9993	0.0130
Pipe_-_(69)_(PROP._STM)	CBMH4	MH6	CONDUIT	6.8	1.0009	0.0130
Pipe_-_(70)_(PROP._STM)	CB8	CBMH3	CONDUIT	26.7	0.9962	0.0130
Pipe_-_(76)_(PROP._STM)	MH1	CBMH1	CONDUIT	8.0	0.9953	0.0130
Pipe_-_(78)_(PROP._STM)	DICB1	MH1	CONDUIT	31.1	0.9999	0.0130
Pipe_-_(79)_(PROP._STM)	CB7	MH4	CONDUIT	14.9	1.0011	0.0130
Pipe_-_(80)_(PROP._STM)	MH4	MH5	CONDUIT	15.3	0.9989	0.0130
Pipe_-_(81)_(PROP._STM)	CB9	CBMH4	CONDUIT	26.7	1.0006	0.0130
OR2	UG-CHAMBER	OGS1_(PROP._STM)	ORIFICE			
OR3	P1	CB4	ORIFICE			
OL1	SU2	MH4	OUTLET			
OL2	SU3	Building-1	OUTLET			
OL3	SU1	Building2	OUTLET			
OL4	SU4	StartNullStruct4	OUTLET			

****
Cross Section Summary
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Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	CIRCULAR	0.60	0.28	0.15	0.60	1	337.15
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	148.16
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	203.99
C3	CIRCULAR	0.12	0.01	0.03	0.12	1	9.37
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	96.71
C5	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C6	CIRCULAR	0.45	0.16	0.11	0.45	1	181.99
C7	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C8	CIRCULAR	0.38	0.11	0.09	0.38	1	421.79
C9	CIRCULAR	0.20	0.03	0.05	0.20	1	32.80
Pipe_-_(1)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.40

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Pipe_-_(2)_(PROP._STM) CIRCULAR            0.45     0.16     0.11     0.45        1   209.42
Pipe_-_(3)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.71
Pipe_-_(4)_(PROP._STM) CIRCULAR            0.20     0.03     0.05     0.20        1    32.77
Pipe_-_(47)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.49
Pipe_-_(48)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.34
Pipe_-_(5)_(PROP._STM) CIRCULAR            0.20     0.03     0.05     0.20        1    32.79
Pipe_-_(51)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(52)_(PROP._STM) CIRCULAR            0.38     0.11     0.09     0.38        1   124.17
Pipe_-_(53)_(PROP._STM) CIRCULAR            0.38     0.11     0.09     0.38        1   123.93
Pipe_-_(56)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.48
Pipe_-_(57)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.71
Pipe_-_(58)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.43
Pipe_-_(59)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.45
Pipe_-_(60)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.32
Pipe_-_(61)_(1)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.58
Pipe_-_(61)_(2)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    61.47
Pipe_-_(61)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.28
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM) CIRCULAR            0.53     0.22     0.13     0.53        1   272.35
Pipe_-_(65)_(2)(0)_(PROP._STM) CIRCULAR            0.53     0.22     0.13     0.53        1   273.44
Pipe_-_(66)_(PROP._STM) CIRCULAR            0.60     0.28     0.15     0.60        1   336.12
Pipe_-_(67)_(PROP._STM) CIRCULAR            0.60     0.28     0.15     0.60        1   336.60
Pipe_-_(68)      CIRCULAR            0.30     0.07     0.07     0.30        1    96.67
Pipe_-_(69)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(70)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.36
Pipe_-_(76)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.48
Pipe_-_(78)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(79)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(80)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.44
Pipe_-_(81)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.49


****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/08/2024 00:00:00
Ending Date .............. 04/09/2024 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.349        60.320
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.086        14.890
Surface Runoff ...........         0.251        43.369
Final Storage ............         0.012         2.077
Continuity Error (%) .....        -0.027


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.251         2.510
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.237         2.374
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.014         0.137
Continuity Error (%) .....        -0.034


***************************
Time-Step Critical Elements
***************************
None


********************************
Highest Flow Instability Indexes
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****
All links are stable.

****
Most Frequent Nonconverging Nodes
****
Node CB4 (0.06%)
Node HW2_(PROP._STM) (0.06%)
Node OF2 (0.06%)

****
Routing Time Step Summary
****

Minimum Time Step	:	0.41 sec
Average Time Step	:	1.00 sec
Maximum Time Step	:	1.00 sec
% of Time in Steady State	:	0.00
Average Iterations per Step	:	2.01
% of Steps Not Converging	:	0.06
Time Step Frequencies	:	
1.000 - 0.871 sec	:	99.63 %
0.871 - 0.758 sec	:	0.08 %
0.758 - 0.660 sec	:	0.06 %
0.660 - 0.574 sec	:	0.06 %
0.574 - 0.500 sec	:	0.17 %

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
PC1	60.32	0.00	0.00	0.39	57.74	0.19	57.94	0.20	72.01	0.960
PC10	60.32	0.00	0.00	39.40	0.00	18.29	18.29	0.03	3.99	0.303
PC11	60.32	0.00	0.00	39.40	0.00	19.02	19.02	0.01	6.64	0.315
PC12	60.32	0.00	0.00	39.40	0.00	18.61	18.61	0.04	8.25	0.308
PC-2.1	60.32	0.00	0.00	0.00	58.35	0.00	58.35	0.02	5.77	0.967
PC2.10	60.32	0.00	0.00	0.00	58.35	0.00	58.35	0.01	2.81	0.967
PC2.11	60.32	0.00	0.00	0.00	58.36	0.00	58.36	0.03	11.45	0.968
PC2.12	60.32	0.00	0.00	0.00	58.35	0.00	58.35	0.01	5.25	0.967
PC2.13	60.32	0.00	0.00	0.00	58.37	0.00	58.37	0.01	3.02	0.968
PC2.14	60.32	0.00	0.00	0.00	58.35	0.00	58.35	0.04	14.06	0.967
PC2.15	60.32	0.00	0.00	0.00	58.34	0.00	58.34	0.03	9.68	0.967
PC2.16	60.32	0.00	0.00	0.00	58.36	0.00	58.36	0.00	1.47	0.967
PC2.17	60.32	0.00	0.00	0.00	58.34	0.00	58.34	0.02	9.14	0.967
PC2.18	60.32	0.00	0.00	0.00	58.34	0.00	58.34	0.05	18.66	0.967
PC2.19	60.32	0.00	0.00	0.00	60.31	0.00	60.31	0.01	4.23	1.000
PC-2.2	60.32	0.00	0.00	0.00	58.36	0.00	58.36	0.02	6.54	0.968
PC2.20	60.32	0.00	0.00	0.00	60.30	0.00	60.30	0.03	9.42	1.000
PC-2.3	60.32	0.00	0.00	0.00	58.35	0.00	58.35	0.02	7.13	0.967
PC-2.4	60.32	0.00	0.00	0.00	58.37	0.00	58.37	0.02	6.09	0.968
PC-2.5	60.32	27.92	0.00	0.00	86.27	0.00	86.27	0.05	17.82	0.978
PC2.6	60.32	0.00	0.00	29.55	14.58	13.52	28.10	0.00	1.16	0.466
PC2.7	60.32	0.00	0.00	0.00	58.37	0.00	58.37	0.00	0.80	0.968
PC2.8	60.32	0.00	0.00	0.00	58.36	0.00	58.36	0.01	3.07	0.967
PC2.9	60.32	0.00	0.00	0.00	58.36	0.00	58.36	0.00	0.56	0.967
PC-3	60.32	0.00	0.00	0.00	58.35	0.00	58.35	0.10	38.23	0.967
PC4	60.32	0.00	0.00	9.42	44.40	4.57	48.97	0.54	208.44	0.812
PC-5	60.32	0.00	0.00	33.17	9.22	16.01	25.23	0.01	6.15	0.418
PC6	60.32	0.00	0.00	0.00	58.33	0.00	58.33	0.38	141.87	0.967

PC7	60.32	0.00	0.00	39.40	0.00	18.36	18.36	0.09	13.56	0.304
PC8	60.32	2.41	0.00	28.56	16.71	15.29	32.00	0.37	115.93	0.510
PC9	60.32	0.00	0.00	2.17	55.13	1.06	56.19	0.28	103.64	0.932
UC-1	60.32	0.00	0.00	12.45	39.91	6.02	45.93	0.12	47.44	0.761

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days	hr:min	Reported Max Depth Meters
Building-1	JUNCTION	0.02	0.14	276.12	0	06:00	0.14
Building2	JUNCTION	0.03	0.33	276.33	0	06:00	0.33
CB1	JUNCTION	0.00	0.00	275.22	0	00:00	0.00
CB10	JUNCTION	0.00	0.00	276.94	0	00:00	0.00
CB11	JUNCTION	0.00	0.00	275.61	0	00:00	0.00
CB2	JUNCTION	0.00	0.00	275.25	0	00:00	0.00
CB3	JUNCTION	0.00	0.00	275.71	0	00:00	0.00
CB4	JUNCTION	0.05	1.65	276.65	0	06:00	1.65
CB5	JUNCTION	0.00	0.00	275.23	0	00:00	0.00
CB6	JUNCTION	0.00	0.13	274.98	0	06:08	0.13
CB7	JUNCTION	0.00	0.00	276.10	0	00:00	0.00
CB8	JUNCTION	0.00	0.00	276.60	0	00:00	0.00
CB9	JUNCTION	0.00	0.00	275.89	0	00:00	0.00
CBMH1	JUNCTION	0.01	0.40	275.18	0	06:06	0.40
CBMH2	JUNCTION	0.00	0.27	275.00	0	06:07	0.27
CBMH3	JUNCTION	0.00	0.00	275.65	0	00:00	0.00
CBMH4	JUNCTION	0.00	0.02	275.62	0	08:24	0.02
CBMH5	JUNCTION	0.00	0.00	276.00	0	00:00	0.00
DICB1	JUNCTION	0.00	0.00	276.40	0	00:00	0.00
DICB2	JUNCTION	0.00	0.00	276.75	0	00:00	0.00
J1	JUNCTION	0.10	0.14	274.76	0	08:30	0.14
J2	JUNCTION	0.03	0.23	273.81	0	06:00	0.23
MH1	JUNCTION	0.01	0.05	275.64	0	06:00	0.05
MH10	JUNCTION	0.00	0.00	275.79	0	00:00	0.00
MH11	JUNCTION	0.00	0.00	275.90	0	00:00	0.00
MH12	JUNCTION	0.03	0.23	275.77	0	06:00	0.23
MH2	JUNCTION	0.04	0.55	275.18	0	06:06	0.55
MH3	JUNCTION	0.04	0.60	275.00	0	06:07	0.60
MH4	JUNCTION	0.01	0.07	275.95	0	05:46	0.07
MH5	JUNCTION	0.02	0.16	275.76	0	06:00	0.16
MH6	JUNCTION	0.19	0.49	275.62	0	08:29	0.49
MH7	JUNCTION	0.28	0.62	275.62	0	08:28	0.62
MH8	JUNCTION	0.36	0.73	275.62	0	08:28	0.73
MH9	JUNCTION	0.11	0.34	275.62	0	08:29	0.34
OGS1	JUNCTION	0.00	0.00	274.02	0	00:00	0.00
OGS1_(PROP._STM)	JUNCTION	0.02	0.13	274.40	0	06:08	0.13
StartNullStruct4	JUNCTION	0.10	0.31	275.62	0	08:26	0.31
StartNullStruct5	JUNCTION	0.00	0.00	0.00	0	00:00	0.00
StartNullStruct6	JUNCTION	0.00	0.00	0.00	0	00:00	0.00
HW2_(PROP._STM)	OUTFALL	0.00	0.00	274.00	0	00:00	0.00
OF2	OUTFALL	0.00	0.00	273.07	0	00:00	0.00
P1	STORAGE	0.00	0.15	276.55	0	06:00	0.15
POND	STORAGE	0.42	0.81	275.61	0	08:29	0.81
SU1	STORAGE	0.01	0.06	285.06	0	06:18	0.06
SU2	STORAGE	0.01	0.14	285.14	0	06:02	0.14
SU3	STORAGE	0.01	0.05	285.05	0	06:01	0.05
SU4	STORAGE	0.01	0.11	285.11	0	06:06	0.11
UG-CHAMBER	STORAGE	0.05	0.65	274.98	0	06:08	0.65

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days	hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
Building-1	JUNCTION	38.74	41.41	0	06:00	0.106	0.129	0.000
Building2	JUNCTION	103.22	109.48	0	06:00	0.28	0.427	0.003
CB1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB10	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB11	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB2	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB3	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB4	JUNCTION	208.44	208.44	0	06:00	0.541	0.578	0.057
CB5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB6	JUNCTION	0.00	0.56	0	05:56	0	0.000167	0.593
CB7	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB8	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB9	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CBMH1	JUNCTION	0.00	11.67	0	05:46	0	0.0152	0.083
CBMH2	JUNCTION	0.00	3.97	0	05:52	0	0.00224	0.438
CBMH3	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr

CBMH4	JUNCTION	0.00	0.03	0	08:15	0	3.45e-05	0.137	
CBMH5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
DICB1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
DICB2	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J1	JUNCTION	0.00	28.74	0	08:29	0	1.56	0.056	
J2	JUNCTION	47.44	143.24	0	06:00	0.123	0.678	-0.000	
MH1	JUNCTION	6.15	6.15	0	06:00	0.0146	0.0146	0.004	
MH10	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
MH11	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
MH12	JUNCTION	0.00	109.46	0	06:00	0	0.427	0.234	
MH2	JUNCTION	0.00	152.40	0	05:52	0	0.556	0.213	
MH3	JUNCTION	0.00	150.77	0	05:52	0	0.556	-0.212	
MH4	JUNCTION	0.00	11.10	0	05:46	0	0.103	0.003	
MH5	JUNCTION	0.00	52.50	0	06:00	0	0.232	0.078	
MH6	JUNCTION	0.00	264.83	0	06:00	0	0.934	-0.020	
MH7	JUNCTION	0.00	305.51	0	06:00	0	1.32	-0.048	
MH8	JUNCTION	0.00	303.64	0	05:59	0	1.32	-0.143	
MH9	JUNCTION	103.64	156.10	0	06:00	0.277	0.509	0.106	
OGS1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
OGS1_(PROP._STM)	JUNCTION	0.00	102.76	0	06:08	0	0.555	-0.001	
StartNullStruct4	JUNCTION	0.00	43.45	0	06:06	0	0.385	0.018	
StartNullStruct5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
StartNullStruct6	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
HW2_(PROP._STM)	OUTFALL	28.45	50.05	0	06:00	0.139	1.7	0.000	
OF2	OUTFALL	0.00	143.07	0	06:00	0	0.678	0.000	
P1	STORAGE	0.00	61.66	0	06:00	0	0.0374	0.007	
POND	STORAGE	115.93	416.36	0	06:00	0.372	1.69	0.045	
SU1	STORAGE	54.12	54.12	0	06:00	0.147	0.147	-0.001	
SU2	STORAGE	38.23	38.23	0	06:00	0.103	0.103	-0.001	
SU3	STORAGE	8.27	8.27	0	06:00	0.0224	0.0224	-0.002	
SU4	STORAGE	141.87	141.87	0	06:00	0.385	0.385	-0.001	
UG-CHAMBER	STORAGE	0.00	147.16	0	05:59	0	0.555	-0.042	

****
Node Surcharge Summary
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Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
Building2	JUNCTION	0.07	0.032	1.666
CB4	JUNCTION	0.41	1.254	0.000
MH8	JUNCTION	6.16	0.113	0.889
OGS1	JUNCTION	24.00	0.000	2.500
StartNullStruct4	JUNCTION	1.90	0.011	2.384

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Node Flooding Summary
****

No nodes were flooded.

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Storage Volume Summary
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Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
P1	0.000	0.1	0.0	0.0	0.037	15.4	0 06:00	87.67
POND	0.504	22.4	0.0	0.0	1.034	45.9	0 08:29	28.74
SU1	0.013	3.2	0.0	0.0	0.073	18.6	0 06:18	6.59
SU2	0.001	1.6	0.0	0.0	0.031	41.3	0 06:02	11.10
SU3	0.000	0.6	0.0	0.0	0.008	12.9	0 06:01	2.71
SU4	0.007	2.6	0.0	0.0	0.127	47.7	0 06:06	43.45
UG-CHAMBER	0.004	0.8	0.0	0.0	0.095	17.7	0 06:08	102.91

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
HW2_(PROP._STM)	92.03	21.35	50.05	1.696
OF2	54.02	14.57	143.07	0.678
System	73.03	35.92	193.09	2.374

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Link Flow Summary
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Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days	Time of Max Occurrence hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	301.29	0	05:59	1.55	0.89	1.00
C10	CONDUIT	28.74	0	08:30	0.80	0.19	0.28
C2	CONDUIT	143.07	0	06:00	2.00	0.70	0.62
C3	CONDUIT	28.74	0	08:29	2.34	3.07	1.00
C4	CONDUIT	0.00	0	00:00	0.00	0.00	0.05
C5	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
C6	CONDUIT	147.16	0	05:59	1.18	0.81	1.00
C7	CONDUIT	0.56	0	05:56	0.06	0.01	0.74
C8	CONDUIT	102.76	0	06:08	2.24	0.24	0.47
C9	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(1)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	CONDUIT	109.39	0	06:00	1.28	0.52	0.54
Pipe_-_(3)_(PROP._STM)	CONDUIT	43.43	0	06:06	1.33	0.45	1.00
Pipe_-_(4)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.46
Pipe_-_(48)_(PROP._STM)	CONDUIT	3.97	0	05:52	0.09	0.06	0.95
Pipe_-_(5)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(51)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
Pipe_-_(52)_(PROP._STM)	CONDUIT	9.81	0	05:46	0.21	0.08	1.00
Pipe_-_(53)_(PROP._STM)	CONDUIT	150.77	0	05:52	1.48	1.22	1.00
Pipe_-_(56)_(PROP._STM)	CONDUIT	150.16	0	05:52	3.06	2.52	1.00
Pipe_-_(57)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(60)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(61)_(1)_(PROP._STM)	CONDUIT	109.46	0	06:00	1.63	1.13	0.92
Pipe_-_(61)_(2)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.13
Pipe_-_(61)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	CONDUIT	155.53	0	05:59	1.28	0.57	0.71
Pipe_-_(65)_(2)(0)_(PROP._STM)	CONDUIT	52.47	0	06:00	0.73	0.19	0.39
Pipe_-_(66)_(PROP._STM)	CONDUIT	264.12	0	06:00	1.42	0.79	0.89
Pipe_-_(67)_(PROP._STM)	CONDUIT	303.64	0	05:59	1.49	0.90	1.00
Pipe_-_(68)	CONDUIT	41.40	0	06:00	1.32	0.43	0.46
Pipe_-_(69)_(PROP._STM)	CONDUIT	0.03	0	08:15	0.01	0.00	0.20
Pipe_-_(70)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(76)_(PROP._STM)	CONDUIT	6.13	0	06:00	0.77	0.06	0.17
Pipe_-_(78)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(80)_(PROP._STM)	CONDUIT	11.11	0	05:46	0.93	0.19	0.29
Pipe_-_(81)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
OR2	ORIFICE	102.76	0	06:08			1.00
OR3	ORIFICE	87.67	0	06:06			
OL1	DUMMY	11.10	0	05:46			
OL2	DUMMY	2.71	0	06:01			
OL3	DUMMY	6.59	0	06:18			
OL4	DUMMY	43.45	0	06:06			

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Flow Classification Summary
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Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
		---------- Fraction of Time in Flow Class ----------								
C1	1.00	0.01	0.00	0.00	0.87	0.13	0.00	0.00	0.06	0.00
C10	1.00	0.07	0.00	0.00	0.00	0.00	0.00	0.93	0.00	0.00
C2	1.00	0.06	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00
C3	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
C4	1.00	0.86	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C5	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C6	1.00	0.06	0.00	0.00	0.07	0.00	0.00	0.87	0.00	0.00
C7	1.00	0.24	0.00	0.00	0.02	0.00	0.00	0.73	0.01	0.00
C8	1.00	0.06	0.00	0.00	0.40	0.53	0.00	0.00	0.94	0.00
C9	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(1)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	1.00	0.00	0.00	0.00	0.45	0.00	0.00	0.54	0.36	0.00
Pipe_-_(3)_(PROP._STM)	1.00	0.06	0.00	0.00	0.49	0.01	0.00	0.44	0.06	0.00
Pipe_-_(4)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(48)_(PROP._STM)	1.00	0.23	0.01	0.00	0.04	0.00	0.00	0.72	0.01	0.00
Pipe_-_(5)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(51)_(PROP._STM)	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(52)_(PROP._STM)	1.00	0.06	0.00	0.00	0.45	0.00	0.00	0.49	0.41	0.00
Pipe_-_(53)_(PROP._STM)	1.00	0.06	0.00	0.00	0.03	0.00	0.00	0.91	0.01	0.00
Pipe_-_(56)_(PROP._STM)	1.00	0.06	0.00	0.00	0.02	0.00	0.00	0.92	0.01	0.00
Pipe_-_(57)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(60)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(61)_(1)_(PROP._STM)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Pipe_-_(61)_(2)_(PROP._STM)	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(61)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	1.00	0.06	0.00	0.00	0.50	0.00	0.00	0.44	0.06	0.00
Pipe_-_(65)_(2)(0)_(PROP._STM)	1.00	0.06	0.00	0.00	0.43	0.00	0.00	0.51	0.43	0.00
Pipe_-_(66)_(PROP._STM)	1.00	0.01	0.00	0.00	0.64	0.00	0.00	0.35	0.08	0.00
Pipe_-_(67)_(PROP._STM)	1.00	0.01	0.00	0.00	0.76	0.00	0.00	0.23	0.07	0.00
Pipe_-_(68)	1.00	0.06	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00

Pipe_-_(69)_(PROP._STM)	1.00	0.77	0.11	0.00	0.12	0.00	0.00	0.00	0.59	0.00
Pipe_-_(70)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(76)_(PROP._STM)	1.00	0.06	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00
Pipe_-_(78)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(80)_(PROP._STM)	1.00	0.06	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00
Pipe_-_(81)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Conduit Surcharge Summary
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Conduit	--------- Hours Full -------- Both Ends	Upstream	Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C1	6.63	6.63	8.36	0.01	0.01
C3	12.75	19.13	12.75	19.62	12.75
C6	0.44	0.44	0.51	0.01	0.01
Pipe_-_(3)_(PROP._STM)	1.89	1.89	5.73	0.01	0.01
Pipe_-_(48)_(PROP._STM)	0.01	0.01	0.45	0.01	0.01
Pipe_-_(52)_(PROP._STM)	0.14	0.14	0.31	0.01	0.01
Pipe_-_(53)_(PROP._STM)	0.29	0.34	0.45	0.34	0.22
Pipe_-_(56)_(PROP._STM)	0.42	0.60	0.43	0.63	0.42
Pipe_-_(61)_(1)_(PROP._STM)	0.01	0.07	0.01	0.18	0.01
Pipe_-_(67)_(PROP._STM)	2.69	2.69	6.16	0.01	0.01

Analysis begun on: Thu Sep 19 20:13:32 2024
Analysis ended on: Thu Sep 19 20:13:34 2024
Total elapsed time: 00:00:02

10 Year Chicago Storm - Output

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EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)
------------------------------------------------------------


*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 32
Number of nodes ........... 48
Number of links ........... 46
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                     Data       Recording
Name                 Data Source                     Type       Interval
------------------------------------------------------------------------
Raingage             10-Yr-Chicago-Storm             INTENSITY   10 min.


********************
Subcatchment Summary
********************
Name                        Area     Width   %Imperv    %Slope Rain Gage            Outlet
-----------------------------------------------------------------------------------------------------------
PC1                         0.34     34.37     99.00    1.5000 Raingage             Building2
PC10                        0.15     20.40      0.00    1.0000 Raingage             PC8
PC11                        0.08     48.12      0.00    2.0000 Raingage             HW2_(PROP._STM)
PC12                        0.20     33.57      0.00    2.0000 Raingage             HW2_(PROP._STM)
PC-2.1                      0.03     15.71    100.00    1.5000 Raingage             PC-2.5
PC2.10                      0.01      6.19    100.00    1.5000 Raingage             SU1
PC2.11                      0.05     58.89    100.00    1.5000 Raingage             Building2
PC2.12                      0.02     14.29    100.00    1.5000 Raingage             SU3
PC2.13                      0.01     28.00    100.00    1.5000 Raingage             SU3
PC2.14                      0.07     26.04    100.00    1.5000 Raingage             Building2
PC2.15                      0.04     14.45    100.00    1.5000 Raingage             SU1
PC2.16                      0.01      6.80    100.00    1.5000 Raingage             Building2
PC2.17                      0.04     14.10    100.00    1.5000 Raingage             SU1
PC2.18                      0.09     29.79    100.00    1.5000 Raingage             SU1
PC2.19                      0.02     17.82    100.00    1.5000 Raingage             Building2
PC-2.2                      0.03     37.88    100.00    1.5000 Raingage             Building-1
PC2.20                      0.04     18.96    100.00    1.5000 Raingage             SU1
PC-2.3                      0.03     13.75    100.00    1.5000 Raingage             Building-1
PC-2.4                      0.03     47.00    100.00    1.5000 Raingage             Building-1
PC-2.5                      0.06     26.57    100.00    1.5000 Raingage             Building-1
PC2.6                       0.02      1.70     25.00    0.5000 Raingage             Building-1
PC2.7                       0.00      5.69    100.00    1.5000 Raingage             SU1
PC2.8                       0.01     12.91    100.00    1.5000 Raingage             SU1
PC2.9                       0.00      2.60    100.00    1.5000 Raingage             SU1
PC-3                        0.18    118.00    100.00    1.0000 Raingage             SU2
PC4                         1.10    368.00     76.10    1.5000 Raingage             CB4
PC-5                        0.06     42.21     15.80    1.0000 Raingage             MH1
PC6                         0.66     87.99    100.00    1.0000 Raingage             SU4
PC7                         0.47     57.68      0.00    1.5000 Raingage             HW2_(PROP._STM)
PC8                         1.16    130.57     27.50    5.0000 Raingage             POND
PC9                         0.49    117.38     94.50    1.5000 Raingage             MH9
UC-1                        0.27     76.57     68.40    1.5000 Raingage             J2


************
Node Summary
************
                                        Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
-------------------------------------------------------------------------------
Building-1           JUNCTION           275.99      2.02       0.0
Building2            JUNCTION           276.00      2.00       0.0
CB1                  JUNCTION           275.22      1.45       0.0
CB10                 JUNCTION           276.94      0.65       0.0
CB11                 JUNCTION           275.61      1.68       0.0
CB2                  JUNCTION           275.25      1.52       0.0
CB3                  JUNCTION           275.71      1.74       0.0
CB4                  JUNCTION           275.00      1.50       0.0
CB5                  JUNCTION           275.23      1.66       0.0
CB6                  JUNCTION           274.85      1.55       0.0
CB7                  JUNCTION           276.10      1.44       0.0
CB8                  JUNCTION           276.60      0.72       0.0
CB9                  JUNCTION           275.89      1.55       0.0
CBMH1                JUNCTION           274.78      1.97       0.0
CBMH2                JUNCTION           274.73      1.49       0.0
CBMH3                JUNCTION           275.65      1.66       0.0
CBMH4                JUNCTION           275.60      1.71       0.0
CBMH5                JUNCTION           276.00      0.76       0.0
DICB1                JUNCTION           276.40      1.30       0.0
DICB2                JUNCTION           276.75      2.15       0.0
J1                   JUNCTION           274.62      1.70       0.0
J2                   JUNCTION           273.58      3.13       0.0
MH1                  JUNCTION           275.59      3.83       0.0
MH10                 JUNCTION           275.79      1.29       0.0
MH11                 JUNCTION           275.90      0.94       0.0
```

MH12	JUNCTION	275.54	1.64	0.0
MH2	JUNCTION	274.63	2.21	0.0
MH3	JUNCTION	274.40	2.49	0.0
MH4	JUNCTION	275.87	1.98	0.0
MH5	JUNCTION	275.60	2.13	0.0
MH6	JUNCTION	275.13	1.99	0.0
MH7	JUNCTION	274.99	1.83	0.0
MH8	JUNCTION	274.88	1.62	0.0
MH9	JUNCTION	275.28	2.03	0.0
OGS1	JUNCTION	274.02	2.50	0.0
OGS1_(PROP._STM)	JUNCTION	274.27	2.25	0.0
StartNullStruct4	JUNCTION	275.31	2.69	0.0
StartNullStruct5	JUNCTION	0.00	276.70	0.0
StartNullStruct6	JUNCTION	0.00	276.33	0.0
HW2_(PROP._STM)	OUTFALL	274.00	0.95	0.0
OF2	OUTFALL	273.07	0.68	0.0
P1	STORAGE	276.40	0.30	0.0
POND	STORAGE	274.80	1.50	0.0
SU1	STORAGE	285.00	0.15	0.0
SU2	STORAGE	285.00	0.20	0.0
SU3	STORAGE	285.00	0.15	0.0
SU4	STORAGE	285.00	0.15	0.0
UG-CHAMBER	STORAGE	274.33	1.50	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
C1	MH8	POND	CONDUIT	27.2	0.3015	0.0130
C10	J1	HW2_(PROP._STM)	CONDUIT	43.7	0.2700	0.0130
C2	J2	OF2	CONDUIT	15.5	1.3535	0.0130
C3	POND	J1	CONDUIT	8.2	1.0001	0.0130
C4	CBMH3	MH9	CONDUIT	6.7	1.0001	0.0130
C5	CB2	MH2	CONDUIT	2.9	1.0001	0.0130
C6	MH3	UG-CHAMBER	CONDUIT	10.8	0.4074	0.0130
C7	CB6	UG-CHAMBER	CONDUIT	10.5	1.0001	0.0130
C8	OGS1_(PROP._STM)	J2	CONDUIT	11.9	5.7866	0.0130
C9	POND	J1	CONDUIT	6.6	1.0001	0.0130
Pipe_-_(1)_(PROP._STM)	DICB2	MH1	CONDUIT	25.6	0.9977	0.0130
Pipe_-_(2)_(PROP._STM)	MH12	MH6	CONDUIT	50.4	0.5395	0.0130
Pipe_-_(3)_(PROP._STM)	StartNullStruct4	MH7	CONDUIT	8.5	1.0002	0.0130
Pipe_-_(4)_(PROP._STM)	StartNullStruct5	MH9	CONDUIT	4.3	0.9984	0.0130
Pipe_-_(47)_(PROP._STM)	CB5	CBMH2	CONDUIT	45.7	1.0006	0.0130
Pipe_-_(48)_(PROP._STM)	CBMH2	MH3	CONDUIT	35.6	0.4994	0.0130
Pipe_-_(5)_(PROP._STM)	StartNullStruct6	MH10	CONDUIT	24.3	0.9992	0.0130
Pipe_-_(51)_(PROP._STM)	CB1	CBMH1	CONDUIT	31.1	0.9998	0.0130
Pipe_-_(52)_(PROP._STM)	CBMH1	MH2	CONDUIT	25.9	0.5015	0.0130
Pipe_-_(53)_(PROP._STM)	MH2	MH3	CONDUIT	31.2	0.4995	0.0130
Pipe_-_(56)_(PROP._STM)	CB4	MH2	CONDUIT	24.3	1.0003	0.0130
Pipe_-_(57)_(PROP._STM)	CB3	MH2	CONDUIT	18.3	1.0079	0.0130
Pipe_-_(58)_(PROP._STM)	CB11	MH3	CONDUIT	27.1	0.9986	0.0130
Pipe_-_(59)_(PROP._STM)	CB10	CBMH5	CONDUIT	89.2	0.9994	0.0130
Pipe_-_(60)_(PROP._STM)	CBMH5	MH11	CONDUIT	8.6	0.4991	0.0130
Pipe_-_(61)_(1)_(PROP._STM)	Building2	MH12	CONDUIT	29.4	0.9974	0.0130
Pipe_-_(61)_(2)_(PROP._STM)	MH10	MH12	CONDUIT	22.5	0.4040	0.0130
Pipe_-_(61)_(PROP._STM)	MH11	MH10	CONDUIT	18.1	0.4986	0.0130
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	MH9	MH6	CONDUIT	17.5	0.4010	0.0130
Pipe_-_(65)_(2)(0)_(PROP._STM)	MH5	MH9	CONDUIT	69.3	0.4042	0.0130
Pipe_-_(66)_(PROP._STM)	MH6	MH7	CONDUIT	29.4	0.2996	0.0130
Pipe_-_(67)_(PROP._STM)	MH7	MH8	CONDUIT	30.3	0.3005	0.0130
Pipe_-_(68)	Building-1	MH5	CONDUIT	10.5	0.9993	0.0130
Pipe_-_(69)_(PROP._STM)	CBMH4	MH6	CONDUIT	6.8	1.0009	0.0130
Pipe_-_(70)_(PROP._STM)	CB8	CBMH3	CONDUIT	26.7	0.9962	0.0130
Pipe_-_(76)_(PROP._STM)	MH1	CBMH1	CONDUIT	8.0	0.9953	0.0130
Pipe_-_(78)_(PROP._STM)	DICB1	MH1	CONDUIT	31.1	0.9999	0.0130
Pipe_-_(79)_(PROP._STM)	CB7	MH4	CONDUIT	14.9	1.0011	0.0130
Pipe_-_(80)_(PROP._STM)	MH4	MH5	CONDUIT	15.3	0.9989	0.0130
Pipe_-_(81)_(PROP._STM)	CB9	CBMH4	CONDUIT	26.7	1.0006	0.0130
OR2	UG-CHAMBER	OGS1_(PROP._STM)	ORIFICE			
OR3	P1	CB4	ORIFICE			
OL1	SU2	MH4	OUTLET			
OL2	SU3	Building-1	OUTLET			
OL3	SU1	Building2	OUTLET			
OL4	SU4	StartNullStruct4	OUTLET			

****
Cross Section Summary
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Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	CIRCULAR	0.60	0.28	0.15	0.60	1	337.15
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	148.16
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	203.99
C3	CIRCULAR	0.12	0.01	0.03	0.12	1	9.37
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	96.71
C5	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C6	CIRCULAR	0.45	0.16	0.11	0.45	1	181.99
C7	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C8	CIRCULAR	0.38	0.11	0.09	0.38	1	421.79
C9	CIRCULAR	0.20	0.03	0.05	0.20	1	32.80
Pipe_-_(1)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.40

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Pipe_-_(2)_(PROP._STM) CIRCULAR            0.45     0.16     0.11     0.45        1   209.42
Pipe_-_(3)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.71
Pipe_-_(4)_(PROP._STM) CIRCULAR            0.20     0.03     0.05     0.20        1    32.77
Pipe_-_(47)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.49
Pipe_-_(48)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.34
Pipe_-_(5)_(PROP._STM) CIRCULAR            0.20     0.03     0.05     0.20        1    32.79
Pipe_-_(51)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(52)_(PROP._STM) CIRCULAR            0.38     0.11     0.09     0.38        1   124.17
Pipe_-_(53)_(PROP._STM) CIRCULAR            0.38     0.11     0.09     0.38        1   123.93
Pipe_-_(56)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.48
Pipe_-_(57)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.71
Pipe_-_(58)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.43
Pipe_-_(59)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.45
Pipe_-_(60)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.32
Pipe_-_(61)_(1)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.58
Pipe_-_(61)_(2)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    61.47
Pipe_-_(61)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.28
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM) CIRCULAR            0.53     0.22     0.13     0.53        1   272.35
Pipe_-_(65)_(2)(0)_(PROP._STM) CIRCULAR            0.53     0.22     0.13     0.53        1   273.44
Pipe_-_(66)_(PROP._STM) CIRCULAR            0.60     0.28     0.15     0.60        1   336.12
Pipe_-_(67)_(PROP._STM) CIRCULAR            0.60     0.28     0.15     0.60        1   336.60
Pipe_-_(68)      CIRCULAR            0.30     0.07     0.07     0.30        1    96.67
Pipe_-_(69)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(70)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.36
Pipe_-_(76)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.48
Pipe_-_(78)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(79)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(80)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.44
Pipe_-_(81)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.49


****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/08/2024 00:00:00
Ending Date .............. 04/09/2024 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.323        55.814
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.086        14.934
Surface Runoff ...........         0.227        39.213
Final Storage ............         0.010         1.699
Continuity Error (%) .....        -0.057


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.227         2.269
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.223         2.229
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.004         0.037
Continuity Error (%) .....         0.143


*************************
Highest Continuity Errors
*************************
Node MH10 (4.30%)


***************************
Time-Step Critical Elements
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**************************
None


*******************************
Highest Flow Instability Indexes
*******************************
All links are stable.


********************************
Most Frequent Nonconverging Nodes
********************************
Node HW2_(PROP._STM) (0.34%)
Node OF2 (0.34%)
Node CB4 (0.33%)
Node Building2 (0.01%)
Node P1 (0.00%)


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.00 sec
Maximum Time Step           :     1.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.02
% of Steps Not Converging   :     0.34
Time Step Frequencies       :
    1.000 -  0.871 sec      :    99.86 %
    0.871 -  0.758 sec      :     0.03 %
    0.758 -  0.660 sec      :     0.03 %
    0.660 -  0.574 sec      :     0.02 %
    0.574 -  0.500 sec      :     0.06 %


***************************
Subcatchment Runoff Summary
***************************
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Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
PC1	55.81	0.00	0.00	0.38	53.30	0.16	53.46	0.18	114.69	0.958
PC10	55.81	0.00	0.00	40.35	0.00	14.20	14.20	0.02	3.24	0.254
PC11	55.81	0.00	0.00	38.76	0.00	15.81	15.81	0.01	3.95	0.283
PC12	55.81	0.00	0.00	39.65	0.00	14.91	14.91	0.03	5.72	0.267
PC-2.1	55.81	0.00	0.00	0.00	53.88	0.00	53.88	0.01	9.35	0.965
PC2.10	55.81	0.00	0.00	0.00	53.87	0.00	53.87	0.01	4.55	0.965
PC2.11	55.81	0.00	0.00	0.00	53.89	0.00	53.89	0.03	18.56	0.966
PC2.12	55.81	0.00	0.00	0.00	53.88	0.00	53.88	0.01	8.51	0.965
PC2.13	55.81	0.00	0.00	0.00	53.90	0.00	53.90	0.01	4.90	0.966
PC2.14	55.81	0.00	0.00	0.00	53.87	0.00	53.87	0.04	22.79	0.965
PC2.15	55.81	0.00	0.00	0.00	53.86	0.00	53.86	0.02	15.68	0.965
PC2.16	55.81	0.00	0.00	0.00	53.89	0.00	53.89	0.00	2.38	0.966
PC2.17	55.81	0.00	0.00	0.00	53.86	0.00	53.86	0.02	14.81	0.965
PC2.18	55.81	0.00	0.00	0.00	53.86	0.00	53.86	0.05	30.25	0.965
PC2.19	55.81	0.00	0.00	0.00	55.84	0.00	55.84	0.01	6.86	1.000
PC-2.2	55.81	0.00	0.00	0.00	53.89	0.00	53.89	0.02	10.61	0.966
PC2.20	55.81	0.00	0.00	0.00	55.82	0.00	55.82	0.02	15.27	1.000
PC-2.3	55.81	0.00	0.00	0.00	53.87	0.00	53.87	0.02	11.55	0.965
PC-2.4	55.81	0.00	0.00	0.00	53.90	0.00	53.90	0.02	9.88	0.966
PC-2.5	55.81	25.78	0.00	0.00	79.65	0.00	79.65	0.04	28.89	0.976
PC2.6	55.81	0.00	0.00	30.69	13.46	10.22	23.68	0.00	1.56	0.424
PC2.7	55.81	0.00	0.00	0.00	53.90	0.00	53.90	0.00	1.30	0.966
PC2.8	55.81	0.00	0.00	0.00	53.89	0.00	53.89	0.01	4.97	0.965
PC2.9	55.81	0.00	0.00	0.00	53.89	0.00	53.89	0.00	[illegible]	0.966

PC-3	55.81	0.00	0.00	0.00	53.87	0.00	53.87	0.10	61.98	0.965
PC4	55.81	0.00	0.00	9.21	40.99	3.83	44.83	0.49	313.20	0.803
PC-5	55.81	0.00	0.00	32.63	8.51	13.30	21.82	0.01	5.33	0.391
PC6	55.81	0.00	0.00	0.00	53.84	0.00	53.84	0.36	226.63	0.965
PC7	55.81	0.00	0.00	40.18	0.00	14.37	14.37	0.07	10.71	0.257
PC8	55.81	1.87	0.00	28.62	15.33	12.29	27.63	0.32	128.60	0.479
PC9	55.81	0.00	0.00	2.11	50.89	0.90	51.79	0.26	166.40	0.928
UC-1	55.81	0.00	0.00	12.22	36.85	5.02	41.87	0.11	68.65	0.750

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days	hr:min	Reported Max Depth Meters
Building-1	JUNCTION	0.01	0.18	276.17	0	01:30	0.18
Building2	JUNCTION	0.03	0.93	276.93	0	01:30	0.93
CB1	JUNCTION	0.00	0.02	275.24	0	01:51	0.02
CB10	JUNCTION	0.00	0.00	276.94	0	00:00	0.00
CB11	JUNCTION	0.00	0.00	275.61	0	00:00	0.00
CB2	JUNCTION	0.00	0.00	275.25	0	00:00	0.00
CB3	JUNCTION	0.00	0.00	275.71	0	00:00	0.00
CB4	JUNCTION	0.05	1.78	276.77	0	01:30	1.77
CB5	JUNCTION	0.00	0.00	275.23	0	00:00	0.00
CB6	JUNCTION	0.00	0.19	275.04	0	01:52	0.19
CB7	JUNCTION	0.00	0.00	276.10	0	00:00	0.00
CB8	JUNCTION	0.00	0.00	276.60	0	00:00	0.00
CB9	JUNCTION	0.00	0.00	275.89	0	00:00	0.00
CBMH1	JUNCTION	0.01	0.46	275.24	0	01:51	0.46
CBMH2	JUNCTION	0.01	0.33	275.06	0	01:51	0.33
CBMH3	JUNCTION	0.00	0.06	275.71	0	01:30	0.06
CBMH4	JUNCTION	0.01	0.08	275.68	0	04:05	0.08
CBMH5	JUNCTION	0.00	0.00	276.00	0	00:00	0.00
DICB1	JUNCTION	0.00	0.00	276.40	0	00:00	0.00
DICB2	JUNCTION	0.00	0.00	276.75	0	00:00	0.00
J1	JUNCTION	0.10	0.14	274.76	0	04:04	0.14
J2	JUNCTION	0.02	0.25	273.83	0	01:30	0.25
MH1	JUNCTION	0.00	0.05	275.64	0	01:30	0.05
MH10	JUNCTION	0.00	0.07	275.85	0	01:30	0.07
MH11	JUNCTION	0.00	0.00	275.90	0	00:00	0.00
MH12	JUNCTION	0.03	0.31	275.85	0	01:30	0.31
MH2	JUNCTION	0.03	0.61	275.24	0	01:51	0.60
MH3	JUNCTION	0.03	0.66	275.06	0	01:51	0.66
MH4	JUNCTION	0.01	0.07	275.95	0	01:22	0.07
MH5	JUNCTION	0.02	0.19	275.79	0	01:30	0.19
MH6	JUNCTION	0.17	0.55	275.68	0	04:05	0.55
MH7	JUNCTION	0.25	0.69	275.68	0	04:05	0.69
MH8	JUNCTION	0.33	0.80	275.68	0	04:05	0.80
MH9	JUNCTION	0.10	0.43	275.71	0	01:30	0.43
OGS1	JUNCTION	0.00	0.00	274.02	0	00:00	0.00
OGS1_(PROP._STM)	JUNCTION	0.01	0.13	274.40	0	01:53	0.13
StartNullStruct4	JUNCTION	0.09	0.38	275.68	0	04:00	0.38
StartNullStruct5	JUNCTION	0.00	0.00	0.00	0	00:00	0.00
StartNullStruct6	JUNCTION	0.00	0.00	0.00	0	00:00	0.00
HW2_(PROP._STM)	OUTFALL	0.00	0.00	274.00	0	00:00	0.00
OF2	OUTFALL	0.00	0.00	273.07	0	00:00	0.00
P1	STORAGE	0.00	0.19	276.59	0	01:32	0.19
POND	STORAGE	0.40	0.88	275.68	0	04:04	0.88
SU1	STORAGE	0.01	0.06	285.06	0	02:10	0.06
SU2	STORAGE	0.01	0.16	285.16	0	01:43	0.16
SU3	STORAGE	0.00	0.06	285.06	0	01:41	0.06
SU4	STORAGE	0.01	0.12	285.12	0	01:45	0.12
UG-CHAMBER	STORAGE	0.04	0.71	275.04	0	01:52	0.71

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days	hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent	
Building-1	JUNCTION	62.49	65.22	0	01:30	0.0978	0.118	-0.000	
Building2	JUNCTION	165.28	171.26	0	01:30	0.258	0.394	-0.005	
CB1	JUNCTION	0.00	0.28	0	01:46	0	5.44e-05	6.320	
CB10	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
CB11	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
CB2	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
CB3	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
CB4	JUNCTION	313.20	313.20	0	01:30	0.495	0.57	0.324	
CB5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr

CB6	JUNCTION	0.00	0.61	0	01:31	0	0.000234	0.439
CB7	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB8	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB9	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CBMH1	JUNCTION	0.00	22.75	0	01:21	0	0.0138	0.099
CBMH2	JUNCTION	0.00	4.41	0	01:27	0	0.00247	0.594
CBMH3	JUNCTION	0.00	0.62	0	01:25	0	0.000108	0.230
CBMH4	JUNCTION	0.00	1.25	0	01:28	0	0.0003	0.468
CBMH5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
DICB1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
DICB2	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J1	JUNCTION	0.00	31.40	0	04:04	0	1.5	0.017
J2	JUNCTION	68.65	156.27	0	01:30	0.112	0.618	-0.001
MH1	JUNCTION	5.33	5.33	0	01:30	0.0127	0.0127	0.004
MH10	JUNCTION	0.00	1.10	0	01:23	0	0.000208	4.489
MH11	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
MH12	JUNCTION	0.00	171.25	0	01:30	0	0.394	0.162
MH2	JUNCTION	0.00	162.30	0	01:23	0	0.507	0.254
MH3	JUNCTION	0.00	158.76	0	01:25	0	0.507	-0.236
MH4	JUNCTION	0.00	11.10	0	01:21	0	0.0953	0.003
MH5	JUNCTION	0.00	76.30	0	01:30	0	0.214	0.088
MH6	JUNCTION	0.00	411.96	0	01:30	0	0.862	0.104
MH7	JUNCTION	0.00	451.17	0	01:30	0	1.22	0.117
MH8	JUNCTION	0.00	450.39	0	01:30	0	1.21	-0.213
MH9	JUNCTION	166.40	242.65	0	01:30	0.255	0.469	0.153
OGS1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
OGS1_(PROP._STM)	JUNCTION	0.00	108.35	0	01:52	0	0.506	-0.000
StartNullStruct4	JUNCTION	0.00	47.84	0	01:45	0	0.355	0.019
StartNullStruct5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
StartNullStruct6	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
HW2_(PROP._STM)	OUTFALL	19.16	42.74	0	01:50	0.11	1.61	0.000
OF2	OUTFALL	0.00	155.92	0	01:30	0	0.618	0.000
P1	STORAGE	0.00	157.77	0	01:30	0	0.0751	-0.073
POND	STORAGE	128.60	587.80	0	01:26	0.321	1.54	0.021
SU1	STORAGE	87.73	87.73	0	01:30	0.136	0.136	0.008
SU2	STORAGE	61.98	61.98	0	01:30	0.0954	0.0954	0.012
SU3	STORAGE	13.41	13.41	0	01:30	0.0206	0.0206	0.007
SU4	STORAGE	226.63	226.63	0	01:30	0.355	0.355	0.007
UG-CHAMBER	STORAGE	0.00	154.25	0	01:24	0	0.506	-0.052

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Node Surcharge Summary
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Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
Building2	JUNCTION	0.16	0.630	1.068
CB4	JUNCTION	0.58	1.375	0.000
CBMH2	JUNCTION	0.18	0.033	1.157
MH7	JUNCTION	1.88	0.040	1.146
MH8	JUNCTION	5.32	0.177	0.825
OGS1	JUNCTION	24.00	0.000	2.500
StartNullStruct4	JUNCTION	2.95	0.076	2.319

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Node Flooding Summary
****

No nodes were flooded.

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Storage Volume Summary
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Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
P1	0.001	0.4	0.0	0.0	0.075	31.0	0 01:32	81.53
POND	0.479	21.3	0.0	0.0	1.134	50.3	0 04:04	31.40
SU1	0.014	3.6	0.0	0.0	0.086	21.9	0 02:10	7.14
SU2	0.002	2.8	0.0	0.0	0.040	54.0	0 01:43	11.10
SU3	0.001	0.9	0.0	0.0	0.009	15.4	0 01:41	2.96
SU4	0.009	3.5	0.0	0.0	0.155	58.3	0 01:45	47.84
UG-CHAMBER	0.004	0.8	0.0	0.0	0.111	20.8	0 01:52	108.44

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
HW2_(PROP._STM)	96.75	19.28	42.74	1.611

OF2	25.07	28.63	155.92	0.618
System	60.91	47.91	183.95	2.229

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Link Flow Summary
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Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days	Time of Max Occurrence hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	474.49	0	01:26	2.84	1.41	1.00
C10	CONDUIT	31.40	0	04:05	0.82	0.21	0.29
C2	CONDUIT	155.92	0	01:30	2.04	0.76	0.66
C3	CONDUIT	29.91	0	04:04	2.44	3.19	1.00
C4	CONDUIT	1.32	0	01:30	0.28	0.01	0.30
C5	CONDUIT	0.00	0	00:00	0.00	0.00	0.03
C6	CONDUIT	154.25	0	01:24	1.41	0.85	1.00
C7	CONDUIT	0.61	0	01:31	0.06	0.01	0.89
C8	CONDUIT	108.35	0	01:53	2.27	0.26	0.48
C9	CONDUIT	1.49	0	04:04	0.53	0.05	0.15
Pipe_-_(1)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	CONDUIT	170.57	0	01:30	1.32	0.81	0.77
Pipe_-_(3)_(PROP._STM)	CONDUIT	47.84	0	01:45	1.36	0.49	1.00
Pipe_-_(4)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
Pipe_-_(48)_(PROP._STM)	CONDUIT	4.41	0	01:27	0.10	0.06	1.00
Pipe_-_(5)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(51)_(PROP._STM)	CONDUIT	0.71	0	01:51	0.03	0.01	0.54
Pipe_-_(52)_(PROP._STM)	CONDUIT	19.82	0	01:21	0.33	0.16	1.00
Pipe_-_(53)_(PROP._STM)	CONDUIT	158.76	0	01:25	1.53	1.28	1.00
Pipe_-_(56)_(PROP._STM)	CONDUIT	156.62	0	01:28	3.19	2.63	1.00
Pipe_-_(57)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(60)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(61)_(1)_(PROP._STM)	CONDUIT	171.25	0	01:30	2.42	1.77	1.00
Pipe_-_(61)_(2)_(PROP._STM)	CONDUIT	3.73	0	01:30	0.22	0.06	0.38
Pipe_-_(61)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.06
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	CONDUIT	241.32	0	01:29	1.38	0.89	0.84
Pipe_-_(65)_(2)(0)_(PROP._STM)	CONDUIT	76.25	0	01:30	0.74	0.28	0.55
Pipe_-_(66)_(PROP._STM)	CONDUIT	410.52	0	01:30	1.61	1.22	0.96
Pipe_-_(67)_(PROP._STM)	CONDUIT	450.39	0	01:30	1.84	1.34	1.00
Pipe_-_(68)	CONDUIT	65.20	0	01:30	1.48	0.67	0.60
Pipe_-_(69)_(PROP._STM)	CONDUIT	3.40	0	01:30	0.29	0.06	0.46
Pipe_-_(70)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(76)_(PROP._STM)	CONDUIT	5.27	0	01:30	0.73	0.05	0.16
Pipe_-_(78)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(80)_(PROP._STM)	CONDUIT	11.12	0	01:22	0.93	0.19	0.29
Pipe_-_(81)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.11
OR2	ORIFICE	108.35	0	01:52			1.00
OR3	ORIFICE	157.77	0	01:30			
OL1	DUMMY	11.10	0	01:21			
OL2	DUMMY	2.96	0	01:41			
OL3	DUMMY	7.14	0	02:10			
OL4	DUMMY	47.84	0	01:45			

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Flow Classification Summary
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Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
		---------- Fraction of Time in Flow Class ----------								
C1	1.00	0.01	0.00	0.00	0.94	0.05	0.00	0.00	0.16	0.00
C10	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
C2	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
C3	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00
C4	1.00	0.80	0.04	0.00	0.11	0.00	0.00	0.05	0.82	0.00
C5	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C6	1.00	0.02	0.00	0.00	0.10	0.00	0.00	0.88	0.00	0.00
C7	1.00	0.06	0.00	0.00	0.03	0.00	0.00	0.91	0.01	0.00
C8	1.00	0.02	0.01	0.00	0.73	0.25	0.00	0.00	0.98	0.00
C9	1.00	0.94	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00
Pipe_-_(1)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	1.00	0.00	0.00	0.00	0.41	0.00	0.00	0.58	0.28	0.00
Pipe_-_(3)_(PROP._STM)	1.00	0.02	0.00	0.00	0.45	0.00	0.00	0.52	0.07	0.00
Pipe_-_(4)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(48)_(PROP._STM)	1.00	0.05	0.01	0.00	0.05	0.00	0.00	0.90	0.01	0.00
Pipe_-_(5)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(51)_(PROP._STM)	1.00	0.06	0.02	0.00	0.01	0.00	0.00	0.91	0.01	0.00
Pipe_-_(52)_(PROP._STM)	1.00	0.02	0.00	0.00	0.16	0.00	0.00	0.82	0.11	0.00
Pipe_-_(53)_(PROP._STM)	1.00	0.02	0.00	0.00	0.04	0.00	0.00	0.94	0.01	0.00
Pipe_-_(56)_(PROP._STM)	1.00	0.02	0.00	0.00	0.03	0.00	0.00	0.95	0.01	0.00
Pipe_-_(57)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pipe_-_(60)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(61)_(1)_(PROP._STM)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Pipe_-_(61)_(2)_(PROP._STM)	1.00	0.06	0.00	0.00	0.01	0.00	0.00	0.93	0.01	0.00
Pipe_-_(61)_(PROP._STM)	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	1.00	0.02	0.00	0.00	0.47	0.00	0.00	0.51	0.06	0.00
Pipe_-_(65)_(2)(0)_(PROP._STM)	1.00	0.02	0.00	0.00	0.40	0.00	0.00	0.58	0.32	0.00
Pipe_-_(66)_(PROP._STM)	1.00	0.00	0.00	0.00	0.61	0.00	0.00	0.39	0.08	0.00
Pipe_-_(67)_(PROP._STM)	1.00	0.00	0.00	0.00	0.76	0.00	0.00	0.24	0.11	0.00
Pipe_-_(68)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
Pipe_-_(69)_(PROP._STM)	1.00	0.76	0.02	0.00	0.18	0.00	0.00	0.04	0.78	0.00
Pipe_-_(70)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(76)_(PROP._STM)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
Pipe_-_(78)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(80)_(PROP._STM)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
Pipe_-_(81)_(PROP._STM)	1.00	0.90	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Conduit Surcharge Summary
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	--------- Hours Full --------			Hours	Hours
Conduit	Both Ends	Upstream	Dnstream	Above Full Normal Flow	Capacity Limited
C1	5.76	5.76	7.45	0.14	0.01
C3	11.92	17.56	11.92	18.34	11.92
C6	0.68	0.68	0.74	0.01	0.01
C7	0.01	0.01	0.25	0.01	0.01
Pipe_-_(3)_(PROP._STM)	2.95	2.95	4.96	0.01	0.01
Pipe_-_(48)_(PROP._STM)	0.18	0.18	0.68	0.01	0.01
Pipe_-_(51)_(PROP._STM)	0.01	0.01	0.12	0.01	0.01
Pipe_-_(52)_(PROP._STM)	0.28	0.28	0.57	0.01	0.01
Pipe_-_(53)_(PROP._STM)	0.52	0.62	0.68	0.51	0.38
Pipe_-_(56)_(PROP._STM)	0.61	0.61	0.66	0.69	0.59
Pipe_-_(61)_(1)_(PROP._STM)	0.03	0.16	0.03	0.18	0.03
Pipe_-_(66)_(PROP._STM)	0.01	0.01	1.88	0.13	0.01
Pipe_-_(67)_(PROP._STM)	3.18	3.18	5.32	0.14	0.01

Analysis begun on: Thu Sep 19 18:57:44 2024
Analysis ended on: Thu Sep 19 18:57:46 2024
Total elapsed time: 00:00:02

10 Yr SCS Output

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****

Number of rain gages 1
Number of subcatchments ... 32
Number of nodes 48
Number of links 46
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	SCS-10YR	INTENSITY	15 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
PC1	0.34	34.37	99.00	1.5000	Raingage	Building2
PC10	0.15	20.40	0.00	1.0000	Raingage	PC8
PC11	0.08	48.12	0.00	2.0000	Raingage	HW2_(PROP._STM)
PC12	0.20	33.57	0.00	2.0000	Raingage	HW2_(PROP._STM)
PC-2.1	0.03	15.71	100.00	1.5000	Raingage	PC-2.5
PC2.10	0.01	6.19	100.00	1.5000	Raingage	SU1
PC2.11	0.05	58.89	100.00	1.5000	Raingage	Building2
PC2.12	0.02	14.29	100.00	1.5000	Raingage	SU3
PC2.13	0.01	28.00	100.00	1.5000	Raingage	SU3
PC2.14	0.07	26.04	100.00	1.5000	Raingage	Building2
PC2.15	0.04	14.45	100.00	1.5000	Raingage	SU1
PC2.16	0.01	6.80	100.00	1.5000	Raingage	Building2
PC2.17	0.04	14.10	100.00	1.5000	Raingage	SU1
PC2.18	0.09	29.79	100.00	1.5000	Raingage	SU1
PC2.19	0.02	17.82	100.00	1.5000	Raingage	Building2
PC-2.2	0.03	37.88	100.00	1.5000	Raingage	Building-1
PC2.20	0.04	18.96	100.00	1.5000	Raingage	SU1
PC-2.3	0.03	13.75	100.00	1.5000	Raingage	Building-1
PC-2.4	0.03	47.00	100.00	1.5000	Raingage	Building-1
PC-2.5	0.06	26.57	100.00	1.5000	Raingage	Building-1
PC2.6	0.02	1.70	25.00	0.5000	Raingage	Building-1
PC2.7	0.00	5.69	100.00	1.5000	Raingage	SU1
PC2.8	0.01	12.91	100.00	1.5000	Raingage	SU1
PC2.9	0.00	2.60	100.00	1.5000	Raingage	SU1
PC-3	0.18	118.00	100.00	1.0000	Raingage	SU2
PC4	1.10	368.00	76.10	1.5000	Raingage	CB4
PC-5	0.06	42.21	15.80	1.0000	Raingage	MH1
PC6	0.66	87.99	100.00	1.0000	Raingage	SU4
PC7	0.47	57.68	0.00	1.5000	Raingage	HW2_(PROP._STM)
PC8	1.16	130.57	27.50	5.0000	Raingage	POND
PC9	0.49	117.38	94.50	1.5000	Raingage	MH9
UC-1	0.27	76.57	68.40	1.5000	Raingage	J2

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Node Summary
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Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
Building-1	JUNCTION	275.99	2.02	0.0	
Building2	JUNCTION	276.00	2.00	0.0	
CB1	JUNCTION	275.22	1.45	0.0	
CB10	JUNCTION	276.94	0.65	0.0	
CB11	JUNCTION	275.61	1.68	0.0	
CB2	JUNCTION	275.25	1.52	0.0	
CB3	JUNCTION	275.71	1.74	0.0	
CB4	JUNCTION	275.00	1.50	0.0	
CB5	JUNCTION	275.23	1.66	0.0	
CB6	JUNCTION	274.85	1.55	0.0	
CB7	JUNCTION	276.10	1.44	0.0	
CB8	JUNCTION	276.60	0.72	0.0	
CB9	JUNCTION	275.89	1.55	0.0	
CBMH1	JUNCTION	274.78	1.97	0.0	
CBMH2	JUNCTION	274.73	1.49	0.0	
CBMH3	JUNCTION	275.65	1.66	0.0	
CBMH4	JUNCTION	275.60	1.71	0.0	
CBMH5	JUNCTION	276.00	0.76	0.0	
DICB1	JUNCTION	276.40	1.30	0.0	
DICB2	JUNCTION	276.75	2.15	0.0	
J1	JUNCTION	274.62	1.70	0.0	
J2	JUNCTION	273.58	3.13	0.0	
MH1	JUNCTION	275.59	3.83	0.0	
MH10	JUNCTION	275.79	1.29	0.0	
MH11	JUNCTION	275.90	0.94	0.0	

MH12	JUNCTION	275.54	1.64	0.0
MH2	JUNCTION	274.63	2.21	0.0
MH3	JUNCTION	274.40	2.49	0.0
MH4	JUNCTION	275.87	1.98	0.0
MH5	JUNCTION	275.60	2.13	0.0
MH6	JUNCTION	275.13	1.99	0.0
MH7	JUNCTION	274.99	1.83	0.0
MH8	JUNCTION	274.88	1.62	0.0
MH9	JUNCTION	275.28	2.03	0.0
OGS1	JUNCTION	274.02	2.50	0.0
OGS1_(PROP._STM)	JUNCTION	274.27	2.25	0.0
StartNullStruct4	JUNCTION	275.31	2.69	0.0
StartNullStruct5	JUNCTION	0.00	276.70	0.0
StartNullStruct6	JUNCTION	0.00	276.33	0.0
HW2_(PROP._STM)	OUTFALL	274.00	0.95	0.0
OF2	OUTFALL	273.07	0.68	0.0
P1	STORAGE	276.40	0.30	0.0
POND	STORAGE	274.80	1.50	0.0
SU1	STORAGE	285.00	0.15	0.0
SU2	STORAGE	285.00	0.20	0.0
SU3	STORAGE	285.00	0.15	0.0
SU4	STORAGE	285.00	0.15	0.0
UG-CHAMBER	STORAGE	274.33	1.50	0.0

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Link Summary
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Name	From Node	To Node	Type	Length	%Slope	Roughness
C1	MH8	POND	CONDUIT	27.2	0.3015	0.0130
C10	J1	HW2_(PROP._STM)	CONDUIT	43.7	0.2700	0.0130
C2	J2	OF2	CONDUIT	15.5	1.3535	0.0130
C3	POND	J1	CONDUIT	8.2	1.0001	0.0130
C4	CBMH3	MH9	CONDUIT	6.7	1.0001	0.0130
C5	CB2	MH2	CONDUIT	2.9	1.0001	0.0130
C6	MH3	UG-CHAMBER	CONDUIT	10.8	0.4074	0.0130
C7	CB6	UG-CHAMBER	CONDUIT	10.5	1.0001	0.0130
C8	OGS1_(PROP._STM)	J2	CONDUIT	11.9	5.7866	0.0130
C9	POND	J1	CONDUIT	6.6	1.0001	0.0130
Pipe_-_(1)_(PROP._STM)	DICB2	MH1	CONDUIT	25.6	0.9977	0.0130
Pipe_-_(2)_(PROP._STM)	MH12	MH6	CONDUIT	50.4	0.5395	0.0130
Pipe_-_(3)_(PROP._STM)	StartNullStruct4	MH7	CONDUIT	8.5	1.0002	0.0130
Pipe_-_(4)_(PROP._STM)	StartNullStruct5	MH9	CONDUIT	4.3	0.9984	0.0130
Pipe_-_(47)_(PROP._STM)	CB5	CBMH2	CONDUIT	45.7	1.0006	0.0130
Pipe_-_(48)_(PROP._STM)	CBMH2	MH3	CONDUIT	35.6	0.4994	0.0130
Pipe_-_(5)_(PROP._STM)	StartNullStruct6	MH10	CONDUIT	24.3	0.9992	0.0130
Pipe_-_(51)_(PROP._STM)	CB1	CBMH1	CONDUIT	31.1	0.9998	0.0130
Pipe_-_(52)_(PROP._STM)	CBMH1	MH2	CONDUIT	25.9	0.5015	0.0130
Pipe_-_(53)_(PROP._STM)	MH2	MH3	CONDUIT	31.2	0.4995	0.0130
Pipe_-_(56)_(PROP._STM)	CB4	MH2	CONDUIT	24.3	1.0003	0.0130
Pipe_-_(57)_(PROP._STM)	CB3	MH2	CONDUIT	18.3	1.0079	0.0130
Pipe_-_(58)_(PROP._STM)	CB11	MH3	CONDUIT	27.1	0.9986	0.0130
Pipe_-_(59)_(PROP._STM)	CB10	CBMH5	CONDUIT	89.2	0.9994	0.0130
Pipe_-_(60)_(PROP._STM)	CBMH5	MH11	CONDUIT	8.6	0.4991	0.0130
Pipe_-_(61)_(1)_(PROP._STM)	Building2	MH12	CONDUIT	29.4	0.9974	0.0130
Pipe_-_(61)_(2)_(PROP._STM)	MH10	MH12	CONDUIT	22.5	0.4040	0.0130
Pipe_-_(61)_(PROP._STM)	MH11	MH10	CONDUIT	18.1	0.4986	0.0130
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	MH9	MH6	CONDUIT	17.5	0.4010	0.0130
Pipe_-_(65)_(2)(0)_(PROP._STM)	MH5	MH9	CONDUIT	69.3	0.4042	0.0130
Pipe_-_(66)_(PROP._STM)	MH6	MH7	CONDUIT	29.4	0.2996	0.0130
Pipe_-_(67)_(PROP._STM)	MH7	MH8	CONDUIT	30.3	0.3005	0.0130
Pipe_-_(68)	Building-1	MH5	CONDUIT	10.5	0.9993	0.0130
Pipe_-_(69)_(PROP._STM)	CBMH4	MH6	CONDUIT	6.8	1.0009	0.0130
Pipe_-_(70)_(PROP._STM)	CB8	CBMH3	CONDUIT	26.7	0.9962	0.0130
Pipe_-_(76)_(PROP._STM)	MH1	CBMH1	CONDUIT	8.0	0.9953	0.0130
Pipe_-_(78)_(PROP._STM)	DICB1	MH1	CONDUIT	31.1	0.9999	0.0130
Pipe_-_(79)_(PROP._STM)	CB7	MH4	CONDUIT	14.9	1.0011	0.0130
Pipe_-_(80)_(PROP._STM)	MH4	MH5	CONDUIT	15.3	0.9989	0.0130
Pipe_-_(81)_(PROP._STM)	CB9	CBMH4	CONDUIT	26.7	1.0006	0.0130
OR2	UG-CHAMBER	OGS1_(PROP._STM)	ORIFICE			
OR3	P1	CB4	ORIFICE			
OL1	SU2	MH4	OUTLET			
OL2	SU3	Building-1	OUTLET			
OL3	SU1	Building2	OUTLET			
OL4	SU4	StartNullStruct4	OUTLET			

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Cross Section Summary
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Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	CIRCULAR	0.60	0.28	0.15	0.60	1	337.15
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	148.16
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	203.99
C3	CIRCULAR	0.12	0.01	0.03	0.12	1	9.37
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	96.71
C5	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C6	CIRCULAR	0.45	0.16	0.11	0.45	1	181.99
C7	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C8	CIRCULAR	0.38	0.11	0.09	0.38	1	421.79
C9	CIRCULAR	0.20	0.03	0.05	0.20	1	32.80
Pipe_-_(1)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.40

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Pipe_-_(2)_(PROP._STM) CIRCULAR            0.45     0.16     0.11     0.45        1   209.42
Pipe_-_(3)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.71
Pipe_-_(4)_(PROP._STM) CIRCULAR            0.20     0.03     0.05     0.20        1    32.77
Pipe_-_(47)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.49
Pipe_-_(48)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.34
Pipe_-_(5)_(PROP._STM) CIRCULAR            0.20     0.03     0.05     0.20        1    32.79
Pipe_-_(51)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(52)_(PROP._STM) CIRCULAR            0.38     0.11     0.09     0.38        1   124.17
Pipe_-_(53)_(PROP._STM) CIRCULAR            0.38     0.11     0.09     0.38        1   123.93
Pipe_-_(56)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.48
Pipe_-_(57)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.71
Pipe_-_(58)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.43
Pipe_-_(59)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.45
Pipe_-_(60)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.32
Pipe_-_(61)_(1)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.58
Pipe_-_(61)_(2)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    61.47
Pipe_-_(61)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.28
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM) CIRCULAR            0.53     0.22     0.13     0.53        1   272.35
Pipe_-_(65)_(2)(0)_(PROP._STM) CIRCULAR            0.53     0.22     0.13     0.53        1   273.44
Pipe_-_(66)_(PROP._STM) CIRCULAR            0.60     0.28     0.15     0.60        1   336.12
Pipe_-_(67)_(PROP._STM) CIRCULAR            0.60     0.28     0.15     0.60        1   336.60
Pipe_-_(68)      CIRCULAR            0.30     0.07     0.07     0.30        1    96.67
Pipe_-_(69)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(70)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.36
Pipe_-_(76)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.48
Pipe_-_(78)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(79)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(80)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.44
Pipe_-_(81)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.49


****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/08/2024 00:00:00
Ending Date .............. 04/09/2024 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.411        71.047
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.094        16.270
Surface Runoff ...........         0.305        52.736
Final Storage ............         0.012         2.061
Continuity Error (%) .....        -0.029


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.305         3.052
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.284         2.842
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.021         0.212
Continuity Error (%) .....        -0.063


************************
Highest Continuity Errors
************************
Node MH10 (13.30%)


***************************
Time-Step Critical Elements
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***************************
None


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*********************************
Most Frequent Nonconverging Nodes
*********************************
Node HW2_(PROP._STM) (0.05%)
Node OF2 (0.05%)
Node CB4 (0.05%)
Node Building2 (0.00%)


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.00 sec
Maximum Time Step           :     1.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.00
% of Steps Not Converging   :     0.05
Time Step Frequencies       :
    1.000 -  0.871 sec      :    99.90 %
    0.871 -  0.758 sec      :     0.02 %
    0.758 -  0.660 sec      :     0.02 %
    0.660 -  0.574 sec      :     0.02 %
    0.574 -  0.500 sec      :     0.04 %


***************************
Subcatchment Runoff Summary
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Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
PC1	71.05	0.00	0.00	0.43	68.37	0.26	68.63	0.23	84.99	0.966
PC10	71.05	0.00	0.00	43.05	0.00	25.39	25.39	0.04	7.20	0.357
PC11	71.05	0.00	0.00	43.05	0.00	26.16	26.16	0.02	9.60	0.368
PC12	71.05	0.00	0.00	43.05	0.00	25.73	25.73	0.05	14.15	0.362
PC-2.1	71.05	0.00	0.00	0.00	69.09	0.00	69.09	0.02	6.79	0.972
PC2.10	71.05	0.00	0.00	0.00	69.08	0.00	69.08	0.01	3.31	0.972
PC2.11	71.05	0.00	0.00	0.00	69.10	0.00	69.10	0.04	13.48	0.973
PC2.12	71.05	0.00	0.00	0.00	69.09	0.00	69.09	0.02	6.18	0.972
PC2.13	71.05	0.00	0.00	0.00	69.10	0.00	69.10	0.01	3.56	0.973
PC2.14	71.05	0.00	0.00	0.00	69.08	0.00	69.08	0.04	16.56	0.972
PC2.15	71.05	0.00	0.00	0.00	69.07	0.00	69.07	0.03	11.40	0.972
PC2.16	71.05	0.00	0.00	0.00	69.10	0.00	69.10	0.00	1.73	0.973
PC2.17	71.05	0.00	0.00	0.00	69.08	0.00	69.08	0.03	10.76	0.972
PC2.18	71.05	0.00	0.00	0.00	69.08	0.00	69.08	0.06	21.98	0.972
PC2.19	71.05	0.00	0.00	0.00	71.04	0.00	71.04	0.01	4.99	1.000
PC-2.2	71.05	0.00	0.00	0.00	69.10	0.00	69.10	0.02	7.71	0.973
PC2.20	71.05	0.00	0.00	0.00	71.03	0.00	71.03	0.03	11.09	1.000
PC-2.3	71.05	0.00	0.00	0.00	69.08	0.00	69.08	0.02	8.39	0.972
PC-2.4	71.05	0.00	0.00	0.00	69.10	0.00	69.10	0.02	7.17	0.973
PC-2.5	71.05	33.06	0.00	0.00	102.14	0.00	102.14	0.06	20.99	0.981
PC2.6	71.05	0.00	0.00	32.28	17.27	18.83	36.10	0.01	1.54	0.508
PC2.7	71.05	0.00	0.00	0.00	69.10	0.00	69.10	0.00	0.94	0.973
PC2.8	71.05	0.00	0.00	0.00	69.09	0.00	69.09	0.01	3.61	0.973
PC2.9	71.05	0.00	0.00	0.00	69.10	0.00	69.10	0.00	0.66	0.973

PC-3	71.05	0.00	0.00	0.00	69.08	0.00	69.08	0.12	45.03	0.972
PC4	71.05	0.00	0.00	10.29	52.57	6.28	58.85	0.65	250.12	0.828
PC-5	71.05	0.00	0.00	36.24	10.92	22.03	32.95	0.02	8.39	0.464
PC6	71.05	0.00	0.00	0.00	69.06	0.00	69.06	0.46	167.33	0.972
PC7	71.05	0.00	0.00	43.05	0.00	25.47	25.47	0.12	24.25	0.358
PC8	71.05	3.34	0.00	31.21	19.92	21.13	41.05	0.48	159.15	0.552
PC9	71.05	0.00	0.00	2.37	65.27	1.45	66.72	0.33	122.43	0.939
UC-1	71.05	0.00	0.00	13.60	47.25	8.28	55.53	0.15	57.68	0.782

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Node Depth Summary
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Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days	hr:min	Reported Max Depth Meters
Building-1	JUNCTION	0.02	0.15	276.14	0	06:00	0.15
Building2	JUNCTION	0.04	0.56	276.56	0	05:49	0.48
CB1	JUNCTION	0.00	0.03	275.24	0	06:14	0.03
CB10	JUNCTION	0.00	0.00	276.94	0	00:00	0.00
CB11	JUNCTION	0.00	0.00	275.61	0	00:00	0.00
CB2	JUNCTION	0.00	0.00	275.25	0	00:00	0.00
CB3	JUNCTION	0.00	0.00	275.71	0	00:00	0.00
CB4	JUNCTION	0.06	1.73	276.73	0	06:00	1.73
CB5	JUNCTION	0.00	0.00	275.23	0	00:00	0.00
CB6	JUNCTION	0.00	0.20	275.05	0	06:15	0.20
CB7	JUNCTION	0.00	0.00	276.10	0	00:00	0.00
CB8	JUNCTION	0.00	0.00	276.60	0	00:00	0.00
CB9	JUNCTION	0.00	0.00	275.89	0	00:00	0.00
CBMH1	JUNCTION	0.02	0.46	275.24	0	06:13	0.46
CBMH2	JUNCTION	0.01	0.34	275.07	0	06:14	0.34
CBMH3	JUNCTION	0.01	0.09	275.74	0	08:05	0.09
CBMH4	JUNCTION	0.02	0.14	275.74	0	08:05	0.14
CBMH5	JUNCTION	0.00	0.00	276.00	0	00:00	0.00
DICB1	JUNCTION	0.00	0.00	276.40	0	00:00	0.00
DICB2	JUNCTION	0.00	0.00	276.75	0	00:00	0.00
J1	JUNCTION	0.11	0.17	274.79	0	08:07	0.17
J2	JUNCTION	0.03	0.25	273.83	0	06:00	0.25
MH1	JUNCTION	0.01	0.06	275.65	0	06:00	0.06
MH10	JUNCTION	0.00	0.01	275.80	0	05:59	0.01
MH11	JUNCTION	0.00	0.00	275.90	0	00:00	0.00
MH12	JUNCTION	0.06	0.26	275.80	0	06:00	0.26
MH2	JUNCTION	0.05	0.61	275.24	0	06:13	0.61
MH3	JUNCTION	0.05	0.67	275.07	0	06:13	0.67
MH4	JUNCTION	0.02	0.07	275.95	0	05:43	0.07
MH5	JUNCTION	0.04	0.17	275.77	0	06:00	0.17
MH6	JUNCTION	0.26	0.61	275.74	0	08:05	0.61
MH7	JUNCTION	0.35	0.75	275.74	0	08:05	0.75
MH8	JUNCTION	0.44	0.86	275.74	0	08:05	0.86
MH9	JUNCTION	0.17	0.46	275.74	0	08:05	0.46
OGS1	JUNCTION	0.00	0.00	274.02	0	00:00	0.00
OGS1_(PROP._STM)	JUNCTION	0.02	0.13	274.40	0	06:15	0.13
StartNullStruct4	JUNCTION	0.15	0.44	275.74	0	08:00	0.44
StartNullStruct5	JUNCTION	0.00	0.00	0.00	0	00:00	0.00
StartNullStruct6	JUNCTION	0.00	0.00	0.00	0	00:00	0.00
HW2_(PROP._STM)	OUTFALL	0.00	0.00	274.00	0	00:00	0.00
OF2	OUTFALL	0.00	0.00	273.07	0	00:00	0.00
P1	STORAGE	0.00	0.19	276.59	0	06:01	0.19
POND	STORAGE	0.50	0.94	275.74	0	08:06	0.94
SU1	STORAGE	0.02	0.06	285.06	0	06:21	0.06
SU2	STORAGE	0.01	0.16	285.16	0	06:03	0.16
SU3	STORAGE	0.01	0.06	285.06	0	06:01	0.06
SU4	STORAGE	0.01	0.12	285.12	0	06:06	0.12
UG-CHAMBER	STORAGE	0.06	0.72	275.05	0	06:15	0.72

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days	hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
Building-1	JUNCTION	45.80	48.74	0	06:00	0.126	0.153	0.000
Building2	JUNCTION	121.75	128.63	0	06:00	0.331	0.505	-0.001
CB1	JUNCTION	0.00	0.53	0	06:00	0	8.56e-05	4.256
CB10	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB11	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB2	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB3	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB4	JUNCTION	250.12	250.12	0	06:00	0.65	0.722	0.050
CB5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr

CB6	JUNCTION	0.00	0.59	0	05:54	0	0.000246	0.433
CB7	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB8	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB9	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CBMH1	JUNCTION	0.00	12.90	0	05:46	0	0.0198	0.035
CBMH2	JUNCTION	0.00	4.21	0	05:50	0	0.00247	0.566
CBMH3	JUNCTION	0.00	0.09	0	06:47	0	0.000183	-0.009
CBMH4	JUNCTION	0.00	0.16	0	06:52	0	0.000401	0.012
CBMH5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
DICB1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
DICB2	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J1	JUNCTION	0.00	44.15	0	08:06	0	1.83	0.056
J2	JUNCTION	57.68	156.57	0	06:00	0.149	0.818	-0.000
MH1	JUNCTION	8.39	8.39	0	06:00	0.0191	0.0191	0.003
MH10	JUNCTION	0.00	0.15	0	05:51	0	2.4e-05	3.190 ltr
MH11	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
MH12	JUNCTION	0.00	128.63	0	06:00	0	0.505	0.300
MH2	JUNCTION	0.00	156.21	0	05:50	0	0.669	0.170
MH3	JUNCTION	0.00	154.50	0	06:00	0	0.67	-0.173
MH4	JUNCTION	0.00	11.10	0	05:43	0	0.122	0.002
MH5	JUNCTION	0.00	59.83	0	06:00	0	0.275	0.054
MH6	JUNCTION	0.00	308.52	0	05:59	0	1.11	-0.080
MH7	JUNCTION	0.00	349.34	0	05:59	0	1.56	-0.077
MH8	JUNCTION	0.00	346.01	0	05:58	0	1.56	-0.092
MH9	JUNCTION	122.43	182.21	0	06:00	0.329	0.604	0.096
OGS1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
OGS1_(PROP._STM)	JUNCTION	0.00	108.99	0	06:15	0	0.669	-0.001
StartNullStruct4	JUNCTION	0.00	47.96	0	06:06	0	0.456	0.014
StartNullStruct5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
StartNullStruct6	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
HW2_(PROP._STM)	OUTFALL	48.00	71.71	0	06:00	0.192	2.02	0.000
OF2	OUTFALL	0.00	156.40	0	06:00	0	0.818	0.000
P1	STORAGE	0.00	101.73	0	06:00	0	0.0724	0.004
POND	STORAGE	159.15	501.70	0	06:00	0.477	2.04	0.059
SU1	STORAGE	63.75	63.75	0	06:00	0.174	0.174	-0.001
SU2	STORAGE	45.03	45.03	0	06:00	0.122	0.122	-0.001
SU3	STORAGE	9.74	9.74	0	06:00	0.0265	0.0265	-0.002
SU4	STORAGE	167.33	167.33	0	06:00	0.456	0.456	-0.001
UG-CHAMBER	STORAGE	0.00	151.52	0	06:00	0	0.669	-0.036

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
Building2	JUNCTION	0.19	0.259	1.439
CB4	JUNCTION	0.71	1.330	0.000
CBMH2	JUNCTION	0.21	0.040	1.150
MH7	JUNCTION	5.46	0.100	1.086
MH8	JUNCTION	8.43	0.237	0.765
OGS1	JUNCTION	24.00	0.000	2.500
StartNullStruct4	JUNCTION	6.41	0.137	2.258

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Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
P1	0.001	0.3	0.0	0.0	0.072	29.8	0 06:01	87.95
POND	0.612	27.2	0.0	0.0	1.228	54.5	0 08:06	44.15
SU1	0.017	4.2	0.0	0.0	0.089	22.5	0 06:21	7.25
SU2	0.002	2.4	0.0	0.0	0.039	52.3	0 06:03	11.10
SU3	0.001	0.8	0.0	0.0	0.009	15.7	0 06:01	2.99
SU4	0.009	3.5	0.0	0.0	0.156	58.6	0 06:06	47.96
UG-CHAMBER	0.005	1.0	0.0	0.0	0.113	21.1	0 06:15	109.09

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
HW2_(PROP._STM)	93.02	25.20	71.71	2.025

OF2	54.93	17.29	156.40	0.818
System	73.97	42.49	228.06	2.842

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Link Flow Summary
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Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days	hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	343.89	0	05:58	1.52	1.02	1.00
C10	CONDUIT	44.15	0	08:07	0.90	0.30	0.35
C2	CONDUIT	156.40	0	06:00	2.04	0.77	0.66
C3	CONDUIT	30.95	0	08:06	2.52	3.30	1.00
C4	CONDUIT	0.09	0	06:47	0.02	0.00	0.41
C5	CONDUIT	0.00	0	00:00	0.00	0.00	0.04
C6	CONDUIT	151.52	0	06:00	1.18	0.83	1.00
C7	CONDUIT	0.59	0	05:54	0.06	0.01	0.90
C8	CONDUIT	108.99	0	06:15	2.29	0.26	0.49
C9	CONDUIT	13.20	0	08:06	0.99	0.40	0.44
Pipe_-_(1)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	CONDUIT	128.55	0	06:00	1.27	0.61	0.72
Pipe_-_(3)_(PROP._STM)	CONDUIT	48.17	0	06:01	1.16	0.50	1.00
Pipe_-_(4)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
Pipe_-_(48)_(PROP._STM)	CONDUIT	4.21	0	05:50	0.10	0.06	1.00
Pipe_-_(5)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(51)_(PROP._STM)	CONDUIT	1.15	0	06:14	0.04	0.02	0.55
Pipe_-_(52)_(PROP._STM)	CONDUIT	10.28	0	05:46	0.21	0.08	1.00
Pipe_-_(53)_(PROP._STM)	CONDUIT	154.50	0	06:00	1.48	1.25	1.00
Pipe_-_(56)_(PROP._STM)	CONDUIT	152.38	0	05:50	3.10	2.56	1.00
Pipe_-_(57)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(60)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(61)_(1)_(PROP._STM)	CONDUIT	128.63	0	06:00	1.86	1.33	0.95
Pipe_-_(61)_(2)_(PROP._STM)	CONDUIT	0.22	0	06:00	0.09	0.00	0.20
Pipe_-_(61)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	CONDUIT	180.73	0	05:57	1.28	0.66	0.94
Pipe_-_(65)_(2)(0)_(PROP._STM)	CONDUIT	59.79	0	06:00	0.72	0.22	0.53
Pipe_-_(66)_(PROP._STM)	CONDUIT	306.22	0	05:57	1.44	0.91	1.00
Pipe_-_(67)_(PROP._STM)	CONDUIT	346.01	0	05:58	1.49	1.03	1.00
Pipe_-_(68)	CONDUIT	48.73	0	06:00	1.38	0.50	0.50
Pipe_-_(69)_(PROP._STM)	CONDUIT	0.16	0	06:52	0.06	0.00	0.70
Pipe_-_(70)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(76)_(PROP._STM)	CONDUIT	8.37	0	06:00	0.84	0.09	0.20
Pipe_-_(78)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(80)_(PROP._STM)	CONDUIT	11.10	0	05:43	0.93	0.19	0.29
Pipe_-_(81)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.23
OR2	ORIFICE	108.99	0	06:15			1.00
OR3	ORIFICE	101.73	0	06:00			
OL1	DUMMY	11.10	0	05:43			
OL2	DUMMY	2.99	0	06:01			
OL3	DUMMY	7.25	0	06:21			
OL4	DUMMY	47.96	0	06:06			

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Flow Classification Summary
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Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
		---------- Fraction of Time in Flow Class ----------								
C1	1.00	0.01	0.00	0.00	0.88	0.12	0.00	0.00	0.07	0.00
C10	1.00	0.06	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00
C2	1.00	0.05	0.00	0.00	0.00	0.00	0.00	0.95	0.00	0.00
C3	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
C4	1.00	0.71	0.06	0.00	0.24	0.00	0.00	0.00	0.51	0.00
C5	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C6	1.00	0.05	0.00	0.00	0.09	0.00	0.00	0.86	0.00	0.00
C7	1.00	0.24	0.00	0.00	0.03	0.00	0.00	0.72	0.00	0.00
C8	1.00	0.05	0.00	0.00	0.40	0.54	0.00	0.00	0.95	0.00
C9	1.00	0.79	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00
Pipe_-_(1)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	1.00	0.00	0.00	0.00	0.53	0.00	0.00	0.47	0.25	0.00
Pipe_-_(3)_(PROP._STM)	1.00	0.05	0.00	0.00	0.57	0.00	0.00	0.38	0.06	0.00
Pipe_-_(4)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(48)_(PROP._STM)	1.00	0.23	0.01	0.00	0.04	0.00	0.00	0.72	0.01	0.00
Pipe_-_(5)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(51)_(PROP._STM)	1.00	0.24	0.01	0.00	0.02	0.00	0.00	0.73	0.01	0.00
Pipe_-_(52)_(PROP._STM)	1.00	0.05	0.00	0.00	0.46	0.00	0.00	0.49	0.41	0.00
Pipe_-_(53)_(PROP._STM)	1.00	0.05	0.00	0.00	0.04	0.00	0.00	0.91	0.01	0.00
Pipe_-_(56)_(PROP._STM)	1.00	0.05	0.00	0.00	0.03	0.00	0.00	0.92	0.01	0.00
Pipe_-_(57)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pipe_-_(60)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(61)_(1)_(PROP._STM)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Pipe_-_(61)_(2)_(PROP._STM)	1.00	0.81	0.11	0.00	0.04	0.00	0.00	0.04	0.71	0.00
Pipe_-_(61)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	1.00	0.05	0.00	0.00	0.58	0.00	0.00	0.37	0.05	0.00
Pipe_-_(65)_(2)(0)_(PROP._STM)	1.00	0.05	0.00	0.00	0.51	0.00	0.00	0.44	0.27	0.00
Pipe_-_(66)_(PROP._STM)	1.00	0.00	0.00	0.00	0.72	0.00	0.00	0.28	0.08	0.00
Pipe_-_(67)_(PROP._STM)	1.00	0.01	0.00	0.00	0.77	0.00	0.00	0.22	0.00	0.00
Pipe_-_(68)	1.00	0.05	0.00	0.00	0.00	0.00	0.00	0.95	0.00	0.00
Pipe_-_(69)_(PROP._STM)	1.00	0.66	0.03	0.00	0.31	0.00	0.00	0.01	0.47	0.00
Pipe_-_(70)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(76)_(PROP._STM)	1.00	0.05	0.00	0.00	0.00	0.00	0.00	0.95	0.00	0.00
Pipe_-_(78)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(80)_(PROP._STM)	1.00	0.05	0.00	0.00	0.00	0.00	0.00	0.95	0.00	0.00
Pipe_-_(81)_(PROP._STM)	1.00	0.75	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Conduit Surcharge Summary

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Conduit	Hours Full: Both Ends	Hours Full: Upstream	Hours Full: Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C1	8.81	8.81	10.27	0.10	0.01
C3	14.52	19.52	14.52	20.05	14.52
C6	0.66	0.66	0.72	0.01	0.01
C7	0.01	0.01	0.27	0.01	0.01
Pipe_-_(2)_(PROP._STM)	0.01	0.01	1.73	0.01	0.01
Pipe_-_(3)_(PROP._STM)	6.41	6.41	8.14	0.01	0.01
Pipe_-_(48)_(PROP._STM)	0.21	0.21	0.66	0.01	0.01
Pipe_-_(51)_(PROP._STM)	0.01	0.01	0.26	0.01	0.01
Pipe_-_(52)_(PROP._STM)	0.34	0.34	0.52	0.01	0.01
Pipe_-_(53)_(PROP._STM)	0.50	0.55	0.66	0.47	0.37
Pipe_-_(56)_(PROP._STM)	0.56	0.76	0.61	0.76	0.54
Pipe_-_(61)_(1)_(PROP._STM)	0.01	0.19	0.01	0.23	0.01
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	0.01	0.01	0.88	0.01	0.01
Pipe_-_(66)_(PROP._STM)	1.38	1.38	5.46	0.01	0.01
Pipe_-_(67)_(PROP._STM)	6.59	6.59	8.43	0.12	0.01

Analysis begun on: Thu Sep 19 20:26:16 2024
Analysis ended on: Thu Sep 19 20:26:18 2024
Total elapsed time: 00:00:02

25 Year Chicago Storm - Output

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EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)
------------------------------------------------------------


*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 32
Number of nodes ........... 48
Number of links ........... 46
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                     Data       Recording
Name                 Data Source                     Type       Interval
------------------------------------------------------------------------
Raingage             25-Yr-Chicago-Storm             INTENSITY   10 min.


********************
Subcatchment Summary
********************
Name                        Area     Width   %Imperv    %Slope Rain Gage            Outlet
----------------------------------------------------------------------------------------------------------------
PC1                         0.34     34.37     99.00    1.5000 Raingage             Building2
PC10                        0.15     20.40      0.00    1.0000 Raingage             PC8
PC11                        0.08     48.12      0.00    2.0000 Raingage             HW2_(PROP._STM)
PC12                        0.20     33.57      0.00    2.0000 Raingage             HW2_(PROP._STM)
PC-2.1                      0.03     15.71    100.00    1.5000 Raingage             PC-2.5
PC2.10                      0.01      6.19    100.00    1.5000 Raingage             SU1
PC2.11                      0.05     58.89    100.00    1.5000 Raingage             Building2
PC2.12                      0.02     14.29    100.00    1.5000 Raingage             SU3
PC2.13                      0.01     28.00    100.00    1.5000 Raingage             SU3
PC2.14                      0.07     26.04    100.00    1.5000 Raingage             Building2
PC2.15                      0.04     14.45    100.00    1.5000 Raingage             SU1
PC2.16                      0.01      6.80    100.00    1.5000 Raingage             Building2
PC2.17                      0.04     14.10    100.00    1.5000 Raingage             SU1
PC2.18                      0.09     29.79    100.00    1.5000 Raingage             SU1
PC2.19                      0.02     17.82    100.00    1.5000 Raingage             Building2
PC-2.2                      0.03     37.88    100.00    1.5000 Raingage             Building-1
PC2.20                      0.04     18.96    100.00    1.5000 Raingage             SU1
PC-2.3                      0.03     13.75    100.00    1.5000 Raingage             Building-1
PC-2.4                      0.03     47.00    100.00    1.5000 Raingage             Building-1
PC-2.5                      0.06     26.57    100.00    1.5000 Raingage             Building-1
PC2.6                       0.02      1.70     25.00    0.5000 Raingage             Building-1
PC2.7                       0.00      5.69    100.00    1.5000 Raingage             SU1
PC2.8                       0.01     12.91    100.00    1.5000 Raingage             SU1
PC2.9                       0.00      2.60    100.00    1.5000 Raingage             SU1
PC-3                        0.18    118.00    100.00    1.0000 Raingage             SU2
PC4                         1.10    368.00     76.10    1.5000 Raingage             CB4
PC-5                        0.06     42.21     15.80    1.0000 Raingage             MH1
PC6                         0.66     87.99    100.00    1.0000 Raingage             SU4
PC7                         0.47     57.68      0.00    1.5000 Raingage             HW2_(PROP._STM)
PC8                         1.16    130.57     27.50    5.0000 Raingage             POND
PC9                         0.49    117.38     94.50    1.5000 Raingage             MH9
UC-1                        0.27     76.57     68.40    1.5000 Raingage             J2


************
Node Summary
************
                                           Invert      Max.    Ponded    External
Name                 Type                   Elev.     Depth      Area    Inflow
-------------------------------------------------------------------------------
Building-1           JUNCTION              275.99      2.02       0.0
Building2            JUNCTION              276.00      2.00       0.0
CB1                  JUNCTION              275.22      1.45       0.0
CB10                 JUNCTION              276.94      0.65       0.0
CB11                 JUNCTION              275.61      1.68       0.0
CB2                  JUNCTION              275.25      1.52       0.0
CB3                  JUNCTION              275.71      1.74       0.0
CB4                  JUNCTION              275.00      1.50       0.0
CB5                  JUNCTION              275.23      1.66       0.0
CB6                  JUNCTION              274.85      1.55       0.0
CB7                  JUNCTION              276.10      1.44       0.0
CB8                  JUNCTION              276.60      0.72       0.0
CB9                  JUNCTION              275.89      1.55       0.0
CBMH1                JUNCTION              274.78      1.97       0.0
CBMH2                JUNCTION              274.73      1.49       0.0
CBMH3                JUNCTION              275.65      1.66       0.0
CBMH4                JUNCTION              275.60      1.71       0.0
CBMH5                JUNCTION              276.00      0.76       0.0
DICB1                JUNCTION              276.40      1.30       0.0
DICB2                JUNCTION              276.75      2.15       0.0
J1                   JUNCTION              274.62      1.70       0.0
J2                   JUNCTION              273.58      3.13       0.0
MH1                  JUNCTION              275.59      3.83       0.0
MH10                 JUNCTION              275.79      1.29       0.0
MH11                 JUNCTION              275.90      0.94       0.0
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MH12	JUNCTION	275.54	1.64	0.0
MH2	JUNCTION	274.63	2.21	0.0
MH3	JUNCTION	274.40	2.49	0.0
MH4	JUNCTION	275.87	1.98	0.0
MH5	JUNCTION	275.60	2.13	0.0
MH6	JUNCTION	275.13	1.99	0.0
MH7	JUNCTION	274.99	1.83	0.0
MH8	JUNCTION	274.88	1.62	0.0
MH9	JUNCTION	275.28	2.03	0.0
OGS1	JUNCTION	274.02	2.50	0.0
OGS1_(PROP._STM)	JUNCTION	274.27	2.25	0.0
StartNullStruct4	JUNCTION	275.31	2.69	0.0
StartNullStruct5	JUNCTION	0.00	276.70	0.0
StartNullStruct6	JUNCTION	0.00	276.33	0.0
HW2_(PROP._STM)	OUTFALL	274.00	0.95	0.0
OF2	OUTFALL	273.07	0.68	0.0
P1	STORAGE	276.40	0.30	0.0
POND	STORAGE	274.80	1.50	0.0
SU1	STORAGE	285.00	0.15	0.0
SU2	STORAGE	285.00	0.20	0.0
SU3	STORAGE	285.00	0.15	0.0
SU4	STORAGE	285.00	0.15	0.0
UG-CHAMBER	STORAGE	274.33	1.50	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
C1	MH8	POND	CONDUIT	27.2	0.3015	0.0130
C10	J1	HW2_(PROP._STM)	CONDUIT	43.7	0.2700	0.0130
C2	J2	OF2	CONDUIT	15.5	1.3535	0.0130
C3	POND	J1	CONDUIT	8.2	1.0001	0.0130
C4	CBMH3	MH9	CONDUIT	6.7	1.0001	0.0130
C5	CB2	MH2	CONDUIT	2.9	1.0001	0.0130
C6	MH3	UG-CHAMBER	CONDUIT	10.8	0.4074	0.0130
C7	CB6	UG-CHAMBER	CONDUIT	10.5	1.0001	0.0130
C8	OGS1_(PROP._STM)	J2	CONDUIT	11.9	5.7866	0.0130
C9	POND	J1	CONDUIT	6.6	1.0001	0.0130
Pipe_-_(1)_(PROP._STM)	DICB2	MH1	CONDUIT	25.6	0.9977	0.0130
Pipe_-_(2)_(PROP._STM)	MH12	MH6	CONDUIT	50.4	0.5395	0.0130
Pipe_-_(3)_(PROP._STM)	StartNullStruct4	MH7	CONDUIT	8.5	1.0002	0.0130
Pipe_-_(4)_(PROP._STM)	StartNullStruct5	MH9	CONDUIT	4.3	0.9984	0.0130
Pipe_-_(47)_(PROP._STM)	CB5	CBMH2	CONDUIT	45.7	1.0006	0.0130
Pipe_-_(48)_(PROP._STM)	CBMH2	MH3	CONDUIT	35.6	0.4994	0.0130
Pipe_-_(5)_(PROP._STM)	StartNullStruct6	MH10	CONDUIT	24.3	0.9992	0.0130
Pipe_-_(51)_(PROP._STM)	CB1	CBMH1	CONDUIT	31.1	0.9998	0.0130
Pipe_-_(52)_(PROP._STM)	CBMH1	MH2	CONDUIT	25.9	0.5015	0.0130
Pipe_-_(53)_(PROP._STM)	MH2	MH3	CONDUIT	31.2	0.4995	0.0130
Pipe_-_(56)_(PROP._STM)	CB4	MH2	CONDUIT	24.3	1.0003	0.0130
Pipe_-_(57)_(PROP._STM)	CB3	MH2	CONDUIT	18.3	1.0079	0.0130
Pipe_-_(58)_(PROP._STM)	CB11	MH3	CONDUIT	27.1	0.9986	0.0130
Pipe_-_(59)_(PROP._STM)	CB10	CBMH5	CONDUIT	89.2	0.9994	0.0130
Pipe_-_(60)_(PROP._STM)	CBMH5	MH11	CONDUIT	8.6	0.4991	0.0130
Pipe_-_(61)_(1)_(PROP._STM)	Building2	MH12	CONDUIT	29.4	0.9974	0.0130
Pipe_-_(61)_(2)_(PROP._STM)	MH10	MH12	CONDUIT	22.5	0.4040	0.0130
Pipe_-_(61)_(PROP._STM)	MH11	MH10	CONDUIT	18.1	0.4986	0.0130
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	MH9	MH6	CONDUIT	17.5	0.4010	0.0130
Pipe_-_(65)_(2)(0)_(PROP._STM)	MH5	MH9	CONDUIT	69.3	0.4042	0.0130
Pipe_-_(66)_(PROP._STM)	MH6	MH7	CONDUIT	29.4	0.2996	0.0130
Pipe_-_(67)_(PROP._STM)	MH7	MH8	CONDUIT	30.3	0.3005	0.0130
Pipe_-_(68)	Building-1	MH5	CONDUIT	10.5	0.9993	0.0130
Pipe_-_(69)_(PROP._STM)	CBMH4	MH6	CONDUIT	6.8	1.0009	0.0130
Pipe_-_(70)_(PROP._STM)	CB8	CBMH3	CONDUIT	26.7	0.9962	0.0130
Pipe_-_(76)_(PROP._STM)	MH1	CBMH1	CONDUIT	8.0	0.9953	0.0130
Pipe_-_(78)_(PROP._STM)	DICB1	MH1	CONDUIT	31.1	0.9999	0.0130
Pipe_-_(79)_(PROP._STM)	CB7	MH4	CONDUIT	14.9	1.0011	0.0130
Pipe_-_(80)_(PROP._STM)	MH4	MH5	CONDUIT	15.3	0.9989	0.0130
Pipe_-_(81)_(PROP._STM)	CB9	CBMH4	CONDUIT	26.7	1.0006	0.0130
OR2	UG-CHAMBER	OGS1_(PROP._STM)	ORIFICE			
OR3	P1	CB4	ORIFICE			
OL1	SU2	MH4	OUTLET			
OL2	SU3	Building-1	OUTLET			
OL3	SU1	Building2	OUTLET			
OL4	SU4	StartNullStruct4	OUTLET			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	CIRCULAR	0.60	0.28	0.15	0.60	1	337.15
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	148.16
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	203.99
C3	CIRCULAR	0.12	0.01	0.03	0.12	1	9.37
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	96.71
C5	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C6	CIRCULAR	0.45	0.16	0.11	0.45	1	181.99
C7	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C8	CIRCULAR	0.38	0.11	0.09	0.38	1	421.79
C9	CIRCULAR	0.20	0.03	0.05	0.20	1	32.80
Pipe_-_(1)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.40

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Pipe_-_(2)_(PROP._STM) CIRCULAR            0.45     0.16     0.11     0.45        1   209.42
Pipe_-_(3)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.71
Pipe_-_(4)_(PROP._STM) CIRCULAR            0.20     0.03     0.05     0.20        1    32.77
Pipe_-_(47)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.49
Pipe_-_(48)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.34
Pipe_-_(5)_(PROP._STM) CIRCULAR            0.20     0.03     0.05     0.20        1    32.79
Pipe_-_(51)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(52)_(PROP._STM) CIRCULAR            0.38     0.11     0.09     0.38        1   124.17
Pipe_-_(53)_(PROP._STM) CIRCULAR            0.38     0.11     0.09     0.38        1   123.93
Pipe_-_(56)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.48
Pipe_-_(57)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.71
Pipe_-_(58)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.43
Pipe_-_(59)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.45
Pipe_-_(60)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.32
Pipe_-_(61)_(1)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.58
Pipe_-_(61)_(2)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    61.47
Pipe_-_(61)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    68.28
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM) CIRCULAR            0.53     0.22     0.13     0.53        1   272.35
Pipe_-_(65)_(2)(0)_(PROP._STM) CIRCULAR            0.53     0.22     0.13     0.53        1   273.44
Pipe_-_(66)_(PROP._STM) CIRCULAR            0.60     0.28     0.15     0.60        1   336.12
Pipe_-_(67)_(PROP._STM) CIRCULAR            0.60     0.28     0.15     0.60        1   336.60
Pipe_-_(68)      CIRCULAR            0.30     0.07     0.07     0.30        1    96.67
Pipe_-_(69)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(70)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.36
Pipe_-_(76)_(PROP._STM) CIRCULAR            0.30     0.07     0.07     0.30        1    96.48
Pipe_-_(78)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(79)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(80)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.44
Pipe_-_(81)_(PROP._STM) CIRCULAR            0.25     0.05     0.06     0.25        1    59.49


****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/08/2024 00:00:00
Ending Date .............. 04/09/2024 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.378        65.238
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.094        16.235
Surface Runoff ...........         0.274        47.346
Final Storage ............         0.010         1.702
Continuity Error (%) .....        -0.068


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.274         2.740
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.269         2.693
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.005         0.046
Continuity Error (%) .....         0.062


************************
Highest Continuity Errors
************************
Node CBMH5 (-7.28%)
Node MH11 (4.24%)


***************************
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Time-Step Critical Elements
****
None

****
Highest Flow Instability Indexes
****
All links are stable.

****
Most Frequent Nonconverging Nodes
****
Node HW2_(PROP._STM) (0.08%)
Node OF2 (0.08%)
Node CB4 (0.07%)
Node Building2 (0.00%)
Node P1 (0.00%)

****
Routing Time Step Summary
****

Minimum Time Step	:	0.50 sec
Average Time Step	:	1.00 sec
Maximum Time Step	:	1.00 sec
% of Time in Steady State	:	0.00
Average Iterations per Step	:	2.01
% of Steps Not Converging	:	0.08
Time Step Frequencies	:	
1.000 - 0.871 sec	:	99.89 %
0.871 - 0.758 sec	:	0.03 %
0.758 - 0.660 sec	:	0.02 %
0.660 - 0.574 sec	:	0.02 %
0.574 - 0.500 sec	:	0.05 %

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
PC1	65.24	0.00	0.00	0.42	62.64	0.22	62.86	0.21	141.61	0.964
PC10	65.24	0.00	0.00	43.84	0.00	20.13	20.13	0.03	5.31	0.309
PC11	65.24	0.00	0.00	42.16	0.00	21.84	21.84	0.02	7.69	0.335
PC12	65.24	0.00	0.00	43.10	0.00	20.89	20.89	0.04	9.83	0.320
PC-2.1	65.24	0.00	0.00	0.00	63.32	0.00	63.32	0.02	11.47	0.971
PC2.10	65.24	0.00	0.00	0.00	63.32	0.00	63.32	0.01	5.58	0.971
PC2.11	65.24	0.00	0.00	0.00	63.34	0.00	63.34	0.03	22.77	0.971
PC2.12	65.24	0.00	0.00	0.00	63.32	0.00	63.32	0.02	10.44	0.971
PC2.13	65.24	0.00	0.00	0.00	63.35	0.00	63.35	0.01	6.01	0.971
PC2.14	65.24	0.00	0.00	0.00	63.31	0.00	63.31	0.04	27.96	0.970
PC2.15	65.24	0.00	0.00	0.00	63.30	0.00	63.30	0.03	19.24	0.970
PC2.16	65.24	0.00	0.00	0.00	63.34	0.00	63.34	0.00	2.92	0.971
PC2.17	65.24	0.00	0.00	0.00	63.30	0.00	63.30	0.03	18.17	0.970
PC2.18	65.24	0.00	0.00	0.00	63.31	0.00	63.31	0.05	37.11	0.970
PC2.19	65.24	0.00	0.00	0.00	65.29	0.00	65.29	0.01	8.42	1.001
PC-2.2	65.24	0.00	0.00	0.00	63.35	0.00	63.35	0.02	13.02	0.971
PC2.20	65.24	0.00	0.00	0.00	65.26	0.00	65.26	0.03	18.73	1.000
PC-2.3	65.24	0.00	0.00	0.00	63.31	0.00	63.31	0.02	14.17	0.970
PC-2.4	65.24	0.00	0.00	0.00	63.35	0.00	63.35	0.02	12.11	0.971
PC-2.5	65.24	30.30	0.00	0.00	93.62	0.00	93.62	0.05	35.44	0.980
PC2.6	65.24	0.00	0.00	33.35	15.82	14.63	30.46	0.01	2.02	0.467
PC2.7	65.24	0.00	0.00	0.00	63.35	0.00	63.35	0.00	1.59	0.971
PC2.8	65.24	0.00	0.00	0.00	63.34	0.00	63.34	0.01	6.10	0.971

PC2.9	65.24	0.00	0.00	0.00	63.34	0.00	63.34	0.00	1.12	0.971
PC-3	65.24	0.00	0.00	0.00	63.32	0.00	63.32	0.11	76.03	0.971
PC4	65.24	0.00	0.00	10.01	48.18	5.28	53.46	0.59	399.08	0.819
PC-5	65.24	0.00	0.00	35.49	10.00	18.38	28.39	0.02	8.74	0.435
PC6	65.24	0.00	0.00	0.00	63.27	0.00	63.27	0.42	279.49	0.970
PC7	65.24	0.00	0.00	43.67	0.00	20.31	20.31	0.10	17.48	0.311
PC8	65.24	2.65	0.00	31.11	18.14	17.19	35.34	0.41	179.39	0.521
PC9	65.24	0.00	0.00	2.29	59.81	1.23	61.04	0.30	205.42	0.936
UC-1	65.24	0.00	0.00	13.29	43.31	6.93	50.24	0.13	88.48	0.770

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days	Time of Max Occurrence hr:min	Reported Max Depth Meters
Building-1	JUNCTION	0.01	0.21	276.19	0	01:30	0.21
Building2	JUNCTION	0.03	1.46	277.46	0	01:30	1.46
CB1	JUNCTION	0.00	0.07	275.29	0	02:02	0.07
CB10	JUNCTION	0.00	0.00	276.94	0	00:00	0.00
CB11	JUNCTION	0.00	0.00	275.61	0	00:00	0.00
CB2	JUNCTION	0.00	0.04	275.29	0	02:02	0.04
CB3	JUNCTION	0.00	0.00	275.71	0	00:00	0.00
CB4	JUNCTION	0.06	2.04	277.04	0	01:30	2.04
CB5	JUNCTION	0.00	0.00	275.23	0	00:00	0.00
CB6	JUNCTION	0.01	0.25	275.10	0	02:03	0.25
CB7	JUNCTION	0.00	0.00	276.10	0	00:00	0.00
CB8	JUNCTION	0.00	0.00	276.60	0	00:00	0.00
CB9	JUNCTION	0.00	0.00	275.89	0	00:00	0.00
CBMH1	JUNCTION	0.02	0.51	275.29	0	02:02	0.51
CBMH2	JUNCTION	0.01	0.40	275.13	0	02:02	0.39
CBMH3	JUNCTION	0.01	0.24	275.89	0	01:30	0.24
CBMH4	JUNCTION	0.02	0.22	275.82	0	01:30	0.21
CBMH5	JUNCTION	0.00	0.08	276.08	0	01:30	0.07
DICB1	JUNCTION	0.00	0.00	276.40	0	00:00	0.00
DICB2	JUNCTION	0.00	0.00	276.75	0	00:00	0.00
J1	JUNCTION	0.11	0.19	274.81	0	03:54	0.19
J2	JUNCTION	0.02	0.27	273.85	0	01:30	0.27
MH1	JUNCTION	0.00	0.06	275.65	0	01:30	0.06
MH10	JUNCTION	0.00	0.29	276.07	0	01:30	0.28
MH11	JUNCTION	0.00	0.17	276.07	0	01:30	0.16
MH12	JUNCTION	0.05	0.53	276.07	0	01:30	0.53
MH2	JUNCTION	0.03	0.66	275.29	0	02:02	0.66
MH3	JUNCTION	0.04	0.72	275.12	0	02:02	0.72
MH4	JUNCTION	0.01	0.07	275.95	0	01:21	0.07
MH5	JUNCTION	0.03	0.31	275.91	0	01:30	0.30
MH6	JUNCTION	0.22	0.69	275.82	0	01:30	0.68
MH7	JUNCTION	0.30	0.79	275.78	0	03:50	0.79
MH8	JUNCTION	0.39	0.90	275.78	0	03:51	0.90
MH9	JUNCTION	0.14	0.61	275.89	0	01:30	0.61
OGS1	JUNCTION	0.00	0.00	274.02	0	00:00	0.00
OGS1_(PROP._STM)	JUNCTION	0.01	0.13	274.40	0	02:03	0.13
StartNullStruct4	JUNCTION	0.12	0.48	275.79	0	03:45	0.48
StartNullStruct5	JUNCTION	0.00	0.00	0.00	0	00:00	0.00
StartNullStruct6	JUNCTION	0.00	0.00	0.00	0	00:00	0.00
HW2_(PROP._STM)	OUTFALL	0.00	0.00	274.00	0	00:00	0.00
OF2	OUTFALL	0.00	0.00	273.07	0	00:00	0.00
P1	STORAGE	0.01	0.22	276.62	0	01:33	0.22
POND	STORAGE	0.45	0.98	275.78	0	03:53	0.98
SU1	STORAGE	0.02	0.07	285.07	0	02:10	0.07
SU2	STORAGE	0.02	0.17	285.17	0	01:47	0.17
SU3	STORAGE	0.01	0.07	285.07	0	01:41	0.07
SU4	STORAGE	0.01	0.13	285.13	0	01:45	0.13
UG-CHAMBER	STORAGE	0.05	0.77	275.10	0	02:03	0.77

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Node Inflow Summary
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Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days	Time of Max Occurrence hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
Building-1	JUNCTION	76.75	79.80	0	01:30	0.115	0.14	0.000
Building2	JUNCTION	203.68	210.29	0	01:30	0.304	0.463	0.011
CB1	JUNCTION	0.00	0.44	0	01:40	0	0.000241	1.365
CB10	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB11	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB2	JUNCTION	0.00	0.10	0	01:48	0	4.68e-05	1.928
CB3	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr

CB4	JUNCTION	399.08	399.08	0	01:30	0.59	0.71	0.031	
CB5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
CB6	JUNCTION	0.00	0.72	0	01:29	0	0.000326	0.347	
CB7	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
CB8	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
CB9	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
CBMH1	JUNCTION	0.00	22.14	0	01:20	0	0.0177	0.074	
CBMH2	JUNCTION	0.00	5.11	0	01:27	0	0.00248	0.465	
CBMH3	JUNCTION	0.00	1.80	0	01:23	0	0.000471	0.340	
CBMH4	JUNCTION	0.00	2.90	0	01:29	0	0.00124	0.321	
CBMH5	JUNCTION	0.00	3.10	0	01:30	0	0.000214	-6.785	
DICB1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
DICB2	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J1	JUNCTION	0.00	56.23	0	03:53	0	1.8	0.018	
J2	JUNCTION	88.48	178.79	0	01:30	0.135	0.741	-0.001	
MH1	JUNCTION	8.74	8.74	0	01:30	0.0165	0.0165	0.002	
MH10	JUNCTION	0.00	13.83	0	01:28	0	0.00303	0.060	
MH11	JUNCTION	0.00	6.53	0	01:30	0	0.00092	4.423	
MH12	JUNCTION	0.00	210.27	0	01:30	0	0.465	0.339	
MH2	JUNCTION	0.00	170.87	0	01:30	0	0.608	0.212	
MH3	JUNCTION	0.00	168.37	0	01:30	0	0.608	-0.205	
MH4	JUNCTION	0.00	11.10	0	01:21	0	0.112	0.059	
MH5	JUNCTION	0.00	90.88	0	01:30	0	0.252	0.030	
MH6	JUNCTION	0.00	484.19	0	01:29	0	1.01	0.011	
MH7	JUNCTION	0.00	526.74	0	01:30	0	1.43	0.140	
MH8	JUNCTION	0.00	526.22	0	01:30	0	1.43	-0.241	
MH9	JUNCTION	205.42	291.68	0	01:29	0.301	0.553	0.149	
OGS1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
OGS1_(PROP._STM)	JUNCTION	0.00	113.80	0	02:03	0	0.607	-0.000	
StartNullStruct4	JUNCTION	0.00	52.94	0	01:45	0	0.418	0.016	
StartNullStruct5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
StartNullStruct6	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
HW2_(PROP._STM)	OUTFALL	32.90	63.32	0	03:48	0.155	1.95	0.000	
OF2	OUTFALL	0.00	178.31	0	01:30	0	0.741	0.000	
P1	STORAGE	0.00	234.94	0	01:30	0	0.12	-0.006	
POND	STORAGE	179.39	700.91	0	01:30	0.411	1.84	0.023	
SU1	STORAGE	107.63	107.63	0	01:30	0.16	0.16	0.003	
SU2	STORAGE	76.03	76.03	0	01:30	0.112	0.112	0.006	
SU3	STORAGE	16.45	16.45	0	01:30	0.0243	0.0243	0.003	
SU4	STORAGE	279.49	279.49	0	01:30	0.418	0.418	0.001	
UG-CHAMBER	STORAGE	0.00	162.78	0	01:30	0	0.607	-0.038	

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Node Surcharge Summary
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Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
Building2	JUNCTION	0.19	1.158	0.540
CB4	JUNCTION	0.77	1.638	0.000
CB6	JUNCTION	0.05	0.004	1.296
CBMH2	JUNCTION	0.49	0.099	1.091
MH12	JUNCTION	0.03	0.061	1.108
MH6	JUNCTION	0.26	0.034	1.304
MH7	JUNCTION	4.00	0.142	1.044
MH8	JUNCTION	6.90	0.279	0.723
OGS1	JUNCTION	24.00	0.000	2.500
StartNullStruct4	JUNCTION	4.96	0.181	2.214

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Node Flooding Summary
****

No nodes were flooded.

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Storage Volume Summary
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Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
P1	0.002	0.9	0.0	0.0	0.120	49.4	0 01:33	88.93
POND	0.557	24.7	0.0	0.0	1.295	57.5	0 03:53	56.23
SU1	0.018	4.6	0.0	0.0	0.104	26.3	0 02:10	7.83
SU2	0.003	4.4	0.0	0.0	0.051	68.8	0 01:47	11.10
SU3	0.001	1.1	0.0	0.0	0.011	18.9	0 01:41	3.28
SU4	0.012	4.6	0.0	0.0	0.192	71.9	0 01:45	52.94
UG-CHAMBER	0.005	1.0	0.0	0.0	0.129	24.1	0 02:03	113.89

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Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
HW2_(PROP._STM)	97.03	23.29	63.32	1.951
OF2	25.36	34.03	178.31	0.741
System	61.19	57.32	223.09	2.693

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Link Flow Summary
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Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	523.21	0 01:30	2.87	1.55	1.00
C10	CONDUIT	56.23	0 03:54	0.97	0.38	0.39
C2	CONDUIT	178.31	0 01:30	2.09	0.87	0.72
C3	CONDUIT	31.65	0 03:53	2.58	3.38	1.00
C4	CONDUIT	2.82	0 01:30	0.30	0.03	0.90
C5	CONDUIT	0.85	0 02:02	0.27	0.01	0.22
C6	CONDUIT	162.78	0 01:30	1.34	0.89	1.00
C7	CONDUIT	0.72	0 01:29	0.07	0.01	1.00
C8	CONDUIT	113.80	0 02:03	2.32	0.27	0.52
C9	CONDUIT	24.58	0 03:53	1.15	0.75	0.65
Pipe_-_(1)_(PROP._STM)	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	CONDUIT	202.22	0 01:30	1.34	0.97	1.00
Pipe_-_(3)_(PROP._STM)	CONDUIT	52.90	0 01:44	1.23	0.55	1.00
Pipe_-_(4)_(PROP._STM)	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	CONDUIT	0.00	0 00:00	0.00	0.00	0.50
Pipe_-_(48)_(PROP._STM)	CONDUIT	5.11	0 01:27	0.11	0.07	1.00
Pipe_-_(5)_(PROP._STM)	CONDUIT	0.00	0 00:00	0.00	0.00	0.47
Pipe_-_(51)_(PROP._STM)	CONDUIT	3.94	0 02:03	0.13	0.07	0.65
Pipe_-_(52)_(PROP._STM)	CONDUIT	19.02	0 01:20	0.30	0.15	1.00
Pipe_-_(53)_(PROP._STM)	CONDUIT	168.37	0 01:30	1.57	1.36	1.00
Pipe_-_(56)_(PROP._STM)	CONDUIT	164.29	0 01:27	3.35	2.76	1.00
Pipe_-_(57)_(PROP._STM)	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	CONDUIT	0.00	0 00:00	0.00	0.00	0.06
Pipe_-_(60)_(PROP._STM)	CONDUIT	6.53	0 01:30	0.63	0.10	0.32
Pipe_-_(61)_(1)_(PROP._STM)	CONDUIT	210.27	0 01:30	2.97	2.18	1.00
Pipe_-_(61)_(2)_(PROP._STM)	CONDUIT	28.81	0 01:31	0.63	0.47	0.98
Pipe_-_(61)_(PROP._STM)	CONDUIT	13.80	0 01:31	0.43	0.20	0.71
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	CONDUIT	287.79	0 01:28	1.40	1.06	1.00
Pipe_-_(65)_(2)(0)_(PROP._STM)	CONDUIT	96.26	0 01:31	0.76	0.35	0.79
Pipe_-_(66)_(PROP._STM)	CONDUIT	481.40	0 01:29	1.70	1.43	1.00
Pipe_-_(67)_(PROP._STM)	CONDUIT	526.22	0 01:30	1.94	1.56	1.00
Pipe_-_(68)	CONDUIT	79.78	0 01:30	1.54	0.83	0.69
Pipe_-_(69)_(PROP._STM)	CONDUIT	9.96	0 01:32	0.55	0.17	0.93
Pipe_-_(70)_(PROP._STM)	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
Pipe_-_(76)_(PROP._STM)	CONDUIT	8.68	0 01:30	0.85	0.09	0.20
Pipe_-_(78)_(PROP._STM)	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
Pipe_-_(80)_(PROP._STM)	CONDUIT	11.12	0 01:21	0.93	0.19	0.52
Pipe_-_(81)_(PROP._STM)	CONDUIT	0.00	0 00:00	0.00	0.00	0.39
OR2	ORIFICE	113.80	0 02:03			1.00
OR3	ORIFICE	234.94	0 01:30			
OL1	DUMMY	11.10	0 01:21			
OL2	DUMMY	3.28	0 01:41			
OL3	DUMMY	7.83	0 02:10			
OL4	DUMMY	52.94	0 01:45			

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Flow Classification Summary
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Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
		---------- Fraction of Time in Flow Class ----------								
C1	1.00	0.01	0.00	0.00	0.94	0.05	0.00	0.00	0.11	0.00
C10	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
C2	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
C3	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00
C4	1.00	0.75	0.03	0.00	0.20	0.00	0.00	0.02	0.76	0.00
C5	1.00	0.07	0.00	0.00	0.01	0.00	0.00	0.91	0.00	0.00
C6	1.00	0.02	0.00	0.00	0.12	0.00	0.00	0.86	0.00	0.00
C7	1.00	0.06	0.00	0.00	0.04	0.00	0.00	0.90	0.01	0.00
C8	1.00	0.02	0.01	0.00	0.73	0.25	0.00	0.00	0.98	0.00
C9	1.00	0.85	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00
Pipe_-_(1)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	1.00	0.00	0.00	0.00	0.47	0.00	0.00	0.53	0.25	0.00
Pipe_-_(3)_(PROP._STM)	1.00	0.02	0.00	0.00	0.51	0.00	0.00	0.47	0.07	0.00
Pipe_-_(4)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(48)_(PROP._STM)	1.00	0.05	0.01	0.00	0.06	0.00	0.00	0.89	0.01	0.00
Pipe_-_(5)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(51)_(PROP._STM)	1.00	0.06	0.01	0.00	0.03	0.00	0.00	0.90	0.01	0.00
Pipe_-_(52)_(PROP._STM)	1.00	0.02	0.00	0.00	0.16	0.00	0.00	0.82	0.11	0.00

Pipe_-_(53)_(PROP._STM)	1.00	0.02	0.00	0.00	0.05	0.00	0.00	0.93	0.01	0.00
Pipe_-_(56)_(PROP._STM)	1.00	0.02	0.00	0.00	0.04	0.00	0.00	0.94	0.01	0.00
Pipe_-_(57)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(60)_(PROP._STM)	1.00	0.06	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00
Pipe_-_(61)_(1)_(PROP._STM)	1.00	0.00	0.00	0.00	0.00	0.02	0.00	0.97	0.02	0.00
Pipe_-_(61)_(2)_(PROP._STM)	1.00	0.83	0.09	0.00	0.04	0.00	0.00	0.04	0.90	0.00
Pipe_-_(61)_(PROP._STM)	1.00	0.06	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	1.00	0.02	0.00	0.00	0.52	0.00	0.00	0.46	0.05	0.00
Pipe_-_(65)_(2)(0)_(PROP._STM)	1.00	0.02	0.00	0.00	0.45	0.00	0.00	0.53	0.28	0.00
Pipe_-_(66)_(PROP._STM)	1.00	0.00	0.00	0.00	0.66	0.00	0.00	0.34	0.08	0.00
Pipe_-_(67)_(PROP._STM)	1.00	0.00	0.00	0.00	0.80	0.00	0.00	0.19	0.11	0.00
Pipe_-_(68)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
Pipe_-_(69)_(PROP._STM)	1.00	0.71	0.02	0.00	0.25	0.00	0.00	0.02	0.72	0.00
Pipe_-_(70)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(76)_(PROP._STM)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
Pipe_-_(78)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(80)_(PROP._STM)	1.00	0.02	0.00	0.00	0.05	0.01	0.00	0.92	0.06	0.00
Pipe_-_(81)_(PROP._STM)	1.00	0.81	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Conduit Surcharge Summary
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Conduit	--------- Hours Full -------- Both Ends	Upstream	Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C1	7.30	7.30	8.83	0.17	0.01
C3	13.10	18.75	13.10	19.54	13.10
C4	0.01	0.01	0.01	0.01	0.01
C6	0.92	0.92	0.98	0.01	0.01
C7	0.04	0.04	0.54	0.01	0.01
Pipe_-_(2)_(PROP._STM)	0.04	0.04	2.22	0.01	0.01
Pipe_-_(3)_(PROP._STM)	4.96	4.96	6.71	0.01	0.01
Pipe_-_(48)_(PROP._STM)	0.49	0.49	0.93	0.01	0.01
Pipe_-_(51)_(PROP._STM)	0.01	0.01	0.44	0.01	0.01
Pipe_-_(52)_(PROP._STM)	0.61	0.61	0.83	0.01	0.01
Pipe_-_(53)_(PROP._STM)	0.77	0.85	0.93	0.70	0.58
Pipe_-_(56)_(PROP._STM)	0.80	0.89	0.89	0.89	0.77
Pipe_-_(61)_(1)_(PROP._STM)	0.12	0.19	0.12	0.21	0.12
Pipe_-_(61)_(2)_(PROP._STM)	0.01	0.01	0.04	0.01	0.01
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	0.08	0.08	1.92	0.08	0.07
Pipe_-_(65)_(2)(0)_(PROP._STM)	0.01	0.01	0.05	0.01	0.01
Pipe_-_(66)_(PROP._STM)	1.98	2.08	4.00	0.17	0.01
Pipe_-_(67)_(PROP._STM)	5.05	5.13	6.90	0.17	0.01
Pipe_-_(69)_(PROP._STM)	0.01	0.01	0.25	0.01	0.01

Analysis begun on: Thu Sep 19 19:00:13 2024
Analysis ended on: Thu Sep 19 19:00:15 2024
Total elapsed time: 00:00:02

25 Year SCS Output

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****
Number of rain gages 1
Number of subcatchments ... 32
Number of nodes 48
Number of links 46
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	SCS-25yr	INTENSITY	15 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
PC1	0.34	34.37	99.00	1.5000	Raingage	Building2
PC10	0.15	20.40	0.00	1.0000	Raingage	PC8
PC11	0.08	48.12	0.00	2.0000	Raingage	HW2_(PROP._STM)
PC12	0.20	33.57	0.00	2.0000	Raingage	HW2_(PROP._STM)
PC-2.1	0.03	15.71	100.00	1.5000	Raingage	PC-2.5
PC2.10	0.01	6.19	100.00	1.5000	Raingage	SU1
PC2.11	0.05	58.89	100.00	1.5000	Raingage	Building2
PC2.12	0.02	14.29	100.00	1.5000	Raingage	SU3
PC2.13	0.01	28.00	100.00	1.5000	Raingage	SU3
PC2.14	0.07	26.04	100.00	1.5000	Raingage	Building2
PC2.15	0.04	14.45	100.00	1.5000	Raingage	SU1
PC2.16	0.01	6.80	100.00	1.5000	Raingage	Building2
PC2.17	0.04	14.10	100.00	1.5000	Raingage	SU1
PC2.18	0.09	29.79	100.00	1.5000	Raingage	SU1
PC2.19	0.02	17.82	100.00	1.5000	Raingage	Building2
PC-2.2	0.03	37.88	100.00	1.5000	Raingage	Building-1
PC2.20	0.04	18.96	100.00	1.5000	Raingage	SU1
PC-2.3	0.03	13.75	100.00	1.5000	Raingage	Building-1
PC-2.4	0.03	47.00	100.00	1.5000	Raingage	Building-1
PC-2.5	0.06	26.57	100.00	1.5000	Raingage	Building-1
PC2.6	0.02	1.70	25.00	0.5000	Raingage	Building-1
PC2.7	0.00	5.69	100.00	1.5000	Raingage	SU1
PC2.8	0.01	12.91	100.00	1.5000	Raingage	SU1
PC2.9	0.00	2.60	100.00	1.5000	Raingage	SU1
PC-3	0.18	118.00	100.00	1.0000	Raingage	SU2
PC4	1.10	368.00	76.10	1.5000	Raingage	CB4
PC-5	0.06	42.21	15.80	1.0000	Raingage	MH1
PC6	0.66	87.99	100.00	1.0000	Raingage	SU4
PC7	0.47	57.68	0.00	1.5000	Raingage	HW2_(PROP._STM)
PC8	1.16	130.57	27.50	5.0000	Raingage	POND
PC9	0.49	117.38	94.50	1.5000	Raingage	MH9
UC-1	0.27	76.57	68.40	1.5000	Raingage	J2

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Node Summary
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Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
Building-1	JUNCTION	275.99	2.02	0.0	
Building2	JUNCTION	276.00	2.00	0.0	
CB1	JUNCTION	275.22	1.45	0.0	
CB10	JUNCTION	276.94	0.65	0.0	
CB11	JUNCTION	275.61	1.68	0.0	
CB2	JUNCTION	275.25	1.52	0.0	
CB3	JUNCTION	275.71	1.74	0.0	
CB4	JUNCTION	275.00	1.50	0.0	
CB5	JUNCTION	275.23	1.66	0.0	
CB6	JUNCTION	274.85	1.55	0.0	
CB7	JUNCTION	276.10	1.44	0.0	
CB8	JUNCTION	276.60	0.72	0.0	
CB9	JUNCTION	275.89	1.55	0.0	
CBMH1	JUNCTION	274.78	1.97	0.0	
CBMH2	JUNCTION	274.73	1.49	0.0	
CBMH3	JUNCTION	275.65	1.66	0.0	
CBMH4	JUNCTION	275.60	1.71	0.0	
CBMH5	JUNCTION	276.00	0.76	0.0	
DICB1	JUNCTION	276.40	1.30	0.0	
DICB2	JUNCTION	276.75	2.15	0.0	
J1	JUNCTION	274.62	1.70	0.0	
J2	JUNCTION	273.58	3.13	0.0	
MH1	JUNCTION	275.59	3.83	0.0	
MH10	JUNCTION	275.79	1.29	0.0	
MH11	JUNCTION	275.90	0.94	0.0	

MH12	JUNCTION	275.54	1.64	0.0
MH2	JUNCTION	274.63	2.21	0.0
MH3	JUNCTION	274.40	2.49	0.0
MH4	JUNCTION	275.87	1.98	0.0
MH5	JUNCTION	275.60	2.13	0.0
MH6	JUNCTION	275.13	1.99	0.0
MH7	JUNCTION	274.99	1.83	0.0
MH8	JUNCTION	274.88	1.62	0.0
MH9	JUNCTION	275.28	2.03	0.0
OGS1	JUNCTION	274.02	2.50	0.0
OGS1_(PROP._STM)	JUNCTION	274.27	2.25	0.0
StartNullStruct4	JUNCTION	275.31	2.69	0.0
StartNullStruct5	JUNCTION	0.00	276.70	0.0
StartNullStruct6	JUNCTION	0.00	276.33	0.0
HW2_(PROP._STM)	OUTFALL	274.00	0.95	0.0
OF2	OUTFALL	273.07	0.68	0.0
P1	STORAGE	276.40	0.30	0.0
POND	STORAGE	274.80	1.50	0.0
SU1	STORAGE	285.00	0.15	0.0
SU2	STORAGE	285.00	0.20	0.0
SU3	STORAGE	285.00	0.15	0.0
SU4	STORAGE	285.00	0.15	0.0
UG-CHAMBER	STORAGE	274.33	1.50	0.0

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Link Summary
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Name	From Node	To Node	Type	Length	%Slope	Roughness
C1	MH8	POND	CONDUIT	27.2	0.3015	0.0130
C10	J1	HW2_(PROP._STM)	CONDUIT	43.7	0.2700	0.0130
C2	J2	OF2	CONDUIT	15.5	1.3535	0.0130
C3	POND	J1	CONDUIT	8.2	1.0001	0.0130
C4	CBMH3	MH9	CONDUIT	6.7	1.0001	0.0130
C5	CB2	MH2	CONDUIT	2.9	1.0001	0.0130
C6	MH3	UG-CHAMBER	CONDUIT	10.8	0.4074	0.0130
C7	CB6	UG-CHAMBER	CONDUIT	10.5	1.0001	0.0130
C8	OGS1_(PROP._STM)	J2	CONDUIT	11.9	5.7866	0.0130
C9	POND	J1	CONDUIT	6.6	1.0001	0.0130
Pipe_-_(1)_(PROP._STM)	DICB2	MH1	CONDUIT	25.6	0.9977	0.0130
Pipe_-_(2)_(PROP._STM)	MH12	MH6	CONDUIT	50.4	0.5395	0.0130
Pipe_-_(3)_(PROP._STM)	StartNullStruct4	MH7	CONDUIT	8.5	1.0002	0.0130
Pipe_-_(4)_(PROP._STM)	StartNullStruct5	MH9	CONDUIT	4.3	0.9984	0.0130
Pipe_-_(47)_(PROP._STM)	CB5	CBMH2	CONDUIT	45.7	1.0006	0.0130
Pipe_-_(48)_(PROP._STM)	CBMH2	MH3	CONDUIT	35.6	0.4994	0.0130
Pipe_-_(5)_(PROP._STM)	StartNullStruct6	MH10	CONDUIT	24.3	0.9992	0.0130
Pipe_-_(51)_(PROP._STM)	CB1	CBMH1	CONDUIT	31.1	0.9998	0.0130
Pipe_-_(52)_(PROP._STM)	CBMH1	MH2	CONDUIT	25.9	0.5015	0.0130
Pipe_-_(53)_(PROP._STM)	MH2	MH3	CONDUIT	31.2	0.4995	0.0130
Pipe_-_(56)_(PROP._STM)	CB4	MH2	CONDUIT	24.3	1.0003	0.0130
Pipe_-_(57)_(PROP._STM)	CB3	MH2	CONDUIT	18.3	1.0079	0.0130
Pipe_-_(58)_(PROP._STM)	CB11	MH3	CONDUIT	27.1	0.9986	0.0130
Pipe_-_(59)_(PROP._STM)	CB10	CBMH5	CONDUIT	89.2	0.9994	0.0130
Pipe_-_(60)_(PROP._STM)	CBMH5	MH11	CONDUIT	8.6	0.4991	0.0130
Pipe_-_(61)_(1)_(PROP._STM)	Building2	MH12	CONDUIT	29.4	0.9974	0.0130
Pipe_-_(61)_(2)_(PROP._STM)	MH10	MH12	CONDUIT	22.5	0.4040	0.0130
Pipe_-_(61)_(PROP._STM)	MH11	MH10	CONDUIT	18.1	0.4986	0.0130
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	MH9	MH6	CONDUIT	17.5	0.4010	0.0130
Pipe_-_(65)_(2)(0)_(PROP._STM)	MH5	MH9	CONDUIT	69.3	0.4042	0.0130
Pipe_-_(66)_(PROP._STM)	MH6	MH7	CONDUIT	29.4	0.2996	0.0130
Pipe_-_(67)_(PROP._STM)	MH7	MH8	CONDUIT	30.3	0.3005	0.0130
Pipe_-_(68)	Building-1	MH5	CONDUIT	10.5	0.9993	0.0130
Pipe_-_(69)_(PROP._STM)	CBMH4	MH6	CONDUIT	6.8	1.0009	0.0130
Pipe_-_(70)_(PROP._STM)	CB8	CBMH3	CONDUIT	26.7	0.9962	0.0130
Pipe_-_(76)_(PROP._STM)	MH1	CBMH1	CONDUIT	8.0	0.9953	0.0130
Pipe_-_(78)_(PROP._STM)	DICB1	MH1	CONDUIT	31.1	0.9999	0.0130
Pipe_-_(79)_(PROP._STM)	CB7	MH4	CONDUIT	14.9	1.0011	0.0130
Pipe_-_(80)_(PROP._STM)	MH4	MH5	CONDUIT	15.3	0.9989	0.0130
Pipe_-_(81)_(PROP._STM)	CB9	CBMH4	CONDUIT	26.7	1.0006	0.0130
OR2	UG-CHAMBER	OGS1_(PROP._STM)	ORIFICE			
OR3	P1	CB4	ORIFICE			
OL1	SU2	MH4	OUTLET			
OL2	SU3	Building-1	OUTLET			
OL3	SU1	Building2	OUTLET			
OL4	SU4	StartNullStruct4	OUTLET			

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Cross Section Summary
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Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	CIRCULAR	0.60	0.28	0.15	0.60	1	337.15
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	148.16
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	203.99
C3	CIRCULAR	0.12	0.01	0.03	0.12	1	9.37
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	96.71
C5	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C6	CIRCULAR	0.45	0.16	0.11	0.45	1	181.99
C7	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C8	CIRCULAR	0.38	0.11	0.09	0.38	1	421.79
C9	CIRCULAR	0.20	0.03	0.05	0.20	1	32.80
Pipe_-_(1)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.40

Pipe_-_(2)_(PROP._STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	209.42
Pipe_-_(3)_(PROP._STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	96.71
Pipe_-_(4)_(PROP._STM)	CIRCULAR	0.20	0.03	0.05	0.20	1	32.77
Pipe_-_(47)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.49
Pipe_-_(48)_(PROP._STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	68.34
Pipe_-_(5)_(PROP._STM)	CIRCULAR	0.20	0.03	0.05	0.20	1	32.79
Pipe_-_(51)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
Pipe_-_(52)_(PROP._STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	124.17
Pipe_-_(53)_(PROP._STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	123.93
Pipe_-_(56)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.48
Pipe_-_(57)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.71
Pipe_-_(58)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.43
Pipe_-_(59)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.45
Pipe_-_(60)_(PROP._STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	68.32
Pipe_-_(61)_(1)_(PROP._STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	96.58
Pipe_-_(61)_(2)_(PROP._STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	61.47
Pipe_-_(61)_(PROP._STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	68.28
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	272.35
Pipe_-_(65)_(2)(0)_(PROP._STM)	CIRCULAR	0.53	0.22	0.13	0.53	1	273.44
Pipe_-_(66)_(PROP._STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	336.12
Pipe_-_(67)_(PROP._STM)	CIRCULAR	0.60	0.28	0.15	0.60	1	336.60
Pipe_-_(68)	CIRCULAR	0.30	0.07	0.07	0.30	1	96.67
Pipe_-_(69)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.50
Pipe_-_(70)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.36
Pipe_-_(76)_(PROP._STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	96.48
Pipe_-_(78)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
Pipe_-_(79)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.50
Pipe_-_(80)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.44
Pipe_-_(81)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.49

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****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/08/2024 00:00:00
Ending Date .............. 04/09/2024 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.480        82.971
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.102        17.586
Surface Runoff ...........         0.367        63.351
Final Storage ............         0.012         2.059
Continuity Error (%) .....        -0.030


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.367         3.667
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.343         3.426
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.024         0.242
Continuity Error (%) .....        -0.033


*************************
Highest Continuity Errors
*************************
Node MH10 (3.28%)


***************************
Time-Step Critical Elements
```

****
None

****
Highest Flow Instability Indexes
****
All links are stable.

****
Most Frequent Nonconverging Nodes
****
Node HW2_(PROP._STM) (0.64%)
Node OF2 (0.64%)
Node CB4 (0.64%)
Node Building2 (0.01%)

****
Routing Time Step Summary
****

Minimum Time Step	:	0.12 sec
Average Time Step	:	1.00 sec
Maximum Time Step	:	1.00 sec
% of Time in Steady State	:	0.00
Average Iterations per Step	:	2.04
% of Steps Not Converging	:	0.64
Time Step Frequencies	:	
1.000 - 0.871 sec	:	99.94 %
0.871 - 0.758 sec	:	0.01 %
0.758 - 0.660 sec	:	0.01 %
0.660 - 0.574 sec	:	0.01 %
0.574 - 0.500 sec	:	0.03 %

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
PC1	82.97	0.00	0.00	0.47	80.17	0.35	80.52	0.27	99.41	0.971
PC10	82.97	0.00	0.00	46.53	0.00	33.82	33.82	0.05	11.50	0.408
PC11	82.97	0.00	0.00	46.53	0.00	34.63	34.63	0.03	12.78	0.417
PC12	82.97	0.00	0.00	46.53	0.00	34.17	34.17	0.07	21.50	0.412
PC-2.1	82.97	0.00	0.00	0.00	81.02	0.00	81.02	0.02	7.93	0.976
PC2.10	82.97	0.00	0.00	0.00	81.01	0.00	81.01	0.01	3.86	0.976
PC2.11	82.97	0.00	0.00	0.00	81.03	0.00	81.03	0.04	15.75	0.977
PC2.12	82.97	0.00	0.00	0.00	81.02	0.00	81.02	0.02	7.22	0.976
PC2.13	82.97	0.00	0.00	0.00	81.04	0.00	81.04	0.01	4.16	0.977
PC2.14	82.97	0.00	0.00	0.00	81.01	0.00	81.01	0.05	19.34	0.976
PC2.15	82.97	0.00	0.00	0.00	81.01	0.00	81.01	0.04	13.31	0.976
PC2.16	82.97	0.00	0.00	0.00	81.03	0.00	81.03	0.01	2.02	0.977
PC2.17	82.97	0.00	0.00	0.00	81.01	0.00	81.01	0.03	12.57	0.976
PC2.18	82.97	0.00	0.00	0.00	81.01	0.00	81.01	0.07	25.67	0.976
PC2.19	82.97	0.00	0.00	0.00	82.98	0.00	82.98	0.02	5.82	1.000
PC-2.2	82.97	0.00	0.00	0.00	81.03	0.00	81.03	0.02	9.00	0.977
PC2.20	82.97	0.00	0.00	0.00	82.96	0.00	82.96	0.04	12.95	1.000
PC-2.3	82.97	0.00	0.00	0.00	81.01	0.00	81.01	0.03	9.80	0.976
PC-2.4	82.97	0.00	0.00	0.00	81.04	0.00	81.04	0.02	8.38	0.977
PC-2.5	82.97	38.77	0.00	0.00	119.78	0.00	119.78	0.07	24.51	0.984
PC2.6	82.97	0.00	0.00	34.90	20.25	25.15	45.40	0.01	2.01	0.547
PC2.7	82.97	0.00	0.00	0.00	81.04	0.00	81.04	0.00	1.10	0.977
PC2.8	82.97	0.00	0.00	0.00	81.03	0.00	81.03	0.01	4.22	0.977
PC2.9	82.97	0.00	0.00	0.00	81.03	0.00	81.03	0.00	0.77	0.977

PC-3	82.97	0.00	0.00	0.00	81.02	0.00	81.02	0.14	52.58	0.976
PC4	82.97	0.00	0.00	11.12	61.65	8.31	69.96	0.77	296.34	0.843
PC-5	82.97	0.00	0.00	39.18	12.80	29.16	41.96	0.02	10.80	0.506
PC6	82.97	0.00	0.00	0.00	80.99	0.00	80.99	0.53	195.61	0.976
PC7	82.97	0.00	0.00	46.53	0.00	33.90	33.90	0.16	38.38	0.409
PC8	82.97	4.45	0.00	33.73	23.51	28.06	51.56	0.60	209.97	0.590
PC9	82.97	0.00	0.00	2.56	76.55	1.92	78.46	0.39	143.36	0.946
UC-1	82.97	0.00	0.00	14.70	55.41	10.96	66.37	0.18	68.94	0.800

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Node Depth Summary
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Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
Building-1	JUNCTION	0.02	0.17	276.15	0 06:00	0.17
Building2	JUNCTION	0.04	0.80	276.80	0 05:47	0.67
CB1	JUNCTION	0.00	0.07	275.29	0 06:22	0.07
CB10	JUNCTION	0.00	0.00	276.94	0 00:00	0.00
CB11	JUNCTION	0.00	0.00	275.61	0 00:00	0.00
CB2	JUNCTION	0.00	0.04	275.29	0 06:21	0.04
CB3	JUNCTION	0.00	0.00	275.71	0 00:00	0.00
CB4	JUNCTION	0.08	1.79	276.79	0 05:59	1.79
CB5	JUNCTION	0.00	0.00	275.23	0 00:00	0.00
CB6	JUNCTION	0.01	0.25	275.10	0 06:23	0.25
CB7	JUNCTION	0.00	0.00	276.10	0 00:00	0.00
CB8	JUNCTION	0.00	0.00	276.60	0 00:00	0.00
CB9	JUNCTION	0.00	0.00	275.89	0 00:00	0.00
CBMH1	JUNCTION	0.02	0.51	275.29	0 06:21	0.51
CBMH2	JUNCTION	0.01	0.40	275.13	0 06:22	0.40
CBMH3	JUNCTION	0.03	0.18	275.83	0 07:43	0.18
CBMH4	JUNCTION	0.04	0.23	275.83	0 07:43	0.23
CBMH5	JUNCTION	0.00	0.00	276.00	0 00:00	0.00
DICB1	JUNCTION	0.00	0.00	276.40	0 00:00	0.00
DICB2	JUNCTION	0.00	0.00	276.75	0 00:00	0.00
J1	JUNCTION	0.12	0.21	274.83	0 07:50	0.21
J2	JUNCTION	0.04	0.26	273.84	0 06:00	0.26
MH1	JUNCTION	0.01	0.07	275.66	0 06:00	0.07
MH10	JUNCTION	0.00	0.10	275.88	0 06:00	0.09
MH11	JUNCTION	0.00	0.00	275.90	0 00:00	0.00
MH12	JUNCTION	0.08	0.34	275.88	0 06:00	0.33
MH2	JUNCTION	0.05	0.66	275.29	0 06:21	0.66
MH3	JUNCTION	0.06	0.72	275.12	0 06:22	0.72
MH4	JUNCTION	0.02	0.07	275.95	0 05:40	0.07
MH5	JUNCTION	0.05	0.24	275.84	0 06:00	0.23
MH6	JUNCTION	0.29	0.70	275.83	0 07:43	0.70
MH7	JUNCTION	0.39	0.84	275.83	0 07:43	0.84
MH8	JUNCTION	0.47	0.95	275.83	0 07:47	0.95
MH9	JUNCTION	0.20	0.55	275.83	0 07:43	0.55
OGS1	JUNCTION	0.00	0.00	274.02	0 00:00	0.00
OGS1_(PROP._STM)	JUNCTION	0.02	0.13	274.40	0 06:23	0.13
StartNullStruct4	JUNCTION	0.18	0.53	275.84	0 07:42	0.53
StartNullStruct5	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
StartNullStruct6	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
HW2_(PROP._STM)	OUTFALL	0.00	0.00	274.00	0 00:00	0.00
OF2	OUTFALL	0.00	0.00	273.07	0 00:00	0.00
P1	STORAGE	0.00	0.22	276.62	0 06:01	0.22
POND	STORAGE	0.53	1.03	275.83	0 07:49	1.03
SU1	STORAGE	0.02	0.07	285.07	0 06:30	0.07
SU2	STORAGE	0.02	0.17	285.17	0 06:03	0.17
SU3	STORAGE	0.01	0.07	285.07	0 06:01	0.07
SU4	STORAGE	0.01	0.13	285.13	0 06:07	0.13
UG-CHAMBER	STORAGE	0.07	0.77	275.10	0 06:23	0.77

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Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
Building-1	JUNCTION	53.70	56.93	0 06:00	0.149	0.18	0.000
Building2	JUNCTION	142.34	149.86	0 06:00	0.389	0.593	0.011
CB1	JUNCTION	0.00	0.87	0 05:57	0	0.000329	1.048
CB10	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB11	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB2	JUNCTION	0.00	0.29	0 06:00	0	6.26e-05	1.527
CB3	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr
CB4	JUNCTION	296.34	296.34	0 06:00	0.772	0.884	0.299
CB5	JUNCTION	0.00	0.00	0 00:00	0	0	0.000 ltr

CB6	JUNCTION	0.00	0.61	0	05:51	0	0.000323	0.124	
CB7	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
CB8	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
CB9	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
CBMH1	JUNCTION	0.00	16.40	0	05:45	0	0.0253	0.029	
CBMH2	JUNCTION	0.00	4.09	0	05:48	0	0.00248	0.435	
CBMH3	JUNCTION	0.00	1.37	0	05:57	0	0.000437	0.198	
CBMH4	JUNCTION	0.00	3.77	0	06:00	0	0.00134	0.170	
CBMH5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
DICB1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
DICB2	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J1	JUNCTION	0.00	69.01	0	07:49	0	2.2	0.049	
J2	JUNCTION	68.94	171.21	0	06:00	0.178	0.973	-0.000	
MH1	JUNCTION	10.80	10.80	0	06:00	0.0243	0.0243	0.002	
MH10	JUNCTION	0.00	3.03	0	05:59	0	0.000475	3.391	
MH11	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
MH12	JUNCTION	0.00	149.85	0	06:00	0	0.593	0.250	
MH2	JUNCTION	0.00	158.33	0	05:59	0	0.795	0.078	
MH3	JUNCTION	0.00	156.99	0	05:56	0	0.796	-0.130	
MH4	JUNCTION	0.00	11.10	0	05:39	0	0.143	0.049	
MH5	JUNCTION	0.00	68.01	0	06:00	0	0.323	0.028	
MH6	JUNCTION	0.00	353.16	0	05:55	0	1.3	-0.058	
MH7	JUNCTION	0.00	390.47	0	05:54	0	1.84	-0.116	
MH8	JUNCTION	0.00	387.75	0	05:54	0	1.84	-0.082	
MH9	JUNCTION	143.36	210.84	0	05:57	0.387	0.71	0.081	
OGS1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
OGS1_(PROP._STM)	JUNCTION	0.00	113.84	0	06:23	0	0.795	-0.001	
StartNullStruct4	JUNCTION	0.00	52.59	0	06:07	0	0.534	0.011	
StartNullStruct5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
StartNullStruct6	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
HW2_(PROP._STM)	OUTFALL	72.67	98.46	0	06:00	0.256	2.45	0.000	
OF2	OUTFALL	0.00	171.03	0	06:00	0	0.973	0.000	
P1	STORAGE	0.00	147.53	0	06:00	0	0.111	0.016	
POND	STORAGE	209.97	588.66	0	06:00	0.599	2.44	0.058	
SU1	STORAGE	74.45	74.45	0	06:00	0.204	0.204	0.004	
SU2	STORAGE	52.58	52.58	0	06:00	0.143	0.143	0.007	
SU3	STORAGE	11.38	11.38	0	06:00	0.031	0.031	0.003	
SU4	STORAGE	195.61	195.61	0	06:00	0.534	0.534	0.005	
UG-CHAMBER	STORAGE	0.00	154.61	0	05:59	0	0.795	-0.033	

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
Building2	JUNCTION	0.23	0.499	1.199
CB4	JUNCTION	0.88	1.394	0.000
CB6	JUNCTION	0.05	0.004	1.296
CBMH2	JUNCTION	0.49	0.098	1.092
MH6	JUNCTION	2.28	0.049	1.289
MH7	JUNCTION	6.73	0.190	0.996
MH8	JUNCTION	9.26	0.326	0.676
OGS1	JUNCTION	24.00	0.000	2.500
StartNullStruct4	JUNCTION	7.54	0.232	2.163

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
P1	0.002	0.7	0.0	0.0	0.111	45.9	0 06:01	92.49
POND	0.667	29.6	0.0	0.0	1.373	61.0	0 07:49	69.01
SU1	0.021	5.4	0.0	0.0	0.106	26.9	0 06:30	7.92
SU2	0.003	3.7	0.0	0.0	0.048	65.1	0 06:03	11.10
SU3	0.001	1.1	0.0	0.0	0.011	18.9	0 06:01	3.28
SU4	0.012	4.5	0.0	0.0	0.189	71.0	0 06:07	52.59
UG-CHAMBER	0.007	1.2	0.0	0.0	0.129	24.2	0 06:23	113.97

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr

```
  ---------------------------------------------------------
  HW2_(PROP._STM)       93.84     30.27     98.46       2.453
  OF2                   55.73     20.25    171.03       0.973
  ---------------------------------------------------------
  System                74.78     50.52    269.45       3.426


  ********************
  Link Flow Summary
  ********************

  -----------------------------------------------------------------------------
                                 Maximum  Time of Max   Maximum    Max/    Max/
                                  |Flow|   Occurrence   |Veloc|    Full    Full
  Link                 Type          LPS  days hr:min     m/sec    Flow   Depth
  -----------------------------------------------------------------------------
  C1                   CONDUIT    386.16     0  05:55      1.51    1.15    1.00
  C10                  CONDUIT     69.01     0  07:50      1.03    0.47    0.44
  C2                   CONDUIT    171.03     0  06:00      2.07    0.84    0.70
  C3                   CONDUIT     32.42     0  07:49      2.64    3.46    1.00
  C4                   CONDUIT      2.21     0  06:02      0.16    0.02    0.72
  C5                   CONDUIT      0.77     0  06:22      0.27    0.01    0.22
  C6                   CONDUIT    154.61     0  05:59      1.25    0.85    1.00
  C7                   CONDUIT      0.61     0  05:51      0.06    0.01    1.00
  C8                   CONDUIT    113.84     0  06:23      2.32    0.27    0.52
  C9                   CONDUIT     36.59     0  07:49      1.29    1.12    0.85
  Pipe_-_(1)_(PROP._STM) CONDUIT      0.00     0  00:00      0.00    0.00    0.00
  Pipe_-_(2)_(PROP._STM) CONDUIT    148.81     0  05:57      1.27    0.71    0.87
  Pipe_-_(3)_(PROP._STM) CONDUIT     52.59     0  06:06      1.19    0.54    1.00
  Pipe_-_(4)_(PROP._STM) CONDUIT      0.00     0  00:00      0.00    0.00    0.00
  Pipe_-_(47)_(PROP._STM) CONDUIT      0.00     0  00:00      0.00    0.00    0.50
  Pipe_-_(48)_(PROP._STM) CONDUIT      4.09     0  05:48      0.09    0.06    1.00
  Pipe_-_(5)_(PROP._STM) CONDUIT      0.00     0  00:00      0.00    0.00    0.00
  Pipe_-_(51)_(PROP._STM) CONDUIT      3.67     0  06:23      0.12    0.06    0.65
  Pipe_-_(52)_(PROP._STM) CONDUIT     12.84     0  05:45      0.22    0.10    1.00
  Pipe_-_(53)_(PROP._STM) CONDUIT    156.99     0  05:56      1.42    1.27    1.00
  Pipe_-_(56)_(PROP._STM) CONDUIT    153.04     0  05:49      3.12    2.57    1.00
  Pipe_-_(57)_(PROP._STM) CONDUIT      0.00     0  00:00      0.00    0.00    0.00
  Pipe_-_(58)_(PROP._STM) CONDUIT      0.00     0  00:00      0.00    0.00    0.00
  Pipe_-_(59)_(PROP._STM) CONDUIT      0.00     0  00:00      0.00    0.00    0.00
  Pipe_-_(60)_(PROP._STM) CONDUIT      0.00     0  00:00      0.00    0.00    0.00
  Pipe_-_(61)_(1)_(PROP._STM) CONDUIT    149.85     0  06:00      2.14    1.55    0.97
  Pipe_-_(61)_(2)_(PROP._STM) CONDUIT      6.50     0  06:01      0.31    0.11    0.47
  Pipe_-_(61)_(PROP._STM) CONDUIT      0.00     0  00:00      0.00    0.00    0.11
  Pipe_-_(65)_(2)(0)_(1)_(PROP._STM) CONDUIT    206.30     0  05:54      1.28    0.76    1.00
  Pipe_-_(65)_(2)(0)_(PROP._STM) CONDUIT     67.67     0  05:57      0.72    0.25    0.71
  Pipe_-_(66)_(PROP._STM) CONDUIT    348.35     0  05:54      1.44    1.04    1.00
  Pipe_-_(67)_(PROP._STM) CONDUIT    387.75     0  05:54      1.50    1.15    1.00
  Pipe_-_(68)          CONDUIT     56.91     0  06:00      1.43    0.59    0.55
  Pipe_-_(69)_(PROP._STM) CONDUIT      7.93     0  06:02      0.33    0.13    0.96
  Pipe_-_(70)_(PROP._STM) CONDUIT      0.00     0  00:00      0.00    0.00    0.00
  Pipe_-_(76)_(PROP._STM) CONDUIT     10.78     0  06:00      0.90    0.11    0.23
  Pipe_-_(78)_(PROP._STM) CONDUIT      0.00     0  00:00      0.00    0.00    0.00
  Pipe_-_(79)_(PROP._STM) CONDUIT      0.00     0  00:00      0.00    0.00    0.00
  Pipe_-_(80)_(PROP._STM) CONDUIT     11.10     0  05:40      0.93    0.19    0.38
  Pipe_-_(81)_(PROP._STM) CONDUIT      0.00     0  00:00      0.00    0.00    0.42
  OR2                  ORIFICE    113.84     0  06:23                      1.00
  OR3                  ORIFICE    147.53     0  06:00
  OL1                  DUMMY       11.10     0  05:39
  OL2                  DUMMY        3.28     0  06:01
  OL3                  DUMMY        7.92     0  06:30
  OL4                  DUMMY       52.59     0  06:07


  ***************************
  Flow Classification Summary
  ***************************

  -------------------------------------------------------------------------------------
                       Adjusted    ---------- Fraction of Time in Flow Class ----------
                       /Actual         Up    Down  Sub   Sup   Up    Down  Norm  Inlet
  Conduit               Length    Dry  Dry   Dry   Crit  Crit  Crit  Crit  Ltd   Ctrl
  -------------------------------------------------------------------------------------
  C1                       1.00   0.01  0.00  0.00  0.89  0.11  0.00  0.00  0.07  0.00
  C10                      1.00   0.05  0.00  0.00  0.00  0.00  0.00  0.95  0.00  0.00
  C2                       1.00   0.04  0.00  0.00  0.00  0.00  0.00  0.96  0.00  0.00
  C3                       1.00   0.02  0.00  0.00  0.00  0.00  0.00  0.98  0.00  0.00
  C4                       1.00   0.66  0.03  0.00  0.30  0.00  0.00  0.00  0.48  0.00
  C5                       1.00   0.25  0.00  0.00  0.02  0.00  0.00  0.73  0.00  0.00
  C6                       1.00   0.05  0.00  0.00  0.11  0.00  0.00  0.84  0.00  0.00
  C7                       1.00   0.24  0.00  0.00  0.04  0.00  0.00  0.72  0.00  0.00
  C8                       1.00   0.04  0.00  0.00  0.40  0.55  0.00  0.00  0.95  0.00
  C9                       1.00   0.74  0.00  0.00  0.00  0.00  0.00  0.26  0.00  0.00
  Pipe_-_(1)_(PROP._STM)     1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
  Pipe_-_(2)_(PROP._STM)     1.00   0.00  0.00  0.00  0.55  0.00  0.00  0.44  0.23  0.00
  Pipe_-_(3)_(PROP._STM)     1.00   0.04  0.00  0.00  0.59  0.00  0.00  0.36  0.06  0.00
  Pipe_-_(4)_(PROP._STM)     1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
  Pipe_-_(47)_(PROP._STM)     1.00   0.96  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00
  Pipe_-_(48)_(PROP._STM)     1.00   0.23  0.01  0.00  0.05  0.00  0.00  0.71  0.01  0.00
  Pipe_-_(5)_(PROP._STM)     1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
  Pipe_-_(51)_(PROP._STM)     1.00   0.24  0.01  0.00  0.03  0.00  0.00  0.72  0.01  0.00
  Pipe_-_(52)_(PROP._STM)     1.00   0.05  0.00  0.00  0.46  0.00  0.00  0.49  0.41  0.00
  Pipe_-_(53)_(PROP._STM)     1.00   0.04  0.00  0.00  0.05  0.00  0.00  0.90  0.01  0.00
  Pipe_-_(56)_(PROP._STM)     1.00   0.04  0.00  0.00  0.04  0.00  0.00  0.92  0.01  0.00
  Pipe_-_(57)_(PROP._STM)     1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
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Pipe_-_(58)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
Pipe_-_(59)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
Pipe_-_(60)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
Pipe_-_(61)_(1)_(PROP._STM)    1.00   0.00  0.00  0.00  0.07  0.03  0.00  0.90  0.10  0.00
Pipe_-_(61)_(2)_(PROP._STM)    1.00   0.75  0.08  0.00  0.16  0.00  0.00  0.01  0.65  0.00
Pipe_-_(61)_(PROP._STM)    1.00   0.94  0.06  0.00  0.00  0.00  0.00  0.00  0.00  0.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)    1.00   0.04  0.00  0.00  0.60  0.00  0.00  0.35  0.05  0.00
Pipe_-_(65)_(2)(0)_(PROP._STM)    1.00   0.04  0.00  0.00  0.53  0.00  0.00  0.42  0.24  0.00
Pipe_-_(66)_(PROP._STM)    1.00   0.00  0.00  0.00  0.75  0.00  0.00  0.25  0.08  0.00
Pipe_-_(67)_(PROP._STM)    1.00   0.01  0.00  0.00  0.78  0.00  0.00  0.21  0.00  0.00
Pipe_-_(68)            1.00   0.04  0.00  0.00  0.00  0.00  0.00  0.96  0.00  0.00
Pipe_-_(69)_(PROP._STM)    1.00   0.63  0.02  0.00  0.35  0.00  0.00  0.00  0.44  0.00
Pipe_-_(70)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
Pipe_-_(76)_(PROP._STM)    1.00   0.04  0.00  0.00  0.00  0.00  0.00  0.96  0.00  0.00
Pipe_-_(78)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
Pipe_-_(79)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
Pipe_-_(80)_(PROP._STM)    1.00   0.04  0.00  0.00  0.11  0.02  0.00  0.83  0.13  0.00
Pipe_-_(81)_(PROP._STM)    1.00   0.70  0.30  0.00  0.00  0.00  0.00  0.00  0.00  0.00


*************************
Conduit Surcharge Summary
*************************

----------------------------------------------------------------------------
                                                           Hours        Hours
                       --------- Hours Full --------   Above Full   Capacity
Conduit                Both Ends  Upstream  Dnstream   Normal Flow   Limited
----------------------------------------------------------------------------
C1                         9.60      9.61     10.95      0.21         0.08
C3                        15.19     19.93     15.19     20.48        15.19
C6                         0.89      0.89      0.95      0.01         0.01
C7                         0.05      0.05      0.53      0.01         0.01
C9                         0.01      0.01      0.01      1.17         0.01
Pipe_-_(2)_(PROP._STM)        0.01      0.01      4.17      0.01         0.01
Pipe_-_(3)_(PROP._STM)        7.54      7.54      9.04      0.01         0.01
Pipe_-_(48)_(PROP._STM)        0.49      0.49      0.89      0.01         0.01
Pipe_-_(51)_(PROP._STM)        0.01      0.01      0.48      0.01         0.01
Pipe_-_(52)_(PROP._STM)        0.55      0.55      0.75      0.01         0.01
Pipe_-_(53)_(PROP._STM)        0.73      0.78      0.89      0.62         0.55
Pipe_-_(56)_(PROP._STM)        0.78      0.93      0.87      0.91         0.75
Pipe_-_(61)_(1)_(PROP._STM)        0.01      0.23      0.01      0.25         0.01
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)        1.57      1.57      3.72      0.01         0.01
Pipe_-_(66)_(PROP._STM)        3.97      3.97      6.73      0.09         0.01
Pipe_-_(67)_(PROP._STM)        7.71      7.73      9.26      0.21         0.08
Pipe_-_(69)_(PROP._STM)        0.01      0.01      2.28      0.01         0.01


Analysis begun on:  Thu Sep 19 20:28:27 2024
Analysis ended on:  Thu Sep 19 20:28:29 2024
Total elapsed time: 00:00:02
```

100 Year Chicago - Output

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)
------------------------------------------------------------


*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 32
Number of nodes ........... 48
Number of links ........... 46
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                         Data       Recording
Name                 Data Source                         Type       Interval
------------------------------------------------------------------------
Raingage             100-Yr-Chicago-Storm                INTENSITY   10 min.


********************
Subcatchment Summary
********************
Name                           Area     Width   %Imperv    %Slope Rain Gage            Outlet
-----------------------------------------------------------------------------------------------------------
PC1                            0.34     34.37     99.00    1.5000 Raingage             Building2
PC10                           0.15     20.40      0.00    1.0000 Raingage             PC8
PC11                           0.08     48.12      0.00    2.0000 Raingage             HW2_(PROP._STM)
PC12                           0.20     33.57      0.00    2.0000 Raingage             HW2_(PROP._STM)
PC-2.1                         0.03     15.71    100.00    1.5000 Raingage             PC-2.5
PC2.10                         0.01      6.19    100.00    1.5000 Raingage             SU1
PC2.11                         0.05     58.89    100.00    1.5000 Raingage             Building2
PC2.12                         0.02     14.29    100.00    1.5000 Raingage             SU3
PC2.13                         0.01     28.00    100.00    1.5000 Raingage             SU3
PC2.14                         0.07     26.04    100.00    1.5000 Raingage             Building2
PC2.15                         0.04     14.45    100.00    1.5000 Raingage             SU1
PC2.16                         0.01      6.80    100.00    1.5000 Raingage             Building2
PC2.17                         0.04     14.10    100.00    1.5000 Raingage             SU1
PC2.18                         0.09     29.79    100.00    1.5000 Raingage             SU1
PC2.19                         0.02     17.82    100.00    1.5000 Raingage             Building2
PC-2.2                         0.03     37.88    100.00    1.5000 Raingage             Building-1
PC2.20                         0.04     18.96    100.00    1.5000 Raingage             SU1
PC-2.3                         0.03     13.75    100.00    1.5000 Raingage             Building-1
PC-2.4                         0.03     47.00    100.00    1.5000 Raingage             Building-1
PC-2.5                         0.06     26.57    100.00    1.5000 Raingage             Building-1
PC2.6                          0.02      1.70     25.00    0.5000 Raingage             Building-1
PC2.7                          0.00      5.69    100.00    1.5000 Raingage             SU1
PC2.8                          0.01     12.91    100.00    1.5000 Raingage             SU1
PC2.9                          0.00      2.60    100.00    1.5000 Raingage             SU1
PC-3                           0.18    118.00    100.00    1.0000 Raingage             SU2
PC4                            1.10    368.00     76.10    1.5000 Raingage             CB4
PC-5                           0.06     42.21     15.80    1.0000 Raingage             MH1
PC6                            0.66     87.99    100.00    1.0000 Raingage             SU4
PC7                            0.47     57.68      0.00    1.5000 Raingage             HW2_(PROP._STM)
PC8                            1.16    130.57     27.50    5.0000 Raingage             POND
PC9                            0.49    117.38     94.50    1.5000 Raingage             MH9
UC-1                           0.27     76.57     68.40    1.5000 Raingage             J2


************
Node Summary
************
                                        Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
-------------------------------------------------------------------------------
Building-1           JUNCTION           275.99      2.02       0.0
Building2            JUNCTION           276.00      2.00       0.0
CB1                  JUNCTION           275.22      1.45       0.0
CB10                 JUNCTION           276.94      0.65       0.0
CB11                 JUNCTION           275.61      1.68       0.0
CB2                  JUNCTION           275.25      1.52       0.0
CB3                  JUNCTION           275.71      1.74       0.0
CB4                  JUNCTION           275.00      1.50       0.0
CB5                  JUNCTION           275.23      1.66       0.0
CB6                  JUNCTION           274.85      1.55       0.0
CB7                  JUNCTION           276.10      1.44       0.0
CB8                  JUNCTION           276.60      0.72       0.0
CB9                  JUNCTION           275.89      1.55       0.0
CBMH1                JUNCTION           274.78      1.97       0.0
CBMH2                JUNCTION           274.73      1.49       0.0
CBMH3                JUNCTION           275.65      1.66       0.0
CBMH4                JUNCTION           275.60      1.71       0.0
CBMH5                JUNCTION           276.00      0.76       0.0
DICB1                JUNCTION           276.40      1.30       0.0
DICB2                JUNCTION           276.75      2.15       0.0
J1                   JUNCTION           274.62      1.70       0.0
J2                   JUNCTION           273.58      3.13       0.0
MH1                  JUNCTION           275.59      3.83       0.0
MH10                 JUNCTION           275.79      1.29       0.0
MH11                 JUNCTION           275.90      0.94       0.0
```

MH12	JUNCTION	275.54	1.64	0.0
MH2	JUNCTION	274.63	2.21	0.0
MH3	JUNCTION	274.40	2.49	0.0
MH4	JUNCTION	275.87	1.98	0.0
MH5	JUNCTION	275.60	2.13	0.0
MH6	JUNCTION	275.13	1.99	0.0
MH7	JUNCTION	274.99	1.83	0.0
MH8	JUNCTION	274.88	1.62	0.0
MH9	JUNCTION	275.28	2.03	0.0
OGS1	JUNCTION	274.02	2.50	0.0
OGS1_(PROP._STM)	JUNCTION	274.27	2.25	0.0
StartNullStruct4	JUNCTION	275.31	2.69	0.0
StartNullStruct5	JUNCTION	0.00	276.70	0.0
StartNullStruct6	JUNCTION	0.00	276.33	0.0
HW2_(PROP._STM)	OUTFALL	274.00	0.95	0.0
OF2	OUTFALL	273.07	0.68	0.0
P1	STORAGE	276.40	0.30	0.0
POND	STORAGE	274.80	1.50	0.0
SU1	STORAGE	285.00	0.15	0.0
SU2	STORAGE	285.00	0.20	0.0
SU3	STORAGE	285.00	0.15	0.0
SU4	STORAGE	285.00	0.15	0.0
UG-CHAMBER	STORAGE	274.33	1.50	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
C1	MH8	POND	CONDUIT	27.2	0.3015	0.0130
C10	J1	HW2_(PROP._STM)	CONDUIT	43.7	0.2700	0.0130
C2	J2	OF2	CONDUIT	15.5	1.3535	0.0130
C3	POND	J1	CONDUIT	8.2	1.0001	0.0130
C4	CBMH3	MH9	CONDUIT	6.7	1.0001	0.0130
C5	CB2	MH2	CONDUIT	2.9	1.0001	0.0130
C6	MH3	UG-CHAMBER	CONDUIT	10.8	0.4074	0.0130
C7	CB6	UG-CHAMBER	CONDUIT	10.5	1.0001	0.0130
C8	OGS1_(PROP._STM)	J2	CONDUIT	11.9	5.7866	0.0130
C9	POND	J1	CONDUIT	6.6	1.0001	0.0130
Pipe_-_(1)_(PROP._STM)	DICB2	MH1	CONDUIT	25.6	0.9977	0.0130
Pipe_-_(2)_(PROP._STM)	MH12	MH6	CONDUIT	50.4	0.5395	0.0130
Pipe_-_(3)_(PROP._STM)	StartNullStruct4	MH7	CONDUIT	8.5	1.0002	0.0130
Pipe_-_(4)_(PROP._STM)	StartNullStruct5	MH9	CONDUIT	4.3	0.9984	0.0130
Pipe_-_(47)_(PROP._STM)	CB5	CBMH2	CONDUIT	45.7	1.0006	0.0130
Pipe_-_(48)_(PROP._STM)	CBMH2	MH3	CONDUIT	35.6	0.4994	0.0130
Pipe_-_(5)_(PROP._STM)	StartNullStruct6	MH10	CONDUIT	24.3	0.9992	0.0130
Pipe_-_(51)_(PROP._STM)	CB1	CBMH1	CONDUIT	31.1	0.9998	0.0130
Pipe_-_(52)_(PROP._STM)	CBMH1	MH2	CONDUIT	25.9	0.5015	0.0130
Pipe_-_(53)_(PROP._STM)	MH2	MH3	CONDUIT	31.2	0.4995	0.0130
Pipe_-_(56)_(PROP._STM)	CB4	MH2	CONDUIT	24.3	1.0003	0.0130
Pipe_-_(57)_(PROP._STM)	CB3	MH2	CONDUIT	18.3	1.0079	0.0130
Pipe_-_(58)_(PROP._STM)	CB11	MH3	CONDUIT	27.1	0.9986	0.0130
Pipe_-_(59)_(PROP._STM)	CB10	CBMH5	CONDUIT	89.2	0.9994	0.0130
Pipe_-_(60)_(PROP._STM)	CBMH5	MH11	CONDUIT	8.6	0.4991	0.0130
Pipe_-_(61)_(1)_(PROP._STM)	Building2	MH12	CONDUIT	29.4	0.9974	0.0130
Pipe_-_(61)_(2)_(PROP._STM)	MH10	MH12	CONDUIT	22.5	0.4040	0.0130
Pipe_-_(61)_(PROP._STM)	MH11	MH10	CONDUIT	18.1	0.4986	0.0130
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	MH9	MH6	CONDUIT	17.5	0.4010	0.0130
Pipe_-_(65)_(2)(0)_(PROP._STM)	MH5	MH9	CONDUIT	69.3	0.4042	0.0130
Pipe_-_(66)_(PROP._STM)	MH6	MH7	CONDUIT	29.4	0.2996	0.0130
Pipe_-_(67)_(PROP._STM)	MH7	MH8	CONDUIT	30.3	0.3005	0.0130
Pipe_-_(68)	Building-1	MH5	CONDUIT	10.5	0.9993	0.0130
Pipe_-_(69)_(PROP._STM)	CBMH4	MH6	CONDUIT	6.8	1.0009	0.0130
Pipe_-_(70)_(PROP._STM)	CB8	CBMH3	CONDUIT	26.7	0.9962	0.0130
Pipe_-_(76)_(PROP._STM)	MH1	CBMH1	CONDUIT	8.0	0.9953	0.0130
Pipe_-_(78)_(PROP._STM)	DICB1	MH1	CONDUIT	31.1	0.9999	0.0130
Pipe_-_(79)_(PROP._STM)	CB7	MH4	CONDUIT	14.9	1.0011	0.0130
Pipe_-_(80)_(PROP._STM)	MH4	MH5	CONDUIT	15.3	0.9989	0.0130
Pipe_-_(81)_(PROP._STM)	CB9	CBMH4	CONDUIT	26.7	1.0006	0.0130
OR2	UG-CHAMBER	OGS1_(PROP._STM)	ORIFICE			
OR3	P1	CB4	ORIFICE			
OL1	SU2	MH4	OUTLET			
OL2	SU3	Building-1	OUTLET			
OL3	SU1	Building2	OUTLET			
OL4	SU4	StartNullStruct4	OUTLET			

****
Cross Section Summary
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Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	CIRCULAR	0.60	0.28	0.15	0.60	1	337.15
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	148.16
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	203.99
C3	CIRCULAR	0.12	0.01	0.03	0.12	1	9.37
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	96.71
C5	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C6	CIRCULAR	0.45	0.16	0.11	0.45	1	181.99
C7	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C8	CIRCULAR	0.38	0.11	0.09	0.38	1	421.79
C9	CIRCULAR	0.20	0.03	0.05	0.20	1	32.80
Pipe_-_(1)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.40

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Pipe_-_(2)_(PROP._STM) CIRCULAR             0.45     0.16     0.11     0.45        1   209.42
Pipe_-_(3)_(PROP._STM) CIRCULAR             0.30     0.07     0.07     0.30        1    96.71
Pipe_-_(4)_(PROP._STM) CIRCULAR             0.20     0.03     0.05     0.20        1    32.77
Pipe_-_(47)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25        1    59.49
Pipe_-_(48)_(PROP._STM) CIRCULAR             0.30     0.07     0.07     0.30        1    68.34
Pipe_-_(5)_(PROP._STM) CIRCULAR             0.20     0.03     0.05     0.20        1    32.79
Pipe_-_(51)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(52)_(PROP._STM) CIRCULAR             0.38     0.11     0.09     0.38        1   124.17
Pipe_-_(53)_(PROP._STM) CIRCULAR             0.38     0.11     0.09     0.38        1   123.93
Pipe_-_(56)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25        1    59.48
Pipe_-_(57)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25        1    59.71
Pipe_-_(58)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25        1    59.43
Pipe_-_(59)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25        1    59.45
Pipe_-_(60)_(PROP._STM) CIRCULAR             0.30     0.07     0.07     0.30        1    68.32
Pipe_-_(61)_(1)_(PROP._STM) CIRCULAR             0.30     0.07     0.07     0.30        1    96.58
Pipe_-_(61)_(2)_(PROP._STM) CIRCULAR             0.30     0.07     0.07     0.30        1    61.47
Pipe_-_(61)_(PROP._STM) CIRCULAR             0.30     0.07     0.07     0.30        1    68.28
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM) CIRCULAR             0.53     0.22     0.13     0.53        1   272.35
Pipe_-_(65)_(2)(0)_(PROP._STM) CIRCULAR             0.53     0.22     0.13     0.53        1   273.44
Pipe_-_(66)_(PROP._STM) CIRCULAR             0.60     0.28     0.15     0.60        1   336.12
Pipe_-_(67)_(PROP._STM) CIRCULAR             0.60     0.28     0.15     0.60        1   336.60
Pipe_-_(68)      CIRCULAR             0.30     0.07     0.07     0.30        1    96.67
Pipe_-_(69)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(70)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25        1    59.36
Pipe_-_(76)_(PROP._STM) CIRCULAR             0.30     0.07     0.07     0.30        1    96.48
Pipe_-_(78)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25        1    59.47
Pipe_-_(79)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25        1    59.50
Pipe_-_(80)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25        1    59.44
Pipe_-_(81)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25        1    59.49


****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/08/2024 00:00:00
Ending Date .............. 04/09/2024 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.483        83.534
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.106        18.327
Surface Runoff ...........         0.368        63.569
Final Storage ............         0.010         1.700
Continuity Error (%) .....        -0.075


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.368         3.679
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.360         3.604
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.002
Final Stored Volume ......         0.007         0.067
Continuity Error (%) .....         0.289


***************************
Time-Step Critical Elements
***************************
None


********************************
Highest Flow Instability Indexes
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*********************************
All links are stable.


*********************************
Most Frequent Nonconverging Nodes
*********************************
Node HW2_(PROP._STM) (0.21%)
Node OF2 (0.21%)
Node CB4 (0.08%)
Node Building2 (0.06%)
Node MH12 (0.04%)


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :     0.28 sec
Average Time Step           :     1.00 sec
Maximum Time Step           :     1.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.03
% of Steps Not Converging   :     0.21
Time Step Frequencies       :
    1.000 -  0.871 sec      :    99.73 %
    0.871 -  0.758 sec      :     0.07 %
    0.758 -  0.660 sec      :     0.05 %
    0.660 -  0.574 sec      :     0.05 %
    0.574 -  0.500 sec      :     0.11 %


***************************
Subcatchment Runoff Summary
***************************
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Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
PC1	83.53	0.00	0.00	0.47	80.77	0.35	81.12	0.27	185.08	0.971
PC10	83.53	0.00	0.00	49.41	0.00	32.87	32.87	0.05	11.41	0.393
PC11	83.53	0.00	0.00	47.65	0.00	34.65	34.65	0.03	16.58	0.415
PC12	83.53	0.00	0.00	48.64	0.00	33.65	33.65	0.07	19.63	0.403
PC-2.1	83.53	0.00	0.00	0.00	81.65	0.00	81.65	0.02	14.88	0.977
PC2.10	83.53	0.00	0.00	0.00	81.64	0.00	81.64	0.01	7.25	0.977
PC2.11	83.53	0.00	0.00	0.00	81.67	0.00	81.67	0.04	29.54	0.978
PC2.12	83.53	0.00	0.00	0.00	81.65	0.00	81.65	0.02	13.54	0.977
PC2.13	83.53	0.00	0.00	0.00	81.67	0.00	81.67	0.01	7.80	0.978
PC2.14	83.53	0.00	0.00	0.00	81.63	0.00	81.63	0.05	36.28	0.977
PC2.15	83.53	0.00	0.00	0.00	81.62	0.00	81.62	0.04	24.97	0.977
PC2.16	83.53	0.00	0.00	0.00	81.67	0.00	81.67	0.01	3.79	0.978
PC2.17	83.53	0.00	0.00	0.00	81.63	0.00	81.63	0.03	23.57	0.977
PC2.18	83.53	0.00	0.00	0.00	81.63	0.00	81.63	0.07	48.15	0.977
PC2.19	83.53	0.00	0.00	0.00	83.62	0.00	83.62	0.02	10.92	1.001
PC-2.2	83.53	0.00	0.00	0.00	81.67	0.00	81.67	0.02	16.89	0.978
PC2.20	83.53	0.00	0.00	0.00	83.59	0.00	83.59	0.04	24.30	1.001
PC-2.3	83.53	0.00	0.00	0.00	81.64	0.00	81.64	0.03	18.39	0.977
PC-2.4	83.53	0.00	0.00	0.00	81.67	0.00	81.67	0.02	15.72	0.978
PC-2.5	83.53	39.07	0.00	0.00	120.72	0.00	120.72	0.07	45.98	0.985
PC2.6	83.53	0.00	0.00	37.54	20.40	24.16	44.57	0.01	2.90	0.534
PC2.7	83.53	0.00	0.00	0.00	81.67	0.00	81.67	0.00	2.06	0.978
PC2.8	83.53	0.00	0.00	0.00	81.67	0.00	81.67	0.01	7.91	0.978
PC2.9	83.53	0.00	0.00	0.00	81.67	0.00	81.67	0.00	1.45	0.978
PC-3	83.53	0.00	0.00	0.00	81.65	0.00	81.65	0.14	98.64	0.977
PC4	83.53	0.00	0.00	11.33	62.13	8.35	70.47	0.78	539.75	0.844
PC-5	83.53	0.00	0.00	40.14	12.90	29.17	42.06	0.02	15.51	0.504

PC6	83.53	0.00	0.00	0.00	81.58	0.00	81.58	0.54	364.71	0.977
PC7	83.53	0.00	0.00	49.23	0.00	33.05	33.05	0.16	37.53	0.396
PC8	83.53	4.33	0.00	35.13	23.65	27.66	51.31	0.60	285.27	0.584
PC9	83.53	0.00	0.00	2.59	77.13	1.94	79.06	0.39	268.04	0.946
UC-1	83.53	0.00	0.00	15.03	55.84	10.98	66.82	0.18	122.20	0.800

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days	hr:min	Reported Max Depth Meters
Building-1	JUNCTION	0.01	0.60	276.59	0	01:30	0.60
Building2	JUNCTION	0.05	3.00	279.00	0	01:26	2.97
CB1	JUNCTION	0.01	0.14	275.36	0	02:20	0.14
CB10	JUNCTION	0.00	0.00	276.94	0	01:26	0.00
CB11	JUNCTION	0.00	0.00	275.61	0	00:00	0.00
CB2	JUNCTION	0.00	0.11	275.36	0	02:20	0.11
CB3	JUNCTION	0.00	0.00	275.71	0	00:00	0.00
CB4	JUNCTION	0.09	2.63	277.63	0	01:30	2.63
CB5	JUNCTION	0.00	0.00	275.23	0	00:00	0.00
CB6	JUNCTION	0.01	0.34	275.19	0	02:24	0.33
CB7	JUNCTION	0.00	0.42	276.52	0	01:27	0.37
CB8	JUNCTION	0.00	0.00	276.60	0	00:00	0.00
CB9	JUNCTION	0.00	0.68	276.57	0	01:27	0.39
CBMH1	JUNCTION	0.03	0.58	275.36	0	02:20	0.58
CBMH2	JUNCTION	0.02	0.47	275.20	0	02:23	0.47
CBMH3	JUNCTION	0.04	0.77	276.42	0	01:30	0.77
CBMH4	JUNCTION	0.06	0.69	276.29	0	01:30	0.68
CBMH5	JUNCTION	0.00	1.72	277.72	0	01:26	0.59
DICB1	JUNCTION	0.00	0.00	276.40	0	00:00	0.00
DICB2	JUNCTION	0.00	0.00	276.75	0	00:00	0.00
J1	JUNCTION	0.22	0.27	274.89	0	03:44	0.27
J2	JUNCTION	0.02	0.34	273.92	0	01:30	0.34
MH1	JUNCTION	0.00	0.08	275.67	0	01:30	0.08
MH10	JUNCTION	0.02	1.30	277.08	0	01:26	0.81
MH11	JUNCTION	0.00	1.66	277.57	0	01:26	0.69
MH12	JUNCTION	0.08	1.30	276.84	0	01:26	1.08
MH2	JUNCTION	0.05	0.73	275.36	0	02:20	0.73
MH3	JUNCTION	0.06	0.80	275.20	0	02:23	0.80
MH4	JUNCTION	0.01	0.61	276.48	0	01:27	0.60
MH5	JUNCTION	0.06	0.87	276.47	0	01:30	0.87
MH6	JUNCTION	0.28	1.16	276.29	0	01:30	1.16
MH7	JUNCTION	0.37	1.00	276.00	0	01:30	1.00
MH8	JUNCTION	0.46	1.04	275.93	0	03:42	1.04
MH9	JUNCTION	0.19	1.14	276.42	0	01:30	1.14
OGS1	JUNCTION	0.00	0.00	274.02	0	00:00	0.00
OGS1_(PROP._STM)	JUNCTION	0.01	0.14	274.41	0	02:24	0.14
StartNullStruct4	JUNCTION	0.17	0.72	276.02	0	01:30	0.72
StartNullStruct5	JUNCTION	0.00	0.00	0.00	0	00:00	0.00
StartNullStruct6	JUNCTION	7.85	8.37	8.37	0	01:32	8.37
HW2_(PROP._STM)	OUTFALL	0.84	0.84	274.84	0	00:00	0.84
OF2	OUTFALL	0.00	0.00	273.07	0	00:00	0.00
P1	STORAGE	0.01	0.28	276.68	0	01:40	0.28
POND	STORAGE	0.53	1.12	275.92	0	03:45	1.12
SU1	STORAGE	0.02	0.08	285.08	0	02:13	0.08
SU2	STORAGE	0.02	0.20	285.20	0	01:52	0.20
SU3	STORAGE	0.01	0.08	285.08	0	01:41	0.08
SU4	STORAGE	0.02	0.15	285.15	0	01:47	0.15
UG-CHAMBER	STORAGE	0.06	0.85	275.18	0	02:24	0.85

****
Node Inflow Summary
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Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days	hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent	
Building-1	JUNCTION	99.87	103.40	0	01:30	0.15	0.181	0.098	
Building2	JUNCTION	265.61	273.23	0	01:30	0.392	0.597	0.033	
CB1	JUNCTION	0.00	2.53	0	01:27	0	0.000958	0.370	
CB10	JUNCTION	0.00	2.01	0	01:26	0	3.41e-06	2.939	ltr
CB11	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
CB2	JUNCTION	0.00	1.36	0	01:28	0	0.000247	0.671	
CB3	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
CB4	JUNCTION	539.75	539.75	0	01:30	0.778	0.985	0.044	
CB5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
CB6	JUNCTION	0.00	0.87	0	01:27	0	0.000338	-0.069	
CB7	JUNCTION	0.00	10.11	0	01:26	0	0.000398	0.083	
CB8	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
CB9	JUNCTION	0.00	6.39	0	01:27	0	0.000782	0.095	
CBMH1	JUNCTION	0.00	18.60	0	01:20	0	0.0264	0.041	
CBMH2	JUNCTION	0.00	6.11	0	01:25	0	0.00249	0.538	

CBMH3	JUNCTION	0.00	7.28	0	01:24	0	0.00172	0.708	
CBMH4	JUNCTION	0.00	15.32	0	01:31	0	0.00342	-0.127	
CBMH5	JUNCTION	0.00	28.22	0	01:24	0	0.00261	0.462	
DICB1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
DICB2	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
J1	JUNCTION	0.00	84.05	0	03:45	0	2.37	0.082	
J2	JUNCTION	122.20	218.90	0	01:30	0.179	0.981	-0.001	
MH1	JUNCTION	15.51	15.51	0	01:30	0.0244	0.0244	0.002	
MH10	JUNCTION	0.00	42.36	0	01:24	0	0.0192	0.036	
MH11	JUNCTION	0.00	30.40	0	01:24	0	0.00627	0.791	
MH12	JUNCTION	0.00	273.22	0	01:30	0	0.603	0.311	
MH2	JUNCTION	0.00	194.08	0	01:30	0	0.803	0.167	
MH3	JUNCTION	0.00	190.08	0	01:30	0	0.803	-0.159	
MH4	JUNCTION	0.00	22.18	0	01:30	0	0.145	0.051	
MH5	JUNCTION	0.00	114.84	0	01:27	0	0.325	-0.037	
MH6	JUNCTION	0.00	610.51	0	01:30	0	1.3	-0.038	
MH7	JUNCTION	0.00	663.20	0	01:30	0	1.84	0.082	
MH8	JUNCTION	0.00	663.17	0	01:30	0	1.84	-0.211	
MH9	JUNCTION	268.04	382.44	0	01:30	0.39	0.717	0.137	
OGS1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
OGS1_(PROP._STM)	JUNCTION	0.00	120.34	0	02:24	0	0.802	-0.000	
StartNullStruct4	JUNCTION	0.00	61.86	0	01:47	0	0.538	0.011	
StartNullStruct5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	ltr
StartNullStruct6	JUNCTION	0.00	38.13	0	01:30	0	0.00977	9768.451	ltr
HW2_(PROP._STM)	OUTFALL	66.08	94.88	0	03:10	0.251	2.62	0.000	
OF2	OUTFALL	0.00	218.34	0	01:30	0	0.981	0.000	
P1	STORAGE	0.00	356.96	0	01:30	0	0.208	0.113	
POND	STORAGE	285.27	948.32	0	01:30	0.596	2.44	0.008	
SU1	STORAGE	139.66	139.66	0	01:30	0.205	0.205	0.010	
SU2	STORAGE	98.64	98.64	0	01:30	0.145	0.145	0.019	
SU3	STORAGE	21.35	21.35	0	01:30	0.0313	0.0313	0.011	
SU4	STORAGE	364.71	364.71	0	01:30	0.538	0.538	0.009	
UG-CHAMBER	STORAGE	0.00	184.92	0	01:30	0	0.802	-0.020	

****
Node Surcharge Summary
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Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
Building-1	JUNCTION	0.07	0.303	1.412
Building2	JUNCTION	0.24	2.698	0.000
CB4	JUNCTION	1.26	2.232	0.000
CB6	JUNCTION	0.73	0.086	1.214
CB7	JUNCTION	0.05	0.170	1.021
CB9	JUNCTION	0.06	0.427	0.873
CBMH2	JUNCTION	1.04	0.174	1.016
CBMH4	JUNCTION	2.26	0.415	1.022
CBMH5	JUNCTION	0.08	1.420	0.000
MH10	JUNCTION	0.13	0.968	0.000
MH11	JUNCTION	0.09	1.311	0.000
MH12	JUNCTION	0.15	0.831	0.338
MH4	JUNCTION	0.07	0.282	1.371
MH5	JUNCTION	0.07	0.288	1.262
MH6	JUNCTION	3.56	0.503	0.835
MH7	JUNCTION	6.07	0.357	0.829
MH8	JUNCTION	8.56	0.425	0.577
OGS1	JUNCTION	24.00	0.000	2.500
StartNullStruct4	JUNCTION	6.80	0.419	1.976

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Node Flooding Summary
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Flooding refers to all water that overflows a node, whether it ponds or not.

Node	Hours Flooded	Maximum Rate LPS	Time of Max Occurrence days hr:min	Total Flood Volume 10^6 ltr	Maximum Ponded Depth Meters
Building2	0.01	0.65	0 01:26	0.000	1.000

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Storage Volume Summary
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Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
P1	0.006	2.4	0.0	0.0	0.207	85.5	0 01:40	92.40
POND	0.659	29.2	0.0	0.0	1.540	68.4	0 03:45	84.05
SU1	0.027	6.9	0.0	0.0	0.140	35.5	0 02:13	8.82
SU2	0.006	8.5	0.0	0.0	0.074	99.7	0 01:52	11.10
SU3	0.001	1.7	0.0	0.0	0.016	25.9	0 01:41	3.78
SU4	0.019	7.1	0.0	0.0	0.265	99.5	0 01:47	61.86

UG-CHAMBER	0.009	1.6	0.0	0.0	0.155	29.0	0	02:24	120.42

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Outfall Loading Summary
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Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
HW2_(PROP._STM)	96.00	31.63	94.88	2.623
OF2	25.72	44.83	218.34	0.981
System	60.86	76.47	305.73	3.603

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Link Flow Summary
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Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days	hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	663.23	0	01:30	2.86	1.97	1.00
C10	CONDUIT	84.05	0	03:45	0.74	0.57	0.67
C2	CONDUIT	218.34	0	01:30	2.13	1.07	0.90
C3	CONDUIT	33.32	0	03:45	2.71	3.56	1.00
C4	CONDUIT	18.33	0	01:30	0.28	0.19	1.00
C5	CONDUIT	1.36	0	01:28	0.26	0.02	0.50
C6	CONDUIT	184.92	0	01:30	1.16	1.02	1.00
C7	CONDUIT	0.87	0	01:27	0.08	0.01	1.00
C8	CONDUIT	120.34	0	02:24	2.36	0.29	0.61
C9	CONDUIT	50.73	0	03:45	1.64	1.55	0.96
Pipe_-_(1)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	CONDUIT	242.41	0	01:26	1.52	1.16	1.00
Pipe_-_(3)_(PROP._STM)	CONDUIT	61.86	0	01:47	1.16	0.64	1.00
Pipe_-_(4)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
Pipe_-_(48)_(PROP._STM)	CONDUIT	6.11	0	01:25	0.12	0.09	1.00
Pipe_-_(5)_(PROP._STM)	CONDUIT	38.13	0	01:30	1.26	1.16	0.92
Pipe_-_(51)_(PROP._STM)	CONDUIT	6.90	0	01:31	0.20	0.12	0.79
Pipe_-_(52)_(PROP._STM)	CONDUIT	22.50	0	01:31	0.22	0.18	1.00
Pipe_-_(53)_(PROP._STM)	CONDUIT	190.08	0	01:30	1.72	1.53	1.00
Pipe_-_(56)_(PROP._STM)	CONDUIT	182.70	0	01:30	3.72	3.07	1.00
Pipe_-_(57)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	CONDUIT	2.01	0	01:26	0.08	0.03	0.50
Pipe_-_(60)_(PROP._STM)	CONDUIT	28.67	0	01:31	0.73	0.42	1.00
Pipe_-_(61)_(1)_(PROP._STM)	CONDUIT	273.22	0	01:30	3.87	2.83	1.00
Pipe_-_(61)_(2)_(PROP._STM)	CONDUIT	42.36	0	01:24	0.63	0.69	1.00
Pipe_-_(61)_(PROP._STM)	CONDUIT	35.14	0	01:32	0.53	0.51	1.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	CONDUIT	388.13	0	01:30	1.79	1.43	1.00
Pipe_-_(65)_(2)(0)_(PROP._STM)	CONDUIT	127.54	0	01:31	0.77	0.47	1.00
Pipe_-_(66)_(PROP._STM)	CONDUIT	610.40	0	01:30	2.16	1.82	1.00
Pipe_-_(67)_(PROP._STM)	CONDUIT	663.17	0	01:30	2.35	1.97	1.00
Pipe_-_(68)	CONDUIT	103.52	0	01:26	1.62	1.07	1.00
Pipe_-_(69)_(PROP._STM)	CONDUIT	15.42	0	01:31	0.38	0.26	1.00
Pipe_-_(70)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.18
Pipe_-_(76)_(PROP._STM)	CONDUIT	15.44	0	01:30	1.00	0.16	0.27
Pipe_-_(78)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	CONDUIT	11.08	0	01:30	0.29	0.19	1.00
Pipe_-_(80)_(PROP._STM)	CONDUIT	26.05	0	01:31	0.93	0.44	1.00
Pipe_-_(81)_(PROP._STM)	CONDUIT	15.32	0	01:31	0.41	0.26	1.00
OR2	ORIFICE	120.34	0	02:24			1.00
OR3	ORIFICE	356.96	0	01:30			
OL1	DUMMY	11.10	0	01:18			
OL2	DUMMY	3.78	0	01:37			
OL3	DUMMY	8.82	0	01:45			
OL4	DUMMY	61.86	0	01:47			

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Flow Classification Summary
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Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
		---------- Fraction of Time in Flow Class ----------								
C1	1.00	0.00	0.00	0.00	0.94	0.05	0.00	0.00	0.05	0.00
C10	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C2	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
C3	1.00	0.01	0.00	0.00	0.87	0.00	0.00	0.12	0.06	0.00
C4	1.00	0.70	0.03	0.00	0.27	0.00	0.00	0.00	0.70	0.00
C5	1.00	0.06	0.00	0.00	0.04	0.00	0.00	0.90	0.00	0.00
C6	1.00	0.02	0.00	0.00	0.14	0.00	0.00	0.84	0.01	0.00
C7	1.00	0.06	0.00	0.00	0.06	0.00	0.00	0.88	0.00	0.00
C8	1.00	0.02	0.01	0.00	0.73	0.25	0.00	0.00	0.98	0.00
C9	1.00	0.77	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00
Pipe_-_(1)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pipe_-_(2)_(PROP._STM)	1.00	0.00	0.00	0.00	0.52	0.00	0.00	0.47	0.23	0.00
Pipe_-_(3)_(PROP._STM)	1.00	0.02	0.00	0.00	0.56	0.00	0.00	0.42	0.06	0.00
Pipe_-_(4)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	1.00	0.94	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(48)_(PROP._STM)	1.00	0.05	0.01	0.00	0.07	0.00	0.00	0.87	0.01	0.00
Pipe_-_(5)_(PROP._STM)	1.00	0.91	0.08	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Pipe_-_(51)_(PROP._STM)	1.00	0.06	0.00	0.00	0.06	0.00	0.00	0.88	0.01	0.00
Pipe_-_(52)_(PROP._STM)	1.00	0.02	0.00	0.00	0.16	0.00	0.00	0.82	0.09	0.00
Pipe_-_(53)_(PROP._STM)	1.00	0.02	0.00	0.00	0.07	0.00	0.00	0.91	0.01	0.00
Pipe_-_(56)_(PROP._STM)	1.00	0.02	0.00	0.00	0.06	0.00	0.00	0.92	0.01	0.00
Pipe_-_(57)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	1.00	0.06	0.00	0.00	0.00	0.00	0.00	0.94	0.94	0.00
Pipe_-_(60)_(PROP._STM)	1.00	0.06	0.00	0.00	0.01	0.00	0.00	0.94	0.00	0.00
Pipe_-_(61)_(1)_(PROP._STM)	1.00	0.00	0.00	0.00	0.14	0.01	0.00	0.85	0.14	0.00
Pipe_-_(61)_(2)_(PROP._STM)	1.00	0.78	0.01	0.00	0.21	0.00	0.00	0.00	0.80	0.00
Pipe_-_(61)_(PROP._STM)	1.00	0.84	0.00	0.00	0.13	0.00	0.00	0.03	0.85	0.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	1.00	0.02	0.00	0.00	0.57	0.00	0.00	0.41	0.06	0.00
Pipe_-_(65)_(2)(0)_(PROP._STM)	1.00	0.02	0.00	0.00	0.51	0.00	0.00	0.48	0.26	0.00
Pipe_-_(66)_(PROP._STM)	1.00	0.00	0.00	0.00	0.71	0.00	0.00	0.29	0.08	0.00
Pipe_-_(67)_(PROP._STM)	1.00	0.00	0.00	0.00	0.86	0.00	0.00	0.13	0.11	0.00
Pipe_-_(68)	1.00	0.02	0.00	0.00	0.02	0.03	0.00	0.93	0.05	0.00
Pipe_-_(69)_(PROP._STM)	1.00	0.66	0.02	0.00	0.32	0.00	0.00	0.00	0.66	0.00
Pipe_-_(70)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(76)_(PROP._STM)	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
Pipe_-_(78)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	1.00	0.06	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00
Pipe_-_(80)_(PROP._STM)	1.00	0.02	0.00	0.00	0.17	0.00	0.00	0.80	0.17	0.00
Pipe_-_(81)_(PROP._STM)	1.00	0.73	0.10	0.00	0.17	0.00	0.00	0.00	0.86	0.00

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Conduit Surcharge Summary
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Conduit	Hours Full Both Ends	Hours Full Upstream	Hours Full Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C1	8.81	8.90	10.20	0.22	0.04
C2	0.01	0.01	0.01	0.05	0.01
C3	14.29	20.20	14.35	20.80	14.29
C4	0.12	0.12	2.11	0.01	0.01
C6	1.39	1.39	1.44	0.02	0.02
C7	0.73	0.73	1.08	0.01	0.01
C9	0.01	2.36	0.01	2.92	0.01
Pipe_-_(2)_(PROP._STM)	0.16	0.16	4.46	0.10	0.10
Pipe_-_(3)_(PROP._STM)	6.80	6.80	8.32	0.01	0.01
Pipe_-_(48)_(PROP._STM)	1.04	1.04	1.39	0.01	0.01
Pipe_-_(5)_(PROP._STM)	0.01	0.01	22.59	0.04	0.01
Pipe_-_(51)_(PROP._STM)	0.01	0.01	1.07	0.01	0.01
Pipe_-_(52)_(PROP._STM)	1.08	1.08	1.27	0.01	0.01
Pipe_-_(53)_(PROP._STM)	1.24	1.30	1.39	1.05	0.97
Pipe_-_(56)_(PROP._STM)	1.17	1.31	1.33	1.28	1.13
Pipe_-_(59)_(PROP._STM)	0.01	0.01	0.08	0.01	0.01
Pipe_-_(60)_(PROP._STM)	0.08	0.08	0.09	0.01	0.01
Pipe_-_(61)_(1)_(PROP._STM)	0.18	0.24	0.18	0.28	0.18
Pipe_-_(61)_(2)_(PROP._STM)	0.14	0.14	0.16	0.01	0.01
Pipe_-_(61)_(PROP._STM)	0.10	0.10	0.13	0.01	0.01
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	3.28	3.28	4.25	0.16	0.14
Pipe_-_(65)_(2)(0)_(PROP._STM)	0.09	0.09	2.74	0.01	0.01
Pipe_-_(66)_(PROP._STM)	4.34	4.36	6.07	0.20	0.16
Pipe_-_(67)_(PROP._STM)	6.96	7.02	8.55	0.22	0.14
Pipe_-_(68)	0.07	0.07	0.07	0.12	0.06
Pipe_-_(69)_(PROP._STM)	2.63	2.63	3.56	0.01	0.01
Pipe_-_(79)_(PROP._STM)	0.05	0.05	0.07	0.01	0.01
Pipe_-_(80)_(PROP._STM)	0.09	0.09	0.13	0.01	0.01
Pipe_-_(81)_(PROP._STM)	0.06	0.06	2.26	0.01	0.01

Analysis begun on: Thu Sep 19 20:03:10 2024
Analysis ended on: Thu Sep 19 20:03:12 2024
Total elapsed time: 00:00:02

100 Year SCS Output

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****

Number of rain gages 1
Number of subcatchments ... 32
Number of nodes 48
Number of links 46
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
Raingage	SCS-100YR	INTENSITY	15 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
PC1	0.34	34.37	99.00	1.5000	Raingage	Building2
PC10	0.15	20.40	0.00	1.0000	Raingage	PC8
PC11	0.08	48.12	0.00	2.0000	Raingage	HW2_(PROP._STM)
PC12	0.20	33.57	0.00	2.0000	Raingage	HW2_(PROP._STM)
PC-2.1	0.03	15.71	100.00	1.5000	Raingage	PC-2.5
PC2.10	0.01	6.19	100.00	1.5000	Raingage	SU1
PC2.11	0.05	58.89	100.00	1.5000	Raingage	Building2
PC2.12	0.02	14.29	100.00	1.5000	Raingage	SU3
PC2.13	0.01	28.00	100.00	1.5000	Raingage	SU3
PC2.14	0.07	26.04	100.00	1.5000	Raingage	Building2
PC2.15	0.04	14.45	100.00	1.5000	Raingage	SU1
PC2.16	0.01	6.80	100.00	1.5000	Raingage	Building2
PC2.17	0.04	14.10	100.00	1.5000	Raingage	SU1
PC2.18	0.09	29.79	100.00	1.5000	Raingage	

PC2.19	0.02	17.82	100.00	1.5000	Raingage
Building2					
PC-2.2	0.03	37.88	100.00	1.5000	Raingage
Building-1					
PC2.20	0.04	18.96	100.00	1.5000	Raingage
SU1					
PC-2.3	0.03	13.75	100.00	1.5000	Raingage
Building-1					
PC-2.4	0.03	47.00	100.00	1.5000	Raingage
Building-1					
PC-2.5	0.06	26.57	100.00	1.5000	Raingage
Building-1					
PC2.6	0.02	1.70	25.00	0.5000	Raingage
Building-1					
PC2.7	0.00	5.69	100.00	1.5000	Raingage
SU1					
PC2.8	0.01	12.91	100.00	1.5000	Raingage
SU1					
PC2.9	0.00	2.60	100.00	1.5000	Raingage
SU1					
PC-3	0.18	118.00	100.00	1.0000	Raingage
SU2					
PC4	1.10	368.00	76.10	1.5000	Raingage
CB4					
PC-5	0.06	42.21	15.80	1.0000	Raingage
MH1					
PC6	0.66	87.99	100.00	1.0000	Raingage
SU4					
PC7	0.47	57.68	0.00	1.5000	Raingage
HW2_(PROP._STM)					
PC8	1.16	130.57	27.50	5.0000	Raingage
POND					
PC9	0.49	117.38	94.50	1.5000	Raingage
MH9					
UC-1	0.27	76.57	68.40	1.5000	Raingage
J2					

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
Building-1	JUNCTION	275.99	2.02	0.0	
Building2	JUNCTION	276.00	2.00	0.0	
CB1	JUNCTION	275.22	1.45	0.0	
CB10	JUNCTION	276.94	0.65	0.0	
CB11	JUNCTION	275.61	1.68	0.0	
CB2	JUNCTION	275.25	1.52	0.0	
CB3	JUNCTION	275.71	1.74	0.0	
CB4	JUNCTION	275.00	1.50	0.0	
CB5	JUNCTION	275.23	1.66	0.0	
CB6	JUNCTION	274.85	1.55	0.0	
CB7	JUNCTION	276.10	1.44	0.0	
CB8	JUNCTION	276.60	0.72	0.0	
CB9	JUNCTION	275.89	1.55	0.0	
CBMH1	JUNCTION	274.78	1.97	0.0	
CBMH2	JUNCTION	274.73	1.49	0.0	

CBMH3	JUNCTION	275.65	1.66	0.0
CBMH4	JUNCTION	275.60	1.71	0.0
CBMH5	JUNCTION	276.00	0.76	0.0
DICB1	JUNCTION	276.40	1.30	0.0
DICB2	JUNCTION	276.75	2.15	0.0
J1	JUNCTION	274.62	1.70	0.0
J2	JUNCTION	273.58	3.13	0.0
MH1	JUNCTION	275.59	3.83	0.0
MH10	JUNCTION	275.79	1.29	0.0
MH11	JUNCTION	275.90	0.94	0.0
MH12	JUNCTION	275.54	1.64	0.0
MH2	JUNCTION	274.63	2.21	0.0
MH3	JUNCTION	274.40	2.49	0.0
MH4	JUNCTION	275.87	1.98	0.0
MH5	JUNCTION	275.60	2.13	0.0
MH6	JUNCTION	275.13	1.99	0.0
MH7	JUNCTION	274.99	1.83	0.0
MH8	JUNCTION	274.88	1.62	0.0
MH9	JUNCTION	275.28	2.03	0.0
OGS1	JUNCTION	274.02	2.50	0.0
OGS1_(PROP._STM)	JUNCTION	274.27	2.25	0.0
StartNullStruct4	JUNCTION	275.31	2.69	0.0
StartNullStruct5	JUNCTION	0.00	276.70	0.0
StartNullStruct6	JUNCTION	0.00	276.33	0.0
HW2_(PROP._STM)	OUTFALL	274.00	0.95	0.0
OF2	OUTFALL	273.07	0.68	0.0
P1	STORAGE	276.40	0.30	0.0
POND	STORAGE	274.80	1.50	0.0
SU1	STORAGE	285.00	0.15	0.0
SU2	STORAGE	285.00	0.20	0.0
SU3	STORAGE	285.00	0.15	0.0
SU4	STORAGE	285.00	0.15	0.0
UG-CHAMBER	STORAGE	274.33	1.50	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	% Slope	Roughness
C1	MH8	POND	CONDUIT	27.2	0.3015	0.0130
C10	J1	HW2_(PROP._STM)	CONDUIT	43.7	0.2700	0.0130
C2	J2	OF2	CONDUIT	15.5	1.3535	0.0130
C3	POND	J1	CONDUIT	8.2	1.0001	0.0130
C4	CBMH3	MH9	CONDUIT	6.7	1.0001	0.0130
C5	CB2	MH2	CONDUIT	2.9	1.0001	0.0130
C6	MH3	UG-CHAMBER	CONDUIT	10.8	0.4074	0.0130
C7	CB6	UG-CHAMBER	CONDUIT	10.5	1.0001	0.0130

```
  C8               OGS1_(PROP._STM) J2               CONDUIT          11.9
5.7866    0.0130
  C9               POND             J1               CONDUIT           6.6
1.0001    0.0130
  Pipe_-_(1)_(PROP._STM) DICB2            MH1              CONDUIT          25.6
0.9977    0.0130
  Pipe_-_(2)_(PROP._STM) MH12             MH6              CONDUIT          50.4
0.5395    0.0130
  Pipe_-_(3)_(PROP._STM) StartNullStruct4 MH7              CONDUIT           8.5
1.0002    0.0130
  Pipe_-_(4)_(PROP._STM) StartNullStruct5 MH9              CONDUIT           4.3
0.9984    0.0130
  Pipe_-_(47)_(PROP._STM) CB5              CBMH2            CONDUIT          45.7
1.0006    0.0130
  Pipe_-_(48)_(PROP._STM) CBMH2            MH3              CONDUIT          35.6
0.4994    0.0130
  Pipe_-_(5)_(PROP._STM) StartNullStruct6 MH10             CONDUIT          24.3
0.9992    0.0130
  Pipe_-_(51)_(PROP._STM) CB1              CBMH1            CONDUIT          31.1
0.9998    0.0130
  Pipe_-_(52)_(PROP._STM) CBMH1            MH2              CONDUIT          25.9
0.5015    0.0130
  Pipe_-_(53)_(PROP._STM) MH2              MH3              CONDUIT          31.2
0.4995    0.0130
  Pipe_-_(56)_(PROP._STM) CB4              MH2              CONDUIT          24.3
1.0003    0.0130
  Pipe_-_(57)_(PROP._STM) CB3              MH2              CONDUIT          18.3
1.0079    0.0130
  Pipe_-_(58)_(PROP._STM) CB11             MH3              CONDUIT          27.1
0.9986    0.0130
  Pipe_-_(59)_(PROP._STM) CB10             CBMH5            CONDUIT          89.2
0.9994    0.0130
  Pipe_-_(60)_(PROP._STM) CBMH5            MH11             CONDUIT           8.6
0.4991    0.0130
  Pipe_-_(61)_(1)_(PROP._STM) Building2        MH12             CONDUIT
29.4    0.9974    0.0130
  Pipe_-_(61)_(2)_(PROP._STM) MH10             MH12             CONDUIT
22.5    0.4040    0.0130
  Pipe_-_(61)_(PROP._STM) MH11             MH10             CONDUIT          18.1
0.4986    0.0130
  Pipe_-_(65)_(2)(0)_(1)_(PROP._STM) MH9              MH6              CONDUIT
17.5    0.4010    0.0130
  Pipe_-_(65)_(2)(0)_(PROP._STM) MH5              MH9              CONDUIT
69.3    0.4042    0.0130
  Pipe_-_(66)_(PROP._STM) MH6              MH7              CONDUIT          29.4
0.2996    0.0130
  Pipe_-_(67)_(PROP._STM) MH7              MH8              CONDUIT          30.3
0.3005    0.0130
  Pipe_-_(68)      Building-1       MH5              CONDUIT          10.5
0.9993    0.0130
  Pipe_-_(69)_(PROP._STM) CBMH4            MH6              CONDUIT           6.8
1.0009    0.0130
  Pipe_-_(70)_(PROP._STM) CB8              CBMH3            CONDUIT          26.7
0.9962    0.0130
  Pipe_-_(76)_(PROP._STM) MH1              CBMH1            CONDUIT           8.0
0.9953    0.0130
  Pipe_-_(78)_(PROP._STM) DICB1            MH1              CONDUIT          31.1
0.9999    0.0130
  Pipe_-_(79)_(PROP._STM) CB7              MH4              CONDUIT          14.9
1.0011    0.0130
```

Pipe_-_(80)_(PROP._STM)	MH4	MH5	CONDUIT	15.3	0.9989	0.0130
Pipe_-_(81)_(PROP._STM)	CB9	CBMH4	CONDUIT	26.7	1.0006	0.0130
OR2	UG-CHAMBER	OGS1_(PROP._STM)	ORIFICE			
OR3	P1	CB4	ORIFICE			
OL1	SU2	MH4	OUTLET			
OL2	SU3	Building-1	OUTLET			
OL3	SU1	Building2	OUTLET			
OL4	SU4	StartNullStruct4	OUTLET			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	CIRCULAR	0.60	0.28	0.15	0.60	1	337.15
C10	CIRCULAR	0.45	0.16	0.11	0.45	1	148.16
C2	CIRCULAR	0.38	0.11	0.09	0.38	1	203.99
C3	CIRCULAR	0.12	0.01	0.03	0.12	1	9.37
C4	CIRCULAR	0.30	0.07	0.07	0.30	1	96.71
C5	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C6	CIRCULAR	0.45	0.16	0.11	0.45	1	181.99
C7	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
C8	CIRCULAR	0.38	0.11	0.09	0.38	1	421.79
C9	CIRCULAR	0.20	0.03	0.05	0.20	1	32.80
Pipe_-_(1)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.40
Pipe_-_(2)_(PROP._STM)	CIRCULAR	0.45	0.16	0.11	0.45	1	209.42
Pipe_-_(3)_(PROP._STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	96.71
Pipe_-_(4)_(PROP._STM)	CIRCULAR	0.20	0.03	0.05	0.20	1	32.77
Pipe_-_(47)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.49
Pipe_-_(48)_(PROP._STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	68.34
Pipe_-_(5)_(PROP._STM)	CIRCULAR	0.20	0.03	0.05	0.20	1	32.79
Pipe_-_(51)_(PROP._STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	59.47
Pipe_-_(52)_(PROP._STM)	CIRCULAR	0.38	0.11	0.09	0.38	1	124.17

```
  Pipe_-_(53)_(PROP._STM) CIRCULAR             0.38     0.11     0.09     0.38
1   123.93
  Pipe_-_(56)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25
1    59.48
  Pipe_-_(57)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25
1    59.71
  Pipe_-_(58)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25
1    59.43
  Pipe_-_(59)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25
1    59.45
  Pipe_-_(60)_(PROP._STM) CIRCULAR             0.30     0.07     0.07     0.30
1    68.32
  Pipe_-_(61)_(1)_(PROP._STM) CIRCULAR             0.30     0.07     0.07     0.30
1    96.58
  Pipe_-_(61)_(2)_(PROP._STM) CIRCULAR             0.30     0.07     0.07     0.30
1    61.47
  Pipe_-_(61)_(PROP._STM) CIRCULAR             0.30     0.07     0.07     0.30
1    68.28
  Pipe_-_(65)_(2)(0)_(1)_(PROP._STM) CIRCULAR             0.53     0.22     0.13
0.53        1   272.35
  Pipe_-_(65)_(2)(0)_(PROP._STM) CIRCULAR             0.53     0.22     0.13
0.53        1   273.44
  Pipe_-_(66)_(PROP._STM) CIRCULAR             0.60     0.28     0.15     0.60
1   336.12
  Pipe_-_(67)_(PROP._STM) CIRCULAR             0.60     0.28     0.15     0.60
1   336.60
  Pipe_-_(68)      CIRCULAR             0.30     0.07     0.07     0.30        1
96.67
  Pipe_-_(69)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25
1    59.50
  Pipe_-_(70)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25
1    59.36
  Pipe_-_(76)_(PROP._STM) CIRCULAR             0.30     0.07     0.07     0.30
1    96.48
  Pipe_-_(78)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25
1    59.47
  Pipe_-_(79)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25
1    59.50
  Pipe_-_(80)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25
1    59.44
  Pipe_-_(81)_(PROP._STM) CIRCULAR             0.25     0.05     0.06     0.25
1    59.49


  ****************
  Analysis Options
  ****************
  Flow Units ............... LPS
  Process Models:
    Rainfall/Runoff ........ YES
    RDII ................... NO
    Snowmelt ............... NO
    Groundwater ............ NO
    Flow Routing ........... YES
    Ponding Allowed ........ NO
    Water Quality .......... NO
  Infiltration Method ...... CURVE_NUMBER
  Flow Routing Method ...... DYNWAVE
  Surcharge Method ......... EXTRAN
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```
Starting Date ............ 04/08/2024 00:00:00
Ending Date .............. 04/09/2024 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.601       103.846
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.113        19.470
Surface Runoff ...........         0.476        82.328
Final Storage ............         0.012         2.082
Continuity Error (%) .....        -0.032


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.476         4.765
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.447         4.472
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.002
Final Stored Volume ......         0.029         0.294
Continuity Error (%) .....         0.020


*************************
Highest Continuity Errors
*************************
Node CBMH5 (1.09%)


***************************
Time-Step Critical Elements
***************************
None


********************************
Highest Flow Instability Indexes
********************************
All links are stable.
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****
Most Frequent Nonconverging Nodes
****

Node HW2_(PROP._STM) (0.08%)
Node OF2 (0.08%)
Node CB4 (0.06%)
Node Building2 (0.02%)
Node MH12 (0.01%)

****
Routing Time Step Summary
****

Minimum Time Step	:	0.16 sec
Average Time Step	:	1.00 sec
Maximum Time Step	:	1.00 sec
% of Time in Steady State	:	0.00
Average Iterations per Step	:	2.01
% of Steps Not Converging	:	0.08
Time Step Frequencies	:	
1.000 - 0.871 sec	:	99.95 %
0.871 - 0.758 sec	:	0.01 %
0.758 - 0.660 sec	:	0.01 %
0.660 - 0.574 sec	:	0.01 %
0.574 - 0.500 sec	:	0.02 %

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
PC1	103.85	0.00	0.00	0.52	100.85	0.51	101.36	0.34	124.64	0.976
PC10	103.85	0.00	0.00	51.51	0.00	49.63	49.63	0.08	20.34	0.478
PC11	103.85	0.00	0.00	51.51	0.00	50.49	50.49	0.04	18.38	0.486
PC12	103.85	0.00	0.00	51.51	0.00	50.00	50.00	0.10	35.49	0.481
PC-2.1	103.85	0.00	0.00	0.00	101.91	0.00	101.91	0.03	9.93	0.981
PC2.10	103.85	0.00	0.00	0.00	101.90	0.00	101.90	0.01	4.83	0.981
PC2.11	103.85	0.00	0.00	0.00	101.93	0.00	101.93	0.05	19.71	0.982
PC2.12	103.85	0.00	0.00	0.00	101.91	0.00	101.91	0.02	9.04	0.981

PC2.13	103.85	0.00	0.00	0.00	101.93	0.00	101.93	0.01	5.21	0.982
PC2.14	103.85	0.00	0.00	0.00	101.90	0.00	101.90	0.07	24.21	0.981
PC2.15	103.85	0.00	0.00	0.00	101.89	0.00	101.89	0.05	16.66	0.981
PC2.16	103.85	0.00	0.00	0.00	101.92	0.00	101.92	0.01	2.53	0.981
PC2.17	103.85	0.00	0.00	0.00	101.89	0.00	101.89	0.04	15.73	0.981
PC2.18	103.85	0.00	0.00	0.00	101.90	0.00	101.90	0.09	32.13	0.981
PC2.19	103.85	0.00	0.00	0.00	103.87	0.00	103.87	0.02	7.29	1.000
PC-2.2	103.85	0.00	0.00	0.00	101.93	0.00	101.93	0.03	11.27	0.982
PC2.20	103.85	0.00	0.00	0.00	103.85	0.00	103.85	0.05	16.21	1.000
PC-2.3	103.85	0.00	0.00	0.00	101.90	0.00	101.90	0.03	12.27	0.981
PC-2.4	103.85	0.00	0.00	0.00	101.93	0.00	101.93	0.03	10.49	0.982
PC-2.5	103.85	48.76	0.00	0.00	150.67	0.00	150.67	0.08	30.68	0.987
PC2.6	103.85	0.00	0.00	38.63	25.47	37.00	62.47	0.01	2.94	0.602
PC2.7	103.85	0.00	0.00	0.00	101.93	0.00	101.93	0.00	1.38	0.982
PC2.8	103.85	0.00	0.00	0.00	101.92	0.00	101.92	0.01	5.28	0.981
PC2.9	103.85	0.00	0.00	0.00	101.92	0.00	101.92	0.00	0.97	0.981
PC-3	103.85	0.00	0.00	0.00	101.91	0.00	101.91	0.18	65.81	0.981
PC4	103.85	0.00	0.00	12.31	77.55	12.10	89.65	0.99	377.86	0.863
PC-5	103.85	0.00	0.00	43.37	16.10	42.51	58.61	0.03	15.04	0.564
PC6	103.85	0.00	0.00	0.00	101.87	0.00	101.87	0.67	245.06	0.981
PC7	103.85	0.00	0.00	51.51	0.00	49.72	49.72	0.24	67.03	0.479
PC8	103.85	6.53	0.00	37.35	29.82	41.04	70.87	0.82	302.82	0.642
PC9	103.85	0.00	0.00	2.83	96.28	2.79	99.07	0.49	180.10	0.954
UC-1	103.85	0.00	0.00	16.28	69.70	15.97	85.67	0.23	88.73	0.825

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters

Building-1	JUNCTION	0.02	0.30	276.28	0	06:00	0.30
Building2	JUNCTION	0.05	1.42	277.43	0	06:00	1.42
CB1	JUNCTION	0.00	0.16	275.38	0	06:00	0.16
CB10	JUNCTION	0.00	0.00	276.94	0	00:00	0.00
CB11	JUNCTION	0.00	0.00	275.61	0	00:00	0.00
CB2	JUNCTION	0.00	0.12	275.37	0	06:00	0.12
CB3	JUNCTION	0.00	0.00	275.71	0	00:00	0.00
CB4	JUNCTION	0.11	2.04	277.04	0	06:00	2.04
CB5	JUNCTION	0.00	0.00	275.23	0	00:00	0.00
CB6	JUNCTION	0.01	0.33	275.18	0	06:39	0.33
CB7	JUNCTION	0.00	0.14	276.24	0	06:00	0.13
CB8	JUNCTION	0.00	0.00	276.60	0	00:00	0.00
CB9	JUNCTION	0.01	0.26	276.15	0	06:00	0.25
CBMH1	JUNCTION	0.03	0.60	275.38	0	06:00	0.59
CBMH2	JUNCTION	0.02	0.47	275.20	0	06:38	0.47
CBMH3	JUNCTION	0.07	0.56	276.21	0	06:00	0.56
CBMH4	JUNCTION	0.08	0.55	276.15	0	06:00	0.55
CBMH5	JUNCTION	0.00	0.35	276.35	0	06:00	0.33
DICB1	JUNCTION	0.00	0.00	276.40	0	00:00	0.00
DICB2	JUNCTION	0.00	0.00	276.75	0	00:00	0.00
J1	JUNCTION	0.22	0.28	274.90	0	07:45	0.28
J2	JUNCTION	0.04	0.30	273.88	0	06:00	0.30
MH1	JUNCTION	0.01	0.08	275.67	0	06:00	0.08
MH10	JUNCTION	0.03	0.54	276.33	0	06:00	0.54
MH11	JUNCTION	0.01	0.44	276.34	0	06:00	0.42
MH12	JUNCTION	0.12	0.79	276.33	0	06:00	0.78
MH2	JUNCTION	0.07	0.74	275.37	0	06:00	0.74
MH3	JUNCTION	0.07	0.79	275.20	0	06:38	0.79
MH4	JUNCTION	0.02	0.36	276.24	0	06:00	0.36
MH5	JUNCTION	0.09	0.63	276.23	0	06:00	0.63
MH6	JUNCTION	0.35	1.02	276.15	0	06:00	1.02
MH7	JUNCTION	0.45	1.02	276.01	0	06:00	1.01
MH8	JUNCTION	0.54	1.10	275.98	0	07:43	1.10
MH9	JUNCTION	0.25	0.93	276.21	0	06:00	0.93
OGS1	JUNCTION	0.00	0.00	274.02	0	00:00	0.00
OGS1_(PROP._STM)	JUNCTION	0.03	0.14	274.41	0	06:39	0.14
StartNullStruct4	JUNCTION	0.23	0.74	276.05	0	06:00	0.73
StartNullStruct5	JUNCTION	0.00	0.00	0.00	0	00:00	0.00
StartNullStruct6	JUNCTION	2.06	2.74	2.74	0	06:01	2.74
HW2_(PROP._STM)	OUTFALL	0.84	0.84	274.84	0	00:00	0.84
OF2	OUTFALL	0.00	0.00	273.07	0	00:00	0.00
P1	STORAGE	0.01	0.27	276.67	0	06:02	0.27
POND	STORAGE	0.60	1.18	275.98	0	07:45	1.18
SU1	STORAGE	0.03	0.08	285.08	0	06:31	0.08
SU2	STORAGE	0.02	0.19	285.19	0	06:06	0.19
SU3	STORAGE	0.01	0.07	285.07	0	06:01	0.07
SU4	STORAGE	0.02	0.15	285.15	0	06:07	0.15
UG-CHAMBER	STORAGE	0.08	0.85	275.18	0	06:39	0.85

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******************
Node Inflow Summary
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                                Maximum  Maximum                  Lateral
Total        Flow
```

Node	Type	Lateral Inflow LPS	Total Inflow LPS	Time of Max Occurrence days	hr:min	Inflow Volume 10^6 ltr	Inflow Volume 10^6 ltr	Balance Error Percent
Building-1	JUNCTION	67.64	71.33	0	06:00	0.188	0.227	0.069
Building2	JUNCTION	178.37	186.91	0	06:00	0.489	0.745	0.093
CB1	JUNCTION	0.00	1.31	0	05:50	0	0.00074	0.381
CB10	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB11	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB2	JUNCTION	0.00	0.52	0	05:53	0	0.000199	0.671
CB3	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB4	JUNCTION	377.86	377.86	0	06:00	0.99	1.17	0.036
CB5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB6	JUNCTION	0.00	0.53	0	05:46	0	0.000319	0.362
CB7	JUNCTION	0.00	1.99	0	05:59	0	0.000231	1.303
CB8	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
CB9	JUNCTION	0.00	3.05	0	05:54	0	0.000951	0.247
CBMH1	JUNCTION	0.00	15.02	0	06:00	0	0.0351	0.024
CBMH2	JUNCTION	0.00	3.37	0	05:42	0	0.00249	0.483
CBMH3	JUNCTION	0.00	2.39	0	05:52	0	0.000903	0.101
CBMH4	JUNCTION	0.00	7.47	0	06:01	0	0.00303	-0.010
CBMH5	JUNCTION	0.00	9.67	0	05:54	0	0.0026	1.098
DICB1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
DICB2	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J1	JUNCTION	0.00	92.64	0	07:45	0	2.85	0.069
J2	JUNCTION	88.73	197.81	0	06:00	0.23	1.25	-0.000
MH1	JUNCTION	15.04	15.04	0	06:00	0.034	0.034	0.001
MH10	JUNCTION	0.00	32.28	0	06:01	0	0.0133	0.117
MH11	JUNCTION	0.00	28.06	0	06:01	0	0.00639	0.767
MH12	JUNCTION	0.00	186.90	0	06:00	0	0.751	0.111

MH2	JUNCTION	0.00	169.04	0	05:59	0	1.02	0.088
MH3	JUNCTION	0.00	167.52	0	06:00	0	1.02	-0.109
MH4	JUNCTION	0.00	16.89	0	06:00	0	0.181	0.041
MH5	JUNCTION	0.00	81.13	0	05:53	0	0.407	-0.001
MH6	JUNCTION	0.00	422.03	0	06:00	0	1.64	-0.069
MH7	JUNCTION	0.00	478.70	0	06:00	0	2.31	-0.070
MH8	JUNCTION	0.00	478.74	0	06:00	0	2.31	0.020
MH9	JUNCTION	180.10	259.87	0	05:59	0.488	0.896	0.054
OGS1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
OGS1_(PROP._STM)	JUNCTION	0.00	120.01	0	06:39	0	1.02	-0.000
StartNullStruct4	JUNCTION	0.00	59.98	0	06:07	0	0.672	0.009
StartNullStruct5	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
StartNullStruct6	JUNCTION	0.00	15.61	0	06:00	0	0.0032	3198.289 ltr
HW2_(PROP._STM)	OUTFALL	120.90	150.29	0	06:00	0.375	3.22	0.000
OF2	OUTFALL	0.00	197.60	0	06:00	0	1.25	0.000
P1	STORAGE	0.00	222.15	0	06:00	0	0.185	0.021
POND	STORAGE	302.82	781.27	0	06:00	0.824	3.13	0.054
SU1	STORAGE	93.18	93.18	0	06:00	0.256	0.256	0.000
SU2	STORAGE	65.81	65.81	0	06:00	0.18	0.18	0.001
SU3	STORAGE	14.24	14.24	0	06:00	0.039	0.039	-0.000
SU4	STORAGE	245.06	245.06	0	06:00	0.672	0.672	0.000
UG-CHAMBER	STORAGE	0.00	166.49	0	06:00	0	1.02	-0.026

****
Node Surcharge Summary
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Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
Building2	JUNCTION	0.27	1.124	0.574
CB4	JUNCTION	1.18	1.639	0.000
CB6	JUNCTION	0.68	0.077	1.223

CB9	JUNCTION	0.01	0.010	1.290
CBMH2	JUNCTION	0.95	0.169	1.021
CBMH4	JUNCTION	3.64	0.279	1.158
CBMH5	JUNCTION	0.01	0.048	0.415
MH10	JUNCTION	0.12	0.211	0.746
MH11	JUNCTION	0.04	0.087	0.501
MH12	JUNCTION	0.17	0.319	0.850
MH4	JUNCTION	0.02	0.037	1.616
MH5	JUNCTION	0.03	0.052	1.498
MH6	JUNCTION	5.18	0.366	0.972
MH7	JUNCTION	7.84	0.370	0.816
MH8	JUNCTION	10.22	0.482	0.520
OGS1	JUNCTION	24.00	0.000	2.500
StartNullStruct4	JUNCTION	8.49	0.441	1.954

****
Node Flooding Summary
****

No nodes were flooded.

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Storage Volume Summary
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Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
P1	0.004	1.6	0.0	0.0	0.185	76.1	0 06:02	93.85
POND	0.763	33.9	0.0	0.0	1.640	72.8	0 07:45	92.64
SU1	0.031	7.9	0.0	0.0	0.138	34.9	0 06:31	8.82
SU2	0.005	6.7	0.0	0.0	0.066	88.5	0 06:06	11.10
SU3	0.001	1.6	0.0	0.0	0.015	24.6	0 06:01	3.74
SU4	0.018	6.7	0.0	0.0	0.249	93.3	0 06:07	59.98
UG-CHAMBER	0.010	1.8	0.0	0.0	0.154	28.8	0 06:39	120.04

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
HW2_(PROP._STM)	92.38	40.34	150.29	3.219
OF2	56.73	25.62	197.60	1.253
System	74.55	65.95	347.84	4.472

****
Link Flow Summary
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Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days	hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	478.84	0	06:00	1.69	1.42	1.00
C10	CONDUIT	92.64	0	07:46	0.80	0.63	0.68
C2	CONDUIT	197.60	0	06:00	2.12	0.97	0.79
C3	CONDUIT	34.05	0	07:45	2.77	3.64	1.00
C4	CONDUIT	3.88	0	06:00	0.17	0.04	1.00
C5	CONDUIT	1.08	0	06:40	0.27	0.02	0.55
C6	CONDUIT	166.49	0	06:00	1.34	0.91	1.00
C7	CONDUIT	0.53	0	05:46	0.06	0.01	1.00
C8	CONDUIT	120.01	0	06:39	2.36	0.28	0.57
C9	CONDUIT	58.59	0	07:45	1.88	1.79	0.98
Pipe_-_(1)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	CONDUIT	172.68	0	05:55	1.30	0.82	1.00
Pipe_-_(3)_(PROP._STM)	CONDUIT	59.97	0	06:07	1.12	0.62	1.00
Pipe_-_(4)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
Pipe_-_(48)_(PROP._STM)	CONDUIT	3.37	0	05:42	0.09	0.05	1.00
Pipe_-_(5)_(PROP._STM)	CONDUIT	15.61	0	06:00	0.62	0.48	0.74
Pipe_-_(51)_(PROP._STM)	CONDUIT	3.61	0	06:01	0.10	0.06	0.83
Pipe_-_(52)_(PROP._STM)	CONDUIT	16.43	0	06:00	0.22	0.13	1.00
Pipe_-_(53)_(PROP._STM)	CONDUIT	167.51	0	06:00	1.52	1.35	1.00
Pipe_-_(56)_(PROP._STM)	CONDUIT	155.94	0	05:53	3.18	2.62	1.00
Pipe_-_(57)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(58)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(59)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.50
Pipe_-_(60)_(PROP._STM)	CONDUIT	28.06	0	06:01	0.68	0.41	1.00
Pipe_-_(61)_(1)_(PROP._STM)	CONDUIT	186.90	0	06:00	2.64	1.94	1.00
Pipe_-_(61)_(2)_(PROP._STM)	CONDUIT	36.62	0	06:02	0.52	0.60	1.00
Pipe_-_(61)_(PROP._STM)	CONDUIT	32.28	0	06:01	0.48	0.47	1.00
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	CONDUIT	257.77	0	06:00	1.28	0.95	1.00
Pipe_-_(65)_(2)(0)_(PROP._STM)	CONDUIT	95.34	0	06:01	0.71	0.35	1.00
Pipe_-_(66)_(PROP._STM)	CONDUIT	421.58	0	06:00	1.49	1.25	1.00
Pipe_-_(67)_(PROP._STM)	CONDUIT	478.74	0	06:00	1.69	1.42	1.00
Pipe_-_(68)	CONDUIT	70.75	0	05:58	1.49	0.73	1.00
Pipe_-_(69)_(PROP._STM)	CONDUIT	7.50	0	06:01	0.20	0.13	1.00

Pipe_-_(70)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(76)_(PROP._STM)	CONDUIT	15.02	0	06:00	0.99	0.16	0.27
Pipe_-_(78)_(PROP._STM)	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
Pipe_-_(79)_(PROP._STM)	CONDUIT	5.79	0	06:00	0.27	0.10	0.78
Pipe_-_(80)_(PROP._STM)	CONDUIT	23.16	0	06:01	0.93	0.39	1.00
Pipe_-_(81)_(PROP._STM)	CONDUIT	7.47	0	06:01	0.17	0.13	1.00
OR2	ORIFICE	120.01	0	06:39			1.00
OR3	ORIFICE	222.15	0	06:00			
OL1	DUMMY	11.10	0	05:36			
OL2	DUMMY	3.74	0	06:01			
OL3	DUMMY	8.82	0	06:04			
OL4	DUMMY	59.98	0	06:07			

****
Flow Classification Summary
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	Adjusted	---------- Fraction of Time in Flow Class ----------								
Conduit	/Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C1	1.00	0.01	0.00	0.00	0.90	0.09	0.00	0.00	0.06	0.00
C10	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C2	1.00	0.04	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.00
C3	1.00	0.01	0.00	0.00	0.83	0.00	0.00	0.16	0.04	0.00
C4	1.00	0.63	0.03	0.00	0.34	0.00	0.00	0.00	0.44	0.00
C5	1.00	0.24	0.00	0.00	0.03	0.00	0.00	0.72	0.00	0.00
C6	1.00	0.04	0.00	0.00	0.15	0.00	0.00	0.81	0.00	0.00
C7	1.00	0.24	0.00	0.00	0.06	0.00	0.00	0.70	0.00	0.00
C8	1.00	0.04	0.00	0.00	0.40	0.56	0.00	0.00	0.96	0.00
C9	1.00	0.69	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00
Pipe_-_(1)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(2)_(PROP._STM)	1.00	0.00	0.00	0.00	0.59	0.00	0.00	0.41	0.22	0.00
Pipe_-_(3)_(PROP._STM)	1.00	0.04	0.00	0.00	0.63	0.01	0.00	0.33	0.06	0.00
Pipe_-_(4)_(PROP._STM)	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(47)_(PROP._STM)	1.00	0.94	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe_-_(48)_(PROP._STM)	1.00	0.23	0.00	0.00	0.07	0.00	0.00	0.69	0.01	0.00

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  Pipe_-_(5)_(PROP._STM)    1.00   0.85  0.14  0.00  0.00  0.00  0.01  0.00  0.00
0.00
  Pipe_-_(51)_(PROP._STM)    1.00   0.23  0.01  0.00  0.05  0.00  0.00  0.71  0.01
0.00
  Pipe_-_(52)_(PROP._STM)    1.00   0.04  0.00  0.00  0.47  0.00  0.00  0.49  0.41
0.00
  Pipe_-_(53)_(PROP._STM)    1.00   0.04  0.00  0.00  0.07  0.00  0.00  0.89  0.01
0.00
  Pipe_-_(56)_(PROP._STM)    1.00   0.04  0.00  0.00  0.05  0.00  0.00  0.91  0.01
0.00
  Pipe_-_(57)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
0.00
  Pipe_-_(58)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
0.00
  Pipe_-_(59)_(PROP._STM)    1.00   0.99  0.01  0.00  0.00  0.00  0.00  0.00  0.00
0.00
  Pipe_-_(60)_(PROP._STM)    1.00   0.88  0.06  0.00  0.03  0.00  0.00  0.03  0.72
0.00
  Pipe_-_(61)_(1)_(PROP._STM)    1.00   0.00  0.00  0.00  0.20  0.02  0.00  0.78
0.21  0.00
  Pipe_-_(61)_(2)_(PROP._STM)    1.00   0.70  0.04  0.00  0.25  0.00  0.00  0.00
0.55  0.00
  Pipe_-_(61)_(PROP._STM)    1.00   0.80  0.02  0.00  0.18  0.00  0.00  0.00  0.63
0.00
  Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)    1.00   0.04  0.00  0.00  0.64  0.00  0.00
0.32  0.05  0.00
  Pipe_-_(65)_(2)(0)_(PROP._STM)    1.00   0.04  0.00  0.00  0.58  0.00  0.00  0.39
0.23  0.00
  Pipe_-_(66)_(PROP._STM)    1.00   0.00  0.00  0.00  0.77  0.00  0.00  0.23  0.06
0.00
  Pipe_-_(67)_(PROP._STM)    1.00   0.00  0.00  0.00  0.81  0.00  0.00  0.19  0.00
0.00
  Pipe_-_(68)             1.00   0.04  0.00  0.00  0.10  0.01  0.00  0.85  0.11
0.00
  Pipe_-_(69)_(PROP._STM)    1.00   0.59  0.02  0.00  0.39  0.00  0.00  0.00  0.40
0.00
  Pipe_-_(70)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
0.00
  Pipe_-_(76)_(PROP._STM)    1.00   0.04  0.00  0.00  0.00  0.00  0.00  0.96  0.00
0.00
  Pipe_-_(78)_(PROP._STM)    1.00   1.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
0.00
  Pipe_-_(79)_(PROP._STM)    1.00   0.88  0.06  0.00  0.03  0.00  0.00  0.03  0.72
0.00
  Pipe_-_(80)_(PROP._STM)    1.00   0.04  0.00  0.00  0.24  0.01  0.00  0.71  0.13
0.00
  Pipe_-_(81)_(PROP._STM)    1.00   0.66  0.14  0.00  0.20  0.00  0.00  0.00  0.62
0.00


  *************************
  Conduit Surcharge Summary
  *************************

  ----------------------------------------------------------------------------
                                                            Hours        Hours
                         --------- Hours Full --------   Above Full   Capacity
  Conduit                Both Ends  Upstream  Dnstream   Normal Flow   Limited
  ----------------------------------------------------------------------------
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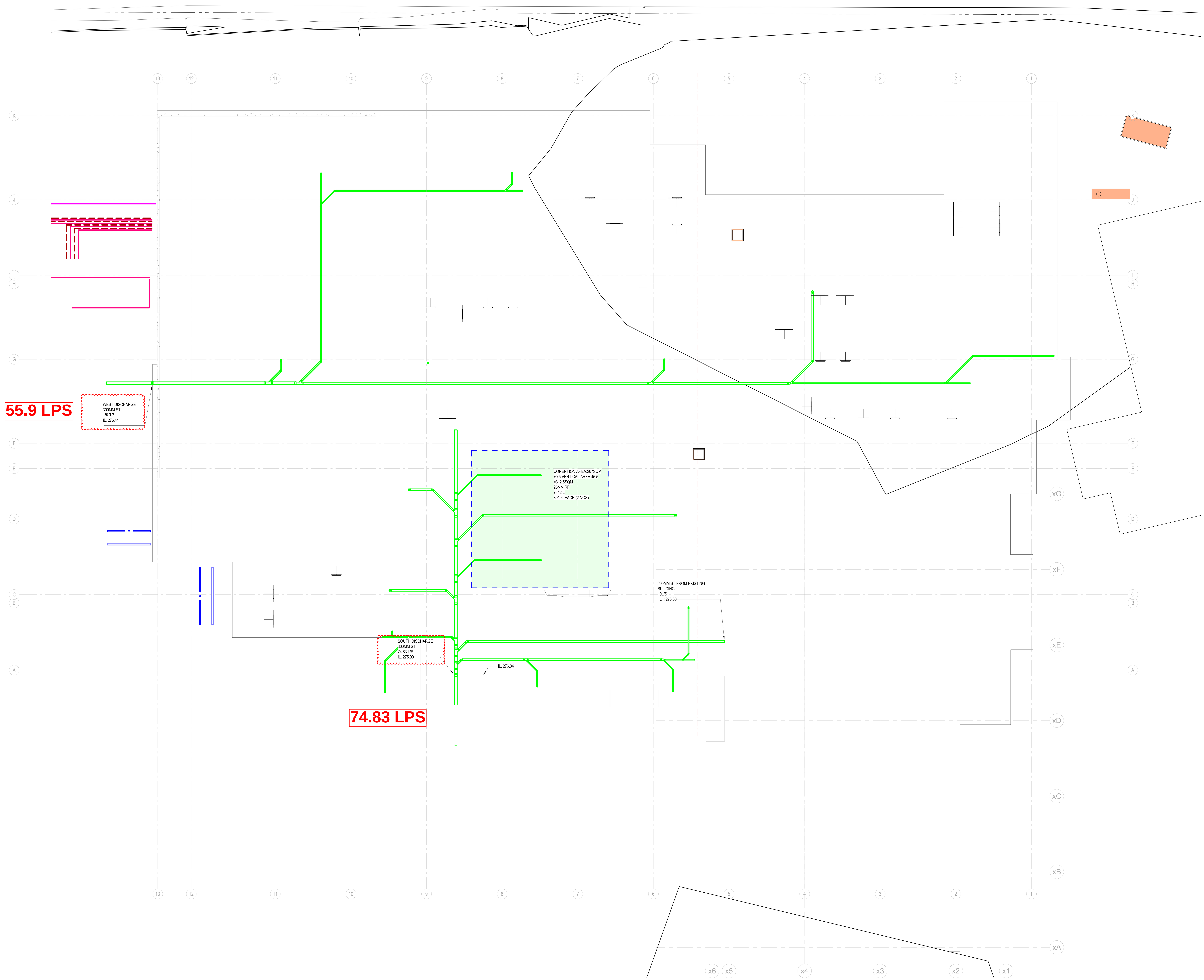
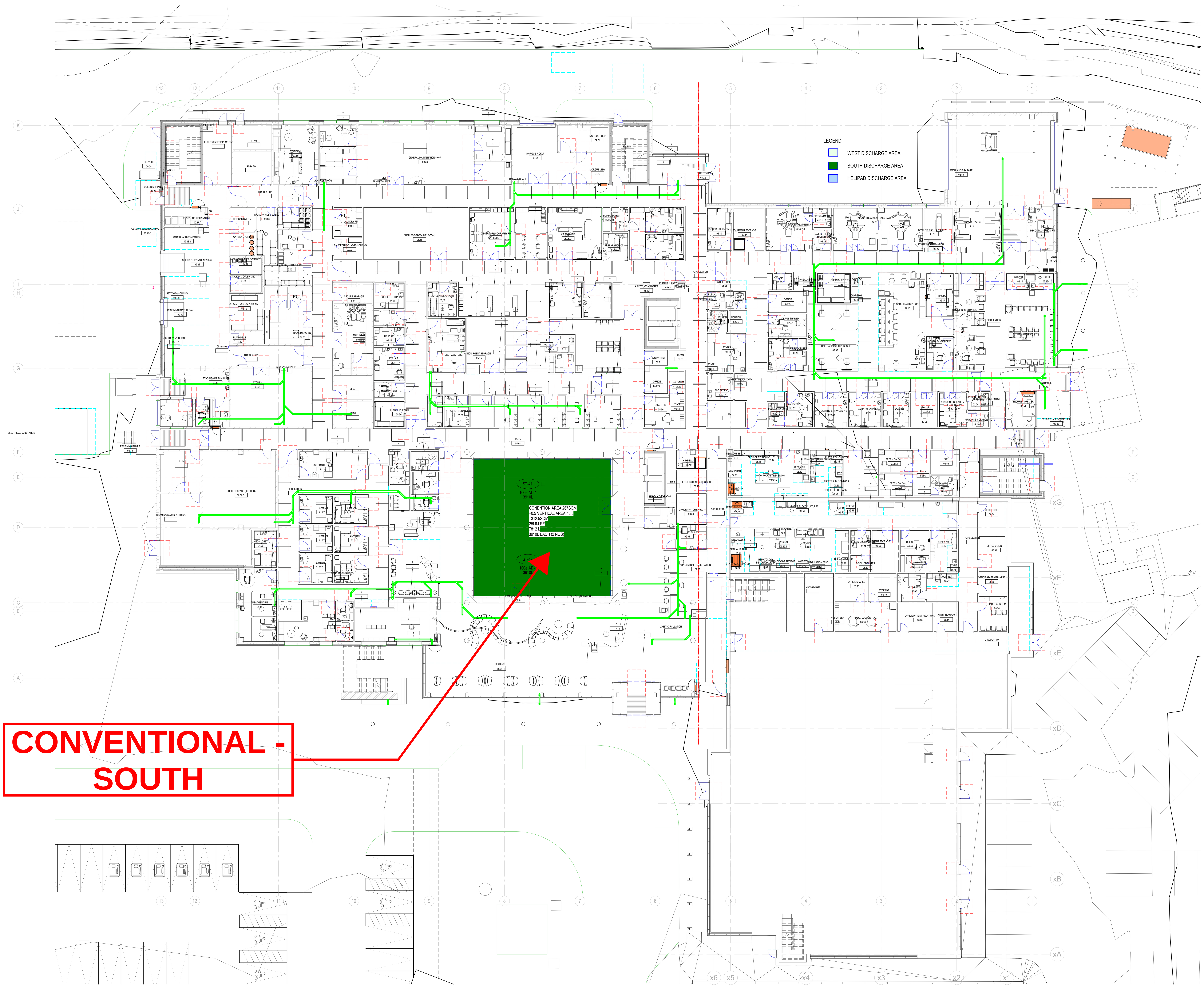
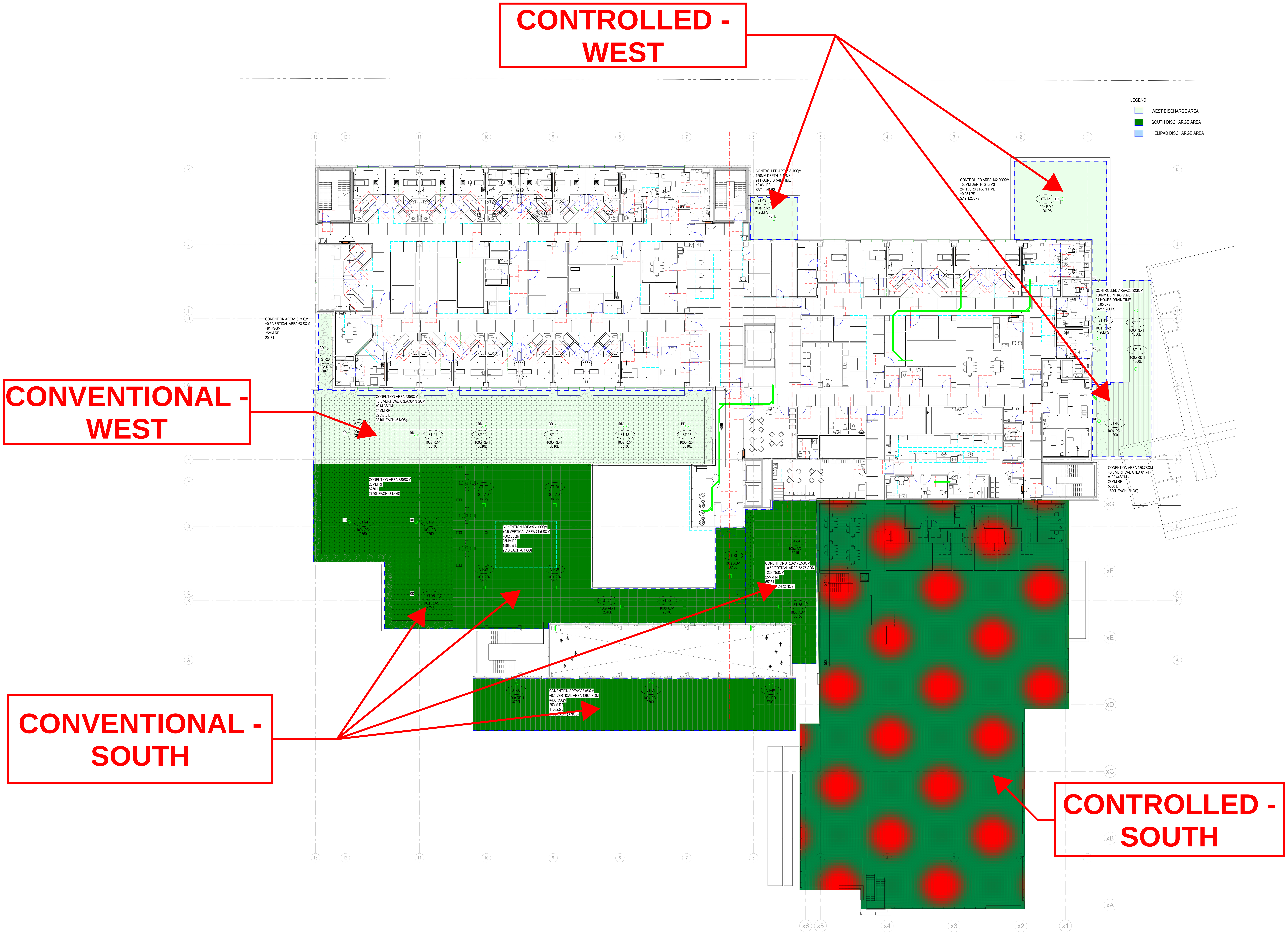
C1	10.54	10.56	11.90	0.25	0.19
C3	16.13	20.58	16.14	20.89	16.13
C4	2.18	2.18	3.50	0.01	0.01
C6	1.32	1.32	1.38	0.01	0.01
C7	0.68	0.68	0.98	0.01	0.01
C9	0.01	3.72	0.01	4.36	0.01
Pipe_-_(2)_(PROP._STM)	0.17	0.17	6.40	0.01	0.01
Pipe_-_(3)_(PROP._STM)	8.49	8.49	9.96	0.01	0.01
Pipe_-_(48)_(PROP._STM)	0.95	0.95	1.32	0.01	0.01
Pipe_-_(5)_(PROP._STM)	0.01	0.01	18.09	0.01	0.01
Pipe_-_(51)_(PROP._STM)	0.01	0.01	0.91	0.01	0.01
Pipe_-_(52)_(PROP._STM)	0.95	0.95	1.15	0.01	0.01
Pipe_-_(53)_(PROP._STM)	1.16	1.19	1.32	1.07	0.90
Pipe_-_(56)_(PROP._STM)	1.21	1.23	1.36	1.19	1.16
Pipe_-_(60)_(PROP._STM)	0.01	0.01	0.04	0.01	0.01
Pipe_-_(61)_(1)_(PROP._STM)	0.21	0.27	0.22	0.27	0.21
Pipe_-_(61)_(2)_(PROP._STM)	0.14	0.14	0.17	0.01	0.01
Pipe_-_(61)_(PROP._STM)	0.08	0.08	0.12	0.01	0.01
Pipe_-_(65)_(2)(0)_(1)_(PROP._STM)	4.83	4.83	6.16	0.01	0.01
Pipe_-_(65)_(2)(0)_(PROP._STM)	0.07	0.07	4.15	0.01	0.01
Pipe_-_(66)_(PROP._STM)	6.29	6.29	7.84	0.23	0.18
Pipe_-_(67)_(PROP._STM)	8.67	8.69	10.22	0.25	0.20
Pipe_-_(68)	0.01	0.01	0.03	0.01	0.01
Pipe_-_(69)_(PROP._STM)	4.04	4.04	5.18	0.01	0.01
Pipe_-_(79)_(PROP._STM)	0.01	0.01	0.02	0.01	0.01
Pipe_-_(80)_(PROP._STM)	0.07	0.07	1.63	0.01	0.01
Pipe_-_(81)_(PROP._STM)	0.01	0.01	3.64	0.01	0.01

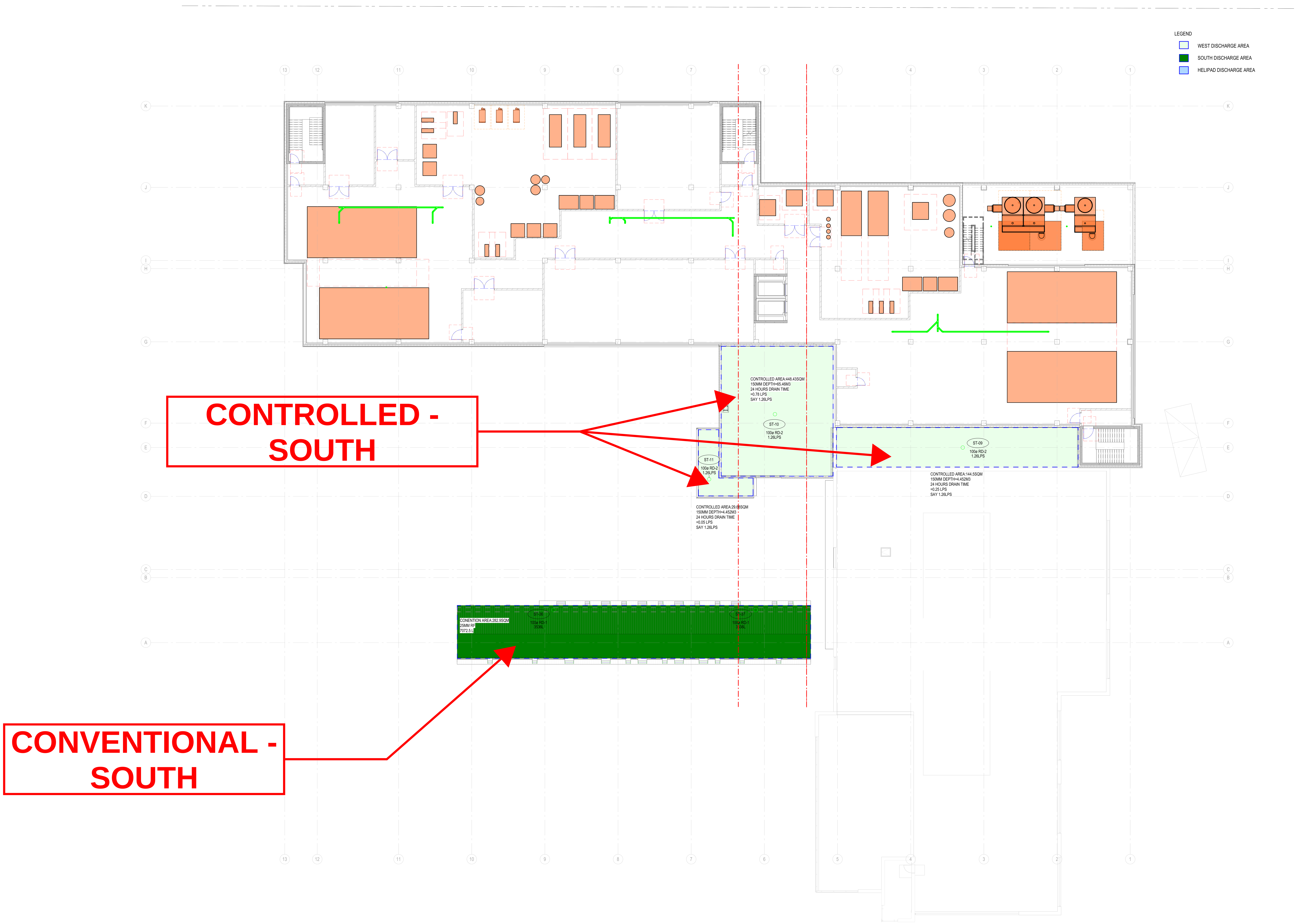
Analysis begun on: Thu Sep 19 20:35:43 2024
Analysis ended on: Thu Sep 19 20:35:45 2024
Total elapsed time: 00:00:02


55.9 LPS
WEST DISCHARGE
300MM ST
55.9L/S
IL. 276.41
CONENTION AREA:267SQM
+0.5 VERTICAL AREA:45.5
=312.5SQM
25MM RF
7812 L
3910L EACH (2 NOS)
200MM ST FROM EXISTING
BUILDING
10L/S
I.L. : 276.68
SOUTH DISCHARGE
300MM ST
74.83 L/S
IL. 275.99
IL. 276.34
74.83 LPS

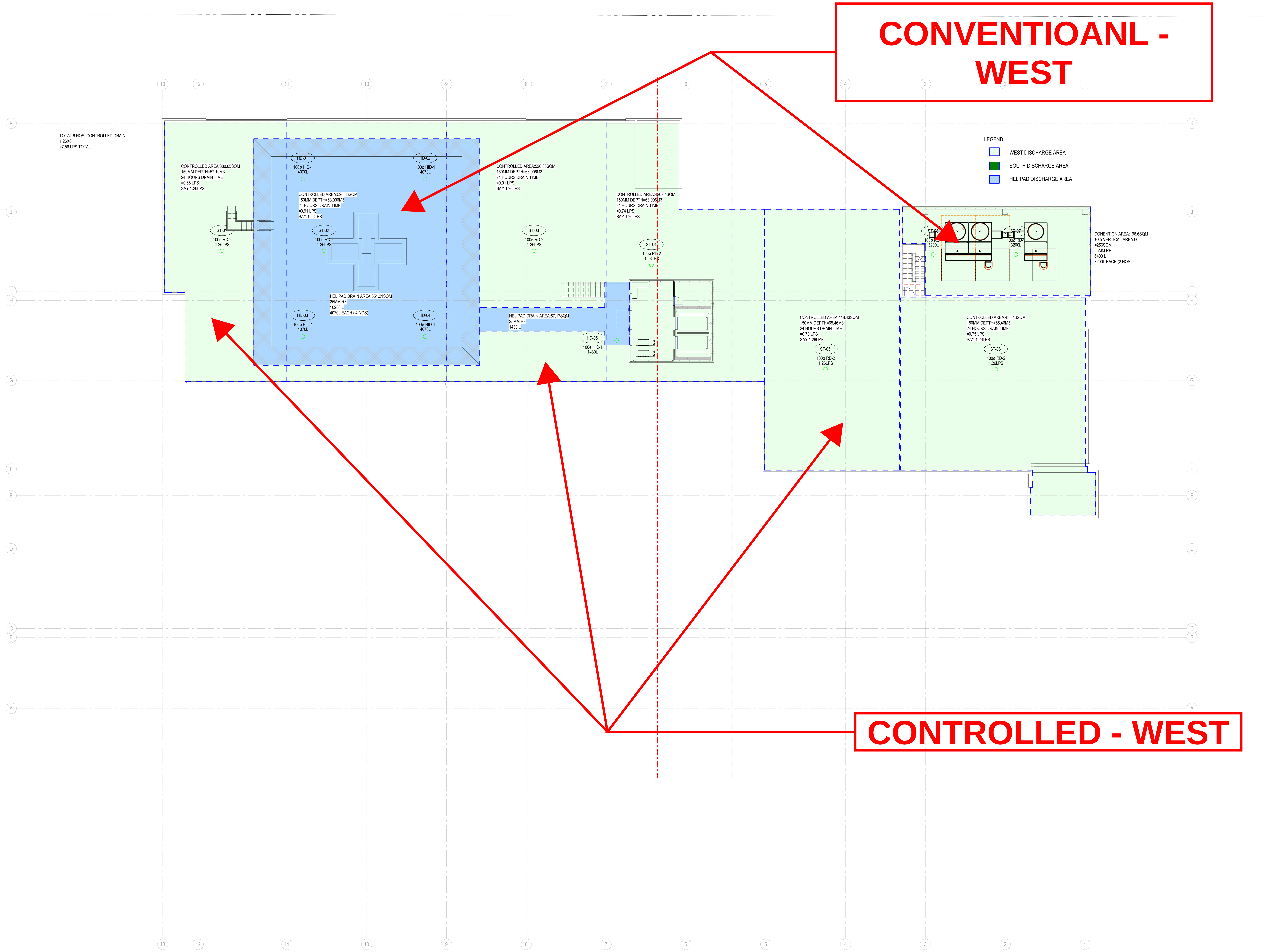


LEGEND
WEST DISCHARGE AREA
SOUTH DISCHARGE AREA
HELIPAD DISCHARGE AREA
ST-41
100ø AD-1
3910L
CONENTION AREA:267SQM
+0.5 VERTICAL AREA:45.5
=312.5SQM
25MM RF
7812 L
3910L EACH (2 NOS)
ST-42
CONVENTIONAL - SOUTH


CONTROLLED - WEST
CONVENTIONAL - WEST
CONVENTIONAL - SOUTH
CONTROLLED - SOUTH
LEGEND
WEST DISCHARGE AREA
SOUTH DISCHARGE AREA
HELIPAD DISCHARGE AREA



LEGEND
WEST DISCHARGE AREA
SOUTH DISCHARGE AREA
HELIPAD DISCHARGE AREA
CONTROLLED - SOUTH
CONTROLLED AREA:448.43SQM
150MM DEPTH=65.46M3
24 HOURS DRAIN TIME
=0.78 LPS
SAY 1.26LPS
ST-10
100ø RD-2
1.26LPS
ST-11
100ø RD-2
1.26LPS
CONTROLLED AREA:29.68SQM
150MM DEPTH=4.452M3
24 HOURS DRAIN TIME
=0.05 LPS
SAY 1.26LPS
ST-09
100ø RD-2
1.26LPS
CONTROLLED AREA:144.5SQM
150MM DEPTH=4.452M3
24 HOURS DRAIN TIME
=0.25 LPS
SAY 1.26LPS
CONENTION AREA:282.9SQM
25MM RF
7072.5 L
ST-36
100ø RD-1
3536L
ST-37
100ø RD-1
3536L
CONVENTIONAL - SOUTH


CONVENTIOANL - WEST
CONTROLLED - WEST
TOTAL 6 NOS. CONTROLLED DRAIN
1.26X6
=7.56 LPS TOTAL
CONTROLLED AREA:380.65SQM
150MM DEPTH=57.10M3
24 HOURS DRAIN TIME
=0.66 LPS
SAY 1.26LPS
ST-01
100ø RD-2
1.26LPS
HD-01
100ø HID-1
4070L
HD-02
100ø HID-1
4070L
CONTROLLED AREA:526.86SQM
150MM DEPTH=63.996M3
24 HOURS DRAIN TIME
=0.91 LPS
SAY 1.26LPS
ST-02
100ø RD-2
1.26LPS
HELIPAD DRAIN AREA:651.21SQM
25MM RF
16280 L
4070L EACH (4 NOS)
HD-03
100ø HID-1
4070L
HD-04
100ø HID-1
4070L
CONTROLLED AREA:526.86SQM
150MM DEPTH=63.996M3
24 HOURS DRAIN TIME
=0.91 LPS
SAY 1.26LPS
ST-03
100ø RD-2
1.26LPS
HELIPAD DRAIN AREA:57.17SQM
25MM RF
1430 L
HD-05
100ø HID-1
1430L
CONTROLLED AREA:426.64SQM
150MM DEPTH=63.996M3
24 HOURS DRAIN TIME
=0.74 LPS
SAY 1.26LPS
ST-04
100ø RD-2
1.26LPS
CONTROLLED AREA:448.43SQM
150MM DEPTH=65.46M3
24 HOURS DRAIN TIME
=0.78 LPS
SAY 1.26LPS
ST-05
100ø RD-2
1.26LPS
CONTROLLED AREA:436.43SQM
150MM DEPTH=65.46M3
24 HOURS DRAIN TIME
=0.75 LPS
SAY 1.26LPS
ST-06
100ø RD-2
1.26LPS
3200L
ST-07
3200L
CONENTION AREA:196.6SQM
+0.5 VERTICAL AREA:60
=256SQM
25MM RF
6400 L
3200L EACH (2 NOS)
LEGEND
WEST DISCHARGE AREA
SOUTH DISCHARGE AREA
HELIPAD DISCHARGE AREA

APPENDIX G

HYDROGEOLOGICAL AND GEOTECHNICAL

Hydrogeological Investigation Report
4 Campbell Drive,
Uxbridge, Ontario

Oak Valley Health

August 29, 2024
02310769.003

ENGLOBE

Oak Valley Health
Hydrogeological Investigation Report
4 Campbell Drive

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Revisions and publications log.

REVISION No.	DATE	DESCRIPTION
A01	August 29, 2024	Hydrogeological Investigation report issued for comments

Distribution

1 digital copy	Oak Valley Health

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1 Introduction

Englobe Corp. (Englobe) was retained by Oak Valley Health. to complete a Hydrogeological investigation and water balance assessment for the proposed development at 4 Campbell Drive in Uxbridge Ontario (Herein referred to as “the site”). The proposed development will involve an addition of a slab on grade Hospital Building, paved parking surfaces, underground utilities installation and a stormwater management pond (SWMP). Currently the site is occupied by an existing UXMED building, a cottage hospital and paved/landscaped areas. The proposed hospital building addition will be in the central part of the site with an approximate building footprint area of 6300 m^2/0.63 hectares. Currently the property and the immediate neighboring areas are serviced with municipal water and sewage services. The property is surrounded by Service Ontario facility to the east, vacant field to the west, residential subdivisions to the south and residential apartment building to the north.

Terraprobe (now Englobe Corp) previously two Hydrogeological investigations at the site (File No. 1-19-0022-46, dated April 12,2019 and File No. 1-19-0022-46.1 dated May 2020). Geotechnical assessment for the proposed development is presented under a separate cover **File No.: 02310769.002.**

This hydrogeological investigation includes an overview of the existing geological and hydrogeological conditions at the Site and the surrounding area, an assessment of the hydrogeological constraints, impacts of the proposed development on the local groundwater use and provides an estimation of construction dewatering requirements during the proposed development phase.

If needed, the results of this investigation can be used in support of an application for a Category 3 Permit to Take Water (PTTW) or an Environmental Activity Sector Registry (EASR) for construction dewatering from the Ministry of the Environment, Conservation and Parks (MECP).

2 Scope of Work

The following tasks were completed as part of the Hydrogeological Investigation:

- Background Review: A review of available background geological and hydrogeological information utilizing resources such as Ontario Geological survey (OGS), Ministry of Environment Conservation and Parks (MECP), Oak Ridges Moraine Groundwater Program (ORMGP), and Ministry of Natural Resources and Forestry (MNRF) databases.
- Review of Regulatory Mapping: Applicable regulatory authority mapping was reviewed in terms of the location of the site.
- Site Inspection: A visual inspection of the Site and surrounding areas was conducted to determine local topography and drainage, and an assessment of hydrogeologically significant features.
- Groundwater Level Monitoring and Hydraulic Conductivity Testing: Groundwater levels were monitored within the monitoring wells installed by Englobe Corporation. Hydraulic conductivity testing was conducted within the monitoring wells to confirm the hydraulic conductivity of the sub-soil profile within the screened intervals.
- Guelph Permeameter Testing: In-situ infiltration tests were conducted at the location of proposed Low Impact Development (LID) measures.
- Groundwater Quality Testing: Groundwater quality was assessed against applicable sewer use by law or Provincial Water Quality Objectives (PWQO).
- Review of Proposed Site Development Concept: The proposed site development plans were reviewed to confirm the proposed invert elevation for developing underground structures.
- Water Balance Assessment: Water balance assessment for the site was completed for the entire site based on the development plans provided.
- Source Water Impact Assessment: Appropriate mitigation measures to address hydrogeological function following property development.
- Groundwater Control Requirements: Groundwater control requirements (if applicable) during construction (Short Term) and post construction (Long term) were addressed as part of the investigation.

3 Applicable Regulations and Policies

3.1 Lake Simcoe Region Conservation Authority (LSRCA)

Under section 28 of the Conservation Authorities Act, local conservation authorities are mandated to protect the health and integrity of the regional greenspace system and to maintain or improve the hydrological and ecological functions performed by the valley and stream corridors. The site is located within the Uxbridge Brook Creek watershed, within the Lake Simcoe and Couchiching/Black River Source Protection Area. The subject site is partially located within a regulated LSRCA area. A tributary of Uxbridge Brook passes through the northwestern corner of the property, and therefore there are associated hazards (Meander belt erosion, erosion Hazard and flooding). Natural Heritage features (woodland) and Hydrologic features (wetlands) were also identified in the study area. Regulatory and watershed maps are presented **in Appendix A**.

3.2 Clean Water Act 2006

The MECP mandates the protection of existing and future sources of drinking water under the Clean Water Act, 2006 (CWA). Initiatives under the CWA include the delineation of Wellhead Protection Areas (WHPAs), Significant Groundwater Recharge Areas (SGRAs) and Highly Vulnerable Aquifers (HVAs), as well as the assessment of drinking water quality and quantity threats within Source Protection Regions. Source Protection Plans are developed under the CWA and include the restriction and prohibition of certain types of activities and land uses within WHPAs.

Based on the review of MECP's Source Protection Information Atlas and regulation area mapping, the following information was obtained:

Associated Policy Area	Applicability
Conservation Authourity	LSRCA
Source Protection Area	Lakes Simcoe and Couchiching/Black River
Conservation Regulated Area	Yes
Wellhead Protection Area (WHPA)	WHPA-A ; Score : 10 WHPA-Q1 and WHPA-Q2
Significant Groundwater Recharge Area (SGRA).	No
Highly Vulnerable Aquifer (HVA)	Yes. Vulnerability score 6
Intake Protection Zone	Westernmost Portion of the site is located in Intake Protection Zone 3 (Score 4.5)
Oak Ridges Moraine (ORM)	No
Niagara Escarpment Plan Area	No
Greenbelt Protection Act Area	No

3.3 South Georgian Bay Lake Simcoe Source Protection Region Approved Source Protection Plan

The Property is subject to policies LUP-12 and LUP-13. Briefly, it is required that the hydrogeological study demonstrate that the existing water balance can be maintained using best management practices such as low impact development (LID) and the use of these practices to maintain recharge rates is mandatory.

4 Site Description

4.1 Site Location and Description

The site (**Figure 2A**) has a total area of 5.5 hectares and currently is occupied by an existing UXMED building, a cottage hospital and paved/landscaped areas The proposed development (**Figure 2B**) will involve an addition of a slab on grade Hospital Building, paved parking surfaces, underground utilities installation and a stormwater management pond (SWMP). Currently the site is occupied by an existing UXMED building, a cottage hospital and paved/landscaped areas. The proposed hospital building addition will be in the central part of the site with an approximate building footprint area of 6300 m^2/0.63 hectares.

4.2 Topography and Surface Drainage

The topography at the site is relatively flat with surface elevation varying from 274.0-275.8 masl. Grade at the property generally slopes downwards to the northwest except in the eastern portion of the property where it slopes downwards to the southeast. Based on the preliminary existing drainage plans **(Appendix J)** provided to Englobe, the surface water from the eastern part of the property (Existing UXmed center and parking lot and Existing Cottage Hospital and Parking lot) flows to a a storm sewer on Campbell Drive. Surface water from the remaining part of the property including some external catchment areas flows to the Uxbridge Brook creek and the associated wetland in the Northwest corner of the site.

The nearest surface water features are a tributary of Uxbridge Brook that passes through the northwest corner of the site and a tributary of Uxbridge Brook present as a pond and creek approximately 120 m east of the property.

4.3 Physiography and Local Geology

Based on published literature and mapping, the Site is located within the Peterborough Drumlin Field physiographic region characterized by Clay till plains. The overburden in the region consists of coarse textured glaciolacustrine deposits. This material is generally characterized as sand, gravel, minor silt and clay from foreshore and basinal deposits. The bedrock in the vicinity of the property consists of the Blue Mountain Formation comprising of shale and limestone. Physiography and geological maps are presented in **Appendix B**.

4.4 Regional Hydrogeology

The Hydrogeological conditions for the site and the study area are inferred based on available well records and published literature. Oak Ridges Moraine Ground Water online mapping portal was also utilized to study regional hydrostratigraphy. The following hydrostratigraphic units are identified at the site and in the study area:

- <u>Channel Silt Aquitard:</u> Low permeability meltwater channel with an approximate thickness of 13 meters, forms the upper most layer of sediments at the site and in the study area. Limited vertical movement of groundwater is expected thus limiting the recharge to the underlying channel sand aquifer.

- Channel Sand Aquifer: Consists of permeable sand and gravel deposits in meltwater channels. This unit is also exploited for municipal water use.

- Lower Newmarket Till Aquitard: Lower Newmarket till in the study area forms the divide between the upper channel aquifer and the deeper aquifer i.e. Thorncliffe and Scarborough formation. The thickness of this layer is between 16 m -25 m as noted in the ORMGP cross section (**Appendix C**)

- Thorncliffe Formation Aquifer: Comprise of glaciofluvial deposits of sand and silty sand. Municipal well PW6 located approximately 15 meters from the southern boundary of the site is screened in this unit. The layer in the study area and site is approximately 16 meters thick.

At a regional level, groundwater moves through the sub watershed from the elevated areas of the Oak Ridges Moraine south of the site toward Lake Simcoe to the north. Shallow groundwater flow is affected by variations in the surface geological materials, which restrict vertical recharge. Additionally, shallow groundwater is influenced by various watercourses within the sub watershed, which are sustained by groundwater discharge.

4.5 Summary of Well Records

A review of MECP well records was conducted for 500 m surrounding the subject property. A total of 101 well records were identified within the study area. Thirty-nine (39) wells were identified as domestic use waters supply wells. All other wells were noted as test holes/monitoring wells, abandoned or not in use. Municipal water supply well PW6 (1911055) is located approximately 15 meters from the southern boundary of the site. The location of the well records is shown in **Figure 3**, whereas the individual well records are attached as **Appendix D**. Predominantly all water supply wells are screened in overburden with depths ranging from 6.1-68.0 mbgs. Private well users within the study area are anticipated.

5 Results of Subsurface Investigation

A subsurface investigation was completed at the Site by Englobe between June 17-20, 2024. Seventeen (17) boreholes in the vicinity of the proposed development were advanced to depths ranging from 5.2-8.2 mbgs.

The boreholes were drilled by a specialist drilling contractor using a track-mounted drill rig power auger. The borings were advanced using continuous flight solid stem augers and were sampled at 0.75 m (up to 3.0 m depth) and 1.5 m (below 3.0 m depth) intervals with a conventional 50 mm diameter split barrel sampler when the Standard Penetration (SPT) was carried out (ASTM D1586). The field work (drilling, sampling, and testing) was observed and recorded by a member of our field engineering staff, who logged the borings and examined the samples as they were obtained.

Water levels were measured in open boreholes upon completion of drilling. Standpipe piezometers or monitoring wells comprising 50 mm diameter PVC pipes were installed in selected boreholes to facilitate groundwater monitoring and for hydrogeological purposes. The PVC tubing was fitted. Upon installation, an elevation survey of the monitoring wells relative to a local datum was completed so that the relative groundwater flow direction can be assessed.

The borehole and monitoring well locations are outlined in **Figure 2A & 2B**. The soil samples were observed and recorded by a member of our field engineering staff, who logged the borings and examined the samples as they were obtained. All samples obtained during the investigation were sealed into plastic jars and transported to our testing laboratory for detailed inspection and testing.

5.1 Local Site Setting

Based on the review of the geotechnical report **File No. 02310769.002**, the subsurface soil stratigraphy is indicated below. The following stratigraphy is based on the borehole findings, as well as the geotechnical laboratory testing conducted on selected representative soil samples. The stratigraphic boundaries indicated on the Borehole Logs are inferred from non-continuous samples and observations of drilling resistance and typically represent a transition from one soil type to another. These boundaries should not be interpreted to represent exact planes of geological change. The subsurface conditions have been confirmed in a series of widely spaced boreholes and will vary between and beyond the borehole locations.

5.1.1 Surficial Layers

A surficial topsoil layer (about 100 to 300 mm thick) was encountered in Boreholes 24-3, 24-5, 24-7 and 24-9 to 24-16. The topsoil was noted to be dark brown to black in color and predominantly consisted of a silt matrix with organic presence. A layer of asphaltic concrete (about 90 to 150 mm thick) was encountered in Boreholes 24-1, 24-2, 24-4, 24- 6, 24-8 and 24-17) at the ground surface which was underlain by an aggregate layer (about 40 to 310 mm thick). The aggregate material (comprising sand and gravel) was noted to be typically in a compact and damp condition.

5.1.2 Earth Fill

A zone of earth fill was encountered in all boreholes (except Boreholes 24-10 and 24-11) beneath the topsoil layer/pavement structure and extended to depths varying from about 0.8 m (boreholes 24-1, 24-3, 24-4, 24-6, 24-9, 24-13, 24-15, 24-16 and 24-17) to about 2.6 m (Borehole 24-5) below existing grade. The earth fill materials predominantly consisted of sandy silt/sand with trace to some silt/silty sand with trace amounts of clay and gravel as well as organics.

5.1.3 Native Soil

Undisturbed native soil was encountered in all boreholes beneath the zone of earth fill material and extended to the full depth of investigation (up to maximum about 8.2 m depth below existing grade).

Silt with trace to some clay and trace to some sand was encountered in all boreholes (except Boreholes 24-11, 24-12, 24-14 and 24-15) at depths varying from about 0.8 (Boreholes 24-1, 24-3, 24-4, 24-16 and 24-17) to 4.6 m (Borehole 24-10) and extended to depths varying from about 4.6 m (Boreholes 24-13) to 8.2 m (Borehole 24-6) below existing grade.

Sandy silt with trace amount of clay was encountered in Boreholes 24-6 and 24-15 at about 0.8 m depth and extended to depths varying from about 1.5 m (Borehole 24-6) to 3.0 m (Borehole 24-15) below existing grade.

Clayey silt with trace amounts sand was encountered in Borehole 24-8 at about 1.5 m depth and extended to about 2.3 m depth below existing grade.

Sand with trace to some silt/silty sand with trace to some gravel and trace amounts of clay was encountered in Boreholes 24-9 to 24-15 at depts varying from about 0.2 m (Borehole 24-11) to 4.6 m (Borehole 24-13) and extended to depths varying from about 1.8 m (Boreholes 24-9) to 6.7 m (full depth of investigation, Boreholes 24-10 to 24-15) below existing grade.

Sand and gravel with trace amounts silt was encountered in Borehole 24-13 at about 0.8 m depth and extended to about 2.3 m depth below existing grade.

The detailed stratigraphic conditions are presented on the accompanying borehole logs provided in **Appendix E**. A subsurface profile of the Site is provided in **Figure 4**. Characterization of the various soil types, including grain size analysis, was conducted and is presented in **Appendix F**.

5.2 Monitoring Wells Installation

Monitoring wells were installed in selected boreholes for groundwater monitoring and to investigate groundwater quality. The monitoring wells were constructed using 50-mm diameter PVC riser pipes and screens, which were installed in each of the geotechnical boreholes in accordance with Ontario Regulation (O. Reg.) 903. Filter sand was placed around the well screen to approximately 0.6 m above the top of the screen. The wells were then backfilled with bentonite to approximately 0.3 m below the ground surface. All monitoring wells were surveyed using an R10 Trimble GPS relative to a geodetic datum. The details are provided below:

Well ID	Well Diameter (mm)	Ground Surface Elevation (masl)	Top of Screen		Bottom of Screen		Screened Unit
			Depth (mbgs)	Elev. (masl)	Depth (mbgs)	Elev. (masl)	
BH24-1	50	276.6	3.1	273.5	6.1	270.5	Silt
BH24-2	50	277.2	3.1	274.1	6.1	271.1	Silt
BH24-3	50	276.9	3.1	2273.8	6.1	270.8	Silt
BH24-4	50	277.3	3.1	274.2	6.1	271.2	Silt
BH24-5	50	277.2	3.1	274.1	6.1	271.1	Silt
BH24-6	50	276.8	3.7	273.1	6.7	270.1	Silt
BH24-7	50	277.6	3.1	274.5	6.1	271.5	Silt
BH24-8	50	278.0	3.1	275.0	6.1	272.0	Silt
BH24-9	50	275.9	3.1	272.9	6.1	269.9	Silt
BH24-10	50	276.0	3.0	273.0	6.0	270.0	Silt
BH24-11	50	275.7	1.9	273.8	4.9	270.8	Sand
BH24-12	50	275.7	1.6	274.4	4.6	271.1	Sand

Well ID	Well Diameter (mm)	Ground Surface Elevation (masl)	Top of Screen		Bottom of Screen		Screened Unit
			Depth (mbgs)	Elev. (masl)	Depth (mbgs)	Elev. (masl)	
BH24-13	50	276.7	3.0	273.7	4.6	272.1	Silt
BH24-15	50	277.6	3.0	274.6	6.1	271.2	Sand

5.3 Groundwater Elevations

Groundwater levels were recorded manually in all installed monitoring wells on July 03,2024. Groundwater levels varied between 1.6-2.5 mbgs (Elevations: 273.9-276.2 masl) representing the groundwater conditions in overburden at the site. Groundwater levels are currently being monitored in all monitoring wells to assess the seasonal fluctuations in groundwater at the site. The report will be updated with additional data upon completion of the monitoring.

Well ID	Ground Surface Elevation (masl)	July 03,2024	
		Groundwater Depth (mbgs)	Groundwater Elevation (masl)
BH24-1	276.6	1.65	274.95
BH24-2	277.2	2.52	274.74
BH24-3	276.9	2.45	274.47
BH24-4	277.3	2.39	274.92
BH24-5	277.2	2.50	274.73
BH24-6	276.8	2.08	274.77
BH24-7	277.6	1.40	276.22
BH24-8	278.0	2.31	275.74
BH24-9	275.9	1.95	273.99
BH24-10	276.0	1.37	274.72
BH24-11	275.7	1.77	274.01
BH24-12	275.7	1.7	274.04
BH24-13	276.7	1.6	275.13
BH24-15	277.6	1.73	275.83

Based on initial groundwater measurements, shallow groundwater flow is inferred to flow northwest towards Uxbridge Brook Tributary in the western part of the site. The flow in eastern part of the site is inferred southeast hence indicating a groundwater divide trending North-South (approximately). A groundwater flow direction map prepared as part of the last hydrogeological investigation at the site (**File: 1-19-002246.1**) is presented in **Appendix G**. An updated groundwater flow map will be prepared at a later stage.

5.4 Estimation of Hydraulic Conductivity

5.4.1 Estimation from Grain Size Distribution

To estimate the hydraulic conductivity (K) from the grain size distribution curves an excel based tool/program HydrogeoSieveXL (Devlin, J.F. 2015) is used that calculates the hydraulic conductivity from grain size distribution curves using 15 different methods. HydrogeoSieveXL was found to calculate K values essentially identical to those reported in the literature, using the published grain-size distribution curves. The complete report for each sample is provided along with the grain size results in **Appendix F.**

Borehole No./Sample ID	Sampling Depth (mbgs)	Sampling Elevation (masl)	Soil Description	Estimated Hydraulic Conductivity (m/s) (Geomean)
BH24-16, SS3	1.5	278.3	Sandy Silt	2.6×10^{-7}
BH24-15, SS3	1.5	276.1	Sandy Silt	3.4×10^{-8}
BH24-12, SS4	2.3	273.3	Silty Sand	3.4×10^{-8}
BH24-8, SS3	1.5	276.5	Clayey Silt	2.6×10^{-9}
BH24-6, SS4	2.3	274.6	Silt	1.4×10^{-8}
BH24-1, SS3	1.5	275.1	Silt	9.0×10^{-9}

5.4.1 Estimation from In-Situ Hydraulic Conductivity Testing

The hydraulic conductivity was also determined based on single well response/rising head tests in selected wells. The monitoring wells were developed in advance of the testing event, which involves the purging and removal of groundwater from the monitoring wells to remove remnants of clay, silt and other debris introduced into the monitoring well during construction and to induce the flow of formation groundwater through the well screens, thereby improving the transmissivity of the subsoil strata formation at the well screen depths. The Solinst Dataloggers (pressure transducers) were programmed to record the water levels at various intervals throughout the tests. The data from the tests were analyzed using the Hvorslev method included in the Aquifer Test V.7 software package.

The results of the analysis are presented in **Appendix H**. The hydraulic conductivity values calculated from the in-situ tests are as follows:

Monitoring Well ID	Top of Well Screen Elevation (masl)	Bottom of Well Screen Elevation (masl)	Screened Geological Unit	Hydraulic Conductivity (m/s)	Geomean (m/s)
BH24-1	273.5	270.5	Silt	7.0×10^{-7}	4.6×10^{-7}
BH24-2	274.1	271.1	Silt	3.7×10^{-7}	
BH24-6	273.1	270.1	Silt	3.1×10^{-7}	
BH24-8	275.0	272.0	Silt	2.3×10^{-7}	
BH24-10	273.0	270.0	Silt	2.3×10^{-7}	
BH24-11	273.8	270.8	Silt	2.2×10^{-7}	
BH24-15	274.2	271.2	Sand	6.4×10^{-6}	
BH24-13	275.1	272.1	Silt	3.3×10^{-7}	

Based on the single well response tests, the hydraulic conductivity in native soils varied from 6.4×10^{-6} to 7.0×10^{-7}.

5.4.1 Field Saturated Hydraulic Conductivity

The proposed development may include low impact development provision for on-site storm water management. As such an assessment of soil infiltration rates will be required as a component of the storm water management design.

A total of three (3) in-situ infiltration tests (GP1 to GP3) were conducted onsite on June 19, 2024, at approximate locations are shown on **Figures 2A& 2B**. The test was performed using a Guelph Permeameter (Model 2800). The test locations and depths were provided by the client. The soil type, in-situ hydraulic conductivity and infiltration rate measured at the test locations/depths during the field tests are summarized as follows:

Test Location	Soil	Test Depth (mbgs)	Test Depth (masl)	Estimated Hydraulic Conductivity (cm/s)	Infiltration rate (mm/hour)
GP1	Sandy Silt, trace to some clay	1.6	275.0	2.1×10^{-6}	14
GP2	Silty Sand, trace gravel, trace clay	1.6	275.3	8.1×10^{-4}	46
GP3	Sandy Silt, trace to some gravel, trace to some clay	1.6	276.4	4.8×10^{-6}	14

The design infiltration rates should be evaluated based on applicable safety correction factor (s) as per TRCA Low Impact Development Stormwater Management Planning and Design Guide, Table C1.

5.5 On-Site Groundwater Quality

Groundwater sample was collected by Englobe and analyzed by a Canadian laboratory accredited and licensed by the Standards Council of Canada and or the Canadian Association for Laboratory Accreditation. One (1) unfiltered groundwater sample was collected from monitoring well BH24-7 on July 05, 2024. The water sample was analyzed and compared against the parameters listed under the Durham Region Sewer Use By-law and the Provincial Water Quality Objectives (PWQO). The table below presents the summary of exceedances, whereas the certificate of analysis is presented in **Appendix I**.

Parameter	Unit	Durham Storm sewer use by-law	Durham Sanitary sewer use by-law	BH24-7
Total Suspended Solids	mg/L	15	350	**<u>18800</u>**
Total Manganese	mg/L	0.15	5	**1.29**
Total Phosphorous	mg/L	0.4	10	**1.29**
Total Zinc	mg/L	0.04	2	**0.045**
Note **Bold** indicates exceedances for Storm. **<u>Bold</u>** indicates exceedances for both storm and sanitary.				

Parameter	Unit	PWQO Guideline	BH24-7
Total Cobalt	mg/L	0.0009	**0.0086**
Total Copper	mg/L	0.005	**0.020**
Total Iron	mg/L	0.3	**22.3**
Total Vanadium	mg/L	0.006	**0.035**
Total Zinc	mg/L	0.030	**0.056**

Based on analytical results, the groundwater quality is not suitable for discharge into the Durham sewer system or to the environment. Elevated levels of metals in the groundwater might not represent actual groundwater quality due to the high amount to sediment load observed during sampling.

During the previous site investigation, elevated levels of Sodium and Chloride were noted in all shallow boreholes **(See Appendix L)** Furthermore total coliform was also noted in the analytical results. It was concluded that the elevated levels of Sodium and Chloride are due to the de-icing practices at the site.

6 Water Balance Assessment

A water balance assessment was completed to assess rates of infiltration across the site under both the pre-development and post-development scenario. The water balance assessment evaluates water inflow (precipitation) to the subject property and the resulting equal outflow plus change in storage from the Site. For the purposes of the hydrogeological assessment the purpose of the water balance assessment is to quantify the volume of pre-development infiltration across the property in comparison to the post-development volume of infiltration. The development target for the proposed development is for the maintenance of pre-development volumes of infiltration following site development to maintain groundwater systems and functions following site development.

Water balance is the relationship between components of the hydrologic cycle and is expressed as follows.

P = S + R +I + R + ET

Where:

P = Precipitation
S = Change in groundwater storage
R = Surface water storage
I = Infiltration
IT = Runoff
ET = Evapotranspiration/Evaporation

Over the long-term any change in groundwater and surface water storage is expected to be negligible and for the purposes of the water balance assessment, have not been considered.The water balance depends on site specific conditions including climatic condition, vegetation, land use, coverage area, topography, and soil conditions such as texture, moisture, storage capacity, hydraulic conductivity, porosity and structure. Water balance for the entire site was calculated on based pre and post development drainage areas, and the provided corresponding runoff coefficients under post the existing pre-development and expected post-development conditions provided to Englobe (**Appendix J**).

6.1 Climate

The climate data was obtained from the following document by LSRCA:

- "*Lake Simcoe Climate Data: A reference Document to Support the completion of Water Balance Assessment*", prepared by Lake Simcoe Region Conservation Authority, Version 1.0, dated April 2017

The mean annual precipitation, Actual Evapotranspiration and precipitation surplus for Uxbridge Brook Sub watershed, as indicated in the reference document is summarized as follows:

Uxbridge Brook Sub watershed	Mean Annual (mm/year)
Annual Precipitation	892
Actual Evapotranspiration (AET)	574
Precipitation Surplus	317

The climate is typical for Southern Ontario, consisting of moist, temperate conditions. Precipitation exceeds evaporation and evapotranspiration. The net annual water surplus (comprising of runoff and infiltration) is approximately 318 mm. Based on the soil types present in the area (predominantly silty sand), the total groundwater recharge component, (infiltration rates at the property are estimated as approximately 175 mm/year). This recharge was determined using the MECP Table 2 and Table 3 approach in the Technical Information Requirements for Land Development Applications (1995). The infiltration factor was calculated based on Table 2 as follows:

Criteria	Infiltration Coefficient
Topography	0.2
Soil	0.2
Cover	0.15
Total	**0.55**

Under Table 3, infiltration rates for various soil types are provided. As observed from the completed subsurface investigation shallow soils predominately consist of silty sand fill to native deposits of silty sand. Under Table 3 a range in infiltration is provided for silty sand to sandy silt soils from 150 mm/year to 200 mm/year. Based on both the Table 2 and Table 3 approach a value for infiltration of 175 mm/year was considered representative for the site.

6.2 Water Balance for Pre- and Post-Development Conditions

Based on the results of groundwater monitoring groundwater is expected to range from 1.4 m to 2.5 m below grade (elevations ranging from 276.2 m to 274.0 m) with groundwater flows expected to the northwest. The expected hydrogeological function of the site is as an area of groundwater recharge, as soils at the property are generally of medium permeability with some to primarily fine-grained silt. There are no significant areas of enhanced or localized higher recharge (such as closed depressions, kettle holes or area of high permeability gravel material identified within the property. Limited groundwater baseflow is expected to surface features including Uxbridge Creek and associated wetlands as groundwater is expected to largely infiltrate to deeper groundwater aquifers.

In summary, the total groundwater recharge component for the area is estimated at 175 mm/a (**Appendix J**) for the entire site of area **5.5 ha**. This recharge was determined using the MECP Table 2 and Table 3 approach in the Technical Information Requirements for Land Development Applications (1995).

The water balance for the entire is calculated based on the preliminary pre and development drainage areas and run off co-efficient provided to englobe by *Lea Consultants*, dated May 2024 (**Appendix J**). The drainage areas and the runoff coefficients are given in tables below:

Pre-Development		
Catchement ID	Area (m^2)	Run off Coefficient
EC1 (woodland, landscaped)	31,740	0.26
EC2 (parking lot and minor landscape)	5,520	0.81
EC3 (Existing UXMED)	1,770	0.90
EC4 (Existing cottage Hospital, parking lot and landscaped)	13,900	0.72
EC7 (Woodland and wetland)	2,040	0.25
Post-Development		
Catchement ID	Area (m^2)	Run off Coefficient
PC1 (woodland, landscaped and SWMP)	31,190	0.56
PC2 (Proposed Hospital and landscaped)	6,280	0.80
PC3 (Existing UXMED)	1,770	0.90
UC1 (Parking and landscaped)	2,680	0.69
PC4 (Parking lot, landscaped)	11,104	0.74
PC7 (Woodland and wetland)	2,040	0.25

Using the site statics, run off coefficients, and climate data the pre and post development water (unmitigated) balance is calculated as follows:

Pre Development	Area (m^2)	Precipitation(m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^2)
Existing Development	55,000	49,060	17,361	9,531	22,168
Post-Developmetn	Area (m^2)	Precipitation(m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^2)
Proposed Development	55,000	49,060.	11,759	6,427	30,874

In the post-development case, there is decrease in evapotranspiration (5,602 m^3/yr) and infiltration (3,104 m^3/yr) and increase in available surface water run-off (8,705 m^3/yr) from the entire property. Following assumptions are made for the unmitigated post development water balance scenario:

- There will be no infiltration beneath hard-surface areas including buildings and pavements.
- It is assumed that the entire road allowance consists of hard surfaces.
- Infiltration rates in open areas of the property (lawns, landscaped areas and open spaces) will occur at similar to those for pre-development conditions.

6.2.1 Feature-Based Water Balance

A feature-based water balance assessment was completed to assess the predicted change in water balance due to site development for drainage areas draining to Uxbridge Creek and associated wetlands only. Areas of the site draining to the municipal storm sewer under both the pre- and post-development scenarios were not considered as part of the feature-based water balance. Based on pre and post development drainage area plan provided, the creek and the wetland are fed by the following drainage areas:

Pre-Development		
Catchement ID	Area (m^2)	Run off Coefficient
EC1 (woodland, landscaped)	31,740	0.26
EC2 (parking lot and minor landscape)	5,520	0.81
EC3 (Existing UXMED)	1,770	0.90

Pre-Development		
Catchement ID	Area (m^2)	Run off Coefficient
EC5 (Existing External catchment)	580	0.35
EC8 (Existing External Catchment)	1,530	0.25
Post-Development		
Catchement ID	Area (m^2)	Run off Coefficient
PC1 (woodland, landscaped and SWMP)	31,190	0.56
PC2 (Proposed Hospital and landscaped)	6,280	0.80
PC3 (Existing UXMED)	1,770	0.90
PC5 (External Catchment Area)	580	0.35
PC8 (External Catchment Area)	1,530	0.25

Using similar approach as in previous section, the water balance for the feature of interest is calculated as follows (**Appendix J**):

Pre Development	Area (m^2)	Precipitation(m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^2)
Existing Development	40,390	36,028	14,791	8,107	13,130
Post-Developmetn	**Area (m^2)**	**Precipitation(m^3)**	**Evapotranspiration (m^3)**	**Infiltration (m^3)**	**Run-Off (m^2)**
Proposed Development	41,350	36,884.	9,631	5,248	22,005

In the post-development case, there is decrease in evapotranspiration (5,160 m^3/yr) and infiltration (2,858 m^3/yr) and increase in available surface water run-off (8,874 m^3/yr) to the feature of interest.

It is expected that the post development infiltration deficit under both the water balance and feature-based water balance assessment will be addressed through stormwater management for the developed property. For the purposes of maintaining pre-development infiltration rates following site development, it is recommended to implement infiltration features to accept rooftop runoff from building areas from the post-development property. It is expected that Low Impact Development (LID) techniques can be implemented as part of the stormwater management approach for the site to maintain volumes of infiltration.

LID features would be implemented under a Best Management Practice approach in areas considered suitable for infiltration based on further in-situ infiltration testing once potential LID features have been identified. LID features are to be implemented in areas where soils are confirmed with rates of infiltration not less than 15 mm/hr, and the proposed LID measures must maintain a 1.0 m clearance from the observed seasonal high groundwater level. Given groundwater depths across the site range from 1.4 to 2.5 m below grade it is expected that LID measures including bio-swales, dry swales, shallow infiltration trenches would be suitable measures to implement as part of the stormwater management plan.

7 Groundwater Control Requirements

As discussed in previous sections, the proposed development will involve installation of underground utilities and LID's, addition of new hospital building and a storm water management pond (SWMP).

Positive dewatering will be required for any excavation below the groundwater level at the site. In addition to potential removal of groundwater, run off from precipitation will also be required to be removed from the excavation. The dewatering rates should be revised after completion of yearly groundwater monitoring at the site. Groundwater control requirements for the proposed developments is discussed in below:

7.1 Groundwater Control Requirement-Underground Utilities

Based on the Site servicing plan and Architectural drawings (**Appendix K**) by Diamond Schmitt dated January 17, 2022, the proposed development will involve installation of underground utilities and LID's. It is anticipated that the proposed storm sewer and watermain would be installed using conventional open cut technique. The following assumptions/considerations were used in calculating the estimated dewatering rates for the section:

- It is assumed that only one excavation of dimensions 20 m long, 3 m wide and 4 m deep is open at any time between.
- The excavation is likely to terminate in low-moderate permeable silt.
- Highest Groundwater depth of 1.4 mbgs recorded in monitoring well BH24-8 on July 03,2024 was used for dewatering estimate. Geomean Hydraulic conductivity calculated during in-situ tests (4.7 x 10^{-7}) was used for dewatering estimate.
- Steady State conditions were assumed for the dewatering assessment.
- The aquifer is assumed to be unconfined and homogenous. It is also assumed that there is no recharge associated with any surface water body present within the radius of influence.
- Safety Factor of x 2.0 is applied on the calculated flow rate to account for variability in subsurface conditions and to account for infiltration from precipitation events

Dupuit equation (defined below) for flow to a drainage trench in a water table aquifer was used to calculate dewatering rates for excavation required for utilities installation (from Powers et al. 2007).

$$Q = \pi K \left(H^2 - h^2\right) / Ln \left(\frac{2R_o + x}{x}\right) + 2LK\left(H^2 - h^2\right)) / 2R_o \quad \textit{(Eq. 1)}$$

$$R_o = 2L \; ; \textit{(Eq.2)}$$

$$\textit{Sichardt Equation: } R_o = 3000 \, * \sqrt{K} \, (H - h); \textit{(Eq.3)}$$

Where.

Q= Groundwater flow rate (m^3/day)
K= Hydraulic Conductivity (m/day)
H= Aquifer thickness/static groundwater level head above the top of the aquitard (m)
h= Groundwater level during pumping. Assumed 1.0 m below the excavation depth (m)
x= Excavation Width (m)
L= Excavation length (m)
R_0=Radius of influence using Sichardt Equation.

The predicted dewatering required was calculated based on the assumptions and equations defined above as follows:

Parameters	Site Servicing

K -Geomean Hydraulic conductivity (m/s)	4.7×10^{-7}
H-Distance from water level to the bottom of an aquifer (m)	4.6
h -Depth of water in the well while pumping (m)	1
Dimensions	20 m x 3 m x 4 m
R_0-Radius of Influence from Sichardt (m)	5.3 m
Estimated Flow Rate- L/day (without safety factor)	2800
Estimated Flow Rate- L/day (with safety factor x 2.0)	5600
Storm water removal consideration (25 mm)	2250
Total Construction dewatering Rate- (L/day)	**7850**

7.2 Groundwater Control Requirement-Proposed Hospital Building

Based on Architectural drawings by Diamond Schmitt , the finished floor elevation for the proposed hospital addition will be 278.0 masl. The footings for the building are expected to extend 1.5 meters below to 276.5 masl. The proposed structure will be supported on a conventional spread footing foundation and thus the excavation size will be limited to footings installation and inspection. Trenches required for footing installation are expected to yield minimal amount of free-flowing groundwater at shallow depths. A conservative estimate nonetheless is provided below based on an assumed trench excavation of 10 m long, 3 m wide and 2 m deep. Again, the dewatering calculation presented here assumes that only excavation is open at any time.

Parameters	Site Servicing
K -Hydraulic conductivity (m/s)	4.7×10^{-7}
H-Distance from water level to the bottom of an aquifer (m)	2.2
h -Depth of water in the well while pumping (m)	1
Dimensions	10 m x 3 m
R_0-Radius of Influence from Sichardt (m)	4.5
Estimated Flow Rate- L/day (without safety factor)	900
Estimated Flow Rate- L/day (with safety factor x 1.5)	1800
Total Construction dewatering Rate- (L/day)	**1800**

7.3 Permitting Requirements

The Ministry of the Environment, Conservation and Parks (MECP) regulates all surface water and groundwater taking in the Province of Ontario. In general, a Permit to Take Water (PTTW) from the MECP is required for any groundwater taking above the threshold of 50,000 L per day. If groundwater control and dewatering is required to support any construction project in Ontario, then under Ontario Regulation (O. Reg.) 63/16, an Environmental Activity and Sector Registry (EASR) Posting with the MECP can be obtained in lieu of a PTTW Registration, if the cumulative volume of groundwater taking and stormwater requiring control is between 50,000 L/day and 400,000 L/day. Based on the flow rates calculated, **an EASR will not**

be required for short term groundwater control. The permitting requirements should be revised if there is a change in design or grading plan.

8 Source Water Impact Assessment and Mitigation Plan

8.1 Risk Assessment

8.1.1 Identification of Vulnerable Areas

The proposed development includes the Hospital Addition, site servicing and SWMP will within the Well Head Protection Area (WHPA) associated with Municipal Well PW6. Due to the proximity of PW6 (approximately 15 m), no refueling of construction equipment or storage of fuels/chemicals during construction should in the WHPA's. Furthermore, the redevelopment's snow storage area must be located outside of the WHPA.

8.1.2 Identification of Prescribed Drinking Water Threats

The Clean Water Act, 2006, prescribes several land uses that are considered to be drinking water threats. The applicable circumstances for activities and conditions to the Property are listed, along with a qualitative evaluation of the threat level, in the table below. There are three (3) potential drinking water quality threats to consider:

- Use of de-icing salt;
- Operation of sanitary sewers; and
- Activities related to the operation of the Property as a medical facility, including chemical/pathogen handling and storage.

#	WHPA Zone on Property	Intrinsic Vulnerability Score	Identified Prescribed Drinking Water Threat	Short Form Name	Type of Threat (Chemical or Pathogen)	Applicable Circumstances	CWA Rating of the Drinking Water Threat
1	WHPA-A and -B	6	The application of road salt	Road salt	Chemical	Exceedances of Table 2 Site Condition Standards due to past activities (Rule 126). Total impervious area >80% of total area.	Low (2017 Threats Table, Chemical, Line 1634)
2	WHPA-A and -B	6	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	Sewage System Or Sewage Works - Sanitary Sewers and related pipes	Pathogen/Chemical (potential)	Detectable Total Coliform Bacteria due to past activities (Table 2).	Low (2017 Threats Table, Pathogen, Line 166)

8.1.3 Identification of Drinking Water Quantity Threats

Given the modest potential dewatering requirements for the proposed development (Section 7.0), the primary threat to water quantity would be the post-development infiltration deficit of 2898 m^3/yr that would result if mitigative measures were not implemented. However, the maintenance of recharge is required under South Georgian Bay Lake Simcoe Source Protection Region Approved Source Protection Plan Policies LUP-12 and LUP-13.

8.2 Risk Management Plan-Groundwater Quality

8.2.1 Water Quality Threats Management-Road Salt

Impacts associated with current practices related to the application of de-icing salt were documented during previous investigations. The implementation of a salt management plan to reduce the use of de-icing salt and/or replace it with other de-icing agents is strongly recommended.

All salt (or replacement de-icing agent[s]) stored at the Property for later application shall be stored in water-impermeable containers roof-covered areas of the Property that are either asphalt-paved or have a poured concrete floor to minimize entry into the subsurface. Only quantities required for reasonably foreseeable short-term use should be stored on-site.

The Transportation Association of Canada (TAC) has produced a document titled Syntheses of Best Practices Road Salt Management (2013). These should be generally followed at the Property unless prohibited. In addition, best management practices for contractors, residents, and the community are provided by the not-for-profit organization Smart About Salt Council and their recommendations may be of benefit in reducing salt loads.

8.2.2 Sanitary Sewers and Related Piping

The proposed development will be serviced with municipal sewers. No on-site sewage treatment systems are proposed or anticipated. The proposed medical office building will be constructed slab-on-grade. Service connections may be deeper and possibly below the water table, but will be constructed in the low permeability silt, resulting in moderate interception of ground water flow by the utility service trenches. If utility trenches will extend below the water table, trench plugs should be installed at intervals so as to reduce any potential interception of ground water flow.

8.2.2.1 Industry Standards, Regulations and Best Management Practices

Sanitary sewage works for the Property will adhere to all applicable provincial and local regulations. Precise metrics for the sewage works will be provided at the detailed design stage. The following legislation regarding design and approval of the sewage works is applicable to the assessment of the environmental risks related to the works:

- Engineering Standards
  - General standards for construction.
- Sanitary Sewer Commissioning Guidelines

  - Physical and visual infiltration, exfiltration and joint tests to ensure that leakage into and/or out of the system is within the acceptable tolerance limits are mandatory prior to use of new sanitary sewer laterals in Durham Region. These tests are required to be carried out prior to commissioning of the on-site sewage works.

- <u>Environmental Protection Act, R.S.O. 1990, Chapter E.19, Part X – Spills</u>

  - Should a spill or leak occur at the Property, property owner (owner of the pollutant) and/or their agents are required to notify the MECP, the Regional Municipality of Durham, and the property owner, immediately upon discovery.

  - Should a spill or leak occur at the Property, the Property owner and/or their agents (persons in control of the pollutant) are required to immediately do everything practicable to prevent, eliminate and ameliorate the adverse effects of the spill.

8.2.2.2 Additional Risk Management Measures

In addition to the regulated management practices and procedures outlined in section above, the Property owner will be responsible for implementing and ensuring the following Risk Management Measures at the Property:

- The Property owner will be responsible for ensuring that Property maintenance staff always have and maintain an adequate and up-to-date emergency response plan at the Property. The emergency response plan will include the information that the Property is located in a Wellhead Protection Area.
- Camera inspections will be conducted every 5 years to confirm the integrity of sanitary sewers at the Property.
- Any spills or leaks related to the sewage works located on the property will be reported to the Spills Action Centre.

Contact information for the Spills Action Centre, as well as information detailing the requirement for reporting any spills which occur, will be available at the Property.

8.2.2.3 Communication and Implementation Plan-Sanitary Sewers and Related Piping

The Property owner will be responsible for implementation of all regulatory and above-listed Risk Management Measures, including communication to all maintenance staff. Information regarding the Property's location within the Wellhead Protection Area and emergency response numbers will be available at the Property. A copy of this report or appropriate summary documentation to be prepared in future should be provided to all purchasers of the Property to ensure compliance with the above-noted Risk Management Measures.

Should a spill or leak occur at the property, the Region of Durham is to be provided with a copy of the Spills Action Centre's report.

8.2.3 Temporary Storage of Fuels and Chemicals during Construction

During construction of the proposed buildings, it may be necessary to temporarily store fuels and/or chemicals at the Property. This represents a potential threat to ground water quality, as a spill of significant size may potentially impact the local water supply. The LSRCA has previously stated that it requires that refueling and the temporary storage of fuels/chemicals during construction must not take place in the WHPAs, particularly WHPA-A. This requirement must be communicated to all parties involved in planning construction activities. The north-central and northeastern portions of the Property are not located in WHPAs; however, there are practical considerations associated with the northeastern portion of the Property due to the presence of the current hospital and associated features.

To further prevent and mitigate any spills at the Property, it is recommended that temporary fuel and chemical storage containers of significant size are placed within secondary containment such that a leak/spill can be contained. There are also refueling services that deliver fuel on-site. On-site storage would not be required if such a service was used. Appropriate spill kits should be maintained at various locations throughout the Property and an emergency response plan should be developed to outline actions to be taken in case of a spill or leak.

The monitoring and emergency response measures recommended to be implemented at the Property include the following:

Monitoring

- It is recommended that temporary fuel and chemical storage locations be inspected on a regular basis to ensure the integrity of storage containers.

Emergency Response

- The property owner will be responsible for ensuring that property maintenance staff have and maintain an adequate and up-to-date emergency response plan at the property at all times. The emergency response plan will include the information that the Property is located in a Wellhead Protection Area.
- Any spills or leaks related to the temporary storage of fuels and chemicals located on the property will be reported to the Spills Action Centre.
- Contact information for the Spills Action Centre, as well as information detailing the requirement for reporting should any spills occur, will be available at the Property.

8.3 Risk Management Plan-Groundwater Quantity

8.3.1 Groundwater Takings for Dewatering

For the proposed development of the additional hospital building, the bulk of the dewatering is to account for the removal of storm water in case of a precipitation event. Furthermore, no long-term dewatering is anticipated. In summary, modest groundwater takings are expected for the proposed development. As there will not be any significant short term ground water control requirements and no long-term requirements, there will be no water quantity threats to the underlying aquifer in which the municipal production and public supply wells are installed in.

8.3.2 Reduction in Aquifer Recharge

There will be no adverse impact from the proposed development on the aquifer in which the water supply wells are screened. Englobe recommends that best management measures are taken to maintain the pre-development water balance to maintain the overall continuity of ground water flow and recharge rates.

9 Conclusion and Recommendations

- The site is located within the Uxbridge Brook Creek watershed, within the Lake Simcoe and Couchiching/Black River Source Protection Area. The subject is partially located within a regulated LSRCA area.
- A tributary of Uxbridge Brook passes through the northwestern corner of the property, and therefore the associated hazards (Meander belt erosion, erosion Hazard and flooding). Natural Heritage features (woodland) and Hydrologic features (wetlands) were also identified in the study area
- According to the Oak Ridges Moraine Conservation Plan, the Property is located approximately 2.3 km north of the Oak Ridges Moraine and is not located within the Oak Ridges Moraine Conservation Plan Area.
- The Property is the site of a Highly Vulnerable Aquifer (score: 6). Aquifer Vulnerability with Vulnerability Score 6 of 10 (low to high). The westernmost portion of the Property is located in an Intake Protection Zone 3 (Score: 4.5). The Property is not located in an area of Significant Groundwater Recharge. Portions of the Property are located within WHPA-A to D due to the presence of the Township of Uxbridge's Well 6 approximately 15 m south of the southern boundary.
- The stratigraphy encountered at the site comprise of Low permeability meltwater channel silt deposits with an approximate thickness of approximately 13 meters, forming the upper most layer of sediments at the site and in the study area. Limited vertical movement of groundwater is expected thus limiting the recharge to the underlying channel sand aquifer.
- Groundwater levels varied between 1.6-2.5 mbgs (Elevations: 273.9-276.2 masl) representing the groundwater conditions in overburden at the site. Groundwater levels are currently being monitored in all monitoring wells to assess the seasonal fluctuations in groundwater at the site.
- Based on initial groundwater measurements, shallow groundwater flow is inferred to flow northwest towards Uxbridge Brook Tributary in the western part of the site. The flow in eastern part of the site is inferred southeast hence indicating a groundwater divide trending North-South (approximately).
- In-situ hydraulic conductivity during field tests was calculated as 4.7×10^{-7} (Geomean). Based on grain size analysis the hydraulic conductivity ranges from 4.7×10^{-7} to $9.0 \times 10^{-9.}$ Infiltration rates (without safety factor) observed ranged from 14-46 mm/hour during the Guelph permeameter testing.
- Based on analytical results, the groundwater quality is not suitable for discharge into the Durham sewer system or to the environment. Elevated levels of metals in the groundwater might not represent actual groundwater quality due to the high amount to sediment load observed during sampling.
- Additional groundwater samples from the shallow wells is recommended to assess the spatial variation of chlorides/Sodium and other contaminants due to the close proximity of municipal Well.
- During the previous site investigation, elevated levels of Sodium and Chloride were noted in all shallow boreholes. Furthermore, total coliform was also noted in the analytical results. It was concluded that the elevated levels of Sodium and Chloride are due to the de-icing practices at the site.

- Based on the water balance assessment for the entire site, In the post-development case, there is decrease in evapotranspiration (5,602 m3/yr) and infiltration (3,104 m3/yr) and increase in available surface water run-off (8,7067987 m3/yr) to the feature of interest.
- Measures to address the infiltration deficit are required under South Georgian Bay Lake Simcoe Source Protection Region Approved Source Protection Plan Policies LUP-12 and LUP-13.
- Based on the water balance assessment for the feature of interest, In the post-development case, there is decrease in evapotranspiration (5,160 m^3/yr) and infiltration (2,858 m^3/yr) and increase in available surface water run-off (8,874 m3/yr) to the feature of interest.
- It is expected that pre-development infiltration volumes can be maintained following development by directing roof runoff from both the proposed and existing hospital buildings to infiltration through various Low Impact Development (LID) techniques, including but not limited to, bio swales, dry swales or shallow infiltration trenches. LID measures should be incorporated in areas where soils are confirmed to have infiltration rates not less than 15 mm/hr, with the LID features maintaining a 1.0 m clearance from the seasonal high groundwater condition.
- Groundwater control requirements were calculated as 158,000 L/day for the proposed hospital addition and 7850 L/day for the site servicing. Based on calculated dewatering rates an EASR will be required for the proposed water taking.

10 Closure

We trust this report meets with your requirements. Should you have any questions regarding the information presented, please do not hesitate to contact our office.

Yours truly,

Abdul Qadir, G.I.T

Project Manager

Muhammad Shahid, P. Geo., QP_{ESA},
Team Lead - Environmental

References

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ENGLOBE

Figures

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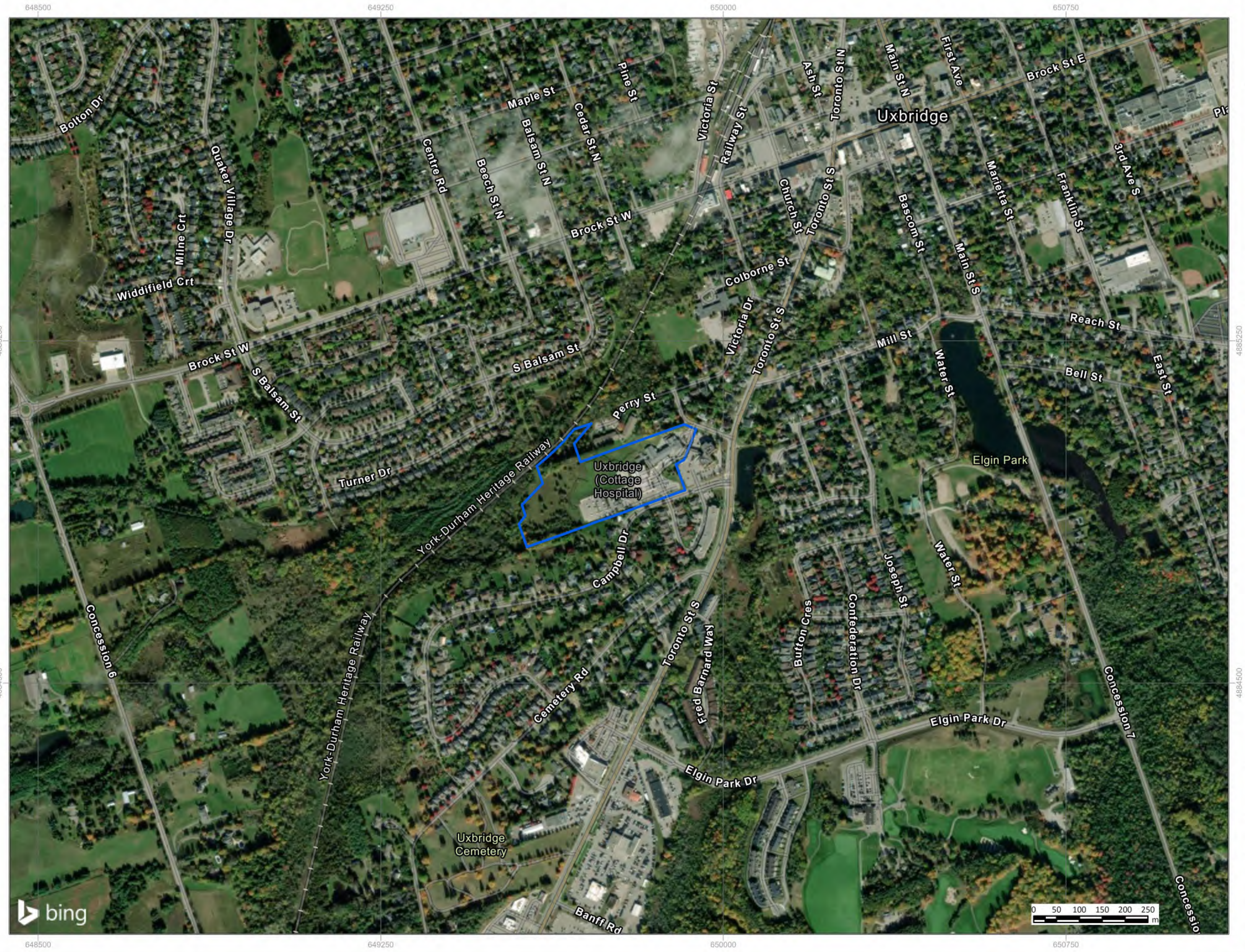

ENGLOBE

N W E S

References:

Bing Maps Aerial-Used for illustrative purposes only.

Notes:

Legend:

Approximate Site Location

Project Title:
Hydrogeological Assessment

Site Location:
Uxbridge community Hospital, Uxbridge, Ontario

Figure Title:
Site Location Plan

Designed By: AQ	*File No.:* 02310769.003
Drawn By: HK	*Scale:* As Shown
Reviewed By: MS	*Figure No.:* 1
Date: August 2024	

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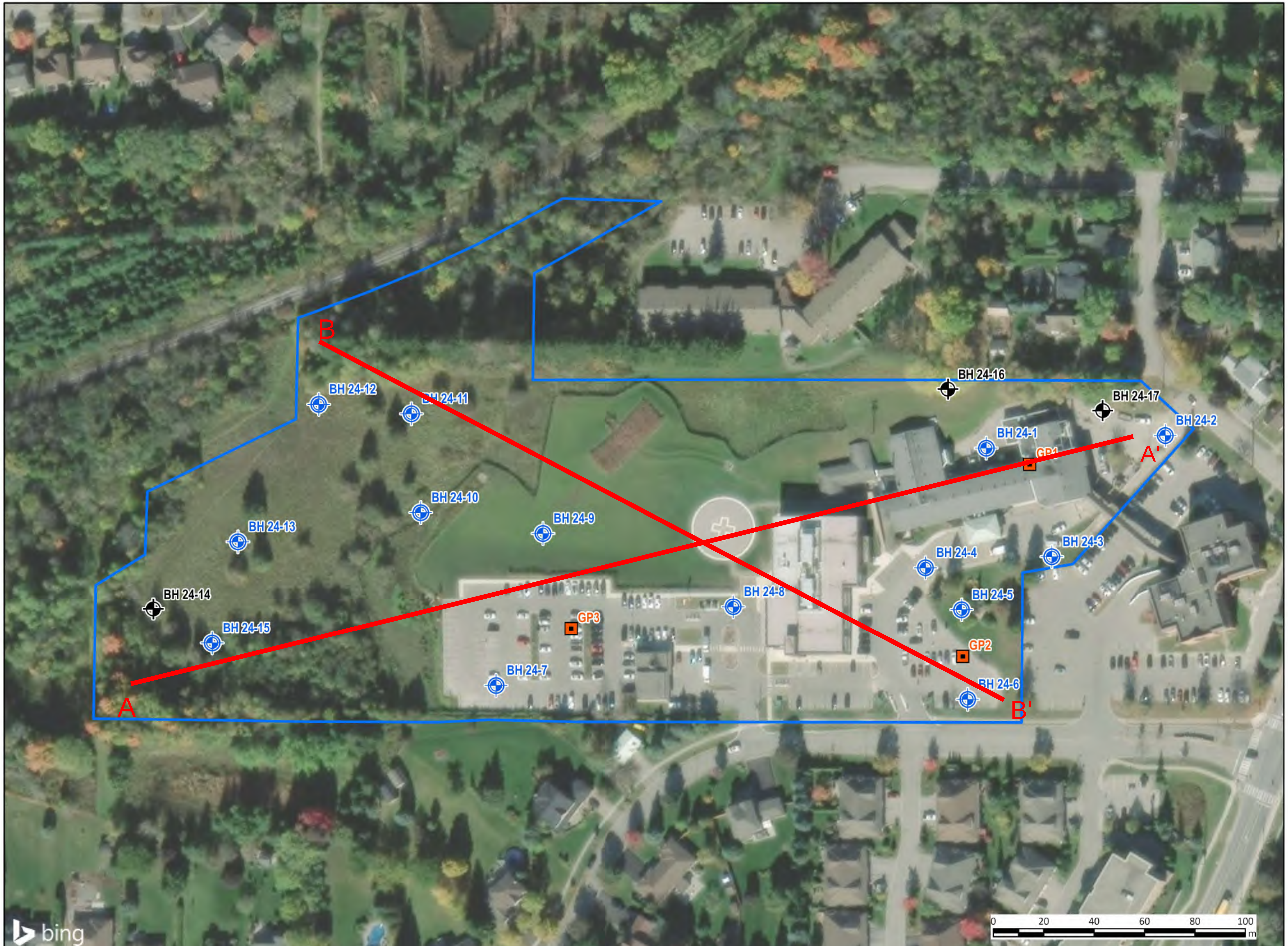

ENGLOBE

References:

Source: Bing Maps Aerial
(Used for illustrative purposes only)

Key Map

Notes:

Legend:

Monitoring Wells

Boreholes

Guelph Permeameter

Approximate Site Location

Project Title:
Hydrogeological Investigation

Site Location:
Uxbridge Community Hospital
Uxbridge, Ontario

Figure Title:
Borehole Location Plan (Existing)

Designed By: AQ	File No.: 02310769.003
Drawn By: HK	Scale: As Shown
Reviewed By: MS	Figure No.: 2A
Date: August 2024	

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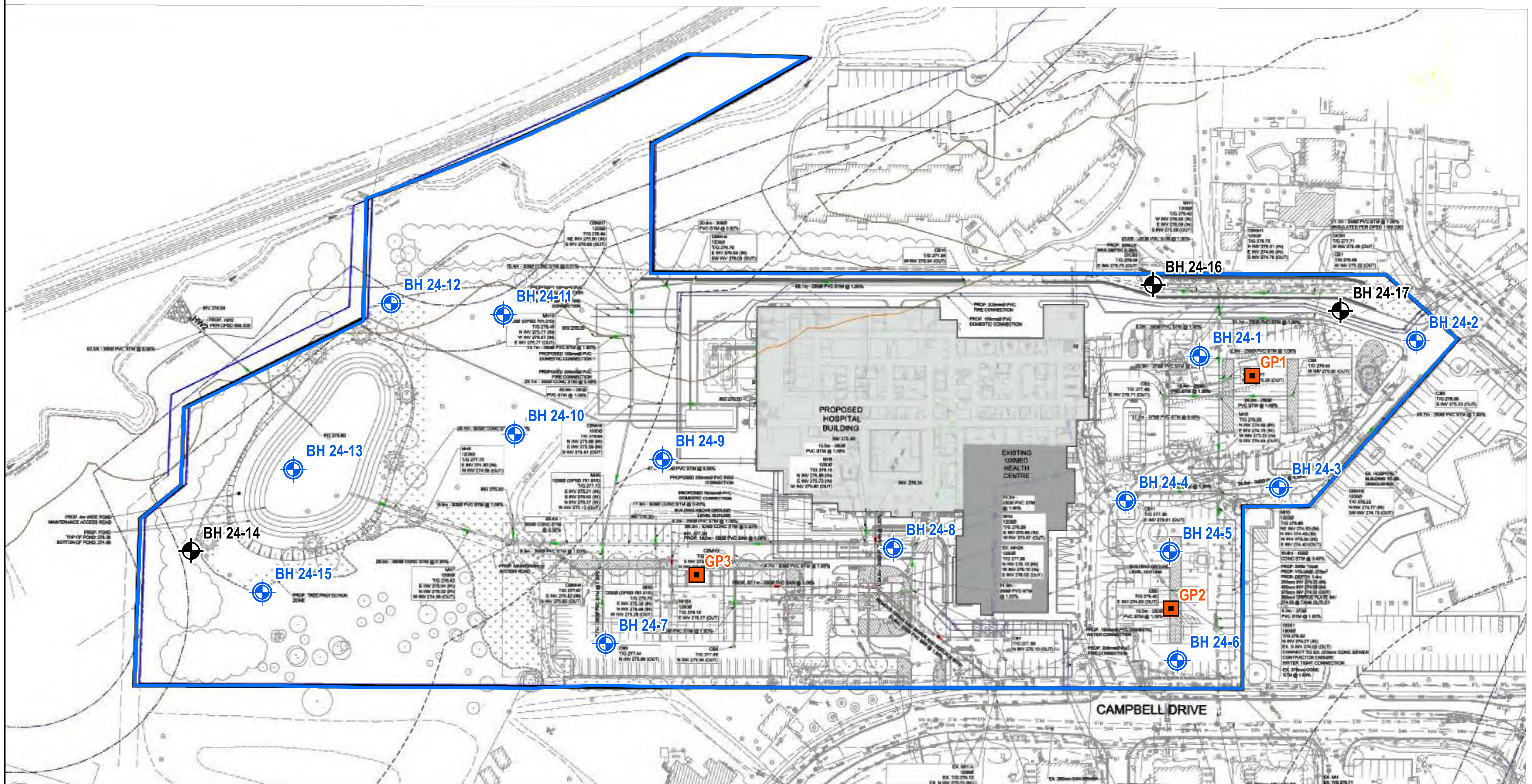


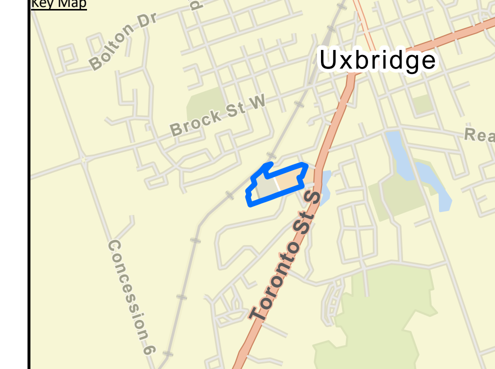
0 20 40 60 80 100 m

ENGLOBE

References:

Title: Site Servicing Plan (Final Works)
Proj No: 24163 Date: Jan 17, 2024
Dwg No: C-02, By: LEA

Key Map



Notes:

Legend:

Monitoring Wells

Boreholes

Guelph Permeameter

Approximate Site Location

Project Title:

Hydrogeological Investigation

Site Location:

Uxbridge Community Hospital
Uxbridge, Ontario

Figure Title:

Borehole Location Plan (Proposed)

Designed By: AQ	*File No.:* 02310769.003
Drawn By: HK	*Scale:* As Shown
Reviewed By: MS	*Figure No.:* 2B
Date: August 2024	

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References:
ESRI, DigitalGlobe, GeoEye, EarthstarGeographics, CNES/Airbus Ds, USDA,USGS, AeroGRID, IGN and the GIS User Community produced by Englobe Corp. Copyright (c) King's Printer. Water Well Information System Ministry of the Environment, Conservation and Parks, 2022

Key Map

Notes:

Legend:

Water Supply Wells with Well ID

Approximate Site Location

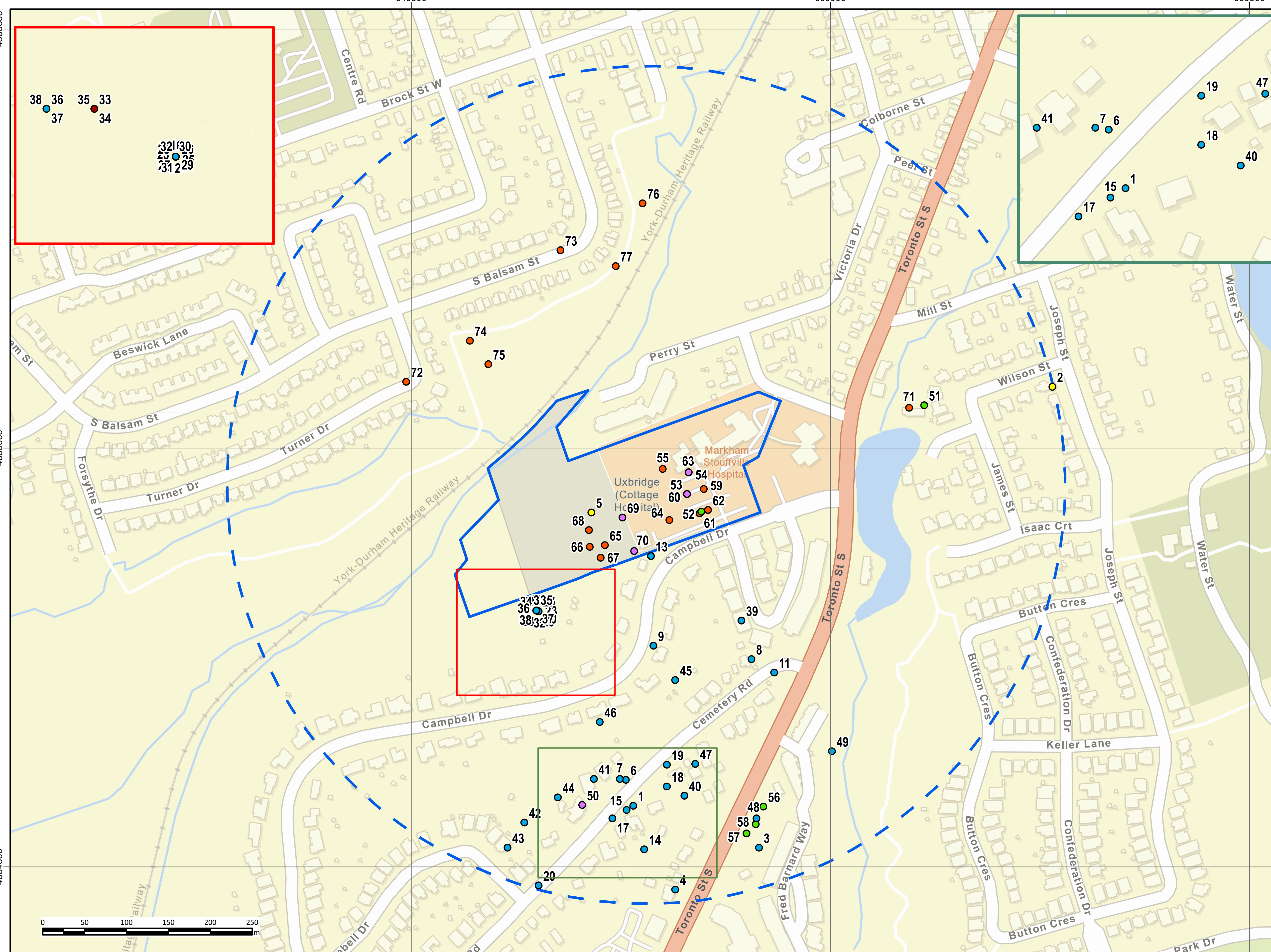
500 m Study Area

Project Title:
Hydrogeological Assessment

Site Location:
Uxbridge Community Hospital, Uxbridge, Ontario

Figure Title:
MECP Well Records Map

Designed By: AQ	*File No.:* 02310769.003
Drawn By: HK	*Scale:* As Shown
Reviewed By: MS	
Date: August 2024	*Figure No.:* 3



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References:
ESRI, DigitalGlobe, GeoEye, EarthstarGeographics, CNES/Airbus Ds, USDA,USGS, AeroGRID, IGN and the GIS User Community produced by Englobe Corp.
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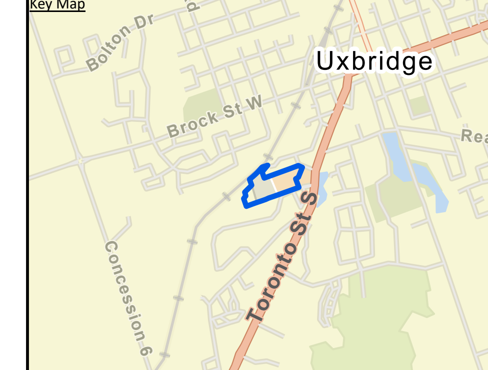
Key Map



Notes:

Legend:
- Approximate Site Location
- 500 m Study Area

MECP Wells_Final Status
- Unknown
- Abandoned-Other
- Abandoned-Supply
- Monitoring and Test Hole
- Observation Wells
- Test Hole
- Water Supply

Project Title: Hydrogeological Assessment

Site Location: Uxbridge Community Hospital, Uxbridge, Ontario

Figure Title: MECP Well Records Map

Designed By: AQ	File No.: 02310769.003
Drawn By: HK	Scale: As Shown
Reviewed By: MS	Figure No.: 3
Date: August 2024	

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References:
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Key Map

Uxbridge

Notes:

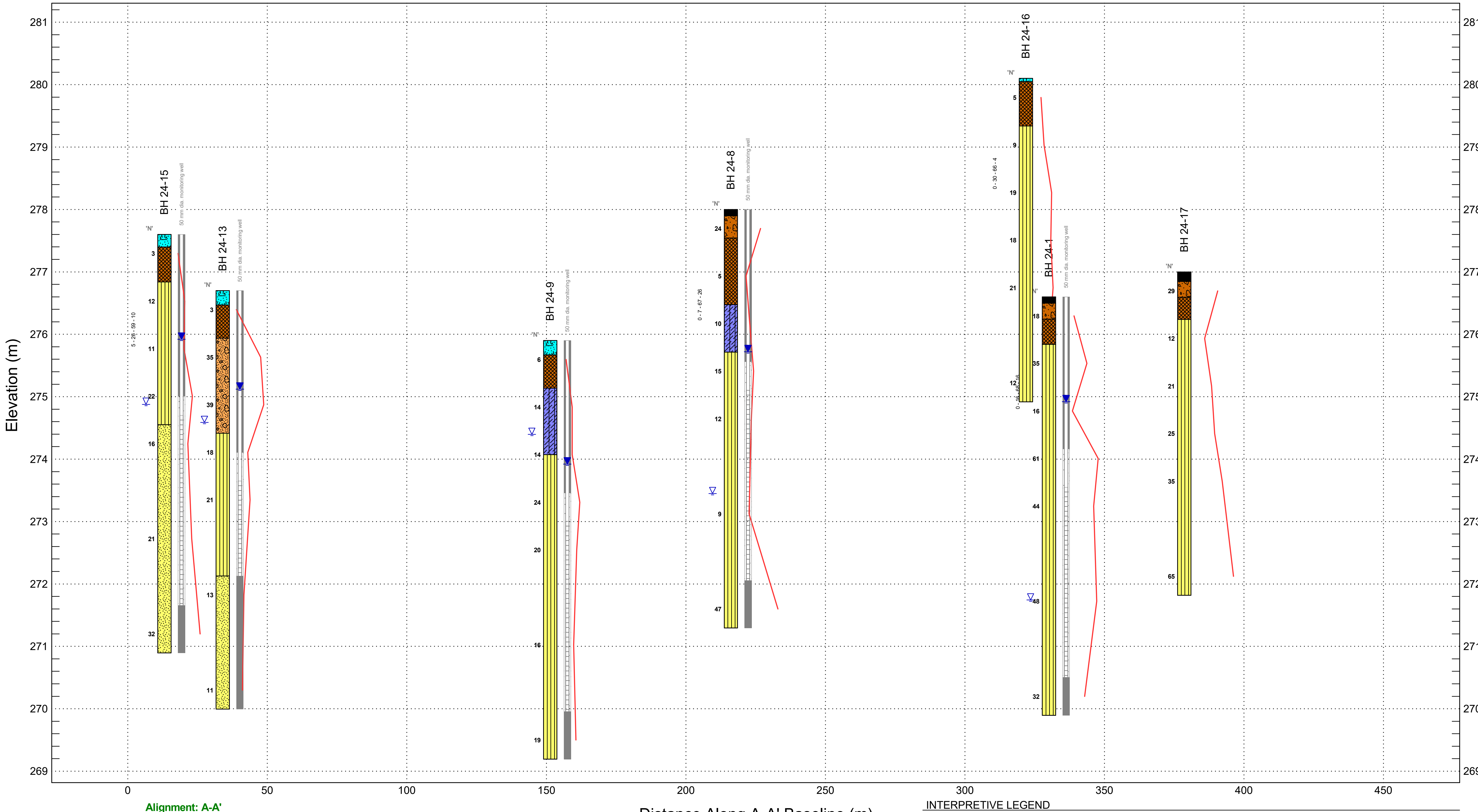
Legend:
- MECP Wells with Well ID
- Approximate Site Location
- 500 m Study Area

Project Title:
Hydrogeological Assessment

Site Location:
Uxbridge Community Hospital, Uxbridge, Ontario

Figure Title:
MECP Well Records Map

Designed By: AQ	File No.: 02310769.003
Drawn By: HK	Scale: As Shown
Reviewed By: MS	
Date: August 2024	Figure No.: 3



LITHOLOGY GRAPHIC LEGEND

- Asphalt
- Clayey Silt
- Aggregate
- Topsoil
- Fill
- Sand and Gravel
- Silt
- Sand

INTERPRETIVE LEGEND

- Unstabilized water level on completion of drilling
- Stabilized water level, most recent
- 30 SPT N-Value

- *FILL*
- *GRAVELS (gravel to gravelly sand)*
- *SILT TO SAND (not till)*
- *COHESIONLESS TILLS*
- *COHESIVE SOILS (clayey silt to clay, incl. tills)*

ENGLOBE

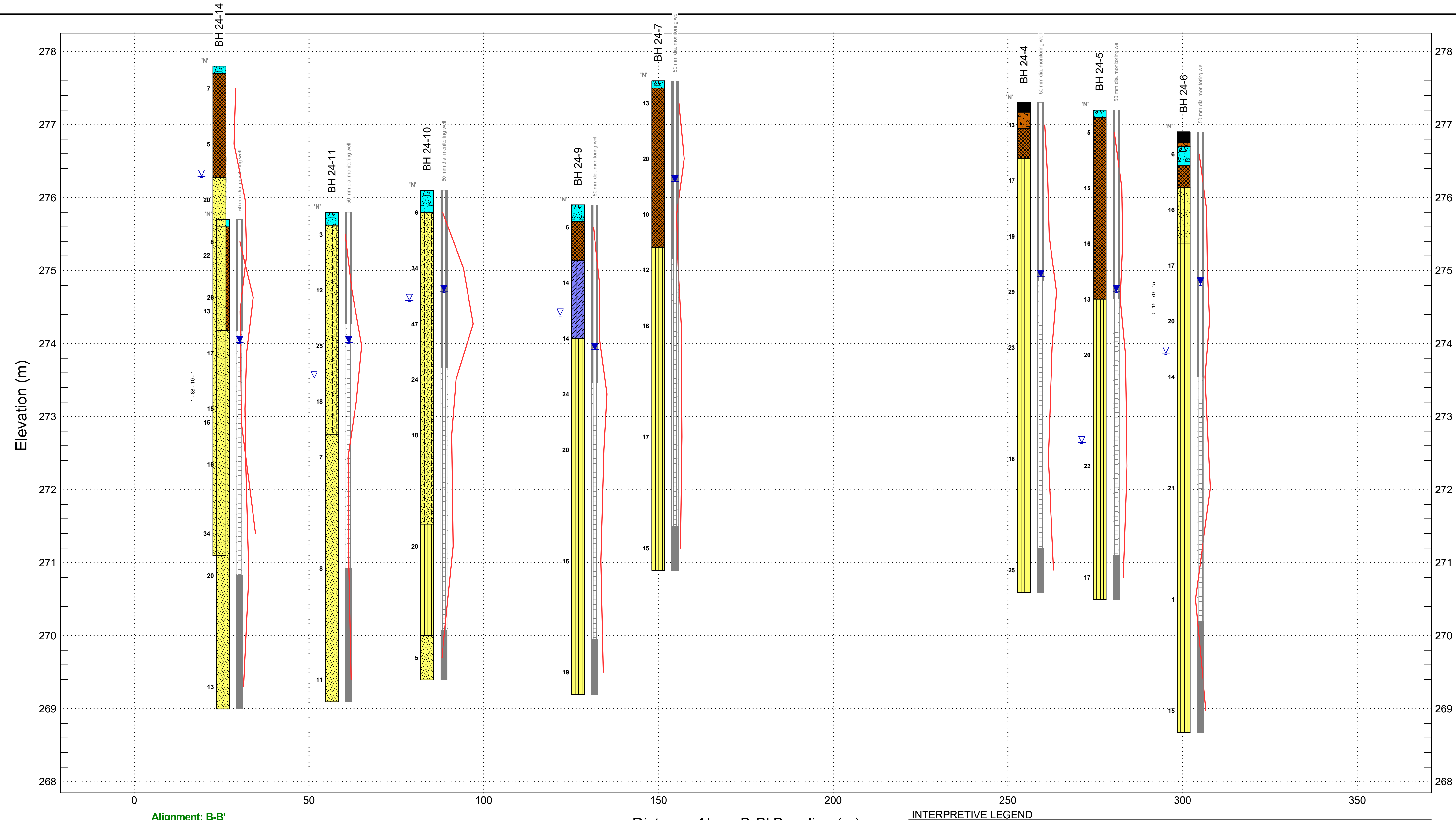
Title:

SUBSURFACE PROFILE
ALIGNMENT A-A'

File No.: **02310769.003**

MAP 4A

Report: ISECTION - TABLOID - ELEV



LITHOLOGY GRAPHIC LEGEND

Asphalt, Topsoil, Sand, Aggregate, Sandy Silt, Fill, Clayey Silt, Silt, Silty Sand

INTERPRETIVE LEGEND

- Unstabilized water level on completion of drilling
- Stabilized water level, most recent
- 30 SPT N-Value

FILL

GRAVELS (gravel to gravelly sand)

SILT TO SAND (not till)

COHESIONLESS TILLS

COHESIVE SOILS (clayey silt to clay, incl. tills)

ENGLOBE

Title: **SUBSURFACE PROFILE ALIGNMENT B-B'**

File No.: **02310769.002** **MAP 4B**

Report: ISECTION - TABLOID - ELEV

Appendix A

Regulatory and Natural Heritage Maps

ENGLOBE

Lake Simcoe Region conservation authority

LSRCA Regulated Area

Scale 1: 3,539

180	0	90	180 Meters

Features

- LSRCA Watershed Boundary
- V_MASK_WATERSHED_1
- Watercourse
- Regulation Limit
- Address Labels
- Road Labels
- LSRCA Watershed Boundary
- Assessment Parcel
- Roads
  - Hwy 400 Series
  - Highway, Arterials
  - Local Road
- Railway

Printed On:
8/24/2024

WGS_1984_Web_Mercator_Auxiliary_Sphere

Mapped By: AQ

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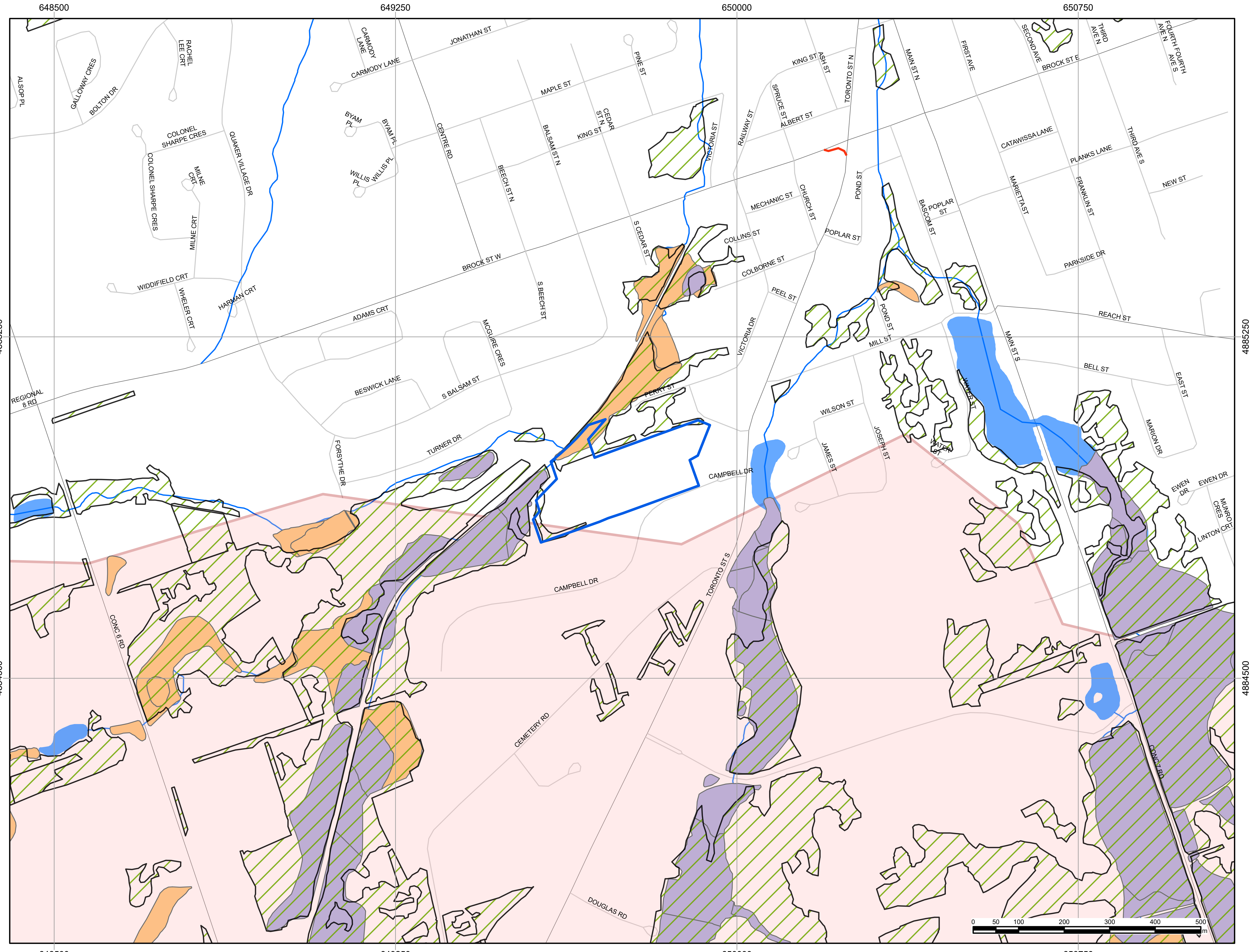

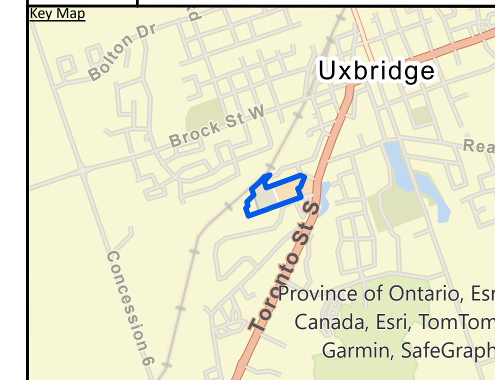

ENGLOBE

References:
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Notes:

Legend:

- Watercourse

Roads Type

- Collector
- Local / Street
- Ramp
- Expressway/Highway
- Water Body
- Approximate Site Location
- Wooded Area

Wetland Significance

- Wetland Features-Not evaluated per OWES
- Wetland Features-Evaluated-Provincial
- Oak Ridges Moraine Protection Area

Project Title: Hydrogeological Assessment

Site Location: Uxbridge Community Hospital, Uxbridge, Ontario

Figure Title: Natural Heritage Feature Map

Designed By: AQ	*File No.:* 02310769.003
Drawn By: HK	*Scale:* As Shown
Reviewed By: MS	*Figure No.:*
Date: August 2024	

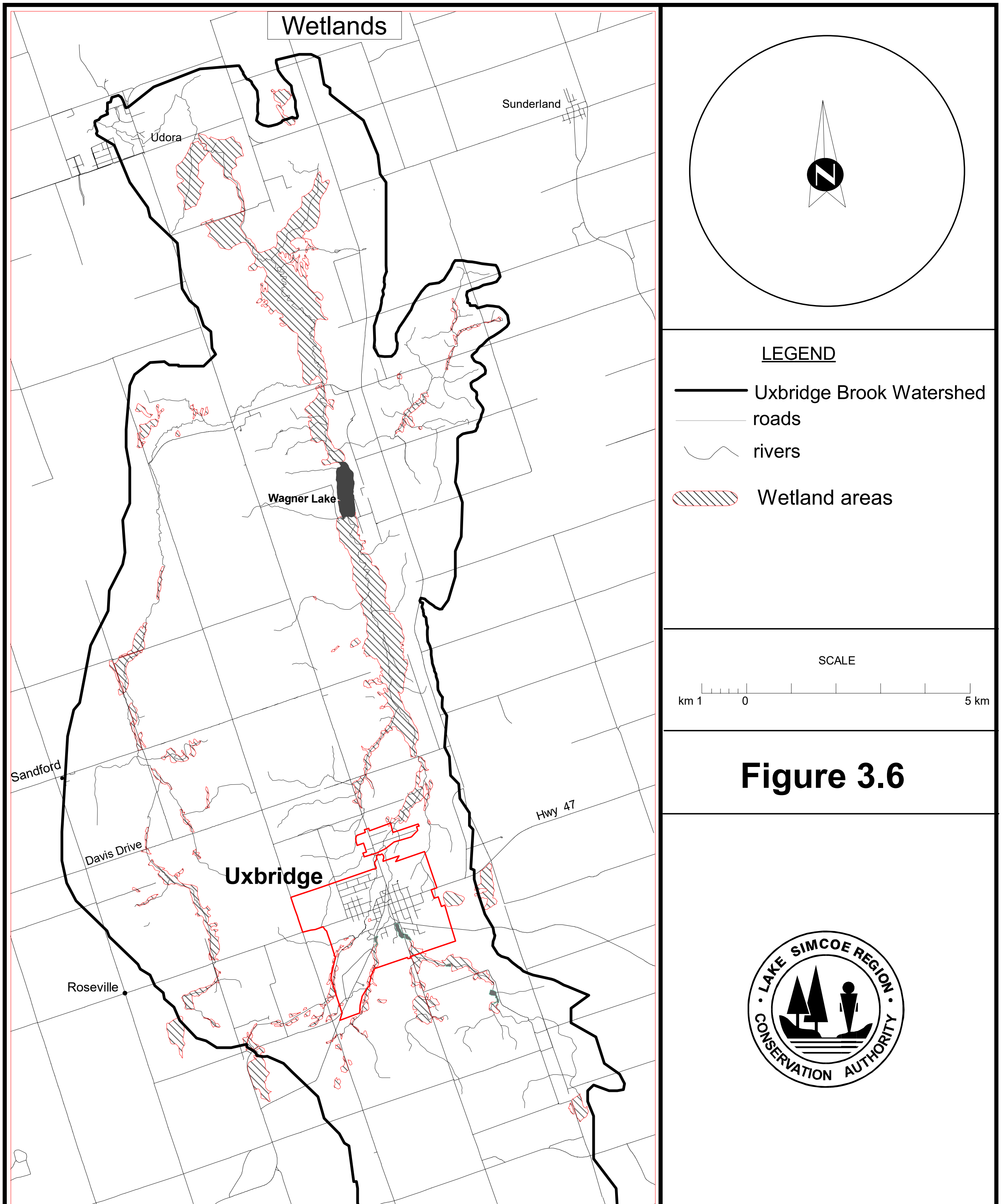


Figure 3.6

Project: Uxbridge Brook Watershed Study

Wetland Map

Data Source: MNR OBM Maps

LSRCA GIS gp

Ontario **Source Protection Information Atlas**
Ministry of the Environment, Conservation and Parks

[Français]

Water Quality | Policy Search by SPA | Water Quantity

Location Information

Zoom in to confirm your location and results.

Latitude: **44.10256** Longitude: **-79.12758**
UTM Zone: **17** Easting: **649861.32**
Northing: **4884968.12**
Upper Tier Municipality: **REGIONAL MUNICIPALITY OF DURHAM**
Lower/Single Tier Municipality: **TOWNSHIP OF UXBRIDGE**
Township Concession and Lot: **UXBRIDGE CON 6, LOT 29**
Assessment Parcel Address: **4 CAMPBELL DR**
Assessment Roll #: **18290400042360000000**
MECP District: **York-Durham**
MECP Region: **Central**

Source Protection Details for Location

Source Protection Area: **Lakes Simcoe and Couchiching/Black River**
Wellhead Protection Area: **C** ; score is **4**
Wellhead Protection Area E (GUDI): **No**
Intake Protection Zone: **No**
Issue Contributing Area: **No**
Significant Groundwater Recharge Area: **No**
Highly Vulnerable Aquifer: **Yes** ; score is **6**
Event Based Area: **No**
Wellhead Protection Area Q1: **Yes** ; Stress: **Moderate**
Wellhead Protection Area Q2: **Yes** ; Stress: **Moderate**
Intake Protection Zone Q: **No**

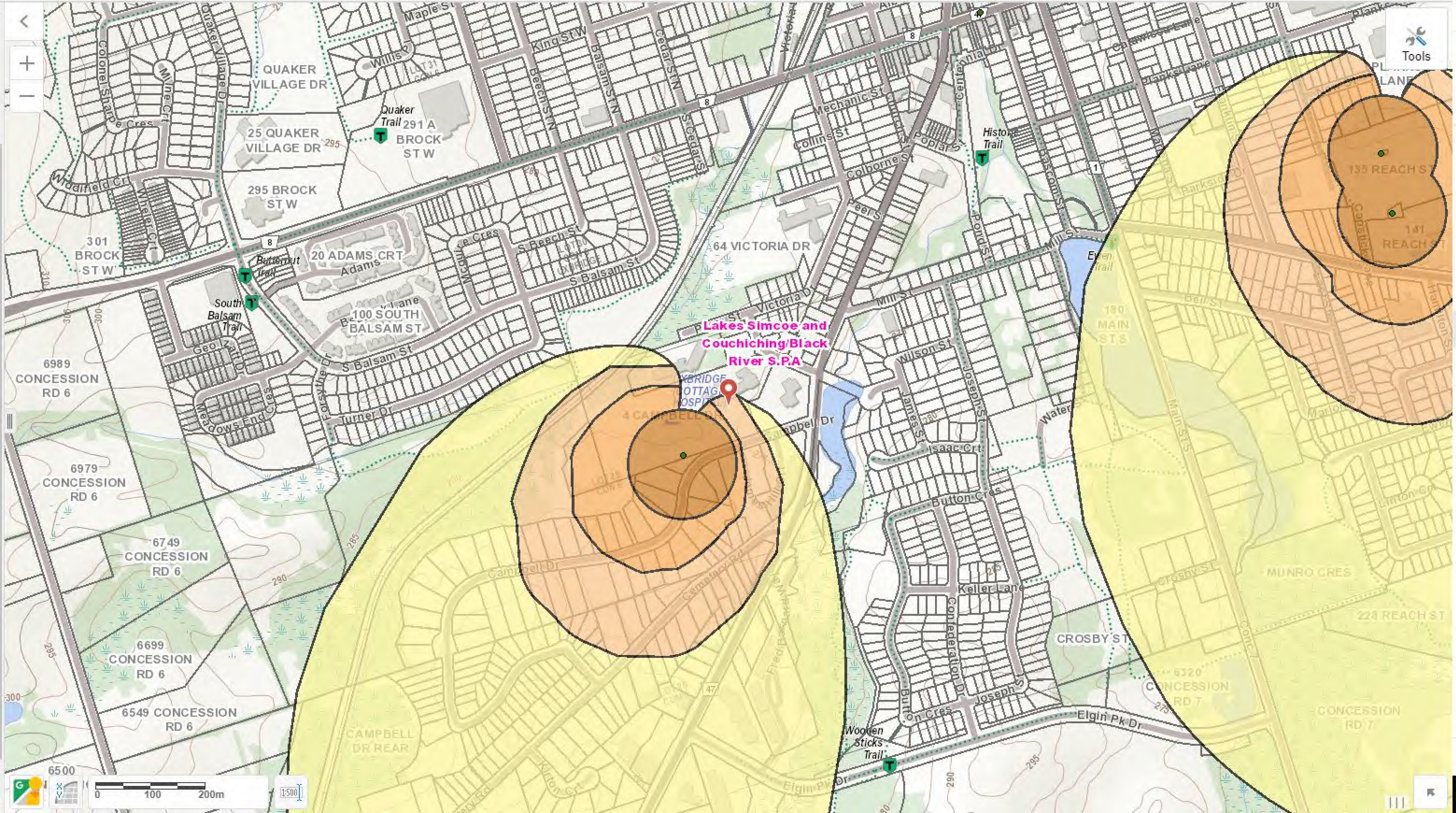
The Significant threats for the vulnerable areas at this location can be found at this link.

Use the Policy search tab to see if any policies apply – for more details see the source protection plan

Information is current as of: **January 31st, 2019**

Map Legend

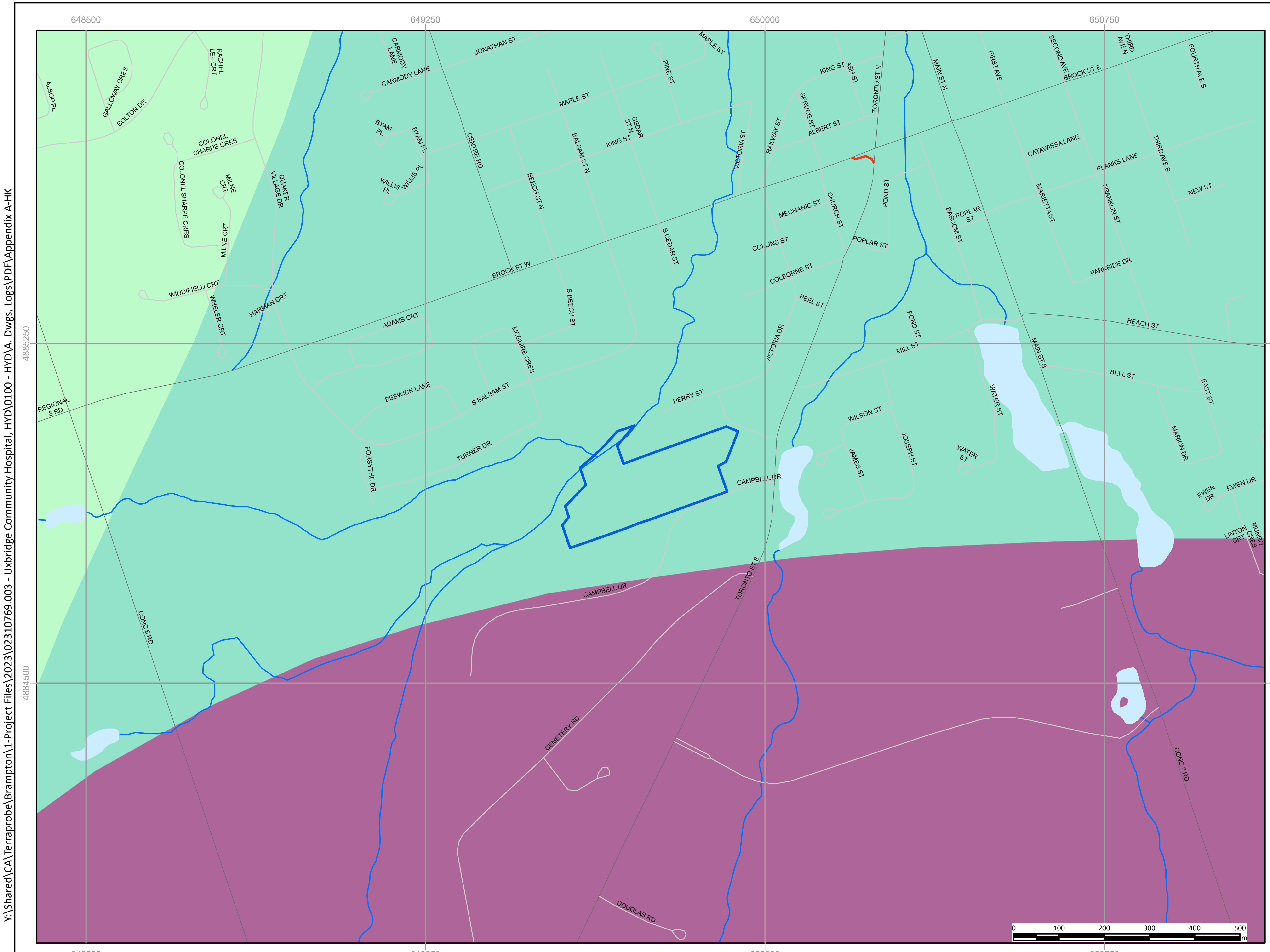
Help and Resources



Appendix B

Surficial Geology, Physiography and Topography

englobe



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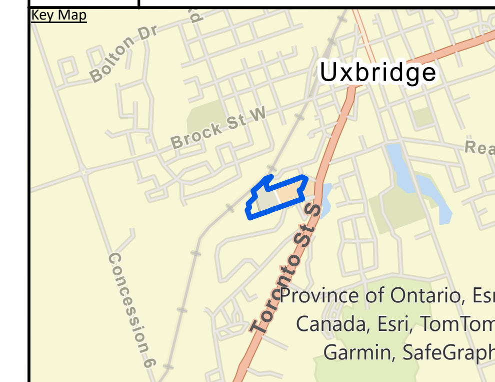
Key Map



Notes:

Legend:

Watercourse

ROADS TYPE

Collector

Local / Street

Ramp

UNIT, REGION

31, Peterborough Drumlin Field

30: Oak Ridges Moraine

Water Body

Approximate Site Location

Project Title:
Hydrogeological Assessment

Site Location:
Uxbridge Community Hospital
Uxbridge, Ontario

Figure Title:
Physiography Map

Designed By: AQ	File No.: 02310769.003
Drawn By: HK	Scale: As Shown
Reviewed By: MS	Figure No.:
Date: August 2024	

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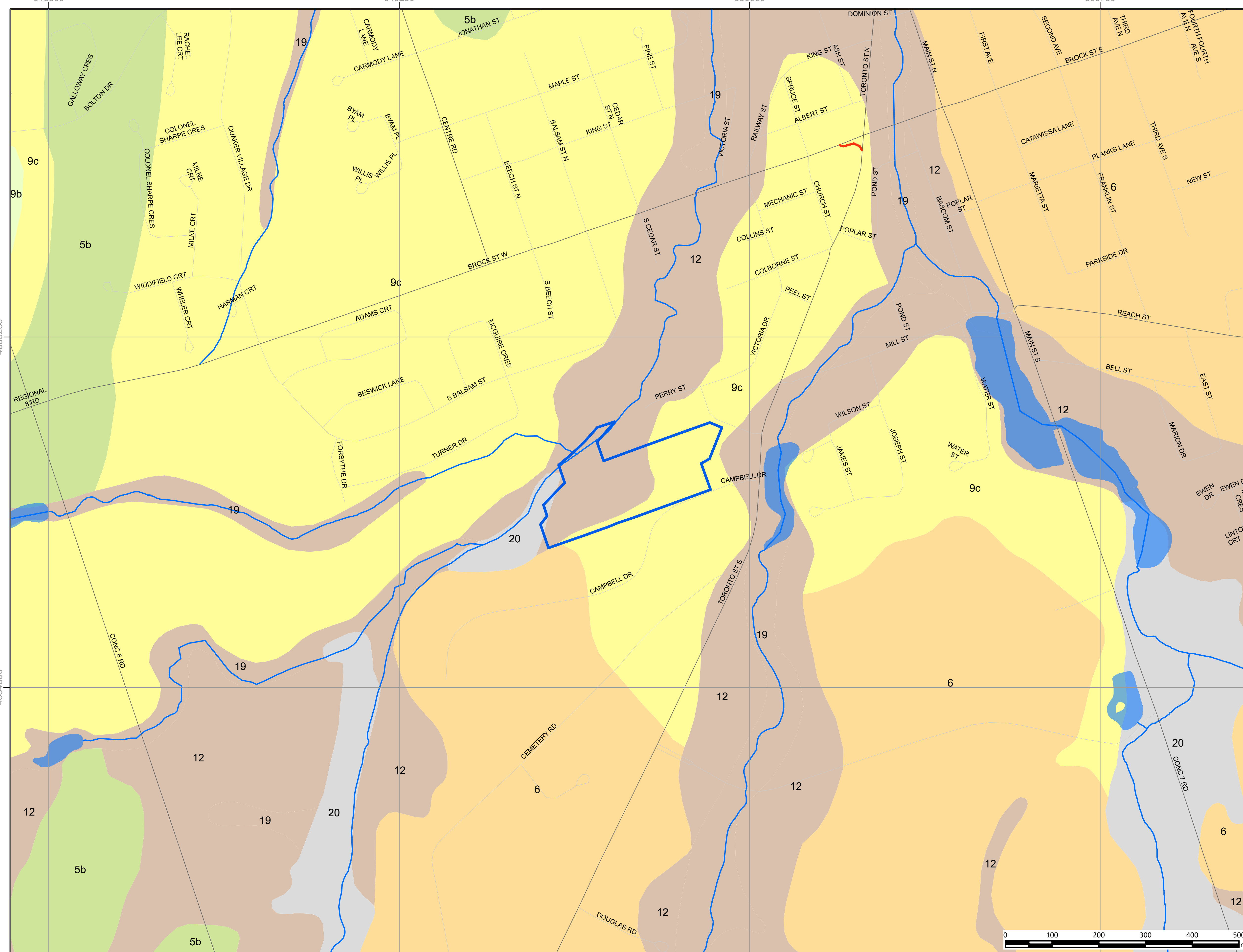

ENGLOBE

N W E S

References:

Service Layer Credits: © Surface Geology Map was Produced by Englobe Corp.under license from the Ministry of Natural Resources and Forestry (MNRF).
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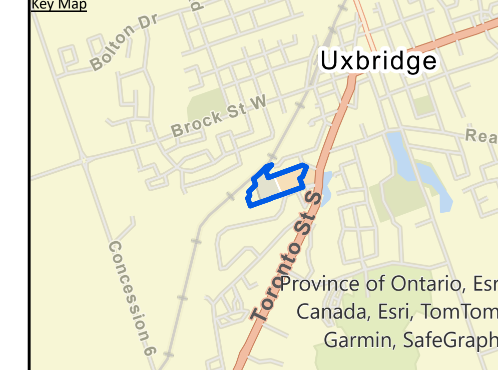
Surficial geology of southern Ontario, 2003, Ontario Geological Survey, Miscellaneous Release— Data 128 – Revised.

Key Map



Notes:

Legend:

Watercourse

Roads Type

Collector

Local / Street

Ramp

Water Body

Surface Geology

5b:Stone-poor,carbonate-derived silty to sandy till

6: Ice-contact stratified deposits

9b: Littoral-foreshore deposits

9c: Foreshore-basinal deposits

12: Older alluvial deposits

19: Modern alluvial deposits

20: Organic deposits

Approximate Site Location

Project Title:

Hydrogeological Assessment

Site Location:

Uxbridge Community Hospital
Uxbridge, Ontario

Figure Title:

Surficial Geology Map

Designed By: AQ	*File No.:* 02310769.003
Drawn By: HK	*Scale:* As Shown
Reviewed By: MS	*Figure No.:*
Date: August 2024	

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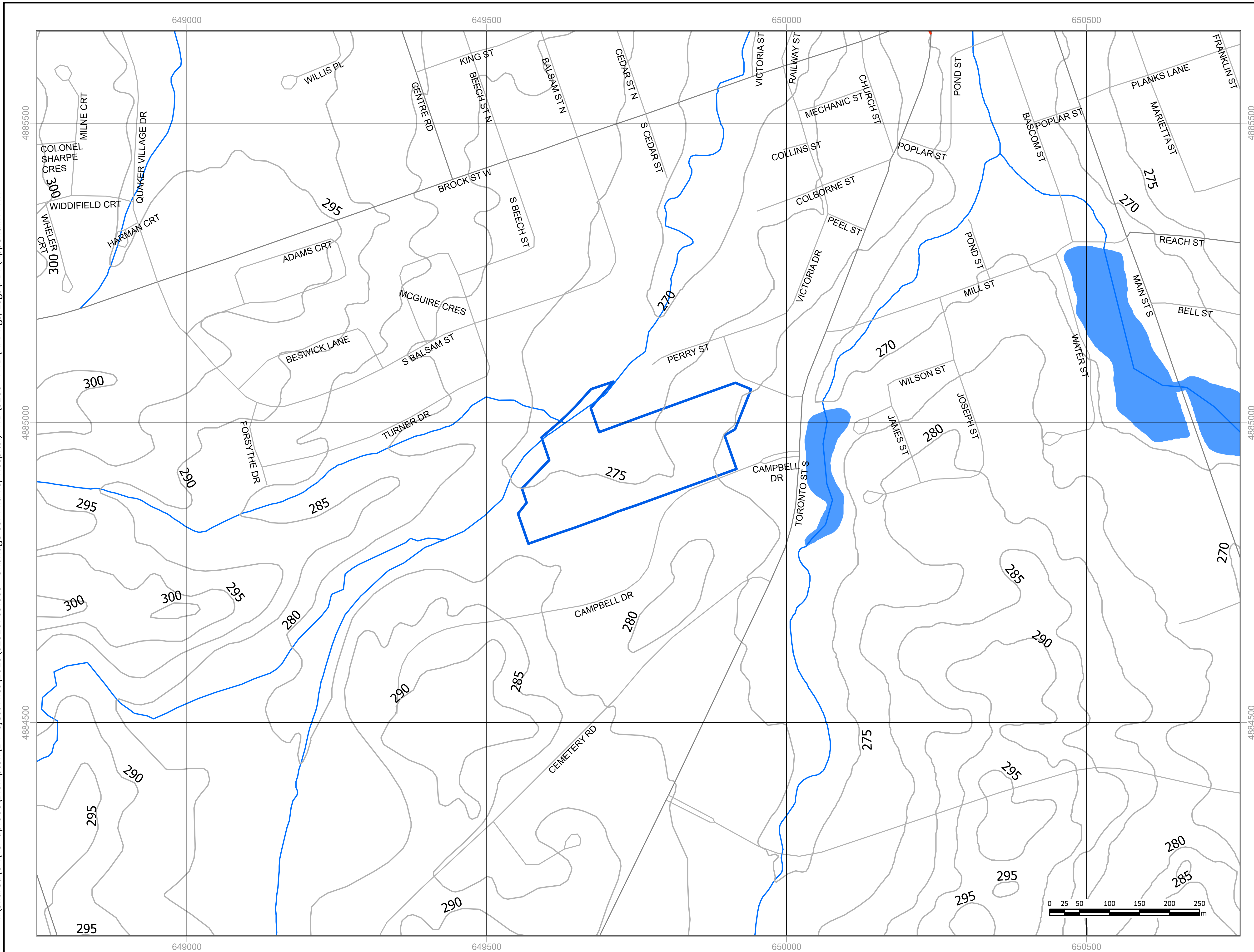

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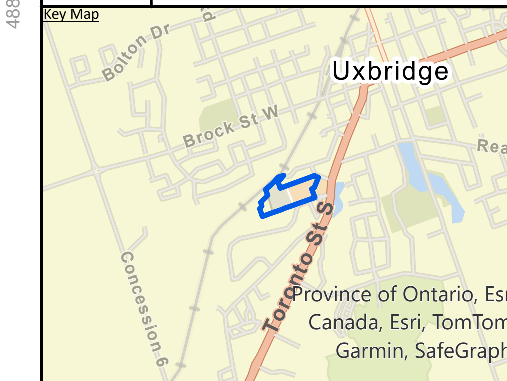
References:
Service Layer Credits: © Topography, Water Body and Watercourse Map was Produced by Englobe Corp. under license from the Ministry of Ministry of Natural Resources and Forestry (MNRF). Copyright (c) is held by the King's Printer for Ontario 2023.

Key Map



Notes:

Legend:
- Watercourse

Roads Type
- Collector
- Local / Street
- Ramp
- Township of Uxbridge, Topographic Contours
- Water Body
- Approximate Site Location

Project Title: Hydrogeological Assessment

Site Location: Uxbridge Community Hospital, Uxbridge, Ontario

Figure Title: Topography Map

Designed By: AQ	*File No.:* 02310769.003
Drawn By: HK	*Scale:* As Shown
Reviewed By: MS	*Figure No.:*
Date: August 2024	

Appendix C

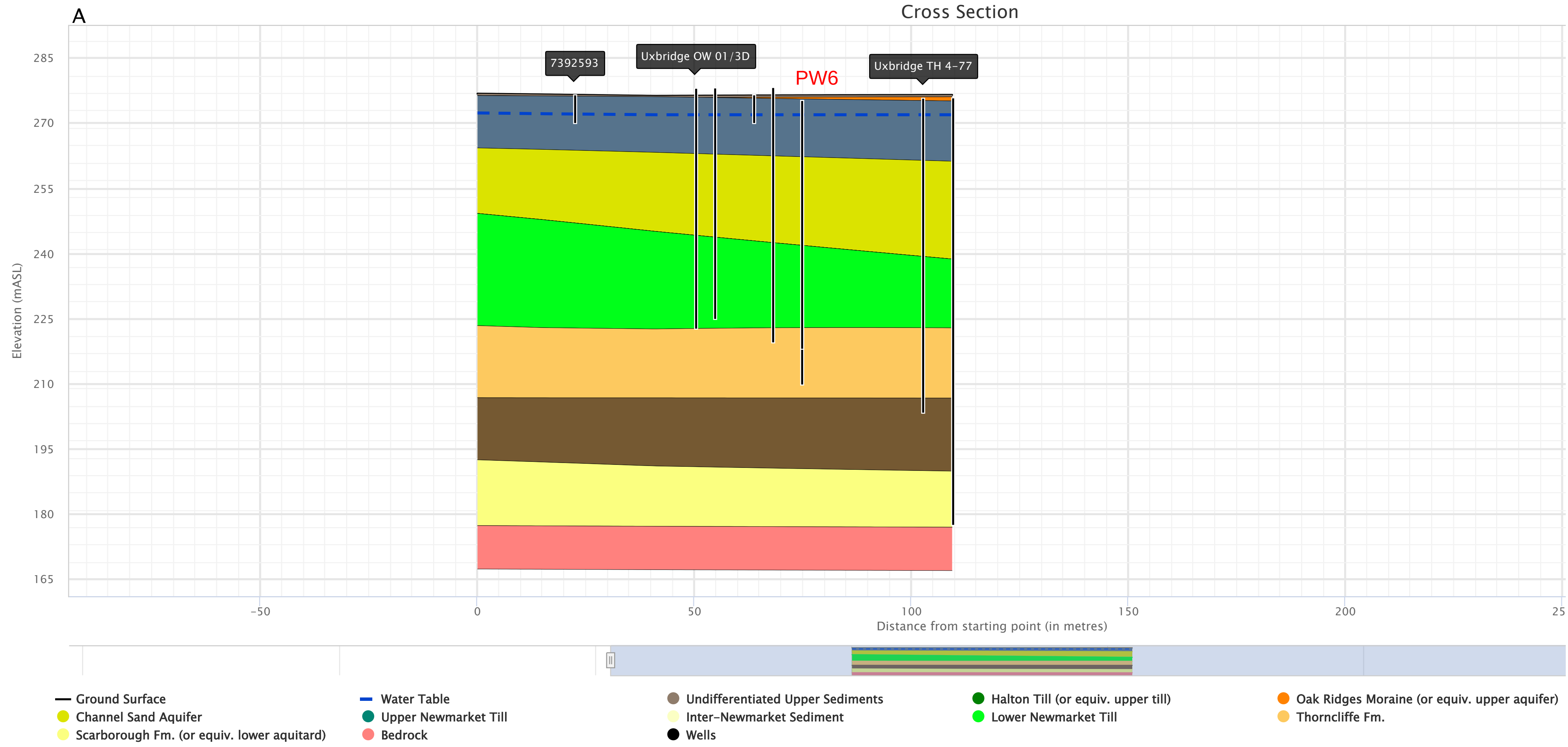
ORMGP Cross-Section


A
A'

Cross Section

NOTE: Mouse over a well to see it's properties, and right click it for more info. Double click to reset zoom or hold the Z key to do a zoom preview.

Section / Figure Name: Cross Section | Interval Size X: auto Y: auto | Show: Mouse-over Info, Grid Lines, Well Names, Start/End Label | Vertical Exaggeration: 1 x | Zoom | RESET | Shift By 100 m



Appendix D

MECP Well Records

ENGLOBE

WELL ID	BH ID	Northing	Easting	DATE	METHOD	TAG	County	Township	Final Status	Use1	Use 2	Depth (m)	Water_kind
1904518	10073464	649764.9	4884573	15-Sep-76	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		21	FRESH
1904902	10073754	650264.9	4885073	22-Feb-77	Rotary (Convent.)		DURHAM	UXBRIDGE TOWNSHIP	Test Hole	Not Used	Municipal		
1904903	10073755	650314.9	4885123	28-Feb-77	Rotary (Convent.)		DURHAM	UXBRIDGE TOWNSHIP	Test Hole	Not Used	Municipal		
1904966	10073817	649914.9	4884523	6-Jan-78	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		12.2	FRESH
1905323	10074170	649814.9	4884473	11-Apr-79	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		19.2	FRESH
1905440	10074281	649714.9	4884923	13-Aug-79	Rotary (Convent.)		DURHAM	UXBRIDGE TOWNSHIP	Test Hole	Municipal		21.3	FRESH
1905765	10074579	649514.9	4884423	18-Jun-80	Rotary (Convent.)		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Supply	Not Used	Domestic		
1905766	10074580	649514.9	4884473	18-Jun-80	Rotary (Convent.)		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Supply	Not Used			
1907591	10076227	649778.9	4884443	3-Feb-86	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		14.3	FRESH
1907669	10076304	649756	4884604	14-May-86	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		15.8	FRESH
1908083	10076717	649748.9	4884605	19-Dec-86	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		14.6	FRESH
1908683	10077312	649905.9	4884748	31-Oct-87	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		23.2	FRESH
1908850	10077478	649788.9	4884764	7-Dec-87	Rotary (Convent.)		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		68.6	FRESH
1909176	10077803	649651.9	4884805	19-Jul-88	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		61	FRESH
1909390	10078017	649933	4884732	22-Jul-88	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		21	FRESH
1909625	10078252	649651.9	4884805	7-Feb-89	Rotary (Convent.)		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		62.8	FRESH
1911055	10079678	649786	4884871	29-Oct-90	Rotary (Reverse)		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Public			
1911068	10079691	649777.9	4884521	8-May-91	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		20.1	FRESH
1911649	10080272	649756.9	4884568	30-Sep-92	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		15.2	FRESH
1912334	10080954	649778.9	4884443	31-Jan-95	Rotary (Convent.)		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		61.3	FRESH
1912335	10080955	649778.9	4884443	20-Feb-95	Not Known		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Supply	Domestic			
1912475	10081094	649651.9	4884805	29-Jun-95	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		25.3	FRESH
1912653	10081272	649740	4884558	23-Nov-95	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		10.4	FRESH
1912654	10081273	649805	4884596	27-Nov-95	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		16.8	FRESH
1912655	10081274	649805	4884622	2-Dec-95	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		21	FRESH
1912671	10081290	649663	4884421	22-Dec-95	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		23	Not stated
1912672	10081291	649652	4884478	9-Dec-95	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		22.2	Not stated
1912846	10081465	649651.9	4884805	29-May-96	Boring		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other	Not Used			
1912847	10081466	649651.9	4884805	29-May-96	Boring		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other	Not Used			
1912848	10081467	649651.9	4884805	29-May-96	Not Known		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other	Not Used			
1912849	10081468	649651.9	4884805	29-May-96	Not Known		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other	Not Used			
1912850	10081469	649651.9	4884805	29-May-96	Not Known		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other	Not Used			
1913766	10082357	649651.9	4884805	21-Aug-98	Not Known		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other				
1913767	10082358	649651.9	4884805	24-Aug-98	Not Known		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other				
1913768	10082359	649651.9	4884805	24-Aug-98	Not Known		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other				
1913769	10082360	649651.9	4884805	24-Aug-98	Not Known		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other				
1913770	10082361	649651.9	4884805	24-Aug-98	Not Known		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other				
1914163	10082754	649651.9	4884805	10-Aug-99	Air Percussion		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		60.4	FRESH
1914209	10082800	649778.9	4884443	30-Jul-99	Rotary (Air)		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other				
1914210	10082801	649778.9	4884443	4-Aug-99	Rotary (Air)		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Quality				
1914299	10082890	649651.9	4884805	2-Oct-99	Not Known		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other	Not Used			
1914300	10082891	649778.9	4884443	29-Oct-99	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Observation Wells			14.6	Not stated
1914417	10083008	649778.9	4884443	7-Mar-00	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		16.8	FRESH
1914797	10083386	649776.2	4884444	22-Aug-00	Rotary (Convent.)		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Supply				
1914799	10083388	649776.2	4884444	17-Aug-00	Rotary (Convent.)		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Supply				
1914838	10083427	649776.2	4884444	3-Oct-00	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		6.1	FRESH
1915204	10517177	649650.2	4884806	23-Jul-01	Not Known		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other	Not Used			
1915255	10517228	649650.2	4884806	19-Jan-01	Rotary (Convent.)		DURHAM	UXBRIDGE TOWNSHIP	Observation Wells				
1915308	10517281	649650.2	4884806	14-Aug-01	Not Known		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other				
1916658	10543642	649649.2	4884806	18-Aug-03	Rotary (Convent.)		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		33.5	FRESH
1916695	10543679	649649.2	4884806	4-Sep-03	Rotary (Air)		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		35.7	FRESH
1916696	10543680	649649.2	4884806	13-Sep-03	Rotary (Convent.)		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Supply	Not Used			
1917953	11317543	649570.4	4884498	30-Nov-05		A032316	DURHAM	UXBRIDGE TOWNSHIP					
1917954	11317544	649574.5	4884494	7-Dec-05		A032314	DURHAM	UXBRIDGE TOWNSHIP					
4602988	10294351	649893.9	4884794	14-Oct-59	Boring		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		6.1	FRESH
4602989	10294352	649825.9	4884585	25-Aug-61	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		32.3	FRESH
4602991	10294354	649717.9	4884605	13-Oct-67	Boring		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		7.6	FRESH
4603776	10295126	649634.9	4884553	21-Nov-68	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		11.3	FRESH
4604116	10295459	649614.9	4884523	5-Aug-69	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		20.4	FRESH
4604891	10296217	649664.9	4884443	25-Nov-71	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		25.3	FRESH
4604894	10296220	649614.9	4884398	29-Nov-71	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		24.7	FRESH
4605428	10296746	649674.9	4884583	2-Apr-73	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		18.6	FRESH
4605526	10296842	649814.9	4884723	31-Jul-73	Rotary (Convent.)		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		63.4	FRESH
4605641	10296955	649724.9	4884673	23-Nov-73	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		18.2	FRESH
4605933	10297241	649838.9	4884623	11-Jul-74	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		13.7	FRESH
4606386	10297677	649911.9	4884558	11-Dec-75	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		12.2	FRESH
4606390	10297681	650001.9	4884638	15-Dec-75	Cable Tool		DURHAM	UXBRIDGE TOWNSHIP	Water Supply	Domestic		17.1	FRESH
7039920	11762205	649995	4884401	12-Dec-06	Other Method		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other	Not Used			
7039921	11762206	649988	4884419	12-Dec-06	Other Method		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other	Not Used			
7046900	23046900	649769	4884388	26-Jun-07			DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other				
7046901	23046901	649772	4884378	26-Jun-07			DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other				
7046902	23046902	649805	4884447	26-Jun-07			DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other				
7182315	1003886556	649704	4884574	18-May-12			DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other				
7197204	1004253685	650112	4885051	22-Jan-13	Direct Push	A143698	DURHAM	UXBRIDGE TOWNSHIP	Monitoring /Test Hole	Monitoring / Test Hole			
7341715	1007640446	649846	4884924	8-Feb-19	Rotary (Convent.)	A174103	DURHAM	UXBRIDGE TOWNSHIP	Monitoring /Test Hole	Monitoring /Test Hole		5.8	Untested
7356676	1008256509	649829	4884945	6-Apr-20			DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other				
7356677	1008256512	649831	4884971	6-Apr-20			DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other				
7366696	1008470904	649800	4884975	8-Oct-19		A275278	DURHAM	UXBRIDGE TOWNSHIP					
7390084	1008687903	649920	4884572	8-Apr-21	Rotary (Convent.)	A312094	DURHAM	UXBRIDGE TOWNSHIP	Monitoring /Test Hole	Monitoring / Test Hole		3.7	Untested
7390085	1008687906	649900	4884540	8-Apr-21	Rotary (Convent.)	A312095	DURHAM	UXBRIDGE TOWNSHIP	Monitoring / Test Hole	Monitoring / Test Hole		3.7	Untested
7390086	1008687909	649911	4884551	9-Apr-21	Rotary (Convent.)	A312093	DURHAM	UXBRIDGE TOWNSHIP	Monitoring / Test Hole	Monitoring / Test Hole		3.7	Untested
7392585	1008713902	649849	4884951		Auger		DURHAM	UXBRIDGE TOWNSHIP					
7392586	1008713905	649829	4884945		Auger		DURHAM	UXBRIDGE TOWNSHIP					
7392587	1008713908	649844	4884922		Auger		DURHAM	UXBRIDGE TOWNSHIP					
7392588	1008713911	649854	4884926		Auger		DURHAM	UXBRIDGE TOWNSHIP		Monitoring			
7392589	1008713914	649831	4884971		Auger		DURHAM	UXBRIDGE TOWNSHIP					
7392590	1008713917	649808	4884914		Auger		DURHAM	UXBRIDGE TOWNSHIP					
7392591	1008713920	649731	4884884		Auger		DURHAM	UXBRIDGE TOWNSHIP		Monitoring			
7392592	1008713923	649713	4884882		Auger		DURHAM	UXBRIDGE TOWNSHIP		Monitoring			
7392593	1008713926	649726	4884869		Auger		DURHAM	UXBRIDGE TOWNSHIP		Monitoring			

7392594	1008713929	649712	4884902		Auger		DURHAM	UXBRIDGE TOWNSHIP		Monitoring			
7392595	1008713932	649752	4884917		Auger		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other	Monitoring			
7392596	1008713935	649766	4884877		Auger		DURHAM	UXBRIDGE TOWNSHIP	Abandoned-Other	Monitoring			
7393780	1008729026	650094	4885048	29-Apr-21			DURHAM	UXBRIDGE TOWNSHIP					
7429965	1009227278	649494	4885079	16-Sep-22		A362870	DURHAM	UXBRIDGE TOWNSHIP					
7429966	1009227281	649678	4885236	16-Sep-22		A362878	DURHAM	UXBRIDGE TOWNSHIP					
7429967	1009227284	649570	4885128	15-Sep-22		A360901	DURHAM	UXBRIDGE TOWNSHIP					
7429968	1009227287	649592	4885100	15-Sep-22		A360898	DURHAM	UXBRIDGE TOWNSHIP					
7429969	1009227290	649776	4885292	14-Sep-22		A362844	DURHAM	UXBRIDGE TOWNSHIP					
7429970	1009227293	649744	4885217	14-Sep-22		A362843	DURHAM	UXBRIDGE TOWNSHIP					
7433414	1009272618	649629	4884428	18-Oct-22			DURHAM	UXBRIDGE TOWNSHIP					

Appendix E

Borehole Logs

LOG OF BOREHOLE 24-1

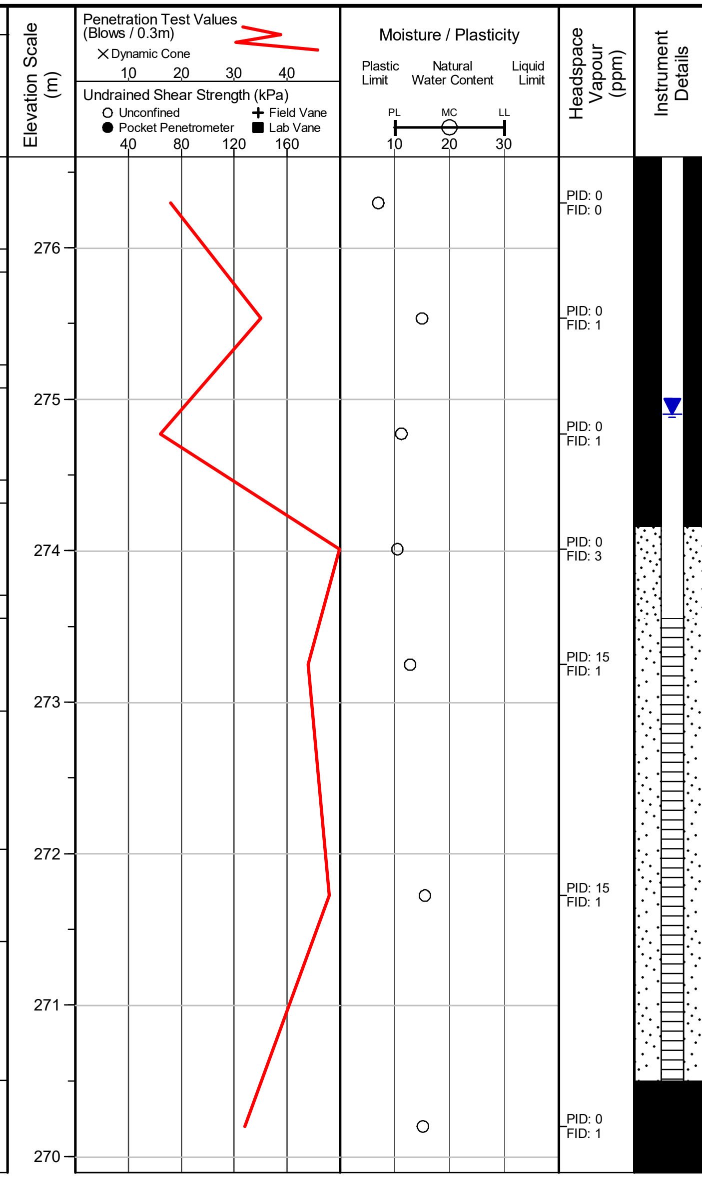
ENGLOBE

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 18, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

Position	: E: 649866, N: 4885021 (UTM 17T)	Elevation Datum	: Geodetic
Rig type	: Track-mounted	Drilling Method	: Solid stem augers

SOIL PROFILE / SAMPLES

Elev / Depth (m)	Description	Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
276.6	**GROUND SURFACE**					
	100mm **ASPHALTIC CONCRETE**					
276.2 / 0.4	250mm **AGGREGATE**	1	SS	18	PID: 0 FID: 0	SS1 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
275.8 / 0.8	**FILL**, sandy silt, trace to some gravel, trace clay, trace organics, compact, dark brown, moist					
	SILT, trace to some clay, trace to some sand, compact to very dense, brown, moist	2	SS	35	PID: 0 FID: 1	
		3	SS	16	PID: 0 FID: 1	GR 0, SA 16, SI 68, CL 16
	...brownish grey below	4	SS	61	PID: 0 FID: 3	
		5	SS	44	PID: 15 FID: 1	SS5 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
	...dilatent and wet below	6	SS	48	PID: 15 FID: 1	wet sampler
269.9 / 6.7		7	SS	32	PID: 0 FID: 1	



END OF BOREHOLE

Unstabilized water level measured at 4.9 m below ground surface; borehole was open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	1.7	274.9

file: 02310769.000 bh logs.gpj

LOG OF BOREHOLE 24-2

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 17, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

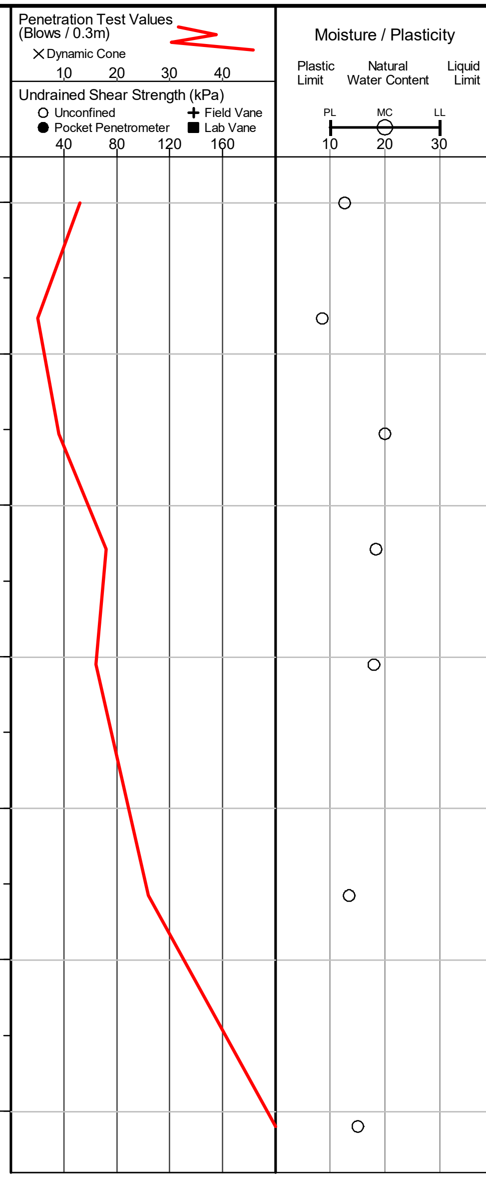
Position : E: 649931, N: 4885050 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

SOIL PROFILE

Elev / Depth (m)	Description
277.3	**GROUND SURFACE**
	90mm **ASPHALTIC CONCRETE**
276.9 / 0.4	250mm **AGGREGATE**
	FILL, sand, trace to some silt, trace gravel, trace organics, loose to compact, dark brown, moist
275.8 / 1.5	**SILT**, trace to some clay, trace to some sand, dilatant, loose to compact, brown, wet
	...dense
270.6 / 6.7	**END OF BOREHOLE**

SAMPLES

Number	Type	SPT 'N' Value	Elevation (m)	Headspace Vapour (ppm)	Lab Data and Comments
1	SS	13	~277.0	PID: 0 FID: 0	
2	SS	5	~276.2	PID: 0 FID: 0	SS2 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC; wet sampler
3	SS	9	~275.5	PID: 0 FID: 0	
4	SS	18	~274.7	PID: 0 FID: 0	SS4 Analysis: M&I, PAH, PCB, VOC
5	SS	16	~274.0	PID: 0 FID: 0	SS5 Analysis: BTEX, VOC, PHC
6	SS	26	~272.5	PID: 0 FID: 0	
7	SS	50	~270.9	PID: 0 FID: 0	



Unstabilized water level measured at 5.8 m below ground surface; borehole was open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	2.5	274.8

LOG OF BOREHOLE 24-3

ENGLOBE

Project No. : 02310769.002 | Client : Oak Valley Health | Originated by : BR

Date started : June 17, 2024 | Project : Uxbridge Community Hospital | Compiled by : AS

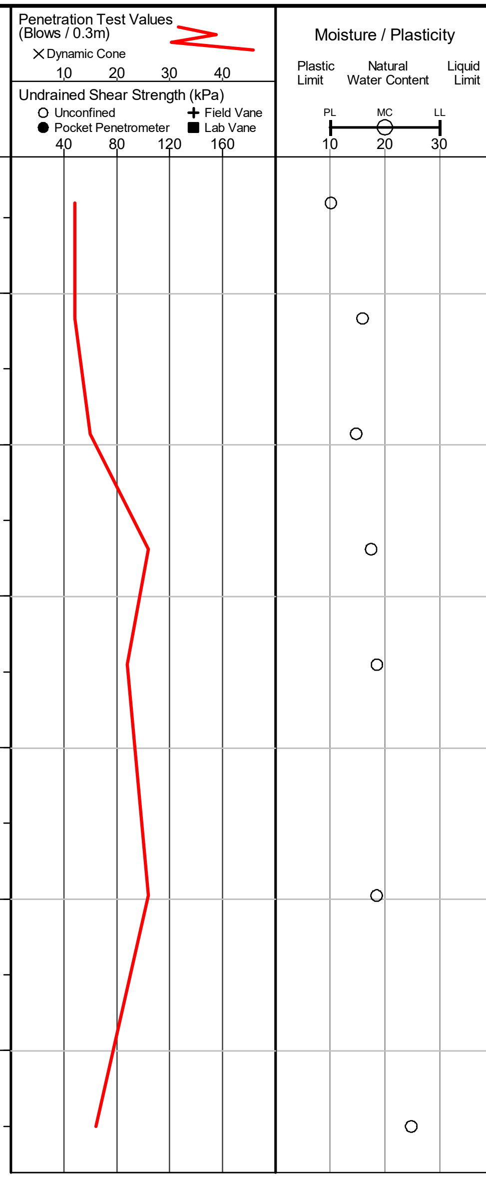
Sheet No. : 1 of 1 | Location : Uxbridge, ON | Checked by : AS

Position : E: 649905, N: 4884989 (UTM 17T) | Elevation Datum : Geodetic

Rig type : Track-mounted | Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	SOIL PROFILE Description	Samples Number	Type	SPT 'N' Value	Elevation Scale (m)	Headspace Vapour (ppm)	Lab Data and Comments
0	276.9	GROUND SURFACE						
		100mm **TOPSOIL**						
		FILL, silty sand, trace gravel, trace organics, compact, dark brown, moist	1	SS	12		PID: 0 FID: 0	SS1 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC, DUP#1
	276.1 / 0.8	**SILT**, trace to some clay, trace to some sand, dilatant, compact, brown, wet				276		
1			2	SS	12		PID: 0 FID: 0	
			3	SS	15	275	PID: 0 FID: 0	
2								wet sampler
			4	SS	26	274	PID: 0 FID: 0	SS4 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
3			5	SS	22	273	PID: 0 FID: 0	
4		...brownish grey below						
			6	SS	26	272	PID: 0 FID: 0	
5						271		
6			7	SS	16		PID: 0 FID: 0	
	270.2 / 6.7	**END OF BOREHOLE**						

Graphic Log | Instrument Details | Unstabilized Water Level | GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL



Unstabilized water level measured at 5.2 m below ground surface; borehole caved to 5.3 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	2.5	274.4

ENGLOBE

LOG OF BOREHOLE 24-4

Project No. : 02310769.002 | Client : Oak Valley Health | Originated by : BR
Date started : June 17, 2024 | Project : Uxbridge Community Hospital | Compiled by : AS
Sheet No. : 1 of 1 | Location : Uxbridge, ON | Checked by : AS

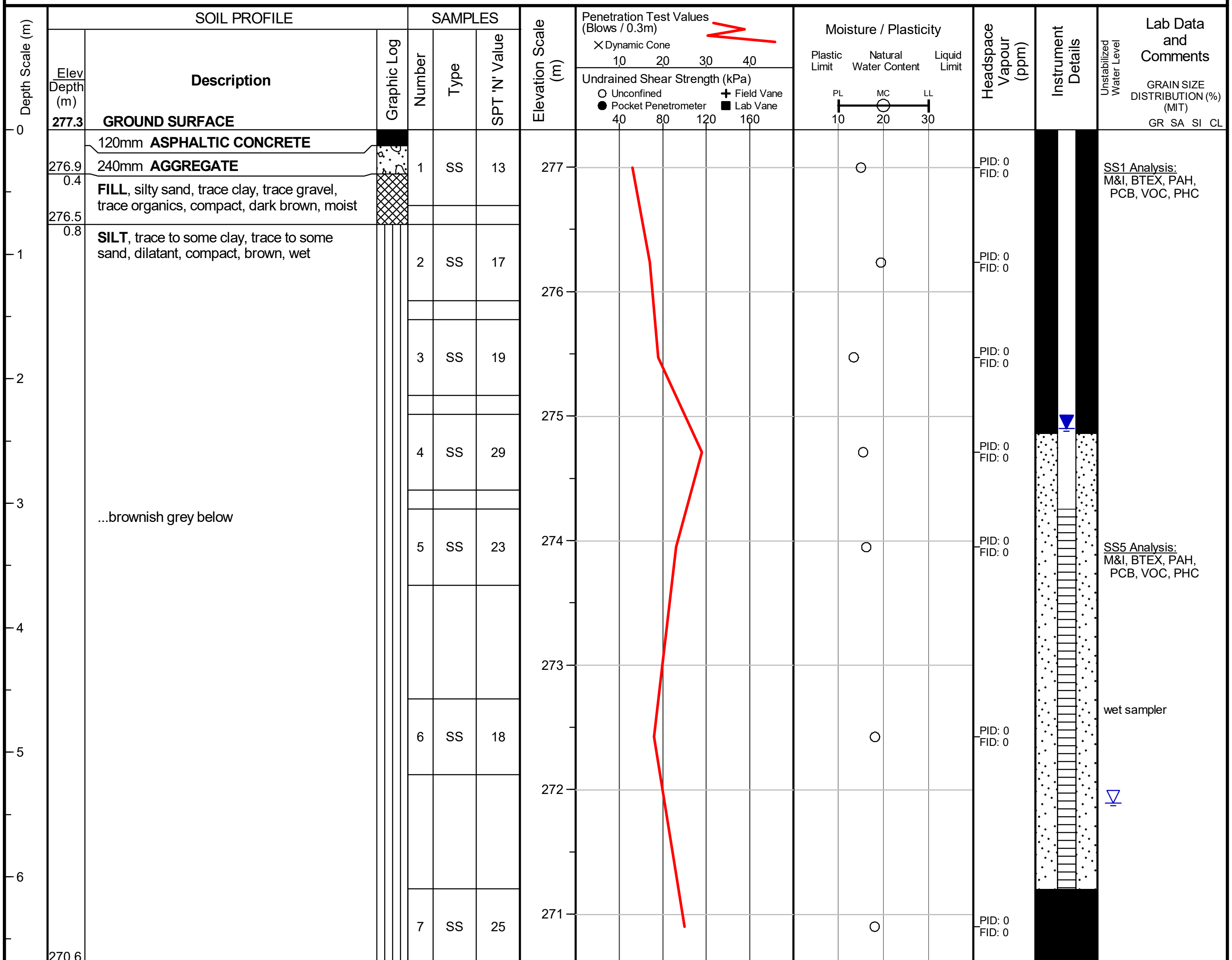
Position : E: 649860, N: 4884968 (UTM 17T) | Elevation Datum : Geodetic
Rig type : Track-mounted | Drilling Method : Solid stem augers

SOIL PROFILE

Elev / Depth (m)	Description
277.3	**GROUND SURFACE**
0	120mm **ASPHALTIC CONCRETE**
	240mm **AGGREGATE**
276.9 / 0.4	**FILL**, silty sand, trace clay, trace gravel, trace organics, compact, dark brown, moist
276.5 / 0.8	**SILT**, trace to some clay, trace to some sand, dilatant, compact, brown, wet
	...brownish grey below
270.6 / 6.7	**END OF BOREHOLE**

SAMPLES

Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
1	SS	13	PID: 0 FID: 0	SS1 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
2	SS	17	PID: 0 FID: 0	
3	SS	19	PID: 0 FID: 0	
4	SS	29	PID: 0 FID: 0	
5	SS	23	PID: 0 FID: 0	SS5 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
6	SS	18	PID: 0 FID: 0	wet sampler
7	SS	25	PID: 0 FID: 0	



Wet cave at 5.4 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	2.4	274.9

LOG OF BOREHOLE 24-5

Project No. : 02310769.002
Client : Oak Valley Health
Originated by : BR

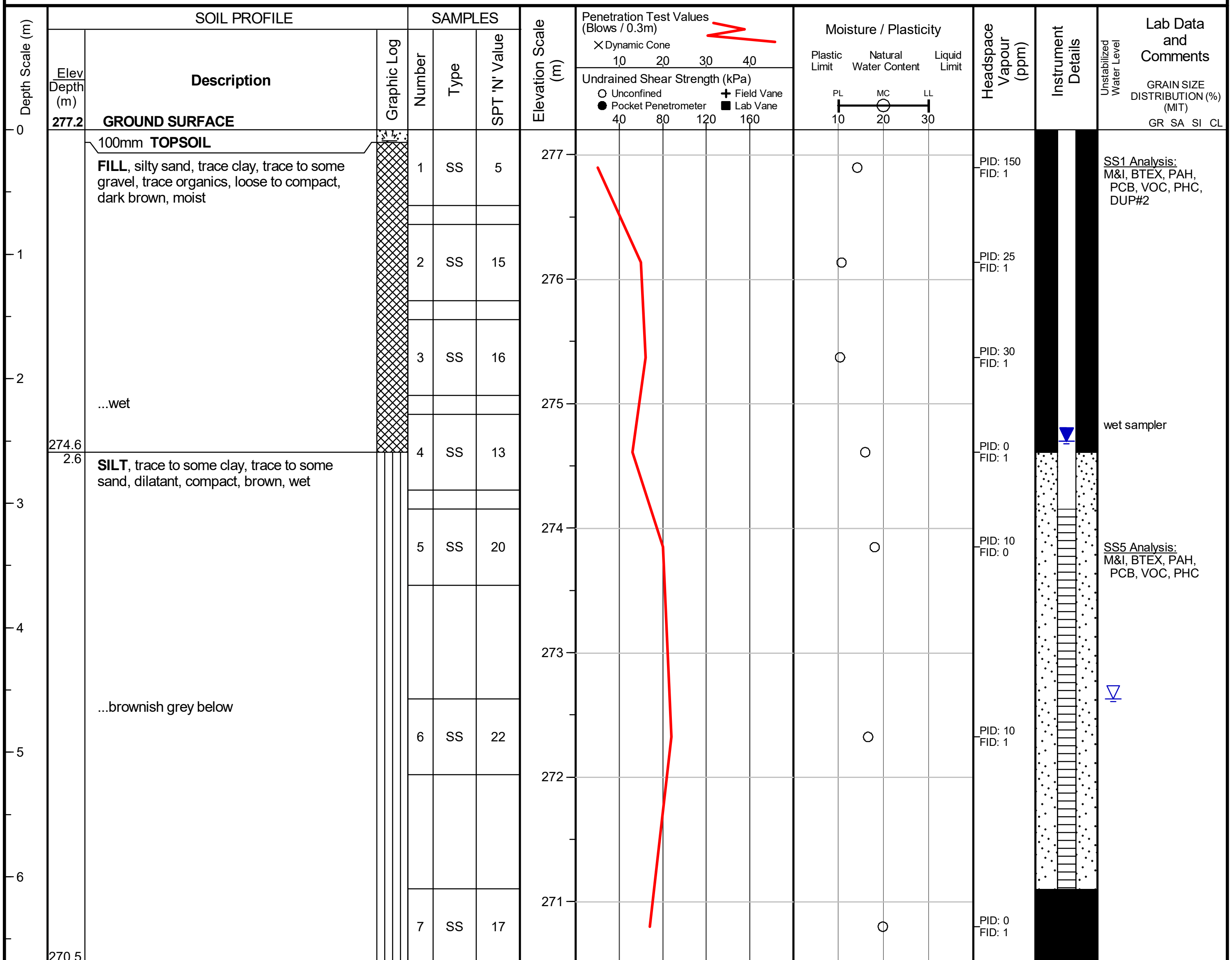
Date started : June 18, 2024
Project : Uxbridge Community Hospital
Compiled by : AS

Sheet No. : 1 of 1
Location : Uxbridge, ON
Checked by : AS

Position : E: 649879, N: 4884957 (UTM 17T)
Elevation Datum : Geodetic

Rig type : Track-mounted
Drilling Method : Solid stem augers

Elev / Depth (m)	Description	Sample Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
277.2	GROUND SURFACE					
	100mm **TOPSOIL**					
	FILL, silty sand, trace clay, trace to some gravel, trace organics, loose to compact, dark brown, moist	1	SS	5	PID: 150 FID: 1	SS1 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC, DUP#2
		2	SS	15	PID: 25 FID: 1	
		3	SS	16	PID: 30 FID: 1	
	...wet					
274.6 / 2.6	**SILT**, trace to some clay, trace to some sand, dilatant, compact, brown, wet	4	SS	13	PID: 0 FID: 1	wet sampler
		5	SS	20	PID: 10 FID: 0	SS5 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
	...brownish grey below	6	SS	22	PID: 10 FID: 1	
		7	SS	17	PID: 0 FID: 1	
270.5 / 6.7	**END OF BOREHOLE**					



Unstabilized water level measured at 4.6 m below ground surface; borehole caved to 5.5 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	2.5	274.7

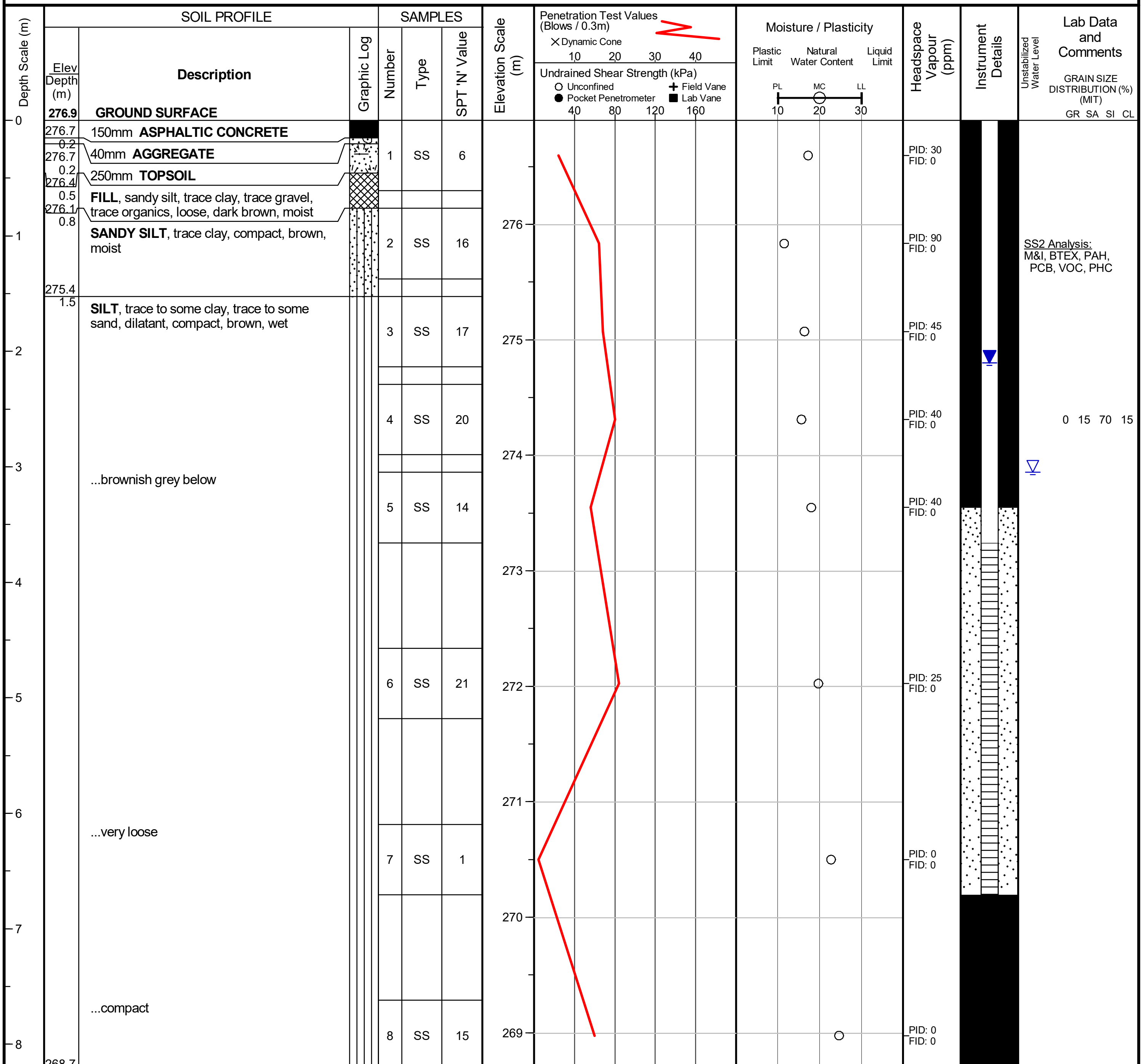
LOG OF BOREHOLE 24-6

ENGLOBE

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 18, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

Position : E: 649893, N: 4884924 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

Elev / Depth (m)	Description	Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
276.9	GROUND SURFACE					
276.7 / 0.2	150mm ASPHALTIC CONCRETE					
276.7 / 0.2	40mm AGGREGATE	1	SS	6	PID: 30 FID: 0	
276.4 / 0.5	250mm TOPSOIL					
276.1 / 0.8	FILL, sandy silt, trace clay, trace gravel, trace organics, loose, dark brown, moist					
	SANDY SILT, trace clay, compact, brown, moist	2	SS	16	PID: 90 FID: 0	SS2 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
275.4 / 1.5	SILT, trace to some clay, trace to some sand, dilatant, compact, brown, wet	3	SS	17	PID: 45 FID: 0	
		4	SS	20	PID: 40 FID: 0	GR SA SI CL: 0 15 70 15
	...brownish grey below	5	SS	14	PID: 40 FID: 0	
		6	SS	21	PID: 25 FID: 0	
	...very loose	7	SS	1	PID: 0 FID: 0	
	...compact	8	SS	15	PID: 0 FID: 0	
268.7 / 8.2	END OF BOREHOLE					



Unstabilized water level measured at 3.0 m below ground surface; borehole caved to 6.7 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	2.1	274.8

file: 02310769.000 bh logs.gpj

ENGLOBE

LOG OF BOREHOLE 24-7

Project No. : 02310769.002	Client : Oak Valley Health	Originated by : BR
Date started : June 18, 2024	Project : Uxbridge Community Hospital	Compiled by : AS
Sheet No. : 1 of 1	Location : Uxbridge, ON	Checked by : AS

Position : E: 649715, N: 4884866 (UTM 17T)

Elevation Datum : Geodetic

Rig type : Track-mounted

Drilling Method : Solid stem augers

Penetration Test Values (Blows / 0.3m): Dynamic Cone. Undrained Shear Strength (kPa): Unconfined, Field Vane, Pocket Penetrometer, Lab Vane. Moisture / Plasticity: Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL). Headspace Vapour (ppm). Instrument Details. Unstabilized Water Level. Lab Data and Comments: GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL.

SOIL PROFILE

Elev Depth (m)	Description
277.6	GROUND SURFACE
	100mm **TOPSOIL**
	FILL, silty sand, trace clay, trace gravel, trace organics, compact, dark brown, moist
	...topsoil inclusion, black
275.3 / 2.3	**SILT**, trace to some clay, trace to some sand, dilatant, compact, brown, wet
	...brownish grey below
270.9 / 6.7	**END OF BOREHOLE**

SAMPLES

Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
1	SS	13	PID: 30 FID: 0	
2	SS	20	PID: 5 FID: 0	
3	SS	10	PID: 35 FID: 0	SS3 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
4	SS	12	PID: 0 FID: 0	
5	SS	16	PID: 0 FID: 0	
6	SS	17	PID: 35 FID: 0	wet sampler; SS6 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
7	SS	15	PID: 35 FID: 0	

Borehole was dry and caved to 3.0 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	1.4	276.2

file: 02310769.000 bh logs.gpj

ENGLOBE

LOG OF BOREHOLE 24-8

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 19, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

Position : E: 649793, N: 4884927 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

SOIL PROFILE

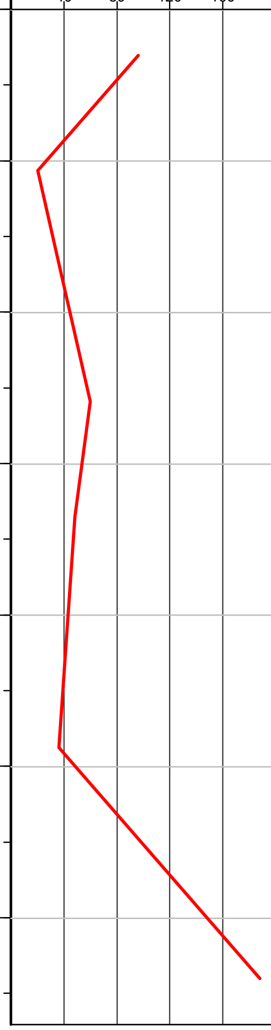
Elev / Depth (m)	Description
278.0	GROUND SURFACE
	105mm **ASPHALTIC CONCRETE**
	310mm **AGGREGATE**
277.5 / 0.5	**FILL**, silty sand, trace clay, trace gravel, trace organics, loose to compact, dark brown, moist
276.5 / 1.5	**CLAYEY SILT**, trace sand, stiff, brown, moist
275.7 / 2.3	**SILT**, trace to some clay, trace to some sand, dilatant, compact, brown, wet
	...brownish grey below
	...loose
	...dense
271.3 / 6.7	**END OF BOREHOLE**

SAMPLES

Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
1	SS	24	PID: 0 FID: 0	
2	SS	5	PID: 75 FID: 0	SS2 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
3	SS	10	PID: 30 FID: 0	Grain size (GR SA SI CL): 0 7 67 26
4	SS	15	PID: 35 FID: 0	wet sampler
5	SS	12	PID: 30 FID: 0	SS5 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
6	SS	9	PID: 20 FID: 0	
7	SS	47	PID: 5 FID: 0	

Depth Scale (m): 0, 1, 2, 3, 4, 5, 6
Elevation Scale (m): 278, 277, 276, 275, 274, 273, 272

Penetration Test Values (Blows / 0.3m) — Dynamic Cone: 10, 20, 30, 40
Undrained Shear Strength (kPa) — Unconfined, Pocket Penetrometer, Field Vane, Lab Vane: 40, 80, 120, 160



Moisture / Plasticity — Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL): 10, 20, 30

Instrument Details | Unstabilized Water Level | Lab Data and Comments — GRAIN SIZE DISTRIBUTION (%) (MIT): GR SA SI CL

Unstabilized water level measured at 4.6 m below ground surface; borehole was open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	2.3	275.7

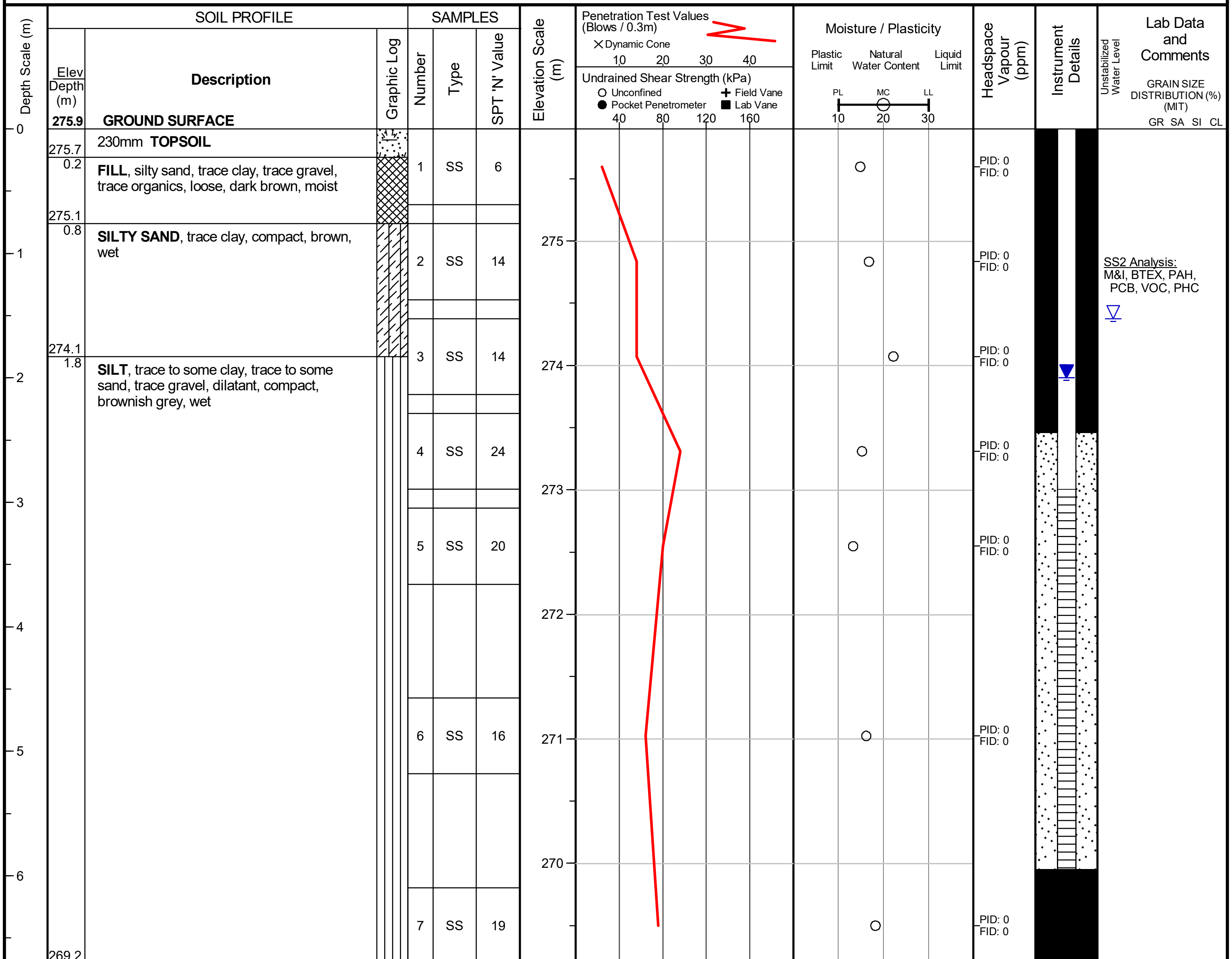
file: 02310769.000 bh logs.gpj

LOG OF BOREHOLE 24-9

Project No. : 02310769.002 | Client : Oak Valley Health | Originated by : BR
Date started : June 19, 2024 | Project : Uxbridge Community Hospital | Compiled by : AS
Sheet No. : 1 of 1 | Location : Uxbridge, ON | Checked by : AS

Position : E: 649712, N: 4884929 (UTM 17T) | Elevation Datum : Geodetic
Rig type : Track-mounted | Drilling Method : Solid stem augers

Elev (m)	Depth (m)	Description	Sample Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
275.9		GROUND SURFACE					
275.7	0.2	230mm **TOPSOIL**					
		FILL, silty sand, trace clay, trace gravel, trace organics, loose, dark brown, moist	1	SS	6	PID: 0 FID: 0	
275.1	0.8	**SILTY SAND**, trace clay, compact, brown, wet	2	SS	14	PID: 0 FID: 0	SS2 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
			3	SS	14	PID: 0 FID: 0	
274.1	1.8	**SILT**, trace to some clay, trace to some sand, trace gravel, dilatant, compact, brownish grey, wet	4	SS	24	PID: 0 FID: 0	
			5	SS	20	PID: 0 FID: 0	
			6	SS	16	PID: 0 FID: 0	
			7	SS	19	PID: 0 FID: 0	
269.2	6.7						



END OF BOREHOLE

Unstabilized water level measured at 1.5 m below ground surface; borehole was open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	2.0	273.9

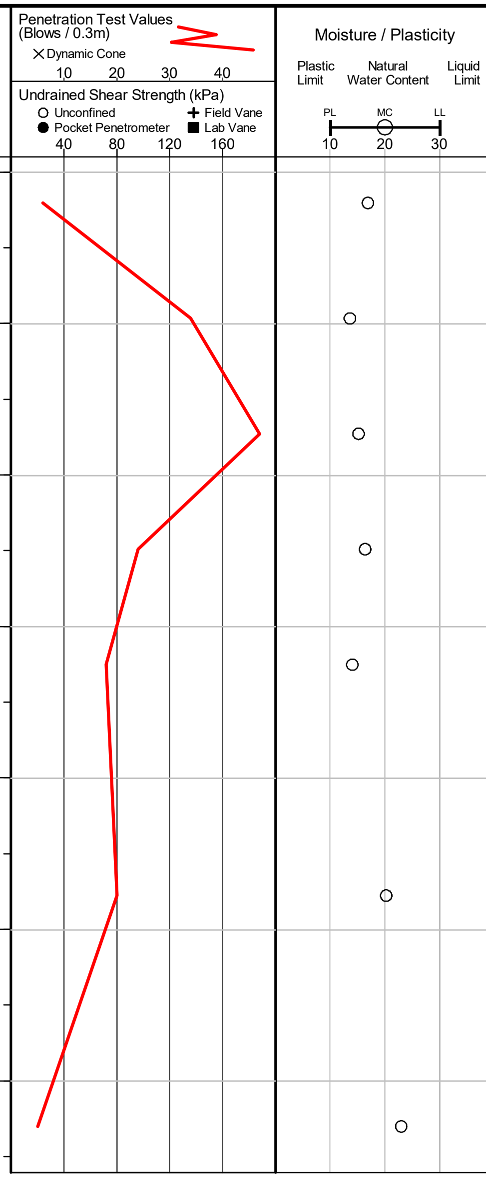
LOG OF BOREHOLE 24-10

ENGLOBE

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 19, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

Position : E: 649664, N: 4884920 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

Elev Depth (m)	Description (SOIL PROFILE)	Sample Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
276.1	**GROUND SURFACE**					
	300mm **TOPSOIL**					
275.8 / 0.3	**SILTY SAND**, trace to some gravel, trace clay, compact to dense, brown, wet	1	SS	6	PID: 0 FID: 0	
		2	SS	34	PID: 15 FID: 0	
		3	SS	47	PID: 20 FID: 0	SS3 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC, DUP#4
		4	SS	24	PID: 0 FID: 0	
	...brownish grey	5	SS	18	PID: 0 FID: 0	
271.5 / 4.6	**SILT**, trace sand, trace gravel, trace clay, compact, brownish grey, wet	6	SS	20	PID: 0 FID: 0	
270.0 / 6.1	**SAND**, trace to some silt, trace clay, trace gravel, loose, brownish grey, wet	7	SS	5	PID: 0 FID: 0	
269.4 / 6.7	**END OF BOREHOLE**					



Unstabilized water level measured at 1.5 m below ground surface; borehole caved to 3.0 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	1.4	274.7

file: 02310769.000 bh logs.gpj

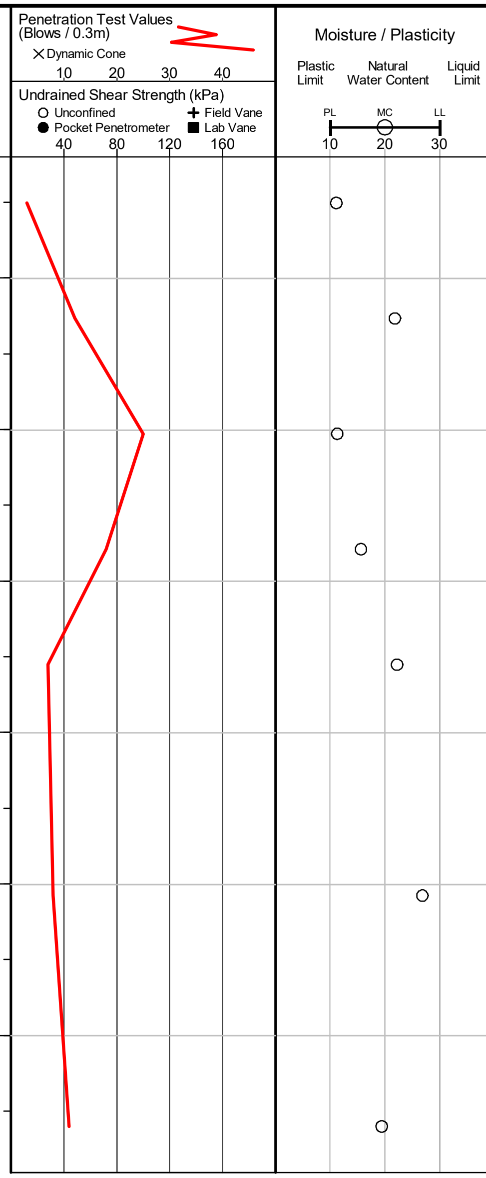
LOG OF BOREHOLE 24-11

ENGLOBE

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 20, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

Position : E: 649647, N: 4884956 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

Elev / Depth (m)	Description	Sample Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
275.8	**GROUND SURFACE**					
275.6 / 0.2	180mm **TOPSOIL**					
	SILTY SAND, trace gravel, trace clay, loose to compact, brown, moist	1	SS	3	PID: 55 FID: 0	
	...wet below	2	SS	12	PID: 90 FID: 0	SS2 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
	...some gravel	3	SS	25	PID: 0 FID: 0	
	...silt lense inclusions	4	SS	18	PID: 0 FID: 0	
272.8 / 3.0	**SAND**, trace to some silt, trace clay, trace gravel, loose to compact, brownish grey, wet	5	SS	7	PID: 0 FID: 0	
		6	SS	8	PID: 0 FID: 0	
		7	SS	11	PID: 0 FID: 0	
269.1 / 6.7	**END OF BOREHOLE**					



Unstabilized water level measured at 2.3 m below ground surface; borehole caved to 4.9 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	1.8	274.0

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LOG OF BOREHOLE 24-12

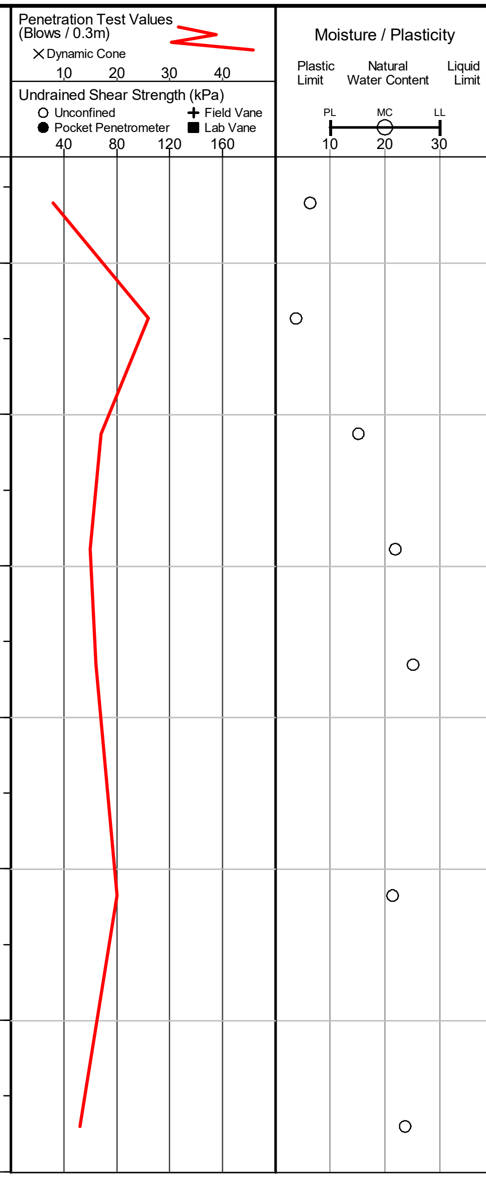
Project No. : 02310769.002	Client : Oak Valley Health		Originated by : BR
Date started : June 20, 2024	Project : Uxbridge Community Hospital		Compiled by : AS
Sheet No. : 1 of 1	Location : Uxbridge, ON		Checked by : AS

Position : E: 649611, N: 4884946 (UTM 17T) — Elevation Datum : Geodetic

Rig type : Track-mounted — Drilling Method : Solid stem augers

SOIL PROFILE

Elev Depth (m)	Description	Sample Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
275.7	**GROUND SURFACE**					
	100mm **TOPSOIL**					
	FILL, silty sand, trace clay, trace to some gravel, trace organics, trace stone pieces inclusion, loose to compact, dark brown, moist	1	SS	8	PID: 5 FID: 1	SS1 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
		2	SS	26	PID: 0 FID: 0	
274.2 / 1.5	**SAND**, trace to some silt, trace clay, trace gravel, compact, brown, wet	3	SS	17	PID: 0 FID: 0	
		4	SS	15	PID: 0 FID: 1	GR SA SI CL: 1 88 10 1; SS4 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
		5	SS	16	PID: 0 FID: 1	
		6	SS	20	PID: 0 FID: 1	
	...brownish grey	7	SS	13	PID: 0 FID: 0	
269.0 / 6.7	**END OF BOREHOLE**					



Wet cave at 1.5 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	1.7	274.0

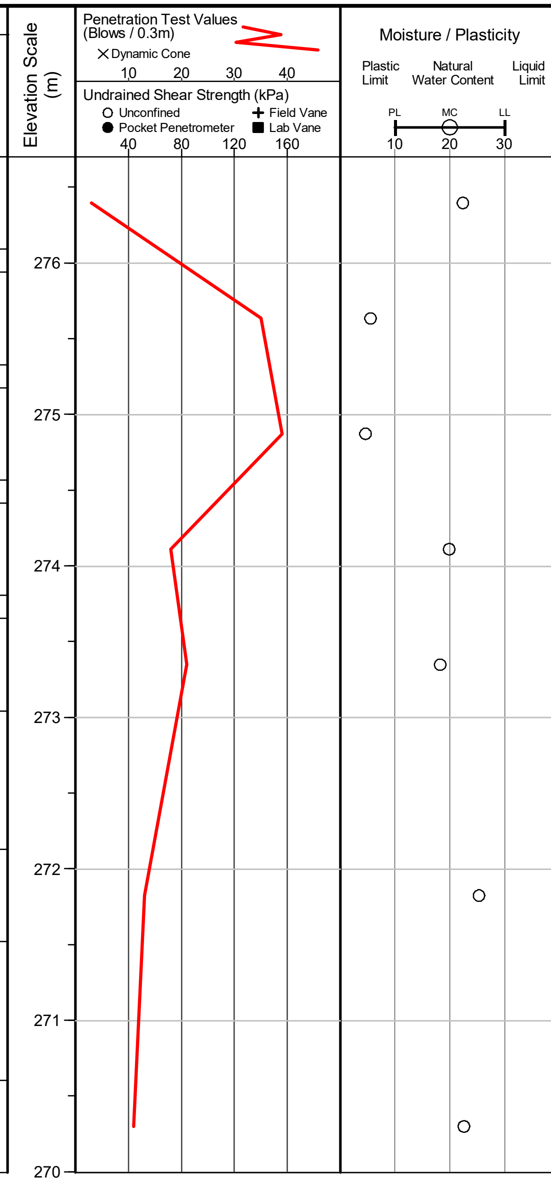
LOG OF BOREHOLE 24-13

Project No. : 02310769.002	Client : Oak Valley Health	Originated by : BR
Date started : June 20, 2024	Project : Uxbridge Community Hospital	Compiled by : AS
Sheet No. : 1 of 1	Location : Uxbridge, ON	Checked by : AS

Position : E: 649599, N: 4884884 (UTM 17T) | Elevation Datum : Geodetic

Rig type : Track-mounted | Drilling Method : Solid stem augers

Elev / Depth (m)	Description (SOIL PROFILE)	Sample Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
276.7	GROUND SURFACE					
276.5 / 0.2	180mm **TOPSOIL**					
	FILL, silty sand, trace gravel, trace organics, very loose, dark brown, moist	1	SS	3	PID: 0 FID: 0	
275.9 / 0.8	**SAND AND GRAVEL**, trace silt, dense, brown, moist	2	SS	35	PID: 5 FID: 1	
		3	SS	39	PID: 25 FID: 0	...at 1.5m, wet sampler; SS3 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
274.4 / 2.3	**SILT**, trace to some clay, trace to some sand, dilatant, compact, brown, wet	4	SS	18	PID: 0 FID: 1	
		5	SS	21	PID: 0 FID: 2	
272.1 / 4.6	**SAND**, trace to some silt, trace clay, trace gravel, compact, brownish grey, wet	6	SS	13	PID: 0 FID: 1	
		7	SS	11	PID: 0 FID: 0	
270.0 / 6.7	**END OF BOREHOLE**					



Instrument Details; Unstabilized Water Level; GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

Unstabilized water level measured at 2.1 m below ground surface; borehole caved to 3.0 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	1.6	275.1

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ENGLOBE

LOG OF BOREHOLE 24-14

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 20, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

Position : E: 649577, N: 4884848 (UTM 17T) Elevation Datum : Geodetic

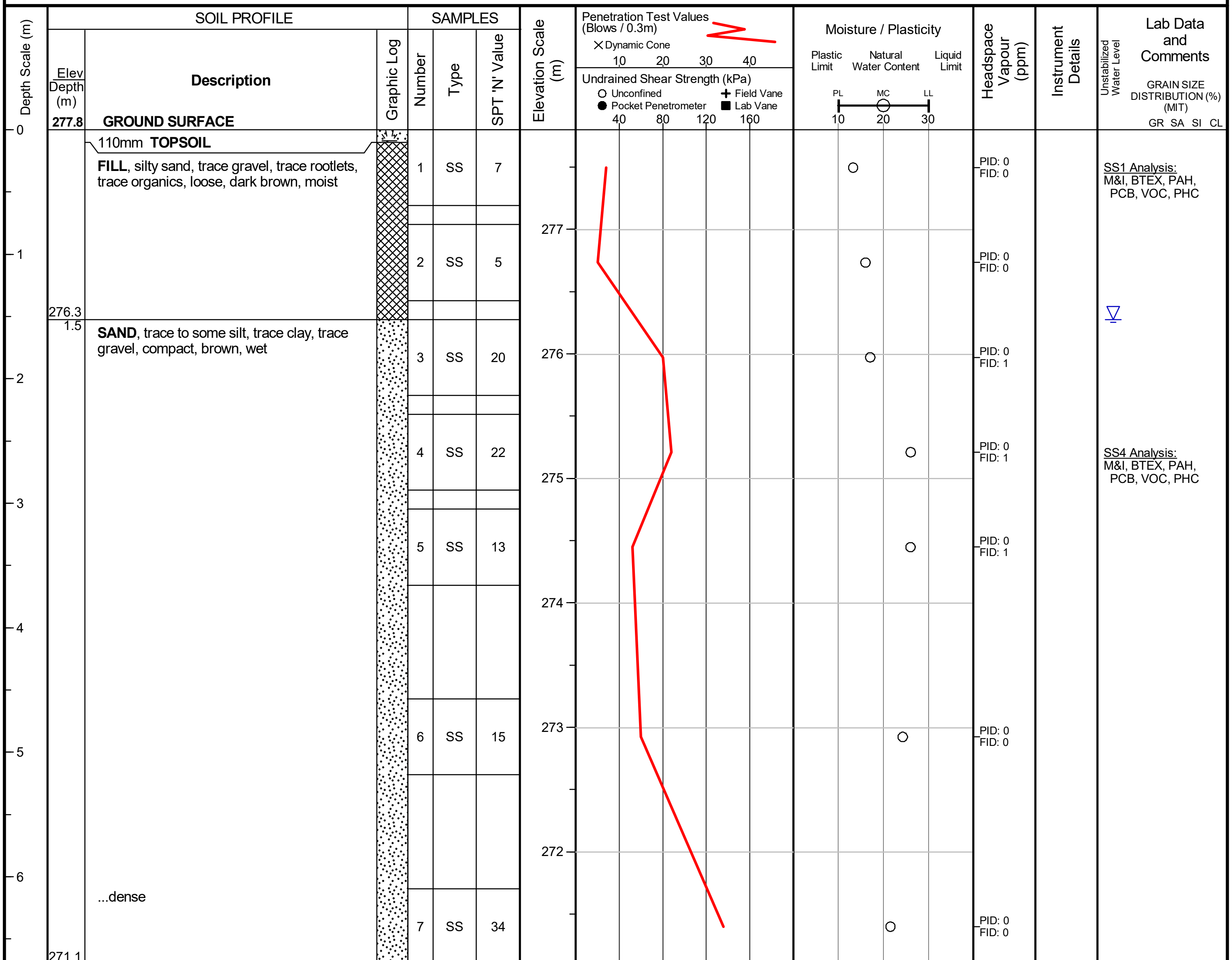
Rig type : Track-mounted Drilling Method : Solid stem augers

SOIL PROFILE

Elev / Depth (m)	Description
277.8	GROUND SURFACE
	110mm **TOPSOIL**
	FILL, silty sand, trace gravel, trace rootlets, trace organics, loose, dark brown, moist
276.3 / 1.5	**SAND**, trace to some silt, trace clay, trace gravel, compact, brown, wet
	...dense
271.1 / 6.7	**END OF BOREHOLE**

SAMPLES

Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
1	SS	7	PID: 0 FID: 0	SS1 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
2	SS	5	PID: 0 FID: 0	
3	SS	20	PID: 0 FID: 1	
4	SS	22	PID: 0 FID: 1	SS4 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
5	SS	13	PID: 0 FID: 1	
6	SS	15	PID: 0 FID: 0	
7	SS	34	PID: 0 FID: 0	



Wet cave measured at 1.5 m below ground surface upon completion of drilling.

ENGLOBE

LOG OF BOREHOLE 24-15

Project No. : 02310769.002	Client : Oak Valley Health	Originated by : BR
Date started : June 20, 2024	Project : Uxbridge Community Hospital	Compiled by : AS
Sheet No. : 1 of 1	Location : Uxbridge, ON	Checked by : AS

Position : E: 649604, N: 4884843 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

Elev / Depth (m)	Description	Sample Number	Type	SPT 'N' Value	Moisture: Natural Water Content (%)	Headspace Vapour (ppm)	Lab Data and Comments
277.6	GROUND SURFACE						
277.4 / 0.2	190mm **TOPSOIL**						
	FILL, silty sand, trace gravel, trace organics, trace rootlets, very loose, dark brown, moist	1	SS	3	○	PID: 0 FID: 0	
276.8 / 0.8	**SILT**, some sand to sandy, trace to some clay, trace gravel, dilatent, compact, brown, wet	2	SS	12	○	PID: 0 FID: 1	
		3	SS	11	○	PID: 5 FID: 1	GRAIN SIZE DISTRIBUTION (%) (MIT): GR 5, SA 26, SI 59, CL 10 SS3 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
		4	SS	22	○	PID: 0 FID: 1	
274.6 / 3.0	**SAND**, trace to some silt, trace clay, trace gravel, compact to dense, brownish grey, wet	5	SS	16	○	PID: 0 FID: 0	wet sampler
		6	SS	21	○	PID: 0 FID: 0	
		7	SS	32	○	PID: 0 FID: 0	
270.9 / 6.7	**END OF BOREHOLE**						

Penetration Test Values (Blows / 0.3m): × Dynamic Cone; scale 10, 20, 30, 40
Undrained Shear Strength (kPa): ○ Unconfined, + Field Vane, ● Pocket Penetrometer, ■ Lab Vane; scale 40, 80, 120, 160
Moisture / Plasticity: Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL); scale 10, 20, 30
Instrument Details; Unstabilized Water Level

Unstabilized water level measured at 2.7 m below ground surface; borehole caved to 4.0 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	1.7	275.9

ENGLOBE

LOG OF BOREHOLE 24-16

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 20, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

Position	: E: 649844, N: 4885038 (UTM 17T)	Elevation Datum	: Geodetic
Rig type	: Track-mounted	Drilling Method	: Solid stem augers

Column headings: Depth Scale (m); SOIL PROFILE: Elev Depth (m), Description, Graphic Log; SAMPLES: Number, Type, SPT 'N' Value; Elevation Scale (m); Penetration Test Values (Blows / 0.3m) × Dynamic Cone 10 20 30 40; Undrained Shear Strength (kPa) ○ Unconfined ✚ Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160; Moisture / Plasticity: Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL) 10 20 30; Headspace Vapour (ppm); Instrument Details; Unstabilized Water Level; Lab Data and Comments, GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

Elev (m) / Depth (m)	Description	Sample Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
280.1	**GROUND SURFACE**					
	100mm **TOPSOIL**					
	FILL, silty sand, trace gravel, trace organics, loose, dark brown, moist	1	SS	5	PID: 5 FID: 0	SS1 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC, DUP#3
279.3 0.8	**SILT**, some sand to sandy, trace to some clay, trace gravel, loose to compact, brown, moist	2	SS	9	PID: 0 FID: 0	
		3	SS	19	PID: 0 FID: 0	GR 0, SA 30, SI 66, CL 4 SS3 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
	...wet, dilatent below	4	SS	18	PID: 0 FID: 0	SS4 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
		5	SS	21	PID: 0 FID: 0	
		6	SS	12	PID: 0 FID: 0	
274.9 5.2	**END OF BOREHOLE**					

Borehole was dry and open upon completion of drilling.

ENGLOBE

LOG OF BOREHOLE 24-17

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 17, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

Position : E: 649904, N: 4885051 (UTM 17T) | Elevation Datum : Geodetic

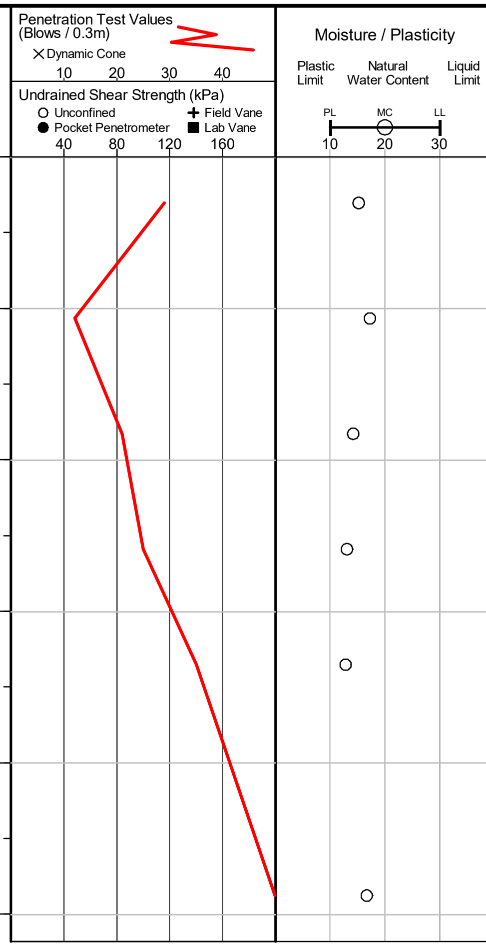
Rig type : Track-mounted | Drilling Method : Solid stem augers

SOIL PROFILE

Elev (m)	Depth (m)	Description
277.0		**GROUND SURFACE**
276.8	0.2	150mm **ASPHALTIC CONCRETE**
276.6	0.4	240mm **AGGREGATE**
276.2	0.8	**FILL**, sandy silt, trace to some gravel, trace clay, trace organics, compact, dark brown, moist
271.8	5.2	**SILT**, trace to some clay, trace to some sand, dilatant, compact to very dense, brown, wet ...brownish grey below

SAMPLES

Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
1	SS	29	PID: 0 FID: 0	SS1 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
2	SS	12	PID: 15 FID: 0	SS2 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
3	SS	21	PID: 0 FID: 0	
4	SS	25	PID: 0 FID: 0	SS4 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
5	SS	35	PID: 0 FID: 0	
6	SS	65	PID: 0 FID: 0	



Elevation Scale (m): 277, 276, 275, 274, 273, 272

Depth Scale (m): 0, 1, 2, 3, 4, 5

Instrument Details | Unstabilized Water Level | GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

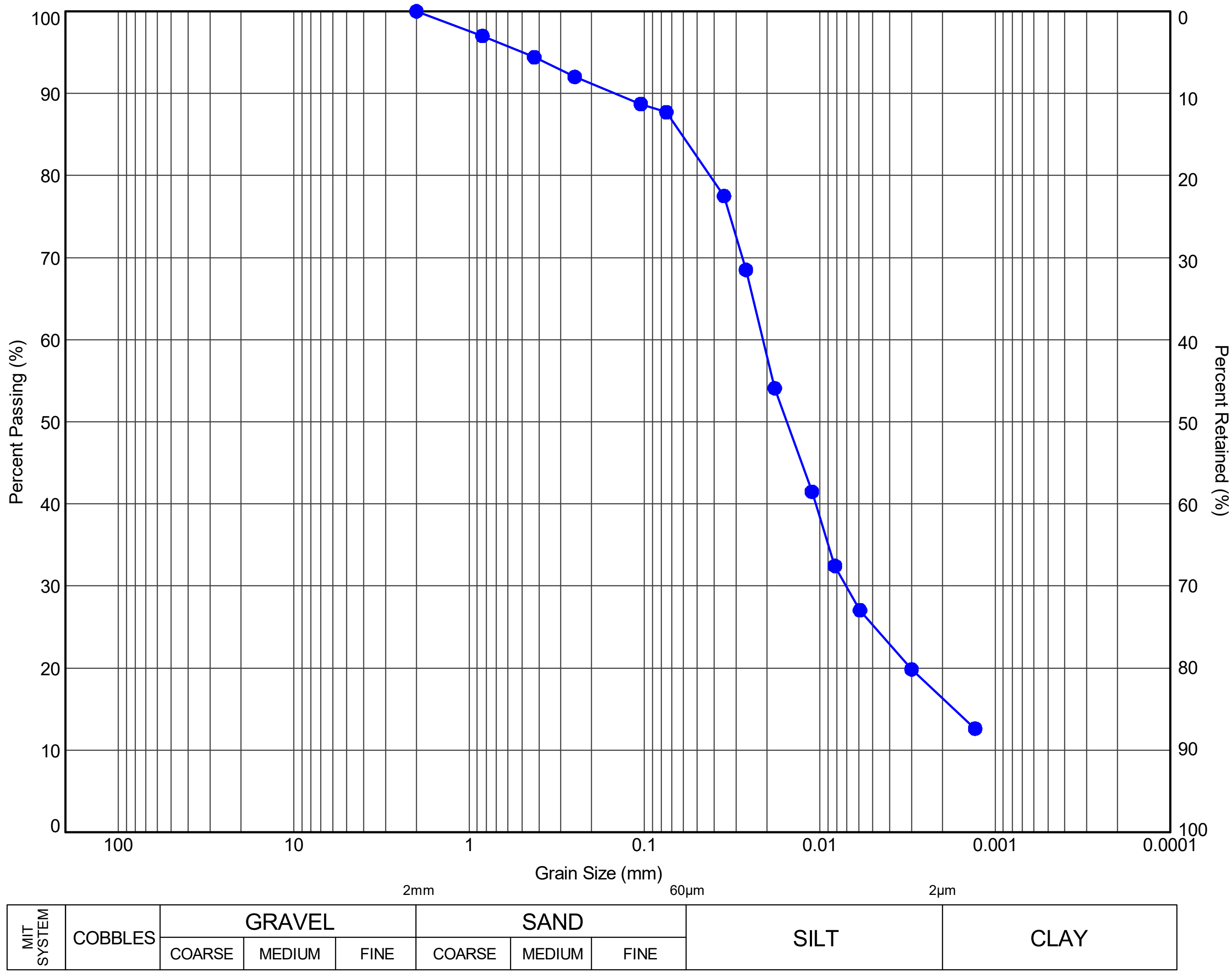
END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

file: 02310769.000 bh logs.gpj

Appendix F

Grain Size Analysis



MIT SYSTEM

	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**24-1**	SS3	1.8	274.8	0	16	68	16	

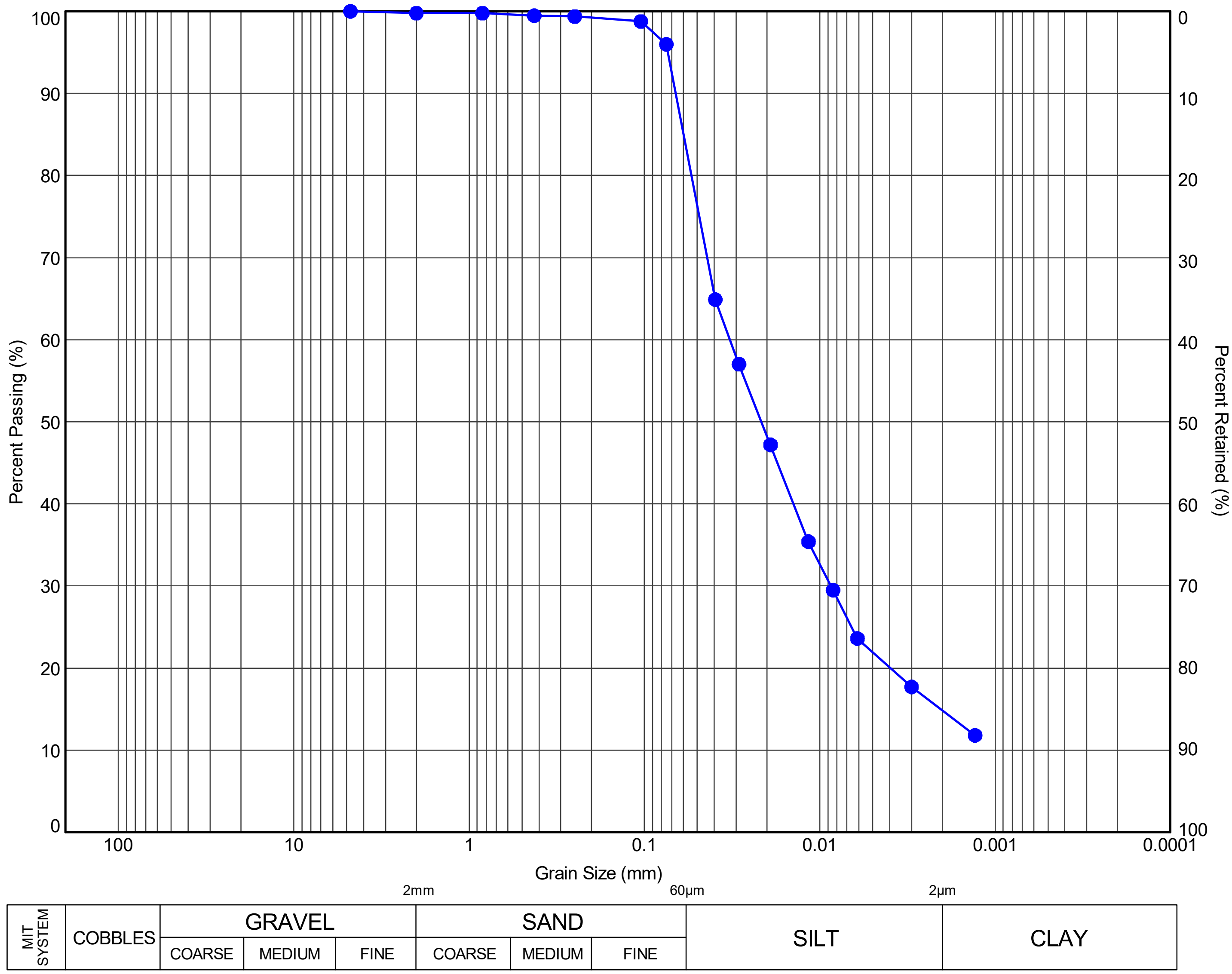
ENGLOBE

Title:

GRAIN SIZE DISTRIBUTION
SILT, SOME SAND, SOME CLAY

File No.:

02310769.002



MIT SYSTEM

	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**24-6**	SS4	2.6	274.3	0	15	70	15	

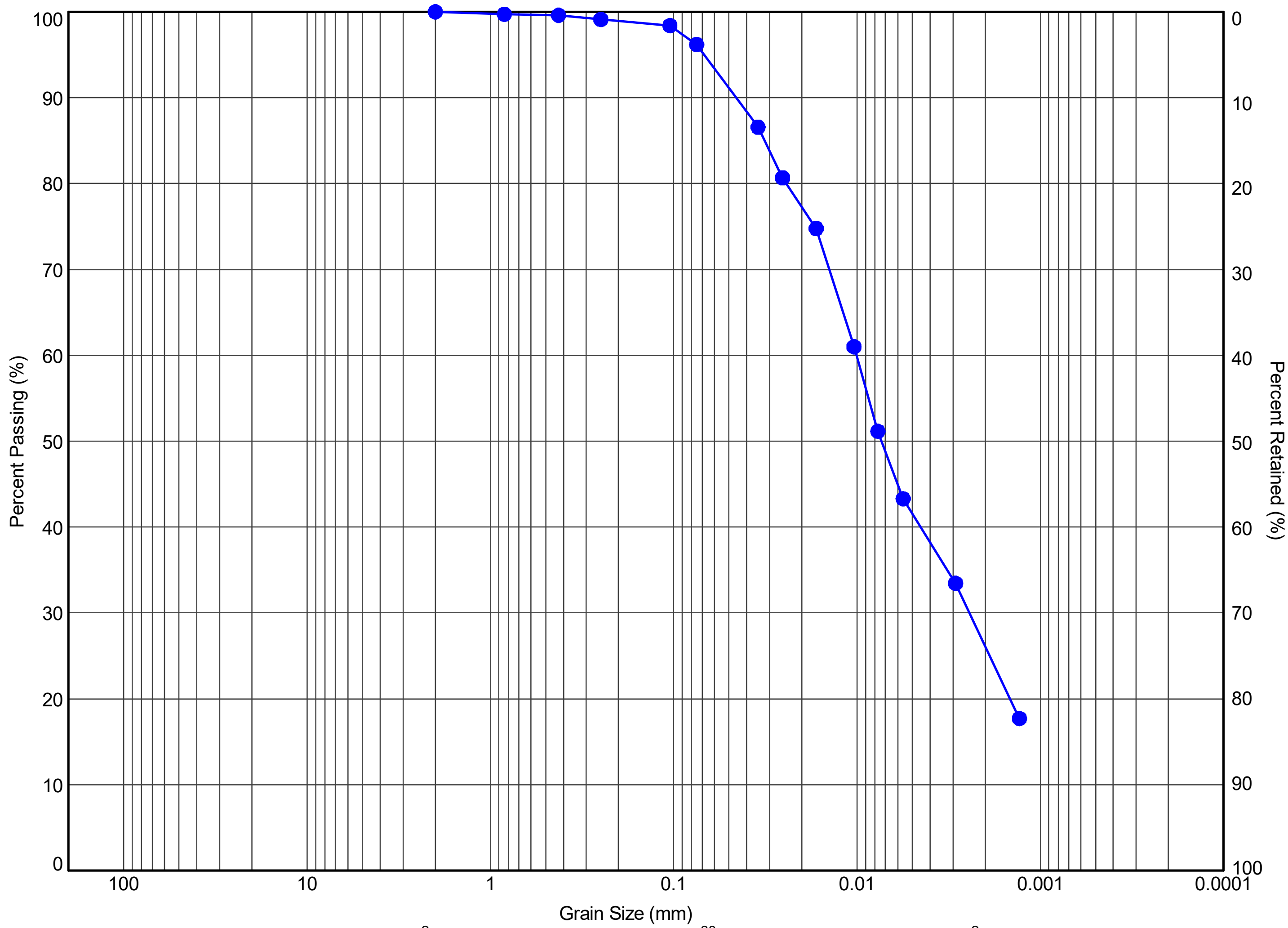
ENGLOBE

Title:

GRAIN SIZE DISTRIBUTION
SILT, SOME SAND, SOME CLAY

File No.:

02310769.002



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

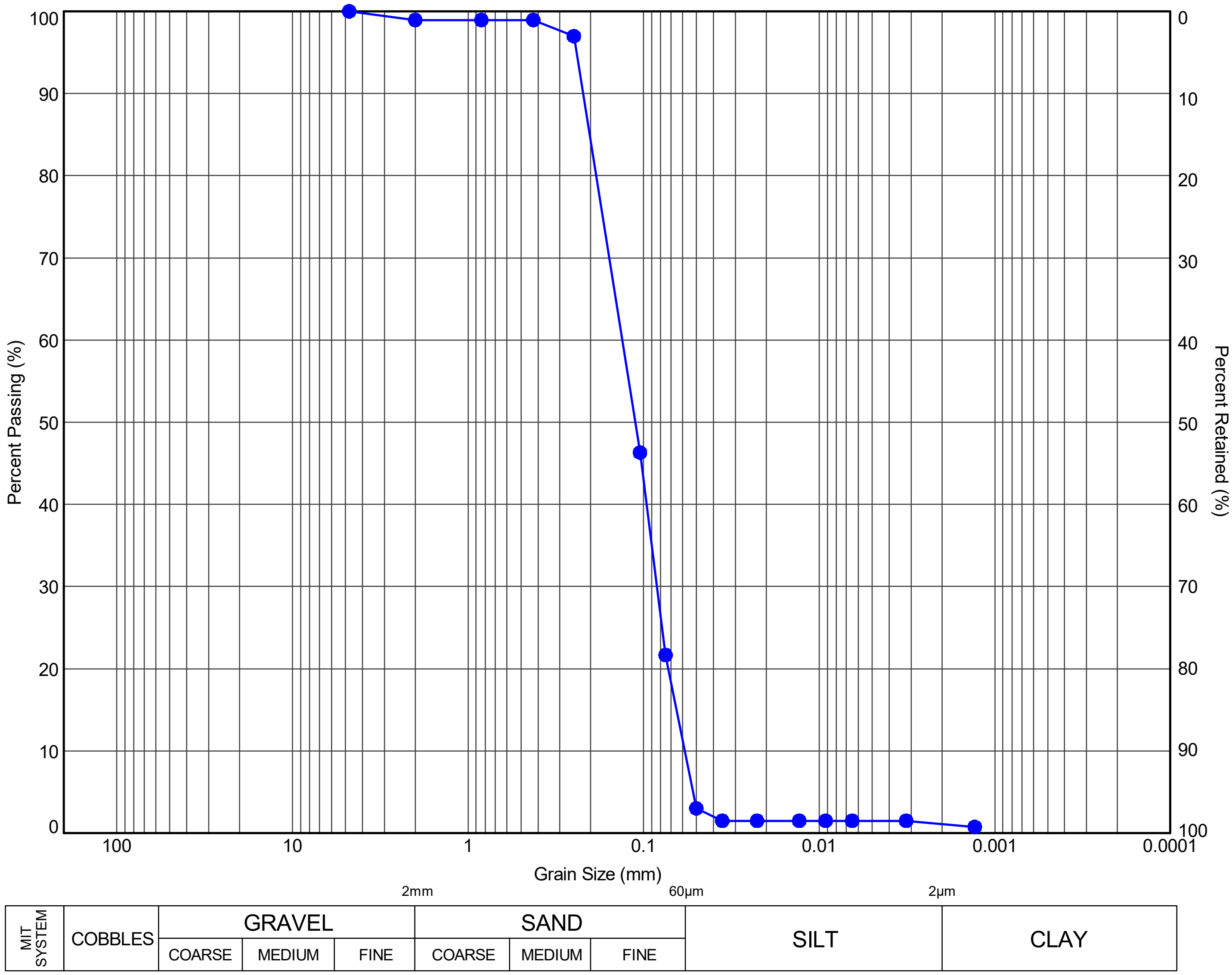
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**24-8**	SS3	1.8	276.2	0	7	67	26	

ENGLOBE

Title:

GRAIN SIZE DISTRIBUTION
CLAYEY SILT, TRACE SAND

File No.: **02310769.002**



MIT SYSTEM

	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**24-12**	SS4	2.6	273.1	1	88	10	1	

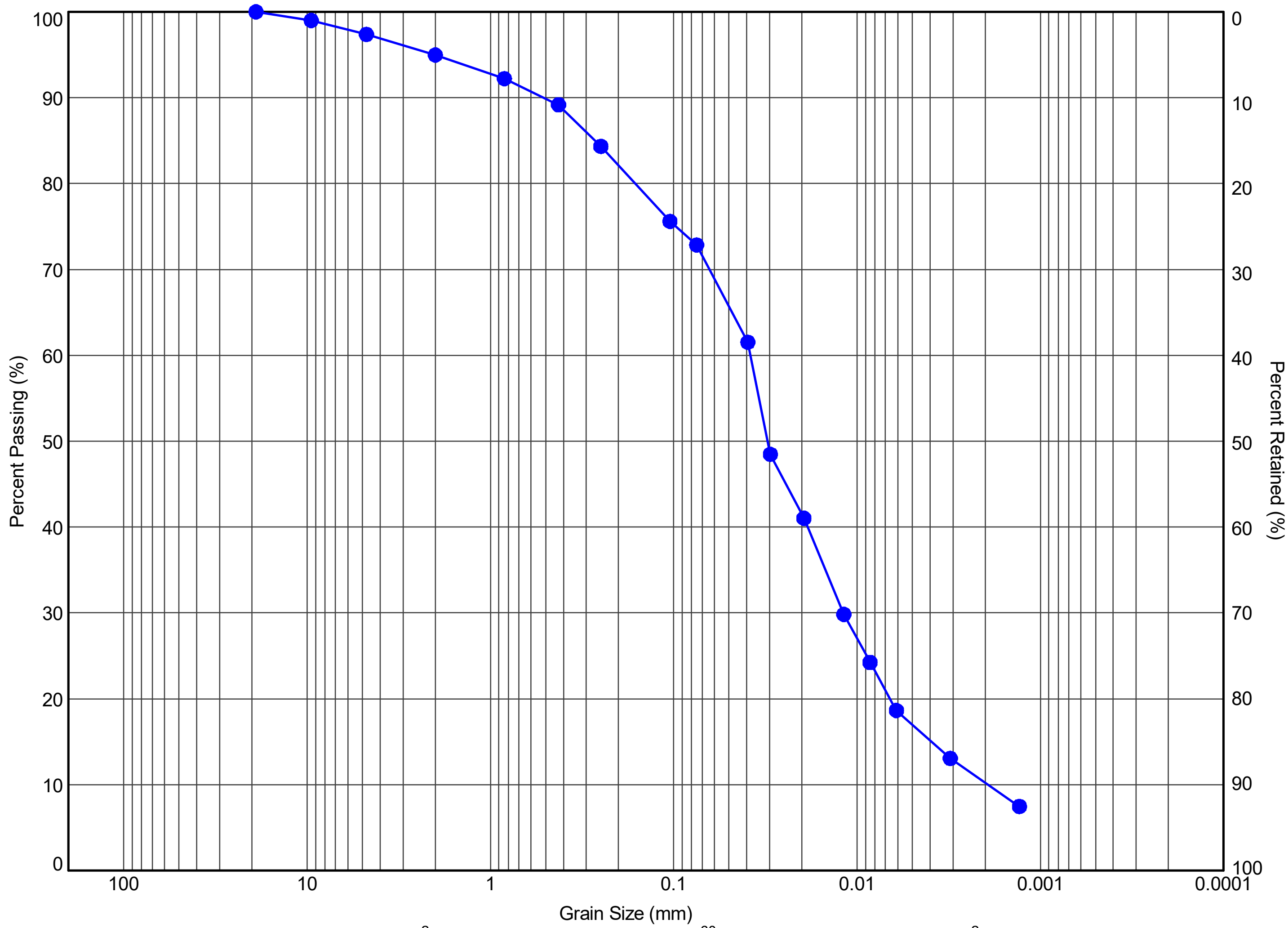
ENGLOBE

Title:

GRAIN SIZE DISTRIBUTION
SAND, SOME SILT, TRACE CLAY, TRACE GRAVEL

File No.:

02310769.002



	2mm						60μm		2μm	
MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

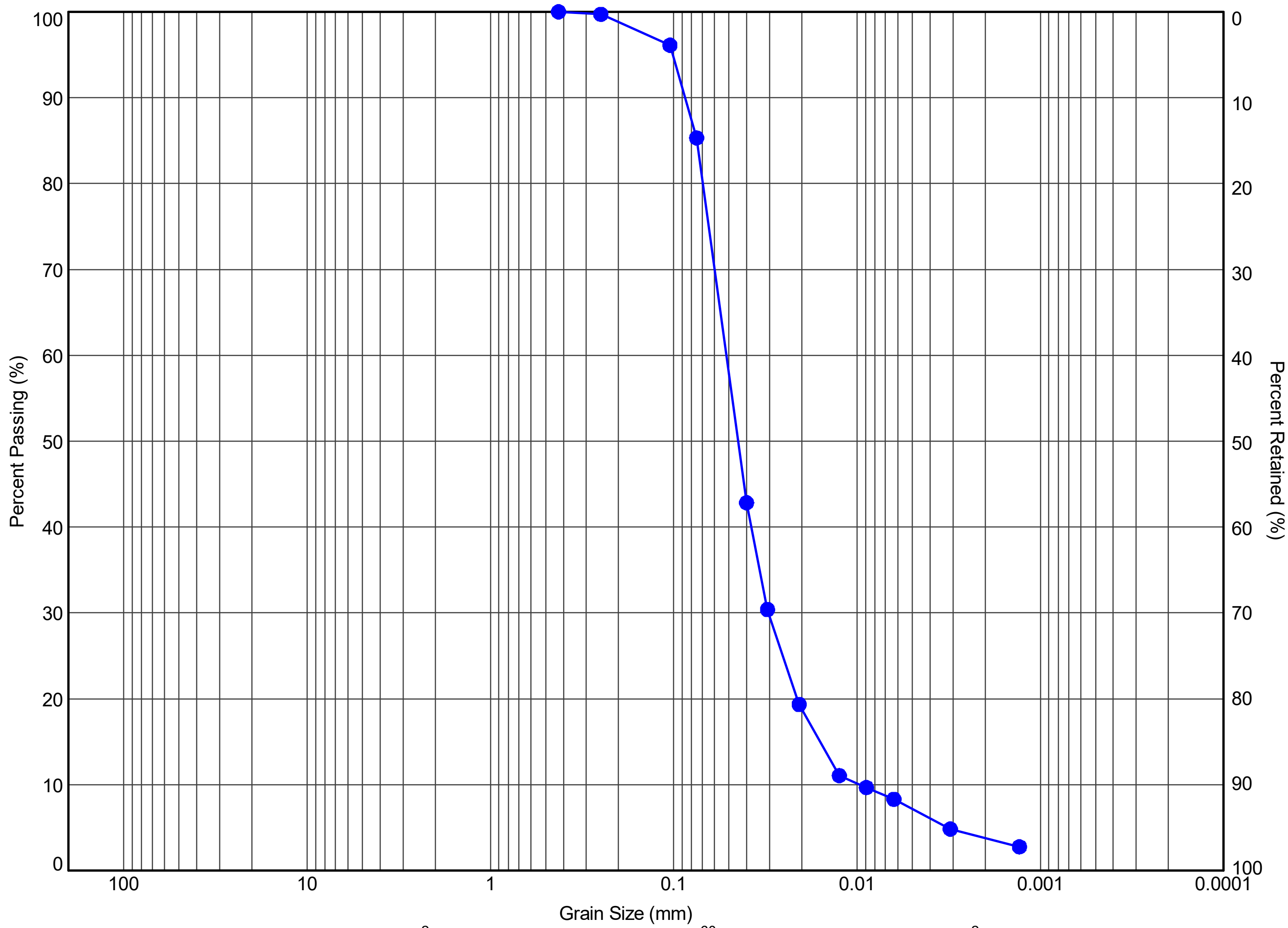
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**24-15**	SS3	1.8	275.8	5	26	59	10	

ENGLOBE

Title:

GRAIN SIZE DISTRIBUTION
SANDY SILT, SOME CLAY, TRACE GRAVEL

File No.: **02310769.002**



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**24-16**	SS3	1.8	278.3	0	30	66	4	

ENGLOBE

Title:

GRAIN SIZE DISTRIBUTION
SANDY SILT, TRACE CLAY

File No.: **02310769.002**

K from Grain Size Analysis Report

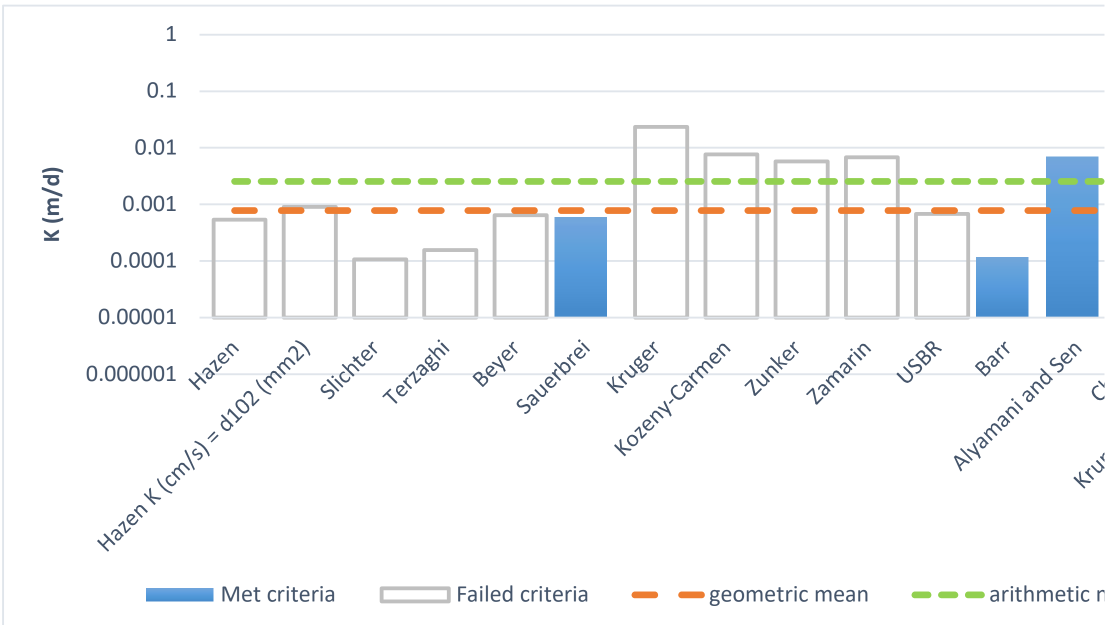
Date:

Sample Name: BH24-1,SS3

Mass Sample (g): 100

T (oC)

Poorly sorted clay with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	6.24E-07	6.24E-09	5.39E-04
Hazen K (cm/s) = d_{10} (mm)	1.05E-06	1.05E-08	9.05E-04
Slichter	1.24E-07	1.24E-09	1.07E-04
Terzaghi	1.81E-07	1.81E-09	1.56E-04
Beyer	7.44E-07	7.44E-09	6.43E-04
Sauerbrei	6.81E-07	6.81E-09	5.88E-04
Kruger	2.71E-05	2.71E-07	2.34E-02
Kozeny-Carmen	8.89E-06	8.89E-08	7.68E-03
Zunker	6.64E-06	6.64E-08	5.74E-03
Zamarin	7.85E-06	7.85E-08	6.79E-03
USBR	7.88E-07	7.88E-09	6.80E-04
Barr	1.34E-07	1.34E-09	1.16E-04
Alyamani and Sen	8.09E-06	8.09E-08	6.99E-03
Chapuis	2.74E-09	2.74E-11	2.37E-06
Krumbein and Monk	2.56E-05	2.56E-07	2.21E-02
geometric mean	9.04E-07	9.04E-09	7.81E-04
arithmetic mean	2.97E-06	2.97E-08	2.56E-03

K from Grain Size Analysis Report

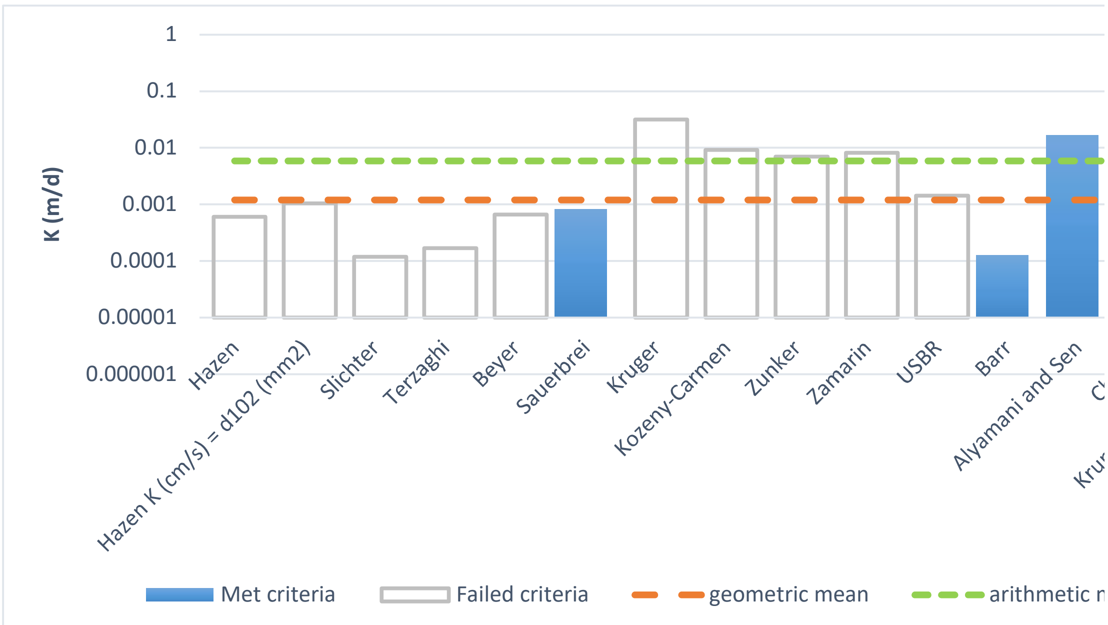
Date:

Sample Name: BH24-6,SS4

Mass Sample (g): 100

T (oC)

Poorly sorted silt with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	6.94E-07	6.94E-09	6.00E-04
Hazen K (cm/s) = d_{10} (mm)	1.21E-06	1.21E-08	1.05E-03
Slichter	1.37E-07	1.37E-09	1.18E-04
Terzaghi	1.96E-07	1.96E-09	1.69E-04
Beyer	7.67E-07	7.67E-09	6.63E-04
Sauerbrei	9.52E-07	9.52E-09	8.23E-04
Kruger	3.64E-05	3.64E-07	3.14E-02
Kozeny-Carmen	1.06E-05	1.06E-07	9.18E-03
Zunker	8.05E-06	8.05E-08	6.96E-03
Zamarin	9.50E-06	9.50E-08	8.20E-03
USBR	1.65E-06	1.65E-08	1.42E-03
Barr	1.47E-07	1.47E-09	1.27E-04
Alyamani and Sen	1.94E-05	1.94E-07	1.68E-02
Chapuis	3.00E-09	3.00E-11	2.59E-06
Krumbein and Monk	4.84E-05	4.84E-07	4.18E-02
geometric mean	1.39E-06	1.39E-08	1.20E-03
arithmetic mean	6.83E-06	6.83E-08	5.90E-03

K from Grain Size Analysis Report Date:

Sample Name: BH24-8,SS3

Mass Sample (g): 100 T (oC)

Poorly sorted clay with fines

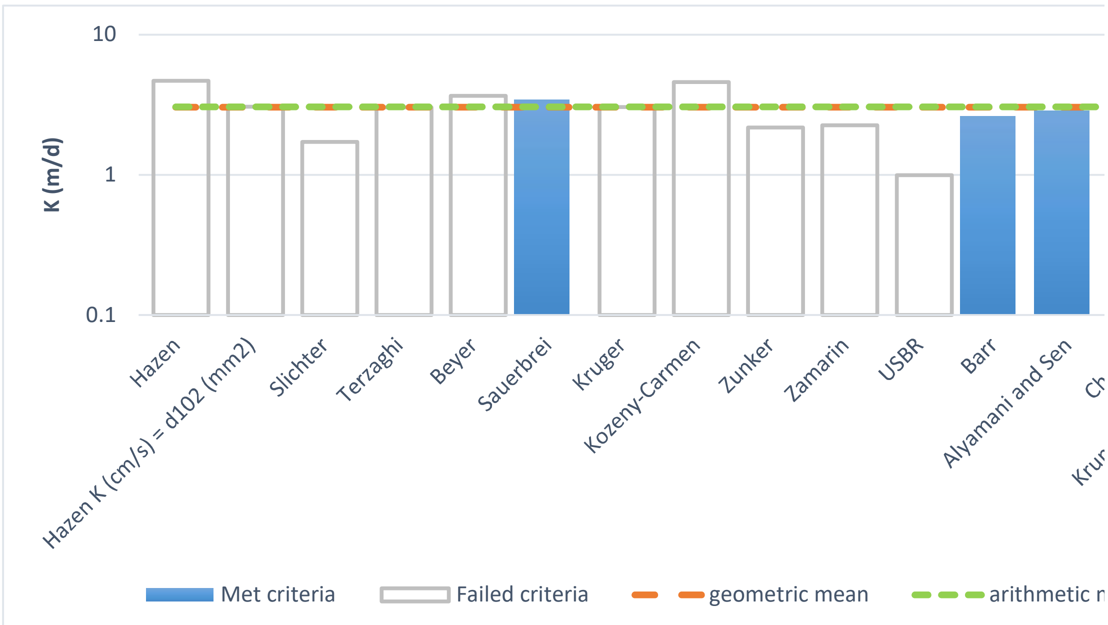
Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	3.51E-07	3.51E-09	3.03E-04
Hazen K (cm/s) = d_{10} (mm)	5.18E-07	5.18E-09	4.47E-04
Slichter	7.26E-08	7.26E-10	6.28E-05
Terzaghi	1.10E-07	1.10E-09	9.53E-05
Beyer	4.15E-07	4.15E-09	3.58E-04
Sauerbrei	2.28E-07	2.28E-09	1.97E-04
Kruger	1.16E-05	1.16E-07	1.00E-02
Kozeny-Carmen	4.64E-06	4.64E-08	4.01E-03
Zunker	3.32E-06	3.32E-08	2.87E-03
Zamarin	3.97E-06	3.97E-08	3.43E-03
USBR	1.54E-07	1.54E-09	1.33E-04
Barr	8.03E-08	8.03E-10	6.94E-05
Alyamani and Sen	9.12E-07	9.12E-09	7.88E-04
Chapuis	1.55E-09	1.55E-11	1.34E-06
Krumbein and Monk	1.82E-05	1.82E-07	1.57E-02
geometric mean	2.56E-07	2.56E-09	2.21E-04
arithmetic mean	4.07E-07	4.07E-09	3.51E-04

K from Grain Size Analysis Report Date:

Sample Name: BH24-12,SS4

Mass Sample (g): 100 T (oC)

Moderately well sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	5.43E-03	5.43E-05	4.69E+00
Hazen K (cm/s) = d_{10} (mm)	3.54E-03	3.54E-05	3.06E+00
Slichter	1.99E-03	1.99E-05	1.72E+00
Terzaghi	3.50E-03	3.50E-05	3.02E+00
Beyer	4.23E-03	4.23E-05	3.66E+00
Sauerbrei	3.97E-03	3.97E-05	3.43E+00
Kruger	3.52E-03	3.52E-05	3.04E+00
Kozeny-Carmen	5.31E-03	5.31E-05	4.59E+00
Zunker	2.51E-03	2.51E-05	2.17E+00
Zamarin	2.61E-03	2.61E-05	2.25E+00
USBR	1.15E-03	1.15E-05	9.94E-01
Barr	3.03E-03	3.03E-05	2.61E+00
Alyamani and Sen	3.31E-03	3.31E-05	2.86E+00
Chapuis	3.98E-03	3.98E-05	3.44E+00
Krumbein and Monk	3.84E-03	3.84E-05	3.31E+00
geometric mean	3.51E-03	3.51E-05	3.04E+00
arithmetic mean	3.54E-03	3.54E-05	3.06E+00

K from Grain Size Analysis Report

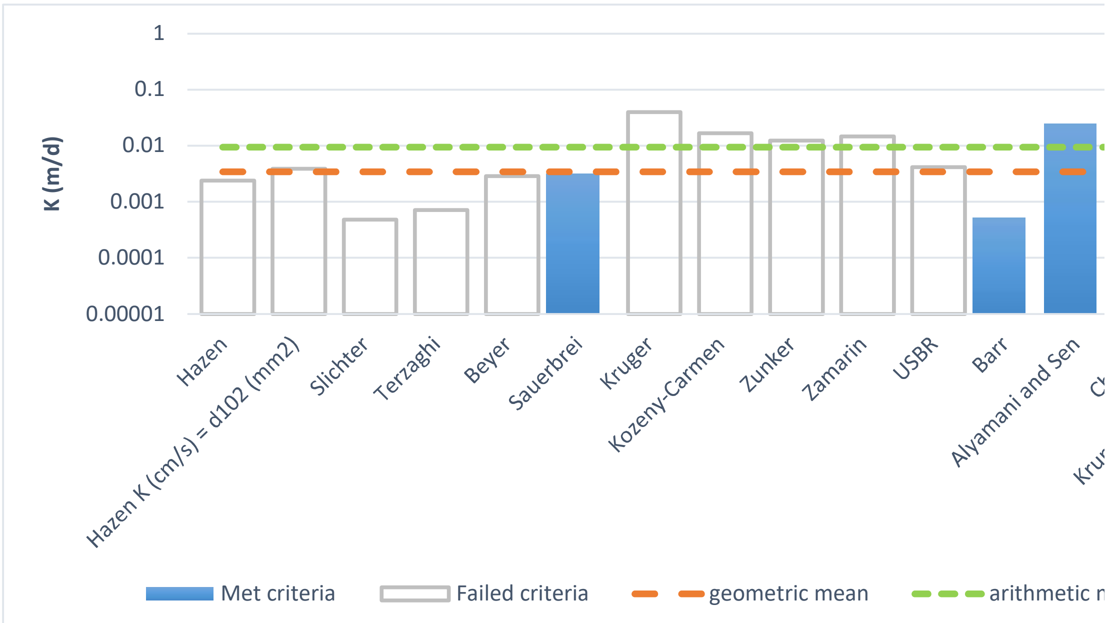
Date:

Sample Name: BH24-15,SS3

Mass Sample (g): 100

T (oC)

Poorly sorted sandy silt with fines



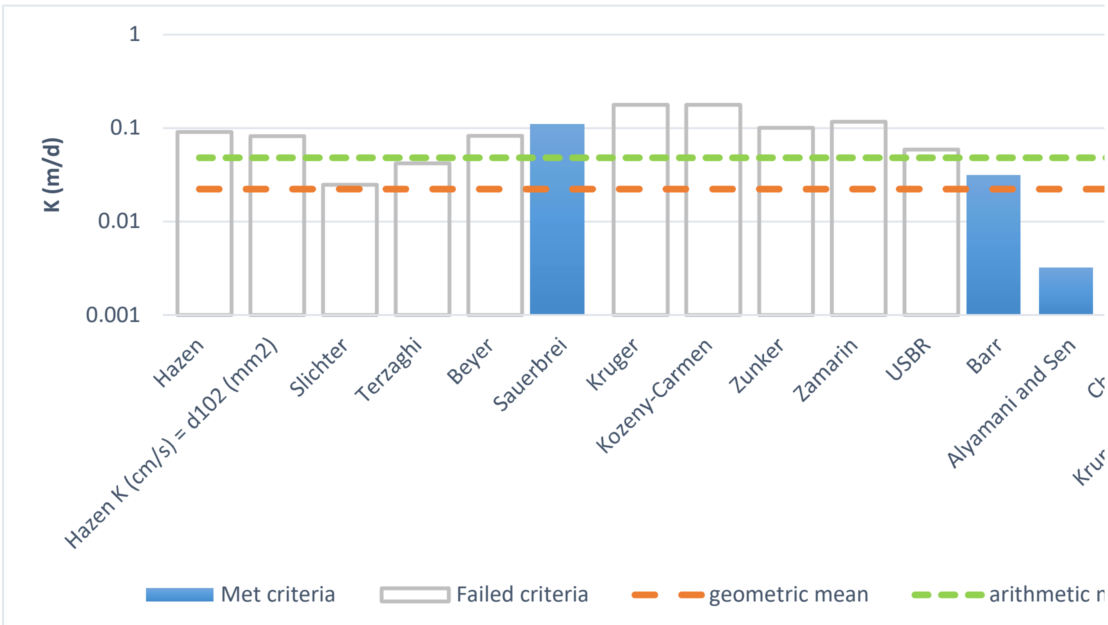
Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	2.77E-06	2.77E-08	2.39E-03
Hazen K (cm/s) = d_{10} (mm)	4.48E-06	4.48E-08	3.87E-03
Slichter	5.57E-07	5.57E-09	4.81E-04
Terzaghi	8.20E-07	8.20E-09	7.09E-04
Beyer	3.33E-06	3.33E-08	2.88E-03
Sauerbrei	3.66E-06	3.66E-08	3.16E-03
Kruger	4.59E-05	4.59E-07	3.96E-02
Kozeny-Carmen	1.93E-05	1.93E-07	1.67E-02
Zunker	1.43E-05	1.43E-07	1.24E-02
Zamarin	1.70E-05	1.70E-07	1.47E-02
USBR	4.81E-06	4.81E-08	4.15E-03
Barr	6.06E-07	6.06E-09	5.23E-04
Alyamani and Sen	2.85E-05	2.85E-07	2.46E-02
Chapuis	2.32E-08	2.32E-10	2.00E-05
Krumbein and Monk	3.75E-05	3.75E-07	3.24E-02
geometric mean	3.98E-06	3.98E-08	3.44E-03
arithmetic mean	1.09E-05	1.09E-07	9.44E-03

K from Grain Size Analysis Report — Date:

Sample Name: BH24-16,SS3

Mass Sample (g): 100 — T (oC)

Poorly sorted sandy silt low in fines

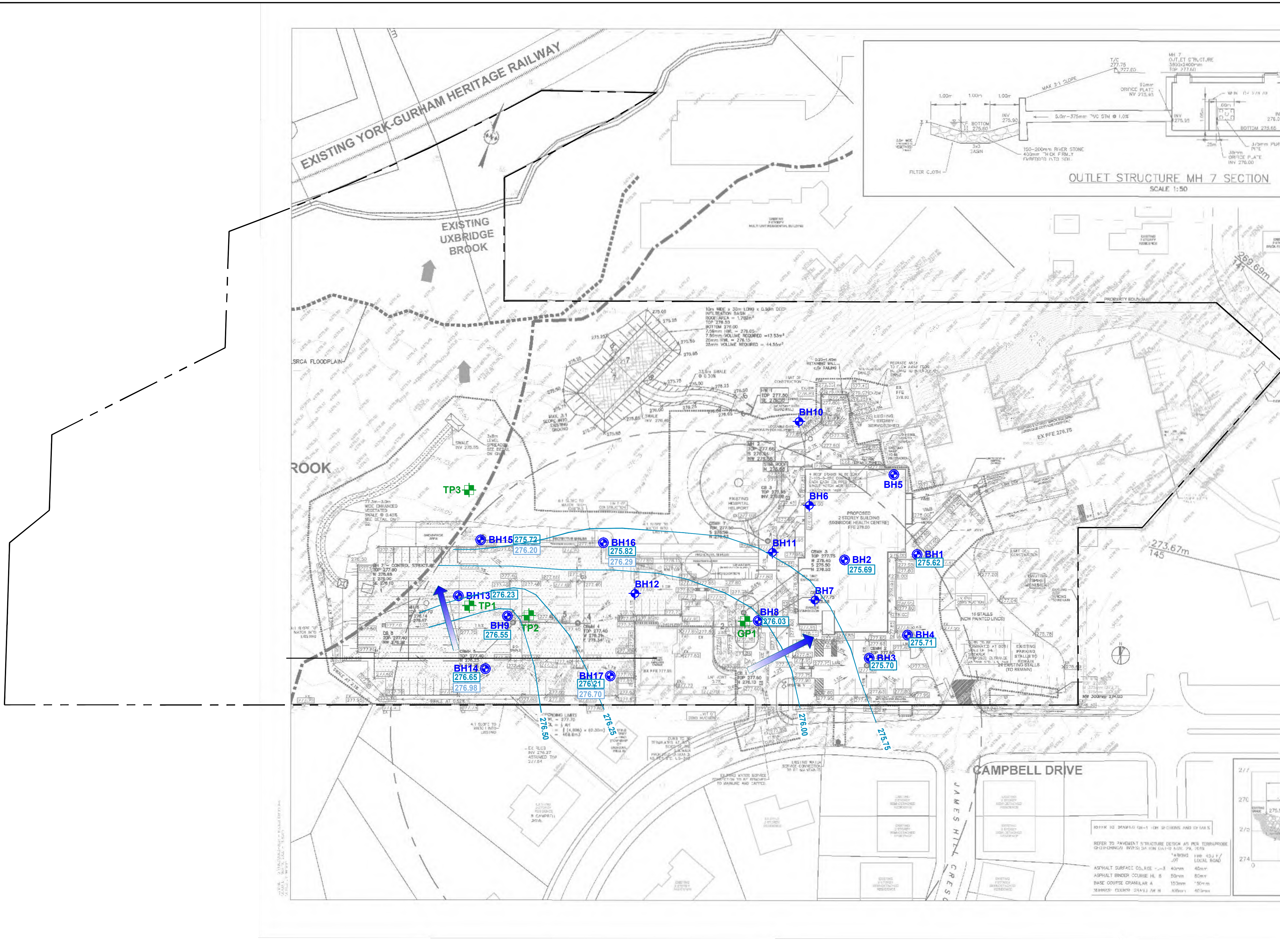


Estimation of Hydraulic Conductivity	cm/s	m/s	m/d
Hazen	1.05E-04	1.05E-06	9.05E-02
Hazen K (cm/s) = d_{10} (mm)	9.48E-05	9.48E-07	8.19E-02
Slichter	2.86E-05	2.86E-07	2.47E-02
Terzaghi	4.86E-05	4.86E-07	4.20E-02
Beyer	9.57E-05	9.57E-07	8.26E-02
Sauerbrei	1.27E-04	1.27E-06	1.10E-01
Kruger	2.05E-04	2.05E-06	1.77E-01
Kozeny-Carmen	2.06E-04	2.06E-06	1.78E-01
Zunker	1.17E-04	1.17E-06	1.01E-01
Zamarin	1.35E-04	1.35E-06	1.17E-01
USBR	6.82E-05	6.82E-07	5.90E-02
Barr	3.64E-05	3.64E-07	3.14E-02
Alyamani and Sen	3.70E-06	3.70E-08	3.20E-03
Chapuis	1.09E-05	1.09E-07	9.41E-03
Krumbein and Monk	2.46E-04	2.46E-06	2.13E-01
geometric mean	2.58E-05	2.58E-07	2.23E-02
arithmetic mean	5.58E-05	5.58E-07	4.82E-02

Appendix G

Ground Water Flow Map

ENGLOBE



Terraprobe Inc.
Consulting Geotechnical & Environmental Engineering
Construction Materials, Inspection & Testing
11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650

Reference:
Project: Uxbridge Health Center
Sheet Contents: Site Survey
Project No.: 1811142
Sheet No.: ESC-1, Date: 01/17/20
By: B+H Architects

Notes:

Legend:

- Property Boundary
- Borehole Location (Terraprobe 2019)
- Monitoring Well Location (Terraprobe 2019)
- TP Test Pit Location (Terraprobe 2019)
- GP Guelph Permeameter Test Location
- 275.71 Water Table Elevation(mASL), Jan 30,2020
- 276.98 Maximum known Water Table Elevation(mASL), Jan 12,2020 (Wells with Datalogger Only)
- 275.75 Inferred Water Table (mASL, Jan 30, 2020) Contours
- Inferred Flow Direction

Project Title:
Hydrogeological Study

Site Location:
4 Campbell Drive, Uxbridge, Ontario

Figure Title:
GROUND WATER CONTOURS- JAN 30, 2020

Designed By: SS	*File No.:* 1-19-0022-46.1
Drawn By: MV	*Scale:* As Shown
Reviewed By: SH	*Figure No.:* 8
Date: May 2020	

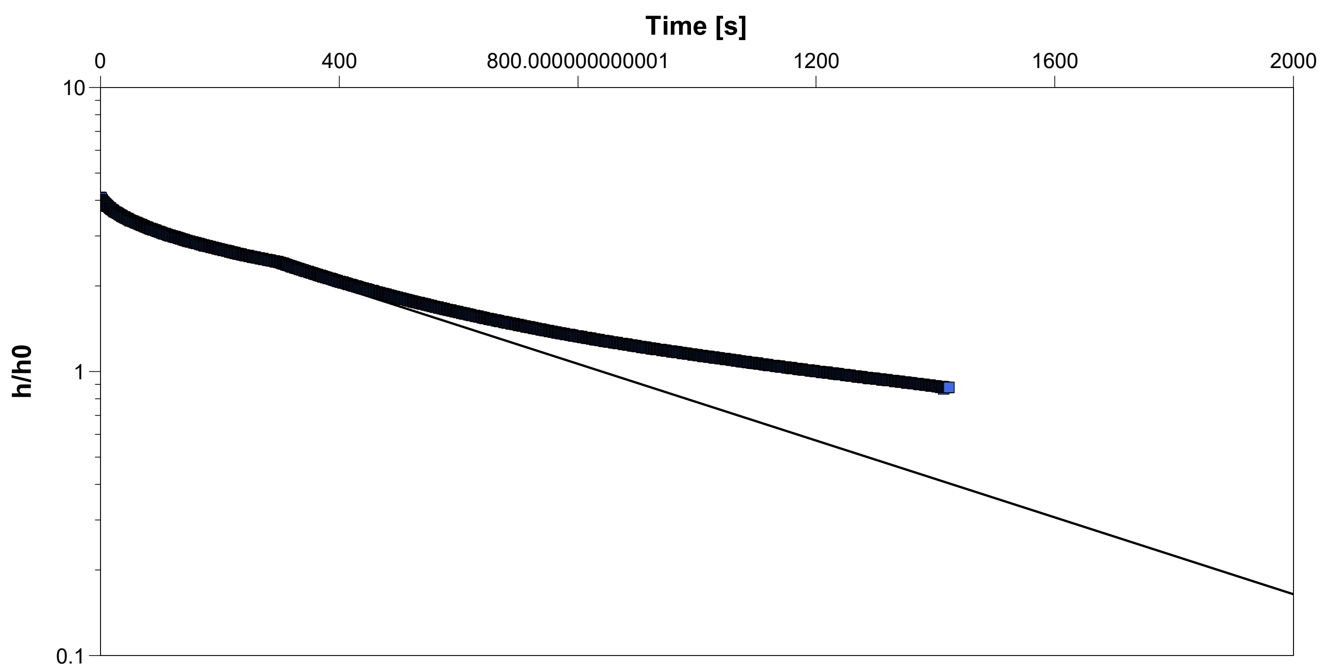
C:\Users\ssinghania\Desktop\1-19-0022-46.1\1-19-0022-46_REV 1.dwg, ssinghania

Appendix H

Aquifer Response Tests

	Slug Test Analysis Report
	Project: Uxbridge Community Hospital
	Number: 02310769.003
	Client: Oak Valley Health

Location: Uxbridge	Slug Test: BH1	Test Well: BH1
Test Conducted by: A.Q		Test Date: 7/4/2024
Analysis Performed by: A.Q	BH1	Analysis Date: 8/27/2024
Aquifer Thickness:		

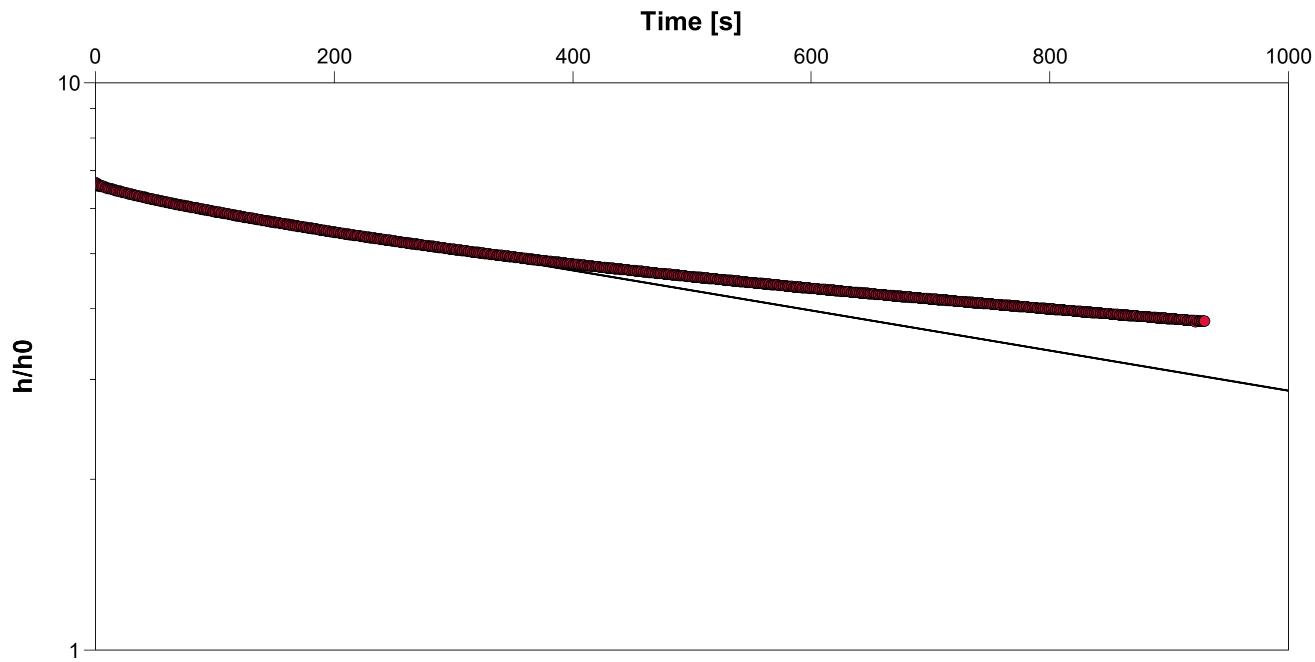


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH1	7.02×10^{-7}	

	Slug Test Analysis Report
	Project: Uxbridge Community Hospital
	Number: 02310769.003
	Client: Oak Valley Health

Location: Uxbridge	Slug Test: BH2	Test Well: BH2
Test Conducted by: A.Q		Test Date: 7/4/2024
Analysis Performed by: A.Q	BH2 Slug Test	Analysis Date: 8/27/2024
Aquifer Thickness:		

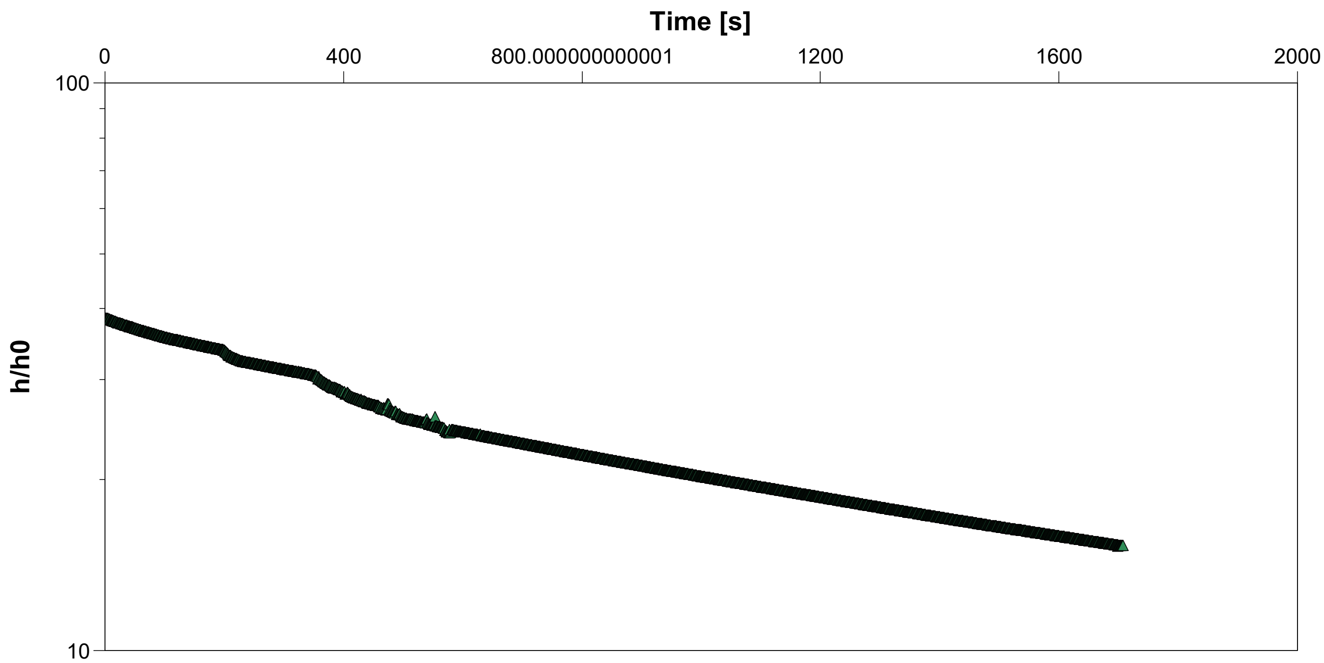


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH2	3.67×10^{-7}	

	Slug Test Analysis Report
	Project: Uxbridge Community Hospital
	Number: 02310769.003
	Client: Oak Valley Health

Location: Uxbridge	Slug Test: BH6	Test Well: BH6
Test Conducted by: A.Q		Test Date: 7/4/2024
Analysis Performed by: A.Q	BH6 Slug Test	Analysis Date: 8/27/2024
Aquifer Thickness:		

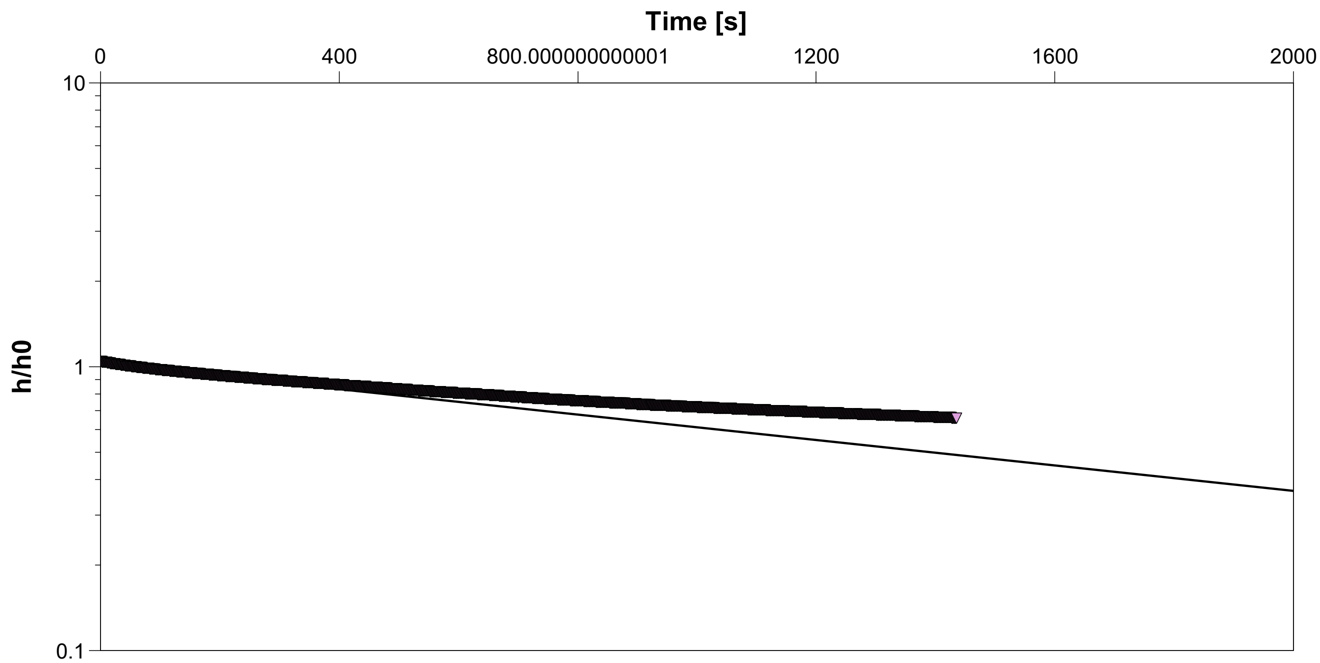


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH6	3.17×10^{-7}	

	Slug Test Analysis Report
	Project: Uxbridge Community Hospital
	Number: 02310769.003
	Client: Oak Valley Health

Location: Uxbridge	Slug Test: BH8	Test Well: BH8
Test Conducted by: A.Q		Test Date: 7/4/2024
Analysis Performed by: A.Q	BH8 Slug Test	Analysis Date: 8/27/2024
Aquifer Thickness:		

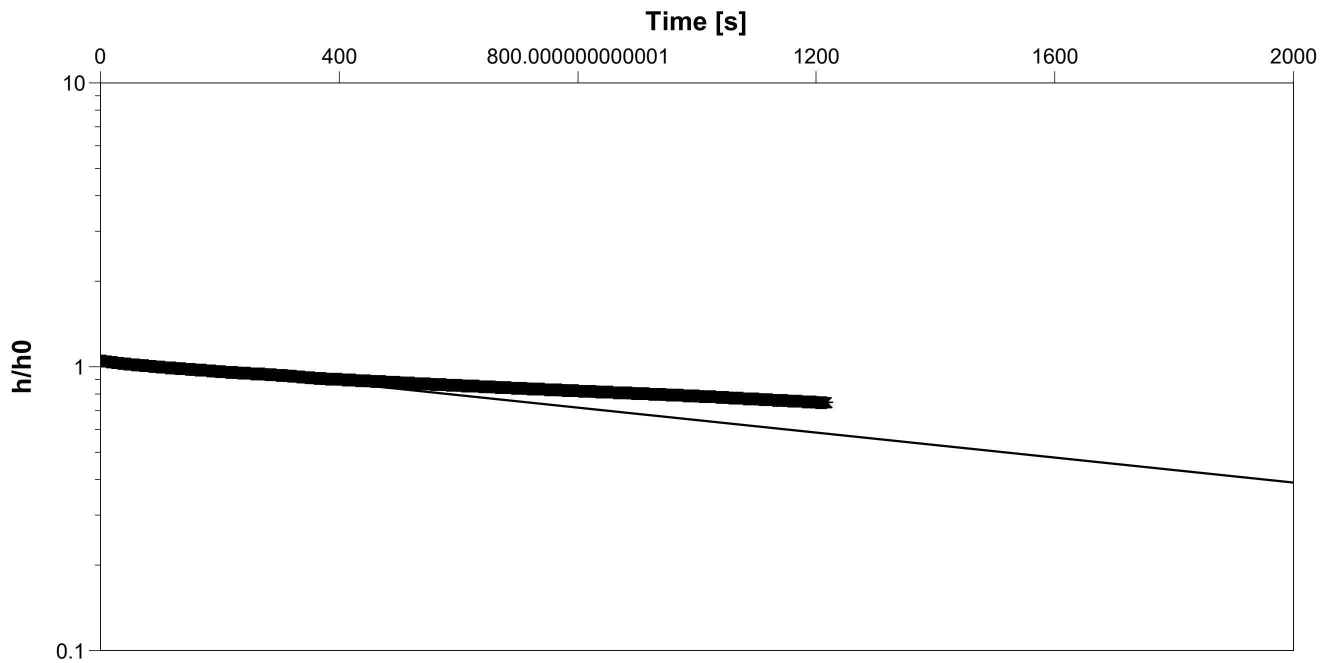


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH8	2.32×10^{-7}	

	Slug Test Analysis Report
	Project: Uxbridge Community Hospital
	Number: 02310769.003
	Client: Oak Valley Health

Location: Uxbridge	Slug Test: BH10	Test Well: BH10
Test Conducted by: A.Q		Test Date: 7/4/2024
Analysis Performed by: A.Q	BH10 Slug Test	Analysis Date: 8/27/2024
Aquifer Thickness:		

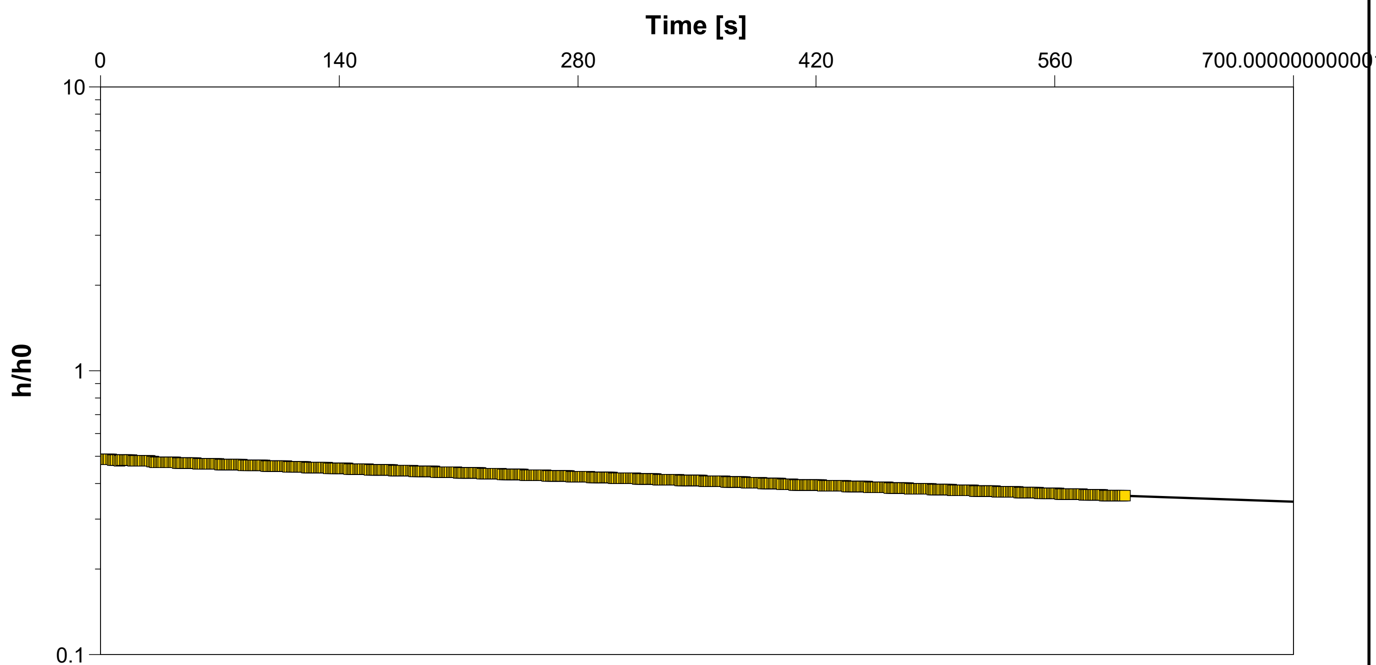


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH10	2.29×10^{-7}	

	Slug Test Analysis Report
	Project: Uxbridge Community Hospital
	Number: 02310769.003
	Client: Oak Valley Health

Location: Uxbridge	Slug Test: BH11	Test Well: BH11
Test Conducted by: A.Q		Test Date: 7/5/2024
Analysis Performed by: A.Q	BH11 Slug Test	Analysis Date: 8/27/2024
Aquifer Thickness:		

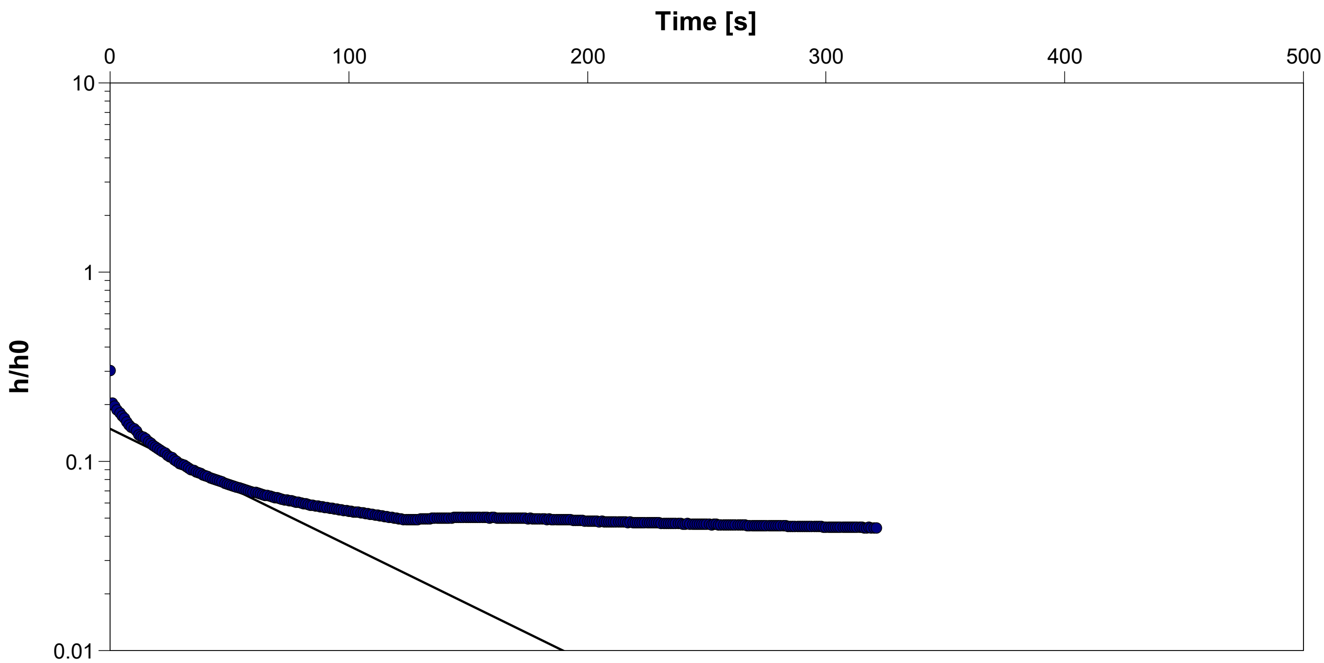


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH11	2.20×10^{-7}	

	Slug Test Analysis Report
	Project: Uxbridge Community Hospital
	Number: 02310769.003
	Client: Oak Valley Health

Location: Uxbridge	Slug Test: BH15	Test Well: BH15
Test Conducted by: A.Q		Test Date: 7/5/2024
Analysis Performed by: A.Q	Slug Test BH15	Analysis Date: 8/27/2024
Aquifer Thickness:		

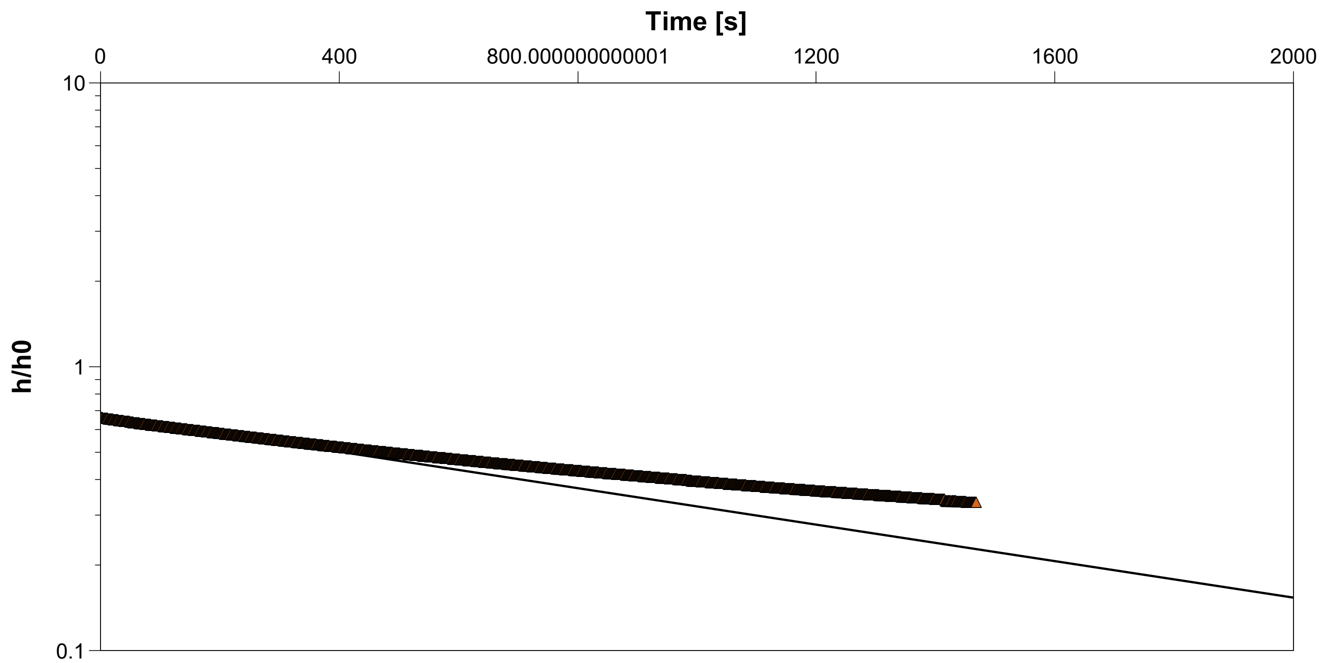


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH15	6.41×10^{-6}	

	Slug Test Analysis Report
	Project: Uxbridge Community Hospital
	Number: 02310769.003
	Client: Oak Valley Health

Location: Uxbridge	Slug Test: BH13	Test Well: BH13
Test Conducted by: A.Q		Test Date: 7/5/2024
Analysis Performed by: A.Q	Slug Test BH13	Analysis Date: 8/27/2024
Aquifer Thickness:		



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
BH13	3.33×10^{-7}	

Appendix I

Groundwater Quality

ENGLOBE

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: ENGLOBE CORP.
20, CARLSON COURT
ETOBICOKE, ON M9W 7K6
416 301-5909

ATTENTION TO: Abdul Qadir

PROJECT: 02310769.002

AGAT WORK ORDER: 24T170750

WATER ANALYSIS REVIEWED BY: Yris Verastegui, Inorganic Team Lead

DATE REPORTED: Jul 12, 2024

PAGES (INCLUDING COVER): 10

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

Notes

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 24T170750
PROJECT: 02310769.002

CLIENT NAME: ENGLOBE CORP.
SAMPLING SITE:4 Campbell Dr, Uxbridge, ON

ATTENTION TO: Abdul Qadir
SAMPLED BY:Abdul Q.

Water Quality Assessment - PWQO (mg/L)

DATE RECEIVED: 2024-07-05
DATE REPORTED: 2024-07-12

			SAMPLE DESCRIPTION:	BH24-7
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2024-07-05 15:00
Parameter	**Unit**	**G / S**	**RDL**	**5984811**
Electrical Conductivity	µS/cm		2	1310
pH	pH Units	6.5-8.5	NA	7.56
Saturation pH (Calculated)				6.33
Langelier Index (Calculated)				1.23
Hardness (as CaCO3) (Calculated)	mg/L		0.5	648
Total Dissolved Solids	mg/L		10	784
Alkalinity (as CaCO3)	mg/L		5	561
Bicarbonate (as CaCO3)	mg/L		5	561
Carbonate (as CaCO3)	mg/L		5	<5
Hydroxide (as CaCO3)	mg/L		5	<5
Fluoride	mg/L		0.05	<0.05
Chloride	mg/L		0.12	153
Nitrate as N	mg/L		0.05	<0.05
Nitrite as N	mg/L		0.05	<0.05
Bromide	mg/L		0.05	<0.05
Sulphate	mg/L		0.10	49.1
Ortho Phosphate as P	mg/L		0.10	<0.10
Ammonia as N	mg/L		0.02	<0.02
Ammonia-Un-ionized (Calculated)	mg/L	0.02	0.000002	<0.000002
Total Phosphorus	mg/L	*	0.06	1.35
Total Organic Carbon	mg/L		0.5	8.2
True Colour	TCU		2.50	11.6
Turbidity	NTU		0.5	11400
Total Calcium	mg/L		0.20	222
Total Magnesium	mg/L		0.10	22.7
Total Potassium	mg/L		0.50	2.79
Total Sodium	mg/L		0.10	48.3
Aluminum-dissolved	mg/L	*	0.004	0.033
Total Antimony	mg/L	0.020	0.003	<0.003

Certified By: Iris Verástegui

Certificate of Analysis

AGAT WORK ORDER: 24T170750
PROJECT: 02310769.002

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CLIENT NAME: ENGLOBE CORP.
SAMPLING SITE:4 Campbell Dr, Uxbridge, ON

ATTENTION TO: Abdul Qadir
SAMPLED BY:Abdul Q.

Water Quality Assessment - PWQO (mg/L)

DATE RECEIVED: 2024-07-05

DATE REPORTED: 2024-07-12

			SAMPLE DESCRIPTION:	BH24-7
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2024-07-05 15:00
Parameter	**Unit**	**G / S**	**RDL**	**5984811**
Total Arsenic	mg/L	0.1	0.003	0.006
Total Barium	mg/L		0.002	0.301
Total Beryllium	mg/L	*	0.001	<0.001
Total Boron	mg/L	0.2	0.010	0.082
Total Cadmium	mg/L	0.0002	0.0001	0.0002
Total Chromium	mg/L		0.003	0.025
Total Cobalt	mg/L	0.0009	0.0005	**0.0086**
Total Copper	mg/L	0.005	0.002	**0.020**
Total Iron	mg/L	0.3	0.050	**22.3**
Total Lead	mg/L	*	0.0005	0.0087
Total Manganese	mg/L		0.002	1.45
Total Mercury	mg/L		0.0001	<0.0001
Total Molybdenum	mg/L	0.040	0.002	0.004
Total Nickel	mg/L	0.025	0.003	0.019
Total Selenium	mg/L	0.1	0.002	<0.002
Total Silver	mg/L	0.0001	0.0001	<0.0001
Total Strontium	mg/L		0.005	0.809
Total Thallium	mg/L	0.0003	0.0003	<0.0003
Total Tin	mg/L		0.002	0.005
Total Titanium	mg/L		0.010	0.868
Total Tungsten	mg/L	0.030	0.010	<0.010
Total Uranium	mg/L	0.005	0.0005	0.0023
Total Vanadium	mg/L	0.006	0.002	**0.035**
Total Zinc	mg/L	0.030	0.020	**0.056**
Total Zirconium	mg/L	0.004	0.004	0.004
Lab Filtration Aluminum Dissolved				1

Certified By: Iris Verástegui

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Certificate of Analysis

AGAT WORK ORDER: 24T170750

PROJECT: 02310769.002

CLIENT NAME: ENGLOBE CORP.

ATTENTION TO: Abdul Qadir

SAMPLING SITE:4 Campbell Dr, Uxbridge, ON

SAMPLED BY:Abdul Q.

Water Quality Assessment - PWQO (mg/L)

DATE RECEIVED: 2024-07-05

DATE REPORTED: 2024-07-12

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to PWQO * Variable - refer to guideline reference document
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5984811 Dilution required, RDL has been increased accordingly.
Un-ionized Ammonia detection limit is a calculated RDL. The calculation of Un-ionized Ammonia is based on lab measured parameters (ammonia as N, pH and temperature).Values are reported as calculated.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: Iris Verástegui

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Exceedance Summary

AGAT WORK ORDER: 24T170750

PROJECT: 02310769.002

CLIENT NAME: ENGLOBE CORP. **ATTENTION TO: Abdul Qadir**

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
5984811	BH24-7	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Cobalt	mg/L	0.0009	0.0086
5984811	BH24-7	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Copper	mg/L	0.005	0.020
5984811	BH24-7	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Iron	mg/L	0.3	22.3
5984811	BH24-7	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Vanadium	mg/L	0.006	0.035
5984811	BH24-7	ON PWQO	Water Quality Assessment - PWQO (mg/L)	Total Zinc	mg/L	0.030	0.056

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Quality Assurance

CLIENT NAME: ENGLOBE CORP. | **AGAT WORK ORDER: 24T170750**
PROJECT: 02310769.002 | **ATTENTION TO: Abdul Qadir**
SAMPLING SITE:4 Campbell Dr, Uxbridge, ON | **SAMPLED BY:Abdul Q.**

Water Analysis

RPT Date: Jul 12, 2024			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Water Quality Assessment - PWQO (mg/L)															
Electrical Conductivity	5984327		9780	10000	2.2%	< 2	102%	90%	110%						
pH	5984327		7.25	7.30	0.7%	NA	99%	90%	110%						
Total Dissolved Solids	5982078		58	56	3.5%	< 10	96%	80%	120%						
Alkalinity (as CaCO3)	5984327		834	843	1.1%	< 5	100%	80%	120%						
Bicarbonate (as CaCO3)	5984327		834	843	1.1%	< 5	NA								
Carbonate (as CaCO3)	5984327		<5	<5	NA	< 5	NA								
Hydroxide (as CaCO3)	5984327		<5	<5	NA	< 5	NA								
Fluoride	5984811	5984811	<0.05	<0.05	NA	< 0.05	100%	70%	130%	97%	80%	120%	93%	70%	130%
Chloride	5984811	5984811	153	150	2.0%	< 0.10	95%	70%	130%	102%	80%	120%	NA	70%	130%
Nitrate as N	5984811	5984811	<0.05	<0.05	NA	< 0.05	101%	70%	130%	100%	80%	120%	97%	70%	130%
Nitrite as N	5984811	5984811	<0.05	<0.05	NA	< 0.05	91%	70%	130%	96%	80%	120%	93%	70%	130%
Bromide	5984811	5984811	<0.05	<0.05	NA	< 0.05	100%	70%	130%	98%	80%	120%	96%	70%	130%
Sulphate	5984811	5984811	49.1	47.8	2.7%	< 0.10	98%	70%	130%	100%	80%	120%	98%	70%	130%
Ortho Phosphate as P	5984811	5984811	<0.10	<0.10	NA	< 0.10	104%	70%	130%	101%	80%	120%	97%	70%	130%
Ammonia as N	5988537		<0.02	<0.02	NA	< 0.02	106%	70%	130%	101%	80%	120%	107%	70%	130%
Total Phosphorus	5984811	5984811	1.35	1.34	0.7%	< 0.02	105%	70%	130%	106%	80%	120%	NA	70%	130%
Total Organic Carbon	5984811	5984811	8.2	8.0	2.5%	< 0.5	96%	90%	110%	102%	90%	110%	107%	80%	120%
True Colour	5978226		<2.50	<2.50	NA	< 2.5	103%	90%	110%						
Turbidity	5984811	5984811	11400	11300	0.9%	< 0.5	99%	80%	120%						
Total Calcium	5989529		201	187	7.2%	< 0.20	103%	70%	130%	101%	80%	120%	81%	70%	130%
Total Magnesium	5989529		34.9	30.0	15.1%	< 0.10	103%	70%	130%	93%	80%	120%	75%	70%	130%
Total Potassium	5989529		24.1	23.0	4.7%	< 0.50	103%	70%	130%	84%	80%	120%	NA	70%	130%
Total Sodium	5989529		2450	2350	4.2%	< 0.10	94%	70%	130%	101%	80%	120%	NA	70%	130%
Aluminum-dissolved	5978226		<0.004	<0.004	NA	< 0.004	94%	70%	130%	102%	80%	120%	91%	70%	130%
Total Antimony	5989529		0.005	0.005	NA	< 0.003	101%	70%	130%	105%	80%	120%	103%	70%	130%
Total Arsenic	5989529		0.005	<0.003	NA	< 0.003	93%	70%	130%	94%	80%	120%	96%	70%	130%
Total Barium	5989529		0.316	0.301	4.9%	< 0.002	99%	70%	130%	104%	80%	120%	110%	70%	130%
Total Beryllium	5989529		<0.001	<0.001	NA	< 0.001	96%	70%	130%	93%	80%	120%	77%	70%	130%
Total Boron	5989529		0.182	0.157	14.7%	< 0.010	100%	70%	130%	101%	80%	120%	80%	70%	130%
Total Cadmium	5989529		<0.0001	<0.0001	NA	< 0.0001	98%	70%	130%	100%	80%	120%	93%	70%	130%
Total Chromium	5989529		<0.003	<0.003	NA	< 0.003	102%	70%	130%	108%	80%	120%	120%	70%	130%
Total Cobalt	5989529		0.0013	0.0015	NA	< 0.0005	106%	70%	130%	104%	80%	120%	115%	70%	130%
Total Copper	5989529		0.012	0.011	8.7%	< 0.002	100%	70%	130%	101%	80%	120%	103%	70%	130%
Total Iron	5989529		1.45	1.32	9.4%	< 0.050	111%	70%	130%	109%	80%	120%	124%	70%	130%
Total Lead	5989529		0.0007	0.0006	NA	< 0.0005	91%	70%	130%	99%	80%	120%	88%	70%	130%
Total Manganese	5989529		0.877	0.814	7.5%	< 0.002	115%	70%	130%	118%	80%	120%	127%	70%	130%
Total Mercury	5982022		<0.0001	<0.0001	NA	< 0.0001	100%	70%	130%	102%	80%	120%	92%	70%	130%
Total Molybdenum	5989529		0.015	0.013	14.3%	< 0.002	108%	70%	130%	94%	80%	120%	98%	70%	130%
Total Nickel	5989529		0.026	0.023	12.2%	< 0.003	108%	70%	130%	108%	80%	120%	114%	70%	130%

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Quality Assurance

CLIENT NAME: ENGLOBE CORP. **AGAT WORK ORDER: 24T170750**

PROJECT: 02310769.002 **ATTENTION TO: Abdul Qadir**

SAMPLING SITE:4 Campbell Dr, Uxbridge, ON **SAMPLED BY:Abdul Q.**

Water Analysis (Continued)

RPT Date: Jul 12, 2024			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Total Selenium	5989529		0.004	0.010	NA	< 0.002	104%	70%	130%	94%	80%	120%	83%	70%	130%
Total Silver	5989529		0.0002	0.0001	NA	< 0.0001	88%	70%	130%	88%	80%	120%	76%	70%	130%
Total Strontium	5989529		1.38	1.19	14.8%	< 0.005	95%	70%	130%	96%	80%	120%	85%	70%	130%
Total Thallium	5989529		<0.0003	<0.0003	NA	< 0.0003	97%	70%	130%	107%	80%	120%	88%	70%	130%
Total Tin	5989529		<0.002	<0.002	NA	< 0.002	103%	70%	130%	103%	80%	120%	102%	70%	130%
Total Titanium	5989529		0.016	<0.010	NA	< 0.010	107%	70%	130%	100%	80%	120%	115%	70%	130%
Total Tungsten	5989529		<0.010	<0.010	NA	< 0.010	90%	70%	130%	93%	80%	120%	92%	70%	130%
Total Uranium	5989529		<0.0005	<0.0005	NA	< 0.0005	97%	70%	130%	103%	80%	120%	106%	70%	130%
Total Vanadium	5989529		0.004	0.003	NA	< 0.002	110%	70%	130%	112%	80%	120%	129%	70%	130%
Total Zinc	5989529		0.081	0.080	NA	< 0.020	101%	70%	130%	102%	80%	120%	100%	70%	130%
Total Zirconium	5989529		<0.004	<0.004	NA	< 0.004	98%	70%	130%	88%	80%	120%	95%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate NA: results are under 5X the RDL and will not be calculated.
Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.

Certified By: Iris Verástegui

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Method Summary

CLIENT NAME: ENGLOBE CORP. **AGAT WORK ORDER: 24T170750**
PROJECT: 02310769.002 **ATTENTION TO: Abdul Qadir**
SAMPLING SITE:4 Campbell Dr, Uxbridge, ON **SAMPLED BY:Abdul Q.**

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	modified from SM 2510 B	PC TITRATE
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Saturation pH (Calculated)		SM 2320 B	CALCULATION
Langelier Index (Calculated)		SM 2330B	CALCULATION
Hardness (as CaCO3) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Total Dissolved Solids	INOR-93-6028	modified from EPA 1684,ON MOECC E3139,SM 2540C,D	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	Modified from SM 2320 B	PC TITRATE
Bicarbonate (as CaCO3)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Carbonate (as CaCO3)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Hydroxide (as CaCO3)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-93-6059	modified from SM 4500-NH3 H	LACHAT FIA
Ammonia-Un-ionized (Calculated)		MOE REFERENCE, PWQOs Tab 2	CALCULATION
Total Phosphorus	INOR-93-6022	modified from SM 4500-P B and SM 4500-P E	SPECTROPHOTOMETER
Total Organic Carbon	INOR-93-6049	modified from SM 5310 B	SHIMADZU CARBON ANALYZER
True Colour	INOR-93-6074	modified from SM 2120 B	LACHAT FIA
Turbidity	INOR-93-6044	modified from SM 2130 B	NEPHELOMETER
Total Calcium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Total Magnesium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Total Potassium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Total Sodium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Aluminum-dissolved	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Total Antimony	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Arsenic	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Barium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Beryllium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Boron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cadmium	MET -93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Chromium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cobalt	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS

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Method Summary

CLIENT NAME: ENGLOBE CORP. | **AGAT WORK ORDER: 24T170750**

PROJECT: 02310769.002 | **ATTENTION TO: Abdul Qadir**

SAMPLING SITE:4 Campbell Dr, Uxbridge, ON | **SAMPLED BY:Abdul Q.**

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Total Copper	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Iron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Lead	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Manganese	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Selenium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Silver	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Strontium	INOR-93-6003	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Thallium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Tin	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Titanium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Tungsten	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Uranium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Vanadium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zirconium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Lab Filtration Aluminum Dissolved	SR-78-9001		FILTRATION

AGAT Laboratories

Have feedback? Scan here for a quick survey!

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Laboratory Use Only

Work Order #: 24T170750

Cooler Quantity: 1 large

Arrival Temperatures: 14.3 | 14.6 | 14.9

Depot Temperatures:

Custody Seal Intact: ☐Yes ☐No ☒N/A

Notes: L/I

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: Englobe Corp

Contact: Abdul Qadir

Address: 20 Carlson Court, Etobicoke, M9W 7K6

Phone: 365-341-4400 Fax:

Reports to be sent to:

1. Email: abdul.qadir@englobecorp.com
2. Email:

Project Information:

Project: 02310769.002

Site Location: 4 Campbell Dr, Uxbridge, ON

Sampled By: Abdul Qadir

AGAT Quote #: 477091 PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company:

Contact:

Address:

Email:

Regulatory Requirements:

(Please check all applicable boxes)

☐ Regulation 153/04 — Table (Indicate One): ☐Ind/Com ☐Res/Park ☐Agriculture; Soil Texture (Check One): ☐Coarse ☐Fine

☐ Regulation 406 — Table (Indicate One): ☐Ind/Com ☐Res/Park ☐Agriculture

☐ Regulation 558

☐ CCME

☐ Sewer Use: ☐Sanitary ☐Storm — Region

☒ Prov. Water Quality Objectives (PWQO)

☐ Other — Indicate One

Is this submission for a Record of Site Condition (RSC)? ☐ Yes ☐ No

Report Guideline on Certificate of Analysis ☐ Yes ☐ No

Legal Sample ☐

Sample Matrix Legend

GW	Ground Water	SD	Sediment
O	Oil	SW	Surface Water
P	Paint	R	Rock/Shale
S	Soil		

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT

**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CSR

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI, DOC (Y/N)	O. Reg 153: Metals & Inorganics	Metals - ☐ CrVI, ☐ Hg, ☐ HWSB	BTEX, F1-F4 PHCs	VOC	PAHs	PCBs: Aroclors ☐	O. Reg 406: Regulation 406 Characterization Package pH, Metals, BTEX, F1-F4	EC, SAR	Regulation 406 SPLP Rainwater Leach mSPLP: ☐ Metals ☐ VOCs ☐ SVOCs ☐ DOC	O. Reg 558: Landfill Disposal Characterization TCLP: TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Corrosivity: ☐ Moisture ☐ Sulphide	PWQO						Potentially Hazardous or High Concentration (Y/N)
1. BH24-7	05-July-2024	15:00 AM PM	7	GW	Non filtered	N												✓						
2.		AM PM																						
3.		AM PM																						
4.		AM PM																						
5.		AM PM																						
6.		AM PM																						
7.		AM PM																						
8.		AM PM																						
9.		AM PM																						
10.		AM PM																						
11.		AM PM																						

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
Abdul Qadir	05/July/24	18:20	Daisy N	July 5	6:25 pm

Page ____ of ____

Nº: T - 159661

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: **ENGLOBE CORP.**
20, CARLSON COURT
ETOBICOKE, ON M9W 7K6
416 301-5909

ATTENTION TO: **Abdul Qadir**

PROJECT: **02310769.002**

AGAT WORK ORDER: **24T170755**

MICROBIOLOGY ANALYSIS REVIEWED BY: **Nivine Basily, Inorganic Team Lead**

TRACE ORGANICS REVIEWED BY: **Neli Popnikolova, Senior Chemist**

WATER ANALYSIS REVIEWED BY: **Yris Verastegui, Inorganic Team Lead**

DATE REPORTED: **Jul 12, 2024**

PAGES (INCLUDING COVER): **14**

VERSION*: **1**

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

Notes

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information is available on request from AGAT Laboratories, in accordance with ISO/IEC 17025:2017, ISO/IEC 17025:2005 (Quebec), DR-12-PALA and/or NELAP Standards.
- This document is signed by an authorized signatory who meets the requirements of the MELCCFP, CALA, CCN and NELAP.
- For environmental samples in the Province of Quebec: The analysis is performed on and results apply to samples as received. A temperature above 6°C upon receipt, as indicated in the Sample Reception Notification (SRN), could indicate the integrity of the samples has been compromised if the delay between sampling and submission to the laboratory could not be minimized.

Certificate of Analysis

AGAT WORK ORDER: 24T170755
PROJECT: 02310769.002

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http://www.agatlabs.com

CLIENT NAME: ENGLOBE CORP.
SAMPLING SITE:4 Campbell Drive, Uxbridge, ON
ATTENTION TO: Abdul Qadir
SAMPLED BY:Abdul Qadir

E.Coli (MI-Agar)

DATE RECEIVED: 2024-07-05 **DATE REPORTED: 2024-07-12**

			SAMPLE DESCRIPTION:	BH24-7
			SAMPLE TYPE:	Water
			DATE SAMPLED:	2024-07-05 15:00
Parameter	**Unit**	**G / S**	**RDL**	**5984827**
Escherichia coli	CFU/100mL	200		0
Total Coliforms	CFU/100mL			0

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Limits for Storm Sewer Discharge - The Regional Municipality of Durham - By-Law No. 55-2013
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5984827 Escherichia coli RDL = 2 CFU/100mL.
RDL > 1 indicates dilutions of the sample.

The sample was diluted prior to filtration due to the presence of sediments.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

CHARTERED NIVINE BASILY CHEMIST — ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO

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Certificate of Analysis

AGAT WORK ORDER: 24T170755
PROJECT: 02310769.002

CLIENT NAME: ENGLOBE CORP.
SAMPLING SITE:4 Campbell Drive, Uxbridge, ON

ATTENTION TO: Abdul Qadir
SAMPLED BY:Abdul Qadir

Durham Sanitary - Organics

DATE RECEIVED: 2024-07-05

DATE REPORTED: 2024-07-12

				SAMPLE DESCRIPTION:	BH24-7
				SAMPLE TYPE:	Water
				DATE SAMPLED:	2024-07-05 15:00
Parameter	**Unit**	**G / S: A**	**G / S: B**	**RDL**	**5984827**
Oil and Grease (animal/vegetable) in water	mg/L	150		0.5	5.23[<A]
Oil and Grease (mineral) in water	mg/L	15		0.5	<0.5
Benzene	mg/L	0.01	0.002	0.0002	<0.0002
Chloroform	mg/L	0.04	0.002	0.0002	<0.0002
1,2-Dichlorobenzene	mg/L	0.05	0.0056	0.0001	<0.0001
1,4-Dichlorobenzene	mg/L	0.08	0.0068	0.0001	<0.0001
CIS 1,2-Dichloroethylene	mg/L			0.0002	<0.0002
Trans-1,3-Dichloropropylene	mg/L			0.0003	<0.0003
Ethylbenzene	mg/L	0.16	0.002	0.0001	<0.0001
Methylene Chloride	mg/L	2	0.0052	0.0003	<0.0003
1,1,2,2-Tetrachloroethane	mg/L	1.4	0.017	0.001	<0.001
Tetrachloroethylene	mg/L	1	0.0044	0.0001	<0.0001
Toluene	mg/L	0.27	0.002	0.0002	0.0004[<B]
Trichloroethylene	mg/L	0.4	0.008	0.0002	<0.0002
Xylenes (Total)	mg/L			0.00028	0.0003
Methyl Ethyl Ketone	mg/L	8		0.001	<0.001
Styrene	mg/L			0.0001	<0.0001
Di-n-butyl phthalate	mg/L	0.08	0.015	0.0005	<0.0005
Bis(2-Ethylhexyl)phthalate	mg/L	0.012	0.0088	0.0005	<0.0005
PCBs	mg/L	0.001		0.0002	<0.0002
Nonylphenols	mg/L	0.02		0.001	<0.001
Nonylphenol Ethoxylates	mg/L	0.2		0.01	<0.01

Certified By: NPopukolof

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Certificate of Analysis

AGAT WORK ORDER: 24T170755

PROJECT: 02310769.002

CLIENT NAME: ENGLOBE CORP.

ATTENTION TO: Abdul Qadir

SAMPLING SITE:4 Campbell Drive, Uxbridge, ON

SAMPLED BY:Abdul Qadir

Durham Sanitary - Organics

DATE RECEIVED: 2024-07-05

DATE REPORTED: 2024-07-12

		SAMPLE DESCRIPTION:	BH24-7
		SAMPLE TYPE:	Water
		DATE SAMPLED:	2024-07-05 15:00
Surrogate	**Unit**	**Acceptable Limits**	**5984827**
Toluene-d8	% Recovery	50-140	94
4-Bromofluorobenzene	% Recovery	50-140	90
2-Fluorophenol	%	50-140	65
phenol-d6 surrogate	%	50-140	94
2,4,6-Tribromophenol	%	50-140	98
Chrysene-d12	%	50-140	91
Decachlorobiphenyl	%	50-140	93

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to Limits for Sanitary Sewer Discharge - The Regional Municipality of Durham - By-Law No. 55-2013, B Refers to Limits for Storm Sewer Discharge - The Regional Municipality of Durham - By-Law No. 55-2013
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5984827 Oil and Grease animal/vegetable is a calculated parameter. The calculated value is the difference between Total O&G and Mineral O&G.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: NPopukolof

Certificate of Analysis

AGAT WORK ORDER: 24T170755
PROJECT: 02310769.002

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CLIENT NAME: ENGLOBE CORP.
SAMPLING SITE:4 Campbell Drive, Uxbridge, ON
ATTENTION TO: Abdul Qadir
SAMPLED BY:Abdul Qadir

Durham Sanitary Sewer Use By-Law - Inorganics

DATE RECEIVED: 2024-07-05 **DATE REPORTED: 2024-07-12**

				SAMPLE DESCRIPTION:	BH24-7
				SAMPLE TYPE:	Water
				DATE SAMPLED:	2024-07-05 15:00
Parameter	**Unit**	**G / S: A**	**G / S: B**	**RDL**	**5984827**
pH	pH Units	6.0-10.5	6.0-9.0	NA	7.59
BOD (5)	mg/L	300	15	2	4[<B]
Fluoride	mg/L	10		0.05	<0.05
Sulphate	mg/L	1500		0.10	46.6[<A]
Cyanide, SAD	mg/L	2	0.02	0.002	<0.002
Total Kjeldahl Nitrogen	mg/L	100	1	0.10	0.20[<B]
Phenols	mg/L	1	0.008	0.001	<0.001
Total Phosphorus	mg/L	10	0.4	0.02	1.29[B-A]
Total Suspended Solids	mg/L	350	15	10	18800[>A]
Total Aluminum	mg/L	50		0.020	14.5[<A]
Total Antimony	mg/L	5		0.003	<0.003
Total Arsenic	mg/L	1	0.02	0.006	0.007[<B]
Total Cadmium	mg/L	0.7	0.008	0.0002	<0.0002
Total Chromium	mg/L	2	0.08	0.006	0.020[<B]
Total Cobalt	mg/L	5		0.0010	0.0072[<A]
Total Copper	mg/L	3	0.05	0.004	0.018[<B]
Total Lead	mg/L	1	0.12	0.0010	0.0073[<B]
Total Manganese	mg/L	5	0.15	0.004	1.29[B-A]
Total Mercury	mg/L	0.01	0.01	0.0001	<0.0001
Total Molybdenum	mg/L	5		0.004	<0.004
Total Nickel	mg/L	2	0.08	0.006	0.020[<B]
Total Selenium	mg/L	1	0.02	0.004	<0.004
Total Silver	mg/L	5	0.12	0.0002	<0.0002
Total Tin	mg/L	5		0.004	<0.004
Total Titanium	mg/L	5		0.020	0.795[<A]
Total Zinc	mg/L	2	0.04	0.040	0.045[B-A]

Certified By: Iris Verástegui

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CLIENT NAME: ENGLOBE CORP. **ATTENTION TO: Abdul Qadir**

SAMPLING SITE:4 Campbell Drive, Uxbridge, ON **SAMPLED BY:Abdul Qadir**

Durham Sanitary Sewer Use By-Law - Inorganics

DATE RECEIVED: 2024-07-05 **DATE REPORTED: 2024-07-12**

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to Limits for Sanitary Sewer Discharge - The Regional Municipality of Durham - By-Law No. 55-2013, B Refers to Limits for Storm Sewer Discharge - The Regional Municipality of Durham - By-Law No. 55-2013
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5984827 Dilution required, RDL has been increased accordingly.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: Iris Verástegui

Exceedance Summary

AGAT WORK ORDER: 24T170755

PROJECT: 02310769.002

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CLIENT NAME: ENGLOBE CORP. **ATTENTION TO: Abdul Qadir**

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
5984827	BH24-7	ON Durham SM	Durham Sanitary Sewer Use By-Law - Inorganics	Total Manganese	mg/L	0.15	1.29
5984827	BH24-7	ON Durham SM	Durham Sanitary Sewer Use By-Law - Inorganics	Total Phosphorus	mg/L	0.4	1.29
5984827	BH24-7	ON Durham SM	Durham Sanitary Sewer Use By-Law - Inorganics	Total Suspended Solids	mg/L	15	18800
5984827	BH24-7	ON Durham SM	Durham Sanitary Sewer Use By-Law - Inorganics	Total Zinc	mg/L	0.04	0.045
5984827	BH24-7	ON Durham SN	Durham Sanitary Sewer Use By-Law - Inorganics	Total Suspended Solids	mg/L	350	18800

AGAT Laboratories

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Quality Assurance

CLIENT NAME: ENGLOBE CORP.
PROJECT: 02310769.002
SAMPLING SITE:4 Campbell Drive, Uxbridge, ON

AGAT WORK ORDER: 24T170755
ATTENTION TO: Abdul Qadir
SAMPLED BY:Abdul Qadir

Microbiology Analysis

RPT Date: Jul 12, 2024			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
E.Coli (MI-Agar)															
Escherichia coli	5984827	5984827	0	0	NA										
Total Coliforms	5984827	5984827	4	4	0.0%										

Comments: NA - % RPD Not Applicable.

Certified By:

CHARTERED
NIVINE BASILY
CHEMIST

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Quality Assurance

CLIENT NAME: ENGLOBE CORP. **AGAT WORK ORDER: 24T170755**
PROJECT: 02310769.002 **ATTENTION TO: Abdul Qadir**
SAMPLING SITE:4 Campbell Drive, Uxbridge, ON **SAMPLED BY:Abdul Qadir**

Trace Organics Analysis

RPT Date: Jul 12, 2024			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Durham Sanitary - Organics															
Oil and Grease (animal/vegetable) in water	5975256		< 0.5	< 0.5	NA	< 0.5	97%	60%	130%	110%	60%	130%	103%	60%	130%
Oil and Grease (mineral) in water	5975256		< 0.5	< 0.5	NA	< 0.5	87%	60%	130%	84%	60%	130%	89%	60%	130%
Benzene	5984080		<0.0002	<0.0002	NA	< 0.0002	89%	50%	140%	80%	60%	130%	92%	50%	140%
Chloroform	5984080		<0.0002	<0.0002	NA	< 0.0002	110%	50%	140%	107%	60%	130%	117%	50%	140%
1,2-Dichlorobenzene	5984080		<0.0001	<0.0001	NA	< 0.0001	108%	50%	140%	89%	60%	130%	100%	50%	140%
1,4-Dichlorobenzene	5984080		<0.0001	<0.0001	NA	< 0.0001	106%	50%	140%	84%	60%	130%	102%	50%	140%
CIS 1,2-Dichloroethylene	5984080		<0.0002	<0.0002	NA	< 0.0002	85%	50%	140%	74%	60%	140%	96%	60%	130%
Trans-1,3-Dichloropropylene	5984080		<0.0003	<0.0003	NA	< 0.0003	82%	50%	140%	71%	60%	130%	74%	50%	140%
Ethylbenzene	5984080		<0.0001	<0.0001	NA	< 0.0001	95%	50%	140%	76%	60%	130%	98%	50%	140%
Methylene Chloride	5984080		<0.0003	<0.0003	NA	< 0.0003	84%	50%	140%	84%	60%	130%	95%	50%	140%
1,1,2,2-Tetrachloroethane	5984080		<0.001	<0.001	NA	< 0.001	100%	50%	140%	107%	60%	130%	102%	50%	140%
Tetrachloroethylene	5984080		<0.0001	<0.0001	NA	< 0.0001	99%	50%	140%	71%	60%	130%	85%	50%	140%
Toluene	5984080		<0.0002	<0.0002	NA	< 0.0002	103%	50%	140%	82%	60%	130%	112%	50%	140%
Trichloroethylene	5984080		<0.0002	<0.0002	NA	< 0.0002	91%	50%	140%	76%	60%	130%	109%	50%	140%
Methyl Ethyl Ketone	5984080		<0.001	<0.001	NA	< 0.001	92%	50%	140%	112%	50%	140%	90%	50%	140%
Styrene	5984080		<0.0001	<0.0001	NA	< 0.0001	89%	50%	140%	71%	60%	130%	99%	50%	140%
Di-n-butyl phthalate	5984827	5984827	< 0.0005	< 0.0005	NA	< 0.0005	95%	50%	140%	79%	50%	140%	80%	50%	140%
Bis(2-Ethylhexyl)phthalate	5984827	5984827	< 0.0005	< 0.0005	NA	< 0.0005	84%	50%	140%	74%	50%	140%	67%	50%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By: NPopukolof

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Quality Assurance

CLIENT NAME: ENGLOBE CORP.
PROJECT: 02310769.002
SAMPLING SITE:4 Campbell Drive, Uxbridge, ON

AGAT WORK ORDER: 24T170755
ATTENTION TO: Abdul Qadir
SAMPLED BY:Abdul Qadir

Water Analysis

RPT Date: Jul 12, 2024			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Durham Sanitary Sewer Use By-Law - Inorganics															
pH	5984327		7.25	7.30	0.7%	NA	99%	90%	110%						
BOD (5)	5984827	5984827	4	4	NA	< 2	101%	75%	125%						
Fluoride	5984811		<0.05	<0.05	NA	< 0.05	100%	70%	130%	97%	80%	120%	93%	70%	130%
Sulphate	5984811		49.1	47.8	2.7%	< 0.10	98%	70%	130%	100%	80%	120%	98%	70%	130%
Cyanide, SAD	5982022		<0.002	<0.002	NA	< 0.002	92%	70%	130%	105%	80%	120%	105%	70%	130%
Total Kjeldahl Nitrogen	5980745		5.25	5.23	0.4%	< 0.10	99%	70%	130%	104%	80%	120%	NA	70%	130%
Phenols	5986415		<0.001	<0.001	NA	< 0.001	99%	90%	110%	96%	90%	110%	113%	80%	120%
Total Phosphorus	5984811		1.35	1.34	0.7%	< 0.02	105%	70%	130%	106%	80%	120%	NA	70%	130%
Total Suspended Solids	5984460		<10	<10	NA	< 10	94%	80%	120%						
Total Aluminum	5989529		0.273	0.311	13.0%	< 0.010	113%	70%	130%	92%	80%	120%	126%	70%	130%
Total Antimony	5989529		0.005	0.005	NA	< 0.003	101%	70%	130%	105%	80%	120%	103%	70%	130%
Total Arsenic	5989529		0.005	<0.003	NA	< 0.003	93%	70%	130%	94%	80%	120%	96%	70%	130%
Total Cadmium	5989529		<0.0001	<0.0001	NA	< 0.0001	98%	70%	130%	100%	80%	120%	93%	70%	130%
Total Chromium	5989529		<0.003	<0.003	NA	< 0.003	102%	70%	130%	108%	80%	120%	120%	70%	130%
Total Cobalt	5989529		0.0013	0.0015	NA	< 0.0005	106%	70%	130%	104%	80%	120%	115%	70%	130%
Total Copper	5989529		0.012	0.011	8.7%	< 0.002	100%	70%	130%	101%	80%	120%	103%	70%	130%
Total Lead	5989529		0.0007	0.0006	NA	< 0.0005	91%	70%	130%	99%	80%	120%	88%	70%	130%
Total Manganese	5989529		0.877	0.814	7.5%	< 0.002	115%	70%	130%	118%	80%	120%	127%	70%	130%
Total Mercury	5982022		<0.0001	<0.0001	NA	< 0.0001	100%	70%	130%	102%	80%	120%	92%	70%	130%
Total Molybdenum	5989529		0.015	0.013	14.3%	< 0.002	108%	70%	130%	94%	80%	120%	98%	70%	130%
Total Nickel	5989529		0.026	0.023	12.2%	< 0.003	108%	70%	130%	108%	80%	120%	114%	70%	130%
Total Selenium	5989529		0.004	0.010	NA	< 0.002	104%	70%	130%	94%	80%	120%	83%	70%	130%
Total Silver	5989529		0.0002	0.0001	NA	< 0.0001	88%	70%	130%	88%	80%	120%	76%	70%	130%
Total Tin	5989529		<0.002	<0.002	NA	< 0.002	103%	70%	130%	103%	80%	120%	102%	70%	130%
Total Titanium	5989529		0.016	<0.010	NA	< 0.010	107%	70%	130%	100%	80%	120%	115%	70%	130%
Total Zinc	5989529		0.081	0.080	NA	< 0.020	101%	70%	130%	102%	80%	120%	100%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate NA: results are under 5X the RDL and will not be calculated.
Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.

Certified By: Iris Verástegui

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: ENGLOBE CORP. **AGAT WORK ORDER: 24T170755**

PROJECT: 02310769.002 **ATTENTION TO: Abdul Qadir**

SAMPLING SITE:4 Campbell Drive, Uxbridge, ON **SAMPLED BY:Abdul Qadir**

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Total Coliforms	MIC-93-7010	EPA 1604	Membrane Filtration

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Method Summary

CLIENT NAME: ENGLOBE CORP. **AGAT WORK ORDER: 24T170755**
PROJECT: 02310769.002 **ATTENTION TO: Abdul Qadir**
SAMPLING SITE:4 Campbell Drive, Uxbridge, ON **SAMPLED BY:Abdul Qadir**

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Oil and Grease (animal/vegetable) in water	VOL-91-5011	EPA SW-846 3510C & SM5520	BALANCE
Oil and Grease (mineral) in water	VOL-91-5011	EPA SW-846 3510C & SM5520	BALANCE
Benzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Chloroform	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
CIS 1,2-Dichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Trans-1,3-Dichloropropylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Toluene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Xylenes (Total)	VOL-91-5010	modified from EPA 5030B & EPA 8260D	(P&T)GC/FID
Methyl Ethyl Ketone	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Styrene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Toluene-d8	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Di-n-butyl phthalate	ORG-91-5114	EPA SW-846 3510C & 8270D	GC/MS
Bis(2-Ethylhexyl)phthalate	ORG-91-5114	EPA SW-846 3510C & 8270D	GC/MS
2-Fluorophenol	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS
phenol-d6 surrogate	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS
2,4,6-Tribromophenol	ORG-91-5114	modified from EPA 3510C, 8270E & ON MOECC E3265	GC/MS
Chrysene-d12	ORG-91-5114	modified from EPA 3510C and EPA 8270E	GC/MS
PCBs	ORG-91-5112	modified from EPA SW-846 3510 & 8082A	GC/ECD
Decachlorobiphenyl	ORG-91-5112	modified from EPA SW846 3510C & 8082A	GC/ECD
Nonylphenols	ORG-91-5122	modified ASTM D7485-16	CALCULATION
Nonylphenol Ethoxylates	ORG-91-5122	modified ASTM D7485-16	CALCULATION

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Method Summary

CLIENT NAME: ENGLOBE CORP. **AGAT WORK ORDER: 24T170755**
PROJECT: 02310769.002 **ATTENTION TO: Abdul Qadir**
SAMPLING SITE:4 Campbell Drive, Uxbridge, ON **SAMPLED BY:Abdul Qadir**

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
BOD (5)	INOR-93-6006	Modified from SM 5210 B	DO METER
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Cyanide, SAD	INOR-93-6051	modified from MOECC E3015; SM 4500-CN- A, B, & C	SEGMENTED FLOW ANALYSIS
Total Kjeldahl Nitrogen	INOR-93-6048	modified from EPA 351.2 and SM 4500-NORG D	LACHAT FIA
Phenols	INOR-93-6072	modified from SM 5530 D	LACHAT FIA
Total Phosphorus	INOR-93-6022	modified from SM 4500-P B and SM 4500-P E	SPECTROPHOTOMETER
Total Suspended Solids	INOR-93-6028	modified from EPA 1684,ON MOECC E3139,SM 2540C,D	BALANCE
Total Aluminum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Antimony	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Arsenic	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cadmium	MET -93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Chromium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cobalt	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Copper	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Lead	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Manganese	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Selenium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Silver	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Tin	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Titanium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS

AGAT Laboratories

Have feedback? Scan here for a quick survey!

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Laboratory Use Only

Work Order #: 24T170755

Cooler Quantity: 1 large

Arrival Temperatures: 14.3 | 14.6 | 14.9

Depot Temperatures:

Custody Seal Intact: ☐ Yes ☐ No ☒ N/A

Notes: L/1

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: Englobe Corp

Contact: Abdul Qadi

Address: 20 Carlson Court, Etobicoke, M9W 7K6

Phone: 365-341-4400 Fax:

Reports to be sent to:

1. Email: abdul.qadir@englobecorp.com

2. Email:

Regulatory Requirements:

(Please check all applicable boxes)

☐ Regulation 153/04 — Table (Indicate One): ☐ Ind/Com ☐ Res/Park ☐ Agriculture

Soil Texture (Check One): ☐ Coarse ☐ Fine

☐ Regulation 406 — Table (Indicate One): ☐ Ind/Com ☐ Res/Park ☐ Agriculture

☐ Regulation 558

☐ CCME

☒ Sewer Use — ☒ Sanitary ☒ Storm — Durham (Region)

☐ Prov. Water Quality Objectives (PWQO)

☐ Other

Indicate One

Is this submission for a Record of Site Condition (RSC)? ☐ Yes ☐ No

Report Guideline on Certificate of Analysis ☐ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
*TAT is exclusive of weekends and statutory holidays

For 'Same Day' analysis, please contact your AGAT CSR

Project Information:

Project: 02310769.0002

Site Location: 4 Campbell drive, Uxbridge, ON

Sampled By: Abdul Qadi

AGAT Quote #: 477082 PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Legal Sample ☐

Invoice Information:

Bill To Same: Yes ☐ No ☐

Company:

Contact:

Address:

Email:

Sample Matrix Legend

GW	Ground Water	SD	Sediment
O	Oil	SW	Surface Water
P	Paint	R	Rock/Shale
S	Soil		

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI, DOC (Y/N)	O. Reg 153: Metals & Inorganics	Metals - ☐ CrVI, ☐ Hg, ☐ HWSB	BTEX, F1-F4 PHCs	VOC	PAHs	PCBs: Aroclors ☐	O. Reg 406: Regulation 406 Characterization Package pH, Metals, BTEX, F1-F4	EC, SAR	Regulation 406 SPLP Rainwater Leach mSPLP: ☐ Metals ☐ VOCs ☐ SVOCs ☐ DOC	O. Reg 558: Landfill Disposal Characterization TCLP: TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Corrosivity: ☐ Moisture ☐ Sulphide	Durham Storm/Sanitary						Potentially Hazardous or High Concentration (Y/N)
1. BH24-7	05/July/2024	1500 AM PM	21	GW	Non filtered	N												✓						
2.		AM PM																						
3.		AM PM																						
4.		AM PM																						
5.		AM PM																						
6.		AM PM																						
7.		AM PM																						
8.		AM PM																						
9.		AM PM																						
10.		AM PM																						
11.		AM PM																						

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Abdul Qadi	05/July/2024	18:20	Daisy N	July 5	6:25pm
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time

Page ____ of ____

Nº: T - 159657

Pink Copy - Client | Yellow Copy - AGAT | White Copy - AGAT

Appendix J

Water Balance Assessment

Preliminary

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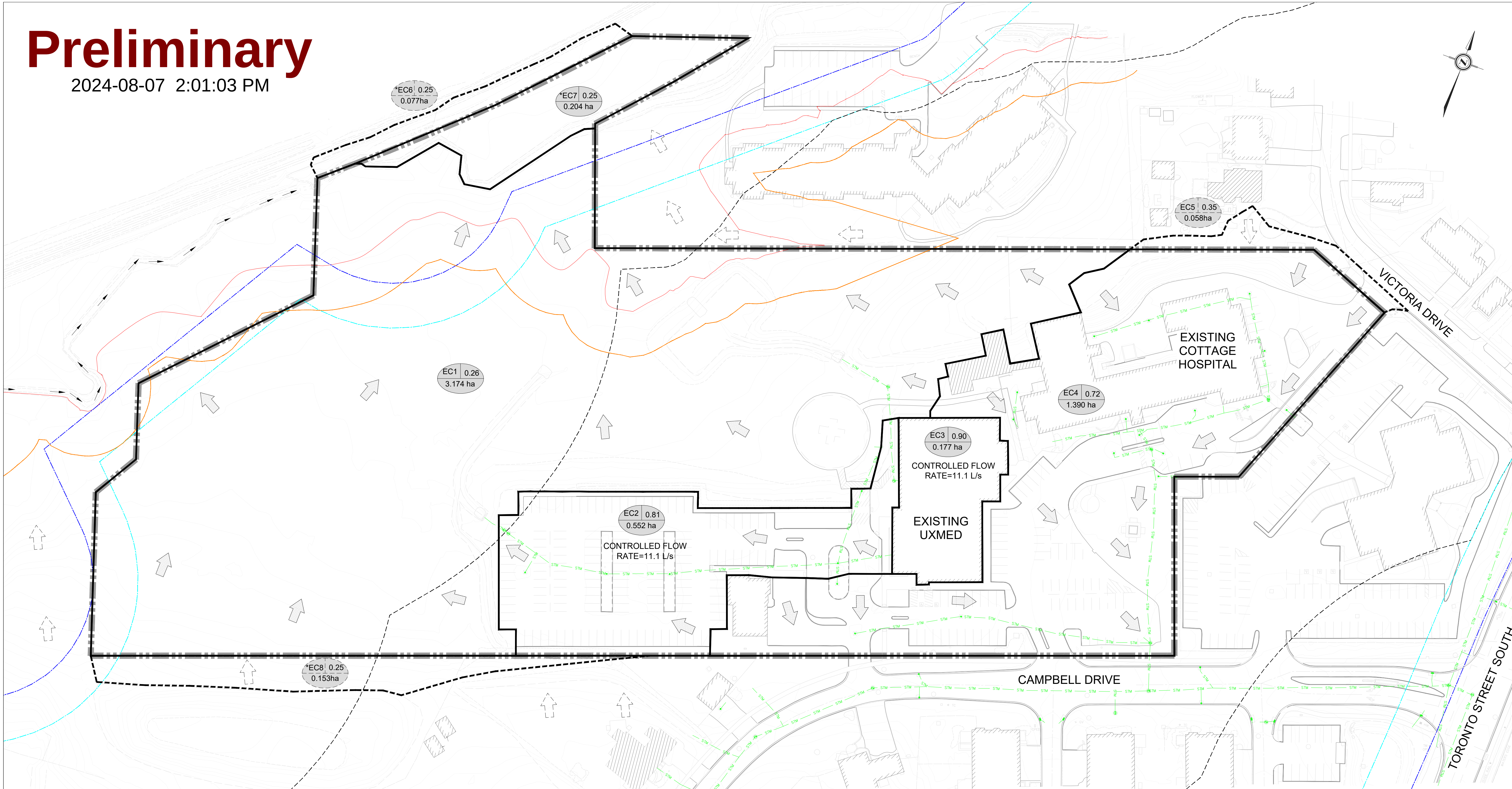


LEGEND:

Symbol	Description
	PROPERTY LINE
	DRAINAGE AREA BOUNDARY
	OVERLAND FLOW DIRECTION
C1 0.25 / 0.388 ha	CATCHMENT ID/RUNOFF COEFFICIENT DRAINAGE AREA (ha)
	EXTERNAL DRAINAGE AREA BOUNDARY
	EXTERNAL OVERLAND FLOW ROUTE
C1 0.95 / 1.00ha	EXTERNAL CATCHMENT ID/RUNOFF COEFFICIENT DRAINAGE AREA (ha)
	REGIONAL FLOOD LINE
	REGIONAL FLOOD LINE OFFSET
	MEANDERBELT LIMIT
	MEANDERBELT LIMIT OFFSET
	LSRCA REGULATION LIMIT

Owner/Client: diamond schmitt

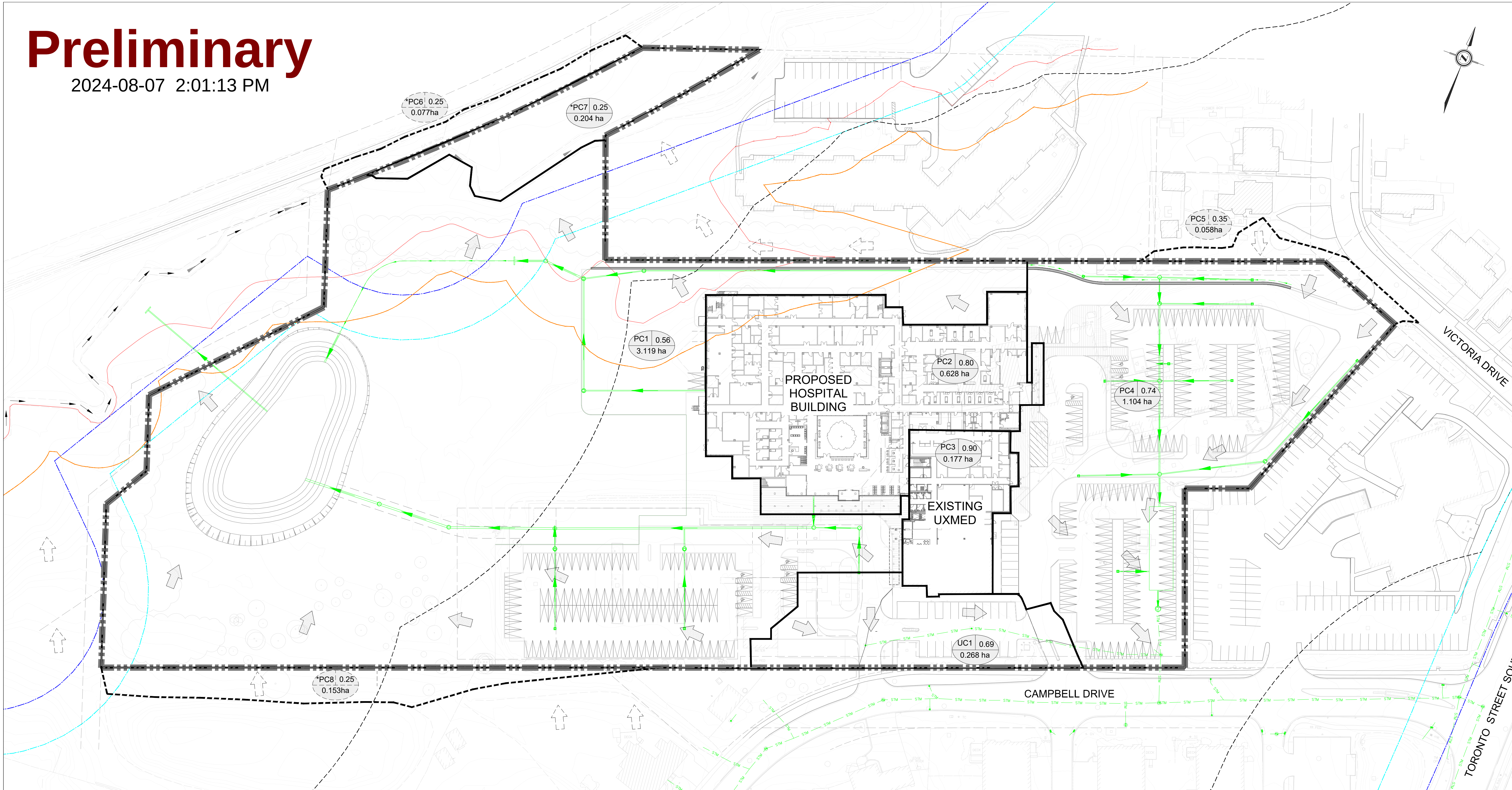
LEA

Title: 4 CAMPBELL DRIVE EXISTING DRAINAGE AREA PLAN

Drawn By:	P.R.	Checked By:	H.B.
Scale:	N.T.S.	Date:	MAY 2024
Project No.:	24163	Figure No.:	5

Preliminary

2024-08-07 2:01:13 PM



LEGEND:

- PROPERTY LINE
- DRAINAGE AREA BOUNDARY
- OVERLAND FLOW DIRECTION
- C1 0.25 / 0.388 ha — CATCHMENT ID/RUNOFF COEFFICIENT DRAINAGE AREA (ha)
- EXTERNAL DRAINAGE AREA BOUNDARY
- EXTERNAL OVERLAND FLOW ROUTE
- C1 0.95 / 1.00ha — EXTERNAL CATCHMENT ID/RUNOFF COEFFICIENT DRAINAGE AREA (ha)
- REGIONAL FLOOD LINE
- REGIONAL FLOOD LINE OFFSET
- MEANDERBELT LIMIT
- MEANDERBELT LIMIT OFFSET
- LSRCA REGULATION LIMIT

Owner/Client: diamond schmitt

LEA

Title: 4 CAMPBELL DRIVE PROPOSED DRAINAGE AREA PLAN

Drawn By:	P.R.	Checked By:	H.B.
Scale:	N.T.S.	Date:	MAY 2024
Project No.:	24163	Figure No.:	6

APPENDIX J - Water Balance (Entire Site) - 4 Campbell Drive,Uxbridge.

File No. File No. 02310769.003

1. Climate Information

Precipitation[1]	892	mm/a	0.89	m/a
Actual Evapotranspiration[1]	574	mm/a	0.57	m/a
Precipitation Surplus	**318**	mm/a	**0.32**	**m/a**

2. Infiltration Rates

Table 3 Approach - Infiltration Factors [2] ***(Pre and Post Development)***

Soil: Silty Sand Fill to Silty Sand				
Infiltration	175	mm/a	0.175	m/a
Run-off	143	mm/a	0.143	m/a

3. Property Statistics

Pre- Development Site Coverage					**Runoff Coefficient**
EC1 (Woodland, Open Space, Helipad, SWM)	31,740	m^2	3.17	ha	0.26
EC2 (Parking and Landscaped)	5,530	m^2	0.55	ha	0.81
EC3 (Existing Hospital)	1,770	m^2	0.18	ha	0.90
EC4 (Existing Cottage Hospital, Parking, Landscaped)	13,910	m^2	1.39	ha	0.72
EC7 (Wetland,Woodland)	2,050	m^2	0.21	ha	0.25
TOTAL:	55,000.00	m^2	5.50	ha	

Post-Development Coverage					**Runoff Coefficient**
PC1 (Woodland, Landscaped, SWMP)	31,190	m^2	3.12	ha	0.56
PC2 (Proposed Hospital, Landscaped)	6,280	m^2	0.63	ha	0.80
PC3 (Existing Hospital)	1,770	m^2	0.18	ha	0.90
UC1 (Parking, Landscaped)	2,680	m^2	0.27	ha	0.69
PC4 (Parking, Landscaped)	11,040	m^2	1.10	ha	0.74
PC7 (Woodland, Wetland)	2,040	m^2	0.20	ha	0.25
TOTAL:	55,000.00	m^2	5.50	ha	

Notes/References:

Water Balance Analysis Method: Thornthwaite and Matther approach
1 Lake Simcoe Climate Data Reference Document (April 2017)
2 MOEE Technical Information Requirements for Land Development Applications (1995)
Drainage catchment areas and runoff coefficents taked from pre and post development plans prepared by Lea Consultants, dated May 20

4. Annual Pre Development Water Balance

Land Use	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^3)
EC1 (Woodland, Open Space, Helipad, SWM)	31,740	28,312	13,482	7,469	7,361
EC2 (Parking and Landscaped)	5,530	4,933	603	334	3,996
EC3 (Existing Hospital)	1,770	1,579	158	nil	1,421
EC4 (Existing Cottage Hospital, Parking, Landscaped)	13,910	12,408	2,236	1,239	8,934
EC7 (Wetland,Woodland)	2,050	1,829	883	489	457
TOTAL	**55,000**	**49,060**	**17,361**	**9,531**	**22,168**

6. Annual Post Development Water Balance - Unmitigated

Land Use	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^3)
PC1 (Woodland, Landscaped, SWMP)	31,190	27,821	7,877	4,364	15,580
PC2 (Proposed Hospital, Landscaped)	6,280	5,602	721	399	4,481
PC3 (Existing Hospital)	1,770	1,579	158	nil	1,421
UC1 (Parking, Landscaped)	2,680	2,391	477	264	1,649
PC4 (Parking, Landscaped)	11,040	9,848	1,648	913	7,287
PC7 (Woodland, Wetland)	2,040	1,820	878	487	455
TOTAL	**55,000**	**49,060**	**11,759**	**6,427**	**30,874**

7. Comparison of Pre-Development and Post-Development Water Balance

	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^3)
Pre-Development	**49,060**	17,361	9,531	22,168
Post-Development	**49,060**	11,759	6,427	30,874
Difference	**0**	**-5,602**	**-3,104**	**8,706**

8. Requirement for Infiltration Maintaenance from roof run-off

Volume of roof run-off from existing and proposed hospital buildings (PC2 and PC3)	5,902
Post-development infiltration deficit	3,104
Percentage of roof run-off required to match pre-development infiltration	**53%**

APPENDIX J - Feature Based Water Balance - 4 Campbell Drive,Uxbridge.

File No. File No. 02310769.003

1. Climate Information

Precipitation[1]	892	mm/a	0.89	m/a
Actual Evapotranspiration[1]	574	mm/a	0.57	m/a
Precipitation Surplus	**318**	mm/a	**0.32**	**m/a**

2. Infiltration Rates

Table 3 Approach - Infiltration Factors [2] ***(Pre and Post Development)***

Soil: Silty Sand Fill to Silty Sand				
Infiltration	175	mm/a	0.175	m/a
Run-off	143	mm/a	0.143	m/a

3. Property Statistics

Pre- Development Site Coverage

					Runoff Coefficient
EC1(Woodland, Landscaped, Helipad, SWM)	31,740	m^2	3.17	ha	0.26
EC2 (Parking, Landscaped)	5,530	m^2	0.55	ha	0.81
EC3 (Existing Hospital)	1,770	m^2	0.18	ha	0.90
EC5 (External Catchment)	580	m^2	0.06	ha	0.35
EC8 (external Catchement)	770	m^2	0.08	ha	0.25
TOTAL:	**40,390.00**	m^2	4.04	ha	

Post-Development Coverage

					Runoff Coefficient
PC1 (Woodland, Landscaped, SWMP)	31,190	m^2	3.12	ha	0.56
PC2 (Proposed Hospital, Landscaped)	6,280	m^2	0.63	ha	0.80
PC3 (Existing Hospital)	1,770	m^2	0.18	ha	0.90
PC5 (Externel Catchement)	580	m^2	0.06	ha	0.35
PC8 (Externel Catchement)	1,530	m^2	0.15	ha	0.25
TOTAL:	**41,350.00**	m^2	4.14	ha	

Notes/References:

Water Balance Analysis Method: Thornthwaite and Matther approach
1 Lake Simcoe Climate Data Reference Document (April 2017)
2 MOEE Technical Information Requirements for Land Development Applications (1995)
Drainage catchment areas and runoff coefficents taked from pre and post development plans prepared by Lea Consultants, dated May 2024

4. Annual Pre-Development Water Balance

Land Use	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^3)
EC1(Woodland, Landscaped Helipad, SWM)	31,740	28,312	13,482	7,469	7,361
EC3 (Existing Hospital)	5,530	4,933	603	334	3,996
EC2 (Parking, Landscaped)	1,770	1,579	158	nil	1,421
EC5 (External Catchment)	580	517	216	120	181
EC8 (external Catchement)	770	687	331	184	172
TOTAL	**40,390**	**36,028**	**14,791**	**8,107**	**13,130**

6. Annual Post-Development Water Balance - Unmitigated

Land Use	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^3)
PC1 (Woodland, Landscaped	31,190	27,821	7,877	4,364	15,580
PC2 (Proposed Hospital, Lan	6,280	5,602	721	399	4,481
PC3 (Existing Hospital)	1,770	1,579	158	nil	1,421
PC5 (Externel Catchement)	580	517	216	120	181
PC8 (Externel Catchement)	1,530	1,365	659	365	341
TOTAL	**41,350**	**36,884**	**9,631**	**5,248**	**22,005**

7. Comparison of Pre-Development and Post-Development Water Balance

	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^3)
Pre-Development	**36,028**	14,791	8,107	13,130
Post-Development	**36,884**	9,631	5,248	22,005
Difference	**-856**	**-5,160**	**-2,858**	**8,874**

8. Requirement for Infiltration Maintaenance from roof run-off

Volume of roof run-off captured from existing and proposed hospital (PC2 and PC3)	5,902
Volume of post development infiltration deficit	2,858
Percentage of roof run-off required to match pre-development infiltration	**48%**

Appendix K

Arch Set & Site Servicng Plan

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

03/30/21

Architect

Diamond Schmitt Architects
384 Adelaide Street West, Suite 100
Toronto, ON M5V 1R7
T: (416)-862-8800

Structural

Read Jones Christoffersen Ltd.
100 University Ave
Toronto, ON M5H 4H2
T: (416)-977-5335

Electrical

EXP
220 Commerce Valley Drive West, Suite 110
Markham, ON M3T 0A8
T: (905)-695-3217

Civil

LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9
T: (905)-470-0015

Mechanical

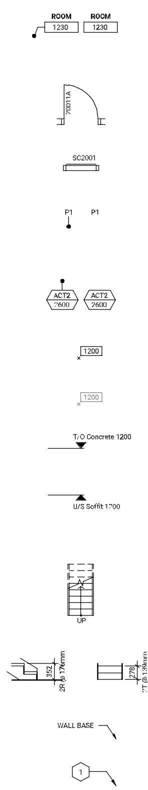
EXP
220 Commerce Valley Drive West, Suite 110
Markham, ON M3T 0A8
T: (905)-695-3217

Landscape

GSP Group
72 Victoria Street South, Suite 201
Kitchener, ON N2G 4Y9
T: (519)-569-8883

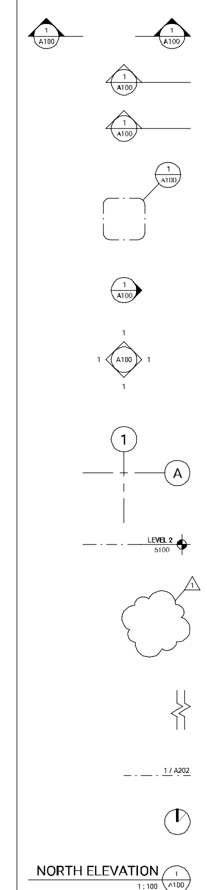
diamond schmitt

ANNOTATION SYMBOLS LEGEND



- ROOM/AREA TAGS
- DOOR TAGS
- SCREEN TAGS
- ASSEMBLIES/ACCESSORIES/FURNITURE/WINDOW/EQUIPMENT/FINISHES TAG
- CEILING TAGS
- SPOT ELEVATION - NEW
- SPOT ELEVATION - EXISTING
- SPOT ELEVATION - "TOP OF" ALIGNMENT BENCHMARK
- SPOT ELEVATION - "UNDERSIDE OF" ALIGNMENT BENCHMARK
- STAIR/RAMP DIRECTION TAG
- STAIR RISE/TREAD TAG
- KEYNOTE TAG
- KEYNOTE TAG - DEMOLITION

DRAWING SYMBOLS LEGEND



- BUILDING SECTION
- WALL SECTION
- DETAIL SECTION
- CALLOUTS
- BUILDING ELEVATION
- INTERIOR ELEVATION
- GRIDS
- LEVELS
- REVISION BUBBLES & TAGS
- BREAKLINE
- MATCHLINE
- NORTH ARROW
- VIEW TITLE

ABBREVIATIONS LIST

A

ABM	AIR BARRIER MEMBRANE
ACONC	ARCHITECTURAL CONCRETE
ACP{#}	ACOUSTIC CEILING PANEL {TYPE NO.}
ACT{#}	ACOUSTIC CEILING TILE {TYPE NO.}
AD	AREA DRAIN
ADD	ADDENDUM
ADJ	ADJUSTABLE
ADO	AUTOMATIC DOOR OPERATOR
AF	ABOVE FLOOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALUM	ALUMINUM
AP	ACCESS PANEL
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
AVBM{#}	AIR VAPOUR BARRIER MEMBRANE
AW	ACID WASTE
AWP{#}	ACOUSTIC WALL PANEL {TYPE NO.}
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL

B

BBD	TILE BACKER BOARD (IN LIEU OF GB BEHIND CT)
BDRM	BEDROOM
BF	BARRIER FREE
BH	BORE HOLE
BM	BENCHMARK
BR	BUMPER RAIL
BSMT	BASEMENT
BT{#}	BASE TYPE {TYPE NO.}

C

CAM	SECURITY CAMERA
CBD	CEMENT BOARD
CG	CORNER GUARD
CH	COAT HOOK
CJ	CONTROL JOINT
CHB	CHALKBOARD
CL	CENTRE LINE
CLG	CEILING
CM	CONSTRUCTION MANAGER
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
CONC{#}	CONCRETE {TYPE NO.}
CON	CONSTRUCTION
CONJT	CONSTRUCTION JOINT
CONT	CONTINUOUS
CONV	CONVECTOR
CPH	CONCEALED PANIC HARDWARE
CPT{#}	CARPET {TYPE NO.}
CR	CHAIR RAIL
CROD	CURTAIN ROD
CT	CURTAIN TRACK
CTR	CENTRE
CUR{#}	CURTAIN {TYPE NO.}
CW{#}	CURTAIN WALL {TYPE NO.}

D

DEMO	DEMOLITION
DEPT	DEPARTMENT
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIFF	DIFFUSER
DIM	DIMENSION
DISP	DISPENSER
DIV	DIVISION
DN	DOWN
DWG	DRAWING

E

EA	EACH
EHO	ELECTRIC HOLD OPEN
ELEC	ELECTRICAL
ELEV	ELEVATOR
EP{#}	EPOXY FLOORING {TYPE NO.}
EPT{#}	EPOXY TERRAZZO
EQ	EQUAL
EQP	EQUIPMENT
ES{#}	EYEWASH STATION {TYPE NO.}
EW{#}	EXTERIOR WALL TYPE
EXG	EXISTING
EXP	EXPOSED
EXPNJT{#}	EXPANSION JOINT
EXPSTR	EXPOSED STRUCTURE

F

F{#}	GYPSUM BOARD FURRING {TYPE NO.}
FA	FIRE ALARM
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FHY	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FIN{#}	FINISH{TYPE NO.}
FL	FLOOR OR FLOORING
FLGR{#}	FLOOR GRILLE {TYPE NO.}
FLUOR	FLUORESCENT
FN{#}	FENCE {TYPE NO.}
FR	FIRE-RATED
FRR	FIRE RESISTANCE RATING
FRTR	FIRE RETARDANT TREATED
FS	FULL-SIZE

G

GA	GAUGE
GALV	HOT DIPPED GALVANIZED
GB	GYPSUM BOARD
GBC{#}	GYPSUM BOARD CEILING {TYPE NO.}
GBR	GRAB BAR
GC	GENERAL CONTRACTOR
GDRL{#}	GUARDRAIL {TYPE NO.}
GFRG	GLASS FIBRE REINFORCED GYPSUM
GL{#}	GLASS {TYPE NO.}
GMU	GLASS MASONRY UNIT
GT{#}	GEOTEXTILE FILTER FABRIC {TYPE NO}

H

HB	HOSE BIB
HDRL{#}	HANDRAIL
HM	HOLLOW METAL
HM{#}	HOLLOW METAL DOOR TYPE
HOR	HORIZONTAL
HP	HIGH POINT
HR	HOUR
HSS	HOLLOW STEEL SECTION
HT	HEIGHT
HVAC	HEATING VENTILATING AND AIR CONDITIONING

I

ID	INSIDE DIAMETER
IFP	INTUMESCENT FIREPROOFING
INT	INTERIOR
INS{#}	INSULATION TYPE {#}
INV	INVERT
IVT	INTRAVENOUS TRACK

J

JAN	JANITOR
JT	JOINT

K

KG	KILOGRAM
KO	KNOCKOUT

L

LAB	LABORATORY
LAM	LAMINATED
LAV	LAVATORY
LINO	LINOLEUM
LP	LOW POINT

M

M	METRE
M{#}	CONCRETE MASONRY UNIT WALL {TYPE NO.}
MAX	MAXIMUM
MECH	MECHANICAL
MEZZ	MEZZANINE
MG	MAKE GOOD
MH	MAINTENANCE HOLE
MIC	MICROPHONE
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MISCMTL	MISCELLANEOUS METAL
MR{#}	FIRE RATED CONCRETE MASONRY UNIT WALL {TYPE NO.}
MWK	MILLWORK
MM	MILLIMETRE
MO	MASONRY OPENING
MTL	METAL

N

NA	NOT APPLICABLE
NBC	NATIONAL BUILDING CODE
NFHB	NON-FREEZE HOSE BIB
NIC	NOT IN CONTRACT
NO	NUMBER
NRC	NOISE REDUCTION COEFFICIENT
NS	NON-SLIP (SLIP RESISTANT)
NTS	NOT TO SCALE

O

OAA	ONTARIO ASSOCIATION OF ARCHITECTS
OBC	ONTARIO BUILDING CODE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFF	OFFICE
OHD{#}	OVERHEAD DOOR {TYPE NO.}
OPP	OPPOSITE
OWSJ	OPEN WEB STEEL JOIST

P

P{#}	GYPSUM BOARD PARTITION {TYPE NO.}
PCONC	PRECAST CONCRETE
PE{#}	MOVEABLE PARTITION {TYPE NO}
PERF	PERFORATED
PH	PANIC HARDWARE
PLAS{#}	PLASTER {TYPE NO.}
PLAM{#}	PLASTIC LAMINATE {TYPE NO.}
PLWD	PLYWOOD
POL	POLISHED
PPT	PRIME PAINTED
PR{#}	FIRE RATED GYPSUM BOARD PARTITION {TYPE NO.}
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PROJ	PROJECTION
PS{#}	SHAFT WALL {TYPE NO.}
PSF	POUNDS PER SQUARE FOOT
PSH{#}	HORIZONTAL SHAFT WALL {TYPE NO.}
PSI	POUNDS PER SQUARE INCH
PT{#}	PAINT {TYPE NO.}
PTD	PAPER TOWEL DISPOSAL
PTDD	PAPER TOWEL DISPENSER
PTR	PAPER TOWEL RECEPTOR
PVA	POLYVINYL ACETATE
PVC	POLYVINYL CHLORIDE

R

R	RADIUS
R{#}	ROOF TYPE {TYPE NO.}
RAD	RADIATOR
RBM	ROOT BARRIER MEMBRANE
RC	REINFORCED CONCRETE
RD	ROOF DRAIN
REF	REFERENCE
REFR	REFRIGERATOR
REV	REVISION
RFS	ROOM FINISH SCHEDULE
RM	ROOM
RO	ROUGH OPENING
RP	REMOVABLE PANEL
RPM	REVOLUTIONS PER MINUTE
RSF {#}	RESILIENT SHEET FLOORING {TYPE NO.}
RSU	ROD & SHELF UNIT
RT {#}	RESILIENT TILE {TYPE NO.}
RTU	ROOF-TOP UNIT
RWL	RAINWATER LEADER

S

S{#}	SOFFIT TYPE {TYPE NO.}
SBO	SUPPLIED BY OWNER (FOR CONTRACTOR INSTALLATION)
SC	SCREEN
SD	SOAP DISPENSER
SECT	SECTION
SF{#}	SUB FLOOR {TYPE NO.}
SFRM	SPRAYED FIREPROOFING
SHRC	SHOWER ROD & CURTAIN
SIM	SIMILAR
SND	SANITARY NAPKIN DISPENSER
SNR	SANITARY NAPKIN RECEPTOR
SPK	SPEAKER
SP{#}	SPANDREL PANEL TYPE NO.
SPEC	SPECIFICATION
SPLR	SPRINKLER
SQ	SQUARE
SS	STAINLESS STEEL
SSM{#}	SOLID SURFACE MATERIAL {TYPE NO.}
ST	STAIN
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STL	STEEL
STL/D	STEEL DECK
STN {#}	STONE {#}
STRUC	STRUCTURAL
SUSP	SUSPENDED
SVC	SPRINKLER VALVE CABINET

T

T&G	TONGUE AND GROOVE
TB	TOWEL BAR
TBD	TACK BOARD
TEL	TELEPHONE
TERR	TERRAZZO
TEX{#}	TEXTILE {TYPE NO.}
THR{#}	THRESHOLD {TYPE NO.}
TL{#}	TILE {TYPE NO.}
TOC	TOP OF CURB
TOCS	TOP OF CONCRETE SLAB
TOL	TOP OF LEDGE
TOS	TOP OF STEEL
TOW	TOP OF WALL
TP	TOILET PARTITION
TPH	TOILET PAPER HOLDER
TR{#}	FLOOR TRANSITION TYPE NO.
TT{#}	TRAFFIC TOPPING {TYPE NO.}
TWSI{#}	TACTILE WARNING STRIP INDICATORS {TYPE NO}
TXF	TEXTURED FINISH
TYP	TYPICAL

U

UC	UNDERCUT
U/S	UNDERSIDE
U/SS	UNDERSIDE SOFFIT
UPS	UNINTERRUPTIBLE POWER SUPPLY
UH	UNIT HEATER

V

V	VINYL
VERT	VERTICAL
VEST	VESTIBULE
VWC{#}	VINYL WALL COVERING

W

W	WIDTH
W/	WITH
WA{#}	WASHROOM ACCESSORY {TYPE NO.}
WBD	WHITEBOARD
WC	WATER CLOSET
WD	WOOD FRAME MATERIAL
WD{#}	WOOD DOOR {TYPE NO.}
WDS{#}	SOLID WOOD TYPE NO
WDFL{#}	WOOD FLOORING TYPE NO.
WDP{#}	WOOD PANEL TYPE NO.
WDVN{#}	WOOD VENEER TYPE NO.
WDU	WASTE DISPOSAL UNIT
WM	WIRE MESH
WMD	WIRE MOLD
WP	WALL PROTECTION
WPM	WATERPROOFING MEMBRANE
WR	WASHROOM
WS{#}	WINDOW SHADES {TYPE NO.}
WTS	WATERPROOF TRAFFIC SURFACING
WWF	WELDED WIRE FABRIC

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Issued

No.	Date	Description
1	2024-03-22	SD Costing

NOT FOR CONSTRUCTION

Contractor Must Check & Verify all Dimensions on the Job

Do Not Scale Drawings

This Drawing is Not to be Used for Construction Until Signed by the Architect.

Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

21022

DRAWING SYMBOLS AND ABBREVIATIONS

As indicated

A001

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No.	Date	Description
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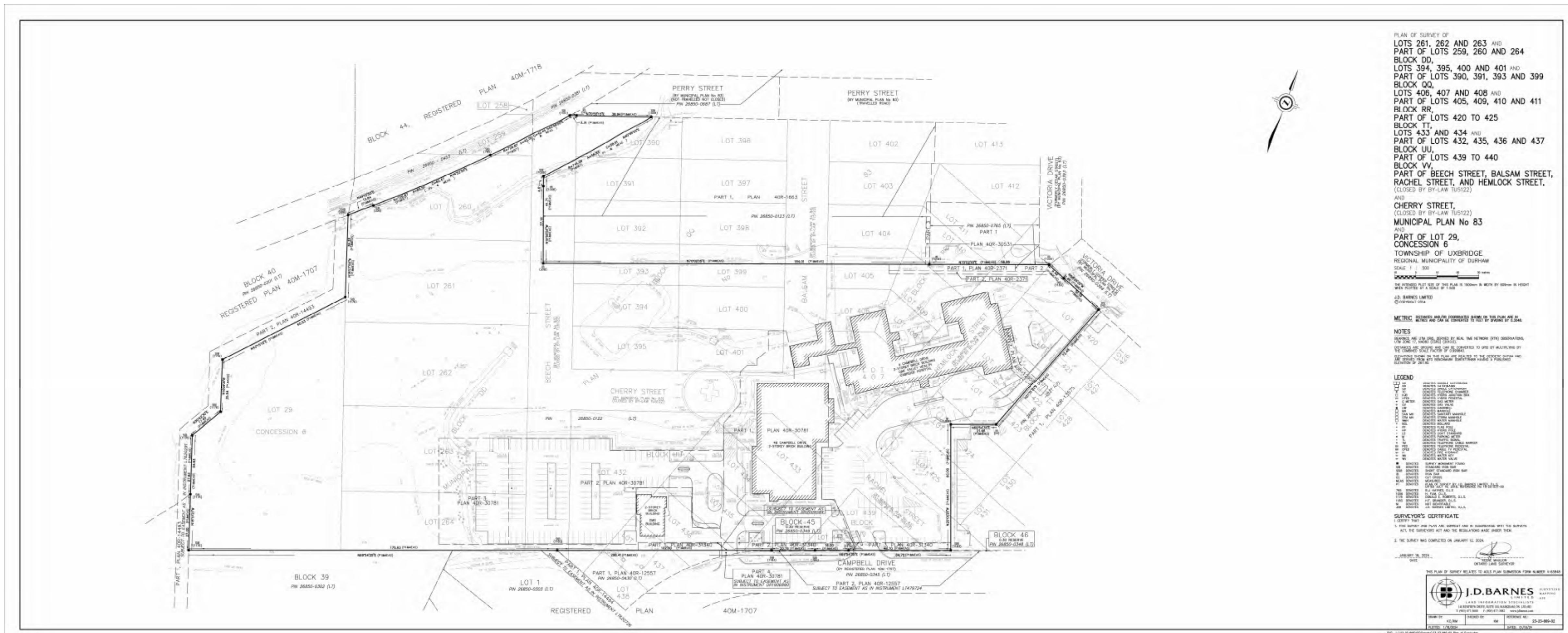

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211022

SITE SURVEY

A010

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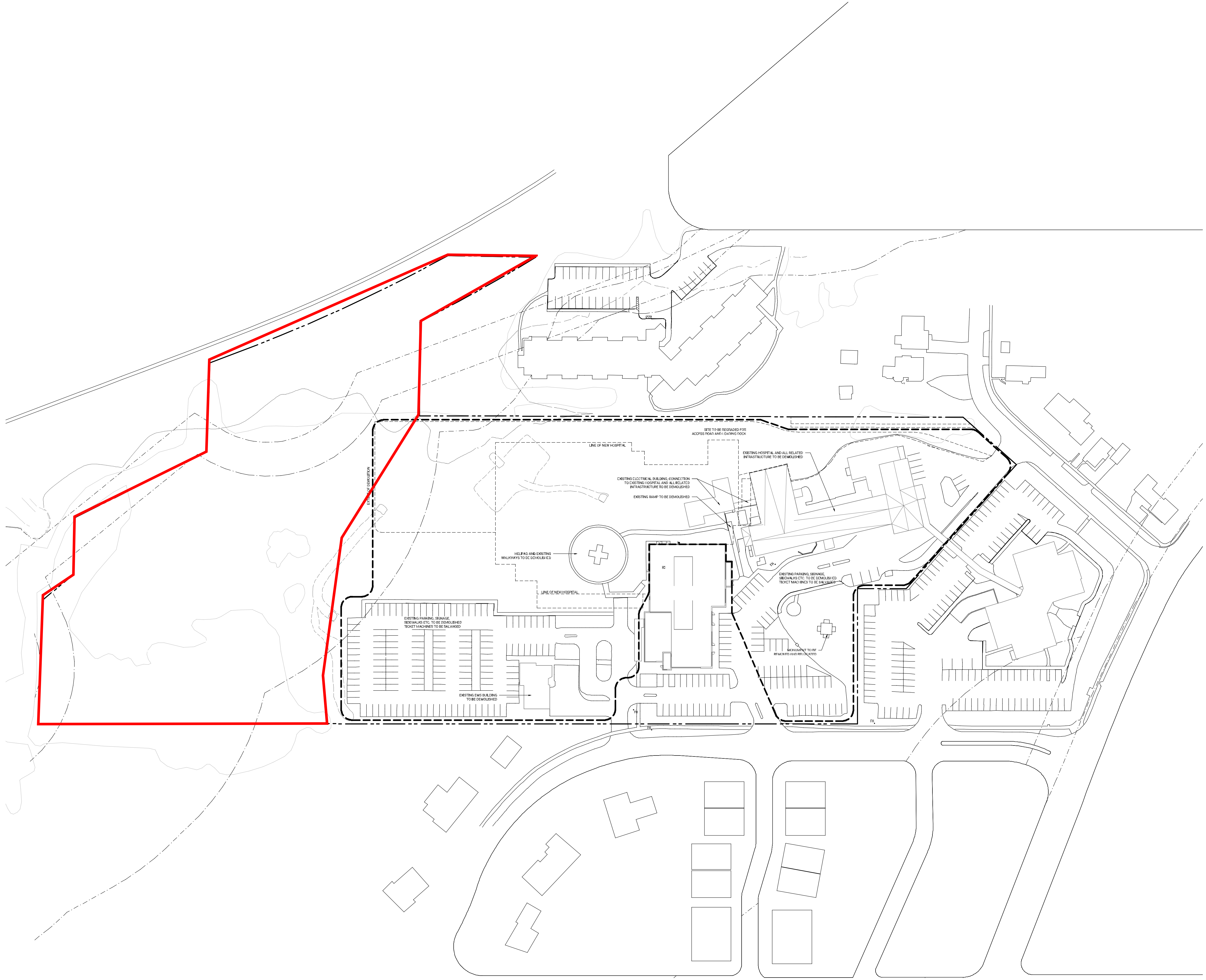

Issued

No.	Date	Description
1	2024-03-25	SD Costing

NOT FOR CONSTRUCTION

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Uxbridge Hospital
Oak Valley Health

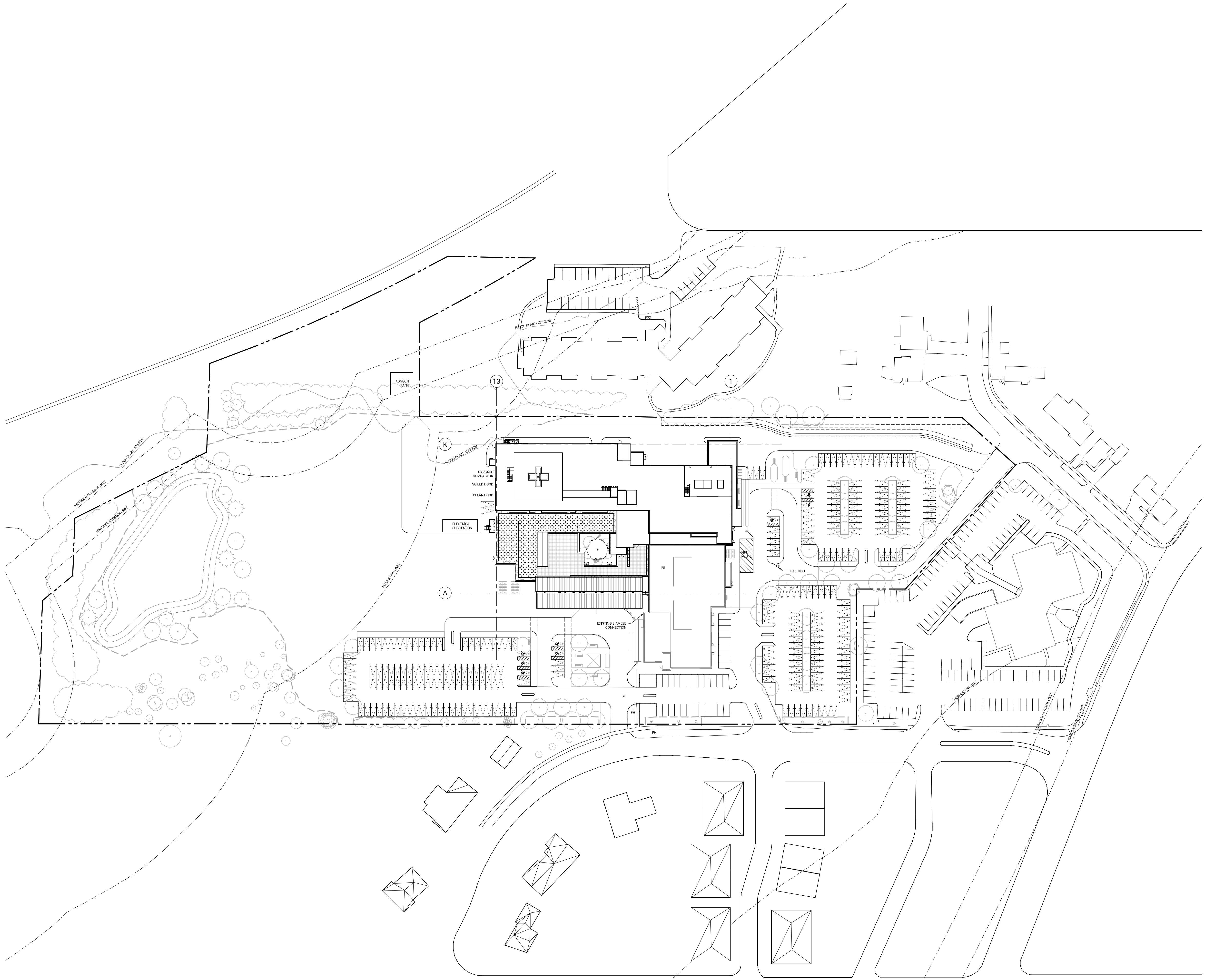
UXBRIDGE HOSPITAL -
OAK VALLEY HEALTH

231022

SITE PLAN - DEMOLITION

1 : 500

A011



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Issued

No.	Date	Description
1	2024-03-25	SD Costing

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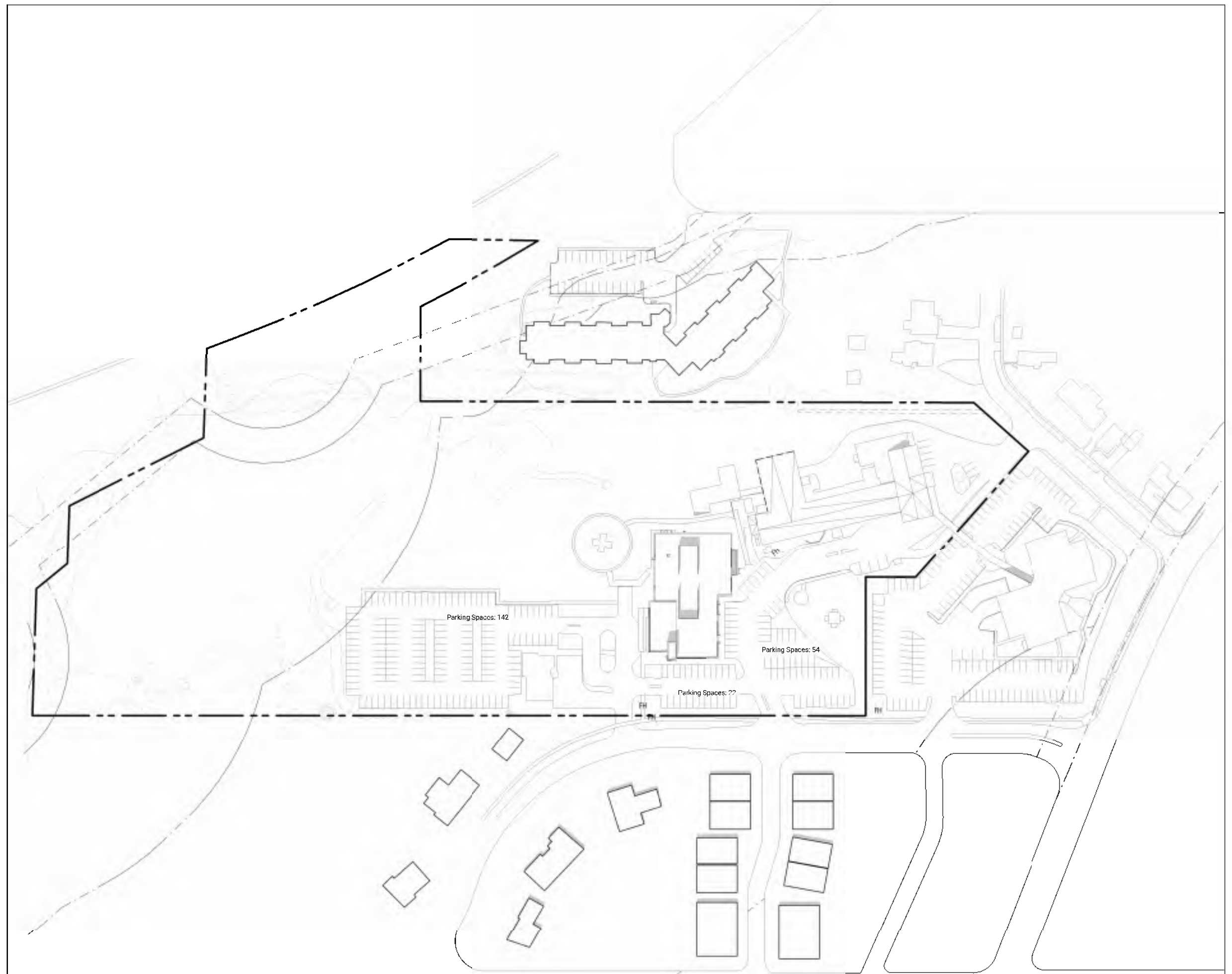
SITE PLAN

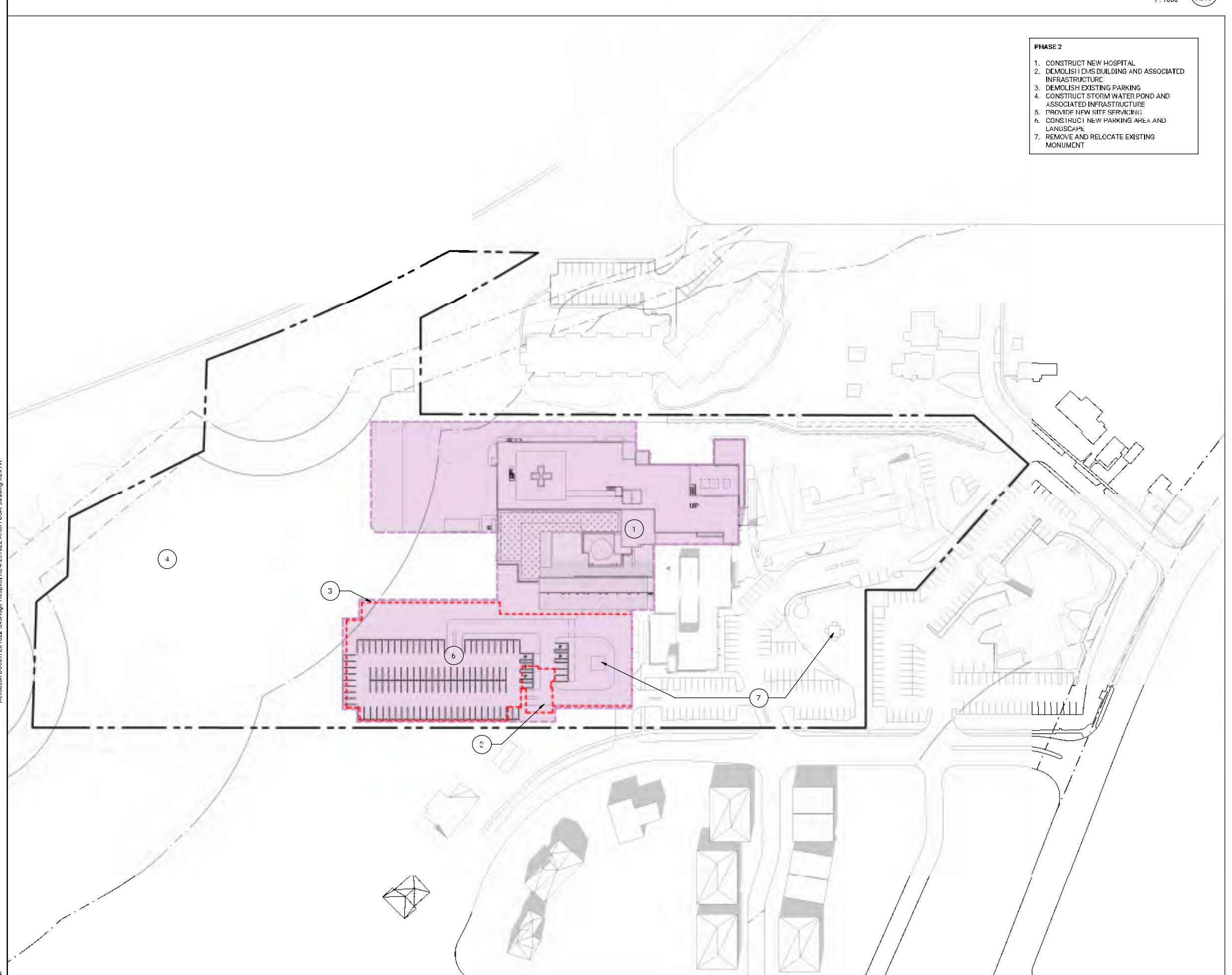
1 : 500

A012

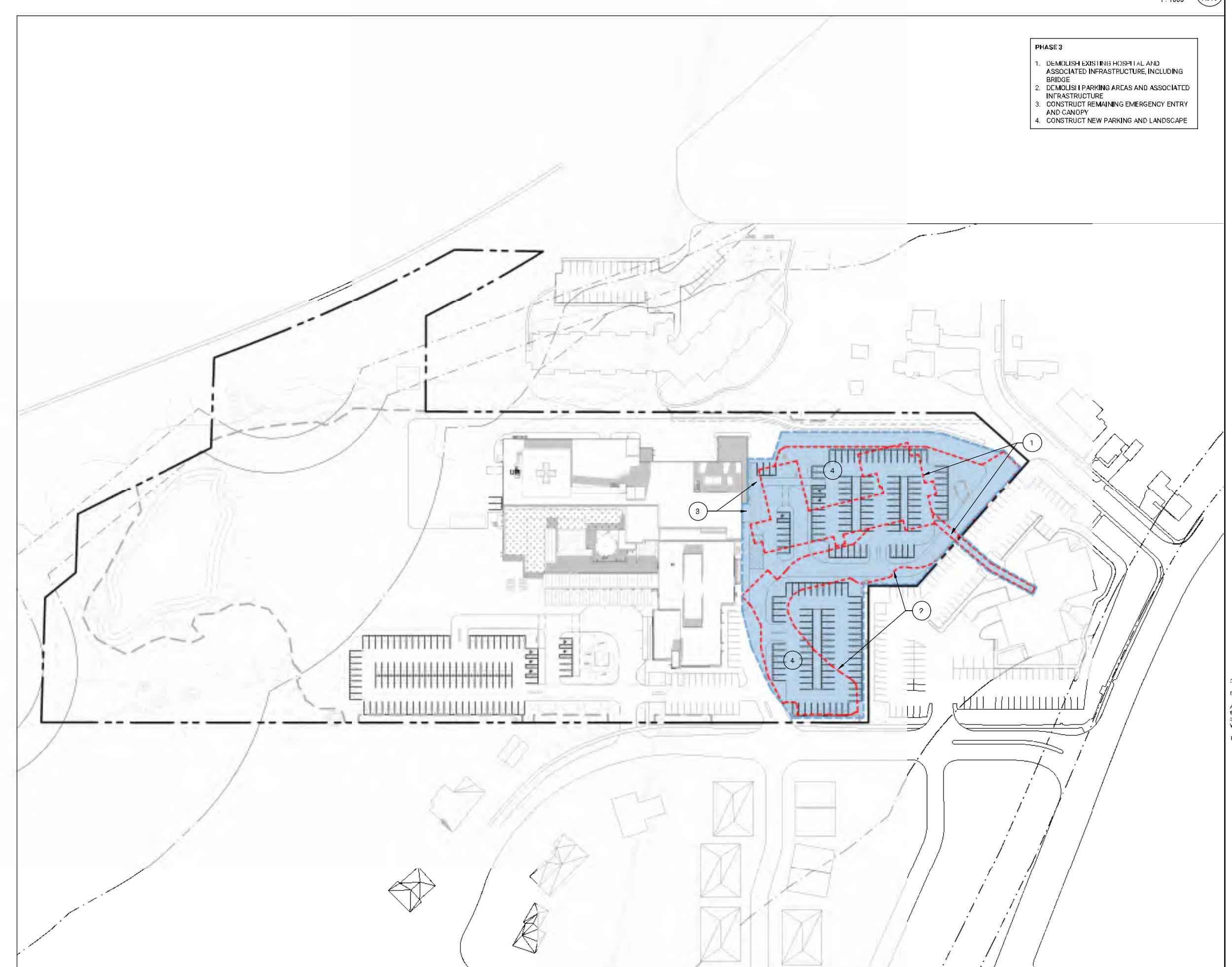


EXISTING SITE PLAN
1 : 1000
2
A013

PHASE 1 - EARLY WORKS
1 : 1000
1
A013



PHASE 2 - NEW CONSTRUCTION
1 : 1000
3
A013



PHASE 3 - EAST SITE WORKS
1 : 1000
4
A013

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Construction Phases

Phase 1 (Early Works)

Phase 2 (New Construction)

Phase 3 (East Site New Construction)

Demolished

Issued

No.	Date	Description
1	2024-03-25	SD Costing

Uxbridge Hospital
Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

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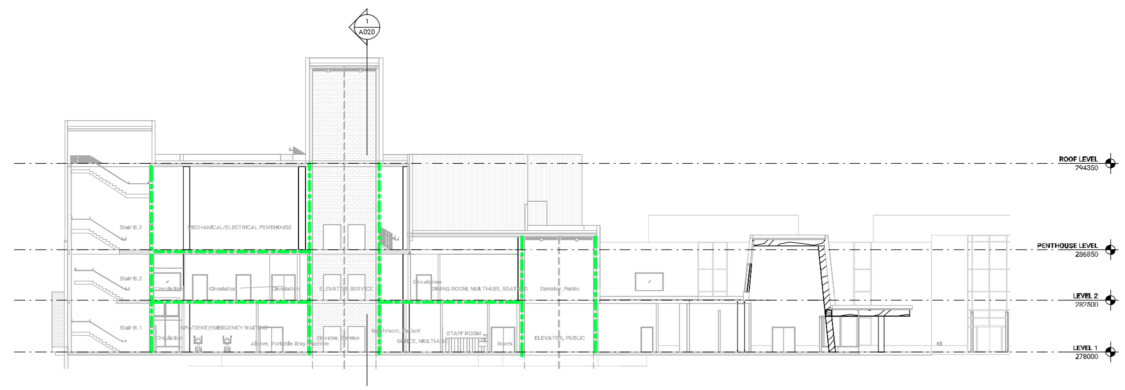
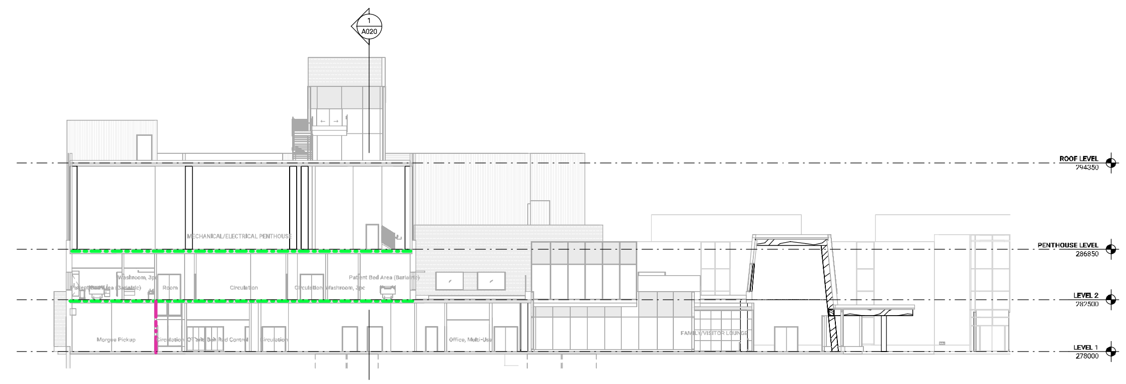
PHASING DIAGRAMS

1 : 1000

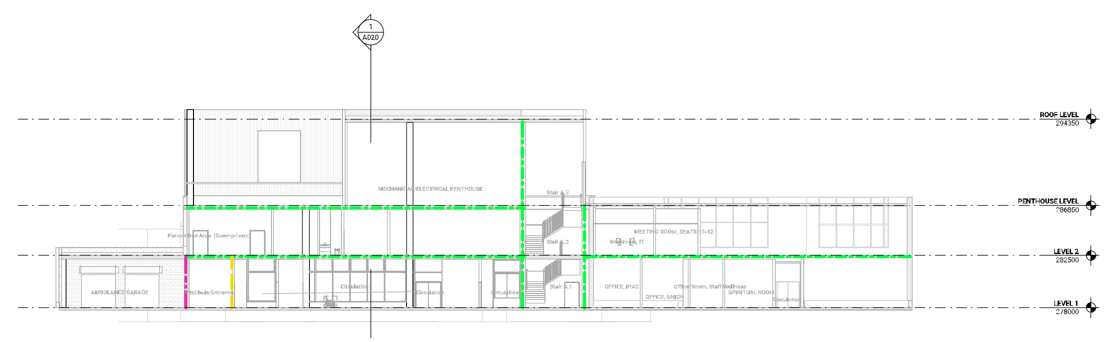
A013



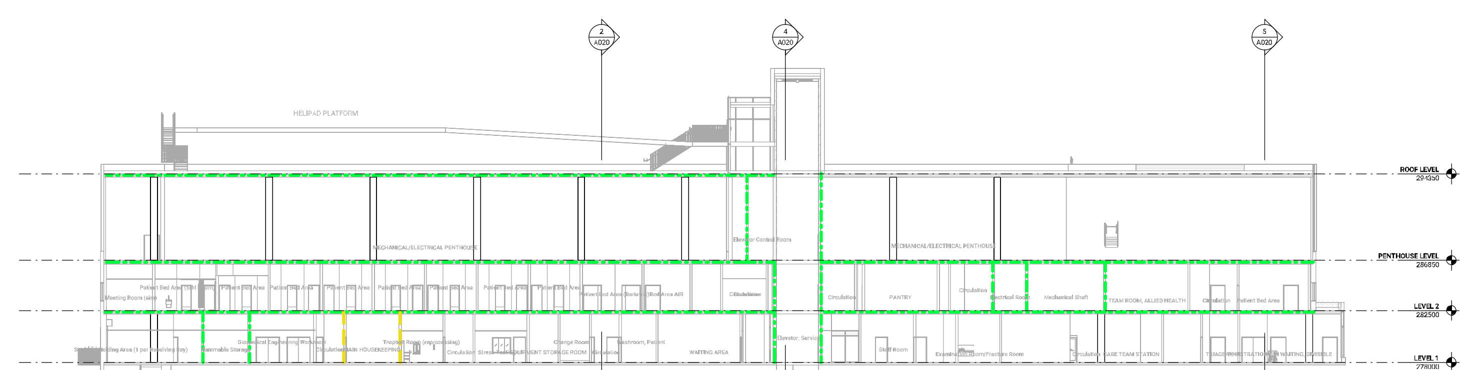
Life Safety Section - North South 3



Life Safety Section - North South 2



Life Safety Section - North South 1



LIFE SAFETY SECTION - EAST WEST

Firm Name: Diamond Schmitt Architects
Certificate of Practice Number:
384 Adelaide St. W, Suite 100
Toronto, ON M5V 1R7
1 (416) 862 8800
The Certificate of Practice Number of the Holder is the Holder's BCDN.

Name of the Project: Enter Project Name

Location: Enter Project Address

Date: Enter Date

The Architect Noted Above has Exercised Responsible Control with Respect to Design Activities. The Architect's Seal Number is the Architect's BCDN.

	Ontario Building Code Data Matrix Parts 3		Building Code Reference 1
3.00	Building Code Version:	O.Reg. 332/12 Last Amendment O. Reg. 191/14	
3.01	Project Type:	☐ New ☐ Addition ☐ Renovation ☐ Change of Use ☐ Addition and Renovation Description:-	[A] 1.1.2.
3.02	Major Occupancy Classification:	Occupancy: - Use: -	3.1.2.1.(1)
3.03	Superimposed Major Occupancies:	☐ No ☐ Yes Description:	3.2.2.7.
3.04	Building Area (m²)	Description / Existing / New / Total: - 0 0 0 - 0 0 0 - 0 0 0 - 0 0 0 0 0 0 0 0 0 0 0 0 Total 0 0 0	[A] 1.4.1.2.
3.05	Gross Area (m²)	Description / Existing / New / Total: - 0 0 0 - 0 0 0 - 0 0 0 - 0 0 0 - 0 0 0 - 0 0 0 - 0 0 0 Total 0 0 0	[A] 1.4.1.2.
3.06	Mezzanine Area (m²)	Description / Existing / New / Total: 0 0 0 0 0 0 - 0 0 0 - 0 0 0 - 0 0 0 - 0 0 0 - 0 0 0 Total 0 0 0	3.2.1.1.
3.07	Building Height	0 Storeys Above Grade 0 (m) Above Grade 0 Storeys Below Grade	[A] 1.4.1.2. & 3.2.1.1.
3.08	High Building	☐ No ☐ Yes	3.2.6.
3.09	Number of Streets/ Firefighter Access	0 Street(s)	3.2.2.10. & 3.2.5.
3.10	Building Classification: (Size and Construction Relative to Occupancy)	3.2.2. Group/Div -	3.2.2.20. - 83.
3.11	Sprinkler System	☐ Required ☐ Not Required Proposed: ☐ Entire Building ☐ Selected Compartments ☐ Selected Floor Areas ☐ Basement ☐ In Lieu of Roof Rating ☐ None	3.2.1.5. & 3.2.2.17.
3.12	Standpipe System	☐ Required ☐ Not Required	3.2.9.
3.13	Fire Alarm System	☐ Required ☐ Not Required Proposed: ☐ Single Stage ☐ Two stage ☐ None	3.2.4.
3.14	Water Service / Supply is Adequate	☐ No ☐ Yes	
3.15	Construction Type:	Restriction: ☐ Combustible Permitted ☐ Non-Combustible Required Actual: ☐ Combustible ☐ Non-Combustible ☐ Combination Heavy Timber Construction: ☐ No ☐ Yes	3.2.2.20. - 83. & 3.2.1.4.
3.16	Importance Category:	☐ Low ☐ Low Human Occupancy ☐ Post-Disaster Shelter ☐ Normal ☐ High ☐ Minor Storage Building ☐ Explosive or Hazardous Substances ☐ Post Disaster	4.1.2.1.(3) & T4.1.2.1.B
3.17	Seismic Hazard Index:	(IE Fa Sa (0.2)) = - Seismic Design Required for Table 4.1.8.18. Items 6 to 21: ((IE Fa Sa (0.2)) ≥ 0.35 or Post-Disaster) ☐ No ☐ Yes	4.1.2.1.(3) 4.1.8.18.(2)
3.17	Occupant Load	Floor Level/Area / Occupancy Type / Based On / Occupant Load (Persons): - - - 0 - - - 0 0 0 0 - - - 0	3.1.17.
3.19	Barrier-Free Design	☐ Yes ☐ No Explanation: -	3.8.
3.20	Hazardous Substances:	☐ Yes ☐ No Explanation: -	3.3.1.2. & 3.3.1.19.
3.21	Required Fire Resistance Ratings	Horizontal Assembly / Rating / Supporting Assembly (H) / Non-Combustible in Lieu of Rating? Floors Over Basement 0 0 ☐ No ☐ Yes ☐ N/A Floors 0 0 ☐ No ☐ Yes ☐ N/A Mezzanine 0 0 ☐ No ☐ Yes ☐ N/A Roof 0 0 ☐ No ☐ Yes ☐ N/A	3.2.2.20. - 83. & 3.2.1.4
3.22	Spatial Separation	Wall / EBF Area (m²) / L.D. (m) / L/H or H/L / Required FRR (H) / Construction Type Required / Cladding Type Required - 0 0 0 0 ☐ Non-Combustible ☐ Combination - 0 0 0 0 ☐ Non-Combustible ☐ Combination - 0 0 0 0 ☐ Non-Combustible ☐ Combination - 0 0 0 0 ☐ Non-Combustible ☐ Combination - 0 0 0 0 ☐ Non-Combustible ☐ Combination - 0 0 0 0 ☐ Non-Combustible ☐ Combination - 0 0 0 0 ☐ Non-Combustible ☐ Combination	3.2.3.
3.23	Plumbing Fixture Requirements	Ratio: Male:Female = 50:50 Except as Noted Otherwise Floor Level/Area / Occupant Load / OBC Reference / Fixtures Required / Fixtures Provided 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3.7.4.
3.24	Energy Efficiency:	Compliance Path: - Climatic Zone: -	
3.25	Notes:	-	

1 *All References are to Division B of the OBC Unless Preceded by [A] for Division A and [C] for Division C.*

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Issued
No. Date Description

LEGEND - FIRE SEPARATION

- 0-MIN FIRE RATED ASSEMBLY
- 45-MIN FIRE RATED ASSEMBLY
- 60-MIN FIRE RATED ASSEMBLY
- 90-MIN FIRE RATED ASSEMBLY
- 120-MIN FIRE RATED ASSEMBLY
- TRAVEL DISTANCE LINE

GENERAL NOTES - FIRE SEPARATIONS:

1. ALL CLOSURES TO HAVE LABELLED RATINGS (C/W LABELLED FRAMES AND CLOSURES). PROVIDE FIRE DAMPERS AS PER MECHANICAL DRAWINGS.
2. DASHED LINE INDICATES FIRE RESISTANCE RATED ASSEMBLY NOT CONSTRUCTED AS A FIRE SEPARATION
3. TO BE READ IN CONJUNCTION WITH CODE CONSULTANT REPORT

NOT FOR CONSTRUCTION

Uxbridge Hospital Oak Valley Health

UXBRIDGE HOSPITAL - OAK VALLEY HEALTH

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OBC MATRIX AND LIFE SAFETY SECTIONS

As indicated

A020

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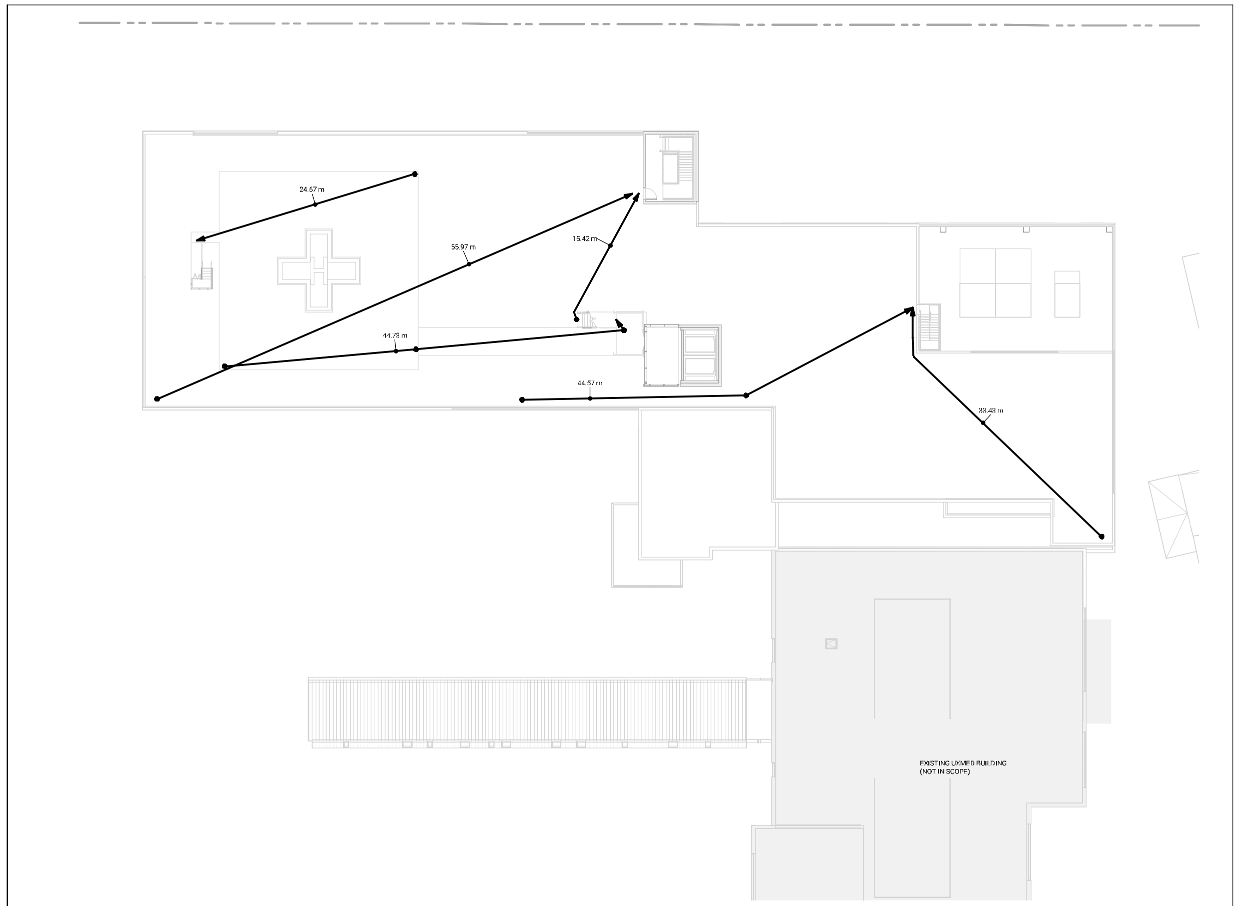
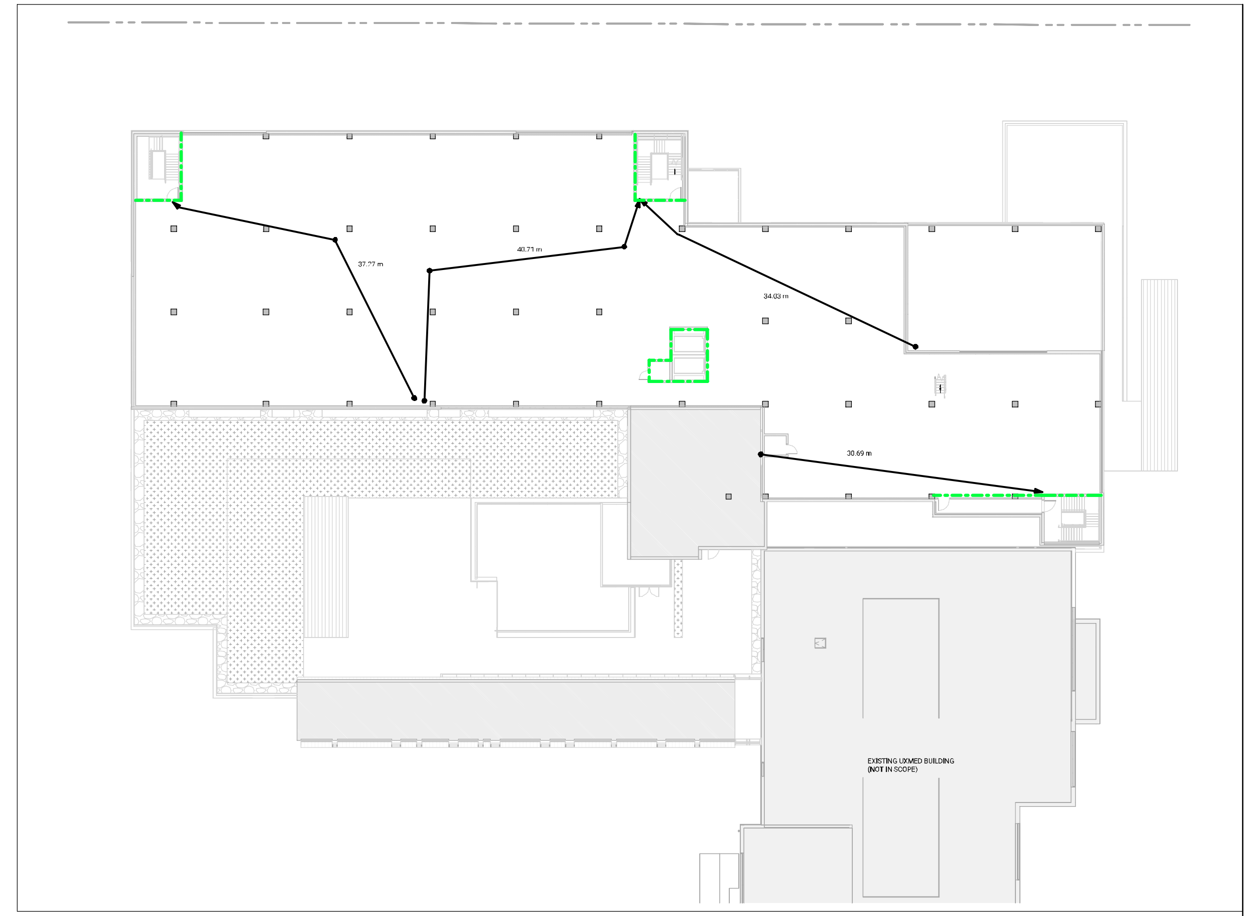


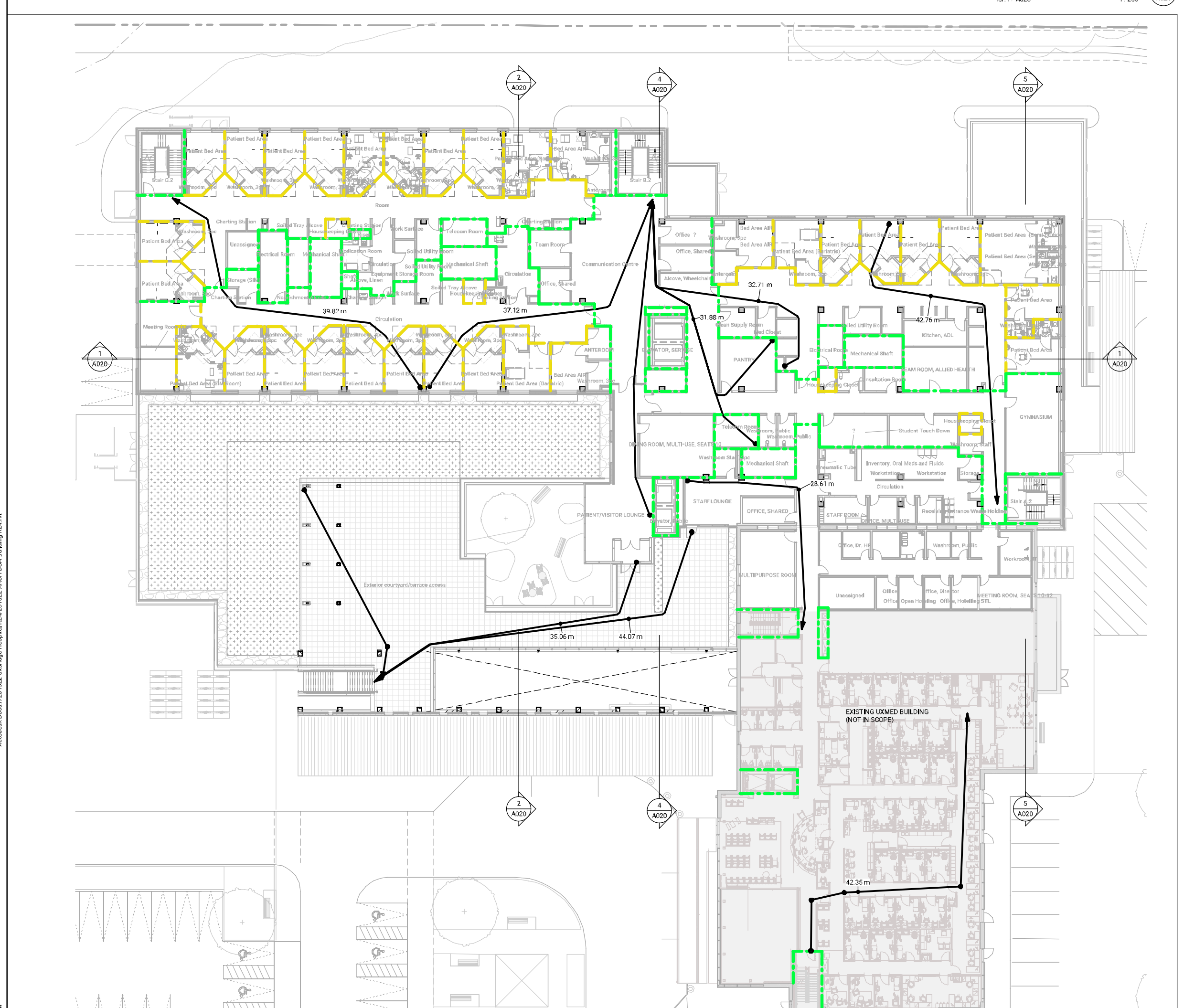
ROOF LEVEL - LIFE SAFETY PLAN 4 / A021

ref 1 / A020 1 : 250



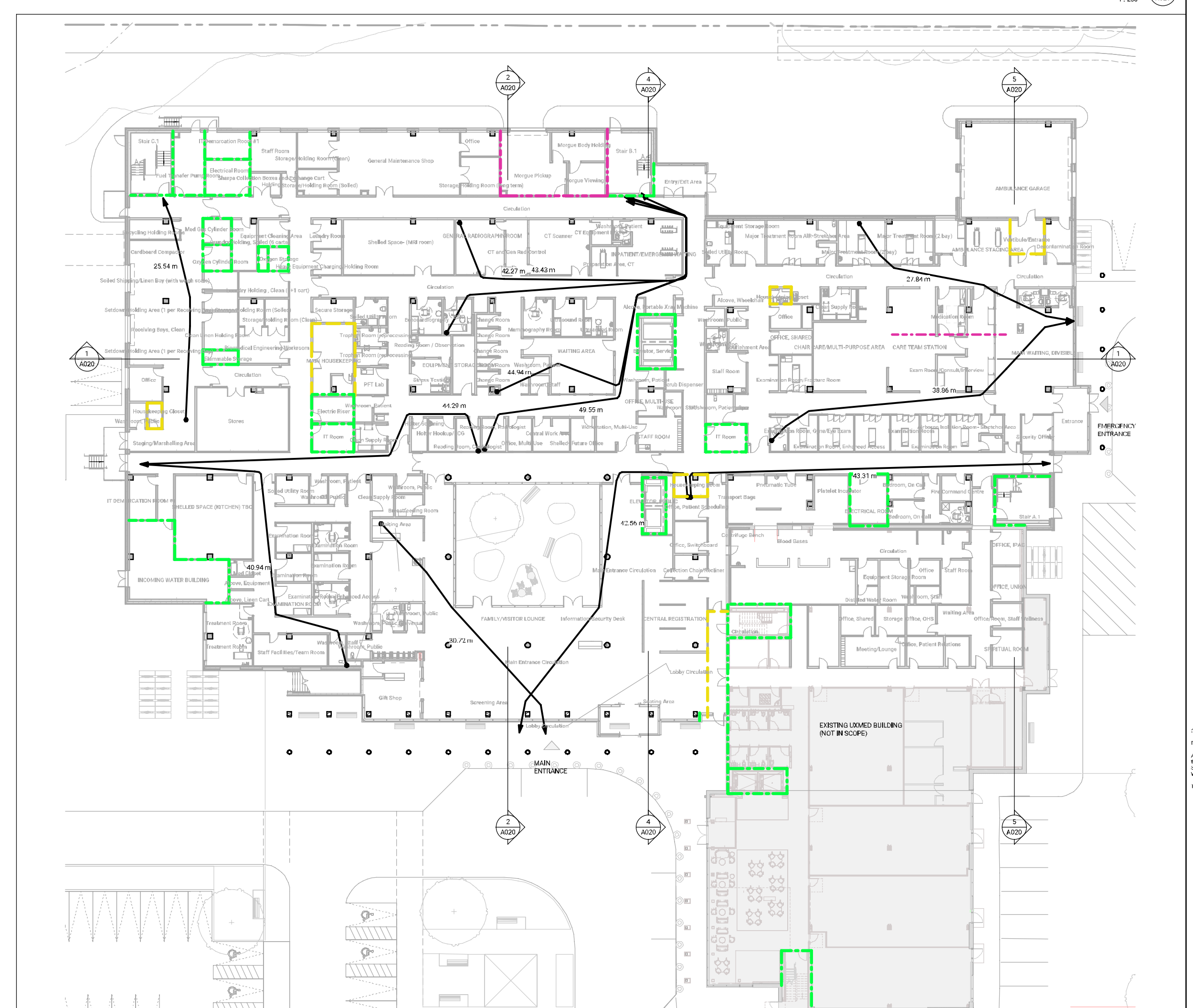
PENTHOUSE LEVEL - LIFE SAFETY PLAN 3 / A021

1 : 250



LEVEL 2 - LIFE SAFETY PLAN 2 / A021

1 : 250



LEVEL 1 - LIFE SAFETY PLAN 1 / A021

ref 1 / A020 1 : 250

Issued

No. Date Description

LEGEND - FIRE SEPARATION

- 0-MIN FIRE RATED ASSEMBLY
- 45-MIN FIRE RATED ASSEMBLY
- 60-MIN FIRE RATED ASSEMBLY
- 90-MIN FIRE RATED ASSEMBLY
- 120-MIN FIRE RATED ASSEMBLY
- TRAVEL DISTANCE LINE

GENERAL NOTES - FIRE SEPARATIONS:

1. ALL CLOSURES TO HAVE LABELLED RATINGS (C/W LABELLED FRAMES AND CLOSURES). PROVIDE FIRE DAMPERS AS PER MECHANICAL DRAWINGS.
2. DASHED LINE INDICATES FIRE -RESISTANCE RATED ASSEMBLY NOT CONSTRUCTED AS A FIRE SEPARATION
3. TO BE READ IN CONJUNCTION WITH CODE CONSULTANT REPORT

NOT FOR CONSTRUCTION

Uxbridge Hospital Oak Valley Health

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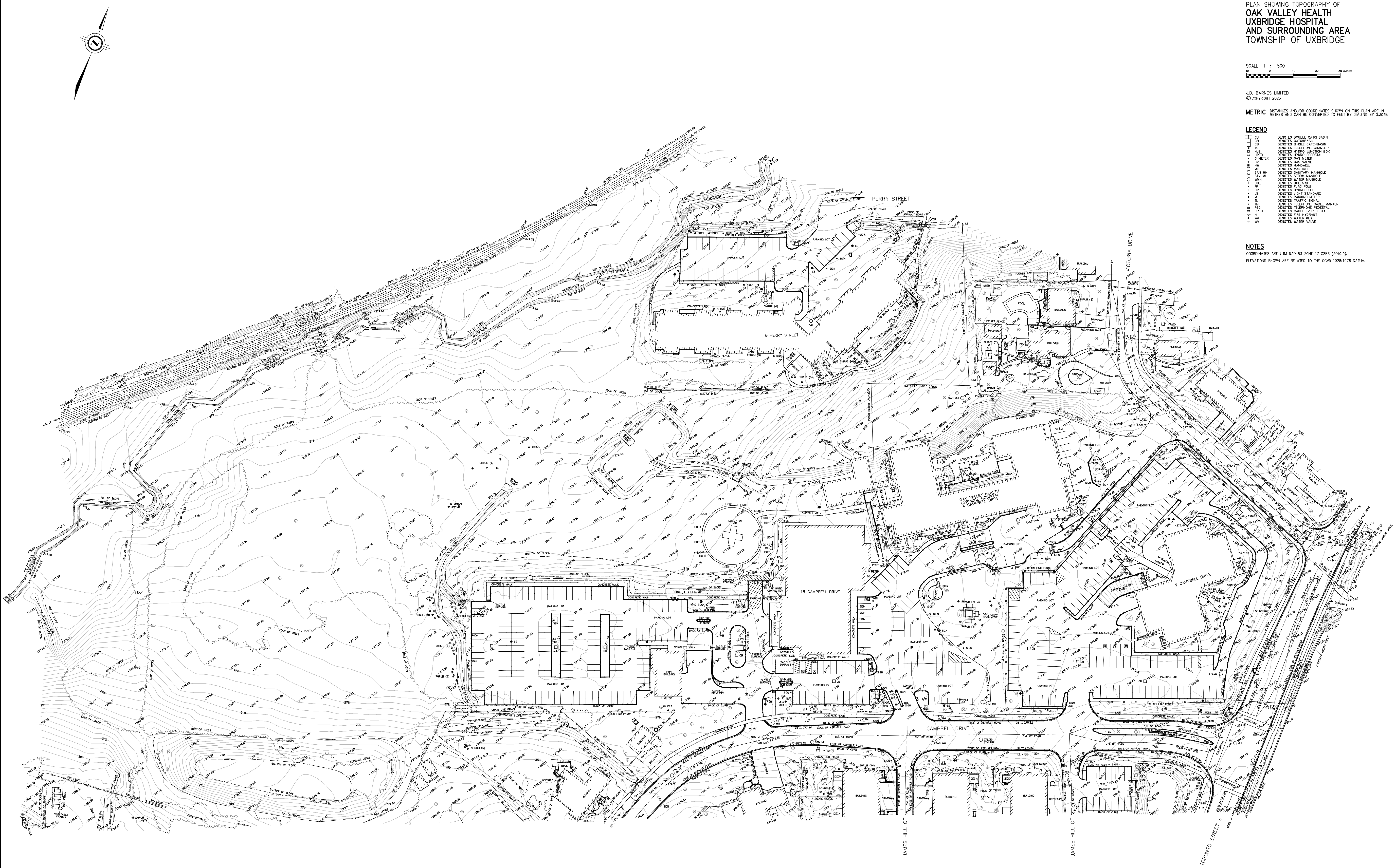
LIFE SAFETY PLANS

1 : 250

A021



PLAN SHOWING TOPOGRAPHY OF

OAK VALLEY HEALTH UXBRIDGE HOSPITAL AND SURROUNDING AREA

TOWNSHIP OF UXBRIDGE

SCALE 1 : 500

10 0 10 20 30 metres

METRIC DISTANCES AND/OR COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

LEGEND

CB	DENOTES DOUBLE CATCHBASIN
CB	DENOTES CATCHBASIN
CB	DENOTES SINGLE CATCHBASIN
TC	DENOTES TELEPHONE CHAMBER
HJB	DENOTES HYDRO JUNCTION BOX
HPED	DENOTES HYDRO PEDESTAL
G METER	DENOTES GAS METER
GV	DENOTES GAS VALVE
HW	DENOTES HANDWELL
MH	DENOTES MANHOLE
SAN MH	DENOTES SANITARY MANHOLE
STM MH	DENOTES STORM MANHOLE
WMH	DENOTES WATER MANHOLE
BOL	DENOTES BOLLARD
FP	DENOTES FLAG POLE
HP	DENOTES HYDRO POLE
LS	DENOTES LIGHT STANDARD
M	DENOTES PARKING METER
TL	DENOTES TRAFFIC SIGNAL
TM	DENOTES TELEPHONE CABLE MARKER
PED	DENOTES TELEPHONE PEDESTAL
CPED	DENOTES CABLE TV PEDESTAL
H	DENOTES FIRE HYDRANT
WK	DENOTES WATER KEY
WV	DENOTES WATER VALVE

NOTES

COORDINATES ARE UTM NAD-83 ZONE 17 CSRS (2010.0).

ELEVATIONS SHOWN ARE RELATED TO THE CGVD 1928:1978 DATUM.

THE SURVEY WAS COMPLETED ON NOVEMBER 3, 2023.

J.D.BARNES LIMITED
SURVEYING MAPPING GIS
LAND INFORMATION SPECIALISTS
140 RENFREW DRIVE, SUITE 100, MARKHAM, ON L3R 6B3
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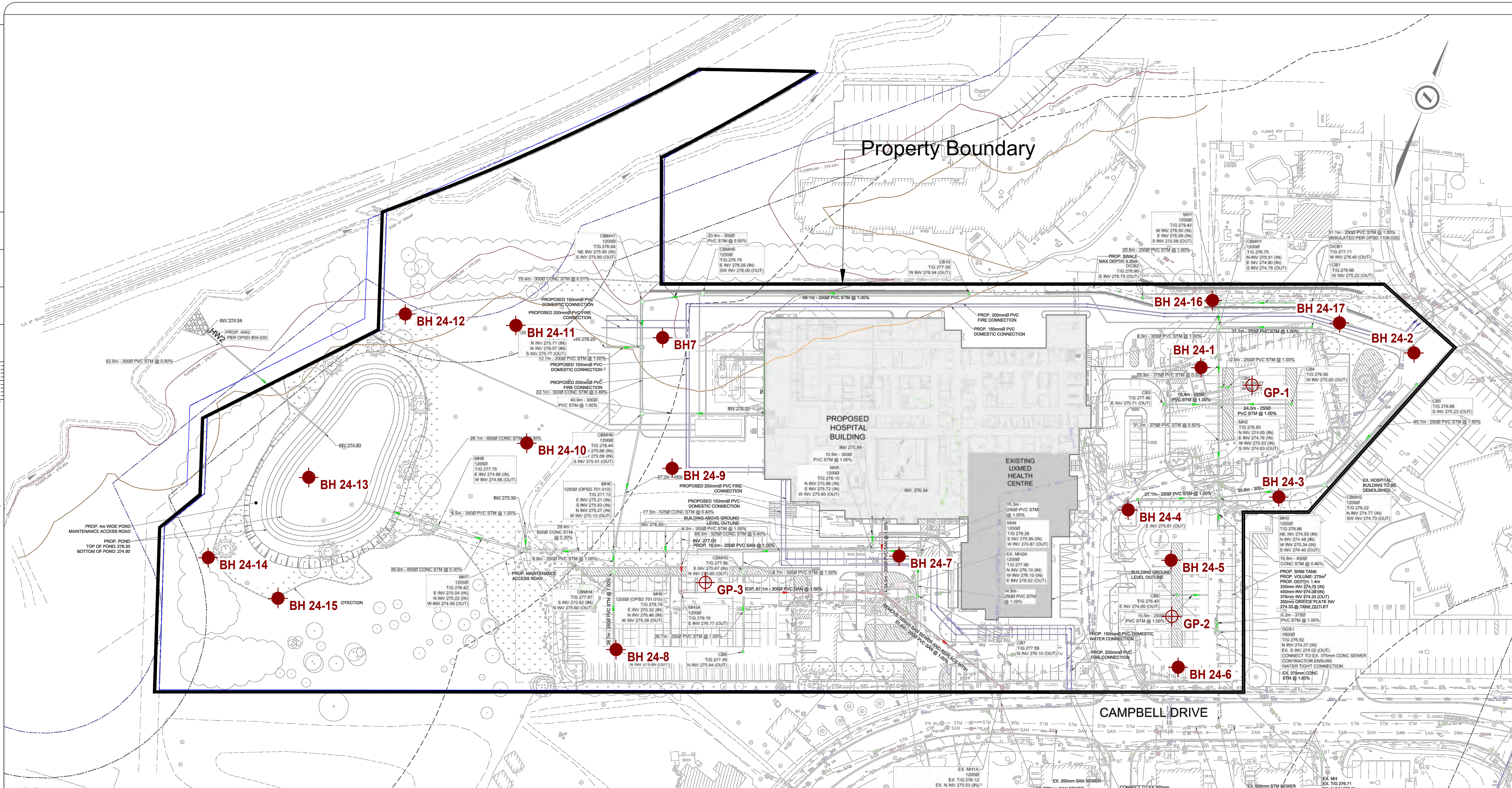
DRAWN BY:	CHECKED BY:	REFERENCE NO.:
TC	MM	23-23-669-01
PLOTTED: 11/28/2023		DATED: 11/27/23

FILE: L:\23-23-669\01\Vision Drawing\2D\23-23-669-01_2D.dgn



LEGEND:

- Approximate Borehole Location
- Approximate Guelph Permeameter Location

0 10 20 30 40 50 m

SCALE 1:1250

REFERENCE:

Title: Site Servicing Plan (Final Works)
Proj. No.: 24163, Date: Jan.17, 2024
Dwg. No.: C-02, By: LEA

Project

Geotechnical investigation
Proposed Additions
4 Campbell Dr, Uxbridge

Title

Borehole Location Plan
Site Servicing Plan

ENGLOBE

Prepared	C. Kamal	Discipline	GEOTECHNICAL	Project manager	S. Abdus
Drawn	C. Kamal	Scale	AS SHOWN	Sequence no.	--
Checked	S. Abdus	Date	JULY 2024		

Resp.	Project	Phase	Disc.	Type	Drawing no.	Rev.
01	02310769.002	0200	-	D	2C	00

Y:\SHARED\CAITERRAPROBE\BRAMPTON\1-PROJECT FILES\2023\02310769.002 - UXBRIDGE COMMUNITY HOSPITAL, GEO\0100 - GEO\1-DWGS_LOGS\AUTOCAD\02310769.002 FIGURES 2024-07-12.DWG

Appendix L

Hydrogeological Investigation (File No : 1-19-022-46)

ENGLOBE

Terraprobe

Consulting Geotechnical & Environmental Engineering
Construction Materials Inspection & Testing

HYDROGEOLOGICAL STUDY AND WATER BALANCE
UXBRIDGE COTTAGE HOSPITAL, 4 CAMPBELL DRIVE
UXBRIDGE, ONTARIO

Prepared For: **Uxbridge Health Care**
2 Elgin Park Drive, Unit B
Uxbridge, Ontario
L9P 0B1

Attention: Mrs. Deborah Edgell

File No. 1-19-0022-46
Issued: April 12, 2019
Rev 1.0: May 2020

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1.0 INTRODUCTION

Terraprobe Inc. was retained by Uxbridge Health Care to conduct a Hydrogeological Study and Water Balance Assessment for the proposed addition of Uxbridge Health Centre (UHC) located within the Uxbridge Cottage Hospital at 4 Campbell Drive, Uxbridge, Ontario (herein referenced as the "Property" or "Site").

The scope of the addition was changed and comments on the initial Hydrogeological Study and Water Balance were received from regulatory authorities. As a result, this revised Hydrogeological Study and Water Balance Assessment was prepared subsequent to an associated additional geotechnical investigation, documented under a separate cover.

The general location of the Property is illustrated on Figure 1. The proposed addition is illustrated on Figure 2. Based on design drawings provided by B+H Architects dated January 17, 2020, the proposed redevelopment will include the construction of a new building with a footprint of approximately 1,782 m^2 and approximately 6,320 m^2 of asphalt parking areas and driveways and the removal of a 30 m^2 concrete pad and 2,375 m^2 of paved areas. The new construction involves replacing a portion of these existing paved areas in the southeast portion of the proposed development with either new asphalt or the southern portion of the proposed building.

The adjacent areas to the south of the Property are located within the Oak Ridges Moraine Planning Area, designated as Settlement Areas. Currently the Property and the immediate neighboring areas are serviced with municipal water (ground water-derived) and sewage services. The Property is surrounded by Service Ontario facility to the east, vacant field to the west, primarily residential subdivisions to the south and residential apartment building to the north. A tributary of Uxbridge Brook passes through the northwestern corner of the Property (Subwatershed 5) and a tributary of Uxbridge Brook/inline pond is located approximately 120 m east of the Property (Subwatershed 2).

The Property is located within the Lake Simcoe and Couchiching/Black River Source Protection Area. Of particular relevance to this study is the presence of the Township of Uxbridge's Well 6 which is located within approximately 7.5 m of the southern limit of the proposed redevelopment. As a result, portions of the Property are located within Wellhead Protection Areas (WHPAs) A through D (WHPA-A is illustrated on Figure 2). Only the northeastern portion of the Property is not located within a WHPA. The WHPA is classed as Q2 (an area where activities that reduce recharge may pose a threat). The Property is the location of a Highly Vulnerable Aquifer (Score: 6) but is not a Significant Ground Water Recharge Area. The westernmost portion of the Property is located in an Intake Protection Zone 3 (Score: 4.5).

The study was undertaken to assess hydrogeological conditions of the proposed UHC Property and to provide general information regarding the hydrogeological impact of the proposed redevelopment on the local ground water function. The report addresses the following areas:

- The hydrogeological setting of the Property with respect to regional features.
- A preliminary water balance assessment for the Property based on the current Property development plan.
- Information for appropriate mitigation measures to maintain hydrogeological function following Property development (Source Water Impact Assessment and Mitigation Plan [SWIAMP]).

2.0 SCOPE OF WORK

The scope of work for the study consisted of the following:

- *Review of background information regarding Property geology and hydrogeology.* This included a review of Ministry of the Environment, Conservation and Parks (MECP) well records, watershed information by the Lake Simcoe Region Conservation Authority (LSRCA), geologic and topographic mapping and results of previous studies and subsurface investigations which Terraprobe has conducted in the area.

- *Review of report.* The review included a geotechnical investigation concurrently with this study prepared by Terraprobe. The finding of the geotechnical investigation will be submitted under a separate cover.

- *Review of background information and meteorological data.* This information was obtained from the results of previous investigations conducted by Terraprobe in the general area, a review of the MECP well records. A review of meteorological data was completed to assess local climate and seasonal variations.

- *Detailed Property inspection.* A detailed visual inspection of the Property and surrounding areas was conducted to determine local topography, drainage, and an assessment of potentially hydrogeologically significant features such as closed depressions (potential areas of ground water recharge), seeps, springs, or ground water discharge to the on-site drainage features.

- *Subsurface investigation.* The initial subsurface investigation consisted of the drilling of four (4) boreholes extending to maximum depth of 8 m (~25 ft.) below existing ground surface (mbgs) and installation of four (4) monitoring wells in the borehole (BH1 through BH4, within the southeastern portion of the proposed addition). The second phase of investigation, hydrogeological and geotechnical, entailed the advancing of BH5 through BH17 elsewhere within the footprint of the expanded addition. 6.25 m deep monitoring wells were installed in BH5, BH8, BH9 and BH13 through BH17.

- *Ground water level monitoring.* Ground water level monitoring occurred primarily during the second phase of investigation commencing on October 29, 2019 and ending on April 06, 2020. Manual measurements were taken in all accessible monitoring wells on a nominally monthly basis. Solinst Leveloggers were installed in monitoring wells BH13 through BH17 and took readings at hourly intervals.

- *Ground water sampling and chemical analysis.* During the initial investigation, monitoring wells BH1 through BH3 were sampled on February 15, 2019 and the samples were submitted for analysis for general water quality parameters including sodium, chloride and metals. During the second phase of investigation, monitoring wells BH14 through BH17 were sampled on October 29, 2019 and the samples were submitted for analysis for sodium, chloride and metals.

- *Hydraulic conductivity testing.* In situ hydraulic conductivity tests (rising head/"bail" tests) were conducted in two (2) selected monitoring wells to assess the hydraulic conductivity of the screened intervals.

- *Infiltration testing.* A screening level assessment of soil infiltration rates using grain size distribution data was undertaken during the initial investigation. During the second phase of investigation, infiltration testing was carried out using a Guelph Permeameter at four (4) locations.

- *Water balance assessment.* A water balance assessment for existing (pre-development) and post-development conditions was completed to determine the feasibility of the proposed development and associated Low Impact Development (LID) requirements (i.e., measures to maintain pre-development infiltration).

3.0 FINDINGS

3.1 Property Location and Surrounding Land Use

The Property under study is located on the northwest quadrant of the intersection of Campbell Drive and Victoria Drive in Uxbridge, Ontario, in a mixed residential, commercial (Service Ontario), industrial (Township of Uxbridge Well 6, “industrial” as defined by industrial property use definition clauses 1 and 8, Ontario Regulation 153/04 [O.Reg. 153/04]), and open space property use area in the Township of Uxbridge, Regional Municipality of Durham. The Property is located within Uxbridge Brook Watershed and the Lake Simcoe and Couchiching/Black River Source Protection Area. The adjacent areas to the south of the Property are located within the Oak Ridges Moraine Planning Area designated as Settlement Areas.

The location of the Property is presented on Figure 1. General Property features are presented in the Property Plan (Figure 2). A copy of plan of survey “Lots 261, 262 and 263, Part of Lots 259, 260 and 264 Block DD, Lots 394, 395, 400 and 401, Part of Lots 390, 391, 393 and 399 Block QQ, Lots 406, 407 and 408, Part of Lots 405, 409, 410 and 411 Block RR, Part of Lots 420 to 425 Block TT, Lots 433 and 434 Part of Lots 432, 435, 436 and 437 Block UU, Pat of Lots 439 to 440 Block VV, Part of Beech Street, Balsam Street, Rachel Street and Hemlock Street, and Cherry Street, Municipal Plan No. 83 and Part of Lot 29, Concession 6, Township of Uxbridge”, J.D. Barnes Ltd., July 19, 2018, is enclosed in Appendix A.

The proposed development will be serviced with municipal water and sewage services which are currently supplied to the Property. Details regarding the proposed development, taken from Property Survey, Sheet A0-01, Project 1811142, B+H Architects, September 09, 2019, are illustrated on Figure 2. Briefly, it is intended to construct a two storey building (Uxbridge Health Centre, UHC) and associated parking areas and driveways. This will require the removal of an existing concrete pad and parts of the existing parking areas.

The Township of Uxbridge requires that a Hydrogeological investigation be completed in order to assess the potential impact of the proposed development on the ground water resources. This study was undertaken to assess geologic and hydrogeological conditions at the Property and to provide information regarding the potential impact of the proposed development on the local ground water function, including a water balance assessment.

3.2 Property Topography, Drainage and Physiography

Based on the topographic information from the Ministry of Natural Resources and Forestry (MNRF) topographic map, the ground surface at the Property is at approximately 275 m geodetic elevation. Regionally, the ground surface slopes down to the northeast. Grade at the Property generally slopes downwards to the northwest except in the eastern portion of the Property where it slopes downwards to the southeast.

The nearest surface water features are a tributary of Uxbridge Brook that passes through the northwest corner of the Property (Subwatershed 5) and a tributary of Uxbridge Brook present as a pond and creek approximately 120 m east of the Property (Subwatershed 2). To date there has been no monitoring of surface water.

Based on the plan of survey prepared by J.D. Barnes in 2018 (Appendix A), the Property has a relatively flat surface. The Property is located within the elevation range of 277.31 to 277.59 metres Above Sea Level (mASL). The runoff at the Property is expected to flow towards the northwest (majority of the Property) and southeast (southeastern portion of the Property).

According to the Lake Simcoe Region Conservation Authority (LSRCA), the western portion of the Property is located within an LSRCA regulated area (Appendix B).

From a regional perspective, the Property is situated within the physiographic feature known as the Peterborough Drumlin Field, a drumlinized till (clay) plain.

3.3 Regional Geology

Based on published information, the overburden in the region consists of coarse-textured glaciolacustrine deposits. This material is generally characterized as sand, gravel, minor silt and clay from foreshore and basinal deposits. The bedrock in the vicinity of the Property consists of the Blue Mountain Formation, which consists of shale and minor limestone. It should be noted that the subsurface soil, rock and ground water conditions described above represent generalized conditions only, and should not be considered Property specific. The information is presented in Appendix C.

3.4 Regional Hydrogeology

The regional hydrogeological conditions were assessed on the basis of Water Well Records (“WWRs”, Appendix D) and geologic mapping (Appendix C). Ground water elevation data and geological strata for the surrounding area are shown in cross-section on Figure 4. Figures 5A, 5 and 6 present a cross-section key plan and Site-specific cross-sections. Manual ground water level measurements and the resulting elevations are presented in Table 1. Figure 7 presents the ground water elevations obtained from manual measurements and from Solinst Leveloggers (combination pressure transducers and dataloggers) installed in BH14 through BH17.

Figure 8 presents the inferred configuration of the shallow water table at the Property on January 30, 2020 (highest water table during a manual water level monitoring event). The nearest surface water features are a tributary of Uxbridge Brook, present as a wetland/creek approximately 100 m northwest of the Property, and Uxbridge Brook, present as a pond and creek approximately 120 m east of the Property. The flow pattern illustrated on Figure 8 is consistent with flow to both tributaries with a ground water flow divide trending, loosely, southwest to northeast through the Property.

A total of 68 WWRs, including 25 Abandonment Records, were on record within a 0.5 km radius of the Property.

Summary of Local Water Well Records

Total Number of Wells	**68**
Wells completed in Overburden	47 (69%)
Wells completed in Bedrock	2 (3%) *
Unknown	19 (28%)
Well Depth Ranges	
100 ft. or Less	30 (44%)
101 ft. to 200 ft.	9 (13%)
201 ft. to 300 ft.	7 (10%)
301 ft. to 400 ft.	3 (5%)
Unknown	19 (28%)
Water Use	
Domestic or Stock	37 (55%)
Monitoring	2 (3%)
Public Supply (1)/Municipal - Not Used (2)	3 (4%)
Not used (other)	1 (1%)
Abandonment Record	25 (37%)

The WWRs for the area indicate that the overburden consists of a till sequence overlying a coarse textured, confined aquifer (the municipal supply aquifer) encountered at depths of approximately 52 to 61 m below grade. The municipal aquifer is underlain by additional till materials. There are coarser zones within the upper till that supply individual domestic wells but are not as productive or widespread as the municipal aquifer. The shale bedrock in the area was encountered at depths of 110 and 112 m and is not utilized as an aquifer for wells in the area.

WWR 1916558, which is for a well located approximately 500 m west-southwest of the Property, reports flowing artesian conditions from an aquifer with an upper contact approximately 30 m below grade. Grade elevation at the location of WWR 1916558 is approximately 20 m higher than at the Property. The WWR for the Township of Uxbridge's Well 6 (WWR 1911055) does not provide information on a sand and gravel unit encountered between 9.1 and 19.5 m below grade, corresponding to the depth of the flowing aquifer at 1916558. Thus, it is unclear if WWR 1916558 documents a localized or widespread condition.

3.5 Results of Subsurface Investigation

Terraprobe conducted an initial geotechnical investigation at the Property on February 8, 2019. The field investigation consisted of drilling and sampling a total of four (4) boreholes extending to a maximum depth of 8.1 m below existing ground surface and installation of four (4) monitoring wells within the proposed addition of UHC located immediately southwest of the existing Uxbridge Cottage Hospital. The second phase of investigation, hydrogeological and geotechnical, entailed the advancing of BH5 through BH17 elsewhere within the footprint of the expanded addition. A total of eight (8) monitoring wells, each of 6.25 m depth, were installed in BH5, BH8, BH9 and BH13 through BH17.

Information regarding borehole logs is presented in Appendix E. The locations of boreholes are shown on Figure 2. A cross-section key plan and Site-specific cross-sections are shown on Figures 5A, 5 and 6. The stratigraphy beneath the investigated areas of the Property is outlined in the following subsections.

3.5.1 Surficial Layers

A pavement structure was encountered in Boreholes 1 to 5 and consisted of 110 and 115 mm thick asphaltic concrete underlain by 150 to 310 mm thick granular base course.

A topsoil layer was encountered in the rest of the boreholes. The topsoil thicknesses were 40 and 150 mm.

The above topsoil and pavement structure thicknesses were measured from the borehole drilling and are approximate. We recommend that a shallow test pit investigation be carried out to determine a precise topsoil/pavement structure thickness present across the Property for quantity estimation and costing purposes.

3.5.2 Earth Fill Materials

The earth fill materials, consisting of sandy silt to silty sand, sand and gravel/sand were encountered at all borehole locations beneath the surficial layer and extended to about 0.6 to 2.3 m depth below grade.

The Standard Penetration Test results (N-values) obtained from the earth fill zone ranged from 4 to 98 blows per 300 mm of penetration, indicating a very loose to very dense relative density. The relatively high N-values obtained from the earth fill materials are likely due to presence of obstruction/debris and do not necessarily represent the degree of compactness of the material tested. The In situ moisture contents of the earth fill samples ranged from 5 to 32 percent by mass, indicating a moist to wet condition.

3.5.3 Silt

A silt unit, with varying amounts of sand (trace to sandy), trace to some clay and trace amounts of gravel was encountered beneath the earth fill zone in all boreholes and extended to the full depth of the investigation.

N-Values obtained from the silt deposit ranged from 8 to 87 blows per 300 mm of penetration, indicating a loose to very dense relative density. The In situ moisture content of the silt sample ranged from 9 to 24, indicating a moist to wet condition.

It must be noted that the undisturbed native soil deposit is likely to contain larger size particles (cobbles and boulders) that are not specifically identified in the boreholes. The size and distribution of such obstructions cannot be predicted with borings, because the borehole sampler size is insufficient to secure representative samples for the particles of this size.

3.5.4 Bedrock

Bedrock was not observed within the investigation depths of 8.1 mbgs. Local WWRs report shale bedrock at depths of 110 – 122 m below grade.

3.6 Ground Water Level Monitoring

After the second phase of investigation, ground water levels measurements were taken on a nominally monthly interval in all wells from October 29, 2019 to April 06, 2020. In addition, Solinst Leveloggers (combination pressure transducers and dataloggers) were installed in monitoring wells BH13 through BH17 and took readings at hourly intervals. Manual ground water level measurements and the resulting elevations are presented in Table 1. Figure 7 presents the ground water elevations obtained from manual measurements and from the Solinst Leveloggers installed in BH14 through BH17. Figure 8 presents the inferred configuration of the water table at the Property on January 30, 2020. January 30, 2020 was used because it was the manual water level monitoring event with the highest water table. Data for wells instrumented with dataloggers for January 12, 2020 (the actual highest water table) are also included on Figure 8.

The depth to ground water ranged from approximately 0.2 to 2.6 m below grade during the monitoring period and was closest to surface in the southwest (vicinity of BH9, BH13 and BH14).

As indicated on Figure 8, a flow divide trends approximately southwest to northeast through the Property. Horizontal flow on the north side of the divide is directed towards a tributary of Uxbridge Brook that passes through the northwest corner of the Property (Subwatershed 5) and flow on the other side of the divide is towards a second tributary located east of the Property (Subwatershed 2). As a result, the direction of the horizontal hydraulic gradient varies from northwest in the west to northeast in the east. The magnitude of the horizontal hydraulic gradient also varies, being relatively steep in the west (up to 0.036 northwest) and near-neutral in the east.

As indicated on Figure 7, water levels in the monitoring wells are influenced by the operation of the Township of Uxbridge’s Well 6, located approximately 7.5 m south of the central portion of the Property, i.e., a downward vertical hydraulic gradient exists, at least when Well 6 is or has recently been in operation. However, it cannot be quantified as there are no nested wells at the Property.

Seasonal/weather-related influences are also evident on Figure 8. The high water table observed in early/mid-March 2020 is the usual seasonal high (i.e., post-snowmelt) but the highest water table was measured on January 12, 2020. This is attributed to abnormal weather consisting of 70.6 mm of rain and approximately 7 cm of snowmelt on January 10 and 11, 2020 (Environment Canada Udora Climate

Station, located approximately 17 km north of the Property).

3.7 Ground Water Quality

During the initial investigation, monitoring wells BH1 through BH3 were sampled on February 15, 2019 and the samples were submitted for analysis for general water quality parameters including sodium, chloride and metals. During the second phase of investigation, monitoring wells BH14 through BH17 were sampled on October 29, 2019 and the samples were submitted for analysis for sodium, chloride and metals.

The analytical results are summarized in Table 2 and copies of the Certificates of Analysis are provided in Appendix F. The analytical results are compared to the MECP's Ontario Drinking Water Standards, Objectives and Guidelines (ODWSOG), June 2006, with the exception of arsenic. The criterion for arsenic has been taken from the MECP's Ontario Drinking Water Quality Standards (ODWQS, O.Reg. 169/03) January 01, 2018. Strictly speaking, the ODWQS are applicable to water from regulated drinking water systems (e.g., municipal water supplies), whereas the ODWSOGs presently apply to private wells. Initially, the criteria in the ODWQS and the health-related criteria in the ODWSOG (Maximum Allowable Concentrations, MACs) were identical. There were a number of changes to the ODWQS effective January 01, 2018. With respect to this hydrogeological assessment, the updated ODWQS of 10 μg/L for arsenic has been used as it is more stringent than the ODWSOG of 25 μg/L. It is further noted that the ODWSOG have Aesthetic Objectives (AOs) and Operational Guidelines (OGs) for parameters that do not have ODWQS.

Table 2 documents a pronounced difference in water quality between wells located in the existing parking lot (BH1 through BH3) and those located in the vacant area west of the parking lot (BH13 through BH17). The concentration of chloride beneath the parking lot (maximum 4,620 mg/L at BH1, ODWSOG AO 250 mg/L) is one or even two orders of magnitude higher than further west (25.9 to 247 mg/L). A similar contrast is noted with sodium with a maximum of 1,650 mg/L beneath the parking lot at BH2 as opposed to 21.2 to 141 mg/L elsewhere. There are two ODWSOG for sodium, an AO of 200 mg/L and an MAC of 20 mg/L at which the local Medical Officer of Health must be notified on behalf of persons on sodium-restricted diets.

These findings are attributed to the use of de-icing salt in the parking lot and on adjacent walkways (the most significant impacts are noted at BH1, installed adjacent to the parking lot kiosk). Given the elevated hardness at BH1 (2,990 mg/L as opposed to a maximum of 606 mg/L elsewhere), it is expected that cation exchange of sodium for +2 valent metals is occurring. While the majority of such exchanges affect the concentrations of calcium and magnesium, this mechanism likely accounts for the elevated concentrations of barium (1.95 mg/L as opposed to a MAC of 1 mg/L) and iron (32 mg/L as opposed to an AO of 0.3 mg/L) at BH1 and the elevated concentrations of manganese at BH1 and BH3 (maximum 0.28 mg/L at BH1 as opposed to an AO of 0.05 mg/L).

In summary, de-icing practices in the existing parking lot and vicinity have adversely affected shallow ground water quality. If these same practices are applied to the proposed parking lot, further degradation of shallow ground water quality within an area directly affected by the operation of Well 6 will occur. The adoption of Best Management Practices for future de-icing operations is recommended.

Finally, it is noted that the Total Coliform counts at BH2 (13 CFU/100 mL) and BH3 (4 CFU/100 mL) exceed the MAC of non-detectable. Conditions at BH1 are unclear because of the need to dilute the sample for clarity, resulting in a detection limit of 2 CFU/100 mL.

3.8 Hydraulic Conductivity and Infiltration Rate Testing

3.8.1 Rising Head Tests

In situ hydraulic conductivity tests (rising head/“bail” tests) were conducted in BH3 and BH13 on February 14, 2020 to assess the hydraulic conductivity of the screened intervals (silt with trace to some clay deposits). The tests were conducted by measuring the static water level, placing a Levelogger in the well, measuring the water level in the well until it returned to static, rapidly removing a bailer from the well and recording/manually measuring the recovery of the water level.

The tests were analyzed using the Bouwer & Rice (1976, 1989) Method in a spreadsheet released by the United States Geological Survey (USGS). Copies of the spreadsheets are provided in Appendix G. Based on these analyses, the hydraulic conductivity of the underlying silt ranges from 1.1×10^{-7} to 1.8×10^{-7} m/sec assuming fully penetrating conditions. If the base of the silt unit is set at a depth of 9.1 m (i.e., upper contact of the shallow sand and gravel encountered in Well 6), this range decreases slightly to 9.7×10^{-8} to 1.6×10^{-7} m/s. These hydraulic conductivity values are considered typical for silt.

3.8.2 Infiltration Testing

During the initial phase of investigation, the hydraulic conductivity of the unsaturated zone was estimated using grain size distribution data for soil samples collected from above the water table (Appendix H). The hydraulic conductivity of the native silt was estimated to range from 10^{-6} to 10^{-7}m/s.

This earlier estimate has been superseded by the results of the infiltration testing carried out during the second phase of investigation in the unsaturated silt using a Guelph Permeameter. The analyses of the tests using the method provided by the equipment’s manufacturer, Soilmoisture Equipment Corporation, are provided in Appendix H. The estimated hydraulic conductivity ranges of the unsaturated silt ranges from 6.3×10^{-7} m/sec to 9.8×10^{-6} m/sec.

Table 3 presents calculations of the corresponding Infiltration Rates (unadjusted) and Design Infiltration Rates using the method provided in Appendix C of the Toronto and Region Conservation Authority's "Stormwater Management Criteria, ver. 1.0", August 2012 ("TRCA, 2012", this method is identical to the method presented in Appendix B of the corresponding document prepared by Credit Valley Conservation, whose use is required by the LSRCA). The unadjusted Infiltration Rates range from 40.9 to 85.2 mm/hr (geometric mean 59.1 mm/hr). Based on Table C-3 of TRCA, 2012, a safety factor of 3.5 is required when calculating the Design Infiltration Rates which range from 11.7 to 24.3 mm/hr (geometric mean 16.9 mm/hr). The geometric mean Design Infiltration Rate of 16.9 mm/hr is greater than 15 mm/hr, which is the lowest rate for readily feasible infiltration provided in Table 4.1 of the MECP's "Stormwater Management, Planning and Design Manual", March 2003.

3.9 Property Inspection to Assess Hydrogeological Features

A Property inspection was conducted to assess the presence of features which are significant from a Hydrogeological viewpoint. In particular, the Property was inspected to assess the following:

- Areas of visible ground water discharge, springs or seepage at the Property or in the vicinity of the on-site water courses.
- Areas of potential enhanced ground water recharge such as closed drainage features or depressions or large flat areas which may allow for significant ground water infiltration.
- Inspection of swales and drainage courses for evidence of ground water seepage or springs.
- Evidence of phreatophytic vegetation, which may indicate seasonally high ground water levels and/or ground water discharge and seepage.

Inspections were performed on February 1, 8 and 14, 2019 to assess the presence of any natural environmental features. During the Property visit, the ground surface was covered by asphaltic concrete. The Property is currently used as a parking lot for the Uxbridge Hospital. A vacant field is located adjacent to the west of the Property. Surface runoff from the Property appears to flow east/southeast towards catch basins located along Campbell Drive. During the Property visit no areas of ground water recharge (such as depression or unpaved areas) were identified on the Property. No permanent creeks or water features were identified. No phreatophytic vegetation was noticed at or in the immediate vicinity of the Property.

Based on the survey plan dated July 19, 2018 prepared by J.D. Barnes, the Property is generally flat with elevations between 277.31 to 277.59 mASL across the Property.

3.10 Regional Municipality of Durham Official Plan

According to Durham Regional Official Plan dated 2017 prepared by Durham Region as presented in Schedule ‘A’ - Map ‘A2’ Regional Structure, the Property is located to the north of the Oak Ridges Moraine Area and not within the Oak Ridges Moraine Area.

According to the Schedule ‘B’ – Map “B1b’, Greenbelt Natural heritage System & Key Natural Heritage and Hydrologic Features, the Property is located in an Urban Area and is not designated as key natural heritage and hydrologic features, greenbelt natural heritage system or Oak Ridges Moraine Plan Area.

3.11 Wellhead Protection Areas and Aquifer Vulnerability

According to the MECP Source Protection Information Atlas, portions of the Property are located within a Wellhead Protection Area A due to the proximity of the Township of Uxbridge’s Well 6. The Property is also located above a High Aquifer Vulnerability, Score 6 out of 10. This mapped information is presented in Appendix I.

3.12 Oak Ridges Moraine Conservation Plan

According to the Oak Ridges Moraine Conservation Plan, the Property is located approximately 2.3 km north of the Oak Ridges Moraine, and is not located within the Oak Ridges Moraine Conservation Plan Area. This mapped information is presented in Appendix I.

3.13 Lake Simcoe Region Conservation Authority

According to the Lake Simcoe Region Conservation Authority (LSRCA) webProperty, the Property is not regulated by LSRCA as there are no wetlands, watercourses or steep slopes to be regulated by the Conservation Authority (Appendix B).

3.14 South Georgian Bay Lake Simcoe Source Protection Region Approved Source Protection Plan

The Property is subject to policies LUP-12 and LUP-13. Briefly, it is required that the hydrogeological study demonstrate that the existing water balance can be maintained through the use of best management practices such as low impact development (LID) and the use of these practices to maintain recharge rates is mandatory.

3.15 Township of Uxbridge Official Plan

As a part of Hydrogeological Study, Terraprobe reviewed the Official Plans related to the Property.

According to the Township of Uxbridge January 2014 Official Plan Schedules A to L the Property includes the following information:

Schedule "A" Land Use and Transportation Plan Uxbridge Urban Area

The Property is located outside of Oak Ridges Moraine, in an institutional area. The Property is surrounded by residential area, and located to the north of Oak Ridge Moraine Conservation Plan Area Boundary.

Schedule "B" Natural Heritage System and Supportive Uses Uxbridge Urban Area

The Property does not include any Natural Heritage System and Supportive Use area.

Schedule 'B1' Oak Ridges Moraine Conservation Plan Areas of High Aquifer Vulnerability

The Property is not included in the Oak Ridge Moraine Conservation Plan.

Schedule 'B2' Oak Ridges Moraine Conservation Plan Landform Conservation Areas

The Property is not included in the Oak Ridge Moraine Conservation Plan.

Schedule 'C' Community Improvement Area

The Property is located within the boundary of community improvement area.

Schedule 'D' Phasing Plan Uxbridge Urban Area

The Property is located within the Uxbridge built boundary.

Schedule 'E' Corridor Commercial Special Policy Properties Uxbridge Urban Area

The Property is not located within the corridor commercial properties.

Schedule 'F' Land Use and Transportation Plan Hamlet of Coppins Corners and Adjacent Lands Secondary Plan

The Property is not included in the Secondary Plan.

Schedule 'H' Township of Uxbridge Oak Ridges Moraine Conservation Plan Area Land Use Plan

The Property is not included in the Oak Ridges Moraine Conservation Plan.

Schedule 'I' Township of Uxbridge Oak Ridges Moraine Conservation Plan Area Key Natural Heritage and Hydrologically Sensitive Features

The Property is not included in the Oak Ridges Moraine Conservation Plan.

Schedule 'J' Township of Uxbridge Oak Ridges Moraine Conservation Plan Area Areas of Aquifer Vulnerability

The Property is not included in the Oak Ridges Moraine Conservation Plan.

Schedule 'K' Township of Uxbridge Oak Ridges Moraine Conservation Plan Area Landform Conservation Areas

The Property is not included in the Oak Ridges Moraine Conservation Plan.

Schedule 'L' Township of Uxbridge Wellhead Protection Areas

Portions of the Property are located within WHPA-A to D due to the presence of the Township of Uxbridge's Well 6 approximately 7.5 m south of the southern boundary. The proposed development is located within WHPA-A and -B.

DISCUSSION AND ANALYSIS

3.16 Proposed Development Plan

The proposed addition is illustrated on Figure 2. Based on Drawing G-2, Grading Plan, , Project 1863, B+H Architects, May14, 2020, the proposed redevelopment will include the construction of a new building with a footprint of approximately 1,782 m^2 and approximately 6,320 m^2 of asphalt parking areas and driveways and the removal of a 30 m^2 concrete pad and 2,375 m^2 of paved areas. The new construction involves replacing a portion of these existing paved areas in the southeast portion of the proposed development with either new asphalt paved parking or the southern portion of the proposed building.

Approximately 5,010 m^2 of new asphalt paved area will drain into two 15 x 20 m lined stone filtration trenches to be constructed beneath the western parking lot, which drain into a swale located in the western portion of the site (Figure 2). The clean rooftop runoff from the proposed building will be directed to drain into a 10 x 30 m stone infiltration trench to be located northwest of the proposed building. As the depth to the seasonally high water table in this area is presently unknown, it is intended to construct the infiltration trench on a base of fill and with lateral berms (i.e., as a storage as well as an infiltration feature).

3.17 Summary of Hydrogeological Conditions

The hydrostratigraphy of the Property, based on the investigations to date and the WWR for Well 6, consists of a silt till containing the water table underlain at approximately 9 m below grade by a sand and gravel of unknown properties underlain below a depth of 19.5 m below grade, in turn by additional till overlying the municipal aquifer at a depth of approximately 52 m below grade. The hydraulic conductivity of the silt till containing the water table is estimated at approximately 1×10^{-7} to 2×10^{-7} m/s.

The shallow water table is present 0.2 to 2.6 m below grade. A flow divide resulting from topography and the presence of two tributaries of Uxbridge Brook runs loosely southwest-northeast through the Property (Figure 8), creating a flow divide with horizontal flow direction varying from northwest in the west (steep horizontal hydraulic gradient) to northeast in the east (near-neutral horizontal hydraulic gradient). The effect of the operation of Well 6, precipitation and snowmelt events on shallow water levels are evident (Figure 7).

The Township of Uxbridge's Well 6 is located approximately 7.5 m south of the southern Property boundary. As a result, portions of the Property are located within WHPA-A through D (Figure 2). Only the northeastern portion of the Property is not located in a WHPA. The Property is the location of a Highly Vulnerable Aquifer (Score: 6) but is not a Significant Ground Water Recharge Area. The westernmost portion of the Property is located in an Intake Protection Zone 3 (Score: 4.5).

Analytical results for ground water samples indicate that the use of de-icing compounds within the existing parking lot has resulted in elevated concentrations of sodium, chloride and, at least locally, barium and iron in ground water. This is of potential concern with respect to water quality in Well 6.

The Source Protection Plan applicable to the Property requires that pre- and post-development water balances be completed and that best management practices, e.g., low impact development measures, be implemented to maintain pre-existing ground water recharge rates.

3.18 Water Balance Assessment

The pre- and post-development water balances for the portion of the Property that is intended to be redeveloped is provided in Table 4. A water balance for the entire Property has not been completed at this time because a larger scale redevelopment of the Property in future has been proposed and the comprehensive water balance is applicable to the subsequent stage of development.

The assessment of precipitation and water surplus has been taken from calculations for Uxbridge Brook Subwatershed, p. 24 of "Lake Simcoe Climate Data: A Reference Document to Support the Completion of Water Balance Assessments, ver. 1.0", Lake Simcoe Region Conservation Authority, April 2017 for silt loam, resulting in a precipitation surplus of 276 mm/yr. For comparison purposes, the Thornthwaite-Mather Method has been applied to Environment Canada's Climate Normals data for the Udora Climate Station (Table J-1, Appendix J), located approximately 15 km to the north, and the Richmond Hill Weather Station (Table J-2), located approximately 30 km to the southwest resulting in precipitation surpluses of 298 mm/yr and 279 mm/yr, respectively, which are reasonably consistent with the Reference Document surplus of 276 mm/yr.

As indicated in Table 4 (first page), an infiltration factor of 0.45 has been derived for pervious surfaces at the Property using infiltration factors provided in Table 2 of former MOEE Hydrogeological Technical Information Requirements for Land Development Applications, 1995 ("MOEE, 1995"). A topography factor of 0.15 was used due to the typical slope of one in 60, i.e., the average of the factors for hilly and rolling land has been used. A soil factor of 0.2 (medium combination of clay and loam) was used due to the silt, trace to some clay soil present and a factor of 0.1 was used for the open land ("Cover - cultivated"). This results in an annual infiltration rate of 124 mm/yr and a runoff rate of 152 mm/yr. The infiltration rate is in reasonable agreement with the ranges provided in Table 3 of MOEE, 1995: 100 – 125 mm/yr for clayey silt and 125 – 150 mm/yr for silt. A runoff factor of 90% and an evapotranspiration factor of 10% was used for the existing concrete slab, proposed building roofs and existing/proposed asphalt paved areas.

The second page of Table 4 presents the pre- and post-development water balances. The post-development infiltration deficit, in the absence of any mitigative measures, is 680 m^3/yr.

3.19 Installation of Property Servicing

Excavations will be required for the installation of Property servicing. Based on the depth of servicing provided and soil stratigraphy data obtained from the subsurface investigation it is expected that excavations for the installation of sanitary sewer servicing will be completed within silt, trace to some clay and, in some areas, trace sand.

As details of the proposed utility installations are not presently available, the following calculation is provided for the purpose of illustration.

The Dupuit-Forchheimer Equation for flow into a fully penetrating trench with unconfined conditions (Driscoll, 1986) is:

$$Q = \pi * K * (H^2 - h_w^2) / (\ln[R_o / r_e]) + 2 * X * K * (H^2 - h_w^2) / (R_o)$$

Where:

Q = flow rate in m^3/s

$\pi = 3.14$

H = initial saturated thickness = 9.1 m assuming base taken from the log for Well 6

h_w = saturated thickness during dewatering = 7.1 m (assumed 2 m deep trench and water table at grade)

K = Hydraulic Conductivity = 1.8×10^{-7} m/s (highest estimate)

X = daily working footprint trench length = 30 m

W = trench width = 1.2 m

r_e = radius of equivalent pumping well = $(W^2/Pi)^{1/2}$

R_o = radius of influence = $3000*(H-h_w)*K^{1/2}$ (Sichardt [1930] Approximation)

Under this scenario, the steady-state dewatering rate would be 12,600 L/day and the radius of influence would be approximately 2.6 m.

3.20 Maintenance of Ground Water Recharge

Figure 8 illustrates the locations of the proposed Low Impact Development (LID) infiltration facility. Clean runoff from the roof of the proposed new building will be directed into a swale connected to a 10 x 30 m stone infiltration trench located northwest of the proposed building. Details are provided in B+H Architects Corp.'s Drawings G-1, G-2 and GN-1, Project 1863.

The proposed building has a footprint of approximately 1,782 m^2. The raised infiltration trench will be bermed on all sides with an inner depth of 0.5 m and a holding capacity of approximately 150 m^3. The holding capacity required for a 25 mm rainfall across the entire roof footprint is 44.5 m^3. The ratio of drainage area to infiltration area is 1,782:300 or approximately 5.9:1.

At present, the depth to the water table at the proposed location of the infiltration trench is unknown. As a conservative measure, it has been assumed to be at grade and the infiltration facility is assumed to be constructed on fill base 0.5 m thick. The fill material to construct the base of infiltration trench will consist of local soil obtained from on-site construction activities.

The assessment of the proposed design consists of two components, (i) assessing the maximum infiltration rate that the proposed LID feature can manage and deriving the associated runoff rate over the catchment area (rooftop) and (ii) assessing the annual infiltration volume using recent weather data (Udora Climate Station). The following assumptions are used in the assessment:

- The hydraulic conductivity of the aquifer and overlying initially unsaturated soil is 1×10^{-7} m/s (the lowest value obtained from any test method; the lowest value from infiltration testing was 6.3×10^{-7} m/s);

- The initial saturated thickness of the aquifer is 7.45 m (based on depth to the underlying sand and gravel at Well 6 less the depth of the highest water table at the nearest monitoring wells, BH15 and BH16);

- The specific yield of the aquifer is 0.08 (value for silt from Johnson, 1967);

- The maximum allowable ground water mound height beneath the simulated infiltration facility is equal to the thickness of the unsaturated zone (i.e., the 0.5 m of fill) at the centroid of the infiltration facility (i.e., the maximum allowable ground water mound contacts the base of the infiltration facility at a single point);

- The assessment using weather data uses only data for 2017 and 2019, rather than the customary three most recent years, because 2018 was wetter than average and would potentially bias the results favourably;

- The assessment using weather data excludes any precipitation in excess of the amount that can be infiltrated over a 24 hour period (i.e., loosely speaking, if 5 mm/day can be infiltrated and a day with 10 mm of rain is followed by a dry day, 5 mm infiltrates on the first day but no infiltration of water stored in the LID facility at midnight on the first day infiltrates on the second day). This is a conservative assumption given that the infiltration trench is designed to contain a 25 mm rainfall event; and

- The assessment using weather data excludes any contribution during months with average temperature below 0º C (January to March and December) and does not include a contribution from seasonal snowmelt.

This is considered to be a conservative assessment. The groundwater mounding assessment was determined by solving a simplified version of the Hantush, 1967 equation for groundwater mounding using an Excel spreadsheet (USGS 2010-5102, a.k.a. Carleton, 2010) outlined in “Simulation of Groundwater Mounding Beneath Hypothetical Stormwater Infiltration Basins (U.S. Geological Survey Scientific Investigations Report 2010-5102)”. This spreadsheet provides an estimate of the transient condition experienced during infiltration of stormwater (infiltration will occur over a period of time, and cease) rather than steady state (infiltration of a constant volume of water over time). The spreadsheet assumes vertical anisotropy with the vertical hydraulic conductivity being one-tenth of the horizontal (i.e., input) hydraulic conductivity.

The USGS spreadsheet output is provided after Tables J-1 and J-2 in Appendix J. It should be noted that all measurements are in feet and that the distances at which mounding is reported at are measured from the centre of the infiltration facility. Thus, the measurement of 16.4 ft/5 m corresponds to the outer edge of the 10 m long side of the infiltration trench.

The maximum infiltration rate over the 300 m^2 footprint of the infiltration trench, if constructed over 0.5 of fill, is 0.131 ft/day (40 mm/day). This equates to 6.72 mm/day over the 1,782 m^2 catchment area.

Table J-3 presents the infiltration that would have occurred in 2017 and Table J-4 presents the equivalent data for 2019. The infiltration volumes for 2017 and 2019 with a 0.5 m ground water mound are 768 and 705 m^3, respectively. Given an annual infiltration deficit of 680 m^3/yr, it appears that a 0.5 m fill layer, assuming seasonal high water table at existing grade, underneath the proposed infiltration trench will be adequate.

4.0 SOURCE WATER IMPACT ASSESSMENT AND MITIGATION PLAN (SWIAMP)

4.1 Risk Assessment

4.1.1 Identification of Vulnerable Areas

The location of the Property with respect to Wellhead Protection Areas (WHPAs) is shown on the first page in Appendix I. A portion of the area proposed for redevelopment is located within the WHPA-A of the Town of Uxbridge's Well 6. The WHPA-A consists of a 100 m radius centered around Well 6, as illustrated on Figures 2 and 8. A large portion of the Property, other than the north-central and northeast portions of the Property, is located within Well 6's WHPA-B through D (Appendix I). In prior correspondence, regulatory authorities have indicated that no refueling of construction equipment or storage of fuels/chemicals during construction should occur in the WHPA's, particularly WHPA-A, and that the redevelopment's snow storage area must be located outside WHPA-A.

The Property is located approximately 2.3 km north of the Oak Ridges Moraine, and is not located within the Oak Ridges Moraine Conservation Plan Area.

4.1.2 Identification of Prescribed Drinking Water Threats

The Clean Water Act, 2006, prescribes a number of land uses that are considered to be drinking water threats. The applicable circumstances for activities and conditions to the Property are listed, along with a qualitative evaluation of the threat level, in table below. For the proposed development (i.e., long-term condition, short-term is considered separately in Section 5.2.2), there are three (3) potential drinking water quality threats to consider:

- Use of de-icing salt;
- Operation of sanitary sewers; and
- Activities related to the operation of the Property as a medical facility, including chemical/pathogen handling and storage.

It is assumed that requirements specific to medical practices in Ontario will address potential drinking water quality threats associated with the last issue and it is not considered further.

Drinking Water Quality Threats Summary

#	WHPA Zone on Property	Intrinsic Vulnerability Score	Identified Prescribed Drinking Water Threat	Short Form Name	Type of Threat (Chemical or Pathogen)	Applicable Circumstances	CWA Rating of the Drinking Water Threat
1	WHPA-A and -B	6	The application of road salt	Road salt	Chemical	Exceedances of Table 2 Site Condition Standards due to past activities (Rule 126). Total impervious area >80% of total area.	Low (2017 Threats Table, Chemical, Line 1634)
2	WHPA-A and -B	6	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	Sewage System Or Sewage Works - Sanitary Sewers and related pipes	Pathogen/Chemical (potential)	Detectable Total Coliform Bacteria due to past activities (Table 2).	Low (2017 Threats Table, Pathogen, Line 166)

Notes:

1. The CWA rating does not include a reduction of the threat if contingency or mitigatory measures are applied.

4.1.3 Identification of Drinking Water Quantity Threats

Given the modest potential dewatering requirements for the proposed development (Section 4.4), the primary threat to water quantity would be the post-development infiltration deficit of 680 m^3/yr that would result if mitigative measures were not implemented (Section 4.3). However, the maintenance of recharge is required under South Georgian Bay Lake Simcoe Source Protection Region Approved Source Protection Plan Policies LUP-12 and LUP-13. The associated mitigative measures (re-infiltration) are discussed in Section 4.5.

4.2 Risk Management Plan

4.2.1 Water Quality Threats Management

4.2.1.1 The Application of Road Salt

4.2.1.1.1 Preventive/Mitigation/Management Measures – Road Salt

Impacts associated with current practices related to the application of de-icing salt are documented in Section 3.7. The implementation of a salt management plan to reduce the use of de-icing salt and/or replace it with other de-icing agents is strongly recommended.

All salt (or replacement de-icing agent[s]) stored at the Property for later application shall be stored in water-impermeable containers roof-covered areas of the Property that are either asphalt-paved or have a poured concrete floor to minimize entry into the subsurface. Only quantities required for reasonably foreseeable short-term use should be stored on-site.

Runoff from the proposed western parking lot is proposed to be directed into lined filtration trenches that will discharge to a bioswale in the western portion of the Property (Figure 2) prior to eventual discharge to surface water.

The Transportation Association of Canada (TAC) has produced a document titled Syntheses of Best Practices – Road Salt Management (2013). These should be generally followed at the Property unless prohibited. In addition, best management practices for contractors, residents, and the community are provided by the not-for-profit organization Smart About Salt Council and their recommendations may be of benefit in reducing salt loads.

4.2.1.2 Monitoring, Emergency Response, Financial Assurance and Communication and Implementation Plan – Road Salt

These issues, where applicable, will need to be incorporated into the management plan outlined in the preceding Subsection.

4.2.1.3 Sanitary Sewers and Related Piping

The proposed development will be serviced with municipal sewers. No on-site sewage treatment systems are proposed or anticipated. The proposed medical office building will be constructed slab-on-grade. Service connections may be deeper and possibly below the water table (i.e., greater than 2 m below grade), but will be constructed in the low permeability silt, resulting in at most a modest interception of ground water flow by the utility service trenches. If utility trenches will extend below the water table, trench plugs should be installed at intervals so as to reduce any potential interception of ground water flow.

4.2.1.3.1 Industry Standards, Regulations and Best Management Practices

Sanitary sewage works for the Property will adhere to all applicable provincial and local regulations. Precise metrics for the sewage works will be provided at the detailed design stage. The following legislation regarding design and approval of the sewage works is applicable to the assessment of the environmental risks related to the works:

- **Engineering Standards**
  - General standards for construction.

- **Sanitary Sewer Commissioning Guidelines**
  - Physical and visual infiltration, exfiltration and joint tests to ensure that leakage into and/or out of the system is within the acceptable tolerance limits are mandatory prior to use of new sanitary sewer laterals in Durham Region. These tests are required to be carried out prior to commissioning of the on-site sewage works.
- **Environmental Protection Act, R.S.O. 1990, Chapter E.19, Part X – Spills**
  - Should a spill or leak occur at the Property, property owner (owner of the pollutant) and/or their agents are required to notify the MECP, the Regional Municipality of Durham, and the property owner, immediately upon discovery.
  - Should a spill or leak occur at the Property, the Property owner and/or their agents (persons in control of the pollutant) are required to immediately do everything practicable to prevent, eliminate and ameliorate the adverse effects of the spill.

4.2.1.3.2 Additional Risk Management Measures

In addition to the regulated management practices and procedures outlined in section 4.2.1.3.1, the Property owner will be responsible for implementing and ensuring the following Risk Management Measures at the Property:

- The Property owner will be responsible for ensuring that Property maintenance staff have and maintain an adequate and up-to-date emergency response plan at the Property at all times. The emergency response plan will include the information that the Property is located in a Wellhead Protection Area.
- Camera inspections will be conducted every 5 years to confirm the integrity of sanitary sewers at the Property.
- Any spills or leaks related to the sewage works located on the property will be reported to the Spills Action Centre.
- Contact information for the Spills Action Centre, as well as information detailing the requirement for reporting any spills which occur, will be available at the Property.

4.2.1.4 Monitoring and Emergency Response – Sanitary Sewers and Related Piping

The monitoring and emergency response measures that will be implemented at the Property have been discussed in sections 4.2.1.3.1 and 4.2.1.3.2, and include the following:

Monitoring

- All sewage works will be subject to physical and visual leak tests prior to commissioning.
- Camera inspections will be conducted every 5 years to confirm the integrity of sanitary sewers at the property.

Emergency Response

- The Property owner will be responsible for ensuring that property maintenance staff have and maintain an adequate and up-to-date emergency response plan at the Property at all times. The emergency response plan will include the information that the Property is located in a Wellhead Protection Area.
- Any spills or leaks related to the sewage works located on the property will be reported to the Spills Action Centre.
- Contact information for the Spills Action Centre, as well as information detailing the requirement for reporting any spills will occur, will be available at the Property.

4.2.1.5 Financial Assurance – Sanitary Sewers and Related Piping

Due to the low risk associated with this prescribed threat, financial assurance is not considered to be necessary for sewage works on the Property; however, the Property owners may opt to maintain insurance on the on-site sewage infrastructure.

4.2.1.6 Communication and Implementation Plan – Sanitary Sewers and Related Piping

The Property owner will be responsible for implementation of all regulatory and above-listed Risk Management Measures, including communication to all maintenance staff. Information regarding the Property's location within a Wellhead Protection Area and emergency response numbers will be available at the Property. A copy of this report or appropriate summary documentation to be prepared in future should be provided to all purchasers of the Property to ensure compliance with the above-noted Risk Management Measures.

Should a spill or leak occur at the property, the Region of Durham is to be provided with a copy of the Spills Action Centre's report.

4.2.2 Temporary Storage of Fuels and Chemicals during Construction

During construction of the proposed buildings it may be necessary to temporarily store fuels and/or chemicals at the Property. This represents a potential threat to ground water quality, as a spill of significant size may potentially impact the local water supply. The LSRCA has previously stated that it requires that refueling and the temporary storage of fuels/chemical during construction must not take place in the WHPAs, particularly WHPA-A. This requirement must be communicated to all parties involved in planning construction activities. The north-central and northeastern portions of the Property are not located in WHPAs; however, there are practical considerations associated with the northeastern portion of the Property due to the presence of the current hospital and associated features.

To further prevent and mitigate any spills at the Property, it is recommended that temporary fuel and chemical storage containers of significant size are placed within secondary containment such that a leak/spill can be contained. There are also refueling services that deliver fuel on-site. On-site storage would not be required if such a service was used.

Appropriate spill kits should be maintained at various locations throughout the Property and an emergency response plan should be developed to outline actions to be taken in case of a spill or leak.

The monitoring and emergency response measures recommended to be implemented at the Property include the following:

Monitoring

- It is recommended that temporary fuel and chemical storage locations be inspected on a regular basis to ensure integrity of storage containers.

Emergency Response

- The property owner will be responsible for ensuring that property maintenance staff have and maintain an adequate and up-to-date emergency response plan at the property at all times. The emergency response plan will include the information that the Property is located in a Wellhead Protection Area.
- Any spills or leaks related to the temporary storage of fuels and chemicals located on the property will be reported to the Spills Action Centre.
- Contact information for the Spills Action Centre, as well as information detailing the requirement for reporting should any spills occur, will be available at the Property.

4.3 Water Quantity Threats Management

4.3.1 Ground Water Takings for Dewatering/Depressurization

The proposed development at the Property will be constructed as a slab-on-grade building. An excavation during the short term period will not be required for the proposed construction activities. As such, there will not be a requirement to significantly control ground water during the construction period (i.e., there may be localized dewatering for individual foundation structures) or to control ground water in the post-construction period.

There may be requirement for temporary ground water control for the installation of any subsurface utilities. As discussed in Section 4.4, steady-state dewatering requirements for a trench extending 1 m below the water table are estimated at 12,600 L/day for a trench with a daily working footprint of 1.2 x 30 m.

As there will not be any significant short term ground water control requirements and no long term requirements, there will be no water quantity threats to the underlying aquifer in which the municipal production and public supply wells are installed in.

4.3.2 Reduction in Aquifer Recharge

There will be no adverse impact from the proposed development on the aquifer in which the water supply wells are screened.

Terraprobe recommends that best management measures are taken to maintain the pre-development water balance to maintain the overall continuity of ground water flow and recharge rates.

5.0 CONCLUSIONS AND RECOMMENDATIONS

- The Property is located within Uxbridge Brook Watershed and the Lake Simcoe and Couchiching/Black River Source Protection Area. The adjacent areas to the south of the Property are located within the Oak Ridges Moraine Planning Area, in a Settlement Areas.
- According to the Oak Ridges Moraine Conservation Plan, the Property is located approximately 2.3 km north of the Oak Ridges Moraine, and is not located within the Oak Ridges Moraine Conservation Plan Area. The western portion of the Property is located within the LSRCA regulated area.
- According to Durham Regional Official Plan, the Property is located to the north of the Oak Ridges Moraine Area and not within the Oak Ridges Moraine Area. The Property is also located in an Urban Area and is not designated as key natural heritage and hydrologic features, greenbelt natural heritage system.
- According to the MECP Source Protection Information Atlas, the Property is the site of a Highly Vulnerable Aquifer (score: 6). Aquifer Vulnerability with Vulnerability Score 6 of 10 (low to high). The westernmost portion of the Property is located in an Intake Protection Zone 3 (Score: 4.5). The Property is not located in an area of Significant Groundwater Recharge. Portions of the Property are located within WHPA-A to D due to the presence of the Township of Uxbridge's Well 6 approximately 7.5 m south of the southern boundary. The proposed development is located within WHPA-A and -B.
- The nearest surface water features are a tributary of Uxbridge Brook that passes through the northwest corner of the Property (Subwatershed 5) and a tributary of Uxbridge Brook present as a pond and creek approximately 120 m east of the Property (Subwatershed 2).
- The stratigraphy encountered at the Property consisted of 0.04 to 0.15 m of topsoil or paving materials over 0.6 to 2.3 m of earth fill. Native soil consisted of silt with a variable sand content (trace to sandy). The silt unit extended to the maximum depth of investigation.
- The depth to ground water ranged from approximately 0.2 to 2.6 m below grade during the monitoring period and was closest to surface in the southwest (vicinity of BH9, BH13 and BH14). Water levels in the monitoring wells are influenced by the operation of the Township of Uxbridge's Well 6
- A flow divide in the water table trends approximately southwest to northeast through the Property. Horizontal flow on the north side of the divide is directed towards a tributary of Uxbridge Brook that passes through the northwest corner of the Property (Subwatershed 5) and flow on the other side of the divide is towards a second tributary located east of the Property (Subwatershed 2). As a result, the direction of the horizontal hydraulic gradient varies from northwest in the west to northeast in the east. The magnitude of the horizontal hydraulic gradient also varies, being relatively steep in the west (up to 0.036 northwest) and near-neutral in the east.
- The hydraulic conductivity of the unsaturated materials at the Property, where tested, ranged from 6×10^{-7} m/sec to 1×10^{-5} m/sec. The unadjusted Infiltration Rates range from 40.9 to 85.2 mm/hr (geometric mean 59.1 mm/hr). Based on Table C-3 of TRCA, 2012, a safety factor of 3.5 is required when calculating the Design Infiltration Rates, which range from 11.7 to 24.3 mm/hr (geometric mean 16.9 mm/hr).
- The hydraulic conductivity of the saturated silt to sandy silt, where tested, ranged from 1×10^{-7} m/sec to 2×10^{-7} m/sec.

- There is a pronounced difference in water quality between wells located in the existing parking lot (BH1 through BH3) and those located in the vacant area west of the parking lot (BH13 through BH17). The concentration of chloride beneath the parking lot (maximum 4,620 mg/L at BH1, ODWSOG AO 250 mg/L) is one or even two orders of magnitude higher than further west (25.9 to 247 mg/L). A similar contrast is noted with sodium with a maximum of 1,650 mg/L beneath the parking lot at BH2 as opposed to 21.2 to 141 mg/L elsewhere. These findings are attributed to the use of de-icing salt in the parking lot and on adjacent walkways. It appears that cation exchange of sodium for +2 valent metals is occurring. While the majority of such exchanges affect the concentrations of calcium and magnesium, this mechanism likely accounts for the elevated concentrations of barium (1.95 mg/L as opposed to a MAC of 1 mg/L) and iron (32 mg/L as opposed to an AO of 0.3 mg/L) at BH1 and the elevated concentrations of manganese at BH1 and BH3 (maximum 0.28 mg/L at BH1 as opposed to an AO of 0.05 mg/L). In summary, de-icing practices in the existing parking lot and vicinity have adversely affected shallow ground water quality. If these same practices are applied to the proposed parking lot, further degradation of shallow ground water quality within an area directly affected by the operation of Well 6 will occur. The adoption of Best Management Practices for future de-icing operations is recommended.

- Finally, it is noted that the Total Coliform counts at BH2 (13 CFU/100 mL) and BH3 (4 CFU/100 mL) exceed the MAC of non-detectable. Conditions at BH1 are unclear because of the need to dilute the sample for clarity, resulting in a detection limit of 2 CFU/100 mL.

- The proposed development will result in an annual infiltration deficit of 680 m^3/yr if mitigative measures are not applied. Measures to address the infiltration deficit are required under South Georgian Bay Lake Simcoe Source Protection Region Approved Source Protection Plan Policies LUP-12 and LUP-13. It is proposed to direct roof runoff from the proposed building to a bermed 10 x 30 m infiltration trench constructed on 0.5 m of locally derived fill due to the anticipated shallow water table at the proposed location of the trench. A feasibility assessment documented herein indicates that a fill layer 0.5 m thick should be sufficient to address the infiltration deficit.

- The proposed uses at the Property which have the potential to impact ground water quality include the application of de-icing salt and the operation of sanitary sewers. Although the risks are classified as low, existing water quality data document impacts associated with the use of de-icing salt and detectable Total Coliforms were detected in samples from two wells. Appropriate planning to address these two issues as well as short-term issues associated with construction (e.g., fuel storage and handling) is warranted.

- The proposed development at the Property will be constructed as a slab-on-grade building and the soil is of low to moderate permeability. As such, there will not be deep excavations or requirements for significant ground water control requirements. As a result, construction activities pose no water quantity threats to the water supply wells that are installed in the underlying deep aquifer.

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7.0 LIMITATIONS AND USE OF THE REPORT

This report was prepared for the exclusive use of Uxbridge Health Centre and is intended to provide a hydrogeological assessment of the portion of the property identified as 4 Campbell Drive, Uxbridge, Ontario that is intended to be redeveloped.

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We trust that the above-noted information is suitable for your review. If you have any questions regarding this information, please do not hesitate to contact the undersigned.

Yours truly,

Terraprobe Inc.

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TABLES

TERRAPROBE INC.

TABLE 1
Ground Water Elevations
Uxbridge Hospital
Project #1-19-0022-46.1

Well ID	**BH1**		**BH2**		**BH3**		**BH4**		**BH5**	
Stick Up (m)	0.00		0.00		0.00		0.00		0.00	
Depth (mbgs)	5.49		6.38		7.66		6.60		5.42	
Grade (mASL)	277.53		277.49		277.52		277.57		277.68	
Date	DTW (mbg)	Elev. (mASL)	DTW (mbg)	Elev. (mASL)	DTW (mbg)	Elev. (mASL)	DTW (mbg)	Elev. (mASL)	DTW (mbg)	Elev. (mASL)
2019/02/14	2.70	274.83	2.19	275.30	2.16	275.36	2.30	275.27	NA	NA
2019/10/29	2.42	275.11	2.26	275.23	2.21	275.31	2.39	275.18	2.58	275.10
2019/11/18	2.22	275.31	2.04	275.45	2.06	275.46	2.16	275.41	*1.58*	*276.10*
2019/12/21	2.04	275.49	*2.80*	*274.69*	2.01	275.51	2.05	275.52	2.16	275.52
2020/01/30	1.91	275.62	1.80	275.69	1.82	275.70	1.86	275.71	Frozen	
2020/02/14	2.13	275.40	1.99	275.50	1.85	275.67	Buried under snow/ice		Buried under snow/ice	
2020/03/16	1.80	275.73	Decommissioned		1.62	275.90	1.73	275.84	Decommissioned	
2020/04/06	1.81	275.72	Decommissioned		Inaccessible (construction)		1.77	275.80	Decommissioned	

Well ID	**BH8**			**BH9**			**BH13**			**BH14**		
Stick Up (m)	0.93			0.93			0.94			0.94		
Depth (mbgs)	6.64			6.43			6.05			6.36		
Grade (mASL)	277.68			277.16			276.62			277.08		
Date	DTW (mBTOP)	DTW (mbg)	Elev. (mASL)	DTW (mBTOP)	DTW (mbg)	Elev. (mASL)	DTW (mBTOP)	DTW (mbg)	Elev. (mASL)	DTW (mBTOP)	DTW (mbg)	Elev. (mASL)
2019/02/14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2019/10/29	3.00	2.07	275.61	2.38	1.45	275.71	1.90	0.96	275.66	2.23	1.29	275.79
2019/11/18	2.90	1.97	275.71	1.74	0.81	276.35	1.59	0.65	275.97	1.80	0.86	276.22
2019/12/21		--			--			--		1.65	0.71	276.37
2020/01/30	2.58	1.65	276.03	1.54	0.61	276.55	1.33	0.39	276.23	1.37	0.43	276.65
2020/02/14	2.91	1.98	275.70	1.71	0.78	276.38	1.55	0.61	276.01	1.67	0.73	276.35
2020/03/16	2.54	1.61	276.07	1.35	0.42	276.74	1.13	0.19	276.43	1.29	0.35	276.73
2020/04/06	2.61	1.68	276.00	1.46	0.53	276.63	1.21	0.27	276.35	1.40	0.46	276.62

Well ID	**BH15**			**BH16**			**BH17**		
Stick Up (m)	0.80			0.92			0.94		
Depth (mbgs)	6.55			6.60			6.74		
Grade (mASL)	276.44			276.97			277.58		
Date	DTW (mBTOP)	DTW (mbg)	Elev. (mASL)	DTW (mBTOP)	DTW (mbg)	Elev. (mASL)	DTW (mBTOP)	DTW (mbg)	Elev. (mASL)
2019/02/14	NA	NA	NA	NA	NA	NA	NA	NA	NA
2019/10/29	1.88	1.08	275.36	2.49	1.57	275.40	2.66	1.72	275.86
2019/11/18	1.73	0.93	275.51	2.29	1.37	275.60	2.52	1.58	276.00
2019/12/21	1.67	0.87	275.57	2.32	1.40	275.57	2.48	1.54	276.04
2020/01/30	1.52	0.72	275.72	2.07	1.15	275.82	2.31	1.37	276.21
2020/02/14	1.69	0.89	275.55	2.24	1.32	275.65	2.43	1.49	276.09
2020/03/16	1.41	0.61	275.83	1.97	1.05	275.92	2.14	1.20	276.38
2020/04/06	1.45	0.65	275.79	2.01	1.09	275.88	2.14	1.20	276.38

Notes:
DTW - depth to water
mBTOP = metres below top of pipe
mbg = metres below grade
mASL - metres above sea level
mbgs - metres below ground surface
NA - Not Applicable (well not yet installed)

Table 2

Analytical Results - Ground Water

Sample Description	**ODWSOG/ODWSQ**			**UNITS**	**BH1**	**BH2**	**BH3**	**BH 14**	**BH 15**	**BH 16**	**BH 17**
Date Sampled	**Maximum Allowable Concentration**	**Aesthetic Objective**			**02/15/2019**	**02/15/2019**	**02/15/2019**	**10/29/2019**	**10/29/2019**	**10/29/2019**	**10/29/2019**
Electrical Conductivity	-	-	-	uS/cm	11600	8390	6710	874	612	870	1580
pH	-	6.5 - 8.5	-	pH units	7.39	7.93	7.88	7.97	7.94	8.03	7.81
Saturation pH	-	-	-	pH units	5.82	6.89	6.47	-	-	-	-
Escherichia coli	Not detectable	-	-	CFU/100mL	<2	<1	<1	-	-	-	-
Total Coliforms	Not detectable	-	-	CFU/100mL	<2	**13**	**4**	-	-	-	-
Background Colony Count	-	-	-	CFU/100mL	<2	<1	<1	-	-	-	-
Reactive Silica as SiO2	-	-	-	mg/L	20.6	9.2	11.8	-	-	-	-
Langelier Index	-	-	-	-	1.57	1.04	1.41	-	-	-	-
Total Hardness (as CaCO3)	-	-	80-100	mg/L	*2990*	*365*	*606*	-	-	-	-
Total Dissolved Solids	-	500	-	mg/L	*7170*	*4560*	*3850*	-	-	-	-
Alkalinity (as CaCO3)	-	-	30-500	mg/L	401	279	443	-	-	-	-
Bicarbonate (as CaCO3)	-	-	-	mg/L	401	279	443	-	-	-	-
Carbonate (as CaCO3)	-	-	-	mg/L	<5	<5	<5	-	-	-	-
Hydroxide (as CaCO3)	-	-	-	mg/L	<5	<5	<5	-	-	-	-
Fluoride	1.5	-	-	mg/L	<10	<1.0	<1.0	-	-	-	-
Chloride	-	250	-	mg/L	*4620*	*2990*	*2200*	37.4	25.9	7.41	247
Nitrate as N	10	-	-	mg/L	<10	<1.0	<1.0	-	-	-	-
Nitrite as N	1	-	-	mg/L	<u><10</u>	<1.0	<1.0	-	-	-	-
Bromide	-	-	-	mg/L	<10	<1.0	<1.0	-	-	-	-
Sulphate	-	500	-	mg/L	90.0	87.4	76.6	-	-	-	-
Ortho Phosphate as P	-	-	-	mg/L	24	<2.0	<2.0	-	-	-	-
Ammonia as N	-	-	-	mg/L	0.13	0.34	0.14	-	-	-	-
Ammonia-Un-ionized	-	-	-	mg/L	0.0016	0.015	0.0054	-	-	-	-
Total Phosphorus	-	-	-	mg/L	0.03	0.05	0.08	-	-	-	-
Total Organic Carbon	-	5 (dissolved)	-	mg/L	*5.2*	*7.8*	*5.6*	-	-	-	-
Colour	-	5	-	C.U.	<5	*6*	<5	-	-	-	-
Turbidity	-	5	-	NTU	*42.5*	*190*	*132*	-	-	-	-
Calcium	-	-	-	mg/L	984	131	216	-	-	-	-
Magnesium	-	-	-	mg/L	130	9.1	16.2	-	-	-	-
Sodium	20	200	-	mg/L	**1310**	**1650**	**1220**	**24.7**	**21.1**	**53.7**	**141**
Potassium	-	-	-	mg/L	7.4	3.3	5.3	-	-	-	-
Aluminum	-	-	0.1	mg/L	0.006	0.088	0.086	-	-	-	-
Antimony	0.006	-	-	mg/L	<0.003	<0.003	<0.003	<0.001	<0.001	<0.001	<0.001
Arsenic	0.025/0.010	-	-	mg/L	0.005	<0.003	<0.003	<0.001	<0.001	<0.001	<0.001
Barium	1	-	-	mg/L	**1.95**	0.237	0.087	0.254	0.197	0.273	0.328

Table 2

Analytical Results - Ground Water

Sample Description	ODWSOG/ODWSQ			UNITS	BH1	BH2	BH3	BH 14	BH 15	BH 16	BH 17
Date Sampled	Maximum Allowable Concentration	Aesthetic Objective			02/15/2019	02/15/2019	02/15/2019	10/29/2019	10/29/2019	10/29/2019	10/29/2019
Beryllium	-	-	-	mg/L	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005
Boron	5	-	-	mg/L	0.028	0.040	0.054	0.0344	0.0137	0.0243	0.0253
Cadmium	0.005	-	-	mg/L	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002
Chromium	0.05	-	-	mg/L	0.012	0.008	0.006	<0.002	0.005	<0.002	<0.002
Cobalt	-	-	-	mg/L	0.0014	<0.0005	0.0010	<0.0005	<0.0005	<0.0005	<0.0005
Copper	-	1	-	mg/L	0.002	0.002	0.006	<0.1	<0.1	<0.1	<0.1
Iron	-	0.3	-	mg/L	**32.0**	<0.01	0.05	-	-	-	-
Lead	0.01	-	-	mg/L	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	0.0008
Manganese	-	0.05	-	mg/L	*0.280*	0.026	*0.148*	-	-	-	-
Mercury	0.001	-	-	mg/L	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	-	-	-	mg/L	<0.002	0.005	0.002	0.0023	0.0048	0.0139	0.0063
Nickel	-	-	-	mg/L	<0.003	<0.003	<0.003	0.0034	0.0015	0.0011	0.0018
Selenium	0.01	-	-	mg/L	<0.004	<0.004	<0.004	<0.001	<0.001	<0.001	0.001
Silver	-	-	-	mg/L	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002
Strontium	-	-	-	mg/L	2.69	0.556	0.594	-	-	-	-
Thallium	-	-	-	mg/L	<0.0003	<0.0003	<0.0003	0.0017	0.0017	0.0008	0.0017
Tin	-	-	-	mg/L	<0.002	<0.002	<0.002	-	-	-	-
Titanium	-	-	-	mg/L	0.003	0.003	0.003	-	-	-	-
Tungsten	-	-	-	mg/L	<0.010	<0.010	<0.010	-	-	-	-
Uranium	0.02	-	-	mg/L	<0.002	<0.002	<0.002	0.0008	0.0012	0.0059	0.0017
Vanadium	-	-	-	mg/L	<0.002	<0.002	0.006	<0.0004	0.0006	<0.0004	0.0006
Zinc	-	5	-	mg/L	0.009	0.006	0.009	0.0074	<0.005	<0.005	<0.005
Zirconium	-	-	-	mg/L	<0.004	<0.004	<0.004	-	-	-	-
Cation Sum	-	-	-	meq/L	117	79.1	65.3	-	-	-	-
Anion Sum	-	-	-	meq/L	140	91.7	72.5	-	-	-	-
% Difference/ Ion Balance	-	-	-	%	9.02	7.37	5.22	-	-	-	-

NOTES:

1. All results reported in mg/L unless otherwise noted.
2. Results compared to Ontario Drinking Water Standards, Objectives and Guidelines, June 2006 and Ontario Drinking Water Quality Standards, January 2018 (arsenic only).
3. Results exceeding Maximum Allowable Concentrations are in **BOLD.**
4. Results exceeding Aesthetic Objectives or Operational Guidelines are in italics.
5. Detection limits exceeding an applicable standard are underlined.

TABLE 3

HYDRAULIC CONDUCTIVITY ESTIMATES AND INFILTRATION RATES

4 CAMPBELL DRIVE, UXBRIDGE

Test ID	Test Used	Depth (m)	Soil Description	K (cm/s)	LN(I)	Infiltration Rate (mm/hour)	Design Infiltration Rate (Safety factor of 3.5)
TP1	Guelph Permeameter	1	Silty sand, trace gravel	9.8E-04	4.4	85.2	24.3
TP2	Guelph Permeameter	1.7	Silt, trace to some fine sand	6.3E-05	3.7	40.9	11.7
TP3	Guelph Permeameter	1.5	Silty fine sand	1.1E-04	3.9	47.5	13.6
BH8	Guelph Permeameter	1.3	Sand, some silt, trace gravel	5.7E-04	4.3	73.9	21.1
Geometric Mean	n.a.			2.5E-04	4.1	59.1	16.9
For selecting safety factor: geometric mean/minimum			*4.0*	*Safety factor from Table C-3:*		*3.5*	

Reference for calculationof Infiltration Rate and selection of Safety Factor:
Appendix C, Low Impact Development Stormwater Management Planning and Design Guide, ver. 1.0. Toronto and Region Conservation Authority and the Credit Valley Conservation Authority, 2010.

From Figure C 11: $y=6E\text{-}11(X^{3.7363})$
LN(K)=LN6-11LN10+3.7363LN(I)
LN(I)=(LN(K)+11LN(10)-LN(6))/3.7363
with K in cm/s and Infiltration im mm/hr

The measured infiltration rate (in millimetres per hour) at the proposed bottom elevation of the BMP must be divided by a safety correction factor selected from Table C 3 to calculate the design infiltration rate. To select a safety correction factor from Table C 3, calculate the ratio of the mean (geometric) measured infiltration rate at the proposed bottom elevation of the BMP to the rate in the least permeable soil horizon within 1.5 metres below the bottom of the BMP. Based on this ratio, a safety correction factor is selected from Table C 3. For example, where the mean infiltration rate measured at the proposed bottom elevation of the BMP is 30 mm/h, and the mean infiltration rate measured in an underlying soil horizon within 1.5 metres of the bottom is 12 mm/h, the

ratio would be 2.5, the safety correction factor would be 3.5, and the design infiltration rate would be 8.6 mm/h. Where the soil horizon is continuous within 1.5 metres below the proposed bottom of the BMP, the mean infiltration rate measured at the bottom elevation of the BMP should be divided by a safety correction factor of 2.5 to calculate the design infiltration rate.

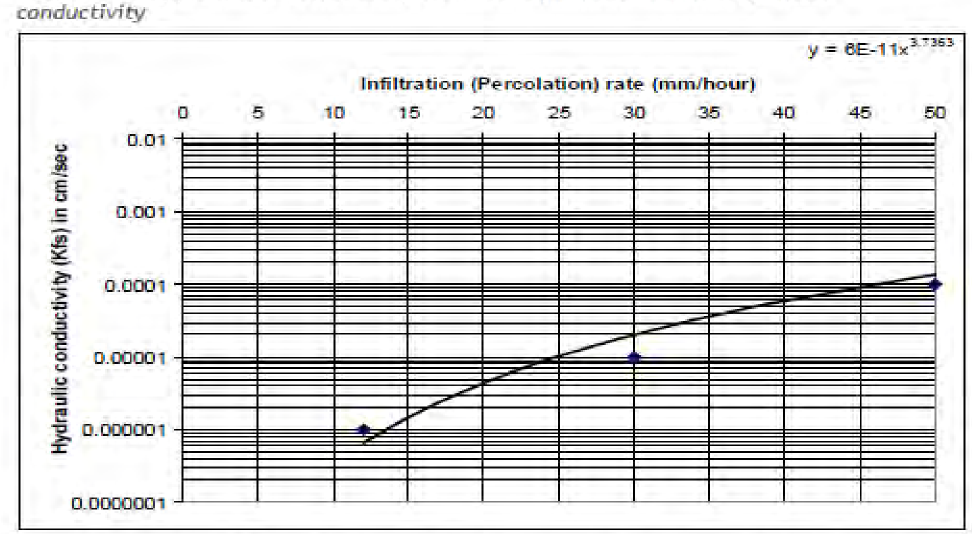
Table C 3: Safety correction factors for calculating design infiltration rates

Ratio of Mean Measured Infiltration Rates[1]	Safety Correction Factor[2]
≤ 1	2.5
1.1 to 4.0	3.5
4.1 to 8.0	4.5
8.1 to 16.0	6.5
16.1 or greater	8.5

Source: Wisconsin Department of Natural Resources. 2004. Conservation Practice Standards. Site Evaluation for Stormwater Infiltration (1002). Madison, WI.

Notes:
1. *Ratio is determined by dividing the geometric mean measured infiltration rate at the proposed bottom elevation of the BMP by the geometric mean measured infiltration rate of the least permeable soil horizon within 1.5 metres below the proposed bottom elevation of the BMP.*
2. *The design infiltration rate is calculated by dividing the geometric mean measured infiltration rate at the proposed bottom elevation of the BMP by the safety correction factor.*

Figure C 11: Approximate relationship between infiltration rate and hydraulic conductivity



Source: Ontario Ministry of Municipal Affairs and Housing (OMMAH). 1997. Supplementary Guidelines to the Ontario Building Code 1997. SG-6 Percolation Time and Soil Descriptions. Toronto, Ontario.

Table 4 - Water Balance

Project No. 1-19-0022-4

1. Climate Information

Source: calculations for Uxbridge Brook Subwatershed, p. 24 of "Lake Simcoe Climate Data: A Reference Document to Support the Completion of Water Balance Assessments, ver. 1.0", Lake Simcoe Region Conservation Authority, April 2017.

Precipitation	892	mm/a
Evapotranspiration	616	mm/a
Water Surplus	276	mm/a

2. Infiltration Rates

MOE, 1995 Infiltration Factors

Pervious Surfaces		*Infiltration Factor*	
1 in 60 (17 m/km) typical slope		0.15	Average of hilly and rolling land factors
Silt		0.2	Use factor for medium combination of clay and loam
Cover - cultivated		0.1	
	TOTAL:	0.45	

Infiltration	124.2	mm/a
Runoff	151.8	mm/a

Impervious Surfaces	*Infiltration Factor*	
Asphalt or building(s)	0	(90% runoff, 10% evapotranspiration)
Existing concrete	0	(90% runoff, 10% evapotranspiration)

3. Property Statistics (Changes within Development Area only)

(i) Pre-Development Site Coverage

Asphalt		2,375	m^2
Concrete		30	m^2
Pervious		5,474	m^2
	TOTAL	7,879	m^2

(ii) Post-Development Coverage

New asphalt		6,319	m^2
Building(s)		1,560	m^2
Concrete		0	m^2
Pervious		0	m^2
	TOTAL:	7,879	m^2

Table 4 - Water Balance

Project No. 1-19-0022-46.1

4. Annual Water Balance Before Development

Land Use	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Runoff (m3)
Asphalt	2,375	2,119	212	0	1,907
Concrete	30	27	3	0	24
Pervious	5,474	4,883	3,372	680	831
TOTAL	**7,879**	**7,028**	**3,587**	**680**	**2,762**

5. Annual Water Balance After Development

Land Use	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Runoff (m3)
Asphalt	6,319	5,637	564	0	5,073
Building	1,560	1,392	139	0	1,252
Concrete	0	-	-	-	-
Pervious	0	-	-	-	-
TOTAL	**7,879**	**7,028**	**703**	**0**	**6,325**

6. Comparison of Pre-Development and Post-Development

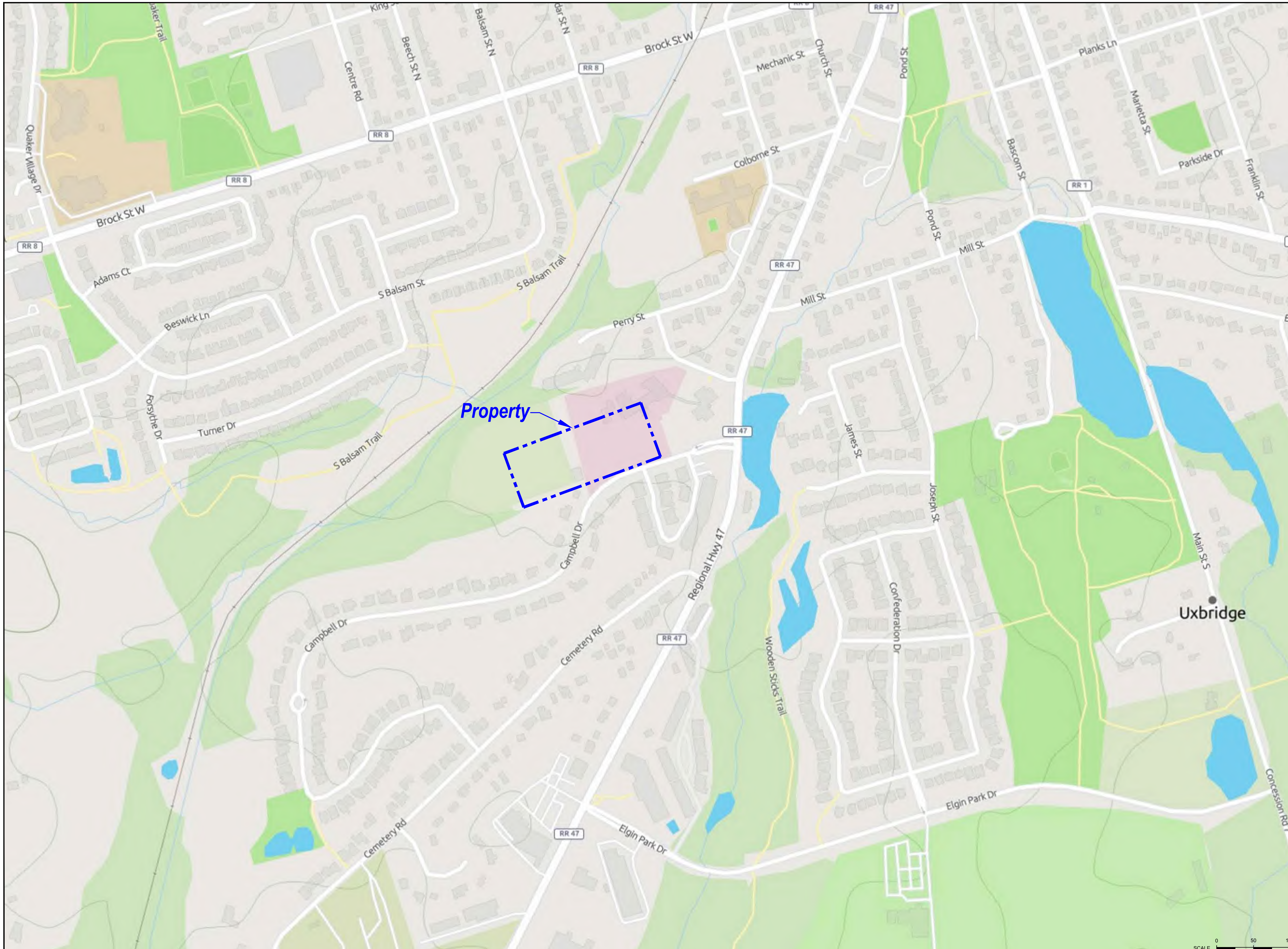
	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Runoff (m3)
Pre-Development	7,028	3,587	680	2,762
Post-Development	7,028	703	0	6,325
Change	--	-2,884	-680	3,564

7. Requirement for Infiltration

Required annual infiltration volume to meet pre-development infiltration rates (m^3) 680

FIGURES

TERRAPROBE INC.



Terraprobe Inc.

Consulting Geotechnical & Environmental Engineering
Construction Materials, Inspection & Testing

11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650

Reference: Toronto Maps

Notes:

Legend:

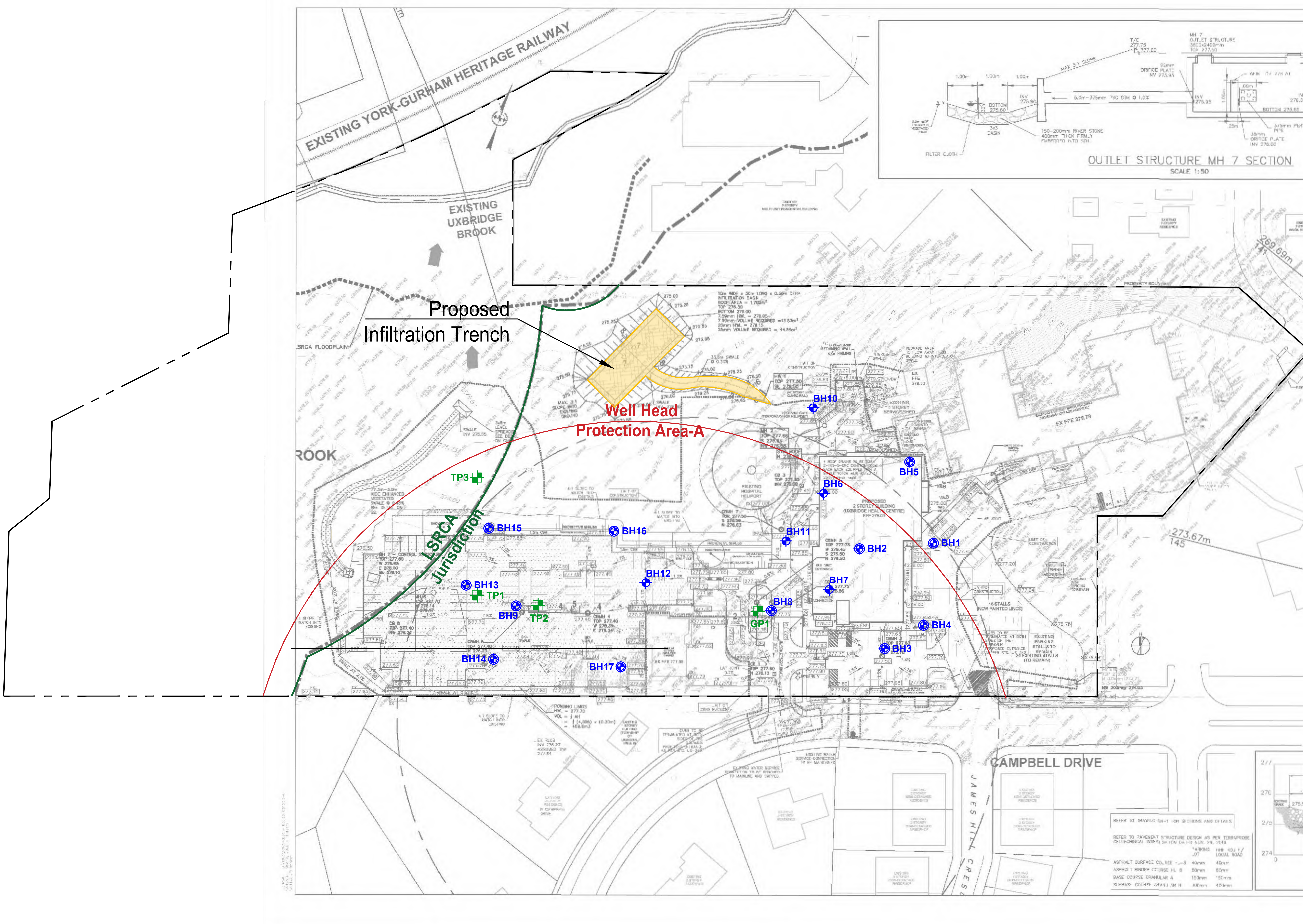
Property Boundary

Project Title: Hydrogeological Study

Site Location: 4 Campbell Drive, Uxbridge, Ontario

Figure Title: SITE LOCATION PLAN

Designed By: JW	File No.: 1-19-0022-46.1
Drawn By: SSK	Scale: As Shown
Reviewed By: SH	Figure No.: 1
Date: May 2020	



Terraprobe Inc.
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Construction Materials, Inspection & Testing
11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650

Reference:
Project: Uxbridge Health Center
Sheet Contents: Site Survey
Project No.: 1811142
Sheet No.: ESC-1, Date: 01/17/20
By: B+H Architects

Notes:

Legend:
- Property Boundary
- Borehole Location (Terraprobe 2019)
- Monitoring Well Location (Terraprobe 2019)
- TP Test Pit Location (Terraprobe 2019)
- GP Guelph Permeameter Test Location

Project Title:
Hydrogeological Study

Site Location:
4 Campbell Drive, Uxbridge, Ontario

Figure Title:
BOREHOLE, TEST PIT AND MONITORING WELL LOCATION PLAN

Designed By: JW	File No.: 1-19-0022-46.1
Drawn By: SSK	Scale: As Shown
Reviewed By: SH	Figure No.: 2
Date: May 2020	

Terraprobe Inc.
Consulting Geotechnical & Environmental Engineering
Construction Materials, Inspection & Testing
11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650

N

Reference:
Google Earth © 2018

Notes:

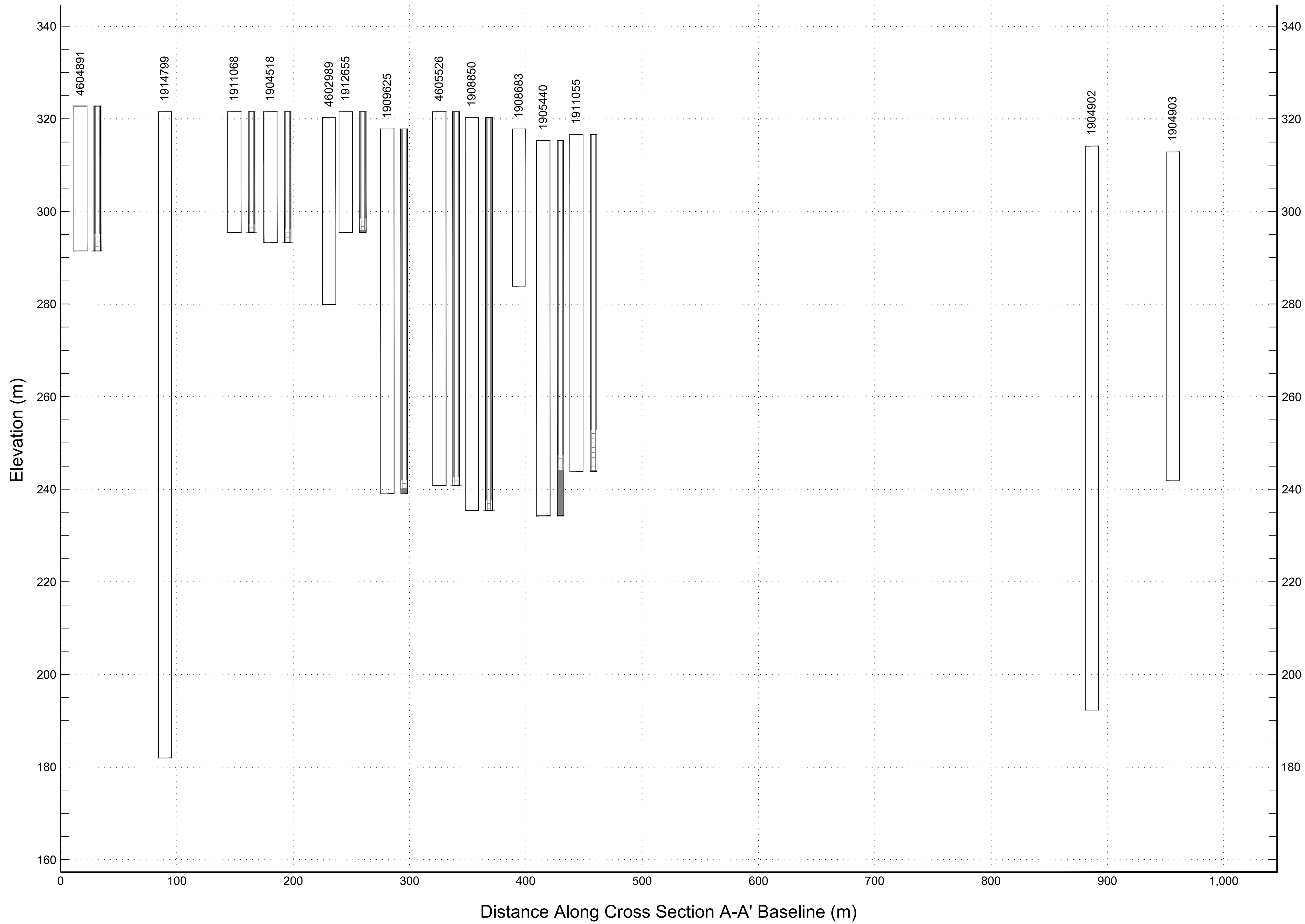
Legend:
- Property Boundary
- Approximate Development Area Boundary
- Borehole with Monitoring Well Location by Terraprobe 2019
- MECP Monitoring Wells in Study Area
- Approximate Cross Section Location

Project Title: Hydrogeological Study

Site Location: 4 Campbell Drive, Uxbridge, Ontario

Figure Title: MECP WELL LOCATION PLAN

Designed By:	JW	File No.:	1-19-0022-46.1
Drawn By:	SSK	Scale:	As Shown
Reviewed By:	SH	Figure No.:	3
Date:	May 2020		



Terraprobe Inc.
Consulting Geotechnical & Environmental Engineering
Construction Materials, Inspection & Testing
11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650

N

Reference:
Google Earth © 2018

Notes:

Legend:

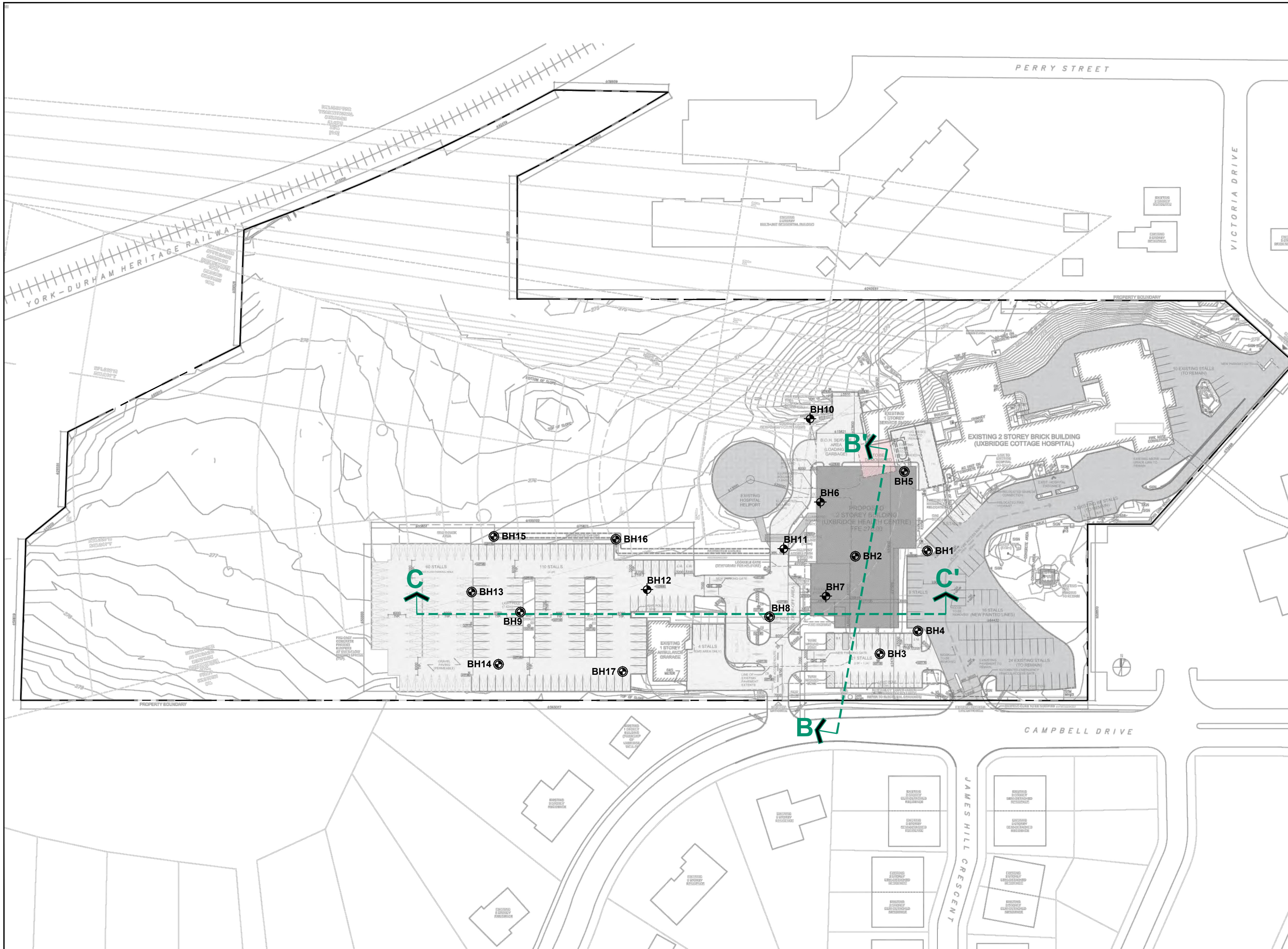
- Topsoil
- Clay
- Sand
- Sandy Clay
- Silty Clay
- Gravel
- Silt
- Boulder
- Clay and Silt
- Fill
- Bedrock (cored)
- Ground Water Level (mbgs)

Project Title:
Hydrogeological Study

Site Location:
4 Campbell Drive, Uxbridge, Ontario

Figure Title:
MECP CROSS SECTION A-A'

Designed By: JW	*File No.:* 1-19-0022-46.1
Drawn By: SSK	*Scale:* As Shown
Reviewed By: SH	*Figure No.:* 4
Date: May 2020	



Terraprobe Inc.

Consulting Geotechnical & Environmental Engineering
Construction Materials, Inspection & Testing

11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650

Reference:

Project: Uxbridge Health Center
Sheet Contents: Site Survey
Project No.: 1811142
Sheet No.: A0-01, Date: 09/09/19
By: B+H Architects

Notes:

Legend:

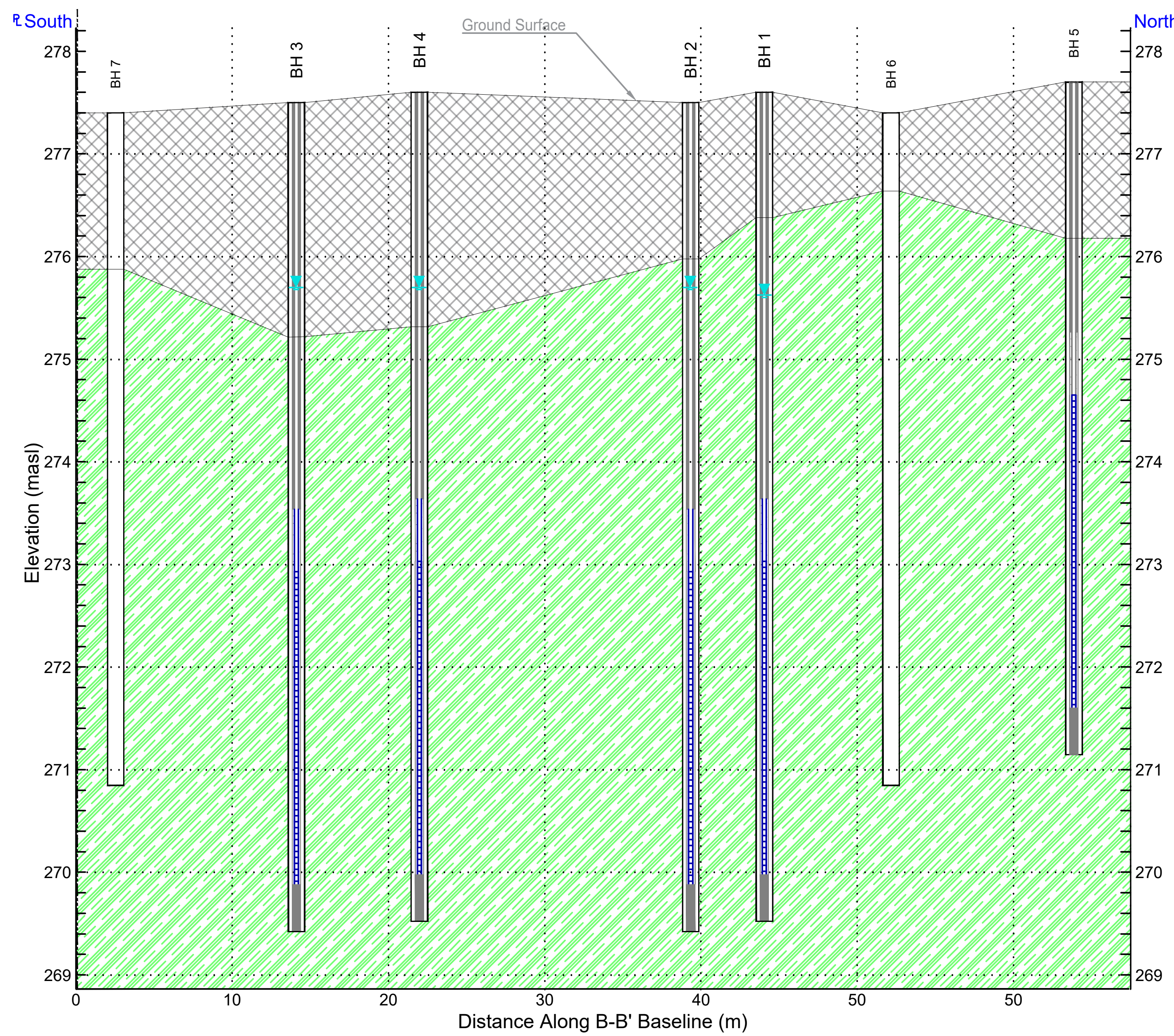
- Property Boundary
- Borehole Location (Terraprobe 2019)
- Monitoring Well Location (Terraprobe 2019)
- Test Pit Location (Terraprobe 2019)
- Cross Section Location

Project Title: Hydrogeological Study

Site Location: 4 Campbell Drive, Uxbridge, Ontario

Figure Title: CROSS-SECTION LOCATION PLAN

Designed By: JW	*File No.:* 1-19-0022-46.1
Drawn By: SSK	*Scale:* As Shown
Reviewed By: SQ	*Figure No.:* 5A
Date: May 2020	



Terraprobe Inc.
Consulting Geotechnical & Environmental Engineering
Construction Materials, Inspection & Testing
11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650

Reference:
Project: Uxbridge Health Center
Sheet Contents: Site Survey
Project No.: 1811142
Sheet No.: A0-01, Date: 09/09/19
By: B+H Architects

Notes:

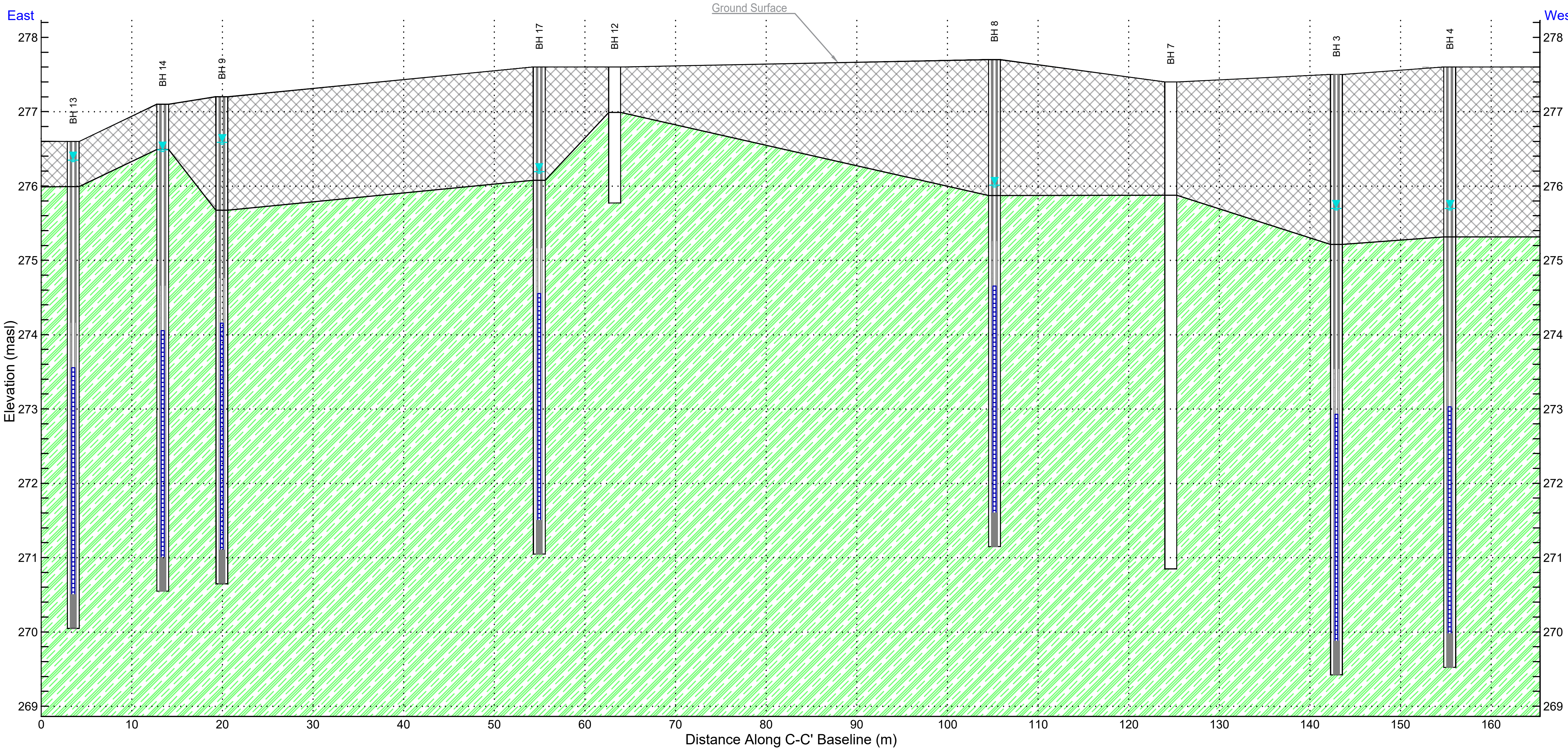
Legend:
- Earth Fill
- Silt
- Monitoring Well Screen
- Approximate Elevation of Ground Water Table (masl), Jan. 30, 2020

Project Title: Hydrogeological Study

Site Location: 4 Campbell Drive, Uxbridge, Ontario

Figure Title: HYDROGEOLOGICAL CROSS SECTION B-B'

Designed By: JW	File No.: 1-19-0022-46.1
Drawn By: SSK	Scale: As Shown
Reviewed By: SH	
Date: May 2020	Figure No.: 5



Terraprobe Inc.

Consulting Geotechnical & Environmental Engineering
Construction Materials, Inspection & Testing

11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650

Reference:

Project: Uxbridge Health Center
Sheet Contents: Site Survey
Project No.: 1811142
Sheet No.: A0-01, Date: 09/09/19
By: B+H Architects

Notes:

Legend:

- Earth Fill
- Silt
- Monitoring Well Screen
- Approximate Elevation of Ground Water Table (masl), Jan. 30, 2020

Project Title:

Hydrogeological Study

Site Location:

4 Campbell Drive, Uxbridge, Ontario

Figure Title:

HYDROGEOLOGICAL CROSS SECTION C-C'

Designed By: JW	*File No.:* 1-19-0022-46.1
Drawn By: SSK	*Scale:* As Shown
Reviewed By: SH	
Date: May 2020	*Figure No.:* 6

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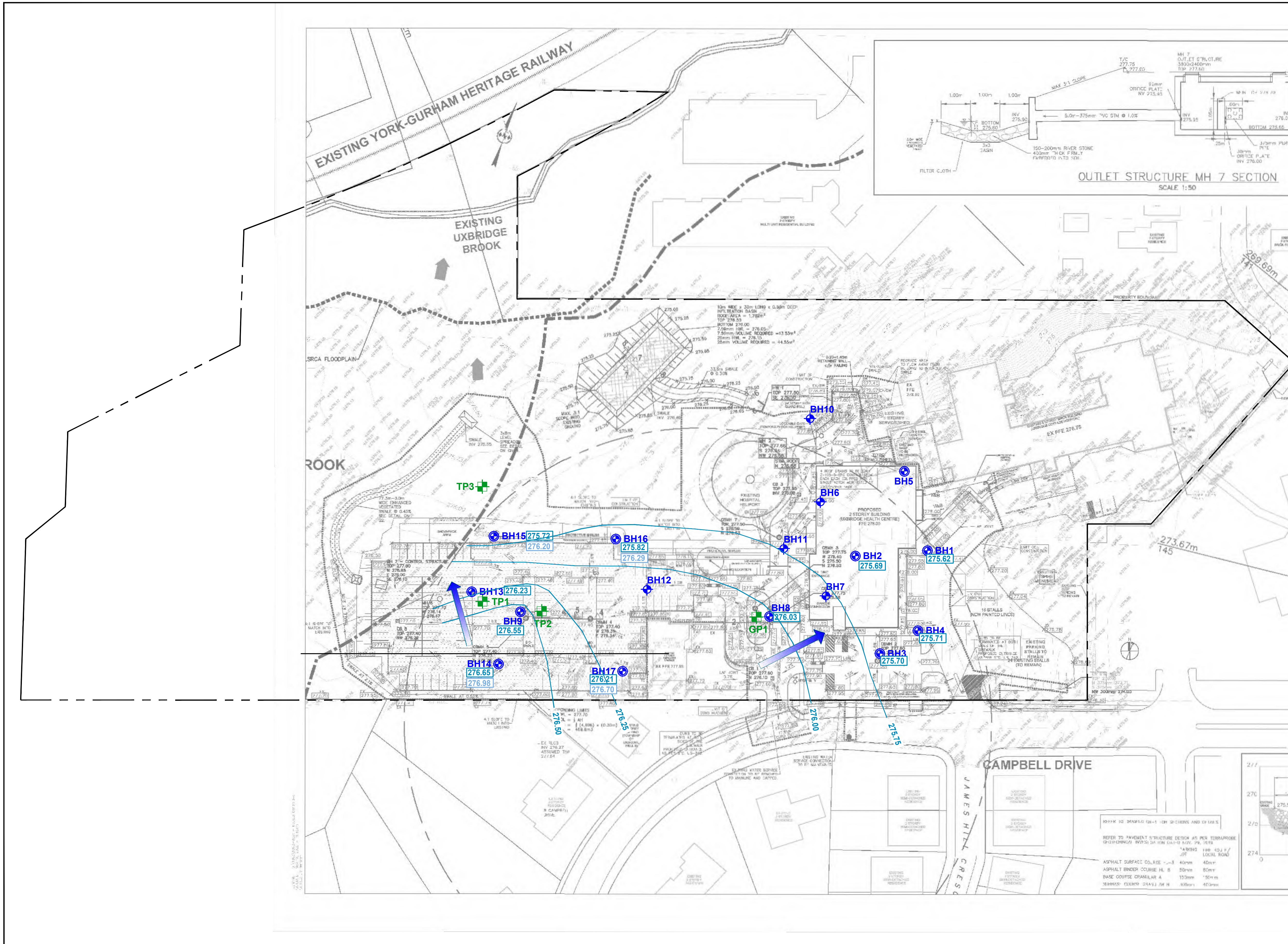

Terraprobe Inc.

Consulting Geotechnical & Environmental Engineering
Construction Materials, Inspection & Testing

11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650

Reference:

Project: Uxbridge Health Center
Sheet Contents: Site Survey
Project No.: 1811142
Sheet No.: ESC-1, Date: 01/17/20
By: B+H Architects

Notes:

Legend:

- Property Boundary
- Borehole Location (Terraprobe 2019)
- Monitoring Well Location (Terraprobe 2019)
- TP Test Pit Location (Terraprobe 2019)
- GP Guelph Permeameter Test Location
- 275.71 Water Table Elevation(mASL), Jan 30,2020
- 276.98 Maximum known Water Table Elevation(mASL), Jan 12,2020 (Wells with Datalogger Only)
- 275.75 Inferred Water Table (mASL, Jan 30, 2020) Contours
- Inferred Flow Direction

Project Title:

Hydrogeological Study

Site Location:

4 Campbell Drive, Uxbridge, Ontario

Figure Title:

GROUND WATER CONTOURS- JAN 30, 2020

Designed By:	JW	*File No.:*	1-19-0022-46.1
Drawn By:	SSK	*Scale:*	As Shown
Reviewed By:	SH		
Date:	May 2020	*Figure No.:*	8

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APPENDIX A

TERRAPROBE INC.

SEWER INVERT DATA TABLE

MH/CB	DIRECTION	INVERT	DIAMETER	TOP ELEV.
CB #1	S	0.87	150	276.68
CB #2	N SE	0.82 0.92	150 200	276.52
CB #3	S	0.87	150	276.61
CB #4	W NE E E S	1.55 1.46 1.50 1.03 1.63	200 200 375 50 400	276.57
CB #5	NW NW	0.80 1.10	50 300	276.56
CB #6	S	1.10	150	276.52
CB #7	SW	1.54	*N/A	275.89
CB #8	FULL OF DEBRIS			276.56
CB #9	S	0.87	200	276.52
CB #10	E	0.72	200	276.47
CB #11	NE SW	0.50 0.79	100 150	276.54
CB #12	S	0.98	150	276.71
CB #13	W	1.22	150	276.95
CB #14	E	0.74	200	278.17
CB #15	S	1.48	250	277.43
CB #16	N	1.46	250	277.37
STM MH#1	COULD NOT OPEN			276.64
STM MH#2	N NE W	1.30 1.42 1.43	100 300 375	276.70
STM MH#3	N S NW	2.97 3.13 2.65	375 400 300	276.68
STM MH#4	N E W	3.07 3.30 3.27	400 600 525	276.37
STM MH#5	E SW	3.00 2.76	525 375	277.60
STM MH#6	W E	0.79 0.50	150 100	278.72
SAN MH#1	W E	4.20 4.18	150 150	280.77
SAN MH#2	NE NE S NW	2.15 3.25 3.29 3.30	200 200 200 100	278.46
SAN MH#3	NW SE	3.30 3.48	200 200	277.93
SAN MH#4	SE W	1.48 1.46	100 100	277.71
SAN MH#5	NO VISIBLE INVERTS; RECESSED			277.60
SAN MH#6	NE SW	3.64 3.58	200 200	278.85
SAN MH#7	E SW	2.70 2.67	200 200	277.60
SAN MH#8	E S W	4.18 2.50 4.20	150 150 150	276.93
SAN MH#9	FULL OF DEBRIS			278.60

PLAN OF SURVEY ILLUSTRATING TOPOGRAPHY OF

LOTS 261, 262 AND 263 AND PART OF LOTS 259, 260 AND 264 BLOCK DD, LOTS 394, 395, 400 AND 401 AND PART OF LOTS 390, 391, 393 AND 399 BLOCK QQ, LOTS 406, 407 AND 408 AND PART OF LOTS 405, 409, 410 AND 411 BLOCK RR, PART OF LOTS 420 TO 425 BLOCK TT, LOTS 433 AND 434 AND PART OF LOTS 432, 435, 436 AND 437 BLOCK UU, PART OF LOTS 439 TO 440 BLOCK VV, PART OF BEECH STREET, BALSAM STREET, RACHEL STREET, AND HEMLOCK STREET,

(CLOSED BY BY-LAW TU5122)
AND
CHERRY STREET,
(CLOSED BY BY-LAW TU5122)
MUNICIPAL PLAN No 83
AND
**PART OF LOT 29,
CONCESSION 6**

TOWNSHIP OF UXBRIDGE
REGIONAL MUNICIPALITY OF DURHAM

SCALE 1 : 400

10 0 10 20 30 metres

METRIC DISTANCES AND/OR COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

LEGEND

■	DENOTES	SURVEY MONUMENT FOUND
□	DENOTES	SURVEY MONUMENT SET
SIB	DENOTES	STANDARD IRON BAR
SSIB	DENOTES	SHORT STANDARD IRON BAR
IB	DENOTES	IRON BAR
CC	DENOTES	CUT CROSS
SB	DENOTES	SUBDIVISION BAR
WIT	DENOTES	WITNESS
MEAS	DENOTES	MEASURED
P1	DENOTES	40R-14493
P2	DENOTES	40R-12453
P3	DENOTES	40R-14494
P4	DENOTES	REGISTERED PLAN 40M-1707
P5	DENOTES	40R-13575
P6	DENOTES	40R-1663
P7	DENOTES	PLAN OF SURVEY BY WILLIAM J. PAXTON, O.L.S. DATED JULY 12, 1970, REFERENCE # 70-17
785	DENOTES	B.J. HAYNES, O.L.S
1006	DENOTES	H. FLIM, O.L.S.
1176	DENOTES	DONALD E. ROBERTS, O.L.S.
1183	DENOTES	H.F. GRANDER, O.L.S.
NI	DENOTES	NOT IDENTIFIABLE

CB	DENOTES SINGLE CATCHBASIN
HJB	DENOTES HYDRO JUNCTION BOX
SP	DENOTES STAND PIPE
FP	DENOTES FLAG POLE
HP	DENOTES HYDRO POLE
LS	DENOTES LIGHT STANDARD
TP	DENOTES TELEPHONE POLE
PED	DENOTES TELEPHONE PEDESTAL
H	DENOTES FIRE HYDRANT
WK	DENOTES WATER KEY
SV	DENOTES SPRINKLER VALVE
WV	DENOTES WATER VALVE
— — –	DENOTES OVERHEAD WALKWAY
MH	DENOTES MANHOLE
SAN MH	DENOTES SANITARY MANHOLE
STM MH	DENOTES STORM MANHOLE
—G—	DENOTES UNDERGROUND GAS LINE
—UE—	DENOTES UNDERGROUND ELECTRICAL
—UT—	DENOTES UNDERGROUND TELEPHONE
—UC—	DENOTES UNDERGROUND CABLE
—W—	DENOTES UNDERGROUND WATER LINE
—SAN—	DENOTES UNDERGROUND SANITARY SEWER
—STM—	DENOTES UNDERGROUND STORM SEWER

NOTES

BEARINGS ARE UTM GRID, DERIVED BY REAL TIME NETWORK (RTN) OBSERVATIONS, UTM ZONE 17, NAD83 (CSRS)(2010.0)

FOR BEARING COMPARISONS, A ROTATION OF 1°20'55" COUNTER-CLOCKWISE WAS APPLIED TO BEARINGS ON PLANS P1, P2, P3, P4, P5, AND P7, A ROTATION OF 1°21'25" COUNTER-CLOCKWISE WAS APPLIED TO BEARINGS ON P6.

BEFORE DIGGING, UNDERGROUND SERVICES SHOULD BE LOCATED ON SITE BY THE RESPECTIVE AGENCIES

IT IS THE RESPONSIBILTITY OF THE CONTRACTOR TO VERIFY THAT LOCAL BENCHMARKS HAVE NOT BEEN ALTERED OR DISTURBED AND THAT THE RELATIVE ELEVATIONS AGREE WITH THE INFORMATION SHOWN ON THIS PLAN

PRIMARY CONTOURS ARE SET AT 1.00m INTERVALS
SECONDATY CONTOURS ARE SET AT 0.25m INTERVALS

LOCAL BENCHMARK No. 1

NAIL IN HYDRO POLE AT THE NORTH END OF THE PARKING LOT ON THE SOUTH SIDE BETWEEN THE 2 STOREY HOSPITAL AND 1 STOREY GARAGE ELEVATION=228.17

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, AND THE SURVEYORS ACT ACT AND THE REGULATIONS MADE UNDER THEM.

2. THE SURVEY WAS COMPLETED ON THE 6th DAY OF JULY, 2018.

July 19, 2018
DATE

Jack Keat
JOHN C.G. KEAT
ONTARIO LAND SURVEYOR

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
2038093
THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29(3).

J.D. BARNES LIMITED
SURVEYING MAPPING GIS
LAND INFORMATION SPECIALISTS
110 SCOTIA COURT, #38, WHITBY, ON L1N 8Y7
T: (905) 723-1212 F: (905) 723-4234 www.jdbarnes.com

DRAWN BY: TAB	CHECKED BY:	REFERENCE NO.: 18-25-537-00
FILE: G:\18-25-537\00\Drawing\18-25-537-00.dgn		DATED: JULY 19, 2018

PLOTTED: 7/19/2018

APPENDIX B

TERRAPROBE INC.

Lake Simcoe Region conservation authority | Ontario Regulation 179/06

Search...

Assessment Parcel (1)

Property Address

ADDRESS: 4 CAMPBELL DR
MUNICIPALITY: Township of Uxbridge
APID: 301999

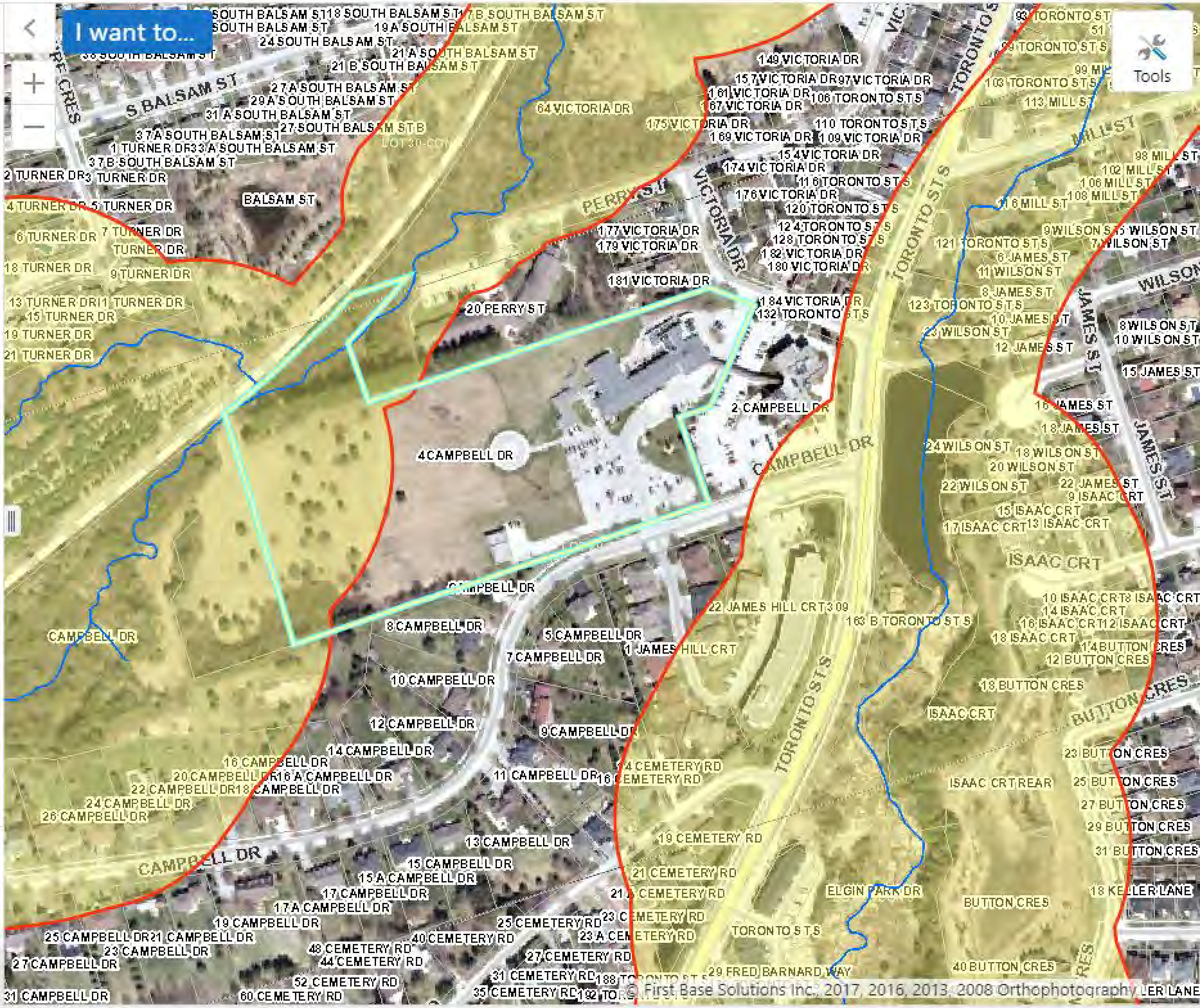
Displaying 1 - 1 (Total: 1)

Page 1 of 1

Map Use G... | Layers | Assessment...

I want to...

Tools



0 50 100m

Permit & Regulation Info | Download Pdf Index Maps | Email Feedback

Lake Simcoe Region Conservation Authority

Lake Simcoe Climate Data:

A Reference Document to Support the Completion of Water Balance Assessments

April 2017
Version 1.0

Disclaimer

This document has been provided in an attempt to standardize and aid in evaluation of water balance assessments completed to support development applications reviewed by the Lake Simcoe Region Conservation Authority and should be referred to for this purpose only. The data contained within this document are results from the Lake Simcoe PRMS model developed by Earthfx (2010) and published in the Lake Simcoe and Couchiching-Black River Source Protection Area Approved Assessment Report (2015) which should be referred to for more information.

Users must exercise judgment and flexibly to adapt the data provided when considering specific site conditions and when new information or data becomes available. It is not the intent of the Lake Simcoe Region Conservation Authority to prescribe the methodology nor the data used to undertake water balance assessments, rather it is intended to provide responsible estimates based on current knowledge and evaluation of the conditions within each subwatershed. Where the Qualified Person can show that alternate approaches/data can produce the desired results or even better, such methods and data should be considered. The Qualified Person is solely responsible for the water balance assessments provided to the Lake Simcoe Conservation Authority supporting Land Development Applications for any given site. This document should be used with other established manuals and practices.

Publication Information

Comments on this document should be directed to:

Shelly Cuddy, P.Geo.
Hydrogeologist
Lake Simcoe Region Conservation Authority
120 Bayview Parkway
Newmarket, Ontario, Canada L3Y 3W3
s.cuddy@lsrca.on.ca

Contents

Introduction

Water balance methods are an appropriate means for predicting the changes to the hydrologic cycle that results from urban development. They can be used to determine amounts of water that should be infiltrated to compensate for reductions caused by large paved areas or changes to vegetation.

The maintenance of pre-development 'recharge' is a general requirement in the Oak Ridges Moraine Conservation Plan (ORMCP), Lake Simcoe Protection Plan (LSPP), the South Georgian Bay Lake Simcoe (SGBLS) Source Protection Plan and the Provincial Policy Statement (PPS) that is often captured in municipal Official Plans. Groundwater frequently supports significant watershed features that are necessary components to the maintenance of a healthy watershed. As a result, a water balance analysis is required to estimate the pre-development and post-development infiltration and runoff for most development applications within the Lake Simcoe Region Conservation Authority as outlined in Table 1.

This document aims at providing a standard dataset for land development applicants and their consultants to use when completing water balance analysis. Qualified Persons (QP) should exercise professional judgment and flexibly to adapt the data provided when considering specific site conditions and when new information or data becomes available. It is not the intent of the Lake Simcoe Region Conservation Authority to prescribe the methodology or the data used; rather it is intended to provide responsible estimates based on current knowledge and evaluation of the conditions within each subwatershed. Where there is an alternate approach or data available that can produce the desired results or even better, such methods and data should be considered.

Table 1: Legislation requirements for water balance assessments within the Lake Simcoe Region Conservation Authority	
Legislative Authority:	**Policy Requirements:**
Oak Ridges Moraine	Hydrogeological assessment, pre and post- development water balance required for all major development.
Lake Simcoe Protection Plan – 4.8 Designated Policy	Pre and post- development water balance required for all major development and show how such changes shall be minimized.
Lake Simcoe Protection Plan – 6.40 Designated Policy	Outside of the Oak Ridges Moraine area, an application for major development within a significant groundwater recharge area (SGRA) shall be accompanied by an environmental impact study that demonstrates that the quality and quantity of groundwater in these areas and the function of the recharge areas will be protected, improved or restored.
South Georgian Bay Lake Simcoe Source Protection Plan – Policy LUP-12	For Planning Act applications within the WHPA-Q2 a hydrogeological study is required to show that the existing water balance can be maintained through the use of best management practices. Where necessary implementation and maximization of off-site recharge enhancement within the same WHPA-Q2 may be used to compensate for any predicted loss of recharge from the development. *excludes single detached residential, barns and non-commercial structures that are accessory to an agricultural operation.
Notes: Major development for ORMCP and LSPP includes any site which has a proposed ***building*** footprint of 500 square metres or greater. Major development for SGBLS SPP includes any site which has a proposed ***impervious*** footprint of 500 square metres or greater.	

Water Balance Methodology

The purpose of the water balance analysis is to reasonably estimate the current infiltration rates to the subsurface and to then determine how much this rate will change as a result of the proposed development. It is recognized that site specific water balances are difficult to accurately estimate; the goal should be to assess the difference between pre-development and post development conditions and to mitigate for impacts on infiltration.

The terms ‘infiltration’ and ‘recharge’ are commonly used interchangeably in development application supporting documents. Infiltration relates to the capacity for the soil to allow water to enter the subsurface. Some of this infiltration results in lateral movement in the shallow unsaturated zone where interflow may predominate and some of the infiltration is directed downward to the deeper aquifer system. Recharge is considered to be primarily water that reaches the saturated zone of the aquifer and becomes part of the regional groundwater flow system. The maintenance of infiltration rates is essential to the sustainability of the groundwater flow system which may support local significant ecological features. In addition, infiltration may move to a regional deeper flow system that may be important at a regional scale from either an ecological or water supply perspective.

It is common practice and an accepted method to provide estimates of surplus using a Thornthwaite and Mather approach where surplus is estimated based on precipitation minus evapotranspiration (Steenhuis and Van Der Molen, 1986). Infiltration portion of the surplus can be estimated by applying the infiltration factors provided in the Ministry of the Environment and Energy Hydrogeological Technical Information Requirements for Land Development Applications (1995). These factors consider slope, vegetation and soils. The remainder of surplus is considered to be runoff.

With the recent completion of technical studies required under The Clean Water Act, 2006, numerical models were utilized to estimate, interception, evaporation, potential and actual evapotranspiration, snowmelt, runoff, infiltration, interflow, and groundwater recharge. Many of these model estimates are based on soils, surficial geology and land use mapping products but may also consider detailed vegetation attributes as well as hydrological cycle functions. These modelling output data are available and consultants are encouraged to use them completing site specific water balance assessments.

The water balance tables provided in this document are average values obtained from the numerical modelling undertaken by Earthfx (2010) required under the Clean Water Act, 2006. The resulting water balance parameters are categorized by various vegetation covers in different soil types for each subwatershed within the Lake Simcoe Basin. Infiltration factors can then be applied based on specific site conditions – vegetation, soil and topography, per the above mentioned MOE methodology. When applied to an appropriate catchment area, they can provide reasonable estimates of infiltration for comparison purposes.

This document is meant to summarize the PRMS modelling results (Earthfx, 2010) and not to provide detailed water balance methodology. For additional information on completing hydrogeological water balance assessments please refer to The Ontario Ministry of the Environment Stormwater Planning and Design Manual (2003), Ministry of the Environment and Energy Hydrogeological Technical Information Requirements for Land Development Applications (1995) or the Hydrogeological Assessment Submissions – Conservation Authority Guidelines for Development Applications (2013). In addition, pre-consultation with the Lake Simcoe Region Conservation Authority is strongly recommended to determine the policy context and the scope of your study.

References

Conservation Authorities Geoscience Working Group. 2013. Hydrogeological Assessment Submissions-Conservation Authority Guidelines for Development Applications.

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Appendix A: Climate Data Tables

Barrie Creeks Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	1.74	952	525	427
Fine Sandy Loam	B		952	539	413
Silt Loam	C		952	573	380
Clay	D		952	643	310
Forest					
Fine Sand	A	4.12	952	521	431
Fine Sandy Loam	B		952	540	412
Silt Loam	C		952	434	518
Clay	D		952	598	354
Pasture & Shrubs					
Fine Sand	A	0.40	952	565	387
Fine Sandy Loam	B		952	546	406
Silt Loam	C		952	558	394
Clay	D		-	-	-
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	0.92	952	528	424
Fine Sandy Loam	B		952	636	316
Silt Loam	C		-	-	-
Clay	D		-	-	-
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	0.43	952	556	396
Fine Sandy Loam	B		952	532	420
Silt Loam	C		-	-	-
Clay	D		-	-	-
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	0.62	952	471	481
Fine Sandy Loam	B		952	456	496
Silt Loam	C		-	-	-
Clay	D		-	-	-
Mean Annual			**952**	**446**	**506**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

Beaver River Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	1.41	905	582	323
Fine Sandy Loam	B		905	594	311
Silt Loam	C		905	589	316
Clay	D		-	-	-
Forest					
Fine Sand	A	27.16	905	561	344
Fine Sandy Loam	B		905	629	276
Silt Loam	C		905	610	295
Clay	D		905	643	262
Pasture & Shrubs					
Fine Sand	A	6.88	905	550	355
Fine Sandy Loam	B		905	620	285
Silt Loam	C		905	613	292
Clay	D		905	584	321
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	106.22	905	584	321
Fine Sandy Loam	B		905	647	258
Silt Loam	C		905	649	256
Clay	D		905	636	269
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	96.36	905	569	336
Fine Sandy Loam	B		905	653	252
Silt Loam	C		905	649	256
Clay	D		905	656	249
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	4.39	905	477	428
Fine Sandy Loam	B		905	515	390
Silt Loam	C		905	495	410
Clay	D		-	-	-
Mean Annual			**905**	**610**	**295**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

Black River Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	3.13	895	564	331
Fine Sandy Loam	B		895	579	316
Silt Loam	C		895	569	326
Clay	D		895	596	299
Forest					
Fine Sand	A	73.90	895	578	317
Fine Sandy Loam	B		895	605	290
Silt Loam	C		895	589	306
Clay	D		895	632	263
Pasture & Shrubs					
Fine Sand	A	14.32	895	581	314
Fine Sandy Loam	B		895	605	290
Silt Loam	C		895	591	304
Clay	D		895	607	288
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	57.67	895	581	314
Fine Sandy Loam	B		895	603	292
Silt Loam	C		895	624	271
Clay	D		895	601	294
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	86.23	895	585	310
Fine Sandy Loam	B		895	615	280
Silt Loam	C		895	620	275
Clay	D		895	652	243
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	3.53	895	486	409
Fine Sandy Loam	B		895	509	386
Silt Loam	C		895	485	410
Clay	D		-	-	-
Mean Annual			**895**	**574**	**320**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

East Holland Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	10.04	878	579	299
Fine Sandy Loam	B		878	638	240
Silt Loam	C		878	594	283
Clay	D		878	613	265
Forest					
Fine Sand	A	39.28	878	608	270
Fine Sandy Loam	B		878	624	253
Silt Loam	C		878	600	278
Clay	D		878	618	260
Pasture & Shrubs					
Fine Sand	A	11.08	878	601	276
Fine Sandy Loam	B		878	621	256
Silt Loam	C		878	606	272
Clay	D		878	594	283
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	24.28	878	622	256
Fine Sandy Loam	B		878	649	229
Silt Loam	C		878	632	246
Clay	D		878	619	259
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	48.80	878	601	276
Fine Sandy Loam	B		878	646	231
Silt Loam	C		878	648	230
Clay	D		878	647	231
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	24.28	878	508	371
Fine Sandy Loam	B		878	532	346
Silt Loam	C		878	462	417
Clay	D		-	-	-
Mean Annual			**878**	**567**	**311**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

Georgina Creeks Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	1.19	907	550	357
Fine Sandy Loam	B		907	568	339
Silt Loam	C		907	664	243
Clay	D		907	593	314
Forest					
Fine Sand	A	9.69	907	575	332
Fine Sandy Loam	B		907	594	313
Silt Loam	C		907	594	313
Clay	D		907	643	264
Pasture & Shrubs					
Fine Sand	A	1.02	907	592	315
Fine Sandy Loam	B		907	612	295
Silt Loam	C		907	585	322
Clay	D		907	651	257
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	2.59	907	649	258
Fine Sandy Loam	B		907	624	283
Silt Loam	C		907	640	267
Clay	D		907	610	297
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	12.98	907	616	291
Fine Sandy Loam	B		907	642	265
Silt Loam	C		907	640	267
Clay	D		907	647	260
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Mean Annual			**907**	**576**	**331**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

Hawkestone Creek Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	0.37	-	-	-
Fine Sandy Loam	B		973	656	317
Silt Loam	C		-	-	-
Clay	D		-	-	-
Forest					
Fine Sand	A	13.95	973	551	422
Fine Sandy Loam	B		973	629	344
Silt Loam	C		973	588	385
Clay	D		973	671	303
Pasture & Shrubs					
Fine Sand	A	1.25	973	551	422
Fine Sandy Loam	B		973	620	353
Silt Loam	C		973	644	329
Clay	D		973	647	326
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	10.50	973	586	387
Fine Sandy Loam	B		973	643	330
Silt Loam	C		973	617	356
Clay	D		973	653	320
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	5.83	973	601	372
Fine Sandy Loam	B		973	647	326
Silt Loam	C		973	608	365
Clay	D		973	667	306
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	0.97	973	478	495
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Mean Annual			**973**	**589**	**385**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

Hewitts Creek Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	0.20	939	654	285
Fine Sandy Loam	B		939	539	401
Silt Loam	C		-	-	-
Clay	D		-	-	-
Forest					
Fine Sand	A	1.48	939	547	392
Fine Sandy Loam	B		939	586	353
Silt Loam	C		939	649	290
Clay	D		-	-	-
Pasture & Shrubs					
Fine Sand	A	0.41	939	498	441
Fine Sandy Loam	B		939	640	299
Silt Loam	C		939	662	278
Clay	D		-	-	-
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	1.58	939	566	373
Fine Sandy Loam	B		939	618	321
Silt Loam	C		939	621	318
Clay	D		-	-	-
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	7.47	939	613	326
Fine Sandy Loam	B		939	624	315
Silt Loam	C		939	641	298
Clay	D		-	-	-
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Mean Annual			**939**	**567**	**372**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

Innisfil Creek Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	1.44	909	538	371
Fine Sandy Loam	B		909	578	331
Silt Loam	C		909	549	360
Clay	D		-	-	-
Forest					
Fine Sand	A	18.24	909	534	375
Fine Sandy Loam	B		909	575	334
Silt Loam	C		909	584	325
Clay	D		909	571	338
Pasture & Shrubs					
Fine Sand	A	1.71	909	572	337
Fine Sandy Loam	B		909	596	313
Silt Loam	C		909	585	324
Clay	D		-	-	-
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	17.89	909	627	282
Fine Sandy Loam	B		909	625	284
Silt Loam	C		909	655	254
Clay	D		-	-	-
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	29.78	909	606	303
Fine Sandy Loam	B		909	625	284
Silt Loam	C		909	674	235
Clay	D		909	664	245
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	0.56	909	462	447
Fine Sandy Loam	B		909	454	455
Silt Loam	C		909	456	453
Clay	D		-	-	-
Mean Annual			**909**	**571**	**339**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

Lovers Creek Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	1.69	914	537	377
Fine Sandy Loam	B		914	571	343
Silt Loam	C		914	585	329
Clay	D		-	-	-
Forest					
Fine Sand	A	8.05	914	574	340
Fine Sandy Loam	B		914	557	357
Silt Loam	C		914	593	321
Clay	D		914	560	354
Pasture & Shrubs					
Fine Sand	A	1.66	914	566	348
Fine Sandy Loam	B		914	582	332
Silt Loam	C		914	658	256
Clay	D		-	-	-
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	3.89	914	571	343
Fine Sandy Loam	B		914	608	306
Silt Loam	C		914	650	264
Clay	D		-	-	-
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	16.20	914	589	325
Fine Sandy Loam	B		914	623	291
Silt Loam	C		914	646	268
Clay	D		914	523	391
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	0.20	914	493	421
Fine Sandy Loam	B		914	529	385
Silt Loam	C		-	-	-
Clay	D		-	-	-
Mean Annual			**914**	**545**	**369**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

Maskinonge River Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	0.04	-	-	-
Fine Sandy Loam	B		893	432	461
Silt Loam	C		-	-	-
Clay	D		-	-	-
Forest					
Fine Sand	A	5.78	893	583	310
Fine Sandy Loam	B		893	626	267
Silt Loam	C		893	587	306
Clay	D		893	584	309
Pasture & Shrubs					
Fine Sand	A	1.09	893	596	297
Fine Sandy Loam	B		893	632	261
Silt Loam	C		893	596	297
Clay	D		893	537	356
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	8.93	893	606	287
Fine Sandy Loam	B		893	634	259
Silt Loam	C		893	615	278
Clay	D		893	629	264
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	35.46	893	603	290
Fine Sandy Loam	B		893	635	258
Silt Loam	C		893	592	301
Clay	D		893	574	319
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Mean Annual			**893**	**599**	**293**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

Oro Creeks North Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	0.50	990	509	482
Fine Sandy Loam	B		990	572	418
Silt Loam	C		990	586	404
Clay	D		-	-	-
Forest					
Fine Sand	A	19.74	990	561	429
Fine Sandy Loam	B		990	606	385
Silt Loam	C		990	602	388
Clay	D		990	654	336
Pasture & Shrubs					
Fine Sand	A	2.04	990	553	437
Fine Sandy Loam	B		990	618	373
Silt Loam	C		990	621	369
Clay	D		990	588	402
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	18.06	990	570	420
Fine Sandy Loam	B		990	623	368
Silt Loam	C		990	626	364
Clay	D		990	659	332
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	7.32	990	568	423
Fine Sandy Loam	B		990	631	360
Silt Loam	C		990	652	339
Clay	D		990	619	372
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	1.50	990	476	515
Fine Sandy Loam	B		-	-	-
Silt Loam	C		990	490	500
Clay	D		-	-	-
Mean Annual			**990**	**562**	**427**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

Oro Creeks South Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	0.64	961	622	339
Fine Sandy Loam	B		961	574	387
Silt Loam	C		-	-	-
Clay	D		-	-	-
Forest					
Fine Sand	A	16.66	961	591	370
Fine Sandy Loam	B		961	626	335
Silt Loam	C		961	603	359
Clay	D		-	-	-
Pasture & Shrubs					
Fine Sand	A	0.83	961	608	354
Fine Sandy Loam	B		961	635	326
Silt Loam	C		961	640	321
Clay	D		-	-	-
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	11.52	961	584	378
Fine Sandy Loam	B		961	650	312
Silt Loam	C		961	640	321
Clay	D		-	-	-
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	10.44	961	582	379
Fine Sandy Loam	B		961	652	309
Silt Loam	C		961	650	312
Clay	D		-	-	-
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Mean Annual			**961**	**608**	**354**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

Pefferlaw Brook Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	5.06	897	529	368
Fine Sandy Loam	B		897	551	346
Silt Loam	C		897	601	296
Clay	D		897	608	289
Forest					
Fine Sand	A	54.17	897	552	345
Fine Sandy Loam	B		897	611	286
Silt Loam	C		897	596	301
Clay	D		897	651	246
Pasture & Shrubs					
Fine Sand	A	8.73	897	552	345
Fine Sandy Loam	B		897	582	315
Silt Loam	C		897	584	313
Clay	D		897	611	286
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	59.27	897	574	323
Fine Sandy Loam	B		897	634	263
Silt Loam	C		897	649	248
Clay	D		897	637	260
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	57.79	897	570	327
Fine Sandy Loam	B		897	624	273
Silt Loam	C		897	650	247
Clay	D		897	652	245
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	8.10	897	432	465
Fine Sandy Loam	B		897	448	449
Silt Loam	C		897	671	226
Clay	D		-	-	-
Mean Annual			**897**	**572**	**325**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

Pefferlaw Brook Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km²)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	5.06	897	529	368
Fine Sandy Loam	B		897	551	346
Silt Loam	C		897	601	296
Clay	D		897	608	289
Forest					
Fine Sand	A	54.17	897	552	345
Fine Sandy Loam	B		897	611	286
Silt Loam	C		897	596	301
Clay	D		897	651	246
Pasture & Shrubs					
Fine Sand	A	8.73	897	552	345
Fine Sandy Loam	B		897	582	315
Silt Loam	C		897	584	313
Clay	D		897	611	286
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	59.27	897	574	323
Fine Sandy Loam	B		897	634	263
Silt Loam	C		897	649	248
Clay	D		897	637	260
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	57.79	897	570	327
Fine Sandy Loam	B		897	624	273
Silt Loam	C		897	650	247
Clay	D		897	652	245
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	8.10	897	432	465
Fine Sandy Loam	B		897	448	449
Silt Loam	C		897	671	226
Clay	D		-	-	-
Mean Annual			**897**	**572**	**325**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

Ramara Creeks Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	1.10	966	576	390
Fine Sandy Loam	B		966	653	313
Silt Loam	C		966	638	328
Clay	D		966	676	290
Forest					
Fine Sand	A	13.12	966	565	401
Fine Sandy Loam	B		966	614	352
Silt Loam	C		966	599	367
Clay	D		966	657	309
Pasture & Shrubs					
Fine Sand	A	3.09	966	546	420
Fine Sandy Loam	B		966	625	341
Silt Loam	C		966	612	354
Clay	D		966	627	339
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	54.65	966	591	375
Fine Sandy Loam	B		966	652	314
Silt Loam	C		966	661	305
Clay	D		966	654	312
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	14.65	966	581	385
Fine Sandy Loam	B		966	663	303
Silt Loam	C		966	663	303
Clay	D		966	639	327
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	0.43	-	-	-
Fine Sandy Loam	B		966	525	441
Silt Loam	C		966	502	464
Clay	D		966	540	426
Mean Annual			**966**	**605**	**361**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

Talbot River Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	0.29	940	533	407
Fine Sandy Loam	B		940	546	394
Silt Loam	C		940	639	301
Clay	D		-	-	-
Forest					
Fine Sand	A	9.47	940	566	374
Fine Sandy Loam	B		940	579	361
Silt Loam	C		940	580	360
Clay	D		940	587	353
Pasture & Shrubs					
Fine Sand	A	2.79	940	595	345
Fine Sandy Loam	B		940	607	333
Silt Loam	C		940	583	357
Clay	D		940	537	403
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	29.21	940	593	347
Fine Sandy Loam	B		940	608	332
Silt Loam	C		940	623	317
Clay	D		940	628	312
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	7.82	940	572	368
Fine Sandy Loam	B		940	618	322
Silt Loam	C		940	586	354
Clay	D		940	652	288
Open Alvar					
Fine Sand	A	0.06	-	-	-
Fine Sandy Loam	B		940	506	434
Silt Loam	C		940	503	437
Clay	D		-	-	-
Aggregates					
Fine Sand	A	1.39	940	490	450
Fine Sandy Loam	B		940	507	433
Silt Loam	C		940	468	472
Clay	D		940	453	487
Mean Annual			**940**	**587**	**353**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

Upper Talbot River Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	0.43	952	479	474
Fine Sandy Loam	B		952	517	435
Silt Loam	C		-	-	-
Clay	D		952	612	340
Forest					
Fine Sand	A	70.50	952	557	395
Fine Sandy Loam	B		952	586	366
Silt Loam	C		952	596	356
Clay	D		952	556	396
Pasture & Shrubs					
Fine Sand	A	37.78	952	546	406
Fine Sandy Loam	B		952	581	371
Silt Loam	C		952	544	408
Clay	D		952	583	369
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	9.56	952	538	414
Fine Sandy Loam	B		952	562	390
Silt Loam	C		952	575	377
Clay	D		952	588	364
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	26.17	952	528	424
Fine Sandy Loam	B		952	599	353
Silt Loam	C		952	629	323
Clay	D		952	559	393
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	1.70	952	474	478
Fine Sandy Loam	B		952	549	403
Silt Loam	C		952	493	459
Clay	D		-	-	-
Mean Annual			**952**	**568**	**384**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

Uxbridge Brook Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	1.74	892	532	360
Fine Sandy Loam	B		892	560	332
Silt Loam	C		892	616	276
Clay	D		-	-	-
Forest					
Fine Sand	A	30.46	892	551	341
Fine Sandy Loam	B		892	606	286
Silt Loam	C		892	591	301
Clay	D		892	531	361
Pasture & Shrubs					
Fine Sand	A	5.20	892	548	344
Fine Sandy Loam	B		892	591	301
Silt Loam	C		892	613	279
Clay	D		892	508	385
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	35.79	892	561	331
Fine Sandy Loam	B		892	625	267
Silt Loam	C		892	624	268
Clay	D		892	569	323
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	43.40	892	585	307
Fine Sandy Loam	B		892	627	265
Silt Loam	C		892	627	265
Clay	D		892	525	367
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	1.75	892	433	459
Fine Sandy Loam	B		892	416	476
Silt Loam	C		892	490	402
Clay	D		-	-	-
Mean Annual			**892**	**574**	**317**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

West Holland Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	4.38	868	537	331
Fine Sandy Loam	B		868	613	255
Silt Loam	C		868	598	270
Clay	D		-	-	-
Forest					
Fine Sand	A	47.88	868	559	309
Fine Sandy Loam	B		868	614	254
Silt Loam	C		868	647	221
Clay	D		868	634	234
Pasture & Shrubs					
Fine Sand	A	12.54	868	586	282
Fine Sandy Loam	B		868	610	258
Silt Loam	C		868	640	228
Clay	D		868	645	223
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	46.19	868	581	287
Fine Sandy Loam	B		868	618	250
Silt Loam	C		868	663	205
Clay	D		868	665	203
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	153.92	868	576	292
Fine Sandy Loam	B		868	606	262
Silt Loam	C		868	659	209
Clay	D		868	660	208
Open Alvar					
Fine Sand	A	-	-	-	-
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Aggregates					
Fine Sand	A	0.07	868	496	372
Fine Sandy Loam	B		868	506	362
Silt Loam	C		-	-	-
Clay	D		-	-	-
Mean Annual			**868**	**605**	**264**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

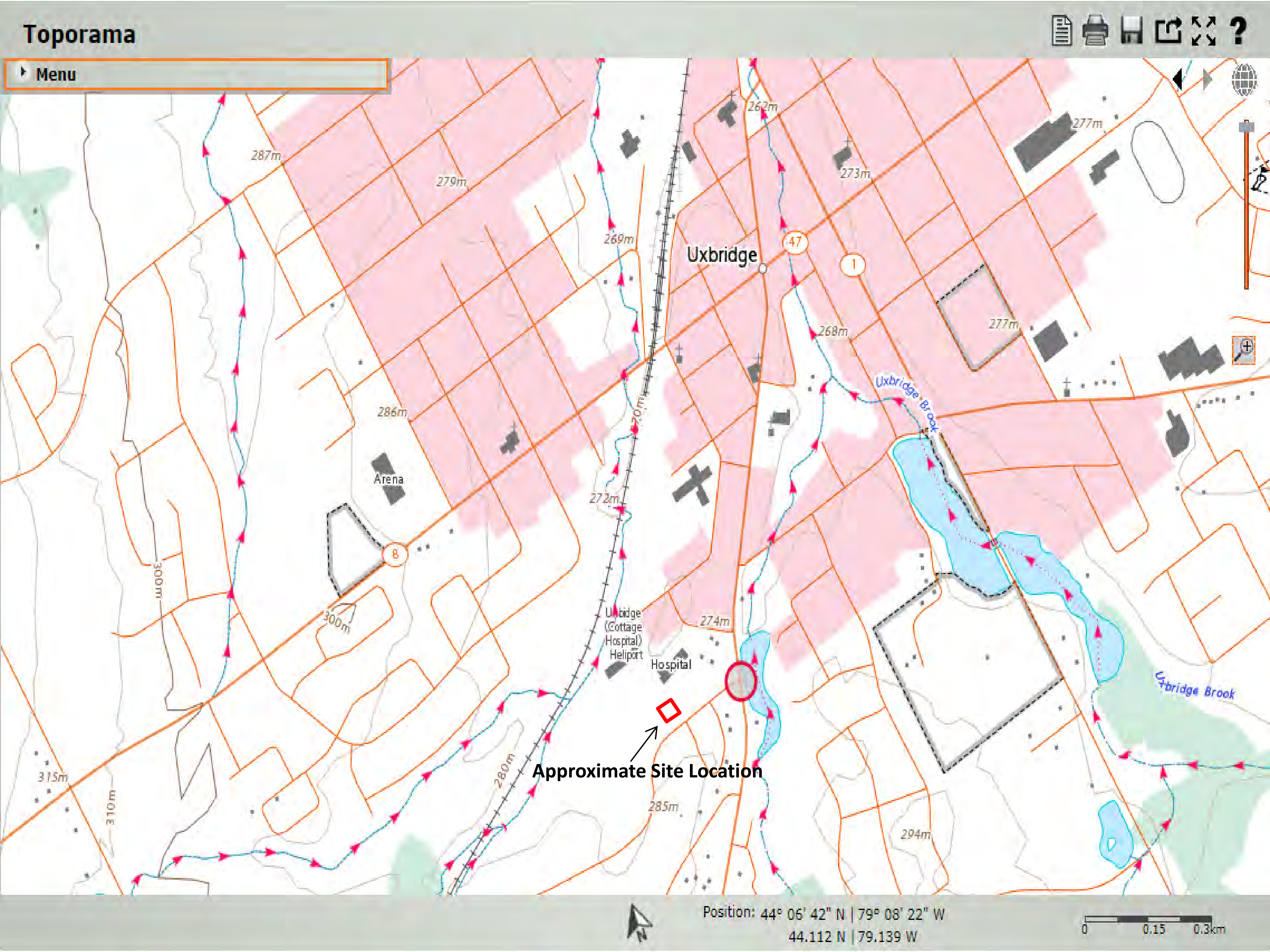
Whites Creek Subwatershed

	Hydrologic Soil Group	Subwatershed Area (km^2)	Mean Annual Precipitation (mm/yr.)	Actual Evapotranspiration (mm/yr.)	Precipitation Surplus (mm/yr.)
Urban Lawns/Golf Courses					
Fine Sand	A	0.12	925	538	387
Fine Sandy Loam	B		925	408	517
Silt Loam	C		925	636	289
Clay	D		-	-	-
Forest					
Fine Sand	A	8.37	925	577	348
Fine Sandy Loam	B		925	603	322
Silt Loam	C		925	589	336
Clay	D		925	612	313
Pasture & Shrubs					
Fine Sand	A	3.34	925	569	356
Fine Sandy Loam	B		925	612	313
Silt Loam	C		925	579	346
Clay	D		925	570	355
Non-Intensive Agriculture (e.g. Hay)					
Fine Sand	A	40.79	925	599	327
Fine Sandy Loam	B		925	637	288
Silt Loam	C		925	622	303
Clay	D		925	641	284
Intensive Agriculture (e.g. Row crop)					
Fine Sand	A	21.31	925	579	346
Fine Sandy Loam	B		925	642	283
Silt Loam	C		925	621	304
Clay	D		925	643	282
Open Alvar					
Fine Sand	A	0.19	-	-	-
Fine Sandy Loam	B		925	528	397
Silt Loam	C		925	534	391
Clay	D		-	-	-
Aggregates					
Fine Sand	A	0.15	925	493	432
Fine Sandy Loam	B		-	-	-
Silt Loam	C		-	-	-
Clay	D		-	-	-
Mean Annual			**925**	**602**	**323**

Notes: Precipitation and Actual Evapotranspiration values are the AVERAGE ANNUAL estimates obtained from the Lake Simcoe PRMS model (Earthfx, 2010).

APPENDIX C

TERRAPROBE INC.



Toporama
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Uxbridge
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8
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279m
269m
262m
277m
273m
268m
277m
286m
Arena
272m
270m
300m
300m
Uxbridge Brook
Uxbridge (Cottage Hospital) Heliport
Hospital
274m
Uxbridge Brook
Approximate Site Location
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285m
294m
315m
310m
Position: 44° 06' 42" N | 79° 08' 22" W
44.112 N | 79.139 W
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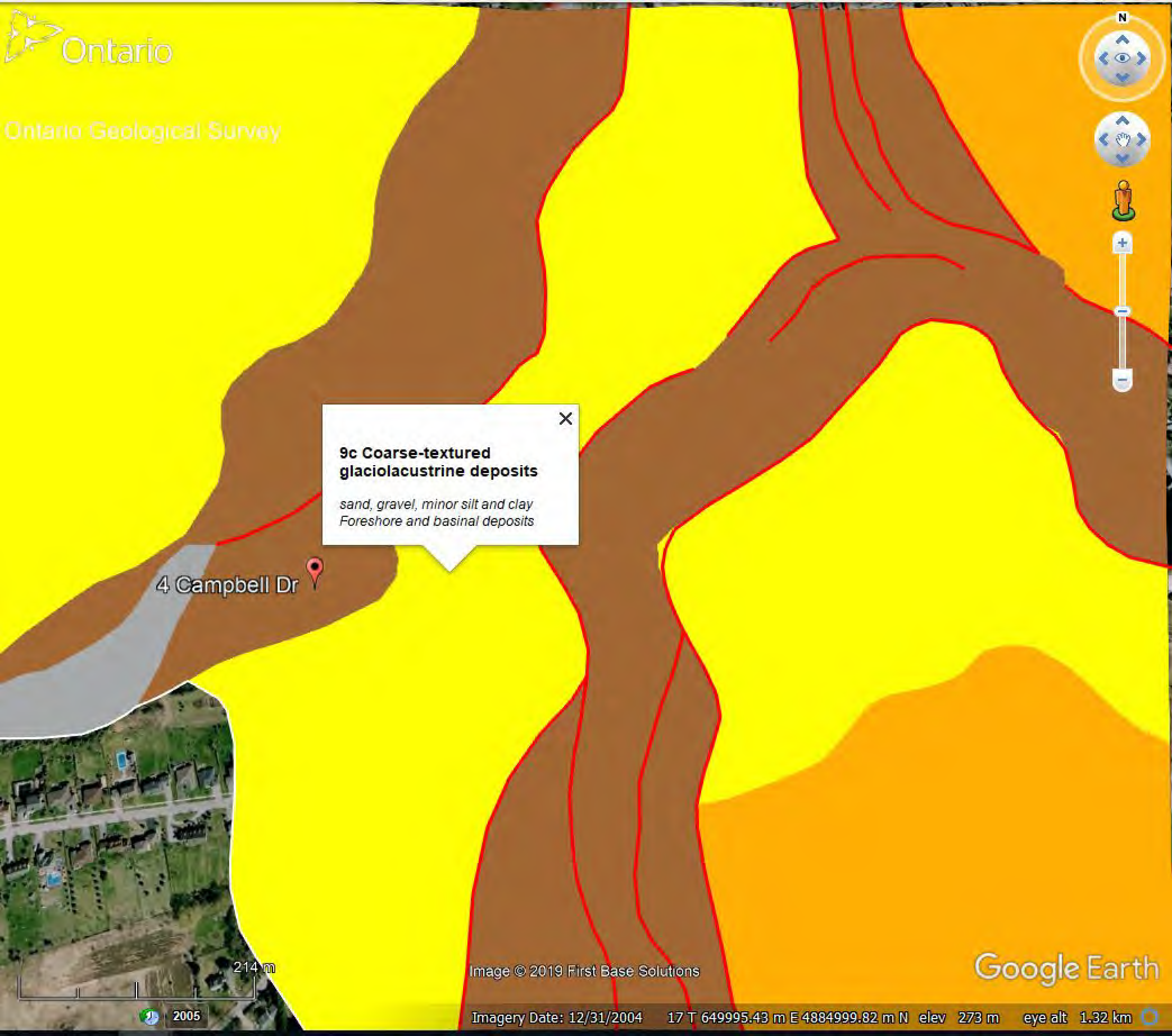
0.3km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Ontario Geological Survey
9c Coarse-textured glaciolacustrine deposits
sand, gravel, minor silt and clay
Foreshore and basinal deposits
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2005
Image © 2019 First Base Solutions
Google Earth
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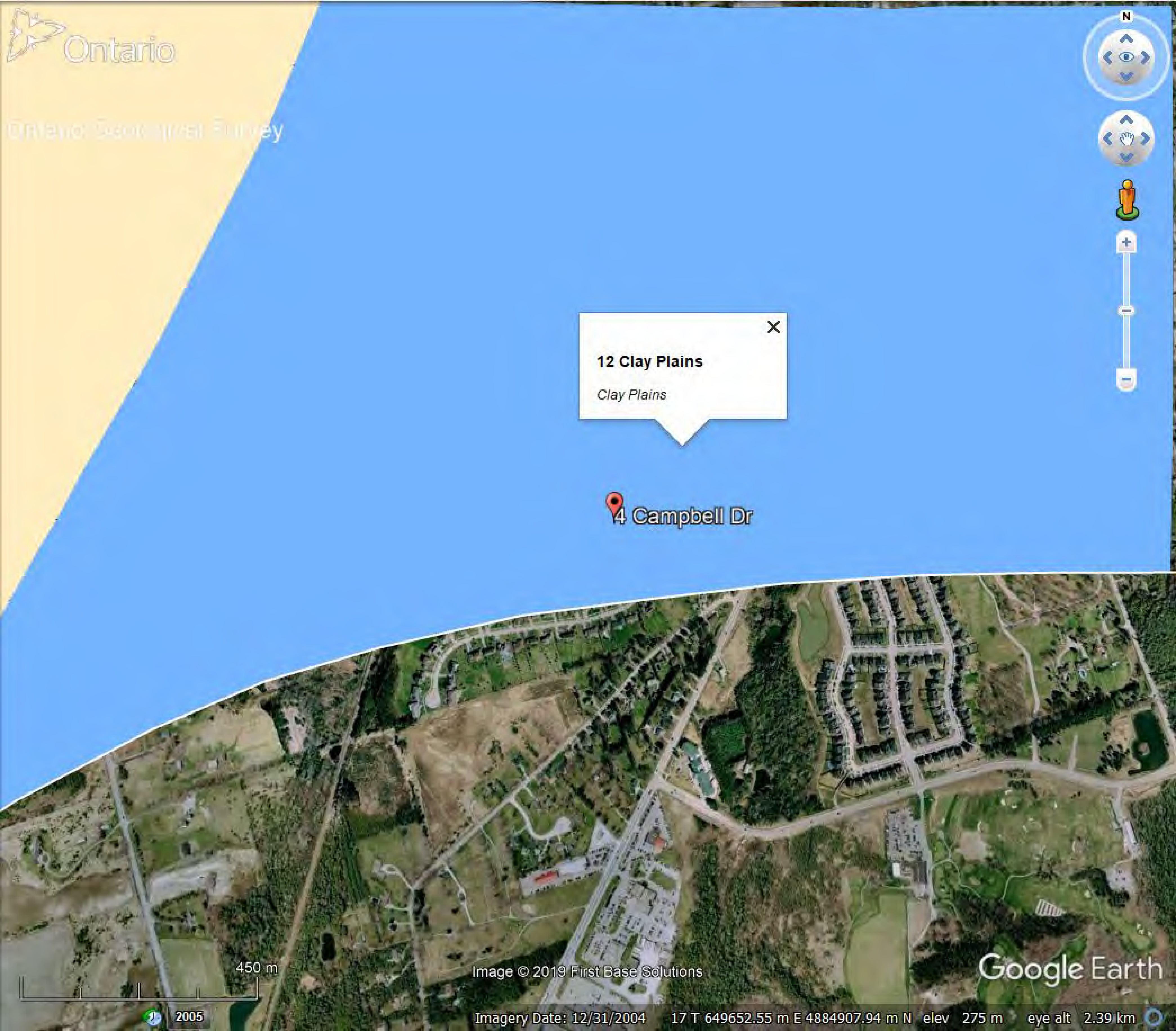
Ontario
Ontario Geological Survey
12 Clay Plains
Clay Plains
4 Campbell Dr
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Image © 2019 First Base Solutions
Google Earth
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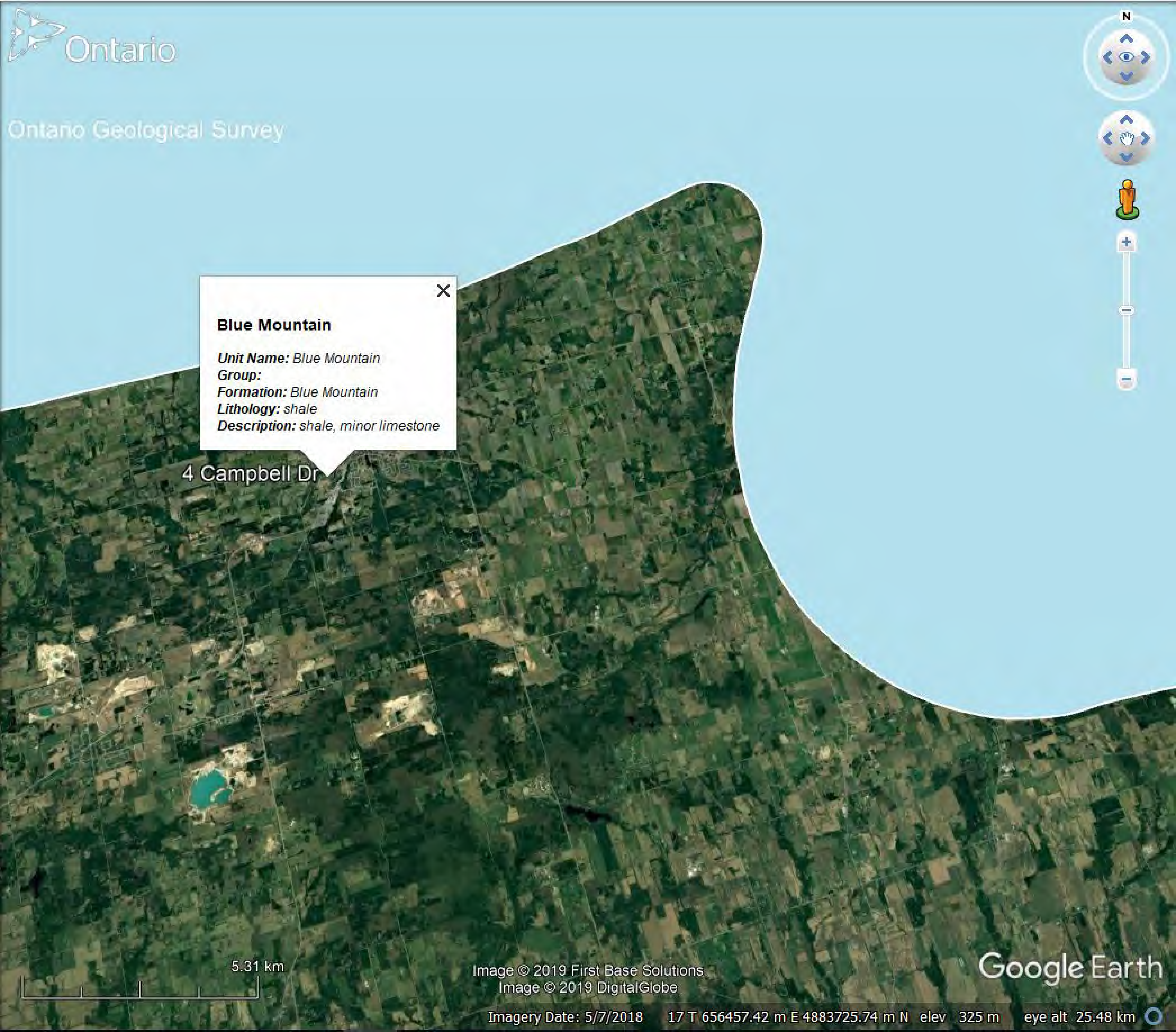
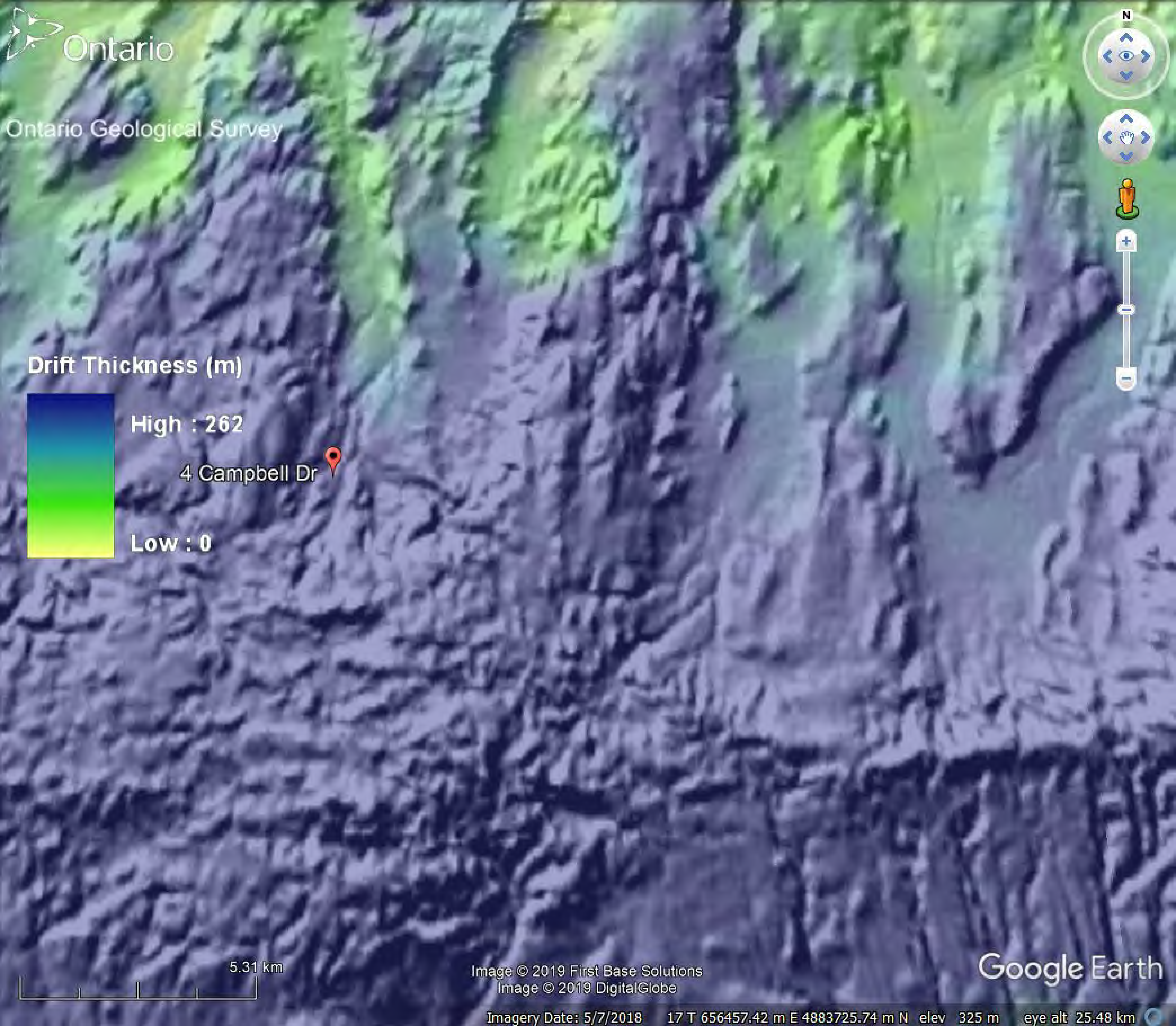

Ontario
Ontario Geological Survey
N
Blue Mountain
Unit Name: Blue Mountain
Group:
Formation: Blue Mountain
Lithology: shale
Description: shale, minor limestone
4 Campbell Dr
5.31 km
Image © 2019 First Base Solutions
Image © 2019 DigitalGlobe
Google Earth
Imagery Date: 5/7/2018 17 T 656457.42 m E 4883725.74 m N elev 325 m eye alt 25.48 km


Ontario
Ontario Geological Survey
Drift Thickness (m)
High : 262
Low : 0
4 Campbell Dr
5.31 km
Image © 2019 First Base Solutions
Image © 2019 DigitalGlobe
Google Earth
Imagery Date: 5/7/2018 17 T 656457.42 m E 4883725.74 m N elev 325 m eye alt 25.48 km
N

APPENDIX D

TERRAPROBE INC.

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
GEORGINA TOWNSHIP (N CON 09 012	17 649806 4884447 W	2007/06 1413	36		2///:			7046906 (Z57510) A	
UXBRIDGE TOWNSHIP (U	17 650112 4885051 W	2013/01 7241	1.5			MT	0014 10	7197204 (Z165618) A143698	BRWN SAND 0004 GREY CLAY 0024
UXBRIDGE TOWNSHIP (U CON 06 022	17 649789 4884764 W	1987/12 1413	5	FR 0225	80/90/12/2:30	DO	0221 4	1908850 (24808)	BRWN SAND PCKD 0020 BRWN CLAY HARD 0080 BRWN SAND CLAY LYRD 0100 GREY CLAY HARD 0200 GREY GRVL SAND CLN 0225
UXBRIDGE TOWNSHIP (U CON 06 027	17 649805 4884596 W	1995/11 3136	8 6	FR 0028	8/43/10/1:0	DO	0046 8	1912654 (165154)	BRWN LOAM 0001 BRWN CLAY SNDY PCKD 0018 BRWN SAND SLTY 0028 BRWN FSND 0055
UXBRIDGE TOWNSHIP (U CON 06 028	17 649933 4884732 W	1988/07 4743	6	FR 0069	4/50/10/2:30	DO	0069 4	1909390 (31453)	BRWN LOAM SOFT 0002 BRWN SAND SOFT 0027 GREY CLAY GRVL SAND 0068 BRWN CSND LOOS LOOS 0073
UXBRIDGE TOWNSHIP (U CON 06 028	17 649749 4884605 W	1986/12 4743	6 5	FR 0048	8/55/10/2:30	DO	0050 4	1908083 (NA)	BLCK LOAM 0002 BRWN SAND CLAY LYRD 0038 BRWN SAND LOOS 0046 GREY CLAY 0048 BRWN SAND CLN FSND 0058 GREY CLAY STKY 0062
UXBRIDGE TOWNSHIP (U CON 06 028	17 649776 4884444 L	2000/10 6874	30	FR 0020	17/26/25/2:	DO		1914838 (222356)	UNKN CMTD 0012 BRWN SAND 0026
UXBRIDGE TOWNSHIP (U CON 06 028	17 649776 4884444 L	2000/08 5459						1914799 (221528) A	GREY GRVL FILL 0001 BRWN CLAY SLTY STNS 0022 GREY CLAY SILT 0075 GREY CLAY SAND DNSE 0150 GREY CLAY STNS SILT 0367 BLCK SHLE HARD 0370
UXBRIDGE TOWNSHIP (U CON 06 028	17 649776 4884444 L	2000/08 5459						1914797 (221525) A	BRWN LOAM SOFT 0003 BRWN FSND SOFT 0075 GREY CLAY STNS HARD 0080 GREY CLAY STNS HARD 0280 GREY CLAY SILT STNS 0360 BLCK SHLE HARD 0370
UXBRIDGE TOWNSHIP (U CON 06 028	17 649779 4884443 L	2000/03 5459	6	FR 0055	8/35/30/1:30	DO	0052 3	1914417 (211656)	BRWN CLAY SNDY 0026 BRWN FSND 0055 BRWN MSND 0060
UXBRIDGE TOWNSHIP (U CON 06 028	17 649779 4884443 L	1999/10 5459	6	UK 0048			0054 3	1914300 (211615)	BRWN CLAY 0028 BRWN SAND CLAY 0043 BRWN CLAY 0048 BRWN SAND SILT 0057
UXBRIDGE TOWNSHIP (U CON 06 028	17 649756 4884604 W	1986/05 4743	6	FR 0052	11/45/10/1:30	DO	0068 4	1907669 ()	BLCK LOAM 0004 BRWN LOAM 0006 BRWN CLAY GRVL LOOS 0012 YLLW SAND DRTY 0048 BRWN CLAY SOFT 0052 BRWN SAND CLN 0072
UXBRIDGE TOWNSHIP (U CON 06 028	17 649779 4884443 L	1999/07 5459						1914209 (195550) A	BRWN SAND SLTY 0062 BRWN SAND SILT STNS 0089 GREY CLAY STNS 0117 GREY SAND STNS 0127 GREY CLAY SAND STNS 0158
UXBRIDGE TOWNSHIP (U CON 06 028	17 649765 4884573 W	1976/09 2407	6	FR 0069	22/72/5/1:0	DO	0069 6	1904518 ()	BLUE LOAM 0001 BLUE CLAY 0032 BLUE SAND QSND 0060 BLUE CLAY 0062 BLUE SAND 0075
UXBRIDGE TOWNSHIP (U CON 06 028	17 649778 4884521 W	1991/05 4743	6	FR 0066	7/50/10/2:0	DO	0066 3	1911068 (73178)	BRWN LOAM BLDR LOOS 0003 BRWN CLAY SOFT 0015 GREY CLAY HARD 0027 GREY SAND LOOS 0032 BRWN SAND 0069

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
UXBRIDGE TOWNSHIP (U CON 06 028	17 649757 4884568 W	1992/09 4743	6 5	FR 0050	13/40/6/4:30	DO	0050 9	1911649 (110978)	BRWN CLAY 0012 BRWN SAND CLAY LYRD 0026 BRWN CLAY SOFT 0051 BRWN SAND FSND 0060 GREY CLAY SILT 0070 GREY CLAY STNS HARD 0070
UXBRIDGE TOWNSHIP (U CON 06 028	17 649779 4884443 L	1995/01 5459	6	FR 0201	18/201/2/5:0	DO	0201 3	1912334 (141583)	BRWN CLAY SNDY 0016 GREY CLAY STNS 0022 BRWN SAND SILT 0031 GREY CLAY STNS ROCK 0189 GREY SAND SILT 0195 GREY CLAY SILT 0201 GREY SAND CLN 0206
UXBRIDGE TOWNSHIP (U CON 06 028	17 649779 4884443 L	1995/02 5459				DO		1912335 (141584) A	PGVL 0120
UXBRIDGE TOWNSHIP (U CON 06 028	17 649779 4884443 L	1999/08 5459						1914210 (195536) A	BRWN SAND SILT 0062 BRWN SAND STNS SILT 0089 GREY SAND STNS 0117 GREY SAND STNS 0123
UXBRIDGE TOWNSHIP (U CON 06 028	17 649665 4884443 W	1971/11 1413	5	FR 0083	20/76/9/3:30	DO	0075 4 0079 4	4604891 ()	BRWN MSND 0020 GREY SILT 0071 RED FSND 0083
UXBRIDGE TOWNSHIP (U CON 06 028	17 649704 4884574 W	2012/05 5459						7182315 (Z141291) A	
UXBRIDGE TOWNSHIP (U CON 06 028	17 650002 4884638 W	1975/12 4743	6	FR 0056	3/20/15/3:0	DO	0057 3	4606390 ()	BLCK LOAM 0001 GREY CLAY GRVL 0020 BRWN CLAY SAND 0038 GREY FSND 0046 GREY GRVL 0060
UXBRIDGE TOWNSHIP (U CON 06 028	17 649912 4884558 W	1975/12 4743	6	FR 0040	8/35/15/1:0	DO	0040 8	4606386 ()	BLCK LOAM 0001 GREY CLAY SAND 0040 GREY SAND 0048 GREY FSND CLAY 0052 GREY GRVL 0054 BLUE CLAY GRVL 0062
UXBRIDGE TOWNSHIP (U CON 06 028	17 649839 4884623 W	1974/07 1350	6	FR 0035	10/35/6/2:0	DO	0037 5	4605933 ()	SAND CLAY 0012 CLAY 0017 SILT CLAY SAND 0035 SAND 0045
UXBRIDGE TOWNSHIP (U CON 06 028	17 649906 4884748 W	1987/10 4743	6	FR 0076	16/26/10/2:15	DO		1908683 (18839)	BRWN LOAM 0007 BLCK BLDR HARD 0010 GREY CLAY SOFT 0035 GREY CLAY SAND 0045 GREY CLAY SAND LYRD 0050 GREY CLAY SOFT 0076 GREY GRVL SAND 0079 GREY GRVL CLN 0090
UXBRIDGE TOWNSHIP (U CON 06 028	17 649675 4884583 W	1973/04 1413	5	FR 0061	12/25/9/1:30	DO	0045 8	4605428 ()	PRDG 0019 BRWN SAND SILT 0050 GREY SAND 0061
UXBRIDGE TOWNSHIP (U CON 06 028	17 649779 4884443 L	1986/02 4743	6 5	FR 0047	15/40/8/1:30	DO	0050 7	1907591 ()	BRWN CLAY SAND 0015 YLLW CLAY SAND PCKD 0047 BRWN FSND 0057 BRWN CLAY SAND LYRD 0064 GREY CLAY STNS HPAN 0077
UXBRIDGE TOWNSHIP (U CON 06 028	17 649615 4884523 W	1969/08 1413	5	FR 0067	23/60/7/2:0	DO	0067 8	4604116 ()	BRWN MSND 0020 RED MSND CLAY 0060 RED FSND 0075
UXBRIDGE TOWNSHIP (U CON 06 028	17 649815 4884473 W	1979/04 4743	6	FR 0063	23/60/6/2:0	DO	0066 4	1905323 ()	BRWN SAND LOOS 0023 YLLW CLAY 0047 GREY CLAY SOFT 0063 GREY SAND CLAY 0066 GREY FSND 0070
UXBRIDGE TOWNSHIP (U CON 06 028	17 649718 4884605 W	1967/10 3109	30	FR 0025	5///:	DO		4602991 ()	LOAM 0002 BRWN CLAY MSND 0024 MSND 0027
UXBRIDGE TOWNSHIP (U CON 06 028	17 649826 4884585 W	1961/08 1415	6	FR 0106	6/40/20/0:30	DO		4602989 ()	GRVL MSND 0004 FSND 0090 MSND CLAY 0100 MSND GRVL 0106 GRVL 0107
UXBRIDGE TOWNSHIP (U CON 06 028	17 649894 4884794 W	1959/10 4102	30	FR 0020	15///:	DO		4602988 ()	FSND 0025
UXBRIDGE TOWNSHIP (U CON 06 028	17 649515 4884473 W	1980/06 1413			///:	NU		1905766 () A	BRWN SAND DRY 0008 BRWN CLAY DNSE 0023 GREY CLAY DNSE 0040 GREY SILT SOFT 0046 GREY CLAY STNS HARD 0100

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
UXBRIDGE TOWNSHIP (U CON 06 028	17 649635 4884553 W	1968/11 1413	5	FR 0037	8/18/9/6:0	DO		4603776 ()	BRWN CLAY MSND 0030 FSND 0034 CLAY 0036 MSND GRVL 0037
UXBRIDGE TOWNSHIP (U CON 06 028	17 649915 4884523 W	1978/01 4743	6	FR 0040	12/35/8/1:0	DO	0042 4	1904966 ()	BRWN SAND 0040 BRWN SAND WBRG 0046
UXBRIDGE TOWNSHIP (U CON 06 029	17 649740 4884558 W	1995/11 3136	8 6	FR 0034	13/62/5/1:0	DO	0063 4	1912653 (165155)	BRWN LOAM 0002 BRWN CLAY SNDY 0016 GREY CLAY SNDY 0027 GREY CLAY SNDY 0034 BRWN FSND 0068 GREY CLAY 0068
UXBRIDGE TOWNSHIP (U CON 06 029	17 649652 4884805 L	1995/06 4743	6	FR 0083	16/40/20/2:0	DO	0084 6	1912475 (152130)	BLCK LOAM 0001 BRWN CLAY SAND LYRD 0021 BRWN SAND LOOS 0025 GREY CLAY SOFT 0059 BRWN FSND 0083 BRWN SAND GRVL CLN 0090
UXBRIDGE TOWNSHIP (U CON 06 029	17 650265 4885073 W	1977/02 2801				NU MN		1904902 ()	BLCK LOAM 0001 BRWN CLAY GRVL SNDY 0023 FSND LOOS 0040 GREY CLAY SNDY SLTY 0050 GREY CLAY SNDY HARD 0057 GREY CLAY GRVL HARD 0065 GREY CLAY GRVL SNDY 0106 GREY CLAY GRVL FSND 0142 BLDR VERY HARD 0144 GREY CLAY GRVL HARD 0166 GREY CLAY SLTY SNDY 0238 BRWN CLAY SAND GRVL 0261 BRWN GRVL CLAY SNDY 0296 GREY CLAY GRVL SLTY 0307 GREY CLAY GRVL HARD 0323
UXBRIDGE TOWNSHIP (U CON 06 029	17 649652 4884805 L	1998/08 5459						1913770 (195371) A	
UXBRIDGE TOWNSHIP (U CON 06 029	17 649786 4884871 W	1990/10 2801	24 12		9/29/600/12:0	PS	0171 21	1911055 (58011)	CLAY GRVL 0022 GRVL CLAY 0030 SAND GRVL 0064 GRVL CLAY SAND 0074 GRVL CLAY 0080 CGVL BLDR 0091 CGVL CLAY 0092 FGVL BLDR 0101 CLAY CGVL HARD 0118 GRVL CLAY 0121 CLAY GRVL HARD 0126 GRVL CLAY SOFT 0147 CLAY GRVL HARD 0156 FGVL CGVL SAND 0171 FGVL CGVL CLAY 0173 FGVL CGVL BLDR 0188 FGVL CGVL BLDR 0193
UXBRIDGE TOWNSHIP (U CON 06 029	17 649652 4884805 L	1989/02 5459	6	FR 0206	/206/15/3:0	DO	0203 3	1909625 (37847)	BRWN CLAY SNDY 0021 BRWN SAND 0026 GREY CLAY SNDY 0127 GREY SAND STNS 0147 GREY CLAY SAND 0187 GREY CLAY SILT 0198 GREY SAND STNS 0209
UXBRIDGE TOWNSHIP (U CON 06 029	17 650315 4885123 W	1977/02 2801				NU MN		1904903 ()	BLCK LOAM 0001 BRWN CLAY GRVL SNDY 0008 GREY CLAY GRVL SLTY 0022 BRWN FSND LOOS 0052 GREY CLAY SNDY SLTY 0060 BLDR VERY HARD 0062 GREY CLAY GRVL SNDY 0068 FGVL MGVL CGVL 0079 GREY CLAY GRVL SNDY 0159 BRWN CLAY GRVL SNDY 0188
UXBRIDGE TOWNSHIP (U CON 06 029	17 649652 4884805 L	1988/07 5459	6	FR 0200	30/206/2/8:0	DO	0200 6	1909176 (NA)	BRWN SAND 0010 BLUE CLAY STNS 0080 BLUE CLAY SOFT 0140 BLUE CLAY STNS 0200 GREY GRVL CMTD 0206
UXBRIDGE TOWNSHIP (U CON 06 029	17 649715 4884923 W	1979/08 2801	2	FR 0070 FR 0163	///:	MN	0182 70	1905440 ()	BRWN CLAY GRVL LOOS 0007 BRWN CLAY SAND SOFT 0019 GREY CLAY SOFT 0029 GREY SAND SILT CLAY 0052 GREY SILT SAND CLAY 0062 BRWN SAND GRVL CLAY 0070 BRWN SAND FGVL CGVL 0096 GREY CLAY GRVL 0163 GREY SAND GRVL PCKD 0195 GREY SAND GRVL CLAY 0215
UXBRIDGE TOWNSHIP (U CON 06 029	17 649652 4884805 L	1999/10 5459				NU		1914299 (211611) A	

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
UXBRIDGE TOWNSHIP (U CON 06 029	17 649725 4884673 W	1973/11 4743	6	FR 0030 FR 0050	18/50/8/6:0	DO	0048 4 0052 4	4605641 ()	BRWN CLAY 0013 YLLW SAND CLAY 0030 YLLW FSND 0038 YLLW CLAY SAND MUCK 0050 BRWN FSND 0056 GREY SILT 0059
UXBRIDGE TOWNSHIP (U CON 06 029	17 649815 4884723 W	1973/07 5459	6	FR 0208	55/125/6/3:0	DO	0214 3	4605526 ()	BRWN SAND 0045 GRVL CLAY 0070 BLUE CLAY STNS 0170 CLAY GRVL 0208 SAND GRVL 0214
UXBRIDGE TOWNSHIP (U CON 06 029	17 649574 4884494 W	2005/12 4743						1917954 (Z26838) A032314 A	
UXBRIDGE TOWNSHIP (U CON 06 029	17 649570 4884498 W	2005/11 4743						1917953 (Z26837) A032316 A	
UXBRIDGE TOWNSHIP (U CON 06 029	17 649649 4884806 L	2003/09 5459				NU		1916696 (264138) A	
UXBRIDGE TOWNSHIP (U CON 06 029	17 649649 4884806 L	2003/09 5459	6	FR 0117	-10/100/20/2:0	DO	0129 6	1916695 (264133)	BRWN SAND 0017 BRWN CLAY FILL 0040 GREY SAND SILT 0048 GREY CLAY 0074 GREY SAND GRVL 0078 GREY CLAY STNS 0103 GREY SAND GRVL 0105 GREY CLAY 0117 GREY SAND GRVL 0135
UXBRIDGE TOWNSHIP (U CON 06 029	17 649649 4884806 L	2003/08 5459	10 6	FR 0110	-14/-14/60/0:0	DO	0110 6	1916658 (264125)	BRWN SAND STNS 0036 GREY CLAY STNS 0075 GREY CLAY SLTY 0081 GREY CLAY STNS 0086 GREY CLAY SLTY 0089 GREY CLAY STNS SILT 0101 GREY SAND STNS 0121
UXBRIDGE TOWNSHIP (U CON 06 029	17 649650 4884806 L	2001/08 2801						1915308 (232024) A	
UXBRIDGE TOWNSHIP (U CON 06 029	17 649652 4884805 L	1998/08 5459						1913768 (195369) A	
UXBRIDGE TOWNSHIP (U CON 06 029	17 649650 4884806 L	2001/07 2801				NU		1915204 (232021) A	
UXBRIDGE TOWNSHIP (U CON 06 029	17 649805 4884622 W	1995/12 3136	8 6	FR 0029	14/64/6/1:0	DO	0063 5	1912655 (165176)	BRWN LOAM 0003 BRWN CLAY SNDY 0027 BRWN FSND 0047 GREY FSND 0069 GREY CLAY 0069
UXBRIDGE TOWNSHIP (U CON 06 029	17 649652 4884805 L	1999/08 5459	6	FR 0198	45/190/10/1:	DO	0200 6	1914163 (195534)	BRWN SAND SILT 0062 BRWN SAND STNS SILT 0089 GREY CLAY STNS 0117 GREY SAND STNS SILT 0127 GREY CLAY STNS STNS 0198 GREY SAND STNS 0211
UXBRIDGE TOWNSHIP (U CON 06 029	17 649652 4884805 L	1998/08 5459						1913769 (195370) A	
UXBRIDGE TOWNSHIP (U CON 06 029	17 649652 4884805 L	1998/08 5459						1913767 (195368) A	
UXBRIDGE TOWNSHIP (U CON 06 029	17 649652 4884805 L	1998/08 5459						1913766 (195367) A	
UXBRIDGE TOWNSHIP (U CON 06 029	17 649652 4884805 L	1996/05 3136				NU		1912850 (165175) A	
UXBRIDGE TOWNSHIP (U CON 06 029	17 649652 4884805 L	1996/05 3136				NU		1912849 (165174) A	

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
UXBRIDGE TOWNSHIP (U CON 06 029	17 649652 4884805 L	1996/05 3136				NU		1912848 (165173) A	
UXBRIDGE TOWNSHIP (U CON 06 029	17 649652 4884805 L	1996/05 3136				NU		1912847 (165170) A	
UXBRIDGE TOWNSHIP (U CON 06 029	17 649652 4884805 L	1996/05 3136				NU		1912846 (165171) A	
UXBRIDGE TOWNSHIP (U CON 06 029	17 649652 4884478 W	1995/12 3136	8 6	UK 0019 FR 0037	9/61/8/1:0	DO	0066 5	1912672 (165177)	BRWN LOAM 0002 BRWN CLAY SNDY 0019 BRWN SAND 0073 GREY CLAY 0073
UXBRIDGE TOWNSHIP (U CON 06 029	17 649650 4884806 L	2001/01 2662	6 2				0165 10	1915255 (228240)	BLCK LOAM 0005 BRWN CLAY SNDY GRVL 0013 GREY CLAY GRVL 0022 GREY SAND SLTY 0043 GREY CLAY GRVL 0052 GREY CLAY SNDY GRVL 0081 GREY SAND SLTY GRVL 0093 GREY CLAY SNDY GRVL 0166 GREY GRVL SAND WBRG 0182
UXBRIDGE TOWNSHIP (U CON 06 030	17 649805 4884447 W	2007/06 1413	42		4///:			7046902 (Z57506) A	

TOWNSHIP CON LOT | UTM | DATE CNTR | CASING DIA | WATER | PUMP TEST | WELL USE | SCREEN | WELL | FORMATION

Notes:
UTM: UTM in Zone, Easting, Northing and Datum is NAD83; L: UTM estimated from Centroid of Lot; W: UTM not from Lot Centroid
DATE CNTR: Date Work Completedand Well Contractor Licence Number
CASING DIA: .Casing diameter in inches
WATER: Unit of Depth in Fee. See Table 4 for Meaning of Code

PUMP TEST: Static Water Level in Feet / Water Level After Pumping in Feet / Pump Test Rate in GPM / Pump Test Duration in Hour : Minutes
WELL USE: See Table 3 for Meaning of Code
SCREEN: Screen Depth and Length in feet
WELL: WEL (AUDIT #) Well Tag . A: Abandonment; P: Partial Data Entry Only
FORMATION: See Table 1 and 2 for Meaning of Code

1. Core Material and Descriptive terms

Code	Description	Code	Description	Code	Description	Code	Description	Code	Description
BLDR	BOULDERS	FCRD	FRACTURED	IRFM	IRON FORMATION	PORS	POROUS	SOFT	SOFT
BSLT	BASALT	FGRD	FINE-GRAINED	LIMY	LIMY	PRDG	PREVIOUSLY DUG	SPST	SOAPSTONE
CGRD	COARSE-GRAINED	FGVL	FINE GRAVEL	LMSN	LIMESTONE	PRDR	PREV. DRILLED	STKY	STICKY
CGVL	COARSE GRAVEL	FILL	FILL	LOAM	TOPSOIL	QRTZ	QUARTZITE	STNS	STONES
CHRT	CHERT	FLDS	FELDSPAR	LOOS	LOOSE	QSND	QUICKSAND	STNY	STONEY
CLAY	CLAY	FLNT	FLINT	LTCL	LIGHT-COLOURED	QTZ	QUARTZ	THIK	THICK
CLN	CLEAN	FOSS	FOSILIFEROUS	LYRD	LAYERED	ROCK	ROCK	THIN	THIN
CLYY	CLAYEY	FSND	FINE SAND	MARL	MARL	SAND	SAND	TILL	TILL
CMTD	CEMENTED	GNIS	GNEISS	MGRD	MEDIUM-GRAINED	SHLE	SHALE	UNKN	UNKNOWN TYPE
CONG	CONGLOMERATE	GRNT	GRANITE	MGVL	MEDIUM GRAVEL	SHLY	SHALY	VERY	VERY
CRYS	CRYSTALLINE	GRSN	GREENSTONE	MRBL	MARBLE	SHRP	SHARP	WBRG	WATER-BEARING
CSND	COARSE SAND	GRVL	GRAVEL	MSND	MEDIUM SAND	SHST	SCHIST	WDFR	WOOD FRAGMENTS
DKCL	DARK-COLOURED	GRWK	GREYWACKE	MUCK	MUCK	SILT	SILT	WTHD	WEATHERED
DLMT	DOLOMITE	GVLY	GRAVELLY	OBDN	OVERBURDEN	SLTE	SLATE		
DNSE	DENSE	GYPS	GYPSUM	PCKD	PACKED	SLTY	SILTY		
DRTY	DIRTY	HARD	HARD	PEAT	PEAT	SNDS	SANDSTONE		
DRY	DRY	HPAN	HARDPAN	PGVL	PEA GRAVEL	SNDY	SANDYOAPSTONE		

2. Core Color

Code	Description
WHIT	WHITE
GREY	GREY
BLUE	BLUE
GREN	GREEN
YLLW	YELLOW
BRWN	BROWN
RED	RED
BLCK	BLACK
BLGY	BLUE-GREY

3. Well Use

Code	Description	Code	Description
DO	Domestic	OT	Other
ST	Livestock	TH	Test Hole
IR	Irrigation	DE	Dewatering
IN	Industrial	MO	Monitoring
CO	Commercial	MT	Monitoring TestHole
MN	Municipal		
PS	Public		
AC	Cooling And A/C		
NU	Not Used		

4. Water Detail

Code	Description	Code	Description
FR	Fresh	GS	Gas
SA	Salty	IR	Iron
SU	Sulphur		
MN	Mineral		
UK	Unknown		

APPENDIX E

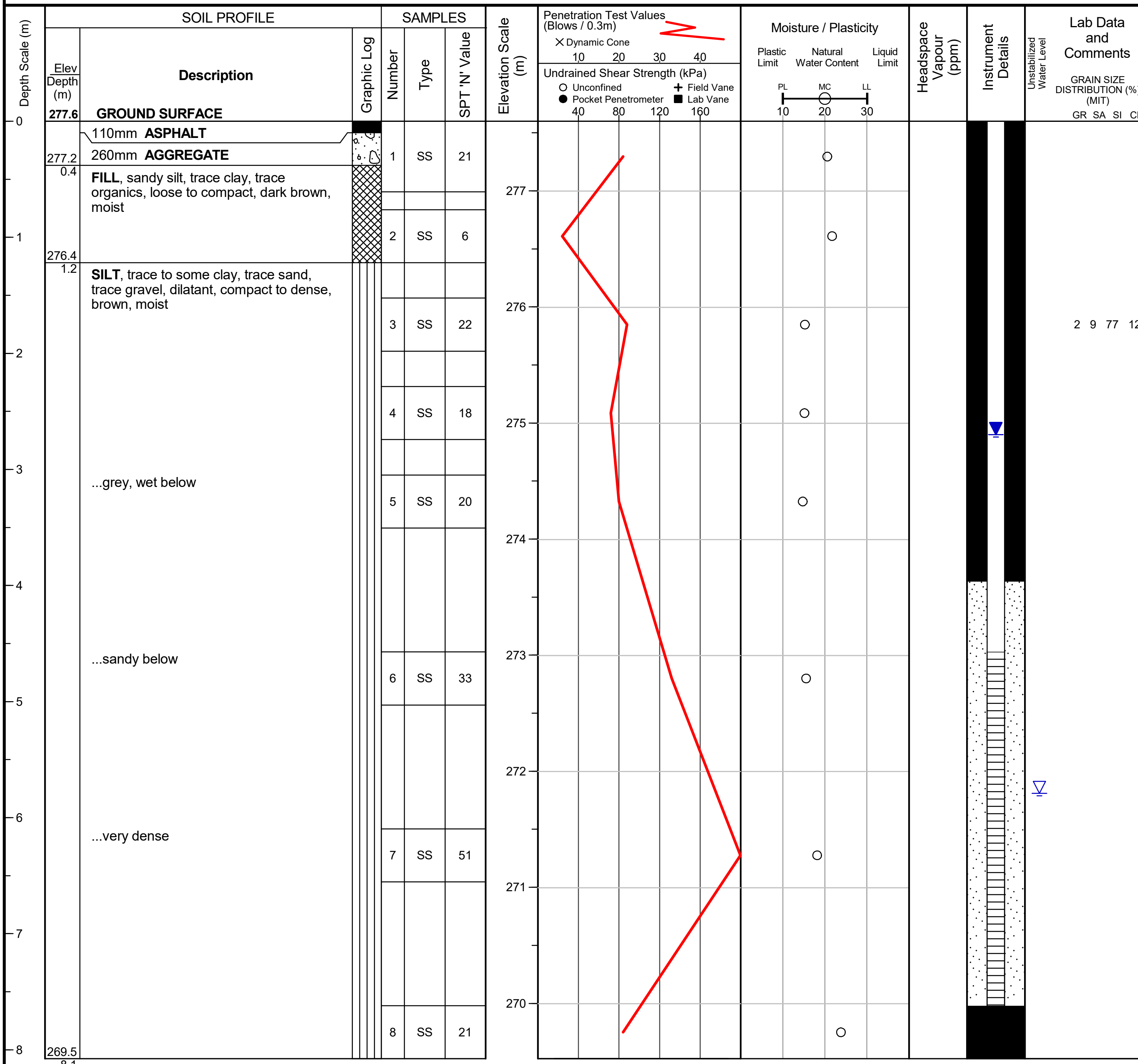
TERRAPROBE INC.

LOG OF BOREHOLE 1

Terraprobe

Project No. : 1-19-0022	Client : Uxbridge Health Centre	Originated by : NB
Date started : February 8, 2019	Project : 4 Campbell Dr	Compiled by : AR
Sheet No. : 1 of 1	Location : Uxbridge, Ontario	Checked by : SZ

Position : E: 649849, N: 4884951 (UTM 17T)
Elevation Datum : Geodetic
Rig type : CME 75, truck-mounted
Drilling Method : Solid stem augers



Elev / Depth (m)	Description
277.6	GROUND SURFACE
	110mm **ASPHALT**
	260mm **AGGREGATE**
277.2 / 0.4	**FILL**, sandy silt, trace clay, trace organics, loose to compact, dark brown, moist
276.4 / 1.2	**SILT**, trace to some clay, trace sand, trace gravel, dilatant, compact to dense, brown, moist
	...grey, wet below
	...sandy below
	...very dense
269.5 / 8.1	

Number	Type	SPT 'N' Value	Lab Data (GR SA SI CL)
1	SS	21	
2	SS	6	
3	SS	22	2 9 77 12
4	SS	18	
5	SS	20	
6	SS	33	
7	SS	51	
8	SS	21	

END OF BOREHOLE

Unstabilized water level measured at 5.8 m below ground surface; borehole caved to 7.3 m below ground surface upon completion of drilling.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Feb 14, 2019	2.7	274.9
Oct 29, 2019	2.4	275.1

file: 1-19-0022 bh logs.gpj

LOG OF BOREHOLE 2

Terraprobe

Project No. : 1-19-0022	Client : Uxbridge Health Centre	Originated by : NB
Date started : February 8, 2019	Project : 4 Campbell Dr	Compiled by : AR
Sheet No. : 1 of 1	Location : Uxbridge, Ontario	Checked by : SZ

Position : E: 649829, N: 4884945 (UTM 17T) Elevation Datum : Geodetic

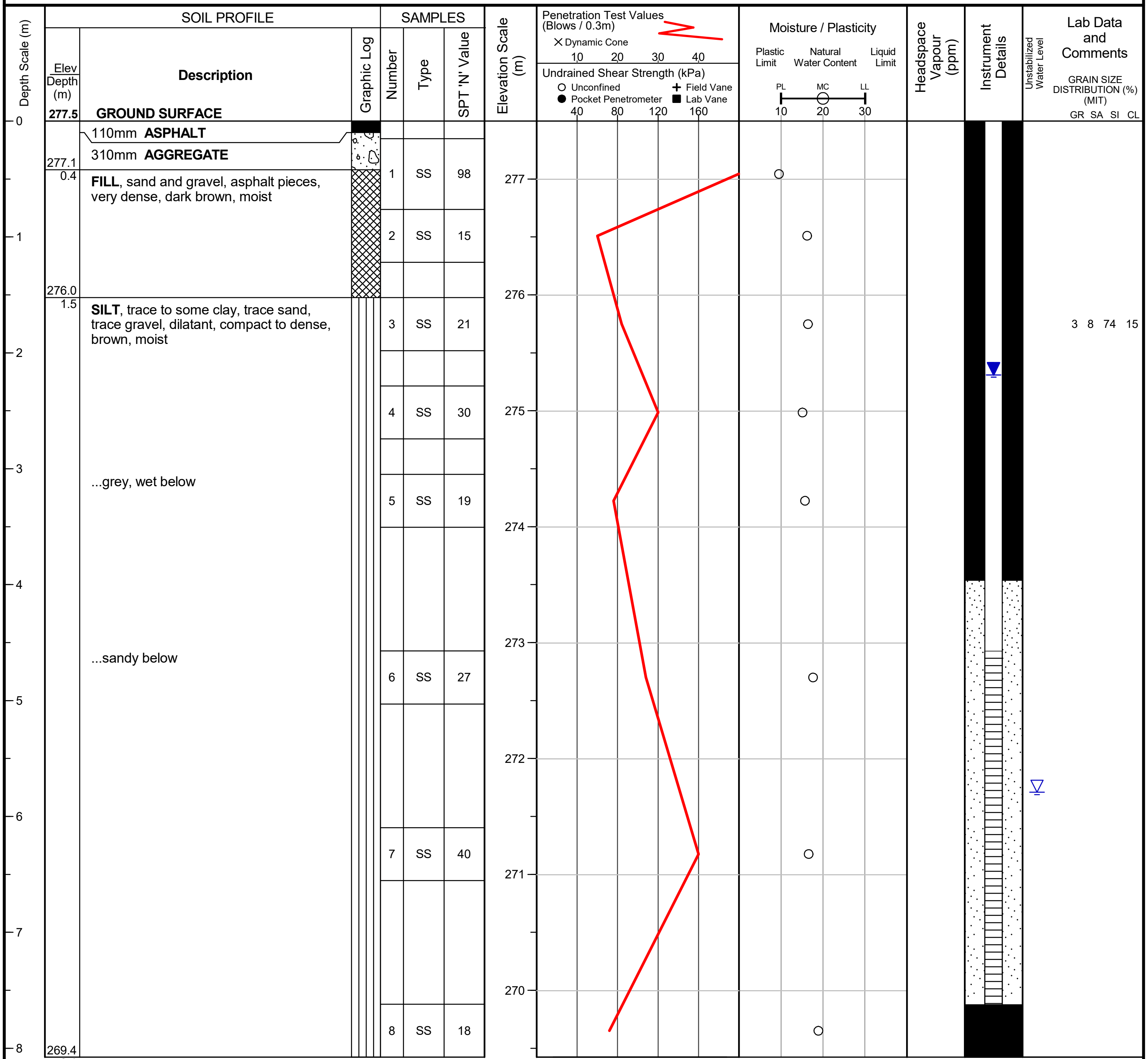
Rig type : CME 75, truck-mounted Drilling Method : Solid stem augers

SOIL PROFILE

Elev Depth (m)	Description
277.5	GROUND SURFACE
	110mm **ASPHALT**
	310mm **AGGREGATE**
277.1 / 0.4	**FILL**, sand and gravel, asphalt pieces, very dense, dark brown, moist
276.0 / 1.5	**SILT**, trace to some clay, trace sand, trace gravel, dilatant, compact to dense, brown, moist
	...grey, wet below
	...sandy below
269.4 / 8.1	

SAMPLES

Number	Type	SPT 'N' Value	Lab Data and Comments (Grain size distribution (%) (MIT): GR SA SI CL)
1	SS	98	
2	SS	15	
3	SS	21	3 8 74 15
4	SS	30	
5	SS	19	
6	SS	27	
7	SS	40	
8	SS	18	



END OF BOREHOLE

Unstabilized water level measured at 5.8 m below ground surface; borehole caved to 7.3 m below ground surface upon completion of drilling.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Feb 14, 2019	2.2	275.3
Oct 29, 2019	2.3	275.2

file: 1-19-0022 bh logs.gpj

Terraprobe

LOG OF BOREHOLE 3

Project No. : 1-19-0022	Client : Uxbridge Health Centre	Originated by : NB
Date started : February 8, 2019	Project : 4 Campbell Dr	Compiled by : AR
Sheet No. : 1 of 1	Location : Uxbridge, Ontario	Checked by : SZ

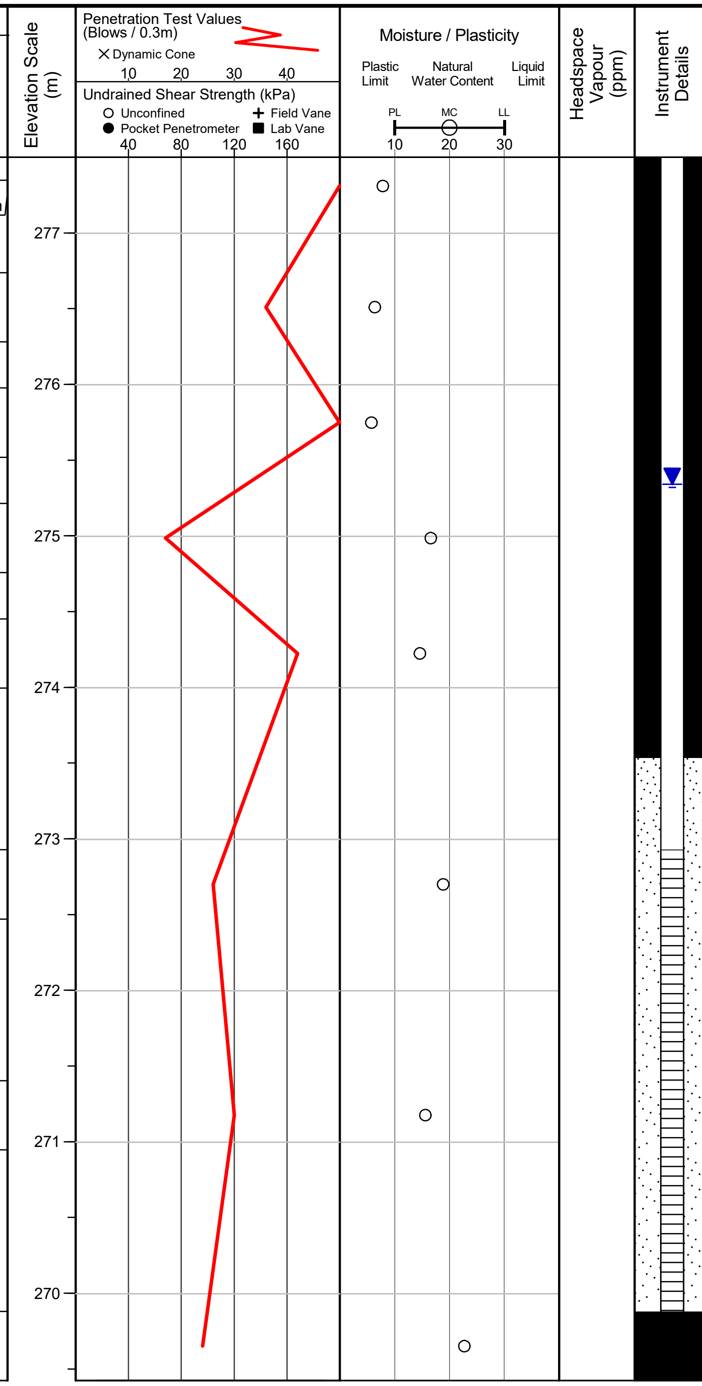
Position : E: 649844, N: 4884922 (UTM 17T)
Elevation Datum : Geodetic
Rig type : CME 75, truck-mounted
Drilling Method : Solid stem augers

SOIL PROFILE

Elev / Depth (m)	Description
277.5	GROUND SURFACE
	110mm **ASPHALT**
277.1 / 0.4	260mm **AGGREGATE**
	FILL, sand, some gravel, trace silt, trace brick fragments, dense to very dense, brown, moist
275.2 / 2.3	**SILT**, trace to some clay, trace sand, dilatant, compact to dense, brown, wet
	...sandy below
269.4 / 8.1	**END OF BOREHOLE**

SAMPLES

Number	Type	SPT 'N' Value	Lab Data and Comments (Grain Size Distribution (%) (MIT): GR SA SI CL)
1	SS	50 / 75mm	
2	SS	36	
3	SS	60	
4	SS	17	0 7 79 14
5	SS	42	
6	SS	26	
7	SS	30	
8	SS	24	



Unstabilized water level measured at 5.8 m below ground surface; borehole caved to 7.3 m below ground surface upon completion of drilling.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Feb 14, 2019	2.2	275.3
Oct 29, 2019	2.2	275.3

file: 1-19-0022 bh logs.gpj

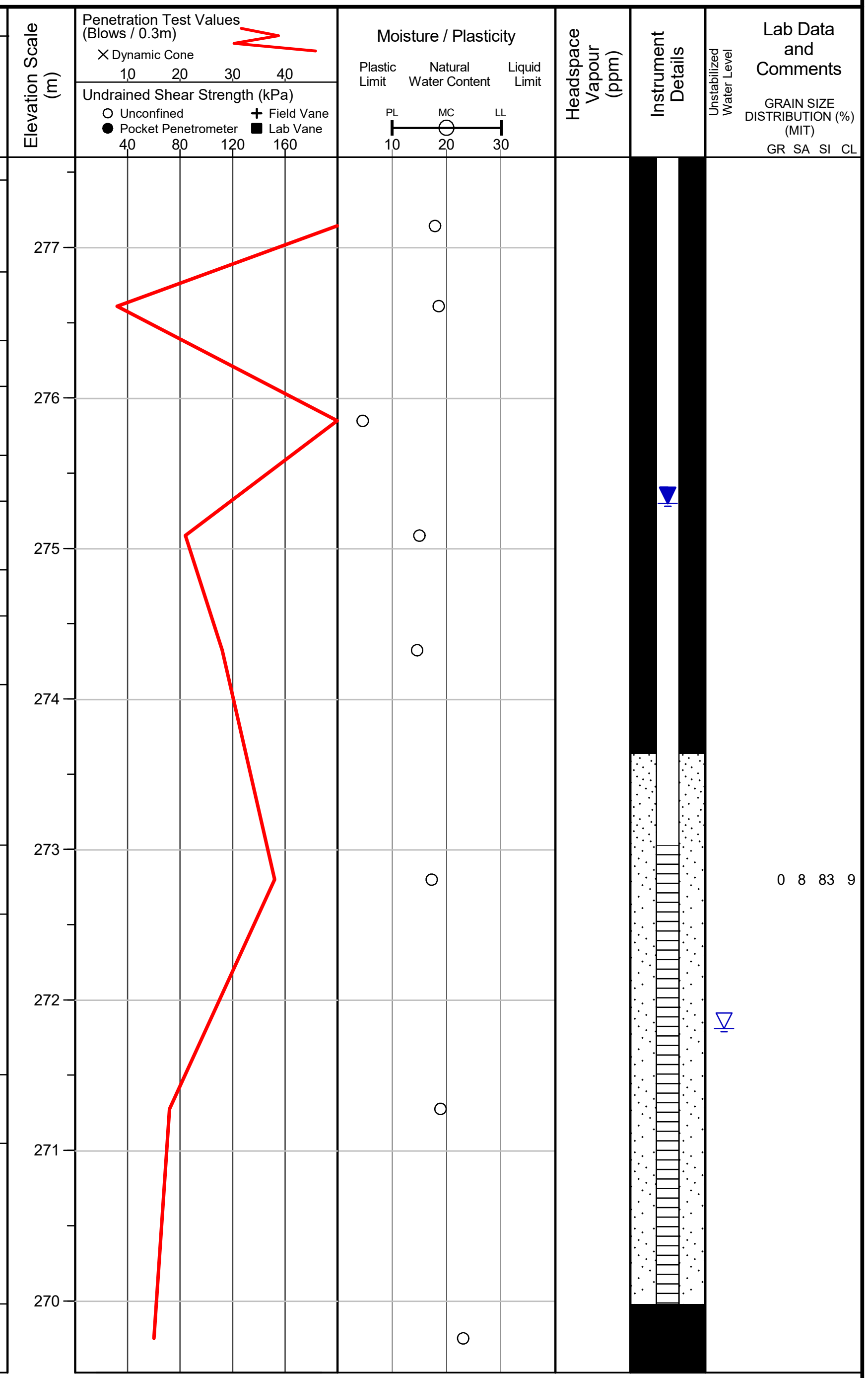
Terraprobe

LOG OF BOREHOLE 4

Project No. : 1-19-0022	Client : Uxbridge Health Centre	Originated by : NB
Date started : February 8, 2019	Project : 4 Campbell Dr	Compiled by : AR
Sheet No. : 1 of 1	Location : Uxbridge, Ontario	Checked by : SZ

Position : E: 649854, N: 4884926 (UTM 17T)
Elevation Datum : Geodetic
Rig type : CME 75, truck-mounted
Drilling Method : Solid stem augers

Elev / Depth (m)	Description (SOIL PROFILE)	Sample Number	Type	SPT 'N' Value	Moisture (%)	Lab Data and Comments (Grain Size Distribution (%) (MIT) GR SA SI CL)
277.6	GROUND SURFACE					
	110mm **ASPHALT**					
	260mm **AGGREGATE**					
277.2 / 0.4	**FILL**, silty sand, trace gravel, loose to very dense, dark brown, moist	1	SS	74		
		2	SS	8		
276.1 / 1.5	**FILL**, sand and gravel, very dense, brown, moist	3	SS	75		
275.3 / 2.3	**SILT**, trace to some clay, trace sand, dilatant, compact to dense, brown, wet	4	SS	21		
		5	SS	28		
		6	SS	38		0 8 83 9
		7	SS	18		
269.5 / 8.1		8	SS	15		



END OF BOREHOLE

Unstabilized water level measured at 5.8 m below ground surface; borehole caved to 7.3 m below ground surface upon completion of drilling.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Feb 14, 2019	2.3	275.3
Oct 29, 2019	2.4	275.2

file: 1-19-0022 bh logs.gpj

Terraprobe

LOG OF BOREHOLE 5

Project No. : 1-19-0022 | Client : Uxbridge Health Centre | Originated by : AK
Date started : October 7, 2019 | Project : 4 Campbell Dr | Compiled by : AR
Sheet No. : 1 of 1 | Location : Uxbridge, Ontario | Checked by : SZ

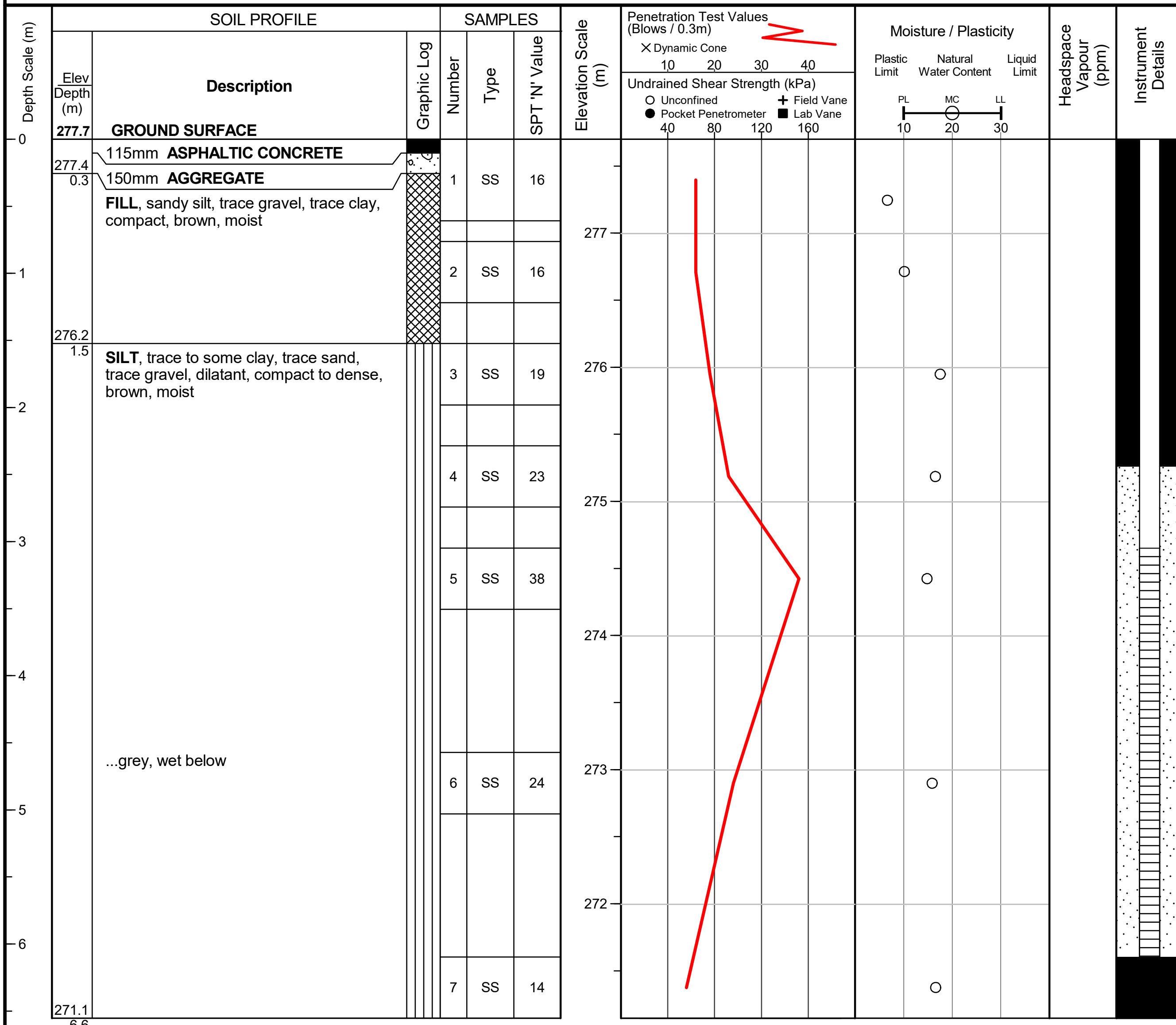
Position : E: 649831, N: 4884971 (UTM 17T) | Elevation Datum : Geodetic
Rig type : Track-mounted | Drilling Method : Solid stem augers

SOIL PROFILE

Elev / Depth (m)	Description
277.7	GROUND SURFACE
	115mm **ASPHALTIC CONCRETE**
277.4 / 0.3	150mm **AGGREGATE**
	FILL, sandy silt, trace gravel, trace clay, compact, brown, moist
276.2 / 1.5	**SILT**, trace to some clay, trace sand, trace gravel, dilatant, compact to dense, brown, moist
	...grey, wet below
271.1 / 6.6	

SAMPLES

Number	Type	SPT 'N' Value
1	SS	16
2	SS	16
3	SS	19
4	SS	23
5	SS	38
6	SS	24
7	SS	14



Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT)

GR	SA	SI	CL
1	9	75	15

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Oct 29, 2019	2.6	275.1

file: 1-19-0022 bh logs.gpj

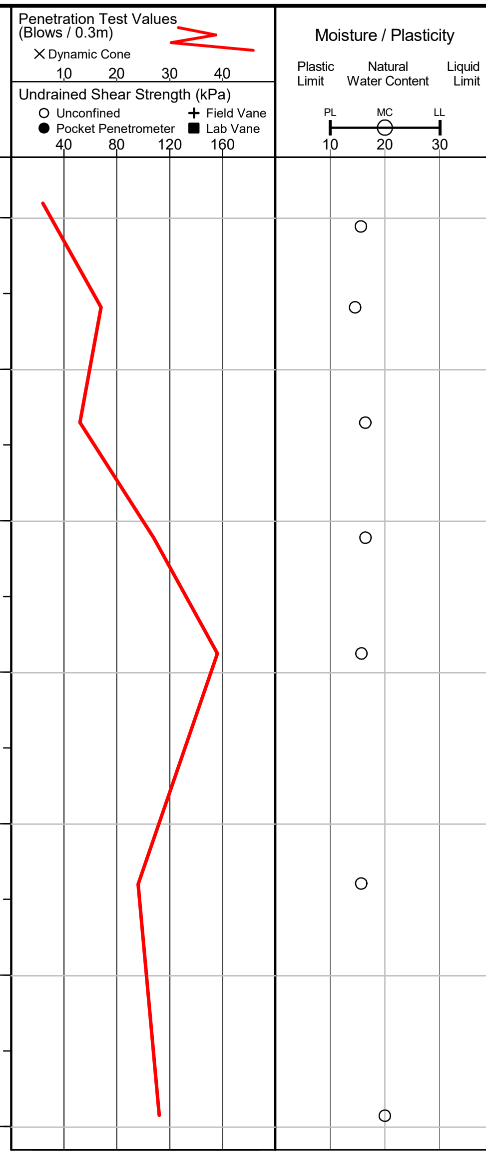
Terraprobe

LOG OF BOREHOLE 6

Project No. : 1-19-0022 | Client : Uxbridge Health Centre | Originated by : AK
Date started : October 7, 2019 | Project : 4 Campbell Dr | Compiled by : AR
Sheet No. : 1 of 1 | Location : Uxbridge, Ontario | Checked by : SZ

Position : E: 649812, N: 4884953 (UTM 17T) | Elevation Datum : Geodetic
Rig type : Track-mounted | Drilling Method : Solid stem augers

Depth Scale (m)	Elev / Depth (m)	Description	Sample Number	Type	SPT 'N' Value	Elevation Scale (m)
0	277.4	GROUND SURFACE				
		50mm **TOPSOIL**				
		FILL, sandy silt, trace gravel, trace clay, compact, brown, moist	1	SS	6	277
	276.6 / 0.8	**SILT**, trace to some clay, trace sand, trace gravel, dilatant, compact, brown, moist	2	SS	17	
1						276
2			3	SS	13	
			4	SS	27	275
3		...Dense	5	SS	39	274
4						273
		...grey, wet below	6	SS	24	
5						272
6		...some sand	7	SS	28	271
	270.8 / 6.6					



Headspace Vapour (ppm) | Instrument Details | Unstabilized Water Level | Lab Data and Comments: GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

END OF BOREHOLE

Unstabilized water level measured at 5.4 m below ground surface; borehole caved to 5.5 m below ground surface upon completion of drilling.

file: 1-19-0022 bh logs.gpj

Terraprobe

LOG OF BOREHOLE 7

Project No. : 1-19-0022
Client : Uxbridge Health Centre
Originated by : AK

Date started : October 7, 2019
Project : 4 Campbell Dr
Compiled by : AR

Sheet No. : 1 of 1
Location : Uxbridge, Ontario
Checked by : SZ

Position : E: 649825, N: 4884922 (UTM 17T)
Elevation Datum : Geodetic

Rig type : Track-mounted
Drilling Method : Solid stem augers

Elev / Depth (m)	Description	Sample Number	Type	SPT 'N' Value	Unstabilized Water Level
277.4	**GROUND SURFACE**				
	50mm **TOPSOIL**				
	FILL, sandy silt, trace gravel, trace clay, trace rootlets, loose to compact, brown, moist	1	SS	8	
		2	SS	20	
275.9 / 1.5	**SILT**, trace to some clay, trace sand, trace gravel, dilatant, compact, brown, moist	3	SS	17	
		4	SS	22	
	...grey, wet below	5	SS	17	
		6	SS	14	
					▽ (6.0 m)
		7	SS	26	
270.8 / 6.6	**END OF BOREHOLE**				

Penetration Test Values (Blows / 0.3m): X Dynamic Cone; 10 20 30 40
Undrained Shear Strength (kPa): O Unconfined, + Field Vane, ● Pocket Penetrometer, ■ Lab Vane; 40 80 120 160

Moisture / Plasticity: Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL); 10 20 30

Headspace Vapour (ppm) | Instrument Details | Lab Data and Comments: GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

Elevation Scale (m): 277, 276, 275, 274, 273, 272, 271
Depth Scale (m): 0, 1, 2, 3, 4, 5, 6

Unstabilized water level measured at 6.0 m below ground surface; borehole was open upon completion of drilling.

file: 1-19-0022 bh logs.gpj

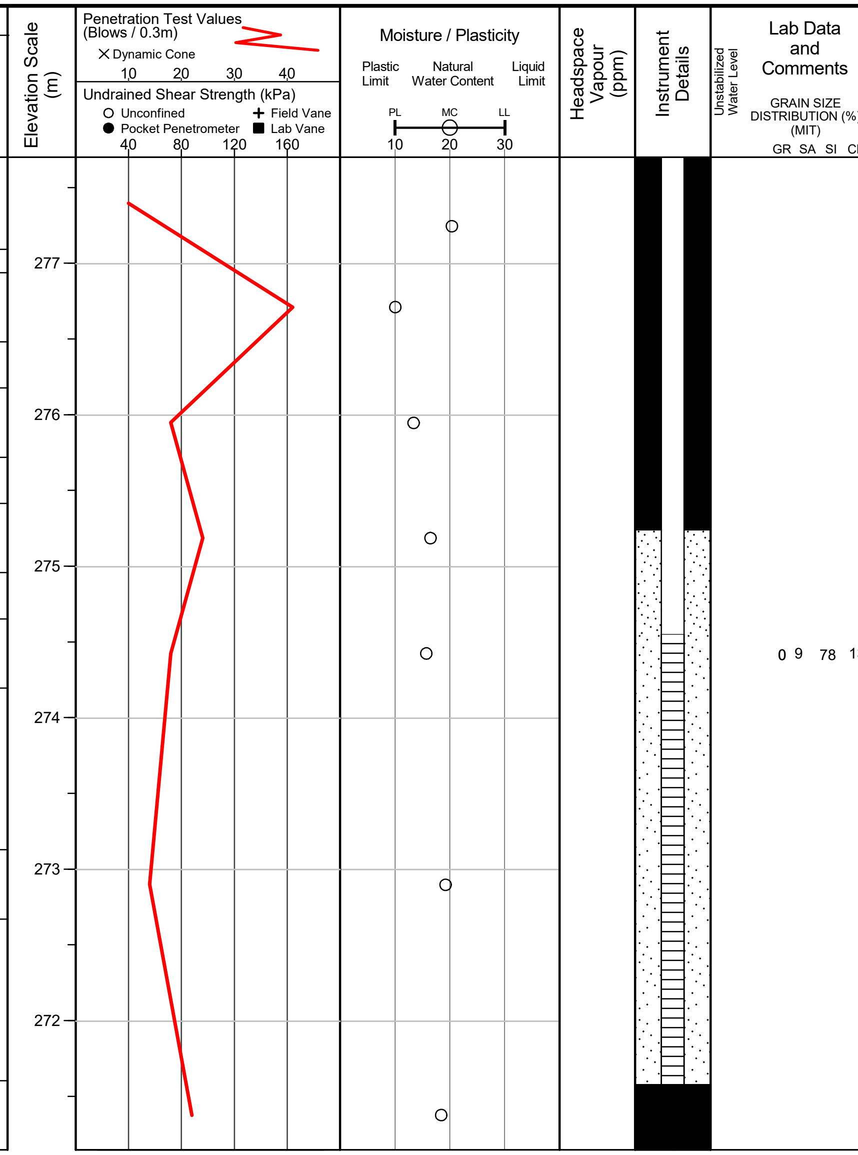
Terraprobe

LOG OF BOREHOLE 8

Project No. : 1-19-0022	Client : Uxbridge Health Centre	Originated by : AK
Date started : October 7, 2019	Project : 4 Campbell Dr	Compiled by : AR
Sheet No. : 1 of 1	Location : Uxbridge, Ontario	Checked by : SZ

Position : E: 649808, N: 4884914 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

Elev / Depth (m)	Description (SOIL PROFILE)	Sample Number	Type	SPT 'N' Value
277.7	GROUND SURFACE			
	40mm **TOPSOIL**			
	FILL, sandy silt, trace gravel, trace clay, loose to dense, brown, moist	1	SS	10
	...stone fragments	2	SS	41
		3	SS	18
275.9 / 1.8	**SILT**, trace to some clay, trace sand, trace gravel, dilatant, compact, brown, moist	4	SS	24
	...grey, wet below	5	SS	18
		6	SS	14
		7	SS	22
271.1 / 6.6				



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Oct 29, 2019	2.1	275.6

file: 1-19-0022 bh logs.gpj

LOG OF BOREHOLE 9

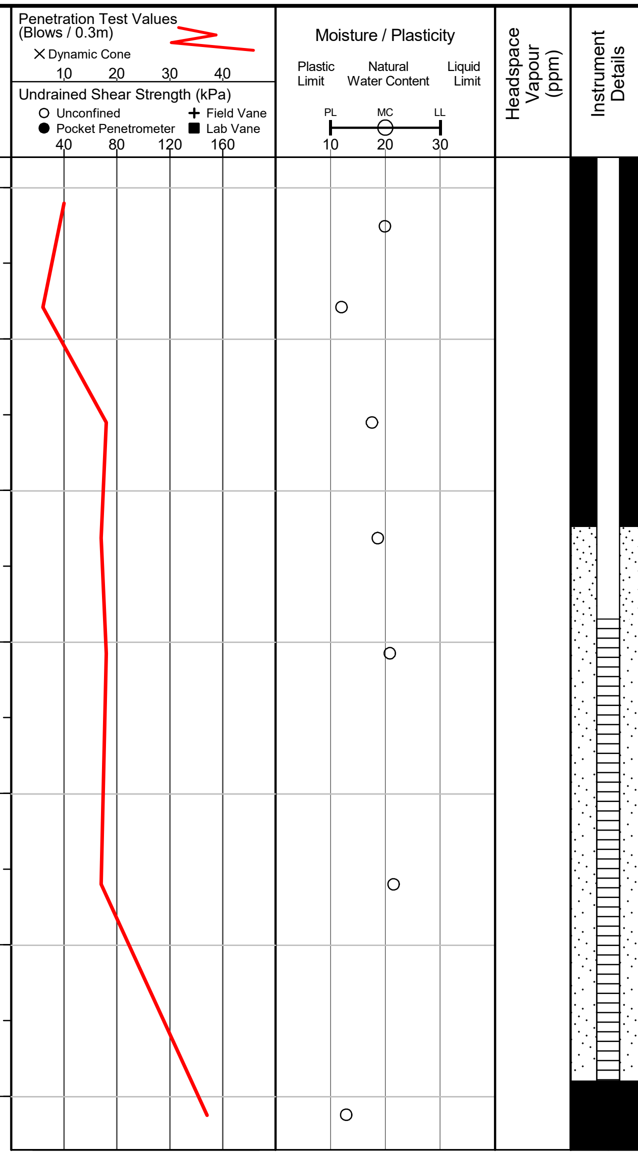
Terraprobe

Project No. : 1-19-0022	Client : Uxbridge Health Centre	Originated by : AK
Date started : October 7, 2019	Project : 4 Campbell Dr	Compiled by : AR
Sheet No. : 1 of 1	Location : Uxbridge, Ontario	Checked by : SZ

Position : E: 649731, N: 4884884 (UTM 17T)	Elevation Datum : Geodetic
Rig type : Track-mounted	Drilling Method : Solid stem augers

SOIL PROFILE / SAMPLES

Elev / Depth (m)	Description	Sample Number	Type	SPT 'N' Value	Lab Data and Comments (Grain size distribution (%) (MIT) GR SA SI CL)
277.2	**GROUND SURFACE**				
	75mm **TOPSOIL**				
	FILL, sandy silt, trace gravel, trace clay, trace rootlets, loose, brown, moist	1	SS	10	
		2	SS	6	
275.7 / 1.5	**SILT**, trace to some clay, trace sand, trace gravel, dilatant, compact, brown, moist	3	SS	18	
		4	SS	17	
	...grey below	5	SS	18	
	...wet below	6	SS	17	0 6 86 8
	...dense	7	SS	37	
270.6 / 6.6	**END OF BOREHOLE**				



Unstabilized water level measured at 6.0 m below ground surface; borehole was open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Oct 29, 2019	1.5	275.7

file: 1-19-0022 bh logs.gpj

LOG OF BOREHOLE 10

Terraprobe

Project No. : 1-19-0022	Client : Uxbridge Health Centre	Originated by : AK
Date started : October 7, 2019	Project : 4 Campbell Dr	Compiled by : AR
Sheet No. : 1 of 1	Location : Uxbridge, Ontario	Checked by : SZ

Position : E: 649804, N: 4884979 (UTM 17T) — Elevation Datum : Geodetic

Rig type : Track-mounted — Drilling Method : Solid stem augers

Depth Scale (m)	Elev / Depth (m)	Description	Sample Number	Type	SPT 'N' Value	Elevation Scale (m)	Natural Water Content	Lab Data and Comments: GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
0	277.9	GROUND SURFACE						
		40mm **TOPSOIL**						
		FILL, sandy silt, trace gravel, trace clay, trace rootlets, loose to compact, brown, moist	1	SS	6			
1			2	SS	12	277		
	276.7 / 1.2	**SILT**, trace clay, some sand, trace gravel, dilatant, compact, brown, moist	3	SS	16			2 13 69 15
	276.1 / 1.8	**END OF BOREHOLE**						

Penetration Test Values (Blows / 0.3m): Dynamic Cone 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Field Vane, Pocket Penetrometer, Lab Vane — 40 80 120 160

Moisture / Plasticity: Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL) — 10 20 30

Headspace Vapour (ppm) | Instrument Details | Unstabilized Water Level

Borehole was dry and open upon completion of drilling.

file: 1-19-0022 bh logs.gpj

Terraprobe

LOG OF BOREHOLE 11

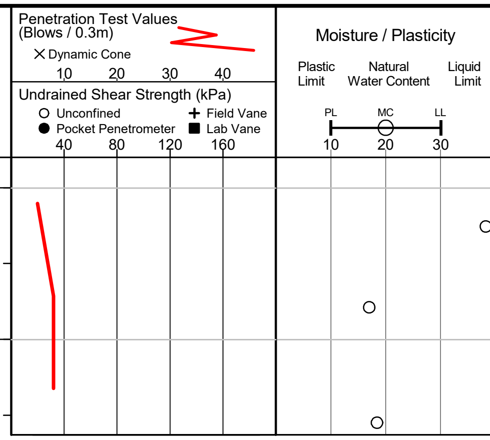
Project No. : 1-19-0022	Client : Uxbridge Health Centre	Originated by : AK
Date started : October 7, 2019	Project : 4 Campbell Dr	Compiled by : AR
Sheet No. : 1 of 1	Location : Uxbridge, Ontario	Checked by : SZ

Position : E: 649803, N: 4884934 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Elev / Depth (m)	Description	Sample Number	Type	SPT 'N' Value
277.2	GROUND SURFACE			
277.0 / 0.2	150mm **TOPSOIL**			
	FILL, sandy silt, trace gravel, trace clay, trace rootlets, loose, brown, moist	1	SS	5
		2	SS	8
276.0 / 1.2	**SILT**, trace to some clay, trace sand, trace gravel, dilatant, loose, brown, moist	3	SS	8
275.4 / 1.8	**END OF BOREHOLE**			

Borehole was dry and open upon completion of drilling.



Headspace Vapour (ppm) | Instrument Details | Unstabilized Water Level | Lab Data and Comments — GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

Terraprobe

LOG OF BOREHOLE 12

Project No.	: 1-19-0022	Client	: Uxbridge Health Centre	Originated by	: AK
Date started	: October 8, 2019	Project	: 4 Campbell Dr	Compiled by	: AR
Sheet No.	: 1 of 1	Location	: Uxbridge, Ontario	Checked by	: SZ

Position	: E: 649768, N: 4884908 (UTM 17T)	Elevation Datum	: Geodetic
Rig type	: Track-mounted	Drilling Method	: Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description (SOIL PROFILE)	Graphic Log	Number (SAMPLES)	Type	SPT 'N' Value	Elevation Scale (m)
0	277.6	**GROUND SURFACE**					
		50mm **TOPSOIL**					
		FILL, sandy silt, trace gravel, trace clay, trace rootlets, compact, brown, moist		1	SS	16	
	277.0 / 0.6	**SILT**, trace to some clay, trace sand, trace gravel, dilatant, compact, brown, moist					277
1				2	SS	20	
				3	SS	16	276
	275.8 / 1.8	**END OF BOREHOLE**					

Borehole was dry and open upon completion of drilling.

Penetration Test Values (Blows / 0.3m)
X Dynamic Cone
10 20 30 40
Undrained Shear Strength (kPa)
O Unconfined + Field Vane
● Pocket Penetrometer ■ Lab Vane
40 80 120 160

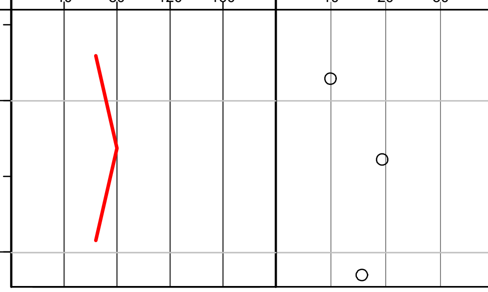
Moisture / Plasticity
Plastic Limit — Natural Water Content — Liquid Limit
PL MC LL
10 20 30

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments
GRAIN SIZE DISTRIBUTION (%) (MIT)
GR SA SI CL



file: 1-19-0022 bh logs.gpj

Terraprobe

LOG OF BOREHOLE 13

Project No. : 1-19-0022
Client : Uxbridge Health Centre
Originated by : AK

Date started : October 8, 2019
Project : 4 Campbell Dr
Compiled by : AR

Sheet No. : 1 of 1
Location : Uxbridge, Ontario
Checked by : SZ

Position : E: 649713, N: 4884882 (UTM 17T)
Elevation Datum : Geodetic

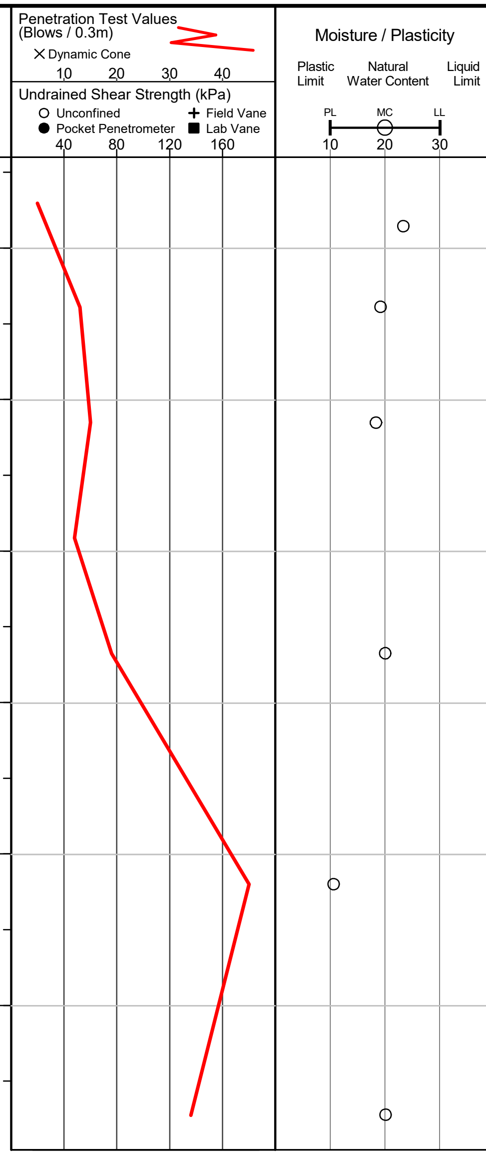
Rig type : Track-mounted
Drilling Method : Solid stem augers

SOIL PROFILE

Elev Depth (m)	Description
276.6	**GROUND SURFACE**
	75mm **TOPSOIL**
	FILL, sandy silt, trace gravel, trace clay, trace rootlets, loose, brown, moist
276.0 0.6	**SILT**, trace to some clay, trace sand, trace gravel, dilatant, compact, brown, moist
	...grey, wet below
	...dense below
270.0 6.6	**END OF BOREHOLE**

SAMPLES

Number	Type	SPT 'N' Value
1	SS	5
2	SS	13
3	SS	15
4	SS	12
5	SS	19
6	SS	45
7	SS	34



Depth Scale (m): 0, 1, 2, 3, 4, 5, 6
Elevation Scale (m): 276, 275, 274, 273, 272, 271

Headspace Vapour (ppm)

Instrument Details

Unstabilized Water Level

Lab Data and Comments
GRAIN SIZE DISTRIBUTION (%) (MIT)
GR SA SI CL

Unstabilized water level measured at 6.1 m below ground surface; borehole was open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Oct 29, 2019	1.0	275.7

file: 1-19-0022 bh logs.gpj

LOG OF BOREHOLE 14

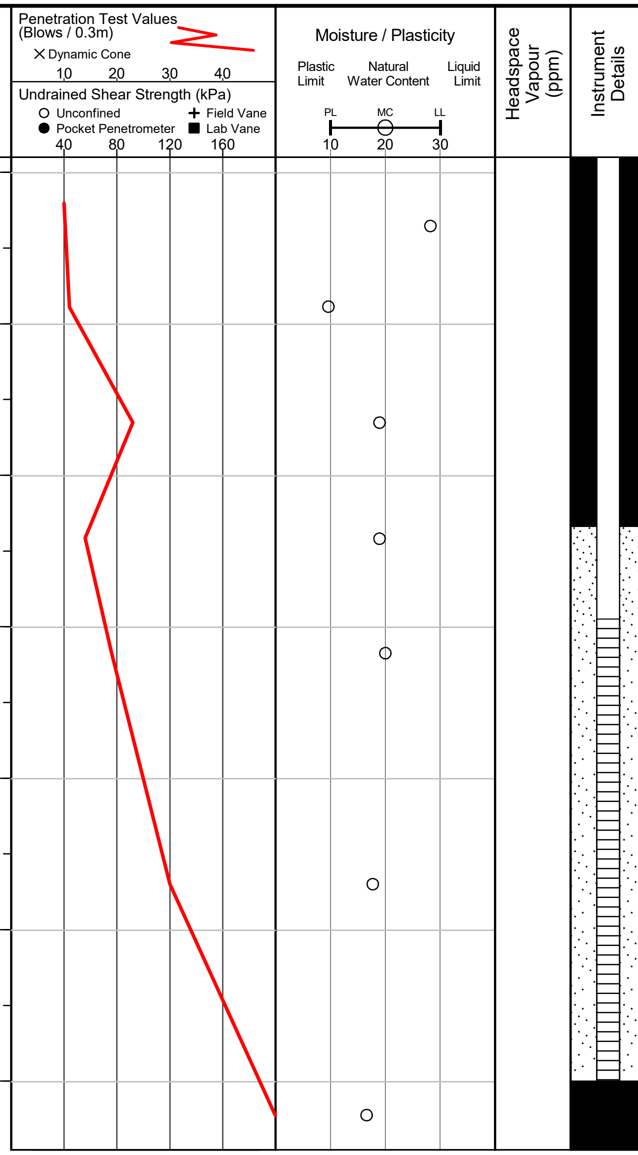
Terraprobe

Project No.	: 1-19-0022	Client	: Uxbridge Health Centre	Originated by	: AK
Date started	: October 8, 2019	Project	: 4 Campbell Dr	Compiled by	: AR
Sheet No.	: 1 of 1	Location	: Uxbridge, Ontario	Checked by	: SZ

Position : E: 649726, N: 4884869 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	SOIL PROFILE Description	Graphic Log	SAMPLES Number	Type	SPT 'N' Value	Elevation Scale (m)	Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
0	277.1	**GROUND SURFACE**						
		75mm **TOPSOIL**					277	
	276.5 / 0.6	**FILL**, sandy silt, trace gravel, trace clay, trace rootlets, loose, brown, moist		1	SS	10		
1		**SILT**, trace to some clay, trace sand, trace gravel, dilatant, compact to dense, brown, moist		2	SS	11	276	
		...wet below		3	SS	23		
2		...grey below		4	SS	14	275	
3				5	SS	19	274	
4							273	
5		...clayey silt, trace sand		6	SS	30	272	0 7 71 22
6		...very dense		7	SS	87	271	
	270.5 / 6.6							



END OF BOREHOLE

Unstabilized water level measured at 5.8 m below ground surface; borehole was open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Oct 29, 2019	1.3	275.8

file: 1-19-0022 bh logs.gpj

Terraprobe

LOG OF BOREHOLE 15

Project No. : 1-19-0022 | Client : Uxbridge Health Centre | Originated by : AK

Date started : October 8, 2019 | Project : 4 Campbell Dr | Compiled by : AR

Sheet No. : 1 of 1 | Location : Uxbridge, Ontario | Checked by : SZ

Position : E: 649712, N: 4884902 (UTM 17T) | Elevation Datum : Geodetic

Rig type : Track-mounted | Drilling Method : Solid stem augers

SOIL PROFILE | **SAMPLES**

Elev / Depth (m)	Description	Number	Type	SPT 'N' Value
276.4	**GROUND SURFACE**			
	100mm **TOPSOIL**			
275.8 / 0.6	**FILL**, sandy silt, trace gravel, trace clay, trace rootlets, very loose, brown, moist	1	SS	4
	SILT, trace to some clay, trace sand, trace gravel, dilatant, compact to dense, brown, moist	2	SS	14
		3	SS	34
	...grey below	4	SS	22
		5	SS	23
	...wet below	6	SS	35
269.8 / 6.6		7	SS	30

Depth Scale (m): 0, 1, 2, 3, 4, 5, 6

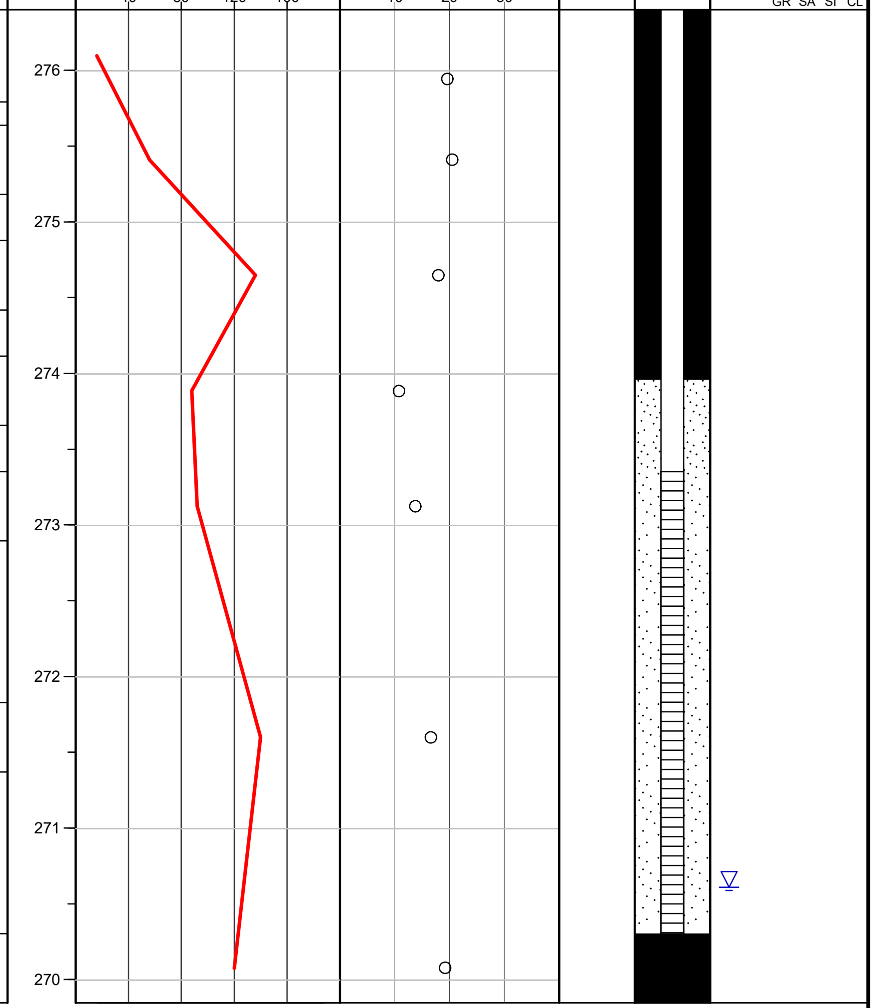
Elevation Scale (m): 276, 275, 274, 273, 272, 271, 270

Penetration Test Values (Blows / 0.3m): X Dynamic Cone 10 20 30 40

Undrained Shear Strength (kPa): O Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit; PL MC LL; 10 20 30

Headspace Vapour (ppm) | Instrument Details | Unstabilized Water Level | Lab Data and Comments: GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL



END OF BOREHOLE

Unstabilized water level measured at 5.8 m below ground surface; borehole was open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Oct 29, 2019	1.1	275.4

file: 1-19-0022 bh logs.gpj

LOG OF BOREHOLE 16

Terraprobe

Project No. : 1-19-0022	Client : Uxbridge Health Centre	Originated by : AK
Date started : October 8, 2019	Project : 4 Campbell Dr	Compiled by : AR
Sheet No. : 1 of 1	Location : Uxbridge, Ontario	Checked by : SZ

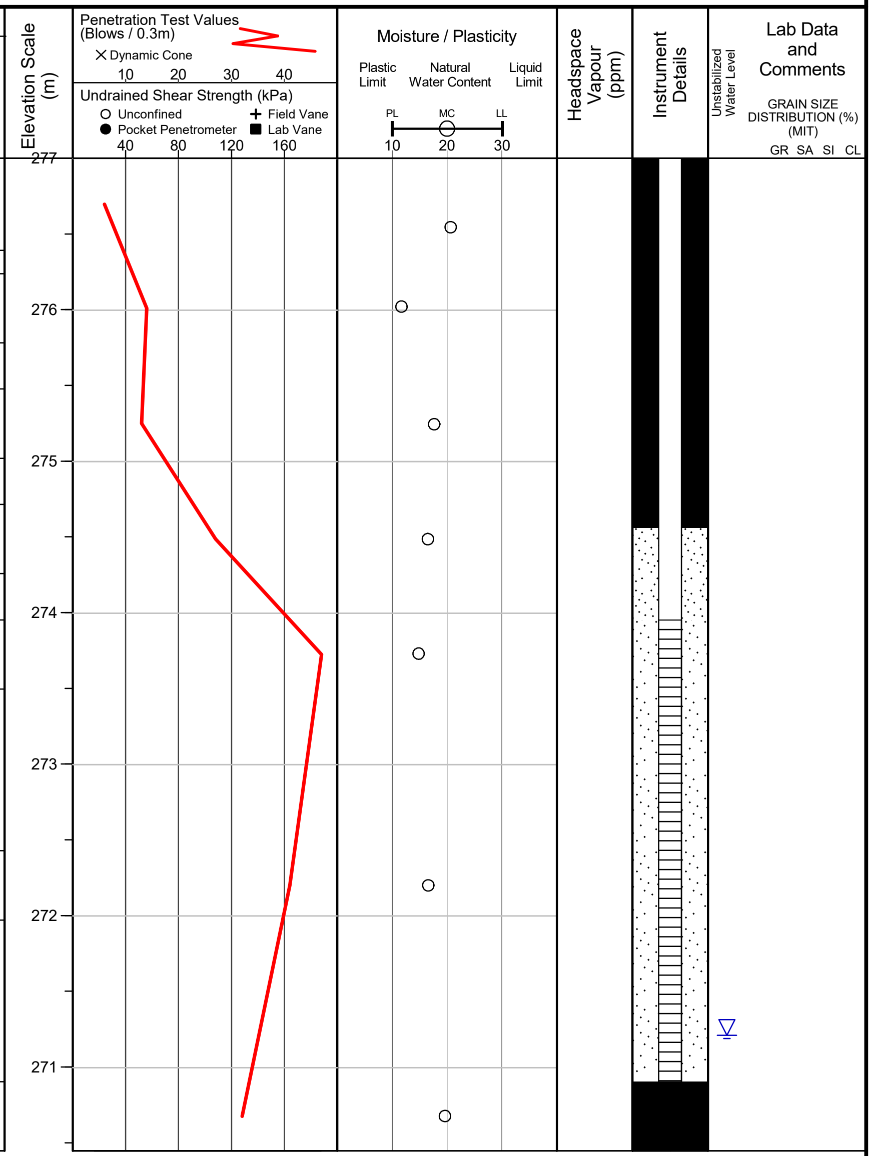
Position : E: 649752, N: 4884917 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

SOIL PROFILE

Elev / Depth (m)	Description
277.0	**GROUND SURFACE**
	100mm **TOPSOIL**
	FILL, sandy silt, trace gravel, trace clay, trace rootlets, loose, brown, moist
276.4 / 0.6	**SILT**, trace to some clay, trace sand, trace gravel, dilatant, compact to dense, brown, moist
	...grey, wet below
270.4 / 6.6	**END OF BOREHOLE**

SAMPLES

Number	Type	SPT 'N' Value
1	SS	6
2	SS	14
3	SS	13
4	SS	27
5	SS	47
6	SS	41
7	SS	32



Unstabilized water level measured at 5.8 m below ground surface; borehole was open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Oct 29, 2019	1.6	275.4

file: 1-19-0022 bh logs.gpj

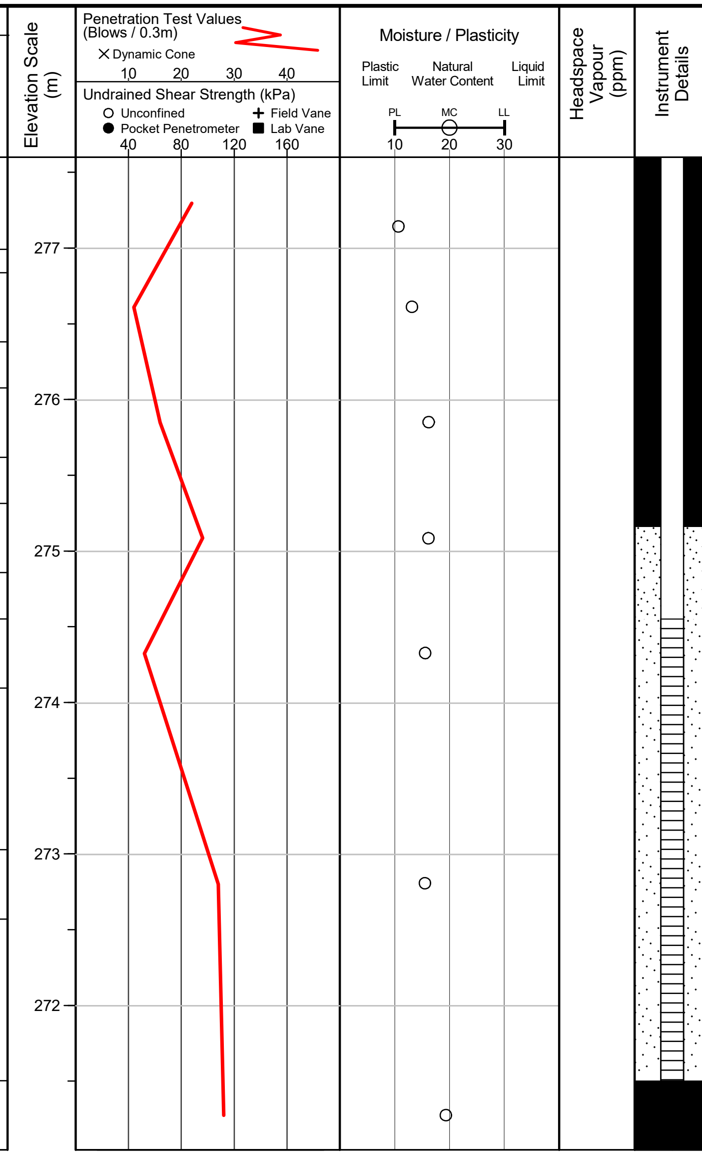
Terraprobe

LOG OF BOREHOLE 17

Project No. : 1-19-0022	Client : Uxbridge Health Centre	Originated by : AK
Date started : October 8, 2019	Project : 4 Campbell Dr	Compiled by : AR
Sheet No. : 1 of 1	Location : Uxbridge, Ontario	Checked by : SZ

Position : E: 649766, N: 4884877 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

Elev (m) / Depth (m)	SOIL PROFILE – Description	Sample Number	Type	SPT 'N' Value	Lab Data and Comments (GR SA SI CL)
277.6	**GROUND SURFACE**				
	75mm **TOPSOIL**				
	FILL, sandy silt, trace gravel, trace clay, trace rootlets, compact, brown, moist	1	SS	22	
	...silt, some clay	2	SS	11	
276.1 / 1.5	**SILT**, trace to some clay, trace sand, trace gravel, dilatant, compact, brown, moist	3	SS	16	
		4	SS	24	
	...grey, wet below	5	SS	13	
	...some sand	6	SS	27	0 12 77 11
271.0 / 6.6		7	SS	28	



END OF BOREHOLE

Unstabilized water level was measured at 5.3 m below grade; borehole was open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Oct 29, 2019	1.7	275.9

file: 1-19-0022 bh logs.gpj

APPENDIX F

TERRAPROBE INC.

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Jessie Wu

PROJECT: 1-19-0022-46

AGAT WORK ORDER: 19T438084

MICROBIOLOGY ANALYSIS REVIEWED BY: Rocio Morales, Inorganics Lab Supervisor

WATER ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

DATE REPORTED: Feb 27, 2019

PAGES (INCLUDING COVER): 14

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

Certificate of Analysis

AGAT WORK ORDER: 19T438084
PROJECT: 1-19-0022-46

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: TERRAPROBE INC.
ATTENTION TO: Jessie Wu
SAMPLING SITE:
SAMPLED BY:

Microbiological Analysis (water) (Using DC Media)

DATE RECEIVED: 2019-02-15
DATE REPORTED: 2019-02-27

			SAMPLE DESCRIPTION:	BH1		BH2	BH3
			SAMPLE TYPE:	Water		Water	Water
			DATE SAMPLED:	2019-02-15		2019-02-15	2019-02-15
Parameter	Unit	G / S	RDL	9905003	RDL	9905085	9905086
Escherichia coli	CFU/100mL		2	ND	1	ND	ND
Total Coliforms	CFU/100mL		2	ND	1	13	4
Background Colony Count	CFU/100mL		2	ND	1	ND	ND

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

9905003 RDL > 1 indicates dilutions of the sample.
ND - Not Detected.
The sample was diluted prior to filtration due to the presence of sediments.

9905085-9905086 ND - Not Detected.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 19T438084

PROJECT: 1-19-0022-46

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Jessie Wu

SAMPLING SITE:

SAMPLED BY:

Reactive Silica

DATE RECEIVED: 2019-02-15

DATE REPORTED: 2019-02-27

			SAMPLE DESCRIPTION:	BH1	BH2	BH3
			SAMPLE TYPE:	Water	Water	Water
			DATE SAMPLED:	2019-02-15	2019-02-15	2019-02-15
Parameter	Unit	G / S	RDL	9905003	9905085	9905086
Reactive Silica as SiO2	mg/L		0.5	20.6	9.2	11.8

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Analysis performed at AGAT Halifax (unless marked by *)

Certified By: Nivine Basily

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 19T438084
PROJECT: 1-19-0022-46

CLIENT NAME: TERRAPROBE INC.
SAMPLING SITE:

ATTENTION TO: Jessie Wu
SAMPLED BY:

Water Quality Assessment - PWQO

DATE RECEIVED: 2019-02-15

DATE REPORTED: 2019-02-27

Parameter	Unit	G / S	RDL	BH1	RDL	BH2	RDL	BH3
			SAMPLE DESCRIPTION:	BH1		BH2		BH3
			SAMPLE TYPE:	Water		Water		Water
			DATE SAMPLED:	2019-02-15		2019-02-15		2019-02-15
				9905003		9905085		9905086
Electrical Conductivity	µS/cm		2	11600	2	8390	2	6710
pH	pH Units	6.5-8.5	NA	7.39	NA	7.93	NA	7.88
Saturation pH				5.82		6.89		6.47
Langelier Index				1.57		1.04		1.41
Total Hardness (as CaCO3)	mg/L		0.5	2990	0.5	365	0.5	606
Total Dissolved Solids	mg/L		20	7170	20	4560	20	3850
Alkalinity (as CaCO3)	mg/L		5	401	5	279	5	443
Bicarbonate (as CaCO3)	mg/L		5	401	5	279	5	443
Carbonate (as CaCO3)	mg/L		5	<5	5	<5	5	<5
Hydroxide (as CaCO3)	mg/L		5	<5	5	<5	5	<5
Fluoride	mg/L		10	<10	1.0	<1.0	1.0	<1.0
Chloride	mg/L		20	4620	10	2990	10	2200
Nitrate as N	mg/L		10	<10	1.0	<1.0	1.0	<1.0
Nitrite as N	mg/L		10	<10	1.0	<1.0	1.0	<1.0
Bromide	mg/L		10	<10	1.0	<1.0	1.0	<1.0
Sulphate	mg/L		20	90	2.0	87.4	2.0	76.6
Ortho Phosphate as P	mg/L		20	24	2.0	<2.0	2.0	<2.0
Ammonia as N	mg/L		0.02	0.13	0.02	0.34	0.02	0.14
Ammonia-Un-ionized	mg/L	0.02	NA	0.0016	NA	0.015	NA	0.0054
Total Phosphorus	mg/L	0.030	0.02	0.03	0.02	0.05	0.02	0.08
Total Organic Carbon	mg/L		1.0	5.2	1.0	7.8	0.5	5.6
Colour	TCU		5	<5	5	6	5	<5
Turbidity	NTU		0.5	42.5	0.5	190	0.5	132
Calcium	mg/L		0.5	984	0.5	131	0.5	216
Magnesium	mg/L		0.5	130	0.5	9.1	0.5	16.2
Sodium	mg/L		0.5	1310	0.5	1650	0.5	1220
Potassium	mg/L		0.5	7.4	0.5	3.3	0.5	5.3
Aluminum (dissolved)	mg/L	0.075	0.004	0.006	0.004	0.088	0.004	0.086
Antimony	mg/L	0.020	0.003	<0.003	0.003	<0.003	0.003	<0.003
Arsenic	mg/L	0.1	0.003	0.005	0.003	<0.003	0.003	<0.003

Certified By: Nivine Basily

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Certificate of Analysis

AGAT WORK ORDER: 19T438084
PROJECT: 1-19-0022-46

CLIENT NAME: TERRAPROBE INC.
SAMPLING SITE:

ATTENTION TO: Jessie Wu
SAMPLED BY:

Water Quality Assessment - PWQO

DATE RECEIVED: 2019-02-15

DATE REPORTED: 2019-02-27

			SAMPLE DESCRIPTION:	BH1		BH2		BH3
			SAMPLE TYPE:	Water		Water		Water
			DATE SAMPLED:	2019-02-15		2019-02-15		2019-02-15
Parameter	Unit	G / S	RDL	9905003	RDL	9905085	RDL	9905086
Barium	mg/L		0.002	1.95	0.002	0.237	0.002	0.087
Beryllium	mg/L	0.011	0.001	<0.001	0.001	<0.001	0.001	<0.001
Boron	mg/L	0.20	0.010	0.028	0.010	0.040	0.010	0.054
Cadmium	mg/L	0.0002	0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001
Chromium	mg/L		0.003	0.012	0.003	0.008	0.003	0.006
Cobalt	mg/L	0.0009	0.0005	0.0014	0.0005	<0.0005	0.0005	0.0010
Copper	mg/L	0.005	0.001	0.002	0.001	0.002	0.001	0.006
Iron	mg/L	0.3	0.01	32.0	0.01	<0.01	0.01	0.05
Lead	mg/L	**	0.001	<0.001	0.001	<0.001	0.001	<0.001
Manganese	mg/L		0.002	0.280	0.002	0.026	0.002	0.148
Dissolved Mercury	mg/L	0.0002	0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001
Molybdenum	mg/L	0.04	0.002	<0.002	0.002	0.005	0.002	0.002
Nickel	mg/L	0.025	0.003	<0.003	0.003	<0.003	0.003	<0.003
Selenium	mg/L	0.1	0.004	<0.004	0.004	<0.004	0.004	<0.004
Silver	mg/L	0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001
Strontium	mg/L		0.005	2.69	0.005	0.556	0.005	0.594
Thallium	mg/L	0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003
Tin	mg/L		0.002	<0.002	0.002	<0.002	0.002	<0.002
Titanium	mg/L		0.002	0.003	0.002	0.003	0.002	0.003
Tungsten	mg/L	0.03	0.010	<0.010	0.010	<0.010	0.010	<0.010
Uranium	mg/L	0.005	0.002	<0.002	0.002	<0.002	0.002	<0.002
Vanadium	mg/L	0.006	0.002	<0.002	0.002	<0.002	0.002	0.006
Zinc	mg/L	0.03	0.005	0.009	0.005	0.006	0.005	0.009
Zirconium	mg/L	0.004	0.004	<0.004	0.004	<0.004	0.004	<0.004
Cation Sum	meq/L		NA	117	NA	79.1	NA	65.3
Anion Sum	meq/L			140		91.7		72.5
% Difference/ Ion Balance	%		NA	9.02	NA	7.37	NA	5.22

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Certificate of Analysis

AGAT WORK ORDER: 19T438084

PROJECT: 1-19-0022-46

CLIENT NAME: TERRAPROBE INC.

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SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment - PWQO

DATE RECEIVED: 2019-02-15

DATE REPORTED: 2019-02-27

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to PWQO (mg/L) **Dependent on alkalinity
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9905003-9905086 Elevated RDL indicates the degree of sample dilution prior to the analysis in order to keep analytes within the calibration range of the instrument and to reduce matrix interference.

The calculation of Un-ionized Ammonia was based on lab measured parameters (pH and temperature) rather than the field parameters; these were not provided to the lab. The temperature is recorded at the time of pH measurement. Values are reported as calculated.

Analysis performed at AGAT Toronto (unless marked by *)

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Guideline Violation

AGAT WORK ORDER: 19T438084

PROJECT: 1-19-0022-46

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Jessie Wu

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
9905003	BH1	ON PWQO 2015 (mg/L)	Water Quality Assessment - PWQO	Cobalt	mg/L	0.0009	0.0014
9905003	BH1	ON PWQO 2015 (mg/L)	Water Quality Assessment - PWQO	Iron	mg/L	0.3	32.0
9905085	BH2	ON PWQO 2015 (mg/L)	Water Quality Assessment - PWQO	Aluminum (dissolved)	mg/L	0.075	0.088
9905085	BH2	ON PWQO 2015 (mg/L)	Water Quality Assessment - PWQO	Total Phosphorus	mg/L	0.030	0.05
9905086	BH3	ON PWQO 2015 (mg/L)	Water Quality Assessment - PWQO	Aluminum (dissolved)	mg/L	0.075	0.086
9905086	BH3	ON PWQO 2015 (mg/L)	Water Quality Assessment - PWQO	Cobalt	mg/L	0.0009	0.0010
9905086	BH3	ON PWQO 2015 (mg/L)	Water Quality Assessment - PWQO	Copper	mg/L	0.005	0.006
9905086	BH3	ON PWQO 2015 (mg/L)	Water Quality Assessment - PWQO	Total Phosphorus	mg/L	0.030	0.08

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Quality Assurance

CLIENT NAME: TERRAPROBE INC.
PROJECT: 1-19-0022-46
SAMPLING SITE:

AGAT WORK ORDER: 19T438084
ATTENTION TO: Jessie Wu
SAMPLED BY:

Microbiology Analysis

RPT Date: Feb 27, 2019			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Microbiological Analysis (water) (Using DC Media)															
Escherichia coli	9905003	9905003	ND	ND	NA	< 1									
Total Coliforms	9905003	9905003	ND	ND	NA	< 1									
Background Colony Count	9905003	9905003	ND	ND	NA	< 1									

Comments: ND - Not Detected, NA - % RPD Not Applicable

Certified By:

AGAT Laboratories

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CLIENT NAME: TERRAPROBE INC.
PROJECT: 1-19-0022-46
SAMPLING SITE:

AGAT WORK ORDER: 19T438084
ATTENTION TO: Jessie Wu
SAMPLED BY:

Water Analysis

RPT Date: Feb 27, 2019			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Water Quality Assessment - PWQO															
Electrical Conductivity	9899237		1130	1130	0.0%	< 2	95%	80%	120%						
pH	9899237		7.90	7.89	0.1%	NA	100%	90%	110%						
Total Dissolved Solids	9899237		746	770	3.2%	< 20	100%	80%	120%						
Alkalinity (as CaCO3)	9899237		183	168	8.5%	< 5	90%	80%	120%						
Bicarbonate (as CaCO3)	9899237		183	168	8.5%	< 5									
Carbonate (as CaCO3)	9899237		<5	<5	NA	< 5									
Hydroxide (as CaCO3)	9899237		<5	<5	NA	< 5									
Fluoride	9903241		0.06	0.06	NA	< 0.05	100%	90%	110%	101%	90%	110%	106%	80%	120%
Chloride	9903241		35.9	35.6	0.8%	< 0.10	108%	90%	110%	109%	90%	110%	94%	80%	120%
Nitrate as N	9903241		0.38	0.41	7.6%	< 0.05	90%	90%	110%	109%	90%	110%	117%	80%	120%
Nitrite as N	9903241		<0.05	<0.05	NA	< 0.05	NA	90%	110%	110%	90%	110%	111%	80%	120%
Bromide	9903241		<0.05	<0.05	NA	< 0.05	104%	90%	110%	109%	90%	110%	106%	80%	120%
Sulphate	9903241		24.2	24.3	0.4%	< 0.10	103%	90%	110%	107%	90%	110%	93%	80%	120%
Ortho Phosphate as P	9903241		<0.10	<0.10	NA	< 0.10	105%	90%	110%	104%	90%	110%	116%	80%	120%
Ammonia as N	9913978		0.02	0.02	NA	< 0.02	99%	90%	110%	94%	90%	110%	88%	80%	120%
Total Phosphorus	9903221		0.18	0.18	0.0%	< 0.02	101%	90%	110%	99%	90%	110%	110%	70%	130%
Total Organic Carbon	9905003	9905003	5.2	4.6	12.2%	< 0.5	100%	90%	110%	96%	90%	110%	104%	80%	120%
Colour	9905003	9905003	<5	6	NA	< 5	107%	90%	110%						
Turbidity	9904541		<0.5	<0.5	NA	< 0.5	97%	90%	110%						
Calcium	9895878		114	114	0.0%	< 0.05	93%	90%	110%	93%	90%	110%	91%	70%	130%
Magnesium	9895878		21.3	21.3	0.0%	< 0.05	91%	90%	110%	92%	90%	110%	89%	70%	130%
Sodium	9895878		9.82	9.84	0.2%	< 0.05	94%	90%	110%	95%	90%	110%	90%	70%	130%
Potassium	9895878		0.63	0.62	1.6%	< 0.05	96%	90%	110%	96%	90%	110%	92%	70%	130%
Aluminum (dissolved)	9905085	9905085	0.088	0.079	10.8%	< 0.004	103%	90%	110%	99%	90%	110%	95%	70%	130%
Antimony	9903241		<0.003	<0.003	NA	< 0.003	105%	90%	110%	103%	90%	110%	105%	70%	130%
Arsenic	9903241		<0.003	<0.003	NA	< 0.003	101%	90%	110%	100%	90%	110%	101%	70%	130%
Barium	9903241		0.025	0.024	4.1%	< 0.002	105%	90%	110%	100%	90%	110%	101%	70%	130%
Beryllium	9903241		<0.001	<0.001	NA	< 0.001	101%	90%	110%	101%	90%	110%	106%	70%	130%
Boron	9903241		0.025	0.026	NA	< 0.010	106%	90%	110%	103%	90%	110%	107%	70%	130%
Cadmium	9903241		<0.0001	<0.0001	NA	< 0.0001	100%	90%	110%	101%	90%	110%	122%	70%	130%
Chromium	9903241		<0.003	<0.003	NA	< 0.003	107%	90%	110%	101%	90%	110%	101%	70%	130%
Cobalt	9903241		<0.0005	<0.0005	NA	< 0.0005	104%	90%	110%	96%	90%	110%	96%	70%	130%
Copper	9903241		0.018	0.017	5.7%	< 0.001	103%	90%	110%	102%	90%	110%	96%	70%	130%
Iron	9903241		<0.01	<0.01	NA	< 0.01	104%	90%	110%	90%	90%	110%	80%	70%	130%
Lead	9903241		<0.001	<0.001	NA	< 0.001	105%	90%	110%	100%	90%	110%	100%	70%	130%
Manganese	9903241		<0.002	<0.002	NA	< 0.002	103%	90%	110%	97%	90%	110%	97%	70%	130%
Dissolved Mercury	9905003	9905003	<0.0001	<0.0001	NA	< 0.0001	101%	90%	110%	101%	90%	110%	106%	70%	130%
Molybdenum	9903241		<0.002	<0.002	NA	< 0.002	100%	90%	110%	97%	90%	110%	99%	70%	130%
Nickel	9903241		<0.003	<0.003	NA	< 0.003	107%	90%	110%	99%	90%	110%	98%	70%	130%

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Quality Assurance

CLIENT NAME: TERRAPROBE INC.
PROJECT: 1-19-0022-46
SAMPLING SITE:

AGAT WORK ORDER: 19T438084
ATTENTION TO: Jessie Wu
SAMPLED BY:

Water Analysis (Continued)

RPT Date: Feb 27, 2019			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Selenium	9903241		<0.004	<0.004	NA	< 0.004	102%	90%	110%	102%	90%	110%	107%	70%	130%
Silver	9903241		<0.0001	<0.0001	NA	< 0.0001	103%	90%	110%	103%	90%	110%	113%	70%	130%
Strontium	9903241		0.180	0.178	1.1%	< 0.005	102%	90%	110%	101%	90%	110%	97%	70%	130%
Thallium	9903241		<0.0003	<0.0003	NA	< 0.0003	103%	90%	110%	94%	90%	110%	95%	70%	130%
Tin	9903241		<0.002	<0.002	NA	< 0.002	103%	90%	110%	94%	90%	110%	98%	70%	130%
Titanium	9903241		<0.002	<0.002	NA	< 0.002	102%	90%	110%	96%	90%	110%	98%	70%	130%
Tungsten	9903241		<0.010	<0.010	NA	< 0.010	93%	90%	110%	91%	90%	110%	94%	70%	130%
Uranium	9903241		<0.002	<0.002	NA	< 0.002	97%	90%	110%	93%	90%	110%	97%	70%	130%
Vanadium	9903241		<0.002	<0.002	NA	< 0.002	102%	90%	110%	96%	90%	110%	98%	70%	130%
Zinc	9903241		0.006	<0.005	NA	< 0.005	105%	90%	110%	101%	90%	110%	104%	70%	130%
Zirconium	9903241		<0.004	<0.004	NA	< 0.004	97%	90%	110%	95%	90%	110%	94%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Reactive Silica															
Reactive Silica as SiO2	1	9922814	14.3	14.2	0.7%	< 0.5	98%	80%	120%		80%	120%	104%	80%	120%

Comments: If RPD value is NA, the results of the duplicates are less than 5x the RDL and the RPD will not be calculated.

Certified By: Nivine Basily

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Method Summary

CLIENT NAME: TERRAPROBE INC.
AGAT WORK ORDER: 19T438084
PROJECT: 1-19-0022-46
ATTENTION TO: Jessie Wu
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Total Coliforms	MIC-93-7010	EPA 1604	Membrane Filtration
Background Colony Count	MIC-93-7010	MOE Method E3407	Membrane Filtration

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Method Summary

CLIENT NAME: TERRAPROBE INC. AGAT WORK ORDER: 19T438084
PROJECT: 1-19-0022-46 ATTENTION TO: Jessie Wu
SAMPLING SITE: SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Reactive Silica as SiO2	INOR-121-6027	SM 4110 B	COLORIMETER
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Saturation pH		SM 2320 B	CALCULATION
Langelier Index		SM 2330B	CALCULATION
Total Hardness (as CaCO3)	MET-93-6105	EPA SW-846 6010C & 200.7	CALCULATION
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Bicarbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Carbonate (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Hydroxide (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-93-6059	QuikChem 10-107-06-1-J & SM 4500 NH3-F	LACHAT FIA
Ammonia-Un-ionized		MOE REFERENCE, PWQOs Tab 2	CALCULATION
Total Phosphorus	INOR-93-6022	SM 4500-P B&E	SPECTROPHOTOMETER
Total Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310 B	SHIMADZU CARBON ANALYZER
Colour	INOR-93-6046	SM 2120 B	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	SM 2130 B	NEPHELOMETER
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Aluminum (dissolved)	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Dissolved Mercury	MET-93-6100	EPA SW 846 7470 & 245.1	CVAAS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Tin	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cation Sum		SM 1030 E	CALCULATION
Anion Sum		SM 1030 E	CALCULATION
% Difference/ Ion Balance		SM 1030 E	CALCULATION

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Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Laboratory Use Only

Work Order #: 19T438084

Cooler Quantity:

Arrival Temperatures: 8.5 | 7.9 | 7.6

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes: anice

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: Terraprobe
Contact: Jesse Wu
Address: 11 Indell Lane, Brampton, ON L6T 3Y3
Phone: Fax:
Reports to be sent to:
1. Email: jwu@terraprobe.ca
2. Email:

Regulatory Requirements: ☐ No Regulatory Requirement

(Please check all applicable boxes)

☐ Regulation 153/04
Table ___ *Indicate One*
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ___ *Indicate One*
☐ MISA

☐ Regulation 558
☐ CCME
☒ Prov. Water Quality Objectives (PWQO)
☐ Other
___ *Indicate One*

Is this submission for a Record of Site Condition? ☐ Yes ☒ No

Report Guideline on Certificate of Analysis ☒ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project: 1-19-0022-46
Site Location: uxbridge
Sampled By: AK
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Y/N)	O. Reg 153: Metals and Inorganics	☐ All Metals ☐ 153 Metals (excl. Hydrides) ☐ Hydride Metals ☐ 153 Metals (incl. Hydrides)	ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN ☐ Cr^{6+} ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3+NO_2	Volatiles: ☐ VOC ☐ BTEX ☐ THM	PHCs F1 - F4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use	~~Water~~ WQA +	Dissolved Al +	Dissolved Hg
BH1	2/15/19		8	GW		Y															X		
BH2	2/15/19		8	GW		Y															X		
BH3	2/15/19		8	GW		Y															X		

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Adil Khan (signature)	2/15/19	3:20 PM	Sima Z	19/2/15	3:25

Page ___ of ___

Nº: T 084427

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME:	TERRAPROBE INC. 11 INDELL LANE BRAMPTON, ON L6T3Y3 (905) 796-2650
ATTENTION TO:	Jessie Wu
PROJECT:	1-19-0022-43.1
AGAT WORK ORDER:	19T537511
WATER ANALYSIS REVIEWED BY:	Jacky Zhu, Spectroscopy Technician
DATE REPORTED:	Nov 05, 2019
PAGES (INCLUDING COVER):	5
VERSION*:	1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 19T537511
PROJECT: 1-19-0022-43.1

CLIENT NAME: TERRAPROBE INC.
ATTENTION TO: Jessie Wu
SAMPLING SITE:
SAMPLED BY:

O. Reg. 153(511) - Metals & Inorganics (Water)

DATE RECEIVED: 2019-10-30
DATE REPORTED: 2019-11-05

		SAMPLE DESCRIPTION:		BH 14		BH 15		BH 16	BH 17
		SAMPLE TYPE:		Water		Water		Water	Water
		DATE SAMPLED:		2019-10-29		2019-10-29		2019-10-29	2019-10-29
Parameter	Unit	G / S	RDL	667000	RDL	667001	RDL	667002	667003
Antimony	µg/L	6	1.0	<1.0	1.0	<1.0	1.0	<1.0	<1.0
Arsenic	µg/L	25	1.0	<1.0	1.0	<1.0	1.0	<1.0	<1.0
Barium	µg/L	1000	2.0	254	2.0	197	2.0	273	328
Beryllium	µg/L	4.0	0.5	<0.5	0.5	<0.5	0.5	<0.5	<0.5
Boron	µg/L	5000	10.0	34.4	10.0	13.7	10.0	24.3	25.3
Cadmium	µg/L	2.7	0.2	<0.2	0.2	<0.2	0.2	<0.2	<0.2
Chromium	µg/L	50	2.0	<2.0	2.0	5.0	2.0	<2.0	<2.0
Cobalt	µg/L	3.8	0.5	<0.5	0.5	<0.5	0.5	<0.5	<0.5
Copper	µg/L	87	1.0	<1.0	1.0	<1.0	1.0	<1.0	<1.0
Lead	µg/L	10	0.5	<0.5	0.5	<0.5	0.5	<0.5	0.8
Molybdenum	µg/L	70	0.5	2.3	0.5	4.8	0.5	13.9	6.3
Nickel	µg/L	100	1.0	3.4	1.0	1.5	1.0	1.1	1.8
Selenium	µg/L	10	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0
Silver	µg/L	1.5	0.2	<0.2	0.2	<0.2	0.2	<0.2	<0.2
Thallium	µg/L	2	0.3	1.7	0.3	1.7	0.3	0.8	1.7
Uranium	µg/L	20	0.5	0.8	0.5	1.2	0.5	5.9	1.7
Vanadium	µg/L	6.2	0.4	<0.4	0.4	0.6	0.4	<0.4	0.9
Zinc	µg/L	1100	5.0	7.4	5.0	<5.0	5.0	<5.0	<5.0
Mercury	µg/L		0.02	<0.02	0.02	<0.02	0.02	<0.02	<0.02
Chromium VI	µg/L	25	5	<5	5	<5	5	<5	<5
Cyanide	µg/L	66	2	<2	2	<2	2	<2	<2
Sodium	µg/L	490000	500	24700	500	21100	500	53700	141000
Chloride	µg/L	790000	500	37400	200	25900	500	7410	247000
Electrical Conductivity	uS/cm		2	874	2	612	2	870	1580
pH	pH Units		NA	7.97	NA	7.94	NA	8.03	7.81

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

667000-667003 Elevated RDL indicates the degree of sample dilution prior to the analysis in order to keep analytes within the calibration range of the instrument and to reduce matrix interference.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

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Quality Assurance

CLIENT NAME: TERRAPROBE INC. | AGAT WORK ORDER: 19T537511

PROJECT: 1-19-0022-43.1 | ATTENTION TO: Jessie Wu

SAMPLING SITE: | SAMPLED BY:

Water Analysis

RPT Date: Nov 05, 2019			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Water)															
Antimony	667000	667000	<1.0	<1.0	NA	< 1.0	104%	70%	130%	97%	80%	120%	102%	70%	130%
Arsenic	667000	667000	1.0	<1.0	NA	< 1.0	107%	70%	130%	95%	80%	120%	108%	70%	130%
Barium	667000	667000	254	247	2.8%	< 2.0	100%	70%	130%	94%	80%	120%	100%	70%	130%
Beryllium	667000	667000	<0.5	<0.5	NA	< 0.5	103%	70%	130%	99%	80%	120%	101%	70%	130%
Boron	667000	667000	34.4	33.0	NA	< 10.0	100%	70%	130%	97%	80%	120%	98%	70%	130%
Cadmium	667000	667000	<0.2	<0.2	NA	< 0.2	101%	70%	130%	97%	80%	120%	97%	70%	130%
Chromium	667000	667000	<2.0	<2.0	NA	< 2.0	100%	70%	130%	97%	80%	120%	97%	70%	130%
Cobalt	667000	667000	<0.5	<0.5	NA	< 0.5	101%	70%	130%	97%	80%	120%	96%	70%	130%
Copper	667000	667000	<1.0	<1.0	NA	< 1.0	103%	70%	130%	98%	80%	120%	96%	70%	130%
Lead	667000	667000	2.2	2.1	NA	< 0.5	98%	70%	130%	90%	80%	120%	96%	70%	130%
Molybdenum	667000	667000	2.3	2.3	NA	< 0.5	103%	70%	130%	98%	80%	120%	101%	70%	130%
Nickel	667000	667000	3.4	3.7	NA	< 1.0	103%	70%	130%	97%	80%	120%	96%	70%	130%
Selenium	667000	667000	<1.0	<1.0	NA	< 1.0	100%	70%	130%	92%	80%	120%	104%	70%	130%
Silver	667000	667000	<0.2	<0.2	NA	< 0.2	103%	70%	130%	95%	80%	120%	96%	70%	130%
Thallium	667000	667000	1.7	1.7	0.0%	< 0.3	104%	70%	130%	94%	80%	120%	102%	70%	130%
Uranium	667000	667000	0.8	0.8	NA	< 0.5	106%	70%	130%	97%	80%	120%	105%	70%	130%
Vanadium	667000	667000	<0.4	<0.4	NA	< 0.4	101%	70%	130%	97%	80%	120%	99%	70%	130%
Zinc	667000	667000	7.4	<5.0	NA	< 5.0	102%	70%	130%	98%	80%	120%	99%	70%	130%
Mercury	667000	667000	<0.02	<0.02	NA	< 0.02	103%	70%	130%	96%	80%	120%	96%	70%	130%
Chromium VI	667000	667000	<5	<5	NA	< 5	102%	70%	130%	99%	80%	120%	98%	70%	130%
Cyanide	667000	667000	<2	<2	NA	< 2	99%	70%	130%	92%	80%	120%	101%	70%	130%
Sodium	653917		1600	1590	NA	< 500	96%	70%	130%	95%	80%	120%	96%	70%	130%
Chloride	668140		113000	110000	2.7%	< 100	90%	70%	130%	98%	70%	130%	90%	70%	130%
Electrical Conductivity	666888		587	587	0.0%	< 2	101%	90%	110%						
pH	666888		7.72	7.67	0.6%	NA	100%	90%	110%						

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:

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http://www.agatlabs.com

Method Summary

CLIENT NAME: TERRAPROBE INC. AGAT WORK ORDER: 19T537511

PROJECT: 1-19-0022-43.1 ATTENTION TO: Jessie Wu

SAMPLING SITE: SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW 846 7470 & 245.1	CVAAS
Chromium VI	INOR-93-6034	SM 3500-Cr B	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE METHOD CN- 3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Laboratory Use Only

Work Order #: 19T537511

Cooler Quantity: 1cart

Arrival Temperatures: 4.4 | 4.1 | 3.9 — 3.3 | 3 | 2.8

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes:

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: Terraprobe
Contact: Jessie Wu
Address: 11 Fridolfone, Brampton. L6T3Y3.
Phone: Fax:
Reports to be sent to:
1. Email: jwu@Terraprobe.ca
2. Email: uarshad@Terraprobe.ca

Regulatory Requirements: ☐ No Regulatory Requirement

(Please check all applicable boxes)

☐Regulation 153/04 — Table 2 (Indicate One) ☐Ind/Com ☑Res/Park ☐Agriculture — Soil Texture (Check One) ☑Coarse ☐Fine

☐Sewer Use ☐Sanitary ☐Storm — Region ___ (Indicate One) ☐MISA

☐Regulation 558 ☐CCME ☐Prov. Water Quality Objectives (PWQO) ☐Other ___ (Indicate One)

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project: 1-19-0022-46.1
Site Location: Uxbridge, ON
Sampled By: Usman Arshad
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Is this submission for a Record of Site Condition? ☐ Yes ☑ No

Report Guideline on Certificate of Analysis ☐ Yes ☐ No

Invoice Information:

Bill To Same: Yes ☑ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Y/N)	O. Reg 153: Metals and Inorganics, NaCl, Cl	O. Reg 153: ☐ All Metals ☐ 153 Metals (excl. Hydrides) ☐ Hydride Metals ☐ 153 Metals (Incl. Hydrides)	O. Reg 153: ORPs: ☐ B-HWS ■ Cl⁻ ■ CN ■ Cr⁶⁺ ☐ EC ☐ FOC ■ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH₃ ☐ TKN ☐ NO₃ ☐ NO₂ ☐ NO₃+NO₂	Volatiles: ☐ VOC ☐ BTEX ☐ THM	PHCs F1 - F4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use	Potentially Hazardous or High Concentration (Y/N)
BH 14	10-29-19		5	GW		Y	✓		✓												
BH 15	10-29-19		5	GW		Y	✓		✓												
BH 16	10-29-19		5	GW		Y	✓		✓												
BH 17	10-29-19		5	GW		Y	✓		✓												

Samples Relinquished By (Print Name and Sign): Usman Arshad	Date: 10-29-19	Time: 06:00 pm	Samples Received By (Print Name and Sign):	Date: Oct 30/19	Time: 10:00
Samples Relinquished By (Print Name and Sign):	Date: Oct 30/19	Time: 3:38	Samples Received By (Print Name and Sign):	Date	Time
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time

Page 01 of 01

Nº: T 096730

APPENDIX G

TERRAPROBE INC.

WELL ID: BH3

Local ID:
Date:
Time:

INPUT

Construction:		
Casing dia. (d_c)	0.05	Meter
Annulus dia. (d_w)	0.05	Meter
Screen Length (L)	3.05	Meter
Depths to:		
water level (DTW)	1.98	Meter
top of screen (TOS)	4.55	Meter
Base of Aquifer (DTB)	7.6	Meter
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Silt, Loess	

COMPUTED

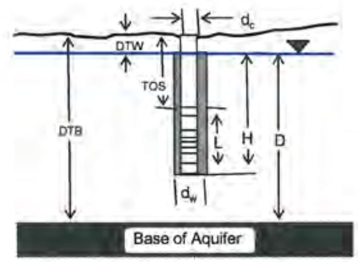
L_{wetted}	3.05	Meter
D =	5.62	Meter
H =	5.62	Meter
L/r_w =	122.00	
$y_{0\text{-DISPLACEMENT}}$ =	0.50	Meter
$y_{0\text{-SLUG}}$ =	0.51	Meter

From look-up table using L/r_w

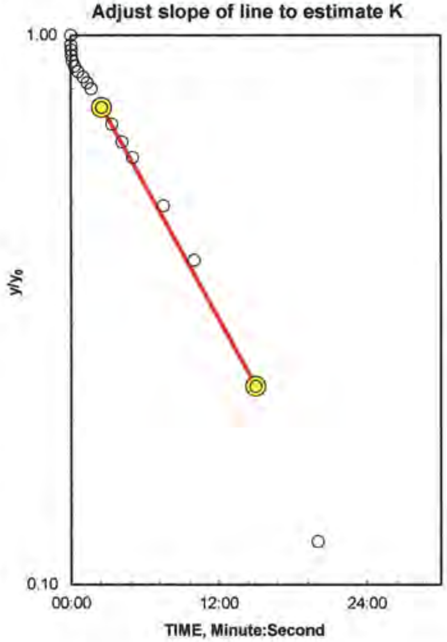
Fully penetrate C =	5.075	
ln(Re/rw) =	4.086	
Re =	4.88	Meter
Slope =	0.000113	$\log_{10}$/sec
$t_{90\%}$ recovery =	8867	sec

Input is consistent.

K = 1.1E-07 Meter/Second



Adjust slope of line to estimate K



Reduced Data

Entry	Time, Hr:Min:Sec	Water Level
1	0:00:00.0	2.48
2	0:00:10.0	2.46
3	0:00:15.0	2.45
4	0:00:20.0	2.44
5	0:00:45.0	2.43
6	0:01:45.0	2.42
7	0:03:30.0	2.41
8	0:06:00.0	2.40
9	0:08:00.0	2.39
10	0:10:00.0	2.38
11	0:15:00.0	2.35
12	0:20:00.0	2.33
13	0:25:00.0	2.30
14	0:30:00.0	2.28
15	0:45:00.0	2.23
16	1:00:00.0	2.18
17	1:30:00.0	2.10
18	2:00:00.0	2.04

REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

Assumed fully penetrating condition. K reduces to 9.7E-8 m/s if an aquifer base of 9.14 m, based on conditions at Well 6, is used.

WELL ID: BH13

Local ID:
Date:
Time:

INPUT

Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.05 Meter
Screen Length (L)	3.05 Meter
Depths to:	
water level (DTW)	0.73 Meter
top of screen (TOS)	3.2 Meter
Base of Aquifer (DTB)	6.25 Meter
Annular Fill:	
across screen -- Coarse Sand	
above screen -- Bentonite	
Aquifer Material -- Silt, Loess	

COMPUTED

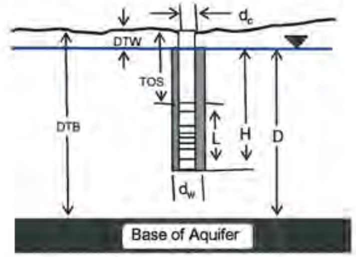
L_{wetted}	3.05 Meter
D =	5.52 Meter
H =	5.52 Meter
L/r_w =	122.00
$y_{0\text{-DISPLACEMENT}}$ =	0.50 Meter
$y_{0\text{-SLUG}}$ =	0.51 Meter

From look-up table using L/r_w

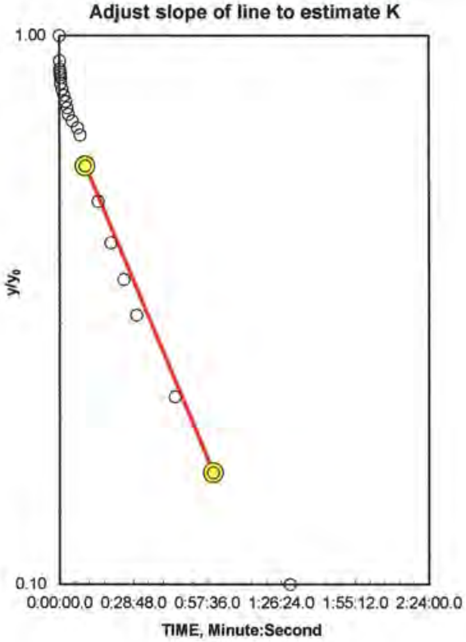
Fully penetrate C =	5.075
ln(Re/rw) =	4.075
Re =	4.83 Meter
Slope =	0.000186 log_{10}/sec
$t_{90\%}$ recovery =	5364 sec

Input is consistent.

K = 1.8E-07 Meter/Second



Adjust slope of line to estimate K



Reduced Data

Entry	Time, Hr:Min:Sec	Water Level
1	0:00:00.0	1.23
2	0:00:05.0	1.18
3	0:00:10.0	1.17
4	0:00:15.0	1.16
5	0:00:20.0	1.16
6	0:00:25.0	1.15
7	0:00:30.0	1.14
8	0:01:00.0	1.13
9	0:01:45.0	1.12
10	0:02:30.0	1.11
11	0:03:00.0	1.10
12	0:03:30.0	1.09
13	0:05:00.0	1.08
14	0:07:00.0	1.07
15	0:08:00.0	1.06
16	0:10:00.0	1.02
17	0:15:00.0	0.98
18	0:20:00.0	0.94
19	0:25:00.0	0.91
20	0:30:00.0	0.89
21	0:45:00.0	0.84
22	1:00:00.0	0.81

REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

Assumed fully penetrating condition. K reduces to 1.6E-7 m/s if an aquifer base of 9.14 m, based on conditions at Well 6, is used.

APPENDIX H

TERRAPROBE INC.

Terraprobe

Consulting Environmental Engineers & Hydrogeologists
Environmental Investigation, Remediation & Inspection

FIELD INSPECTION RECORD

Project: 4 Campbell Drive	File / Report No. 1-19-0022-46.1
Location: Uxbridge	Date / Time: Oct 4/19
Client:	Inspector: B. Racher
Contractor: Cannington	Weather: Cloudy 11 °C,

NOTES: Guelph permeameter @ 4 locations

TP #1 : Free water present @ 1.4 mbg, ∴ test performed @ 1.0 mbg
Soil is a silty SAND, trace gravel.

TP #2 : test depth = 1.7 mbg
SILT trace to some fine sand.

TP #3 : test depth = 1.5 mbg
silty fine SAND v. moist.

BH 8 (added test)
Depth @ 1.3 mbg (gravelly layer, impossible to auger to 1.5 mbg)
Sand, some silt, trace gravel.

SKETCH

Samples obtained at each location for 't' time including wet sample at TP 1

Results combining Two Head method.

TP #1	1.0 mbg					
R_1	0.01666	cm/sec	k_{fs}=	2.00E-04 cm/sec	→ 7.21E+00 mm/hr	→ 1.20E-02 cm/min
R_2	0.02333	cm/sec				
X	35.22	cm^2	Φ_m=	1.41E-02 cm^2/s		
TP #2	1.7 mbg					
R_1	0.0333	cm/sec	k_{fs}=	5.44E-05 cm/sec	→ 1.96E+00 mm/hr	→ 3.26E-03 cm/min
R_2	0.05	cm/sec				
X	2.16	cm^2	Φ_m=	1.55E-03 cm^2/s		
TP #3	1.5 mbg					
R_1	0.06	cm/sec	k_{fs}=	6.71E-05 cm/sec	→ 2.42E+00 mm/hr	→ 4.03E-03 cm/min
R_2	0.0866	cm/sec				
X	2.16	cm^2	Φ_m=	2.98E-03 cm^2/s		

Enter numbers in RED cells only. Do not change the value of GREY cells.

Variable Glossary

R_1 **1)** is the steady state rate of flow per minute at a head height of 5 cm

2) determined by timing the drop of water in the Guelph Permeameter

R_2 **1)** is the steady state rate of flow per minute at a head height of 10 cm

2) determined by timing the drop of water in the Guelph Permeameter

X **1)** is the resevoir constant

2) determined by the reservoir knob at the top of the unit

- if the knob is up X = 35.22 (outer and inner reservoir)
- if the knob is down X = 2.16 (inner reservoir)

Equation Glossary

k_{fs} is the field saturated hydraulic conductivity of the soil

Φ_m is an indicator of the capillary pull exerted by the unsaturated soil on the water

If either k_{fs} or Φ_m are negative then dismiss the calculation and use the average of the single head test.

Results combining two Head method.

BH 8 **1.3 mbg**

R_1	0.01	cm/sec	k_{fs}=	1.87E-05 cm/sec	→ 6.72E-01 mm/hr	→ 1.12E-03 cm/min
R_2	0.0133	cm/sec				
X	35.22	cm^2	Φ_m=	9.04E-03 cm^2/s		

R_1		cm/sec	k_{fs}=	0.00E+00 cm/sec	→ 0.00E+00 mm/hr	→ 0.00E+00 cm/min
R_2		cm/sec				
X		cm^2	Φ_m=	0.00E+00 cm^2/s		

R_1		cm/sec	k_{fs}=	0.00E+00 cm/sec	→ 0.00E+00 mm/hr	→ 0.00E+00 cm/min
R_2		cm/sec				
X		cm^2	Φ_m=	0.00E+00 cm^2/s		

Enter numbers in	RED	cells only. Do not change the value of	GREY	cells.

Variable Glossary

R_1 **1)** is the steady state rate of flow per minute at a head height of 5 cm

2) determined by timing the drop of water in the Guelph Permeameter

R_2 **1)** is the steady state rate of flow per minute at a head height of 10 cm

2) determined by timing the drop of water in the Guelph Permeameter

X **1)** is the resevoir constant

2) determined by the reservoir knob at the top of the unit

- if the knob is up X = 35.22 (outer and inner reservoir)
- if the knob is down X = 2.16 (inner reservoir)

Equation Glossary

k_{fs} is the field saturated hydraulic conductivity of the soil

Φ_m is an indicator of the capillary pull exerted by the unsaturated soil on the water

If either k_{fs} or Φ_m are negative then dismiss the calculation and use the average of the single head test.

Individual Head Results
For 5 cm + 10 cm.

TP #1 **1.0 mbg**

α*=	0.12	cm^{-1}
H=	5	cm
a=	3	cm
X=	35.22	cm^2
R=	0.01666	cm/sec

Ha=	1.666667	
Q1=	0.586765	cm^3/sec

◉ C1 0.803154
○ C2
○ C3

k_{fs}=	1.07E-03 cm/sec	⟶ 3.84E+01 mm/hr	⟶	6.40E-02 cm/min
Φ_m=	8.89E-03 cm^2/s			

TP #1 **1.0 mbg**

α*=	0.12	cm^{-1}
H=	10	cm
a=	3	cm
X=	35.22	cm^2
R=	0.0233	cm/sec

Ha=	3.333333	
Q1=	0.820626	cm^3/sec

◉ C1 1.287543
○ C2
○ C3

k_{fs}=	8.89E-04 cm/sec	⟶ 3.20E+01 mm/hr	⟶	5.33E-02 cm/min
Φ_m=	7.41E-03 cm^2/s			

a		cm^{-1}
H=		cm
a=		cm
X=		cm^2
R=		cm/sec

Ha=	#DIV/0!	
Q1=	0	cm^3/sec

◉ C1 #DIV/0!
○ C2
○ C3

k_{fs}=	#DIV/0! cm/sec	⟶ #DIV/0! mm/hr	⟶	#DIV/0! cm/min
Φ_m=	#DIV/0! cm^2/s			

Enter numbers in RED cells only. Do not change the value of GREY cells.

Variable Glossary

α* **1)** is the ratio of gravity to capillarity forces during infiltration or drainage.
2) determined from table 1 on page 47 of the manual (or the adjacent page)

H **1)** is the water head in the BH
2) determined by the height that the inner tube is pulled up during field operation

a **1)** is the radius of the borehole
2) determine by the size of the auger

X **1)** is the resevoir constant
2) determined by the reservoir knob at the top of the unit
- if the knob is up X = 35.22 (outer and inner reservoir)
- if the knob is down X = 2.16 (inner reservoir)

R **1)** is the steady state rate of flow per minute
2) is determined by timing the drop of water in the Guelph Permeameter

Equation Glossary

Ha is the ratio of head to borehole radius
Q1 is the flow rate
$C_{(1, 2 or 3)}$ is the shape factor which accounts for the saturated area of the soil.
- Select C_1 if α* is ≥ 0.12 cm^{-1}
- Select C_2 if α* = 0.04 cm^{-1}
- Select C_3 if α* = 0.01 cm^{-1}

k_{fs} is the field saturated hydraulic conductivity of the soil
Φ_m is an indicator of the capillary pull exerted by the unsaturated soil on the water

Table 1. Soil texture-structure categories for site-estimation of α* (adapted from Elrick et al., 1989)

Soil Texture - Structure Category	α* (cm^{-1})
Compacted, structureless, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.	0.01
Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.	0.04
Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.	0.12
Coarse and gravelly sands; may also include some highly structured soils with large and/or numerous cracks, macropores, etc.	0.36

Individual Result for 5 cm & 10 cm Head.

TP #2 1.7 mbg

α*=	0.04	cm^{-1}	Ha=	1.666667		C1	0.842059	
H=	5	cm	Q1=	0.071993	cm^3/sec	◉ C2		
a=	3	cm				C3		
X=	2.16	cm^2						
R=	0.03333	cm/sec						

k_{fs}= 6.27E-05 cm/sec ⟶ 2.26E+00 mm/hr ⟶ 3.76E-03 cm/min

Φ_m= 1.57E-03 cm^2/s

TP #2 1.7 mbg

α*=	0.04	cm^{-1}	Ha=	3.333333		C1	1.290234	
H=	10	cm	Q1=	0.108	cm^3/sec	◉ C2		
a=	3	cm				C3		
X=	2.16	cm^2						
R=	0.05	cm/sec						

k_{fs}= 6.23E-05 cm/sec ⟶ 2.24E+00 mm/hr ⟶ 3.74E-03 cm/min

Φ_m= 1.56E-03 cm^2/s

a		cm^{-1}	Ha=	#DIV/0!		◉ C1	#DIV/0!	
H=		cm	Q1=	0	cm^3/sec	C2		
a=		cm				C3		
X=		cm^2						
R=		cm/sec						

k_{fs}= #DIV/0! cm/sec ⟶ #DIV/0! mm/hr ⟶ #DIV/0! cm/min

Φ_m= #DIV/0! cm^2/s

Enter numbers in RED cells only. Do not change the value of GREY cells.

Variable Glossary

α* 1) is the ratio of gravity to capillarity forces during infiltration or drainage.
2) determined from table 1 on page 47 of the manual (or the adjacent page)

H 1) is the water head in the BH
2) determined by the height that the inner tube is pulled up during field operation

a 1) is the radius of the borehole
2) determine by the size of the auger

X 1) is the resevoir constant
2) determined by the reservoir knob at the top of the unit
- if the knob is up X = 35.22 (outer and inner reservoir)
- if the knob is down X = 2.16 (inner reservoir)

R 1) is the steady state rate of flow per minute
2) is determined by timing the drop of water in the Guelph Permeameter

Equation Glossary

Ha is the ratio of head to borehole radius

Q1 is the flow rate

$C_{(1, 2 or 3)}$ is the shape factor which accounts for the saturated area of the soil.
- Select C_1 if α* is ≥ 0.12 cm^{-1}
- Select C_2 if α* = 0.04 cm^{-1}
- Select C_3 if α* = 0.01 cm^{-1}

k_{fs} is the field saturated hydraulic conductivity of the soil

Φ_m is an indicator of the capillary pull exerted by the unsaturated soil on the water

Table 1. Soil texture-structure categories for site-estimation of α* (adapted from Elrick et al., 1989)

Soil Texture - Structure Category	α* (cm^{-1})
Compacted, structureless, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.	0.01
Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.	0.04
Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.	0.12
Coarse and gravelly sands; may also include some highly structured soils with large and/or numerous cracks, macropores, etc.	0.36

Individual Head Results
For 5 & 10 cm Head.

TP #3	1.5 mbg								
α*=	0.04	cm^{-1}	Ha=	1.666667		○ C1	0.842059	k_{fs}=	1.13E-04 cm/sec → 4.07E+00 mm/hr → 6.78E-03 cm/min
H=	5	cm	Q1=	0.1296	cm^3/sec	◉ C2			
a=	3	cm				○ C3		Φ_m=	2.82E-03 cm^2/s
X=	2.16	cm^2							
R=	0.06	cm/sec							

TP #3	1.5 mbg								
α*=	0.04	cm^{-1}	Ha=	3.333333		○ C1	1.290234	k_{fs}=	1.08E-04 cm/sec → 3.89E+00 mm/hr → 6.48E-03 cm/min
H=	10	cm	Q1=	0.187186	cm^3/sec	◉ C2			
a=	3	cm				○ C3		Φ_m=	2.70E-03 cm^2/s
X=	2.16	cm^2							
R=	0.08666	cm/sec							

a		cm^{-1}	Ha=	#DIV/0!		◉ C1	#DIV/0!	k_{fs}=	#DIV/0! cm/sec → #DIV/0! mm/hr → #DIV/0! cm/min
H=		cm	Q1=	0	cm^3/sec	○ C2			
a=		cm				○ C3		Φ_m=	#DIV/0! cm^2/s
X=		cm^2							
R=		cm/sec							

Enter numbers in RED cells only. Do not change the value of GREY cells.

Variable Glossary

α*	**1)** is the ratio of gravity to capillarity forces during infiltration or drainage.
	2) determined from table 1 on page 47 of the manual (or the adjacent page)
H	**1)** is the water head in the BH
	2) determined by the height that the inner tube is pulled up during field operation
a	**1)** is the radius of the borehole
	2) determine by the size of the auger
X	**1)** is the resevoir constant
	2) determined by the reservoir knob at the top of the unit
	• if the knob is up X = 35.22 (outer and inner reservoir)
	• if the knob is down X = 2.16 (inner reservoir)
R	**1)** is the steady state rate of flow per minute
	2) is determined by timing the drop of water in the Guelph Permeameter

Equation Glossary

Ha	is the ratio of head to borehole radius
Q1	is the flow rate
$C_{(1, 2 or 3)}$	is the shape factor which accounts for the saturated area of the soil.
	• Select C_1 if α* is ≥ 0.12 cm^{-1}
	• Select C_2 if α* = 0.04 cm^{-1}
	• Select C_3 if α* = 0.01 cm^{-1}
k_{fs}	is the field saturated hydraulic conductivity of the soil
Φ_m	is an indicator of the capillary pull exerted by the unsaturated soil on the water

Table 1. Soil texture-structure categories for site-estimation of α* (adapted from Elrick et al., 1989)

Soil Texture - Structure Category	α* (cm^{-1})
Compacted, structureless, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.	0.01
Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.	0.04
Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.	0.12
Coarse and gravelly sands; may also include some highly structured soils with large and/or numerous cracks, macropores, etc.	0.36

Individual Head Results
For 5 cm + 10 cm.

BH 8 **1.3 mbg**

α*=	0.12	cm^{-1}	Ha=	1.666667	◉ C1	0.803154	k_{fs}=	6.41E-04 cm/sec → 2.31E+01 mm/hr → 3.84E-02 cm/min
H=	5	cm	Q1=	0.3522 cm^3/sec	○ C2			
a=	3	cm			○ C3		Φ_m=	5.34E-03 cm^2/s
X=	35.22	cm^2						
R=	0.01	cm/sec						

BH 8 **1.3 mbg**

α*=	0.12	cm^{-1}	Ha=	3.333333	◉ C1	1.287543	k_{fs}=	5.08E-04 cm/sec → 1.83E+01 mm/hr → 3.05E-02 cm/min
H=	10	cm	Q1=	0.468426 cm^3/sec	○ C2			
a=	3	cm			○ C3		Φ_m=	4.23E-03 cm^2/s
X=	35.22	cm^2						
R=	0.0133	cm/sec						

a		cm^{-1}	Ha=	#DIV/0!	◉ C1	#DIV/0!	k_{fs}=	#DIV/0! cm/sec → #DIV/0! mm/hr → #DIV/0! cm/min
H=		cm	Q1=	0 cm^3/sec	○ C2			
a=		cm			○ C3		Φ_m=	#DIV/0! cm^2/s
X=		cm^2						
R=		cm/sec						

Enter numbers in RED cells only. Do not change the value of GREY cells.

Variable Glossary

α* 1) is the ratio of gravity to capillarity forces during infiltration or drainage.
2) determined from table 1 on page 47 of the manual (or the adjacent page)

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- if the knob is down X = 2.16 (inner reservoir)

R 1) is the steady state rate of flow per minute
2) is determined by timing the drop of water in the Guelph Permeameter

Equation Glossary

Ha is the ratio of head to borehole radius

Q1 is the flow rate

$C_{(1, 2 \text{ or } 3)}$ is the shape factor which accounts for the saturated area of the soil.
- Select C_1 if α* is ≥ 0.12 cm^{-1}
- Select C_2 if α* = 0.04 cm^{-1}
- Select C_3 if α* = 0.01 cm^{-1}

k_{fs} is the field saturated hydraulic conductivity of the soil

Φ_m is an indicator of the capillary pull exerted by the unsaturated soil on the water

Table 1. Soil texture-structure categories for site-estimation of α* (adapted from Elrick et al., 1989)

Soil Texture - Structure Category	α* (cm^{-1})
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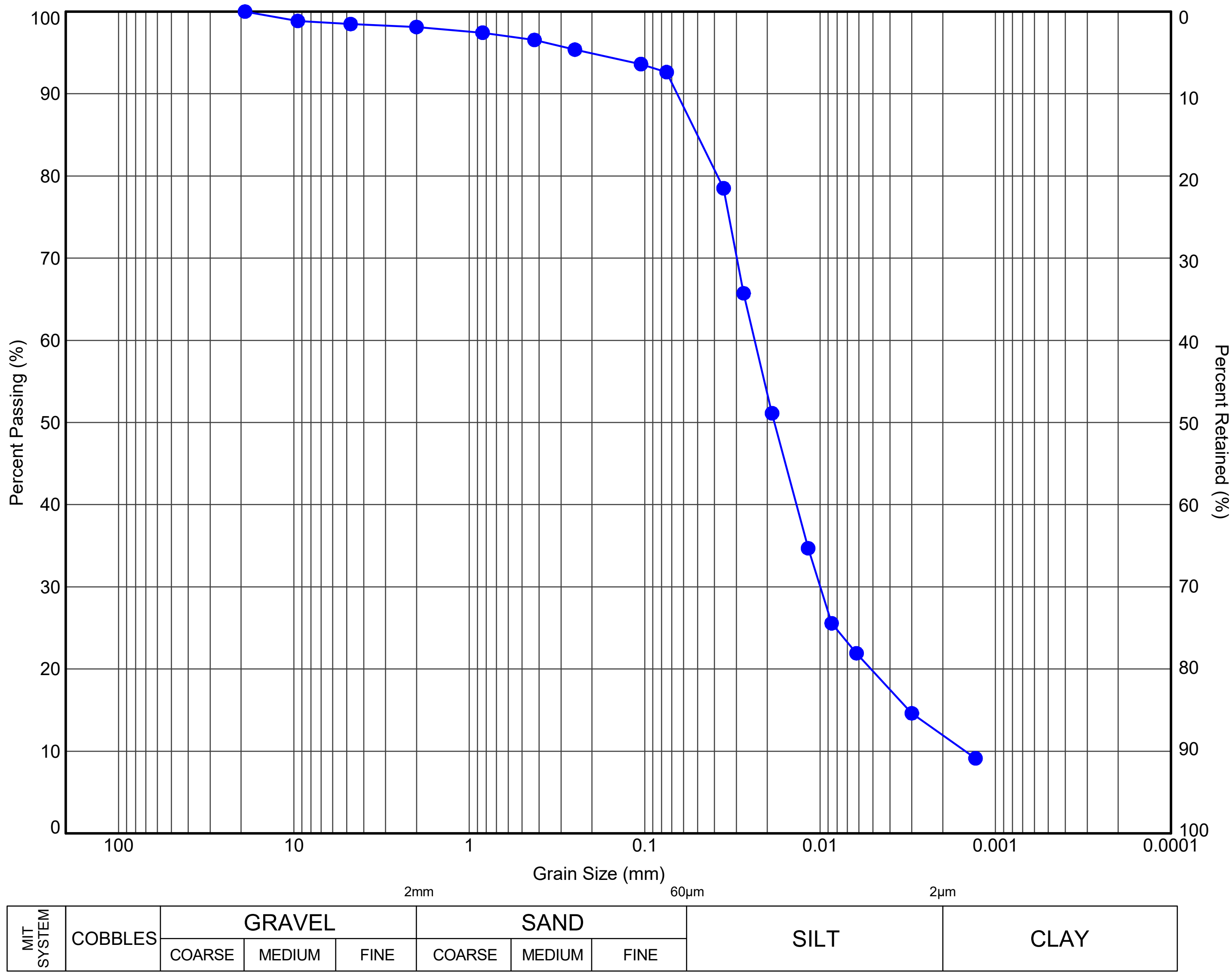
Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.	0.04
Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.	0.12
Coarse and gravelly sands; may also include some highly structured soils with large and/or numerous cracks, macropores, etc.	0.36



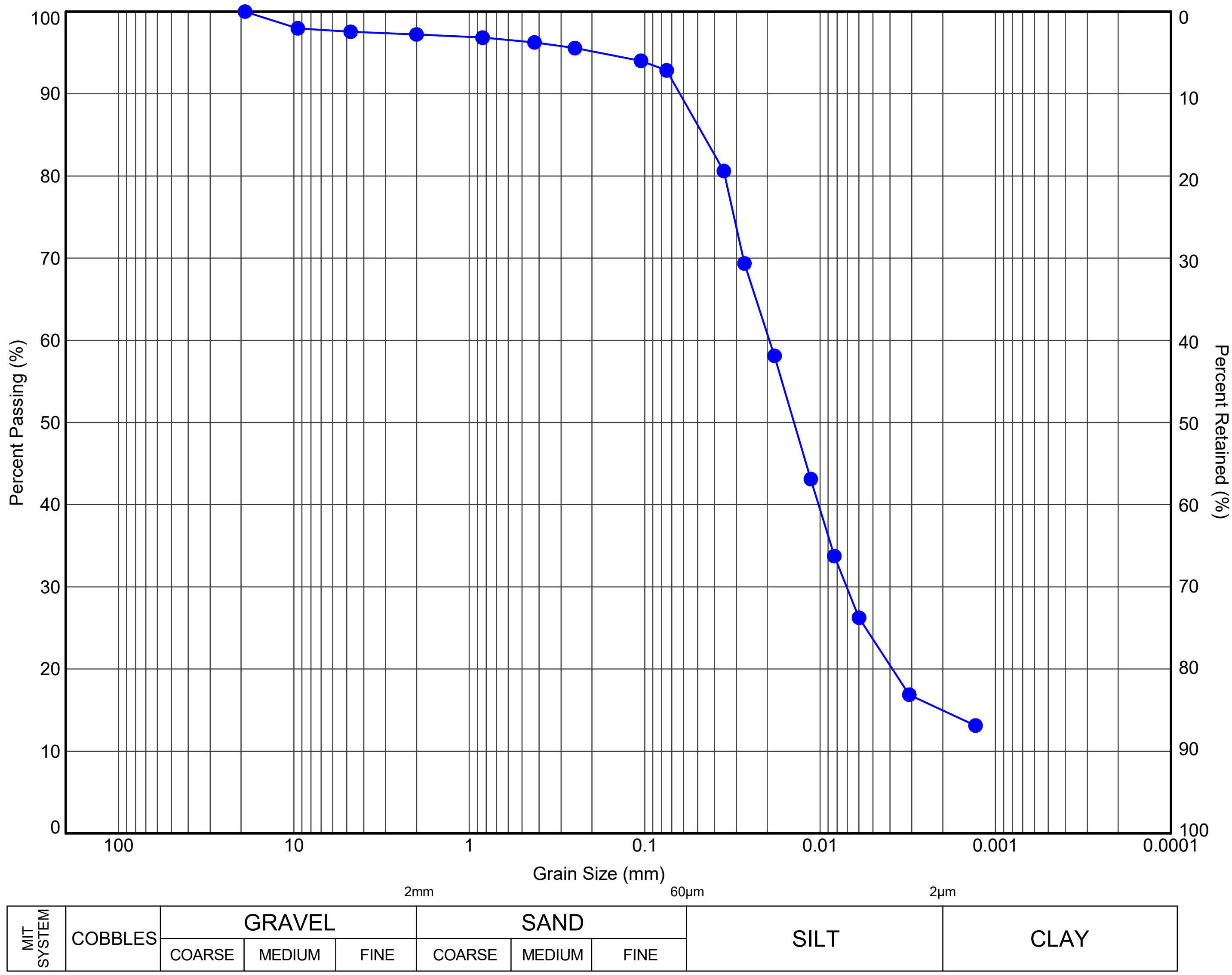
MIT SYSTEM

	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**1**	SS3	1.8	275.8	2	9	77	12	

Terraprobe
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:
GRAIN SIZE DISTRIBUTION
SILT, SOME CLAY, TRACE SAND, TRACE GRAVEL

File No.: **1-19-0022-46**



MIT SYSTEM

	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**2**	SS3	1.8	275.7	3	8	74	15	

Terraprobe

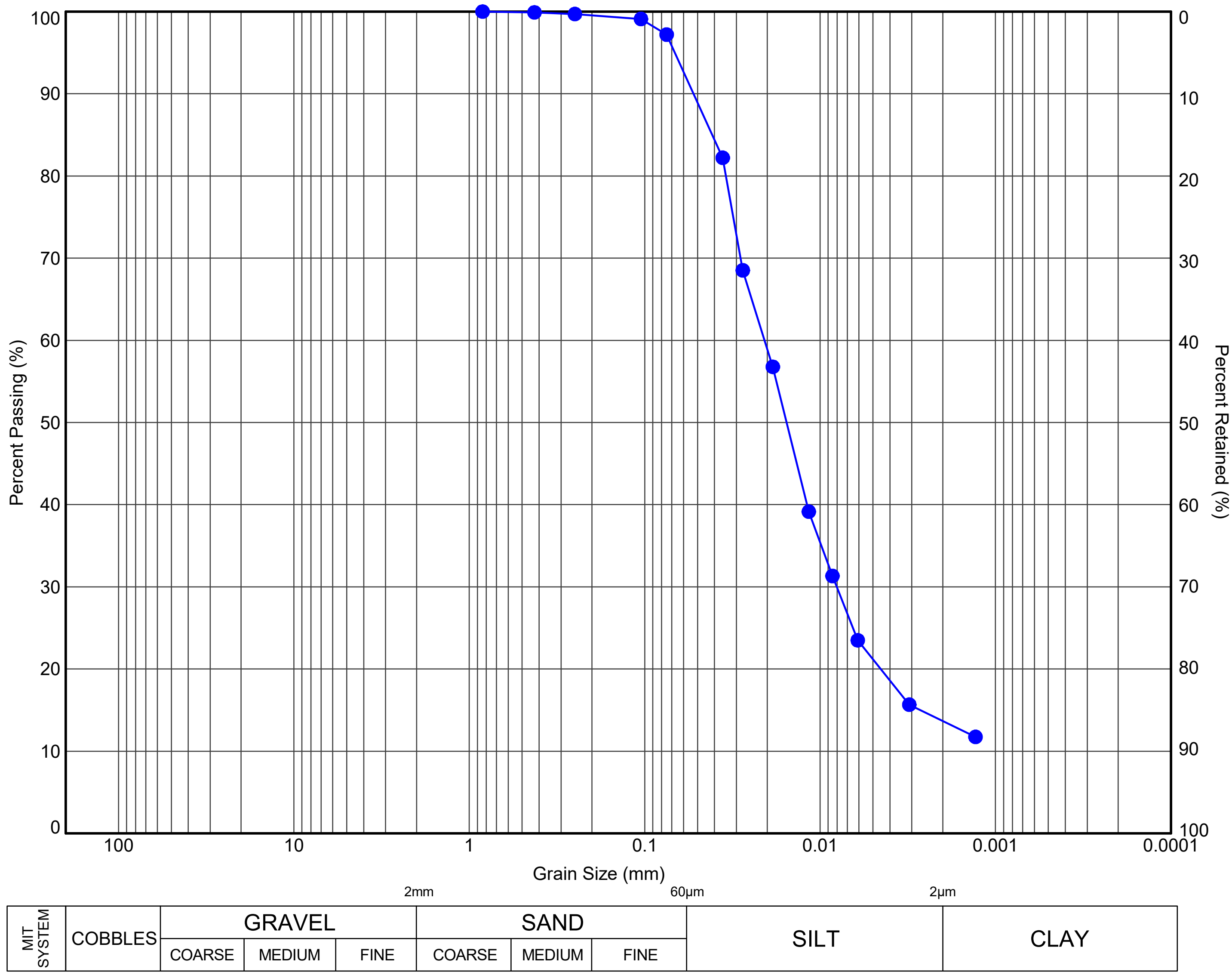
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

GRAIN SIZE DISTRIBUTION
SILT, SOME CLAY, TRACE SAND, TRACE GRAVEL

File No.:

1-19-0022-46



MIT SYSTEM

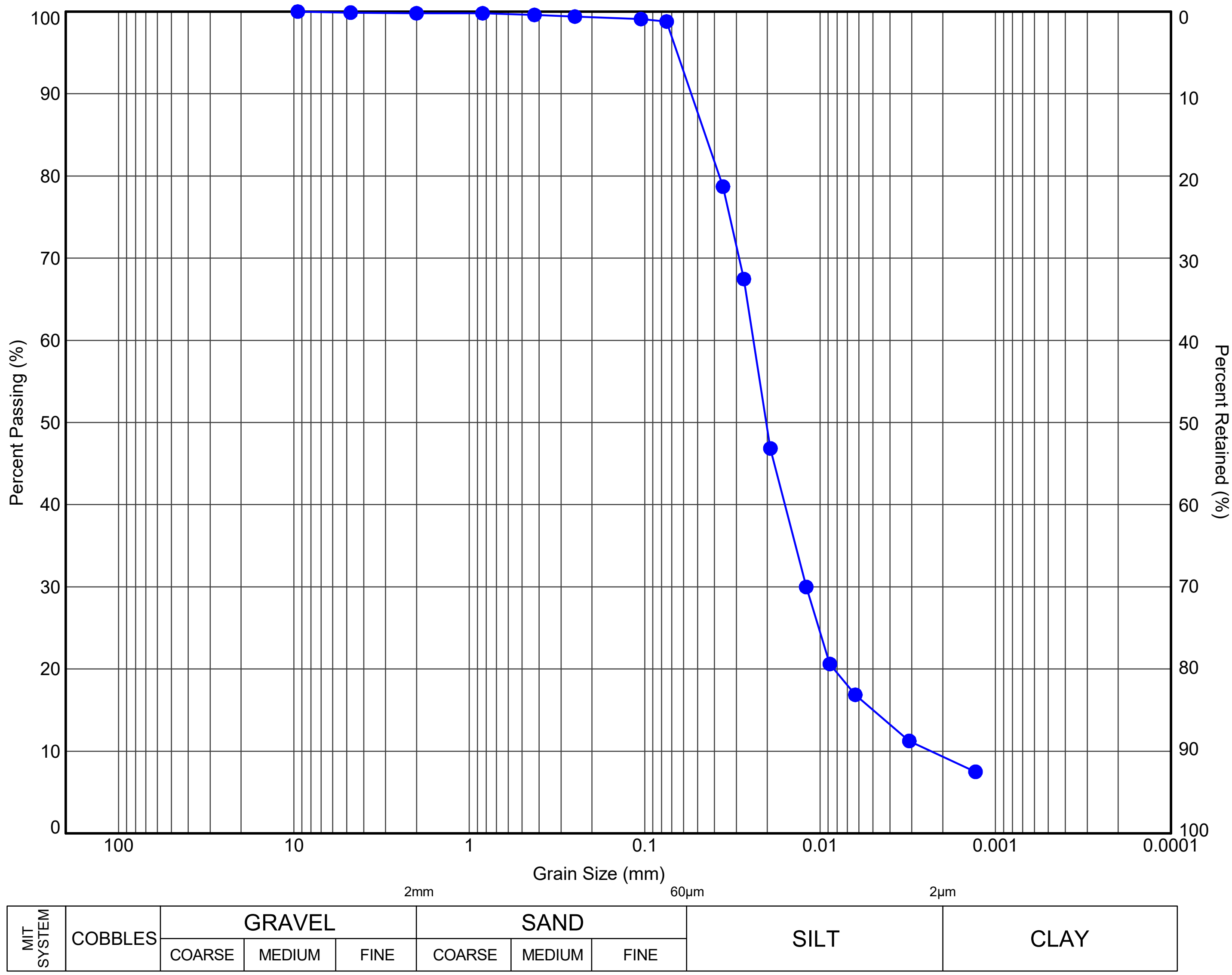
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**3**	SS4	2.5	275.0	0	7	79	14	

Terraprobe
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

GRAIN SIZE DISTRIBUTION
SILT, SOME CLAY, TRACE SAND

File No.: **1-19-0022-46**



	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
					MIT SYSTEM				
●	**4**	SS6	4.8	272.8	0	8	83	9	

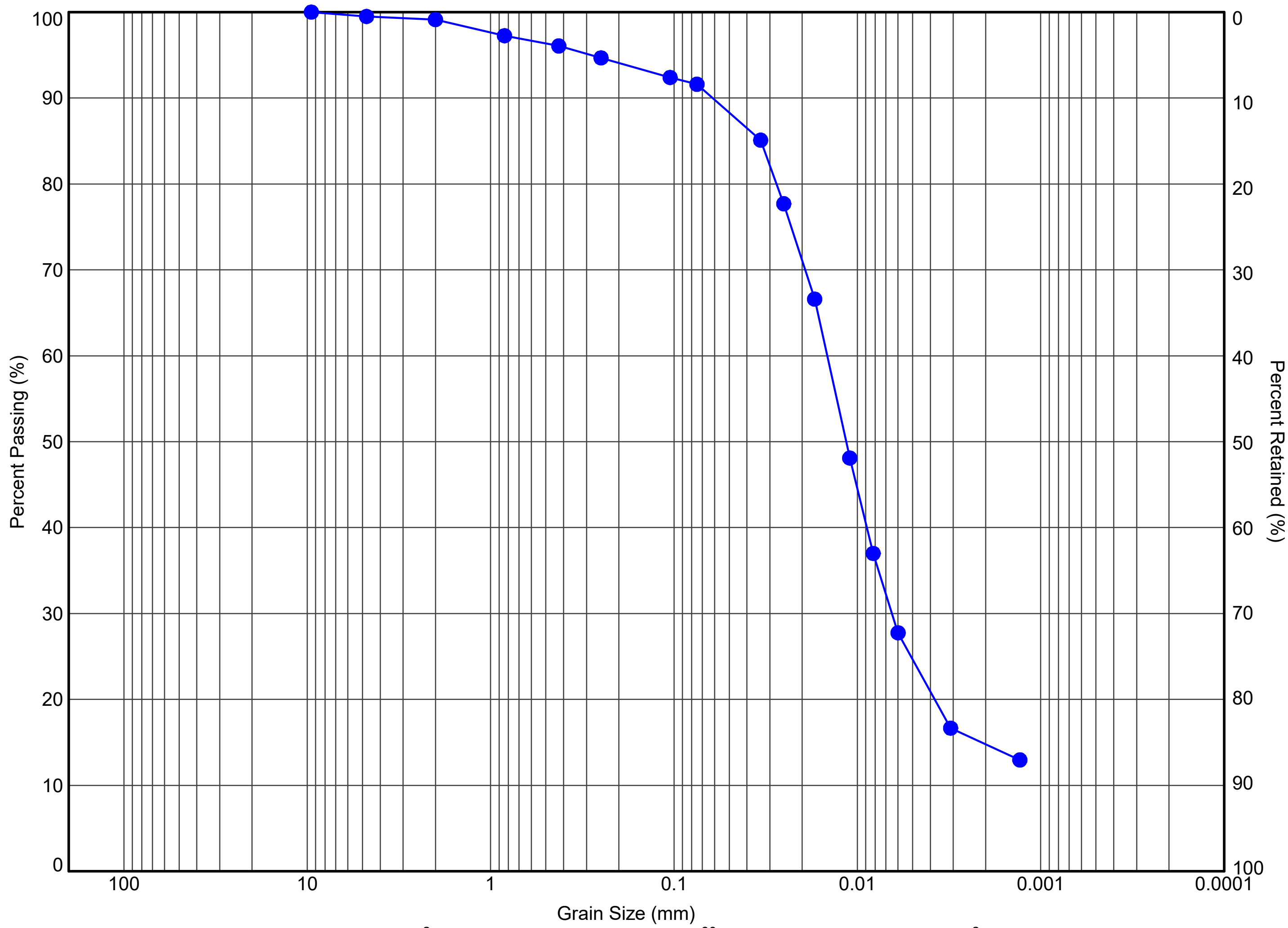
Terraprobe

11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

GRAIN SIZE DISTRIBUTION
SILT, TRACE CLAY, TRACE SAND

File No.: **1-19-0022-46**



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

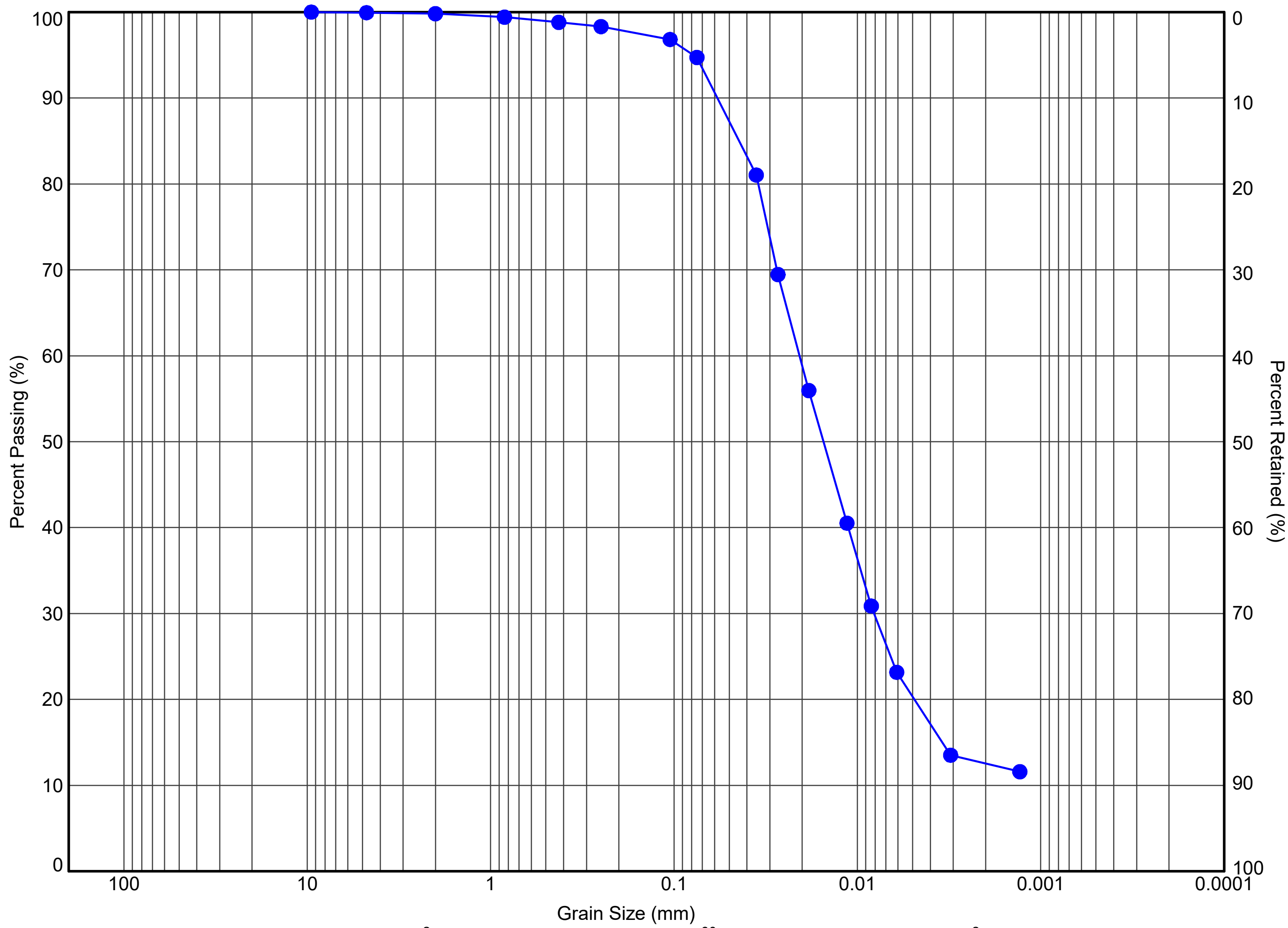
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**5**	SS4	2.5	275.2	1	9	75	15	

Terraprobe

11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title: **GRAIN SIZE DISTRIBUTION**
SILT, SOME CLAY, TRACE SAND, TRACE GRAVEL

File No.: **1-19-0022-46**



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

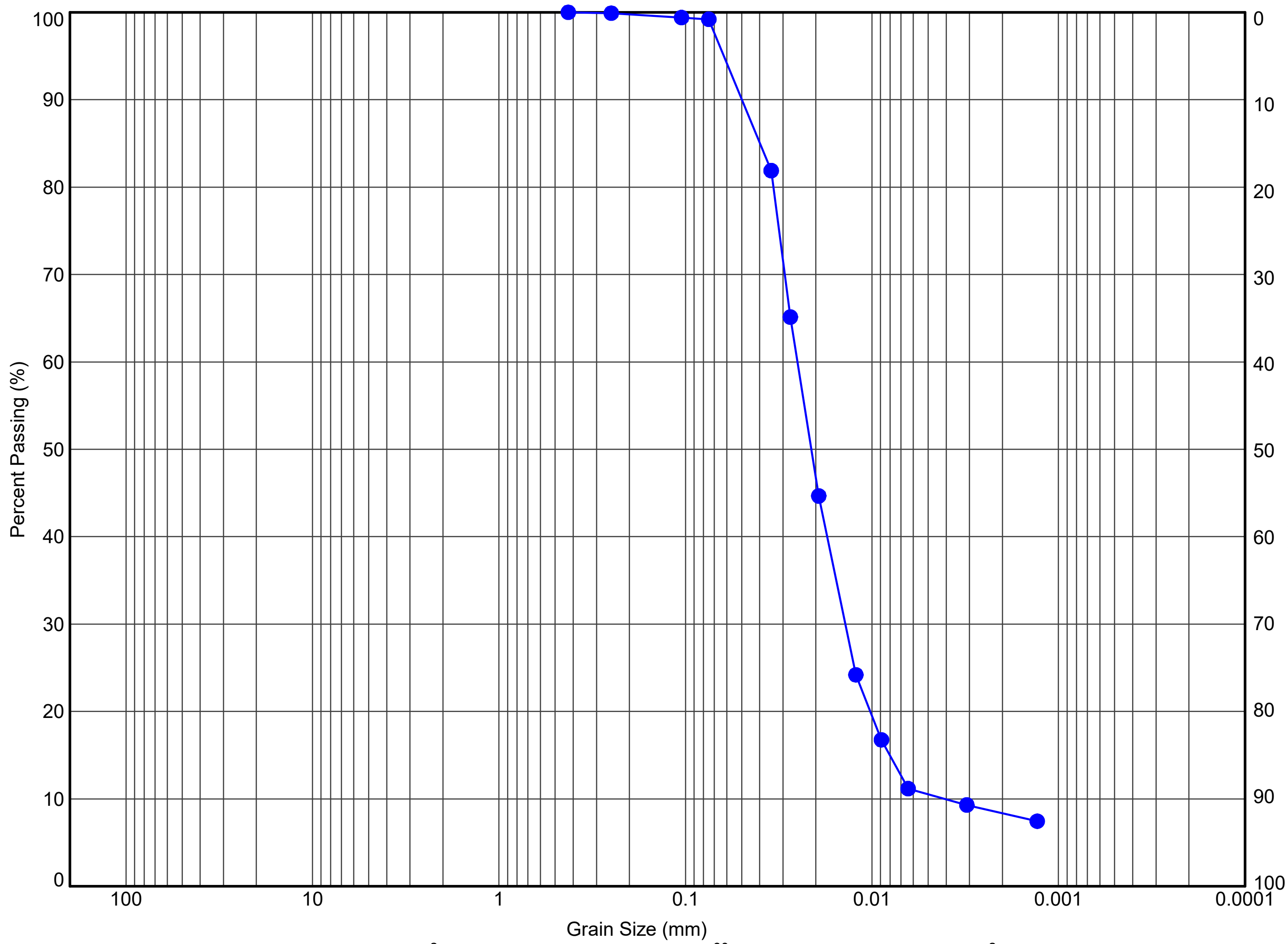
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**8**	SS5	3.3	274.4	0	9	78	13	

Terraprobe

11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title: **GRAIN SIZE DISTRIBUTION**
SILT, SOME CLAY, TRACE SAND

File No.: **1-19-0022-46**



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

2mm 60µm 2µm

MIT SYSTEM

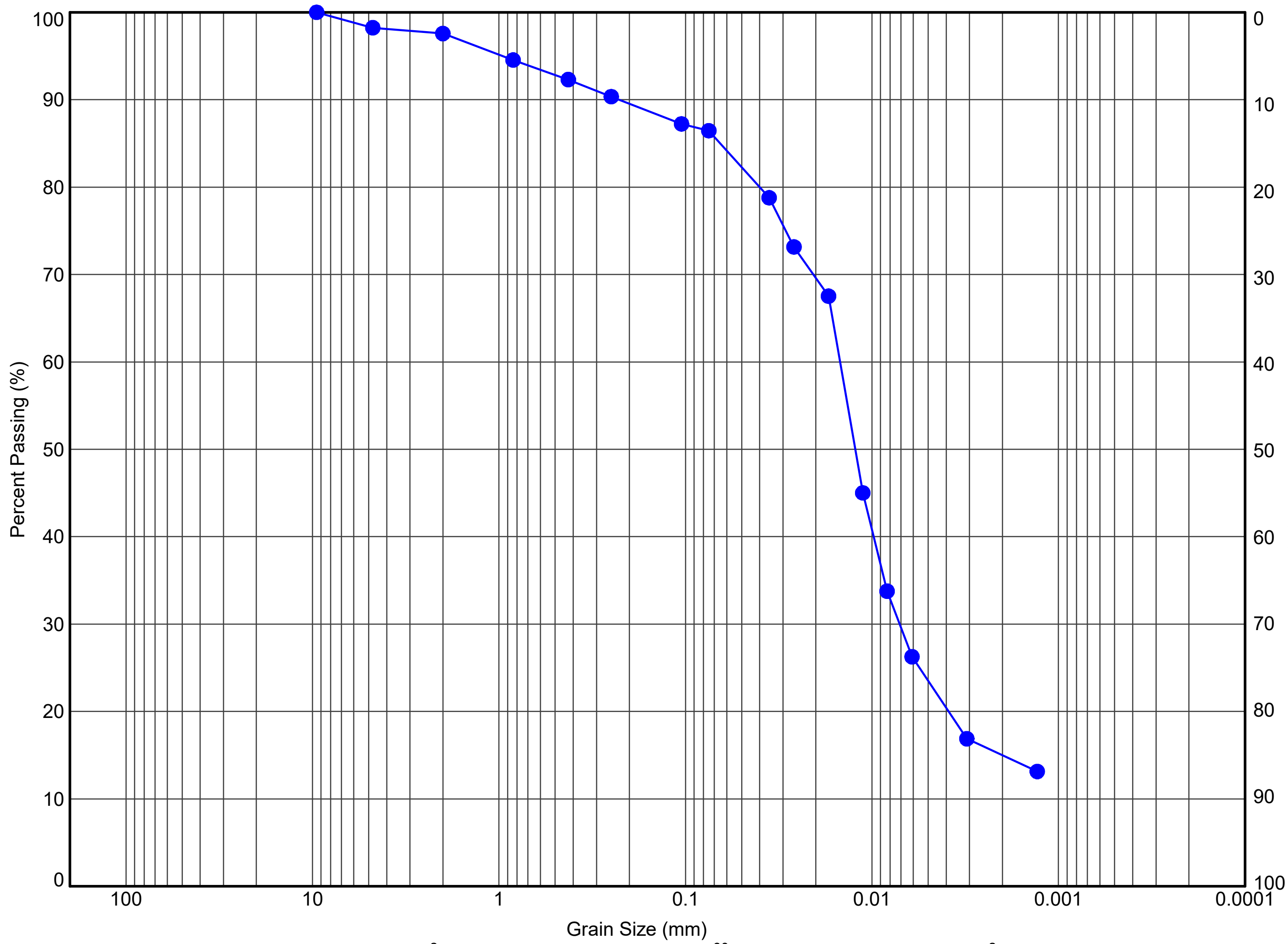
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**9**	SS6	4.8	272.4	0	6	86	8	

Terraprobe
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

GRAIN SIZE DISTRIBUTION
SILT, TRACE CLAY, TRACE SAND

File No.: **1-19-0022-46**



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

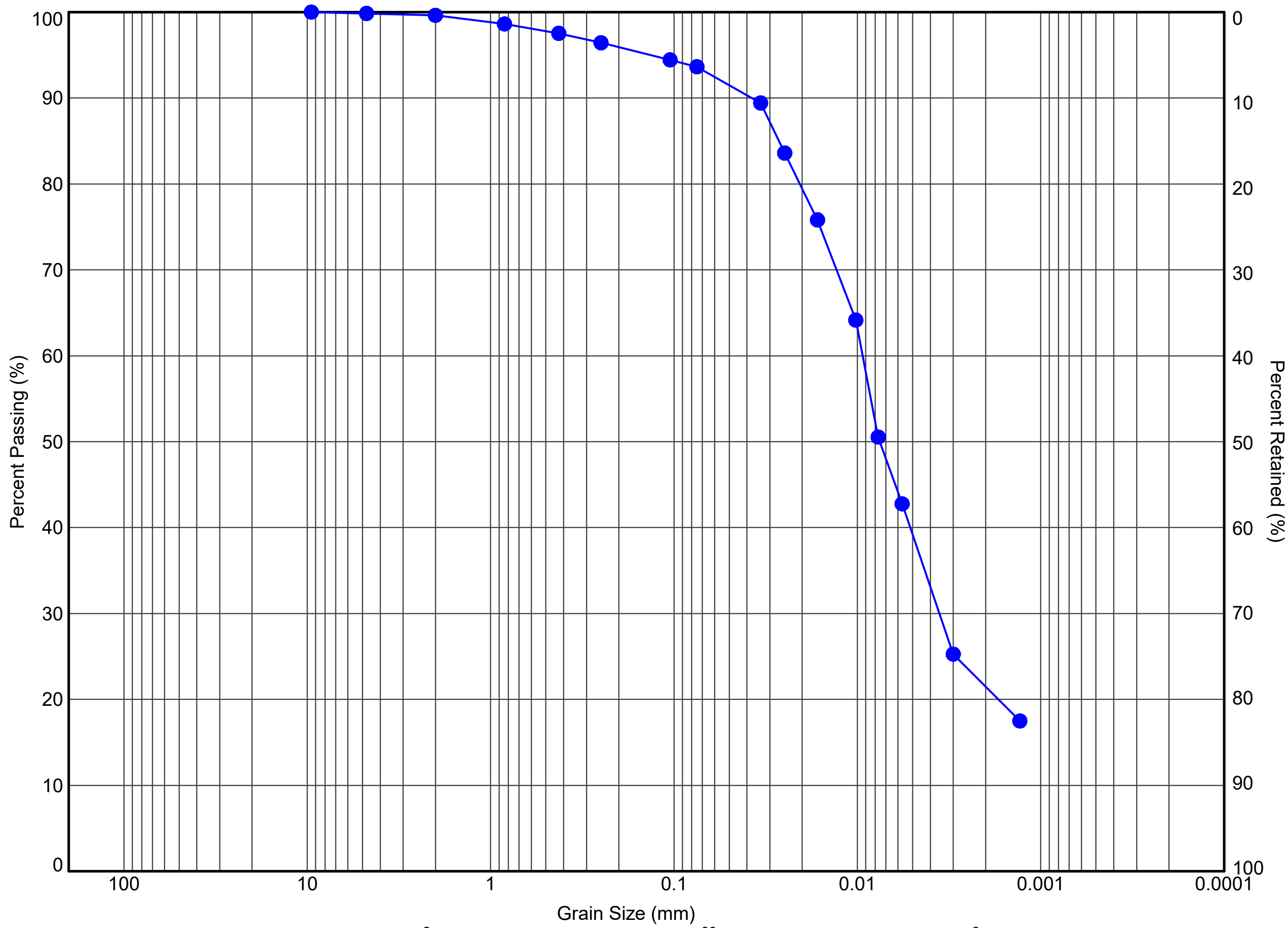
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**10**	SS3	1.5	276.4	2	13	69	15	

Terraprobe
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

GRAIN SIZE DISTRIBUTION
SILT, SOME CLAY, SOME SAND, TRACE GRAVEL

File No.: **1-19-0022-46**



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
					MIT SYSTEM				
●	**14**	SS6	4.8	272.3	0	7	71	22	

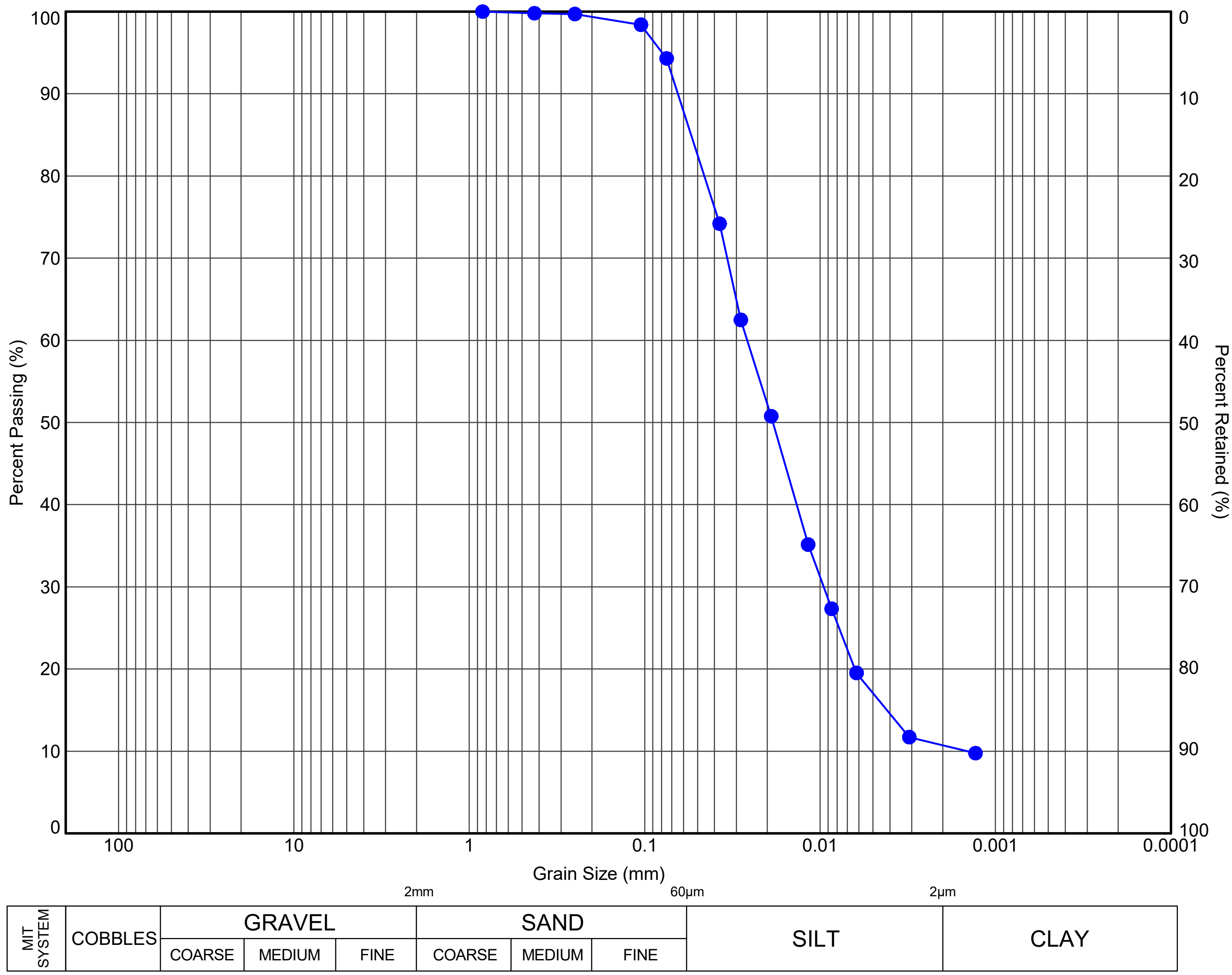
Terraprobe

11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

GRAIN SIZE DISTRIBUTION
CLAYEY SILT, TRACE SAND

File No.: **1-19-0022-46**



MIT SYSTEM

	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**17**	SS6	4.8	272.8	0	12	77	11	

Terraprobe

11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title: **GRAIN SIZE DISTRIBUTION**
SILT, SOME SAND, SOME CLAY

File No.: **1-19-0022-46**

APPENDIX I

TERRAPROBE INC.

Ontario **Source Protection Information Atlas**
Ministry of the Environment, Conservation and Parks

[Français]

Water Quality | Policy Search by SPA | Water Quantity

Location Information

Zoom in to confirm your location and results.

Latitude: **44.10256** Longitude: **-79.12758**
UTM Zone: **17** Easting: **649861.32**
Northing: **4884968.12**
Upper Tier Municipality: **REGIONAL MUNICIPALITY OF DURHAM**
Lower/Single Tier Municipality: **TOWNSHIP OF UXBRIDGE**
Township Concession and Lot: **UXBRIDGE CON 6, LOT 29**
Assessment Parcel Address: **4 CAMPBELL DR**
Assessment Roll #: **182904000423600000000**
MECP District: **York-Durham**
MECP Region: **Central**

Source Protection Details for Location

Source Protection Area: **Lakes Simcoe and Couchiching/Black River**
Wellhead Protection Area: C ; score is **4**
Wellhead Protection Area E (GUDI): **No**
Intake Protection Zone: **No**
Issue Contributing Area: **No**
Significant Groundwater Recharge Area: **No**
Highly Vulnerable Aquifer: **Yes** ; score is **6**
Event Based Area: **No**
Wellhead Protection Area Q1: **Yes** ; Stress: **Moderate**
Wellhead Protection Area Q2: **Yes** ; Stress: **Moderate**
Intake Protection Zone Q: **No**

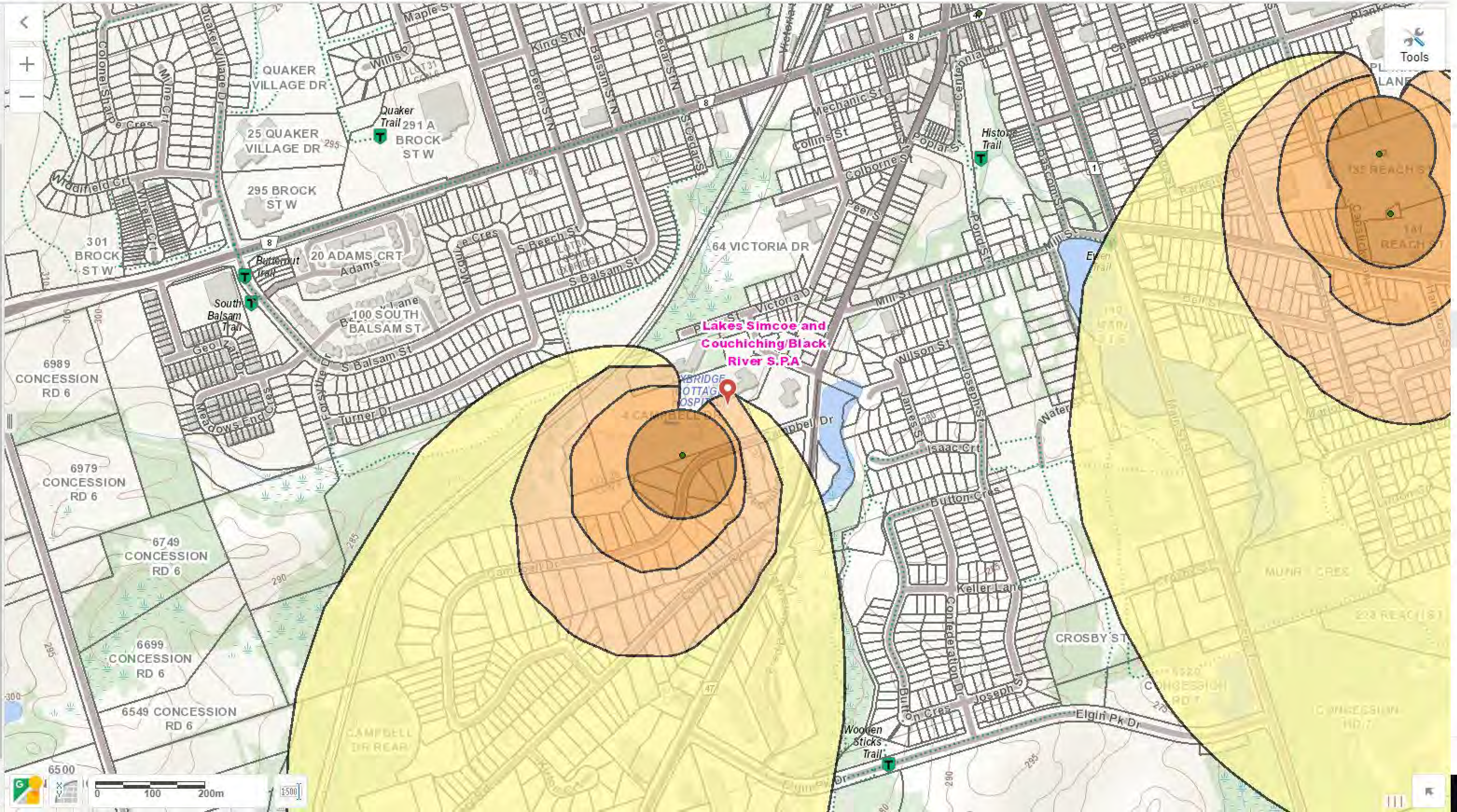
The Significant threats for the vulnerable areas at this location can be found at this link.

Use the Policy search tab to see if any policies apply – for more details see the source protection plan

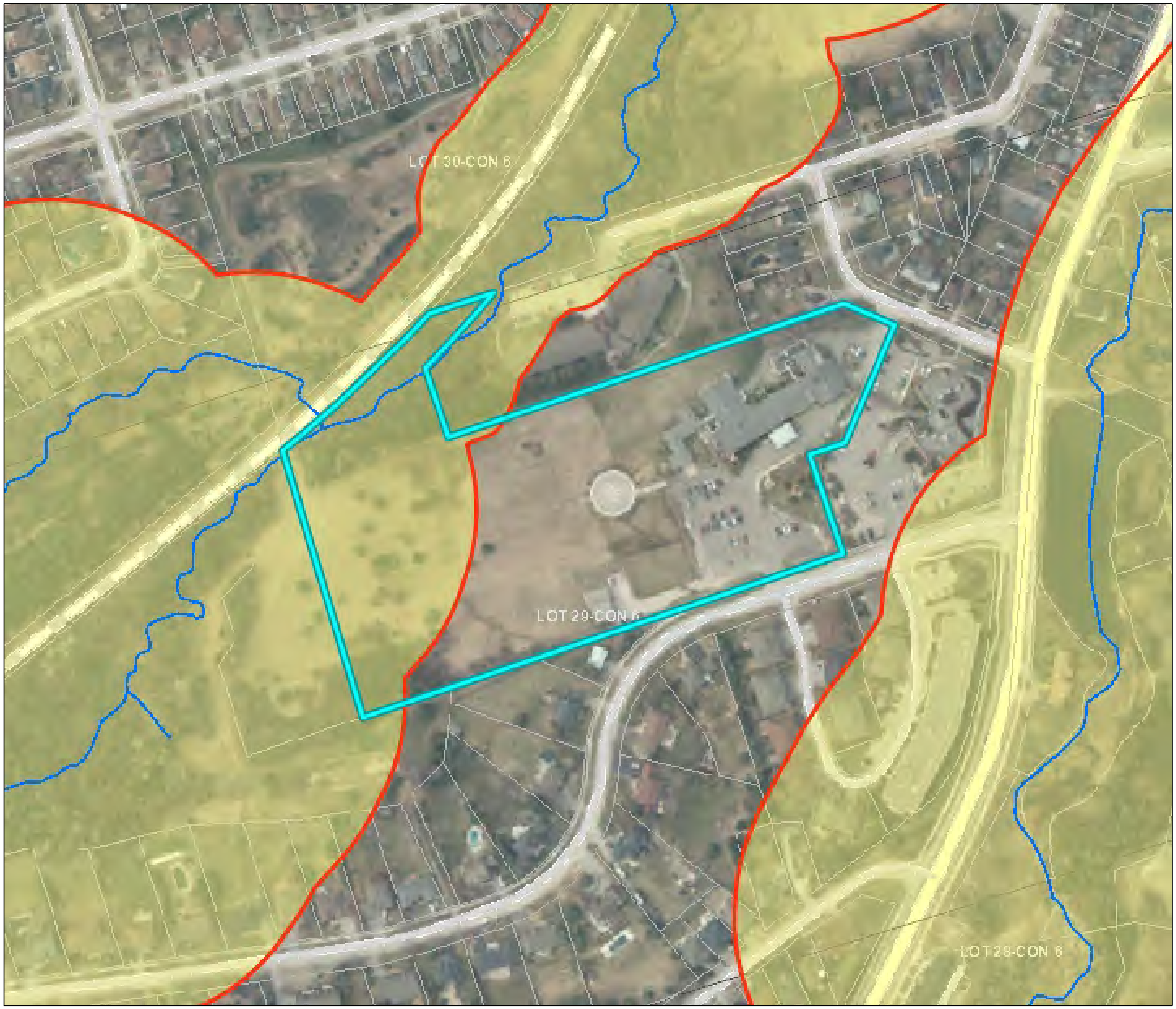
Information is current as of: **January 31st, 2019**

Map Legend

Help and Resources



Lake Simcoe Region conservation authority



Features

- Regulation Map Index
- LSRCA Watershed Boundary
- Watercourse
- Regulated Area Boundary
- Regulated Area
- Address Labels
- Assessment Parcel
- Lot and Concession
- Roads
  - Hwy 400 Series
  - Highway, Arterials
  - Local Road
- Railway

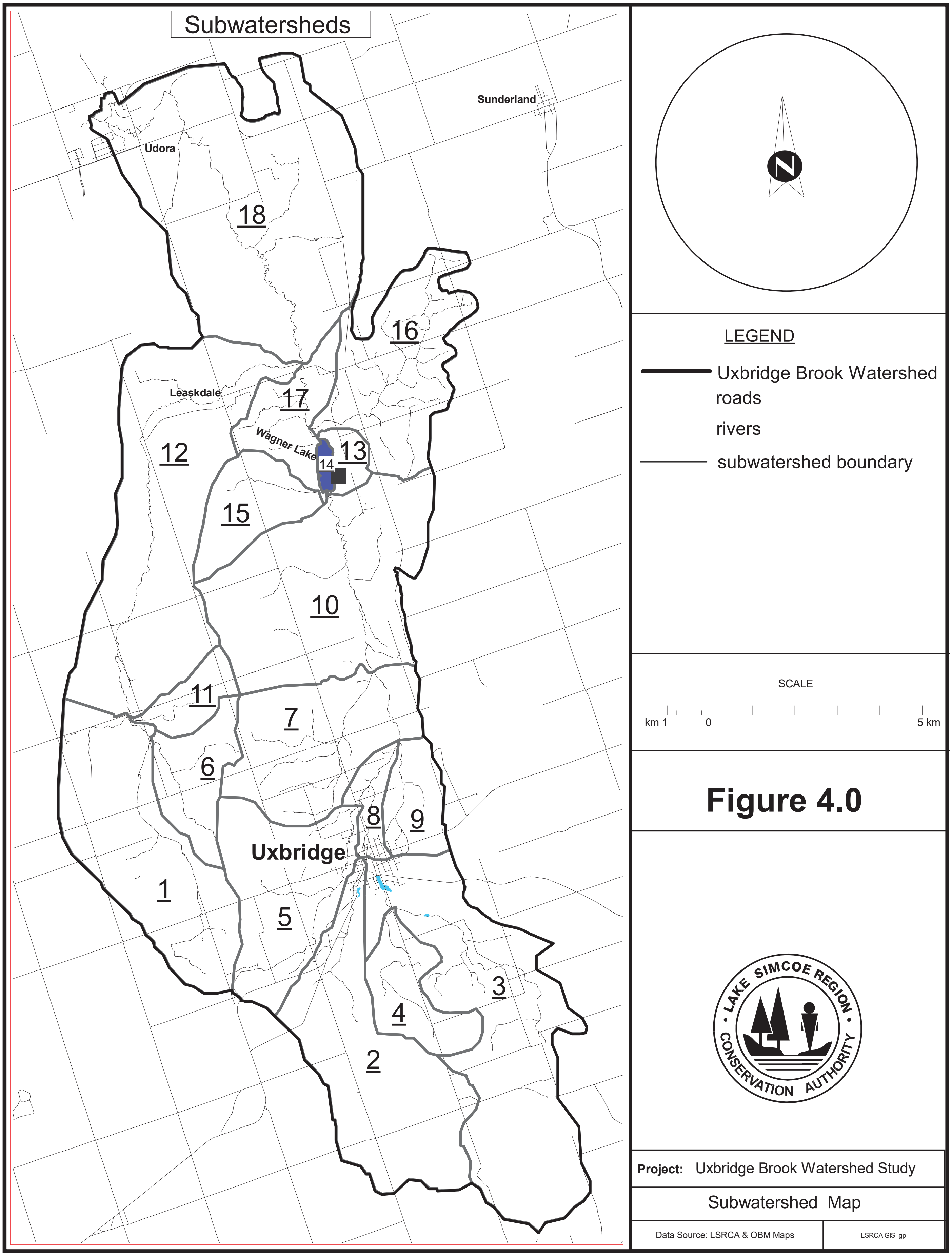
Printed On:
3/20/2020

WGS_1984_Web_Mercator_Auxiliary_Sphere

Mapped By:

Scale 1: 3,539

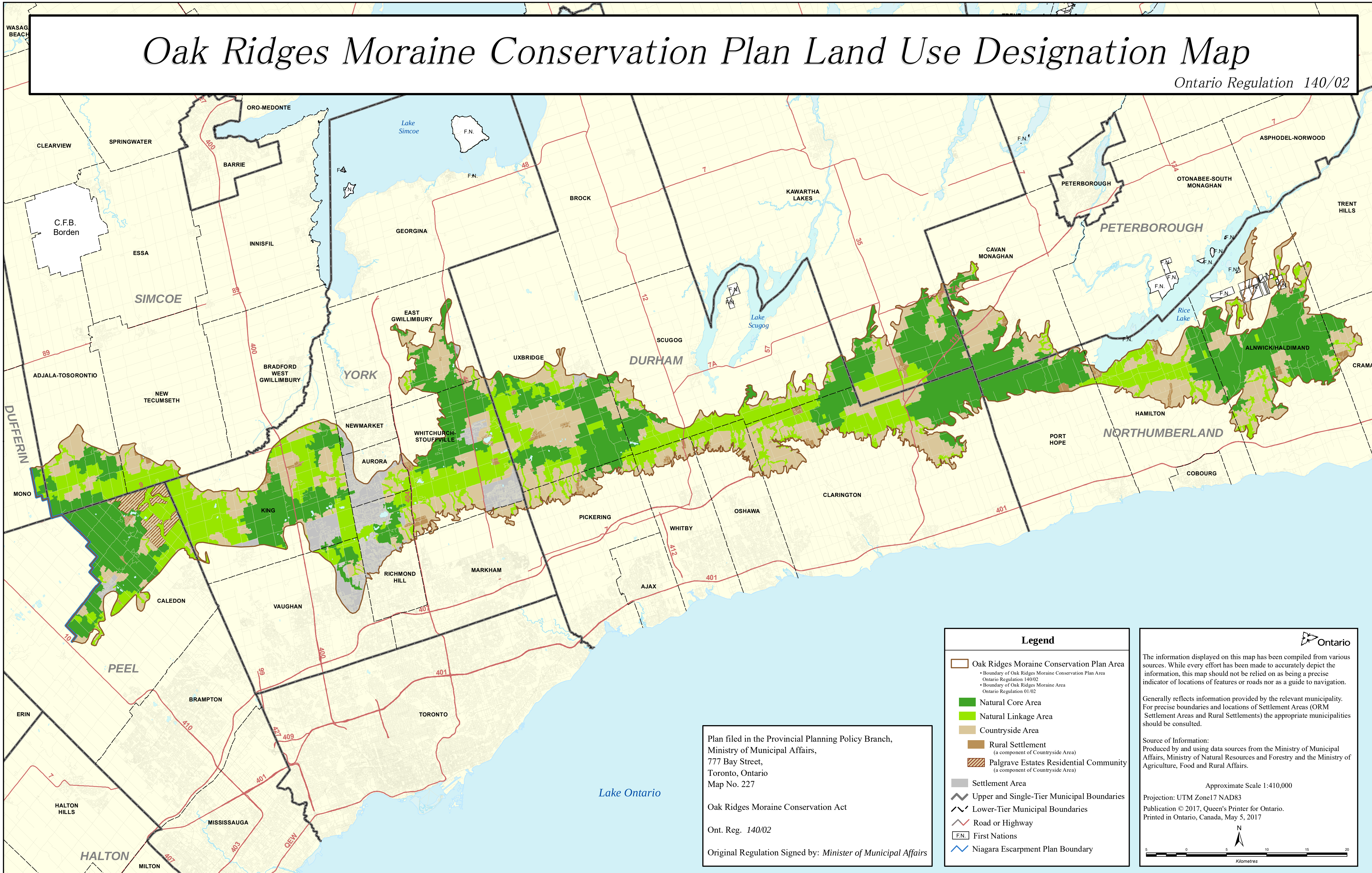
180 0 90 180 Meters



Subwatersheds
Sunderland
Udora
18
16
Leaskdale
17
Wagner Lake
12
13
14
15
10
11
7
6
8
9
Uxbridge
1
5
3
4
2
LEGEND
Uxbridge Brook Watershed
roads
rivers
subwatershed boundary
SCALE
km 1
0
5 km
Figure 4.0
LAKE SIMCOE REGION CONSERVATION AUTHORITY
Project: Uxbridge Brook Watershed Study
Subwatershed Map
Data Source: LSRCA & OBM Maps
LSRCA GIS gp

Oak Ridges Moraine Conservation Plan Land Use Designation Map

Ontario Regulation 140/02



Plan filed in the Provincial Planning Policy Branch,
Ministry of Municipal Affairs,
777 Bay Street,
Toronto, Ontario
Map No. 227

Oak Ridges Moraine Conservation Act

Ont. Reg. *140/02*

Original Regulation Signed by: *Minister of Municipal Affairs*

Legend

- Oak Ridges Moraine Conservation Plan Area
  - Boundary of Oak Ridges Moraine Conservation Plan Area Ontario Regulation 140/02
  - Boundary of Oak Ridges Moraine Area Ontario Regulation 01/02
- Natural Core Area
- Natural Linkage Area
- Countryside Area
  - Rural Settlement (a component of Countryside Area)
  - Palgrave Estates Residential Community (a component of Countryside Area)
- Settlement Area
- Upper and Single-Tier Municipal Boundaries
- Lower-Tier Municipal Boundaries
- Road or Highway
- F.N. First Nations
- Niagara Escarpment Plan Boundary

Ontario

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations of features or roads nor as a guide to navigation.

Generally reflects information provided by the relevant municipality. For precise boundaries and locations of Settlement Areas (ORM Settlement Areas and Rural Settlements) the appropriate municipalities should be consulted.

Source of Information:
Produced by and using data sources from the Ministry of Municipal Affairs, Ministry of Natural Resources and Forestry and the Ministry of Agriculture, Food and Rural Affairs.

Approximate Scale 1:410,000

Projection: UTM Zone17 NAD83

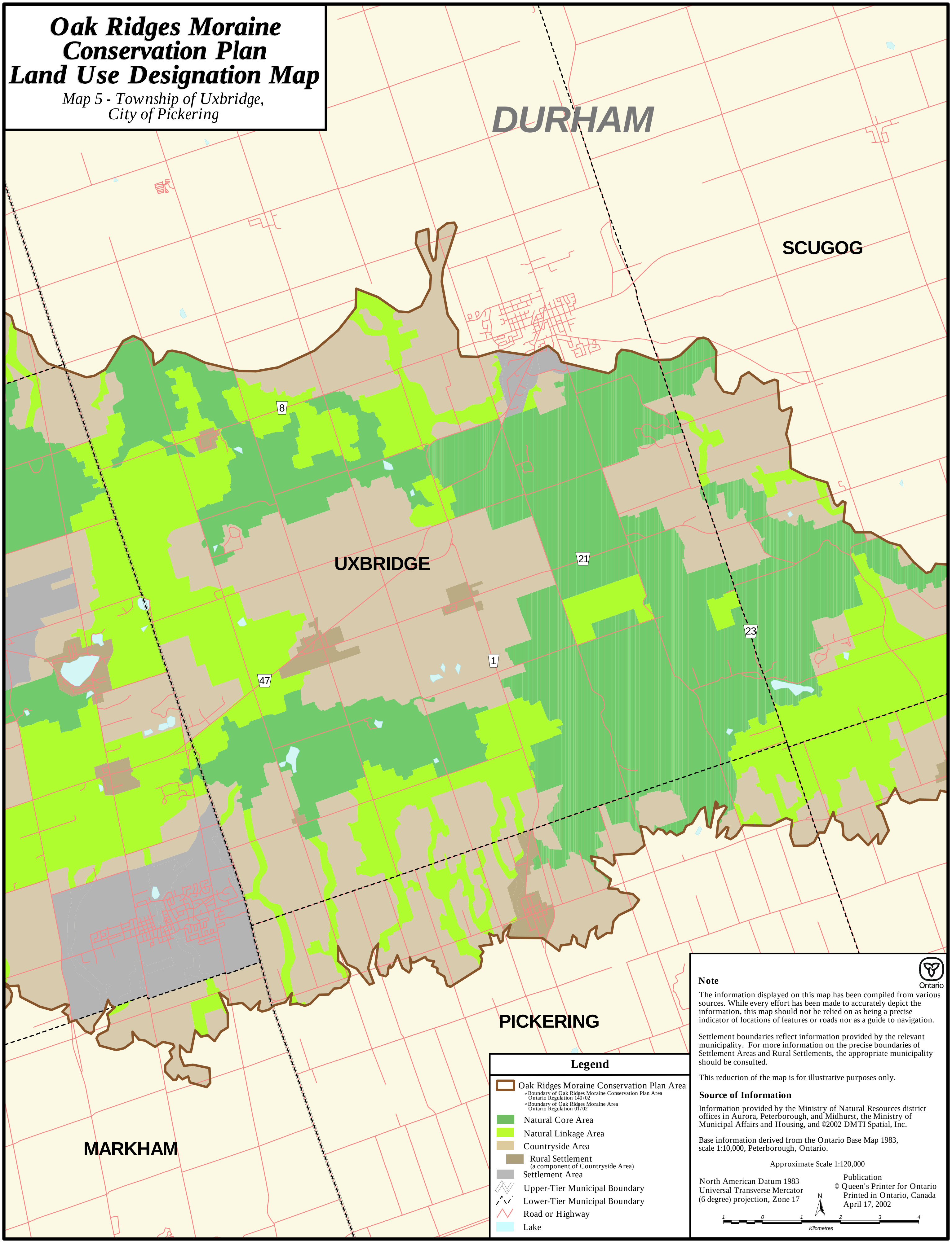
Printed in Ontario, Canada, May 5, 2017

N

5 0 5 10 15 20
Kilometres

Oak Ridges Moraine Conservation Plan Land Use Designation Map

Map 5 - Township of Uxbridge, City of Pickering



Note

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations of features or roads nor as a guide to navigation.

Settlement boundaries reflect information provided by the relevant municipality. For more information on the precise boundaries of Settlement Areas and Rural Settlements, the appropriate municipality should be consulted.

This reduction of the map is for illustrative purposes only.

Source of Information

Information provided by the Ministry of Natural Resources district offices in Aurora, Peterborough, and Midhurst, the Ministry of Municipal Affairs and Housing, and ©2002 DMTI Spatial, Inc.

Base information derived from the Ontario Base Map 1983, scale 1:10,000, Peterborough, Ontario.

Approximate Scale 1:120,000

North American Datum 1983
Universal Transverse Mercator
(6 degree) projection, Zone 17

Publication
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Printed in Ontario, Canada
April 17, 2002

APPENDIX J

TERRAPROBE INC.

Table J-1

Evapotranspiration, Thornthwaite-Mather Method

Month	Average Temperature (degrees C)	Monthly Heat Index	Potential Evapotranspiration (mm)	Latitude Adjustment Factor (44 degrees; Chow, 1964)	Adjusted Potential Evapotranspiration (mm)
Jan	-7.0	0	0	0.81	0
Feb	-6.6	0	0	0.81	0
Mar	-1.3	0	0	1.02	0
Apr	5.7	1.22	26.3	1.13	29.7
May	12.2	3.86	59.1	1.27	75.1
Jun	18.0	6.95	89.5	1.28	114.6
Jul	19.9	8.10	99.6	1.30	129.5
Aug	19.3	7.73	96.4	1.20	115.7
Sep	15.1	5.33	74.2	1.04	77.2
Oct	8.6	2.27	40.7	0.94	38.3
Nov	2.4	0.33	10.5	0.80	8.4
Dec	-4.0	0	0	0.76	0.0
Heat Index TE=		35.8			
a=		1.07			
Total PET (mm)			496.4		588.4
Annual Precipitation (mm)					886.2
Precipitation Surplus (mm)					297.8

Source: Canadian Climate Normals, 1981 to 2010, Udora Station

Table J-2

Evapotranspiration, Thornthwaite-Mather Method

Month	Average Temperature (degrees C)	Monthly Heat Index	Potential Evapotranspiration (mm)	Latitude Adjustment Factor (44 degrees; Chow, 1964)	Adjusted Potential Evapotranspiration (mm)
Jan	-6.2	0	0	0.81	0
Feb	-4.9	0	0	0.81	0
Mar	-0.3	0	0	1.02	0
Apr	6.9	1.63	29.9	1.13	33.8
May	13.3	4.40	62.4	1.27	79.3
Jun	18.7	7.37	91.5	1.28	117.1
Jul	21.4	9.04	106.4	1.30	138.4
Aug	20.3	8.34	100.3	1.20	120.4
Sep	15.9	5.76	76.3	1.04	79.3
Oct	9.1	2.48	40.8	0.94	38.3
Nov	3.1	0.48	12.2	0.80	9.8
Dec	-2.7	0	0	0.76	0.0
Heat Index TE=		39.5			
a=		1.12			
Total PET (mm)			519.9		616.4
Annual Precipitation (mm)					895.2
Precipitation Surplus (mm)					278.8

Source: Canadian Climate Normals, 1981 to 2010, Richmond Hill Station

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin. Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.
Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

use consistent units (e.g. feet & days **or** inches & hours)

Input Values

0.1310	***R***	**Recharge (infiltration) rate (feet/day)**
0.080	**Sy**	**Specific yield, Sy (dimensionless, between 0 and 1)**
0.0275	**K**	**Horizontal hydraulic conductivity, Kh (feet/day)***
16.400	**x**	**1/2 length of basin (x direction, in feet)**
49.200	**y**	**1/2 width of basin (y direction, in feet)**
1.000	**t**	**duration of infiltration period (days)**
24.436	**hi(0)**	**initial thickness of saturated zone (feet)**

Conversion Table

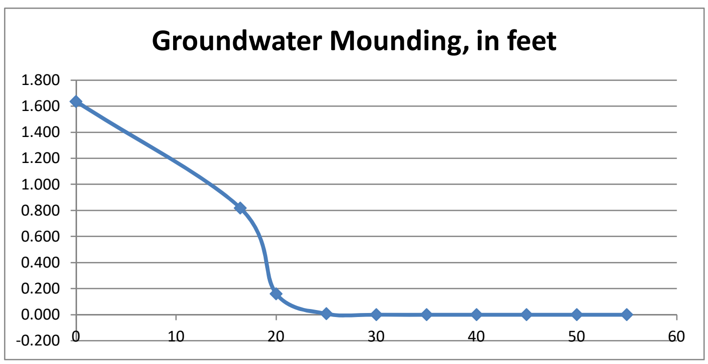
inch/hour	**feet/day**
0.67	1.33
2.00	4.00
hours	**days**
36	1.50

In the report accompanying this spreadsheet (USGS SIR 2010-5102), vertical soil permeability (ft/d) is assumed to be one-tenth horizontal hydraulic conductivity (ft/d).

26.073	**h(max)**	**maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
1.637	**Δh(max)**	**maximum groundwater mounding (beneath center of basin at end of infiltration period)**

Ground-water Mounding, in feet	**Distance from center of basin in x direction, in feet**
1.637	**0**
0.819	**16.4**
0.162	**20**
0.008	**25**
0.001	**30**
0.001	**35**
0.001	**40**
0.001	**45**
0.001	**50**
0.001	**55**

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

Table J-3: 2017 Conditions

Date/Time	Total Precip (mm)	Avail mm (0.5 m)
4/3/2017	6.4	6.4
4/4/2017	17.2	6.72
4/5/2017	0.4	0.4
4/6/2017	25.8	6.72
4/10/2017	8	6.72
4/11/2017	6.2	6.2
4/15/2017	8.2	6.72
4/16/2017	1	1
4/19/2017	2	2
4/20/2017	12.4	6.72
4/25/2017	4	4
4/27/2017	5.2	5.2
4/29/2017	2	2
4/30/2017	15.2	6.72
5/1/2017	20.2	6.72
5/2/2017	8.4	6.72
5/4/2017	27	6.72
5/5/2017	16.8	6.72
5/6/2017	6.4	6.4
5/18/2017	2.6	2.6
5/21/2017	23.4	6.72
5/24/2017	3.6	3.6
5/25/2017	13.2	6.72
5/28/2017	1.4	1.4
5/29/2017	4.8	4.8
5/30/2017	3	3
6/1/2017	2.2	2.2
6/3/2017	3.6	3.6
6/4/2017	7.4	6.72
6/5/2017	3.4	3.4
6/6/2017	0.8	0.8
6/12/2017	0.2	0.2
6/13/2017	10.2	6.72
6/15/2017	10.6	6.72
6/16/2017	0.4	0.4
6/17/2017	20.6	6.72
6/18/2017	17.8	6.72
6/19/2017	2.8	2.8
6/20/2017	2.2	2.2
6/22/2017	50.4	6.72
6/23/2017	1.8	1.8
6/25/2017	4.1	4.1
6/26/2017	9.2	6.72
6/27/2017	3	3
6/28/2017	6	6
6/29/2017	3.6	3.6
6/30/2017	2	2
7/2/2017	10.6	6.72
7/9/2017	5.2	5.2
7/12/2017	2.6	2.6
7/13/2017	18.2	6.72
7/14/2017	1.6	1.6
7/16/2017	0.2	0.2
7/20/2017	6.2	6.2
7/24/2017	0.4	0.4

Date/Time	Total Precip (mm)	Avail mm (0.5 m)
7/26/2017	3.4	3.4
8/2/2017	11	6.72
8/3/2017	22.4	6.72
8/4/2017	5.4	5.4
8/5/2017	1	1
8/6/2017	3.8	3.8
8/7/2017	0.8	0.8
8/10/2017	0.4	0.4
8/11/2017	4.2	4.2
8/12/2017	1.2	1.2
8/17/2017	2.2	2.2
8/18/2017	0.4	0.4
8/22/2017	12.4	6.72
8/23/2017	1	1
8/30/2017	5.4	5.4
9/2/2017	7.8	6.72
9/3/2017	1.2	1.2
9/4/2017	21.2	6.72
9/5/2017	12	6.72
9/7/2017	1	1
9/19/2017	1.2	1.2
9/29/2017	12	6.72
10/3/2017	1.8	1.8
10/4/2017	10.8	6.72
10/5/2017	1	1
10/6/2017	2	2
10/7/2017	7.1	6.72
10/8/2017	6	6
10/10/2017	0.8	0.8
10/11/2017	13.6	6.72
10/13/2017	1	1
10/14/2017	17.2	6.72
10/15/2017	5.8	5.8
10/23/2017	6.2	6.2
10/24/2017	0.8	0.8
10/26/2017	0.6	0.6
10/27/2017	1.8	1.8
10/28/2017	7.4	6.72
10/29/2017	0.4	0.4
10/30/2017	1	1
10/31/2017	1	1
11/1/2017	10.4	6.72
11/2/2017	20.8	6.72
11/4/2017	2.2	2.2
11/5/2017	2.6	2.6
11/9/2017	4.4	4.4
11/12/2017	0.2	0.2
11/15/2017	4.4	4.4
11/17/2017	5.8	5.8
11/18/2017	3	3
11/19/2017	1	1
11/24/2017	3.4	3.4
11/30/2017	4.8	4.8
Total infiltration (mm)		431.1
Infiltration over 1,782 m^2 (m^3/yr)		768

Table J-4: 2019 Conditions

Date/Time	Total Precip (mm)	Avail mm (0.5 m)	Date/Time	Total Precip (mm)	Avail mm (0.5 m)
4/5/2019	1.8	1.8	8/6/2019	3.4	3.4
4/7/2019	3.8	3.8	8/8/2019	10	6.72
4/8/2019	2.2	2.2	8/9/2019	1	1
4/14/2019	19	6.72	8/15/2019	0.6	0.6
4/17/2019	0.8	0.8	8/17/2019	25	6.72
4/18/2019	16.2	6.72	8/21/2019	1.4	1.4
4/19/2019	24.2	6.72	8/27/2019	8.8	6.72
4/20/2019	6.8	6.72	8/29/2019	0.4	0.4
4/23/2019	10.6	6.72	9/1/2019	3.6	3.6
4/25/2019	11.8	6.72	9/2/2019	2	2
4/26/2019	5	5	9/3/2019	5.4	5.4
4/29/2019	1.8	1.8	9/6/2019	3.8	3.8
4/30/2019	7.6	6.72	9/7/2019	0.4	0.4
5/1/2019	5.4	5.4	9/19/2019	16.4	6.72
5/2/2019	13.6	6.72	9/21/2019	1.2	1.2
5/3/2019	1.6	1.6	9/22/2019	9.2	6.72
5/9/2019	25.8	6.72	9/23/2019	0.4	0.4
5/10/2019	0.6	0.6	9/25/2019	1.6	1.6
5/11/2019	0.4	0.4	9/26/2019	4	4
5/12/2019	10.6	6.72	9/27/2019	5.4	5.4
5/13/2019	6.8	6.72	9/28/2019	2.4	2.4
5/16/2019	3.2	3.2	9/30/2019	7	6.72
5/19/2019	4.6	4.6	10/1/2019	11.6	6.72
5/23/2019	3.4	3.4	10/2/2019	0.4	0.4
5/24/2019	1	1	10/3/2019	1.4	1.4
5/25/2019	5.8	5.8	10/5/2019	0.4	0.4
5/27/2019	11	6.72	10/11/2019	3.4	3.4
5/28/2019	4.2	4.2	10/12/2019	2.2	2.2
5/31/2019	10.2	6.72	10/15/2019	10.4	6.72
6/1/2019	7.2	6.72	10/16/2019	13.2	6.72
6/4/2019	5	5	10/21/2019	6.6	6.6
6/5/2019	18.4	6.72	10/22/2019	5	5
6/9/2019	3.6	3.6	10/26/2019	30.2	6.72
6/10/2019	18.6	6.72	10/27/2019	4	4
6/12/2019	4	4	10/30/2019	21	6.72
6/13/2019	9	6.72	10/31/2019	21	6.72
6/14/2019	0.6	0.6	11/2/2019	2.4	2.4
6/15/2019	3	3	11/3/2019	1	1
6/20/2019	7	6.72	11/6/2019	6	6
6/24/2019	18.4	6.72	11/10/2019	1	1
6/25/2019	5	5	11/11/2019	8	6.72
6/26/2019	3.2	3.2	11/12/2019	4	4
6/28/2019	2.6	2.6	11/13/2019	6	6
7/5/2019	51	6.72	11/14/2019	1	1
7/10/2019	0.8	0.8	11/17/2019	1	1
7/11/2019	1.2	1.2	11/18/2019	5	5
7/13/2019	1.2	1.2	11/21/2019	4.2	4.2
7/15/2019	8.8	6.72	11/25/2019	1.2	1.2
7/16/2019	2	2	11/27/2019	9.4	6.72
7/20/2019	1	1	Total infiltration (mm)		410
7/29/2019	2.8	2.8	Infiltration over 1,782 sq m (m3/yr)		705

Installation of New Services
4 Campbell Drive
Uxbridge, Ontario
L9P 1S4

Geotechnical Investigation Report

Oak Valley Health
Augst 7, 2024
02310769.002

ENGLOBE

Geotechnical Investigation Report

LICENSED PROFESSIONAL ENGINEER
A.S.
A. SOBAHAN
100184282
2024-08-12
PROVINCE OF ONTARIO

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Reviewed by:

Michael Tanos, P.Eng.
Technical Director

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Senior Geotechnical Engineer	Michael Tanos, P.Eng.
Drafter	Kamal Chawla

Revisions and publications log

REVISION No.	DATE	DESCRIPTION

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Englobe Corp.'s subcontractors who have carried out on-site or laboratory work are duly assessed according to the purchase procedure of our quality system. For further information, please contact your project manager."

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ENCLOSURES

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Appendices

1 Introduction

Englobe Corp. (Englobe) was retained by Oak Valley Health to conduct a geotechnical investigation for the proposed underground services at 4 Campbell Drive, in the Township of Uxbridge. The general location of the site is presented on Figure 1.

This report encompasses the results of the geotechnical investigation conducted for the proposed development site to determine the prevailing subsurface soil and groundwater conditions, and provide pertinent geotechnical engineering design advice and recommendations for the installation of underground services (i.e. watermain, sanitary and storm sewer), retaining wall, earthquake and earth pressure design parameters, storm water management pond design, infiltration rate and pavement design. In addition, comments are also included on pertinent construction aspects including excavation, backfill and ground water control.

Terraprobe (current Englobe) has previously completed several geotechnical investigation reports at the site (File No.1-19-0022-01, dated March 22, 2019, and File No.1-19-0022-02, dated November 29, 2019). Recently, Englobe also completed geotechnical investigation for the proposed building addition (refer to File No.02310769.000, dated February 4,2024).

2 Site and Project Description

The site is located on the northwest corner of Campbell Drive and Toronto Street South, in the Township of Uxbridge. The municipal address of the site is 4 Campbell Drive, Uxbridge, Ontario. The project site is currently occupied by a two (2) storey brick building (Uxbridge Cottage Hospital), a two (2) storey Health Centre building with associated parking lots, driveways/access routes, and landscaped areas.

It is proposed to demolish the existing east building and construct the new parking lots, retaining wall and install new underground services as well as storm water management pond.

3 Investigation Procedure

The field investigation was conducted on June 17 to 20, 2024 and consisted of drilling and sampling a total of seventeen (17) boreholes in the vicinity of the proposed development and extended to depths varying from about 5.2 to 8.2 m below existing grade. The boreholes details are provided as follows:

- Advance eleven (11) boreholes (BH24-1 to 24-11) within/in the vicinity of the proposed underground services extending to depths varying from about 6.7 to 8.2 m below grade,
- Advance four (4) boreholes (BH24-12 to 24-15) within/in the vicinity of the proposed SWM pond extending to about 6.7 m depth below grade, and
- Advance two (2) boreholes (BH24-16 and 24-17) along the alignment of the proposed retaining wall extending to about 5 .2 m depth below grade.

The boreholes were staked in the field by Englobe in consultation with the client. Various utility locates agencies, including a private locator, were contacted to locate the locatable underground public and private utility lines and clear the borehole locations prior to drilling. The approximate borehole locations are shown on enclosed Borehole Location Plan (Figures 2A, 2B and 2C).

The borehole ground surface elevations were surveyed by Englobe using a Trimble R10 GNSS System. The Trimble R10 system uses the Global Navigation Satellite System and the Can-Net reference system to determine target location and elevation. The Trimble R10 system is reported to have an accuracy of up to 10 mm horizontally and up to 30 mm vertically.

The borings were advanced by a specialist drilling contractor using a continuous flight power auger machine (truck-mounted) with solid stem augers and were sampled at 0.75 m interval (upper 3.0 m depth) and 1.5 m interval (below 3.0 m depth below grade) with a conventional 50 mm diameter split barrel samplers when the Standard Penetration Test (SPT) was carried out (ASTM D1586). The results of these Penetration Tests are reported as “N” values on the enclosed Borehole Logs at corresponding depths.

All field work (drilling, sampling, and testing) was observed and recorded by a member of Englobe’s field engineering staff, who logged the borings and examined the soil samples as they were obtained. All samples obtained during the field investigation were sealed into clean plastic jars and transported to our testing laboratory for detailed inspection and testing. All borehole soil samples were examined (visual and tactile) in detail by a geotechnical engineer and classified according to visual and index properties. Laboratory tests consisted of water content determination on all samples, and a Sieve and Hydrometer analysis test on five (5) selected native soil samples (Borehole 24-1, Sample 3; Borehole 24-6, Sample 4; Borehole 24-8, Sample 3; Borehole 24-12, Sample 4; Borehole 24-15, Sample 3 and Borehole 24-16, Sample 3). The laboratory testing results of individual soil samples are plotted on the enclosed Borehole Logs at respective sampling depths, and the results of the Sieve and Hydrometer analysis are appended and summarized in Section 4.2 of this report.

Groundwater levels were measured in the boreholes upon completion of drilling. Monitoring wells comprising of 50-mm diameter PVC tubing was installed in selected boreholes (Boreholes 24-1 to 24-13 and 24-15) to facilitate groundwater level monitoring. The results of groundwater monitoring are presented in Section 4.3 of this report. Water levels in the monitoring wells were measured on July 3, 2024, and is noted on the enclosed Borehole Logs. The results of ground water monitoring are presented in Section 4.3 of this report.

4 Subsurface Conditions

The specific soil conditions encountered at each borehole location are described in greater detail on the Borehole Logs, with a summary of the general subsurface soil conditions outlined below. This summary is intended to correlate this data to assist in the interpretation of the subsurface conditions encountered at the site.

It should be noted that the subsurface conditions are confirmed at the borehole locations only and may vary between and beyond the borehole locations. The boundaries between the various strata as shown in the logs are based on non-continuous sampling. These boundaries represent an inferred transition between the various strata, rather than a precise plane of geologic change.

4.1 Stratigraphy

The following stratigraphy is based on the borehole findings, as well as the geotechnical laboratory testing conducted on selected representative soil samples. The summary provided below is for general guidance only. Detailed depths and elevations are given in the following subsections and appended borehole logs.

4.1.1 Surficial Layers

A surficial topsoil layer (about 100 to 300 mm thick) was encountered in Boreholes 24-3, 24-5, 24-7 and 24-9 to 24-16. The topsoil was noted to be dark brown to black in colour and predominantly consisted of a silt matrix with organic presence.

A layer of asphaltic concrete (about 90 to 150 mm thick) was encountered in Boreholes 24-1, 24-2, 24-4, 24-6, 24-8 and 24-17) at the ground surface which was underlain by an aggregate layer (about 40 to 310 mm thick). The aggregate material (comprising sand and gravel) was noted to be typically in a compact and damp condition.

The above noted pavement structure component and topsoil thicknesses were measured from the borings and are approximate and may vary between and beyond the boreholes. The topsoil thickness noted on the Borehole Logs refers to the distinct topsoil layer present at the borehole location, however, organic inclusions extended deeper than the topsoil thickness layer noted on the Borehole Logs. The topsoil thickness to be removed/stripped for the site development may differ from the topsoil thickness noted on the Borehole Logs. The reported thickness data may vary between and beyond the borehole locations. This information is not sufficient for estimating topsoil/pavement component quantities and/or associated costs. Consideration should be given to conduct shallow test pit investigation/coring to obtain accurate thickness information of the topsoil/pavement structure.

4.1.2 Earth Fill

A zone of earth fill was encountered in all boreholes (except Boreholes 24-10 and 24-11) beneath the topsoil layer/pavement structure and extended to depths varying from about 0.8 m (boreholes 24-1, 24-3, 24-4, 24-6, 24-9, 24-13, 24-15, 24-16 and 24-17) to about 2.6 m (Borehole 24-5) below existing grade. The earth fill materials predominantly consisted of sandy silt/sand with trace to some silt/silty sand with trace amounts of clay and gravel as well as organics.

The Standard Penetration Test results (N Values) obtained from the earth fill materials varied from 3 to 26 blows per 300 mm of penetration, indicating a very loose compact relative density. Measured moisture contents of the earth fill materials generally ranged from 4 to 22 percent by weight, indicating a moist to locally wet condition (at Borehole 24-5).

4.1.3 Native Soil

Undisturbed native soil was encountered in all boreholes beneath the zone of earth fill material and extended to the full depth of investigation (up to maximum about 8.2 m depth below existing grade).

Silt with trace to some clay and trace to some sand was encountered in all boreholes (except Boreholes 24-11, 24-12, 24-14 and 24-15) at depts varying from about 0.8 depth (Boreholes 24-1, 24-3, 24-4, 24-16 and 24-17) to 4.6 m (Borehole 24-10) and extended to depths varying from about 4.6 m (Boreholes 24-13) to 8.2 m (Borehole 24-6) below existing grade.

Sandy silt with trace amount of clay was encountered in Boreholes 24-6 and 24-15 at about 0.8 m depth and extended to depths varying from about1.5 m (Borehole 24-6) to 3.0 m (Borehole 24-15) below existing grade.

The Standard Penetration Test results (N Values) obtained from the native silt/sandy silt soils varied from 9 to 65 blows per 300 mm of penetration, indicating a loose to very dense (typically compact) relative density.

Measured moisture contents of the native silt/sandy silt soils ranged from 10 to 25 percent by weight, indicating a moist to wet condition.

Clayey silt with trace amounts sand was encountered in Borehole 24-8 at about 1.5 m depth and extended to about 2.3 m depth below existing grade.

The Standard Penetration Test results (N Values) obtained from the native clayey silt soil was 10 blows per 300 mm of penetration, indicating a stiff consistency. Measured moisture contents of the native clayey silt soil were 20 percent by weight, indicating a moist condition.

Sand with trace to some silt/silty sand with trace to some gravel and trace amounts of clay was encountered in Boreholes 24-9 to 24-15 at depts varying from about 0.2 m (Borehole 24-11) to 4.6 m (Borehole 24-13) and extended to depths varying from about 1.8 m (Boreholes 24-9) to 6.7 m (full depth of investigation, Boreholes 24-10 to 24-15) below existing grade.

Sand and gravel with trace amounts silt was encountered in Borehole 24-13 at about 0.8 m depth and extended to about 2.3 m depth below existing grade.

The Standard Penetration Test results (N Values) obtained from the native sand/silty sand/sand and gravel soils varied from 5 to 39 blows per 300 mm of penetration, indicating a loose to dense (typically compact) relative density. Measured moisture contents of the native sand/silty sand/sand and gravel soils ranged from 5 to 27 percent by weight, indicating a moist to wet condition.

4.2 Geotechnical Laboratory Test Results

The geotechnical laboratory testing consisted of natural water content determination for all samples, while a Sieve and Hydrometer analysis were conducted on selected native soil samples. The test results are plotted on the enclosed Borehole Logs at respective sampling depths. The results (graphs) of the Sieve and Hydrometer (grain size) analysis are appended, and a summary of these results are presented as follows:

Borehole No.	Sampling Depth below Grade (m)	Percentage (by mass)				Descriptions (MIT)
		Gravel	Sand	Silt	Clay	
Borehole 24-1, Sample 3	1.8	0	16	68	16	SILT, some sand, some clay
Borehole 24-6, Sample 4	2.6	0	15	70	15	SILT, some sand, some clay
Borehole 24-8, Sample 3	1.8	0	7	67	26	CLAYEY SILT, trace sand
Borehole 24-12, Sample 4	2.6	1	88	10	1	SAND, some silt, trace clay, trace gravel
Borehole 24-15, Sample 3	1.8	5	26	59	10	SANDY SILT, some clay, trace gravel
Borehole 24-16, Sample 3	1.8	0	30	66	4	SANDY SILT, trace gravel

4.3 Groundwater

Observations pertaining to the depth of caving were made in boreholes immediately after completion of drilling and are noted on the enclosed Borehole Logs. Monitoring wells were installed in selected boreholes (Boreholes 24-1 to 24-13 and 24-15) to facilitate groundwater level monitoring. Water levels in the monitoring wells were measured on July 3, 2024, and are noted on the enclosed Borehole Logs. A summary of these observations is provided as follows:

Borehole No.	Depth of Boring Below Grade (m)	Depth to Cave Upon Completion of DRILLING Strata Screened (m)	Water Level Depth During Drilling (m)	Water Level Depth /Elevation in the Monitoring Wells on July 3,2024 m)
BH24-1	6.7	Open	4.9	1.7/274.9
BH24-2	6.7	Open	5.8	2.5 / 274.8
BH24-3	6.7	5.3	5.2	2.5/274.4
BH24-4	6.7	5.4	5.4	2.4 /274.9
BH24-5	6.7	5.5	4.6	2.5/274.7
BH24-6	8.2	6.7	3.0	2.1 / 274.8
BH24-7	6.7	3.0	Dry	1.4/276.2
BH24-8	6.7	Open	4.6	2.3 / 275.7
BH24-9	6.7	Open	1.5	2.0/273.9
BH24-10	6.7	3.0	1.5	1.4/274.7
BH24-11	6.7	4.9	2.3	1.8/274.0
BH24-12	6.7	1.5	1.5	1.7/274.0
BH24-13	6.7	3.0	2.1	1.6/275.1
BH24-14	6.7	1.5	1.5	NM
BH24-15	6.7	4.0	2.7	1.7/275.9
BH24-16	5.2	Open	Dry	NM
BH24-17	5.2	Open	Dry	NM

NM =No Monitoring Installed

Water levels noted above may fluctuate seasonally depending upon the amount of precipitation and surface runoff.

5

5 Discussion and Recommendations

The following discussion and recommendations are based on the factual data obtained from this investigation and are intended for the use of the owner and the design engineer. Contractors bidding or providing services on this project should review the factual data and determine their own conclusions regarding construction methods and scheduling.

This report is provided on the basis of these terms of reference and on the assumption that the design features relevant to the geotechnical analyses will be in accordance with applicable codes, standards and guidelines of practice. The Ontario Building Code may require additional considerations beyond the recommendations provided in this report and must be followed. If there are any changes to the site development features or there is any additional information relevant to the interpretations made of the subsurface information with respect to the geotechnical analyses or other recommendations, then Englobe should be retained to review the implications of these changes with respect to the contents of this report.

5.1 Underground Services

The project involves the installation of underground services (installation of sanitary and storm sewer lines as well as extension of water line connections). Refer to the attached site servicing plan (prepared by LEA Consulting, Project No. 24153, dated Jan 17, 2024, Drawing No. C-02) for details (Appendix C).

Eleven (11) boreholes (Boreholes 24-1 to 24-11) were advanced in the vicinity of the proposed underground services extending to depths varying from about 6.7 to 8.2 m below existing grade. The boreholes encountered a zone of earth fill beneath the surficial topsoil layer/pavement structure extending to depths varying from about 0.8 to 2.6 m below existing grade. The earth fill materials were underlain by undisturbed native soil deposit which extended to the full depth of investigation (up to about 8.2 depth below grade).

Ground surface elevations at borehole locations vary from 275.9 to 278.0 m. Based on the site servicing plan, the proposed sewer invert elevations vary from 274.4 to 276.0 m. Therefore, earth fill/undisturbed native soil subgrade is expected at the proposed invert depths at the borehole locations.

The existing earth fill materials were not suitable to support the proposed buried services. The undisturbed native soil deposit and approved fill material will be suitable for support of buried services on conventional well graded granular base material. Where disturbance of the trench base is likely to occur due to ground water seepage or construction traffic, the disturbed soils should be subexcavated and replaced with suitably compacted granular fill. The subgrade should be inspected by a geotechnical engineer during construction.

5.2 Retaining Wall

As noted before, two (2) boreholes (Boreholes 24-16 and 24-17) were advanced along the alignment of the proposed reinforced concrete retaining wall. These boreholes encountered earth fill materials beneath the surficial topsoil layer/pavement structure and extended to about 0.8 depth below grade. The earth fill materials were underlain by undisturbed native soils deposit and extended to the full depth of investigation (up to about 5.2 m depth below existing grade).

Based on the borehole data and preliminary wall design information, the wall foundation subgrade would consist of undisturbed native soils silt with trace to some sand and trace clay of a compact relative density. A nominal net geotechnical reaction of 150 kPa (Serviceability Limit States, SLS) and a factored geotechnical resistance of 225 kPa (Ultimate Limit States, ULS) may be used for the design of the retaining wall foundation supported on the underlying competent undisturbed native soils.

It is recommended that the footing base be evaluated by a qualified geotechnical engineer to ensure that the founding soils exposed at the excavation base are consistent with the design bearing pressure intended by the geotechnical engineer. The subgrade should be cleaned of all deleterious materials such as topsoil, fill, softened, disturbed or caved materials, as well as any standing water. If construction proceeds during freezing weather conditions, adequate temporary frost protection for foundation subgrade must be provided.

The following general recommendations are provided for the wall design/construction:

- The retaining wall should be provided with a positive drainage system comprising free draining backfill zone and subdrain with a positive outlet to prevent the formation of hydrostatic pressure.

- The wall should be designed and constructed as per recommendations noted above and provided with free drainage backfill and positive drainage behind the wall.

- The foundation subgrade should be inspected by a qualified geotechnical engineer to ensure that the founding soils exposed at the excavation base are consistent with the design bearing pressure intended by the geotechnical engineer. Periodic site inspections will be required to confirm that the wall construction is completed in general conformance to the project recommendations.

- Any new footings adjacent to existing foundations must be located at the same level as the existing footings or below an imaginary line extending up from the edge of the existing footings at an inclination of 45 degrees.

- Heavy compaction equipment should not be used behind the wall within a lateral distance equal to the height of fill above the wall footing, in order to minimize deflection or possible damage to the wall. An appropriate light compaction equipment such as jumping jack, plate tamper, smaller walk-behind roller, etc., should be used for compaction close to the wall.

- A safety fence/barrier should be installed along the top of the retaining wall as per Ontario Building Code specifications (as applicable).

- The wall construction should be conducted under the supervision of the review engineer to ensure it is constructed in general conformance with the design details/specifications.

- A global slope stability analysis of the retaining wall system must be carried out.

  It should be noted that the mobilization of the active earth pressure behind the wall will require an outward deflection of up to 0.5 percent of the wall height. The effect of this deflection should be allowed for the design of the wall and any adjacent or connected structures. The earth pressure design parameters are provided in Section 5.5 of this report.

5.3 Storm Water Management (SWM) Pond

Based on the site servicing plan, the proposed Storm Water Management (SWM) Pond would be located in the west portion of the site. Four (4) boreholes (Boreholes 24 -12 to 24-15) were advanced in the vicinity of the proposed SWM pond footprint. The boreholes encountered a surficial topsoil layer underlain by a zone of fill material extending to depths varying from of about 0.8 to 1.5 m below existing grade. The fill material was underlain by undisturbed native soil deposit and extended to the full depth of investigation (about 6.7 m depth below grade).

The ground surface elevations at the borehole locations varied from about 275.7 to 277.8. The design bottom/invert elevation of pond would be set at about 274.80 m. The borehole data suggests that the pond base and side slopes are expected to predominantly consist of earth fill and undisturbed native soil. The result of the sieve and hydrometer analysis conducted on two (2) selected soil samples obtained from the boreholes (Borehole 24-12, Sample 4 and Borehole 24-15, Sample 3) indicated that the soil contains 10 to 59 percent silt, 1 to 10 percent clay, 26 to 88 percent sand and 1 to 5 percent gravel particles by weight. Based on these soil gradations, the coefficient of permeability (k) of these native soil deposit is estimated to be on the order of 10^{-3} to 10^{-6} cm/sec.

Water levels varied from about 1.5 to 2.7 m and depth to cave varied from about 1.5 to 4.0 m below grade upon completion of drilling. The measured ground water level depth in the Monitoring Wells (installed in Boreholes 24-12, 24-13 and 24-15) varied from about 1.6 to 1.7 m (Elev.274.0 to 275.9 m) below grade on July 3,2024. The above data indicate that the pond invert level will be set higher, to about 1.1 m higher than the highest ground water level measures at the pond location.

Borehole data indicate that the pond footprint (base and sides) would comprise silty sand/sand and gravel/sand with trace to some silt/sandy silt deposit, therefore ground water seepage is expected into the pond. The amount of seepage/discharge would depend upon the depth of excavation and prevailing ground water level in addition to the variability of the soil composition in the area.

Typically, a separation of 1.5 m is desired between the pond invert and the ground water level to minimize impact of the SWP pond water on the ground water. Where such separation cannot be achieved due to site grading considerations and the pond design requirements are such that the groundwater influx/out-flux is not desired then provisions are generally made to incorporate a pond liner to help achieve this separation.

Based on the subsurface soils conditions encountered in the boreholes, the recommended preliminary stable slope inclination for the side slope is 4 horiz. to 1 vert. above water level and 5 horiz. to 1 vert. below water level. A detailed pond slope stability analysis should be carried out once the design details of the SWM ponds are finalized. It must be noted that regulatory agencies may also have specific requirements with respect to pond design (including side slopes) in addition to the slope considerations noted above.

5.3.1 Earth Berm, Liner and Pond Slope Surface Treatment

The final pond design grades will require an earth-berm and/or a liner. The earth fill material used for the berm and liner construction should be of low permeability and free of organic/topsoil. It should consist of at least 15 percent clay and 40 percent silt size particles. Any cobbles or boulders greater than 100 mm in size should be excluded from the earth berm fill, as should any earth fill/disturbed soils containing excessive amounts of sand or silt. The approved earth fill materials should be placed in lifts not exceeding 150 mm and be compacted to a minimum of 95 percent of the SPMDD. The materials will be placed and compacted at a water content of between 2 percent dry and 3 percent wet of the optimum moisture content. In order to achieve required compaction of the berm fill at the final slope surface, consideration should be given to ‘overbuild’ the berm (minimum 1.5 m beyond the design slope surface) and cut neatly to the final design slope configuration. The subgrade area beneath berm fill and pond base (for liner) should be stripped to remove all organics, topsoil and vegetation. The exposed subgrade should be proof-rolled and inspected by a qualified geotechnical engineer to confirm the founding soil conditions. Any loose, soft or otherwise deleterious materials must be removed to their full extent and replaced with approved compacted earth fill (as specified above) under the direction of a qualified geotechnical engineer. Similarly, areas of sand/silt soils must be identified, subexcavated and replaced with compacted approved low permeability earth fill soils. The subgrade should be compacted to at least 95 percent SPMDD prior to the berm fill placement.

The final slope surface and all bare or exposed areas (where applicable) should be provided with suitable ground cover or erosion protection. The slope surface should be provided with a thin layer of topsoil (minimum 150 mm thick) and should be hydro-seeded with a grass mixture and mulch. If seeded, during the first 2 to 3 years, the surface cover of topsoil and seeding may require periodic maintenance until the vegetation becomes well established. It is recommended that erosion netting be staked on the outside slope (where applicable) for erosion protection (and inside the slope which is above the water level).

It is understood that the inside slopes of the SWM pond will likely be vegetated with aquatic vegetation species. Periodic fluctuations in the water level will make inside slopes susceptible to minor sheet and rill erosion over extended periods of exposure if these slopes remain bare and without vegetation. Occasional maintenance and repair of the inside bare slopes (and removal of accumulated sediment in the base) will be required. A lining of the inside slopes would reduce the amount of maintenance. The lining may consist of rip-rap or local field stones.

It is recommended that any piping or trenching in the area of the pond should be provided with seepage cut off collars (clay plugs, concrete plugs, or other barriers) to protect against water seepage through the pipe bedding and backfill.

The liner may consist of a natural soil material (such as clay or clayey silt) or a synthetic membrane liner (such as a High Density Polyethylene, Geo-synthetic Clay Liner, or PVC). The following considerations may be useful for the selection liner:

- Low permeability clayey silt materials may be available locally for the construction of the liner,
- A clay liner is readily constructed using locally available construction equipment and manpower,
- A synthetic liner requires more elaborate design and construction considerations with respect to fabrication and protection of the completed liner.

However, a synthetic liner would perform satisfactorily and could be considered if a suitable and sufficient clay source were not available.

It is recommended that the minimum liner thickness (clay liner) be 1.5 m to provide required separation between the pond invert and native soil subgrade, and that the liner be inspected on an annual basis, to deal with these considerations. We note that depending upon final pond design and measured ground water levels, the liner may be subject to uplift, therefore, provisions for temporary dewatering for pond construction and uplift resistance may be required and should be assessed.

The liner must be constructed of low permeability materials (clayey silt or clay) in order to perform adequately and to provide a liner bulk permeability on the order of 10^{-6} to10^{-7} cm/s. The liner material should consist of clean mineral soil. The grain size distribution of the liner material must conform to the following:

- no particle greater than 50 mm dimension
- not greater than 15 percent of the material larger than 4.8 mm (No. 4 sieve)
- minimum of 40 percent of the material finer than 0.08 mm (i.e., passing No. 200 sieve)
- minimum 15 percent finer than 0.002 mm (clay size)
- ! not greater than 5% organic content, with no visible roots, stumps or topsoil.

A strict control and monitoring of the liner material must be maintained to collect samples to verify its composition based on laboratory test results and to identify any variation in the material. The liner material must be placed at water contents 2 to 4 percent wet of the optimum moisture content. This is required to ensure that the material is compacted to a homogenous mass and does not remain as distinct "clods" or “clumps". The liner should be constructed in thin lifts (not exceeding 150 mm thick) and be heavily compacted to a minimum of 95 percent SPMDD using sheepsfoot roller for kneading. Liner materials should not contain any frozen soil should the construction proceeds under winter conditions. Also, adequate protection against frost penetration must be provided if required (e.g. straw bales, tarping, heating).

It is recognized that a broad range of soil materials will be suitable for a clay liner (i.e., will meet the specifications noted above). It is recommended that contractors bidding on the project provide the results of testing, to indicate the following:

- The location (source) of the clay material.
- Verification of the uniformity of the material.
- Demonstration that sufficient material is available for the project.
- Laboratory testing to demonstrate that the material meets the minimum specifications noted above.

The liner construction must be conducted under the full-time supervision of a qualified geotechnical engineer.

Alternately, a synthetic liner (HDPE, Geosynthetic Clay Liner or PVC liner) such as ‘Bentofix® Thermal Lock or equivalent’ may also be used. Manufacturer’s specifications and recommendations must be referred for the design and construction of a synthetic liner. It is recommended that the site subsurface and grading information be reviewed by the manufacturer to assess suitability of a geosynthetic liner and recommendations for installation.

The liner design must be assessed for uplift consideration depending upon the water table pond invert and permanent pool elevation as well as type of liner system.

5.3.2 Operational Considerations

The following general considerations are recommended with respect to the long-term operation and maintenance of the pond:

- A minimum operating freeboard of 0.45 m should be maintained between the high-water level and the pond rim. Overtopping of the pond, as a result of overfilling or flooding may result in pond damage. A provision of an overflow conveyance route/spillway is recommended to prevent pond overtopping, if applicable.

- The flat surface (maintenance/access roads) at the top of the pond/berm must be a minimum of 3.0 m wide to facilitate adequate compaction and to accommodate service vehicles for maintenance.
- The pond should be carefully inspected each season for including but not limited to the following:
  - (i) General condition of various components including areas of erosion, settlement, slump or deterioration.
  - (ii) Inspection of liner surface for discontinuities or holes as a result of burrowing animals, vandalism, settlement or the like.
  - (iii) Removal of unwanted vegetation (tree, seedlings and the like) from within the footprint of the pond area.

Any damaged or deteriorated areas must be repaired regularly.

It must be noted that regulatory agencies stipulate maximum pond slope inclinations and other requirements for stormwater management pond design. These specifications may include requirements above and beyond the geotechnical recommendations provided in this report.

5.4 Infiltration Rate

The proposed development may include low impact development provision for on-site storm water management. As such an assessment of soil infiltration rates will be required as a component of the storm water management design.

A total of three (3) in-situ infiltration tests (GP1 to GP3) were conducted onsite on June 19, 2024, at approximate locations are shown on Figures 2, 2A and 2B. The test was performed using a Guelph Permeameter (Model 2800). The test locations and depths were provided by the client.

The soil type, in-situ hydraulic conductivity and infiltration rate measured at the test locations/depths during the field tests are summarized as follows:

Test Location	General Soil Type	Test Depth/Elevation Below Existing Ground Level	Estimated Hydraulic Conductivity	Infiltration Rate
GP1	Sandy Silt, trace to some gravel, trace to some clay	1.6 m/275.0 m	2.1×10^{-6} cm/sec	14 mm/hr
GP2	Silty Sand, trace gravel, trace clay	1.6 m/275.3 m	8.1×10^{-4} cm/sec	46 mm/hr
GP3	Sandy Silt, trace to some gravel, trace to some clay	1.6 m/276.4 m	4.8×10^{-6} cm/sec	14 mm/hr

*Note: Based on the in-situ hydraulic conductivity test result, the infiltration rate is estimated as per TRCA Low Impact Development Stormwater Management Planning and Design Guide, Table C1.

The design infiltration rates for the site should be evaluated based on applicable safety correction factor(s), as per the above referenced document.

5.5 Lateral Earth Pressure Design Parameters

The retaining wall should be designed to resist a pressure that can be calculated based on the following equation:

$$P = K[\gamma(h-h_w) + \gamma' h_w + q] + \gamma_w h_w$$

Where:

- **P** = the horizontal pressure (kPa)
- **K** = the earth pressure coefficient
- **h** = the depth below the ground surface (m)
- **h_w** = the depth below the groundwater level (m)
- **γ** = the bulk unit weight of soil (kN/m^3)
- **γ_w** = the bulk unit weight of water (9.8 kN/m^3)
- **γ'** = the submerged unit weight of the exterior soil, ($\gamma_{sat} - \gamma_w$)
- **q** = the complete surcharge loading (kPa)

Where the wall backfill can be drained effectively to eliminate hydrostatic pressures on the wall, this equation can be simplified to:

$$P = K[\gamma h + q]$$

This equation assumes that free-draining granular backfill is used and positive drainage is provided to ensure that there is no hydrostatic pressure acting in conjunction with the earth pressure.

Resistance to sliding of retaining structures is developed by friction between the base of the footing and the soil. This friction (R) depends on the normal load on the soil contact (N) and the frictional resistance of the soil (tan ϕ) expressed as $R = N \tan \phi$. The factored geotechnical resistance at ULS is 0.8 R.

Passive earth pressure resistance is generally not considered as a resisting force against sliding for conventional retaining structure design because a structure must deflect significantly to develop the full passive resistance.

The average values for use in the design of walls subjected to unbalanced earth pressures at this site are tabulated as follow:

Parameter	Definition	Units
ϕ	angle of internal friction	degrees
γ	bulk unit weight of soil	kN/m^3
K_a	active earth pressure coefficient (Rankine)	dimensionless
K_o	at-rest earth pressure coefficient (Rankine)	dimensionless
K_p	passive earth pressure coefficient (Rankine)	dimensionless

Stratum/Parameter	γ	Φ	Ka	Ko	Kp
Earth Fill	19.0	28	0.36	0.53	2.77
Compact Granular Fill	21.0	32	0.31	0.47	3.25
Sand/Silty Sand	20.0	32	0.31	0.47	3.25
Silt/Sany Silt	20.0	32	0.31	0.47	3.25

The above values of the earth pressure coefficients are for the horizontal backfill grade behind the wall. The earth pressure coefficients for inclined grade will vary based on the inclination of the retained ground surface.

5.6 Pipe Bedding

The undisturbed native materials and engineered fill material compacted to 98 percent SPMDD will be suitable for support of buried services on conventional well graded granular base material. It is recommended that the utility subgrade should be inspected by a geotechnical engineer or its representative during construction. If disturbance of the trench base has occurred, such as due to ground water seepage, or construction traffic, the disturbed soils should be subexcavated and replaced with suitably compacted granular fill.

Granular bedding material should consist of a well graded, free draining soil such as OPSS Granular “A” or 19 mm Crusher Run Limestone or its equivalent as per the pertinent City/Region specifications. The bedding materials should be placed in 150 mm thick lifts and compacted to a minimum of 95 percent SPMDD or vibrated/tempted to a dense state in case of a clear stone bedding.

A clear stone type bedding may be considered if approved by the City/Region, however, on a silt/sand subgrade it must be utilized only in conjunction with a suitable geotextile filter (Terrafix 270R or equivalent). Without proper filtering, there may be entry of fines from the subgrade soils into the bedding. This loss of ground could result in loss of support to the pipes and possible future settlements. A geotextile is required where subgrade consists of cohesionless soils.

5.7 Pavement

It is understood that the paved areas at this site would consist of fire routes/access routes, and parking lot and driveways. Design recommendations for pavement structures are provided in this section.

5.7.1 Pavement Design

The following flexible pavement thickness design is provided in the table below.

Pavement Layers	Minimum Component Thickness		Compaction Requirements
	Parking Lot	Fire/Access Route	
Hot Mix Asphalt Surface Course OPSS 1150 HL 3	40 mm	40 mm	OPSS.MUNI 310
Hot Mix Asphalt Binder Course OPSS 1150 HL 8	50 mm	80 mm	
Base Course OPSS.MUNI 1010 Granular A	150 mm	150 mm	100 percent of SPMDD (ASTM D698)
Subbase Course OPSS.MUNI 1010 Granular B Type I	300 mm	400 mm	

Alternatively, consideration may also be given to the use of Portland cement concrete pavement where there is intense truck use and turning of transport vehicles in conjunction with the waste handling, loading docks or delivery facilities. The following table provides the minimum recommended rigid pavement structures:

Pavement Layers	Minimum Component Thickness		Compaction Requirements
	Light Duty Pavement	Heavy Duty Pavement	
Portland Cement Concrete, CAN/CSA A23.1- Class C-2	190 mm	215 mm	CAN/CSA A23.1
Subbase Course, OPSS MUNI 1010 Granular A	150 mm	150 mm	100 percent of SPMDD (ASTM D698)

It should be noted that in addition to the adherence to the above pavement design recommendations, a close control on the pavement construction process will also be required in order to obtain the desired pavement life. It is recommended that regular inspection and testing be conducted during the pavement construction to confirm material quality, thickness, and to ensure adequate compaction.

5.7.2 Drainage

Control of water is an important factor in achieving a good pavement life. The subgrade must be free of depressions and sloped (preferably at a minimum grade of 3 percent) to provide effective drainage toward subgrade drains. Grading adjacent to the pavement areas should be designed to ensure that water is not allowed to pond adjacent to the outside edges of the pavement. Continuous pavement subdrains should be provided along both sides of the driveway and internal roadways and drained into respective catch basins to facilitate drainage of the subgrade and granular materials. The subdrain should be installed in accordance with OPSD 216.021. The subdrain invert should be maintained at least 0.3 m below subgrade level. Two lengths of subdrain (each minimum of about 3 m long) should be installed at each catch basin over the parking lot area.

5.7.3 General Pavement Recommendations

HL 3 and HL 8 hot mix asphalt mixes should be designed, produced and placed in conformance with OPSS.MUNI 1150 and OPSS.MUNI 310 requirements and relevant Town's standard.

Granular A and Granular B Type I should meet the requirements of OPSS.MUNI 1010 and relevant Town's standards. Granular materials should be compacted to 100 percent SPMDD at ±2 percent of the optimum moisture content.

PG 58-28, conforming to OPSS MUNI 1101 is recommended in the HMA surface and binder courses.

Tack coat SS-1 should be applied between hot mix asphalt binder course and surface course.

5.7.4 Subgrade Preparation

All topsoil, organics and soft/loose soil should be stripped from the subgrade areas. The subgrade soil is expected to consist of engineered fill, native soils and these fine-grained soils will be weakened by construction traffic when wet; especially if site work is carried out during the periods of wet weather. An adequate granular working surface would be likely required in order to minimize subgrade disturbance and protect its integrity in wet periods.

Immediately prior to placing the granular subbase, the exposed subgrade should be compacted and then proof rolled with a heavy rubber-tired vehicle (such as a loaded gravel truck). The subgrade should be inspected for signs of rutting or displacement. Areas displaying signs of rutting or displacement should be recompacted and retested or, the material should be excavated and replaced with well-compacted clean fill. The fill material may consist of either granular material or local inorganic soils provided that its moisture content is within ±2 percent of optimum moisture content. Fill should be placed and compacted in accordance with OPSS.MUNI 501 and the subgrade should be compacted to 98 percent of SPMDD. The final subgrade surface should be sloped at least 3 percent to provide positive drainage.

5.8 Excavations and Ground Water Control

The boreholes data indicate that the earth fill materials and undisturbed native soils would be encountered in the excavations. Excavations must be carried out in accordance with the Occupational Health and Safety Act and Regulations for Construction Projects. These regulations designate four (4) broad classifications of soils to stipulate appropriate measures for excavation safety.

TYPE 1 SOIL

a. is hard, very dense and only able to be penetrated with difficulty by a small sharp object;
b. has a low natural moisture content and a high degree of internal strength;
c. has no signs of water seepage; and
d. can be excavated only by mechanical equipment.

TYPE 2 SOIL

a. is very stiff, dense and can be penetrated with moderate difficulty by a small sharp object;
b. has a low to medium natural moisture content and a medium degree of internal strength; and
c. has a damp appearance after it is excavated.

TYPE 3 SOIL

a. is stiff to firm and compact to loose in consistency or is previously-excavated soil;
b. exhibits signs of surface cracking;
c. exhibits signs of water seepage;
d. if it is dry, may run easily into a well-defined conical pile; and
e. has a low degree of internal strength

TYPE 4 SOIL

a. is soft to very soft and very loose in consistency, very sensitive and upon disturbance is significantly reduced in natural strength;
b. runs easily or flows, unless it is completely supported before excavating procedures;
c. has almost no internal strength;
d. is wet or muddy; and
e. exerts substantial fluid pressure on its supporting system.

The earth fill materials encountered in the boreholes are classified as Type 3 Soil, while the undisturbed native soil deposit would be classified as Type 3 Soil above and Type 4 Soil below prevailing groundwater level under these regulations.

Where workmen must enter excavations advanced deeper than 1.2 m, the trench walls should be suitably sloped and/or braced in accordance with the Occupational Health and Safety Act and Regulations for Construction Projects. The regulation stipulates the steepest slopes of excavation by soil type as follows:

Soil Type	Base of Slope	Steepest Slope Inclination
1	within 1.2 metres of bottom of trench	1 horizontal to 1 vertical
2	within 1.2 metres of bottom of trench	1 horizontal to 1 vertical
3	from bottom of trench	1 horizontal to 1 vertical
4	from bottom of trench	3 horizontal to 1 vertical

Minimum support system requirements for steeper excavations are stipulated in the Occupational Health and Safety Act and Regulations for Construction Projects, and include provisions for timbering, shoring and moveable trench boxes.

As noted before, the earth fill and native soils may contain larger particles that are not specifically identified in the boreholes. The size and distribution of such obstructions cannot be predicted with borings, because the borehole sampler size is insufficient to secure representative samples for particles of this size. Provision should be made in excavation contract to allocate risks associated with the time spent and equipment utilized to remove or penetrate such obstructions when encountered.

Ground water was encountered in all boreholes (except Boreholes 24-7, 24-16 and 24-17) and varied from about 1.5 to 5.8 m below grade upon completion of drilling. Depth to cave was noted in all boreholes (except Boreholes 24-1, 24-2, 24-8, 24-9, 24-16 and 24-17) and varied from about 1.5 to 6.7 m below grade upon completion of drilling. Water level measured in the monitoring wells on July 3, 2024, varied from about 1.4 to 2.5 m depth below grade. Relatively permeable cohesionless silt/sand soils encountered across the site were noted to be generally in a moist to wet condition. Therefore, free flowing ground water seepage is expected in the excavation penetrating these soils. The ground water levels may fluctuate seasonally depending upon the precipitation and surface runoff; and wet soils may be encountered to about 0.6 m higher than the water levels noted here due to capillary rise in fine cohesionless silt/sand soils.

Based on the borehole information, it is understood that the ground water seepage is anticipated in the excavation. This seepage will likely emanate from the perched ground water generally present within the earth fill and from the ground water seepage from the wet cohesionless silt/sand soils as encountered in the boreholes. The ground water seepage emanating from above the static ground water table should diminish slowly and can be controlled by continuous pumping from filtered at the base of the excavation. The amount of perched water seepage is expected to increase with the depth of excavation.

For excavations extending below the static ground water level/table and/or into the wet silt/sand deposit, and/or below the prevailing ground water level, it will be necessary to lower the ground water level and maintain it below the excavation base prior to and during the subsurface construction, in order to avoid loosening and sloughing of the base and sides. Consideration should be given to install a skim coat of lean concrete (mud-slab) in conjunction with positive groundwater control to preserve the subgrade integrity to provide support to foundations and utilities, and a working platform, as needed. In general, prior dewatering and ground water control provisions are required for excavations penetrating about 0.6 or more into the ground water table in cohesionless soils. Pumping from the sumps, in general may be effective for shallow excavations, up to about 1.0 m below the ground water level. A professional dewatering contractor should be consulted to review subsurface soil and ground water conditions to assess and recommend ground water control prevision if excavations and service inverts are to extend below the ground water table/level.

Ministry of the Environment, Conservation and Parks (MECP) has made changes to the requirement for Permit to Take Water approvals for construction related activities. Under the revised requirements, specific construction-related water-taking activities are eligible for Environmental Activity and Sector Registry (EASR). The trigger volume for EASR registration is water taking of more than 50,000 L/day. This includes the ground water that is collected in the open excavation as well as any precipitation or surface run off that enters the excavation.

5.9 Backfill

The earth fill materials containing excessive amounts of organic inclusion should not be reused as backfill in settlement sensitive areas, such as beneath the floor slabs, trench backfill and pavement areas. However, these materials may be stockpiled and reused for landscaping purposes.

The existing earth fill materials are considered suitable (with selection and sorting as required) for backfill provided the moisture content of these soils is within ±2 percent of the OMC. Any soil material with ±2 percent or higher in-situ moisture content than its OMC, could be put aside to dry or be tilled to reduce the moisture content so that it can be effectively compacted. Alternatively, materials of higher moisture content could be wasted and be replaced with imported material which can be readily compacted.

The existing earth fill soil will likely require selection and sorting to be reused as backfill. The selection and sorting must be conducted under the supervision of a geotechnical engineer. The site soils will be best compacted with a heavy sheep foot type roller.

The backfill should consist of clean earth and be placed in lifts of 150 mm thickness or less, and heavily compacted to a minimum of 95 percent SPMDD at a water content close to optimum (within 2 percent). The upper 600 mm of the pavement subgrade (at driveways outside of the basement roof deck) must be compacted to a minimum of 98 percent SPMDD.

It should be noted that the soils encountered on the site are generally not free draining and will be difficult to handle and compact should they become wetter as a result of inclement weather or seepage.

5.10 Quality Control

Excavations on this site must be shored to preserve the integrity of the surrounding properties and structures. The Ontario Building Code stipulates that engineering review of the subsurface conditions is required on a continuous basis during the installation of earth retaining structures. Englobe should be retained to provide this review, which is an integral part of the geotechnical design function as it relates to the shoring design considerations.

All foundations must be monitored by the geotechnical engineer on a continuous basis as they are constructed. The on-site review of the condition of the foundation soil as the foundations are constructed is an integral part of the geotechnical design function and is required by Section 4.2.2.2 of the Ontario Building Code 2012. If Englobe is not retained to carry out foundation evaluations during construction, then Englobe accepts no responsibility for the performance or non-performance of the foundations, even if they are ostensibly constructed in accordance with the conceptual design advice provided in this report.

Concrete for this structure will be specified in accordance with the requirements of CAN3 - CSA A23.1. Englobe maintains a CSA certified concrete laboratory and can provide concrete sampling and testing services for the project as necessary.

The requirements for fill placement on this project should be stipulated relative to SPMDD, as determined by ASTM D698. In-situ determinations of density during fill placement by Procedure Method B of ASTM D2922 are recommended to demonstrate that the contractor is achieving the specified soil density. Englobe is a CNSC licensed operator of appropriate nuclear density gauges for this work and can provide sampling and testing services for the project as necessary.

Englobe can provide thorough in house resources, quality control services for Building Envelope, Roofing, as well as Structural Steel in accordance with CSA W178, as necessary, for the Structural and Architectural quality control requirements of the project. Englobe is certified by the Canadian Welding Bureau under W178.1-1996.

6 Limitations and Risk

6.1 Procedures

This investigation has been carried out using investigation techniques and engineering analysis methods consistent with those ordinarily exercised by Englobe and other engineering practitioners, working under similar conditions and subject to the time, financial and physical constraints applicable to this project. The discussions and recommendations that have been presented are based on the factual data obtained by Englobe.

It must be recognized that there are special risks whenever engineering or related disciplines are applied to identify subsurface conditions. Even a comprehensive sampling and testing programme implemented in accordance with the most stringent level of care may fail to detect certain conditions. Englobe has assumed for the purposes of providing design parameters and advice, that the conditions that exist between sampling points are similar to those found at the sample locations. The conditions that Englobe has interpreted to exist between sampling points can differ from those that exist.

It may not be possible to drill a sufficient number of boreholes or sample and report them in a way that would provide all the subsurface information that could affect construction costs, techniques, equipment and scheduling. Contractors bidding on or undertaking work on the project should be directed to draw their own conclusions as to how the subsurface conditions may affect them, based on their own investigations and their own interpretations of the factual investigation results, cognizant of the risks implicit in the subsurface investigation activities so that they may draw their own conclusions as to how the subsurface conditions may affect them.

6.2 Changes in Site and Scope

It must also be recognized that the passage of time, natural occurrences, and direct or indirect human intervention at or near the site have the potential to alter subsurface conditions. Groundwater levels are particularly susceptible to seasonal fluctuations.

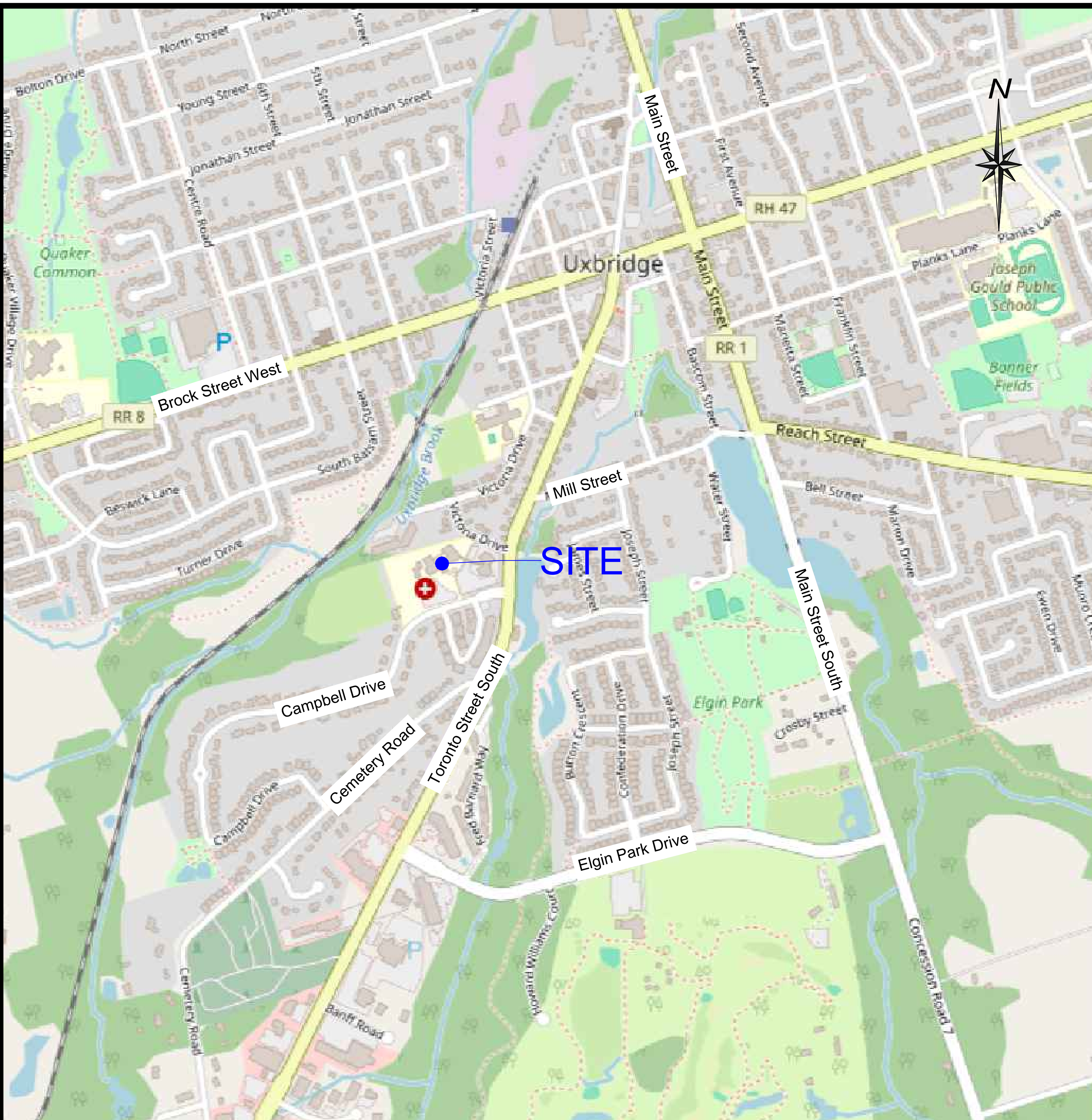
The discussion and recommendations are based on the factual data obtained from this investigation conducted at the site by Englobe and are intended for use by the owner and its retained designers in the design phase of the project. If there are changes to the project scope and development features, the interpretations made of the subsurface information, the geotechnical design parameters and comments relating to constructability issues and quality control may not be relevant or complete for the revised project. Englobe should be retained to review the implications of such changes with respect to the contents of this report.

This report was prepared for the express use of Oak Valley Health and their retained design consultants and is not for use by others. This report is copyright of Englobe Inc., and no part of this report may be reproduced by any means, in any form, without the prior written permission of Englobe Inc. and Oak Valley Health who are the authorized users.

It is recognized that the regulatory agencies in their capacities as the planning and building authorities under Provincial statutes, will make use of and rely upon this report, cognizant of the limitations thereof, both expressed and implied.

We trust the foregoing information is sufficient for your present requirements. If you have any questions, or if we can be of further assistance, please do not hesitate to contact us.

Figures



NOTES:

1-REFERENCES: © OpenStreetMap contributors (2023).

2-Not to Scale

Project

Geotechnical investigation
Proposed Services
4 Campbell Dr, Uxbridge

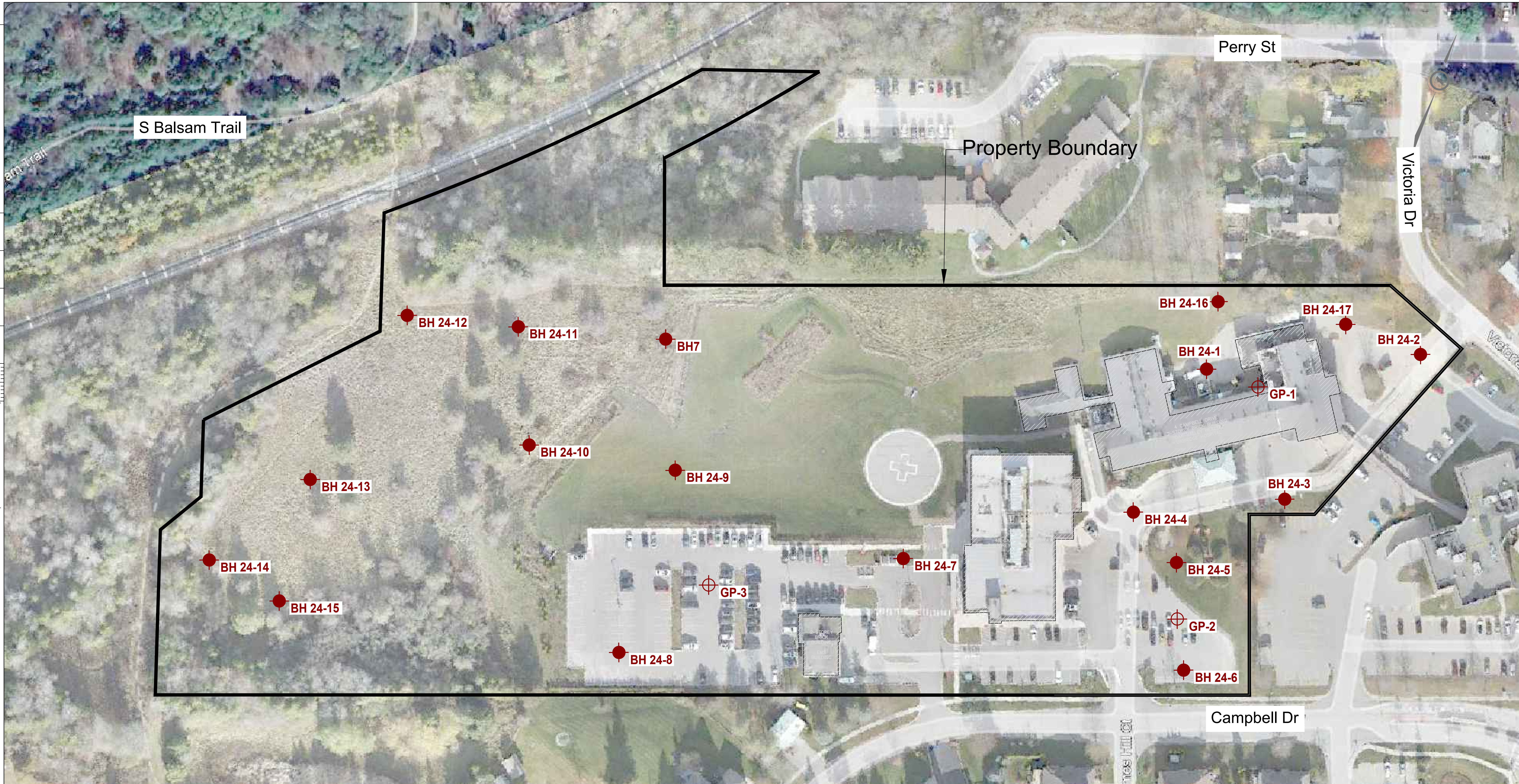
Title

Site Location Plan

ENGLOBE

Prepared	S. Abdus	Discipline	GEOTECHNICAL	Project manager	S. Abdus
Drawn	C. Kamal	Scale	N.T.S.	Sequence no.	-
Checked	S. Abdus	Date	2022/11/22		

Resp.	Project	Phase	Disc.	Type	Drawing no.	Rev.
01	02310769.000	000	-	D	1	00



LEGEND:

Approximate Borehole Location

Approximate Guelph Permeameter Location

0 10 20 30 40 50 m

SCALE 1:1250

REFERENCE

Image ©2024 Google Earth

Project

Geotechnical investigation
Proposed Services
4 Campbell Dr, Uxbridge

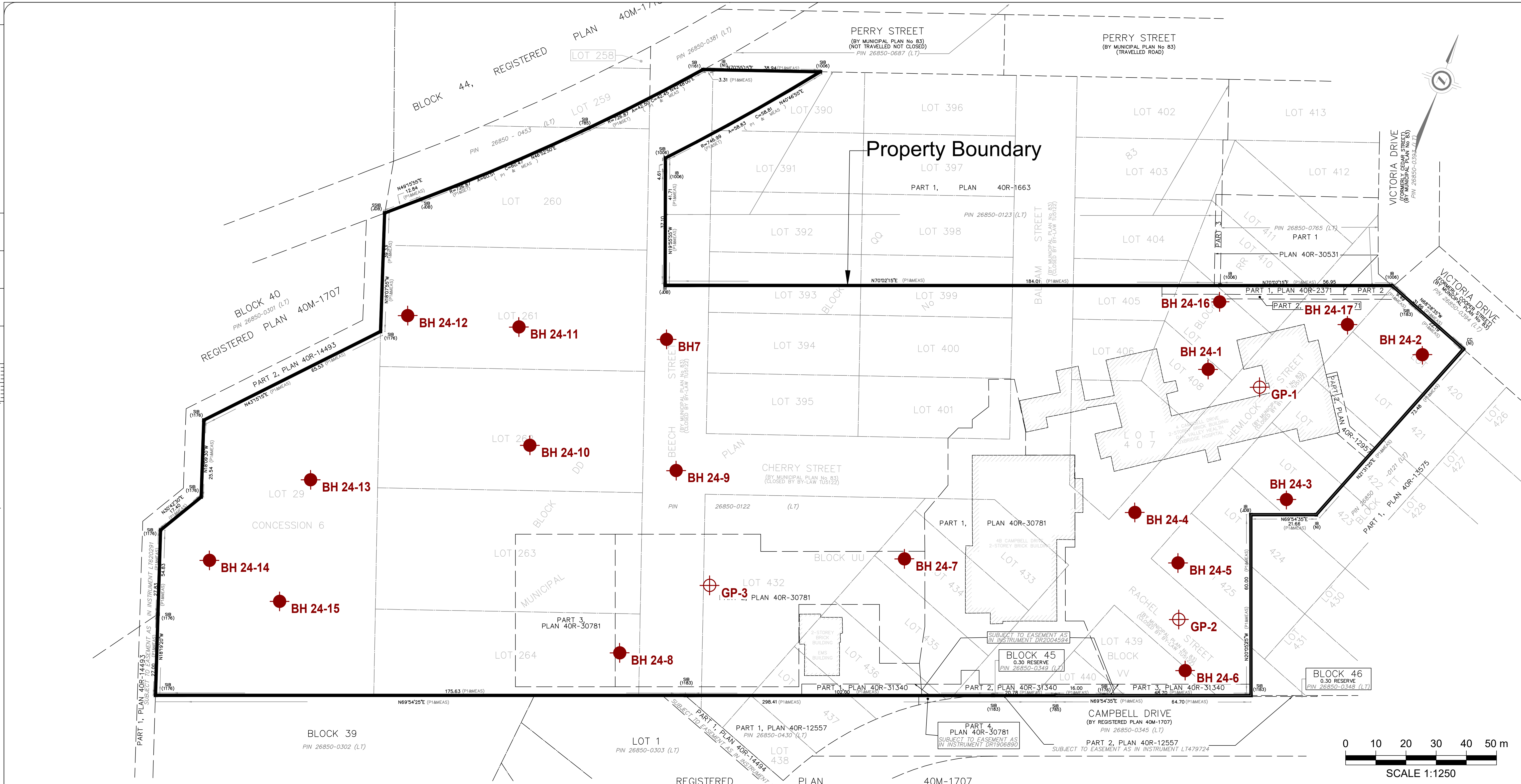
Title

Borehole Location Plan
Google Earth

ENGLOBE

Prepared	C. Kamal	Discipline	GEOTECHNICAL	Project manager	S. Abdus			
Drawn	C. Kamal	Scale	AS SHOWN	Sequence no.	--			
Checked	S. Abdus	Date	JULY 2024					
Resp.	Project	Phase	Disc.	Type	Drawing no.	Rev.		
01	02310769.002	0200	-	D	2A	00		

Y:\SHARED\CATERRAPROBE\BRAMPTON\1-PROJECT FILES\2023\02310769.002 - UXBRIDGE COMMUNITY HOSPITAL, GEO\0100 - GEO\1-DWGS\LOGS\AUTOCAD\02310769.002 FIGURES 2024-07-12.DWG



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LEGEND:

- Approximate Borehole Location
- Approximate Guelph Permeameter Location

REFERENCE:

Municipal Plan No. 83,
Township of Uxbridge
Regional Municipality of Durham
Reference No.: 23-23-669-02,
Survey Completed
Date: January 12, 2024
By: J.D.Barnes Limited

Project

Geotechnical investigation
Proposed Services
4 Campbell Dr, Uxbridge

Title

Borehole Location Plan
Existing Condition

ENGLOBE

Prepared	C. Kamal	Discipline	GEOTECHNICAL	Project manager	S. Abdus
Drawn	C. Kamal	Scale	AS SHOWN	Sequence no.	--
Checked	S. Abdus	Date	JULY 2024		

Resp.	Project	Phase	Disc.	Type	Drawing no.	Rev.
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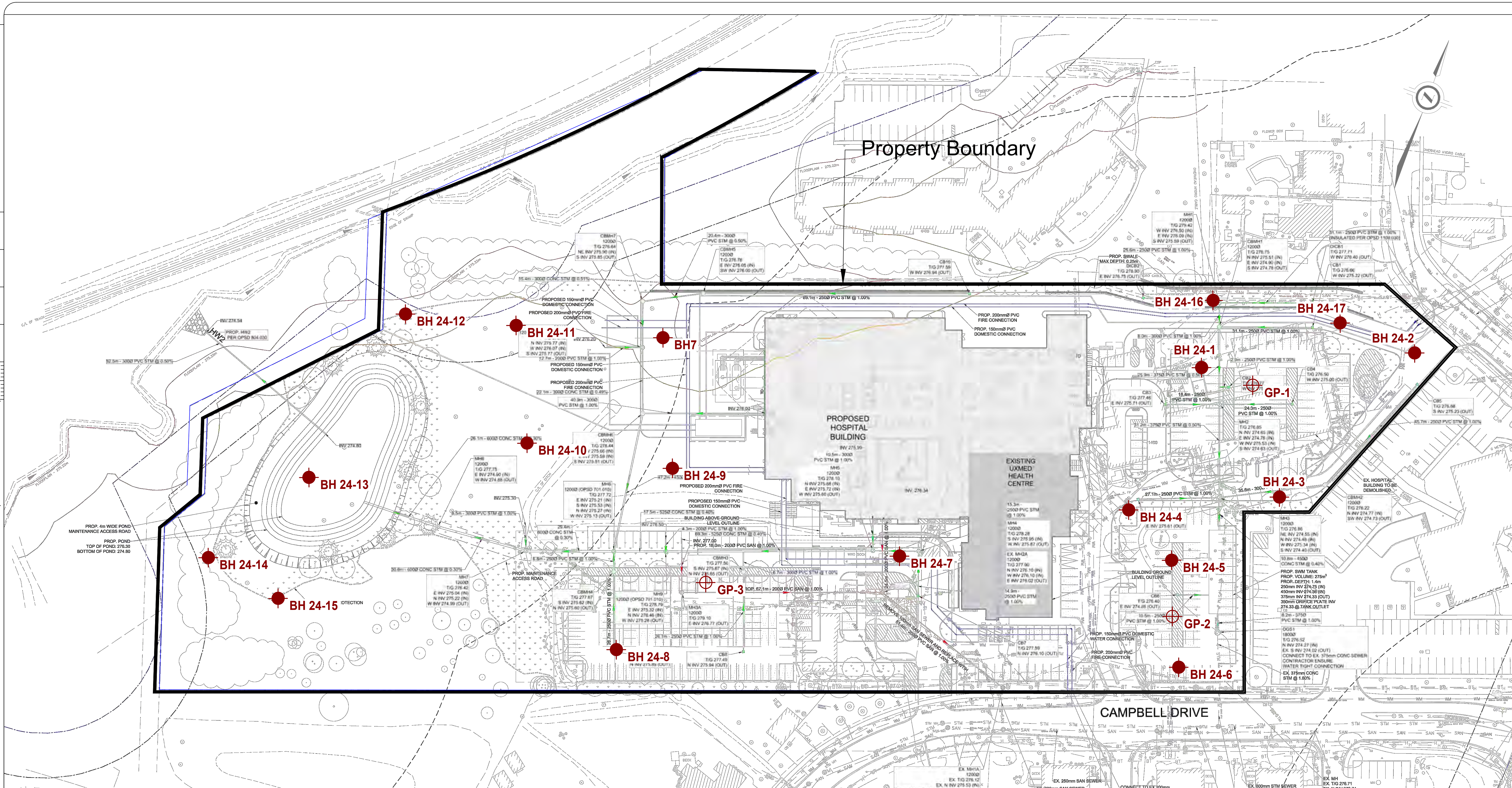

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LEGEND:

- Approximate Borehole Location
- Approximate Guelph Permeameter Location

0 10 20 30 40 50 m

SCALE 1:1250

REFERENCE:

Title: Site Servicing Plan (Final Works)
Proj. No.: 24163, Date: Jan.17, 2024
Dwg. No.: C-02, By: LEA

Project

Geotechnical investigation
Proposed Additions
4 Campbell Dr, Uxbridge

Title

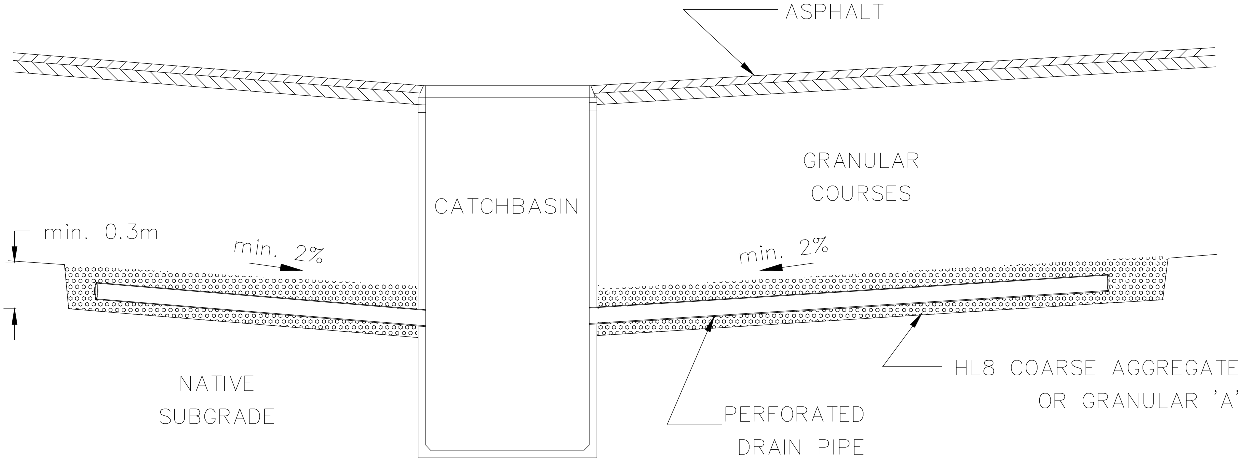
Borehole Location Plan
Site Servicing Plan

ENGLOBE

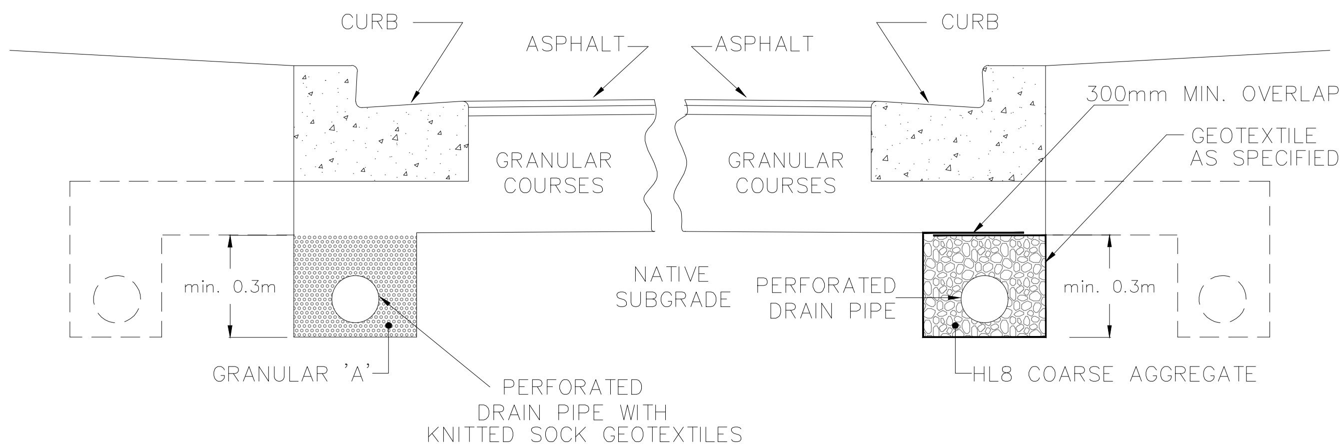
Prepared	C. Kamal	Discipline	GEOTECHNICAL	Project manager	S. Abdus
Drawn	C. Kamal	Scale	AS SHOWN	Sequence no.	--
Checked	S. Abdus	Date	JULY 2024		

Resp.	Project	Phase	Disc.	Type	Drawing no.	Rev.
01	02310769.002	0200	-	D	2C	00

Longitudinal Subdrain Connection to Catchbasin



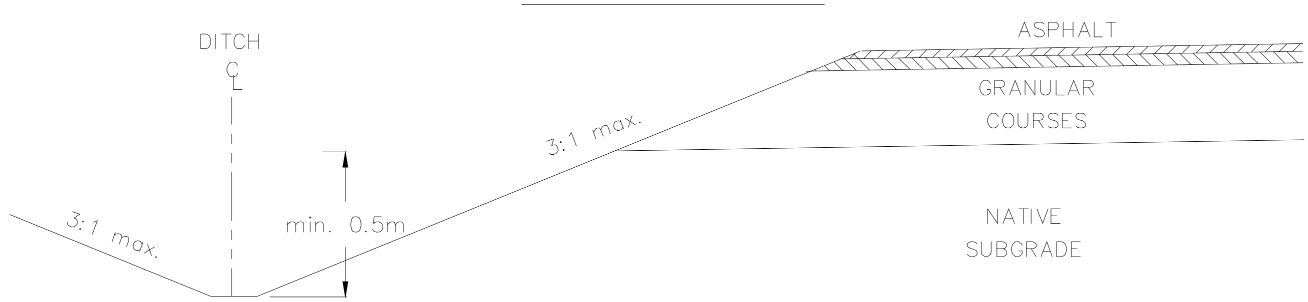
Urban Cross Sections



Unwrapped Trench

Wrapped Trench

Rural Cross Section



ENGLOBE

Title:

PAVEMENT DRAINAGE ALTERNATIVES
Figure 4

Appendix A
Borehole Logs

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ABBREVIATIONS AND TERMINOLOGY

SAMPLING METHODS	
AS	auger sample
CORE	cored sample
DP	direct push
FV	field vane
GS	grab sample
SS	split spoon
ST	shelby tube
WS	wash sample

PENETRATION RESISTANCE

Standard Penetration Test (SPT) resistance ('N' values) is defined as the number of blows by a hammer weighing 63.6 kg (140 lb.) falling freely for a distance of 0.76 m (30 in.) required to advance a standard 50 mm (2 in.) diameter split spoon sampler for a distance of 0.3 m (12 in.).

Dynamic Cone Test (DCT) resistance is defined as the number of blows by a hammer weighing 63.6 kg (140 lb.) falling freely for a distance of 0.76 m (30 in.) required to advance a conical steel point of 50 mm (2 in.) diameter and with 60° sides on 'A' size drill rods for a distance of 0.3 m (12 in.)."

COHESIONLESS SOILS

Compactness	'N' value
very loose	< 4
loose	4 – 10
compact	10 – 30
dense	30 – 50
very dense	> 50

COHESIVE SOILS

Consistency	'N' value	Undrained Shear Strength (kPa)
very soft	< 2	< 12
soft	2 – 4	12 – 25
firm	4 – 8	25 – 50
stiff	8 – 15	50 – 100
very stiff	15 – 30	100 – 200
hard	> 30	> 200

COMPOSITION

Term (e.g)	% by weight
trace silt	< 10
some silt	10 – 20
silt*y*	20 – 35
sand *and* silt	> 35

TESTS AND SYMBOLS

MH	mechanical sieve and hydrometer analysis
w, w_c	water content
w_L, LL	liquid limit
w_P, PL	plastic limit
I_P, PI	plasticity index
k	coefficient of permeability
γ	soil unit weight, bulk
G_s	specific gravity
φ'	internal friction angle
c'	effective cohesion
c_u	undrained shear strength

▽	Unstabilized water level
	1st water level measurement
	2nd water level measurement
▼	Most recent water level measurement
3.0 +	Undrained shear strength from field vane (with sensitivity)
C_c	compression index
c_v	coefficient of consolidation
m_v	coefficient of compressibility
e	void ratio

FIELD MOISTURE DESCRIPTIONS

Damp	refers to a soil sample that does not exhibit any observable pore water from field/hand inspection.
Moist	refers to a soil sample that exhibits evidence of existing pore water (e.g. sample feels cool, cohesive soil is at plastic limit) but does not have visible pore water
Wet	refers to a soil sample that has visible pore water

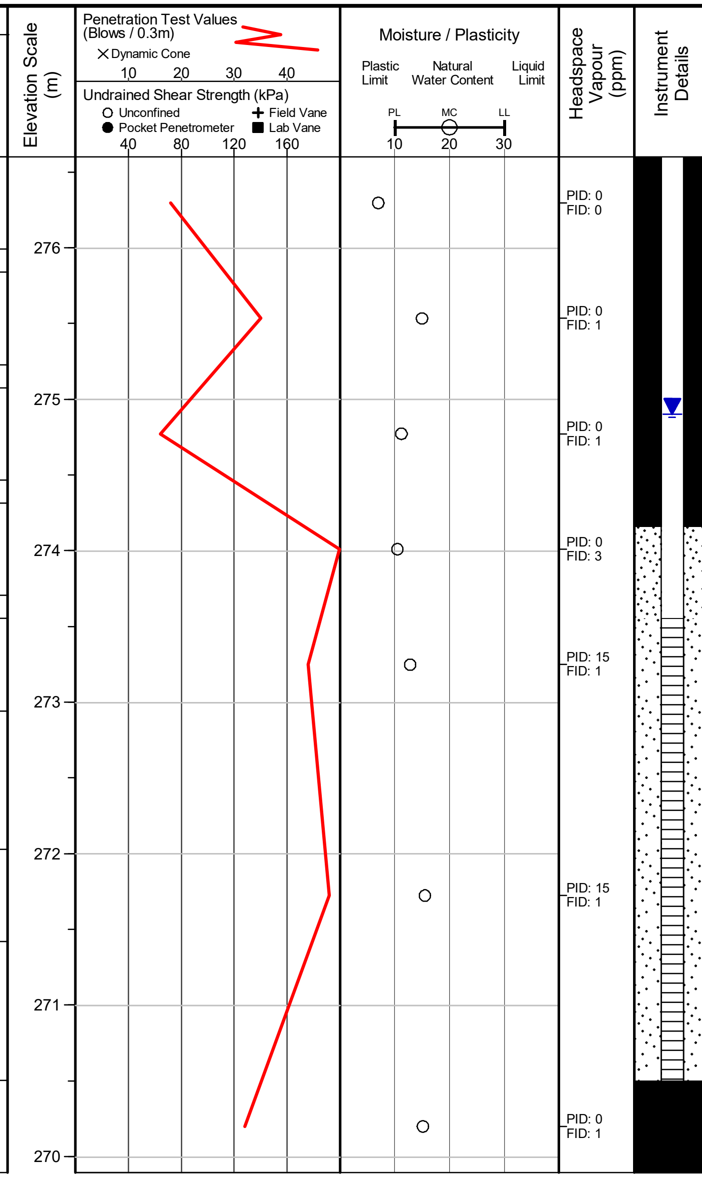
ENGLOBE

LOG OF BOREHOLE 24-1

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 18, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

Position : E: 649866, N: 4885021 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

Elev / Depth (m)	Description (SOIL PROFILE)	Sample Number	Type	SPT 'N' Value	Moisture / Plasticity (Natural Water Content)	Headspace Vapour (ppm)	Lab Data and Comments
276.6	GROUND SURFACE						
	100mm **ASPHALTIC CONCRETE**						
276.2 / 0.4	250mm **AGGREGATE**	1	SS	18		PID: 0 FID: 0	SS1 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
275.8 / 0.8	**FILL**, sandy silt, trace to some gravel, trace clay, trace organics, compact, dark brown, moist						
	SILT, trace to some clay, trace to some sand, compact to very dense, brown, moist	2	SS	35		PID: 0 FID: 1	
		3	SS	16		PID: 0 FID: 1	GR SA SI CL: 0 16 68 16
	...brownish grey below	4	SS	61		PID: 0 FID: 3	
		5	SS	44		PID: 15 FID: 1	SS5 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
	...dilatent and wet below	6	SS	48		PID: 15 FID: 1	wet sampler
269.9 / 6.7		7	SS	32		PID: 0 FID: 1	



END OF BOREHOLE

Unstabilized water level measured at 4.9 m below ground surface; borehole was open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	1.7	274.9

file: 02310769.000 bh logs.gpj

LOG OF BOREHOLE 24-2

ENGLOBE

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 17, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

Position : E: 649931, N: 4885050 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

SOIL PROFILE

Elev / Depth (m)	Description
277.3	GROUND SURFACE
	90mm **ASPHALTIC CONCRETE**
276.9 / 0.4	250mm **AGGREGATE**
	FILL, sand, trace to some silt, trace gravel, trace organics, loose to compact, dark brown, moist
275.8 / 1.5	**SILT**, trace to some clay, trace to some sand, dilatant, loose to compact, brown, wet
	...dense
270.6 / 6.7	**END OF BOREHOLE**

SAMPLES

Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
1	SS	13	PID: 0 FID: 0	
2	SS	5	PID: 0 FID: 0	SS2 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC; wet sampler
3	SS	9	PID: 0 FID: 0	
4	SS	18	PID: 0 FID: 0	SS4 Analysis: M&I, PAH, PCB, VOC
5	SS	16	PID: 0 FID: 0	SS5 Analysis: BTEX, VOC, PHC
6	SS	26	PID: 0 FID: 0	
7	SS	50	PID: 0 FID: 0	

Depth Scale (m): 0, 1, 2, 3, 4, 5, 6
Elevation Scale (m): 277, 276, 275, 274, 273, 272, 271

Penetration Test Values (Blows / 0.3m): X Dynamic Cone; 10, 20, 30, 40
Undrained Shear Strength (kPa): O Unconfined, + Field Vane, ● Pocket Penetrometer, ■ Lab Vane; 40, 80, 120, 160
Moisture / Plasticity: Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL); 10, 20, 30
Instrument Details; Unstabilized Water Level
GRAIN SIZE DISTRIBUTION (%) (MIT): GR SA SI CL

Unstabilized water level measured at 5.8 m below ground surface; borehole was open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	2.5	274.8

file: 02310769.000 bh logs.gpj

LOG OF BOREHOLE 24-3

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 17, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

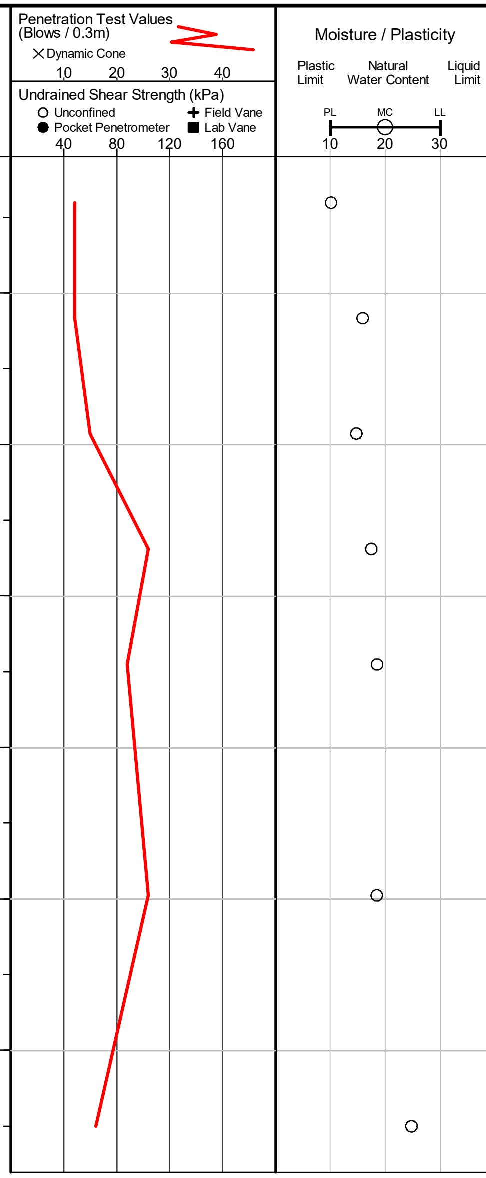
Position	: E: 649905, N: 4884989 (UTM 17T)	Elevation Datum	: Geodetic
Rig type	: Track-mounted	Drilling Method	: Solid stem augers

SOIL PROFILE

Elev Depth (m)	Description
276.9	GROUND SURFACE
	100mm **TOPSOIL**
276.1 / 0.8	**FILL**, silty sand, trace gravel, trace organics, compact, dark brown, moist
270.2 / 6.7	**SILT**, trace to some clay, trace to some sand, dilatant, compact, brown, wet ...brownish grey below

SAMPLES

Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
1	SS	12	PID: 0 FID: 0	SS1 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC, DUP#1
2	SS	12	PID: 0 FID: 0	
3	SS	15	PID: 0 FID: 0	
4	SS	26	PID: 0 FID: 0	wet sampler SS4 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
5	SS	22	PID: 0 FID: 0	
6	SS	26	PID: 0 FID: 0	
7	SS	16	PID: 0 FID: 0	



Depth Scale (m): 0 – 6; Elevation Scale (m): 276 – 271

Instrument Details; Unstabilized Water Level; GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

END OF BOREHOLE

Unstabilized water level measured at 5.2 m below ground surface; borehole caved to 5.3 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	2.5	274.4

file: 02310769.000 bh logs.gpj

LOG OF BOREHOLE 24-4

Project No. : 02310769.002	Client : Oak Valley Health	Originated by : BR
Date started : June 17, 2024	Project : Uxbridge Community Hospital	Compiled by : AS
Sheet No. : 1 of 1	Location : Uxbridge, ON	Checked by : AS

Position : E: 649860, N: 4884968 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

Elev / Depth (m)	Description	Sample Number	Type	SPT 'N' Value	Elevation Scale (m)	Headspace Vapour (ppm)	Lab Data and Comments
277.3	**GROUND SURFACE**						
	120mm **ASPHALTIC CONCRETE**						
276.9 / 0.4	240mm **AGGREGATE**	1	SS	13	277	PID: 0 FID: 0	SS1 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
276.5 / 0.8	**FILL**, silty sand, trace clay, trace gravel, trace organics, compact, dark brown, moist						
	SILT, trace to some clay, trace to some sand, dilatant, compact, brown, wet	2	SS	17	276	PID: 0 FID: 0	
		3	SS	19		PID: 0 FID: 0	
		4	SS	29	275	PID: 0 FID: 0	
	...brownish grey below	5	SS	23	274	PID: 0 FID: 0	SS5 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
		6	SS	18	273 / 272	PID: 0 FID: 0	wet sampler
270.6 / 6.7		7	SS	25	271	PID: 0 FID: 0	

Penetration Test Values (Blows / 0.3m): × Dynamic Cone; 10, 20, 30, 40
Undrained Shear Strength (kPa): ○ Unconfined, + Field Vane, ● Pocket Penetrometer, ■ Lab Vane; 40, 80, 120, 160
Moisture / Plasticity: Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL); 10, 20, 30
Instrument Details; Unstabilized Water Level
GRAIN SIZE DISTRIBUTION (%) (MIT): GR SA SI CL

END OF BOREHOLE

Wet cave at 5.4 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	2.4	274.9

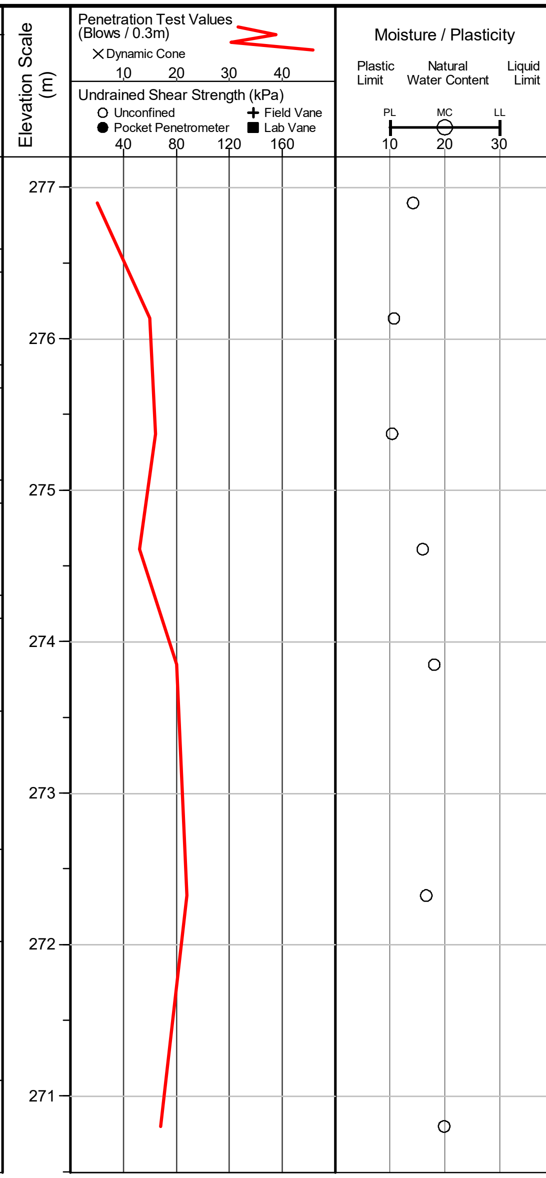
file: 02310769.000 bh logs.gpj

LOG OF BOREHOLE 24-5

Project No. : 02310769.002
Client : Oak Valley Health
Originated by : BR
Date started : June 18, 2024
Project : Uxbridge Community Hospital
Compiled by : AS
Sheet No. : 1 of 1
Location : Uxbridge, ON
Checked by : AS

Position : E: 649879, N: 4884957 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

Elev (m)	Depth (m)	Description	Sample Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
277.2	0	GROUND SURFACE					
		100mm **TOPSOIL**					
		FILL, silty sand, trace clay, trace to some gravel, trace organics, loose to compact, dark brown, moist	1	SS	5	PID: 150 FID: 1	SS1 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC, DUP#2
			2	SS	15	PID: 25 FID: 1	
			3	SS	16	PID: 30 FID: 1	
		...wet	4	SS	13	PID: 0 FID: 1	wet sampler
274.6	2.6	**SILT**, trace to some clay, trace to some sand, dilatant, compact, brown, wet					
			5	SS	20	PID: 10 FID: 0	SS5 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
		...brownish grey below	6	SS	22	PID: 10 FID: 1	
			7	SS	17	PID: 0 FID: 1	
270.5	6.7	**END OF BOREHOLE**					



Unstabilized water level measured at 4.6 m below ground surface; borehole caved to 5.5 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	2.5	274.7

LOG OF BOREHOLE 24-6

ENGLOBE

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 18, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

Position : E: 649893, N: 4884924 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

SOIL PROFILE

Elev / Depth (m)	Description
276.9 / 0	**GROUND SURFACE**
276.7 / 0.2	150mm **ASPHALTIC CONCRETE**
276.7 / 0.2	40mm **AGGREGATE**
276.4 / 0.5	250mm **TOPSOIL**
276.1 / 0.8	**FILL**, sandy silt, trace clay, trace gravel, trace organics, loose, dark brown, moist
275.4 / 1.5	**SANDY SILT**, trace clay, compact, brown, moist
	SILT, trace to some clay, trace to some sand, dilatant, compact, brown, wet
	...brownish grey below
	...very loose
	...compact
268.7 / 8.2	**END OF BOREHOLE**

SAMPLES

Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Moisture (%)	Lab Data and Comments
1	SS	6	PID: 30 FID: 0		
2	SS	16	PID: 90 FID: 0		SS2 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
3	SS	17	PID: 45 FID: 0		
4	SS	20	PID: 40 FID: 0		GR 0, SA 15, SI 70, CL 15
5	SS	14	PID: 40 FID: 0		
6	SS	21	PID: 25 FID: 0		
7	SS	1	PID: 0 FID: 0		
8	SS	15	PID: 0 FID: 0		

Depth Scale (m): 0, 1, 2, 3, 4, 5, 6, 7, 8
Elevation Scale (m): 276, 275, 274, 273, 272, 271, 270, 269

Penetration Test Values (Blows / 0.3m): × Dynamic Cone; 10, 20, 30, 40
Undrained Shear Strength (kPa): ○ Unconfined, ✚ Field Vane, ● Pocket Penetrometer, ■ Lab Vane; 40, 80, 120, 160
Moisture / Plasticity: Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL); 10, 20, 30
Instrument Details
Unstabilized Water Level
GRAIN SIZE DISTRIBUTION (%) (MIT): GR SA SI CL

Unstabilized water level measured at 3.0 m below ground surface; borehole caved to 6.7 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	2.1	274.8

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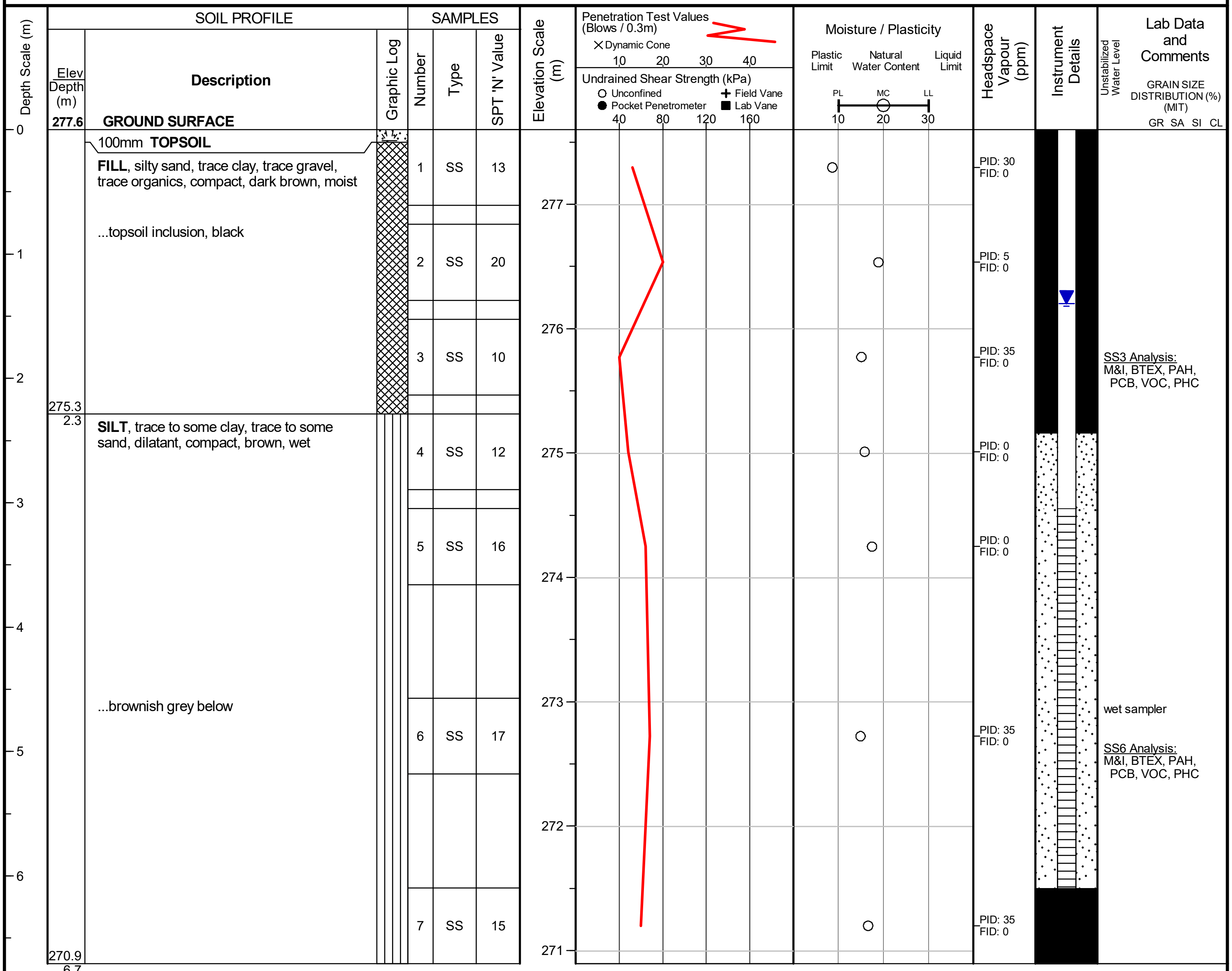
LOG OF BOREHOLE 24-7

ENGLOBE

Project No. : 02310769.002	Client : Oak Valley Health	Originated by : BR
Date started : June 18, 2024	Project : Uxbridge Community Hospital	Compiled by : AS
Sheet No. : 1 of 1	Location : Uxbridge, ON	Checked by : AS

Position : E: 649715, N: 4884866 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

Elev Depth (m)	Description (SOIL PROFILE)	Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
277.6	GROUND SURFACE					
	100mm **TOPSOIL**					
	FILL, silty sand, trace clay, trace gravel, trace organics, compact, dark brown, moist	1	SS	13	PID: 30 FID: 0	
	...topsoil inclusion, black	2	SS	20	PID: 5 FID: 0	
		3	SS	10	PID: 35 FID: 0	SS3 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
275.3 2.3	**SILT**, trace to some clay, trace to some sand, dilatant, compact, brown, wet	4	SS	12	PID: 0 FID: 0	
		5	SS	16	PID: 0 FID: 0	
	...brownish grey below	6	SS	17	PID: 35 FID: 0	wet sampler; SS6 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
		7	SS	15	PID: 35 FID: 0	
270.9 6.7						



END OF BOREHOLE

Borehole was dry and caved to 3.0 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	1.4	276.2

file: 02310769.000 bh logs.gpj

ENGLOBE

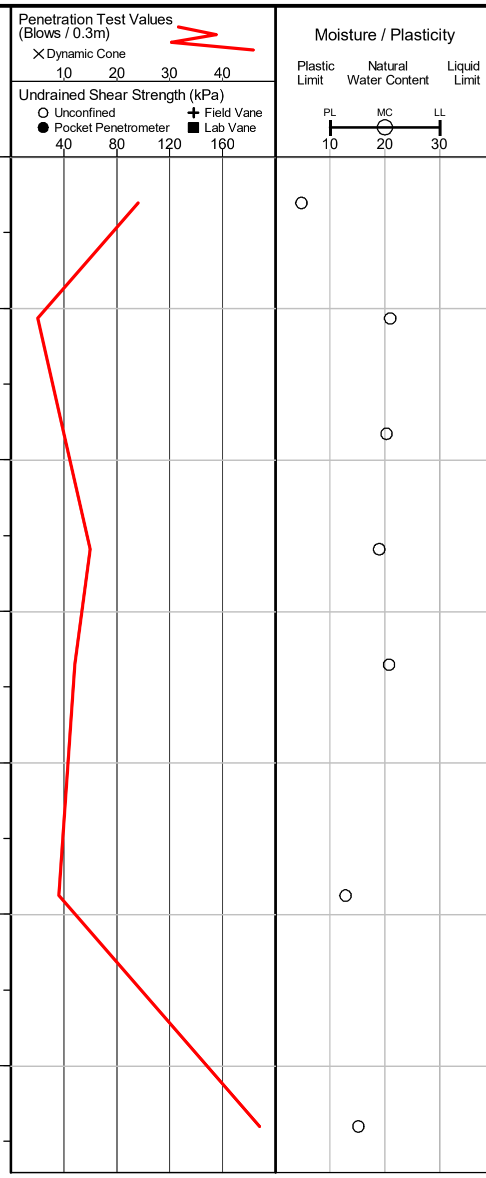
LOG OF BOREHOLE 24-8

Project No. : 02310769.002	Client : Oak Valley Health		Originated by : BR
Date started : June 19, 2024	Project : Uxbridge Community Hospital		Compiled by : AS
Sheet No. : 1 of 1	Location : Uxbridge, ON		Checked by : AS

Position : E: 649793, N: 4884927 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	Elev / Depth (m)	SOIL PROFILE Description	SAMPLES Number	Type	SPT 'N' Value	Elevation Scale (m)	Headspace Vapour (ppm)	Unstabilized Water Level	Lab Data and Comments (GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL)
0	278.0	**GROUND SURFACE**				278			
		105mm **ASPHALTIC CONCRETE**							
		310mm **AGGREGATE**	1	SS	24		PID: 0 FID: 0		
	277.5 / 0.5	**FILL**, silty sand, trace clay, trace gravel, trace organics, loose to compact, dark brown, moist							
1			2	SS	5	277	PID: 75 FID: 0		SS2 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
	276.5 / 1.5	**CLAYEY SILT**, trace sand, stiff, brown, moist	3	SS	10		PID: 30 FID: 0		0 7 67 26
2						276			
	275.7 / 2.3	**SILT**, trace to some clay, trace to some sand, dilatant, compact, brown, wet						▼	wet sampler
			4	SS	15		PID: 35 FID: 0		
3		...brownish grey below				275			
			5	SS	12		PID: 30 FID: 0		SS5 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
4						274			
		...loose						▽	
5			6	SS	9	273	PID: 20 FID: 0		
6		...dense				272			
			7	SS	47		PID: 5 FID: 0		
	271.3 / 6.7								



END OF BOREHOLE

Unstabilized water level measured at 4.6 m below ground surface; borehole was open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	2.3	275.7

file: 02310769.000 bh logs.gpj

LOG OF BOREHOLE 24-9

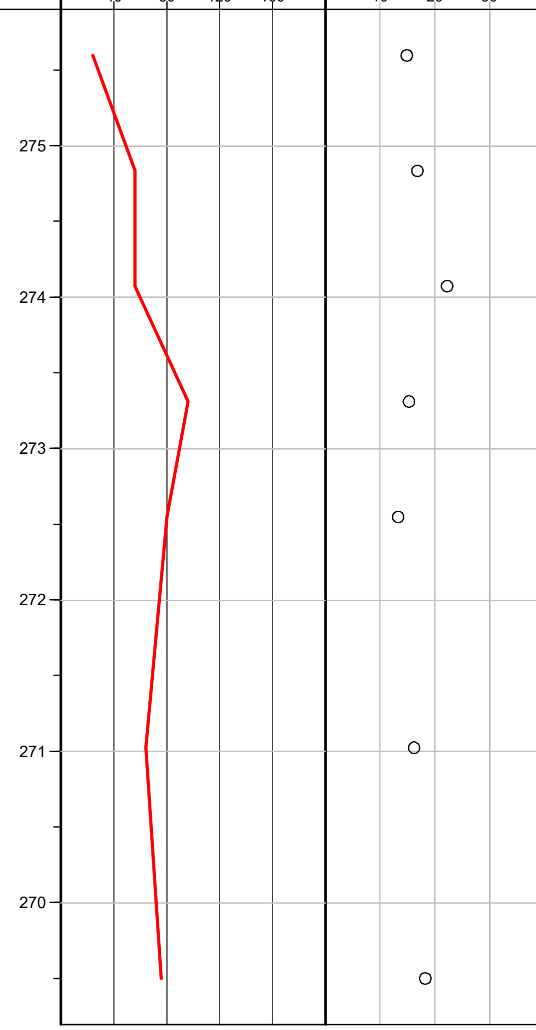
ENGLOBE

Project No. : 02310769.002	Client : Oak Valley Health	Originated by : BR
Date started : June 19, 2024	Project : Uxbridge Community Hospital	Compiled by : AS
Sheet No. : 1 of 1	Location : Uxbridge, ON	Checked by : AS

Position : E: 649712, N: 4884929 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

Elev / Depth (m)	Description (SOIL PROFILE)	Sample Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
275.9	GROUND SURFACE					
275.7 / 0.2	230mm **TOPSOIL**					
275.1 / 0.8	**FILL**, silty sand, trace clay, trace gravel, trace organics, loose, dark brown, moist	1	SS	6	PID: 0 FID: 0	
274.1 / 1.8	**SILTY SAND**, trace clay, compact, brown, wet	2	SS	14	PID: 0 FID: 0	SS2 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
		3	SS	14	PID: 0 FID: 0	
269.2 / 6.7	**SILT**, trace to some clay, trace to some sand, trace gravel, dilatant, compact, brownish grey, wet	4	SS	24	PID: 0 FID: 0	
		5	SS	20	PID: 0 FID: 0	
		6	SS	16	PID: 0 FID: 0	
		7	SS	19	PID: 0 FID: 0	

Penetration Test Values (Blows / 0.3m): X Dynamic Cone; 10 20 30 40
Undrained Shear Strength (kPa): O Unconfined, + Field Vane, ● Pocket Penetrometer, ■ Lab Vane; 40 80 120 160
Moisture / Plasticity: Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL); 10 20 30
Lab Data: GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL



END OF BOREHOLE

Unstabilized water level measured at 1.5 m below ground surface; borehole was open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	2.0	273.9

file: 02310769.000 bh logs.gpj

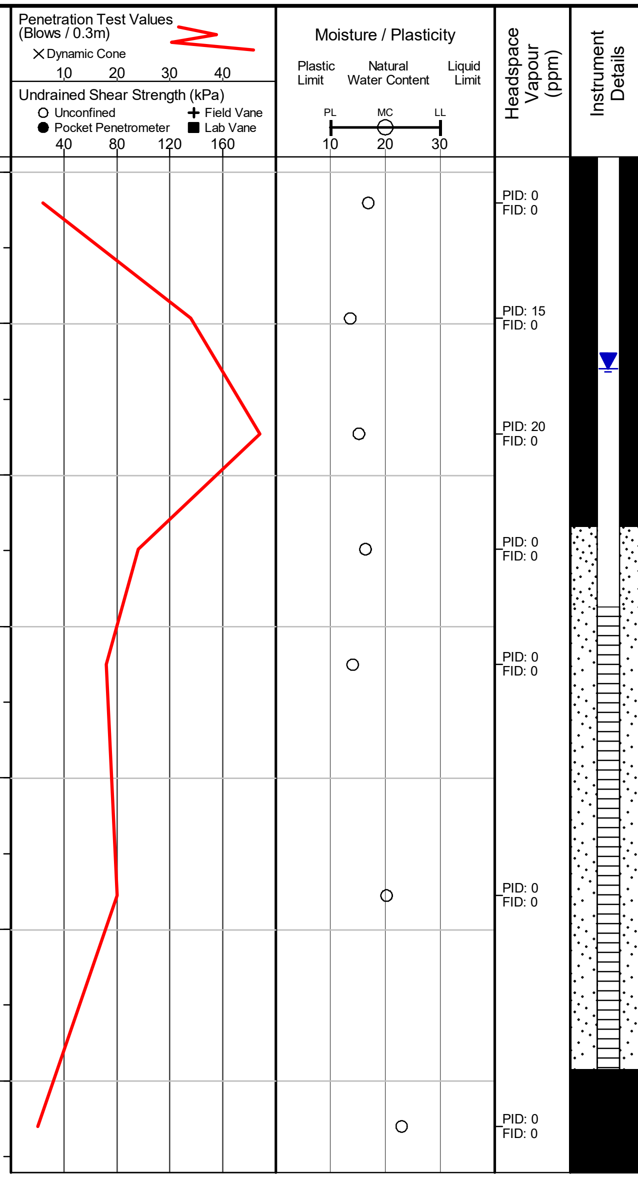
LOG OF BOREHOLE 24-10

ENGLOBE

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 19, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

Position : E: 649664, N: 4884920 (UTM 17T)
Elevation Datum : Geodetic
Rig type : Track-mounted
Drilling Method : Solid stem augers

Depth Scale (m)	Elev / Depth (m)	Description (SOIL PROFILE)	Number	Type	SPT 'N' Value	Elevation Scale (m)	Headspace Vapour (ppm)	Lab Data and Comments
0	276.1	**GROUND SURFACE**						
		300mm **TOPSOIL**				276		
	275.8 / 0.3	**SILTY SAND**, trace to some gravel, trace clay, compact to dense, brown, wet	1	SS	6		PID: 0 FID: 0	
1			2	SS	34	275	PID: 15 FID: 0	
2			3	SS	47	274	PID: 20 FID: 0	SS3 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC, DUP#4
			4	SS	24		PID: 0 FID: 0	
3		...brownish grey	5	SS	18	273	PID: 0 FID: 0	
4						272		
	271.5 / 4.6	**SILT**, trace sand, trace gravel, trace clay, compact, brownish grey, wet	6	SS	20	271	PID: 0 FID: 0	
6	270.0 / 6.1	**SAND**, trace to some silt, trace clay, trace gravel, loose, brownish grey, wet	7	SS	5	270	PID: 0 FID: 0	
	269.4 / 6.7	**END OF BOREHOLE**						



Unstabilized water level measured at 1.5 m below ground surface; borehole caved to 3.0 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	1.4	274.7

file: 02310769.000 bh logs.gpj

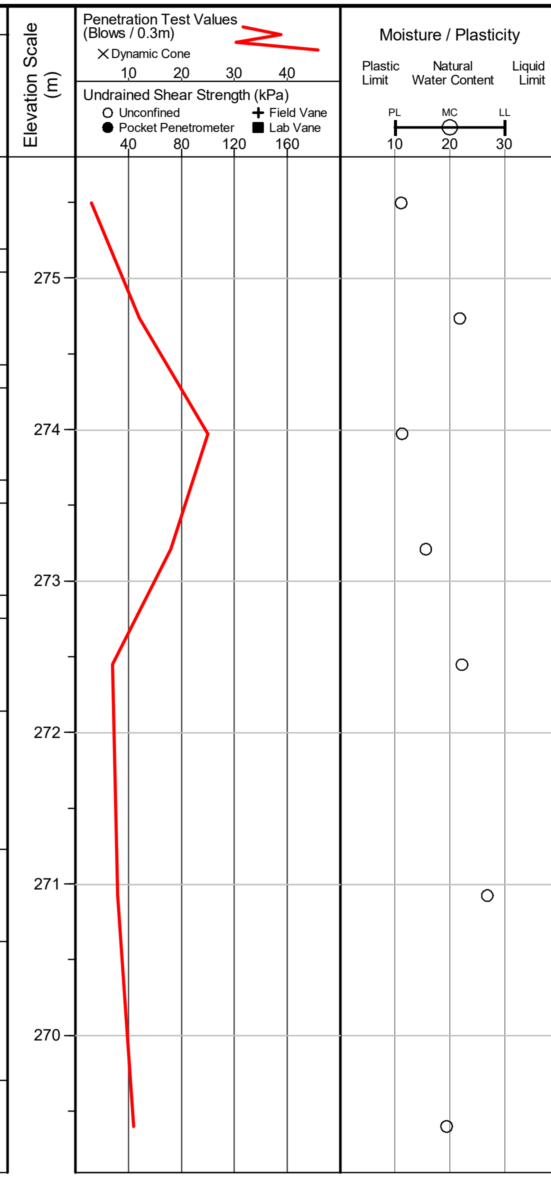
LOG OF BOREHOLE 24-11

Project No. : 02310769.002	Client : Oak Valley Health		Originated by : BR
Date started : June 20, 2024	Project : Uxbridge Community Hospital		Compiled by : AS
Sheet No. : 1 of 1	Location : Uxbridge, ON		Checked by : AS

Position : E: 649647, N: 4884956 (UTM 17T) | Elevation Datum : Geodetic

Rig type : Track-mounted | Drilling Method : Solid stem augers

Elev / Depth (m)	Description (SOIL PROFILE)	Sample Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
275.8	**GROUND SURFACE**					
275.6 / 0.2	180mm **TOPSOIL**					
	SILTY SAND, trace gravel, trace clay, loose to compact, brown, moist	1	SS	3	PID: 55 FID: 0	
	...wet below	2	SS	12	PID: 90 FID: 0	SS2 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
	...some gravel	3	SS	25	PID: 0 FID: 0	
	...silt lense inclusions	4	SS	18	PID: 0 FID: 0	
272.8 / 3.0	**SAND**, trace to some silt, trace clay, trace gravel, loose to compact, brownish grey, wet	5	SS	7	PID: 0 FID: 0	
		6	SS	8	PID: 0 FID: 0	
		7	SS	11	PID: 0 FID: 0	
269.1 / 6.7	**END OF BOREHOLE**					



Instrument Details | Unstabilized Water Level | GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

Unstabilized water level measured at 2.3 m below ground surface; borehole caved to 4.9 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	1.8	274.0

file: 02310769.000 bh logs.gpj

LOG OF BOREHOLE 24-12

ENGLOBE

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 20, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

Position : E: 649611, N: 4884946 (UTM 17T)   Elevation Datum : Geodetic

Rig type : Track-mounted   Drilling Method : Solid stem augers

Penetration Test Values (Blows / 0.3m): × Dynamic Cone; 10, 20, 30, 40

Undrained Shear Strength (kPa): ○ Unconfined; + Field Vane; ● Pocket Penetrometer; ■ Lab Vane; 40, 80, 120, 160

Moisture / Plasticity: Plastic Limit (PL), Natural Water Content (MC), Liquid Limit (LL); 10, 20, 30

Depth Scale (m)	Elev Depth (m)	Description	Sample Number	Type	SPT 'N' Value	Elevation Scale (m)	Headspace Vapour (ppm)	Lab Data and Comments (Grain Size Distribution (%) (MIT): GR SA SI CL)
0	275.7	GROUND SURFACE						
		100mm **TOPSOIL**						
		FILL, silty sand, trace clay, trace to some gravel, trace organics, trace stone pieces inclusion, loose to compact, dark brown, moist	1	SS	8		PID: 5, FID: 1	SS1 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
1			2	SS	26	275	PID: 0, FID: 0	
	274.2 / 1.5	**SAND**, trace to some silt, trace clay, trace gravel, compact, brown, wet	3	SS	17	274	PID: 0, FID: 0	
2			4	SS	15	273	PID: 0, FID: 1	1 88 10 1; SS4 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
3			5	SS	16	272	PID: 0, FID: 1	
4–5			6	SS	20	271	PID: 0, FID: 1	
6		...brownish grey	7	SS	13	270	PID: 0, FID: 0	
	269.0 / 6.7					269		

END OF BOREHOLE

Wet cave at 1.5 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	1.7	274.0

file: 02310769.000 bh logs.gpj

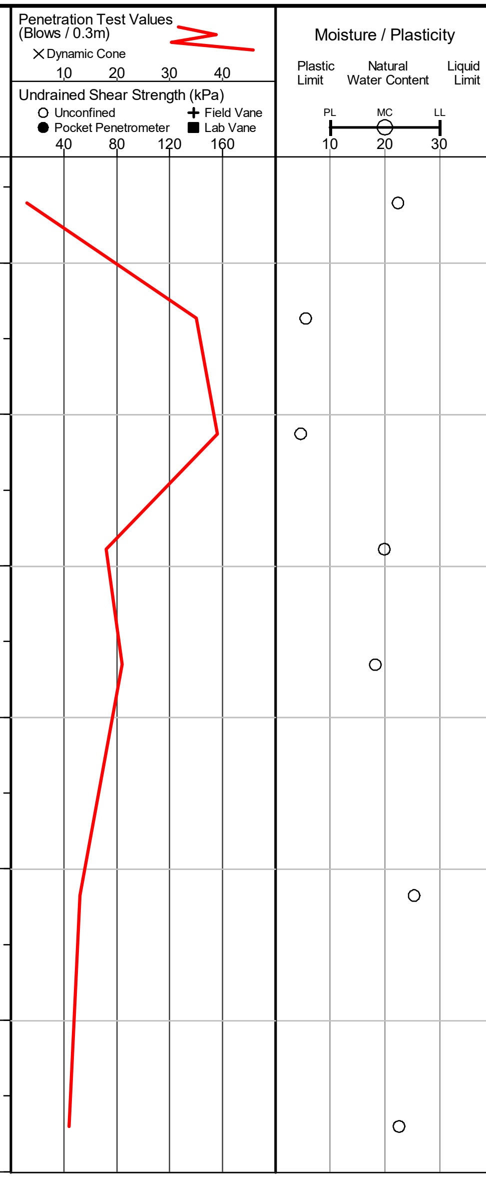
LOG OF BOREHOLE 24-13

Project No. : 02310769.002	Client : Oak Valley Health		Originated by : BR
Date started : June 20, 2024	Project : Uxbridge Community Hospital		Compiled by : AS
Sheet No. : 1 of 1	Location : Uxbridge, ON		Checked by : AS

Position : E: 649599, N: 4884884 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Elev / Depth (m)	Description (SOIL PROFILE)	Sample Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
276.7	**GROUND SURFACE**					
276.5 / 0.2	180mm **TOPSOIL**					
	FILL, silty sand, trace gravel, trace organics, very loose, dark brown, moist	1	SS	3	PID: 0 FID: 0	
275.9 / 0.8	**SAND AND GRAVEL**, trace silt, dense, brown, moist	2	SS	35	PID: 5 FID: 1	
						...at 1.5m, wet sampler
		3	SS	39	PID: 25 FID: 0	SS3 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
274.4 / 2.3	**SILT**, trace to some clay, trace to some sand, dilatant, compact, brown, wet	4	SS	18	PID: 0 FID: 1	
		5	SS	21	PID: 0 FID: 2	
272.1 / 4.6	**SAND**, trace to some silt, trace clay, trace gravel, compact, brownish grey, wet	6	SS	13	PID: 0 FID: 1	
		7	SS	11	PID: 0 FID: 0	
270.0 / 6.7	**END OF BOREHOLE**					



Unstabilized water level measured at 2.1 m below ground surface; borehole caved to 3.0 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	1.6	275.1

file: 02310769.000 bh logs.gpj

LOG OF BOREHOLE 24-14

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 20, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

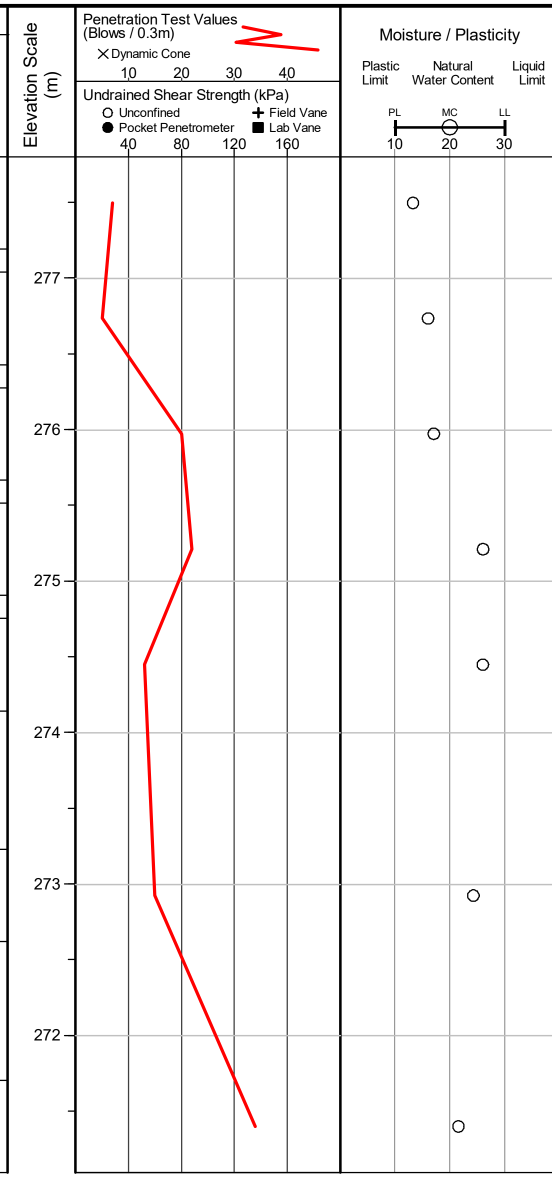
Position	: E: 649577, N: 4884848 (UTM 17T)	Elevation Datum	: Geodetic
Rig type	: Track-mounted	Drilling Method	: Solid stem augers

Elev / Depth (m)	SOIL PROFILE – Description	Sample Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Unstabilized Water Level	Lab Data and Comments
277.8 / 0	**GROUND SURFACE**						
	110mm **TOPSOIL**						
	FILL, silty sand, trace gravel, trace rootlets, trace organics, loose, dark brown, moist	1	SS	7	PID: 0 FID: 0		SS1 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
		2	SS	5	PID: 0 FID: 0		
276.3 / 1.5	**SAND**, trace to some silt, trace clay, trace gravel, compact, brown, wet	3	SS	20	PID: 0 FID: 1	∇	
		4	SS	22	PID: 0 FID: 1		SS4 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
		5	SS	13	PID: 0 FID: 1		
		6	SS	15	PID: 0 FID: 0		
	...dense	7	SS	34	PID: 0 FID: 0		
271.1 / 6.7	**END OF BOREHOLE**						

Depth Scale (m): 0, 1, 2, 3, 4, 5, 6

Graphic Log | Instrument Details

Lab Data and Comments – GRAIN SIZE DISTRIBUTION (%) (MIT): GR SA SI CL



END OF BOREHOLE

Wet cave measured at 1.5 m below ground surface upon completion of drilling.

LOG OF BOREHOLE 24-15

ENGLOBE

Project No. : 02310769.002	Client : Oak Valley Health	Originated by : BR
Date started : June 20, 2024	Project : Uxbridge Community Hospital	Compiled by : AS
Sheet No. : 1 of 1	Location : Uxbridge, ON	Checked by : AS

Position : E: 649604, N: 4884843 (UTM 17T) Elevation Datum : Geodetic

Rig type : Track-mounted Drilling Method : Solid stem augers

Elev / Depth (m)	SOIL PROFILE Description	Sample Number	Type	SPT 'N' Value	Moisture (%)	Headspace Vapour (ppm)	Lab Data and Comments
277.6 / 0	GROUND SURFACE						
277.4 / 0.2	190mm **TOPSOIL**						
276.8 / 0.8	**FILL**, silty sand, trace gravel, trace organics, trace rootlets, very loose, dark brown, moist	1	SS	3		PID: 0 FID: 0	
274.6 / 3.0	**SILT**, some sand to sandy, trace to some clay, trace gravel, dilatent, compact, brown, wet	2	SS	12		PID: 0 FID: 1	
		3	SS	11		PID: 5 FID: 1	GR SA SI CL: 5 26 59 10; SS3 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
		4	SS	22		PID: 0 FID: 1	
270.9 / 6.7	**SAND**, trace to some silt, trace clay, trace gravel, compact to dense, brownish grey, wet	5	SS	16		PID: 0 FID: 0	wet sampler
		6	SS	21		PID: 0 FID: 0	
		7	SS	32		PID: 0 FID: 0	

Penetration Test Values (Blows / 0.3m): Dynamic Cone 10 20 30 40

Undrained Shear Strength (kPa): Unconfined, Pocket Penetrometer, Field Vane, Lab Vane 40 80 120 160

Moisture / Plasticity: Plastic Limit, Natural Water Content, Liquid Limit (PL, MC, LL) 10 20 30

Instrument Details; Unstabilized Water Level; GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL

Elevation Scale (m): 277, 276, 275, 274, 273, 272, 271

END OF BOREHOLE

Unstabilized water level measured at 2.7 m below ground surface; borehole caved to 4.0 m below ground surface upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jul 3, 2024	1.7	275.9

LOG OF BOREHOLE 24-16

Project No. : 02310769.002 | Client : Oak Valley Health | Originated by : BR

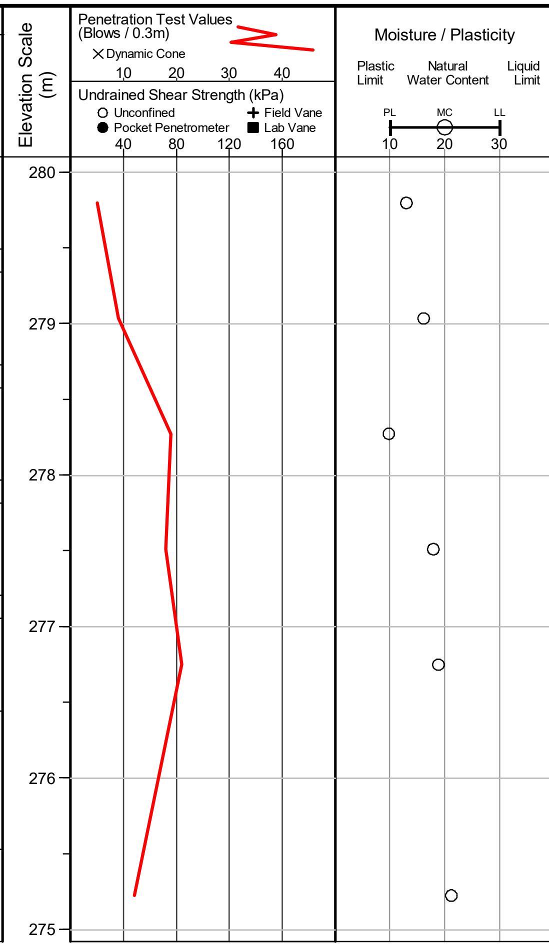
Date started : June 20, 2024 | Project : Uxbridge Community Hospital | Compiled by : AS

Sheet No. : 1 of 1 | Location : Uxbridge, ON | Checked by : AS

Position : E: 649844, N: 4885038 (UTM 17T) | Elevation Datum : Geodetic

Rig type : Track-mounted | Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Sample Number	Type	SPT 'N' Value	Headspace Vapour (ppm)	Lab Data and Comments
0	280.1	GROUND SURFACE					
		100mm **TOPSOIL**					
		FILL, silty sand, trace gravel, trace organics, loose, dark brown, moist	1	SS	5	PID: 5 FID: 0	SS1 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC, DUP#3
	279.3 0.8	**SILT**, some sand to sandy, trace to some clay, trace gravel, loose to compact, brown, moist					
1			2	SS	9	PID: 0 FID: 0	
							GRAIN SIZE DISTRIBUTION (%) (MIT): GR 0, SA 30, SI 66, CL 4
2			3	SS	19	PID: 0 FID: 0	SS3 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
		...wet, dilatent below					
			4	SS	18	PID: 0 FID: 0	SS4 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
3			5	SS	21	PID: 0 FID: 0	
4							
5			6	SS	12	PID: 0 FID: 0	
	274.9 5.2	**END OF BOREHOLE**					



Borehole was dry and open upon completion of drilling.

Instrument Details | Unstabilized Water Level

file: 02310769.000 bh logs.gpj

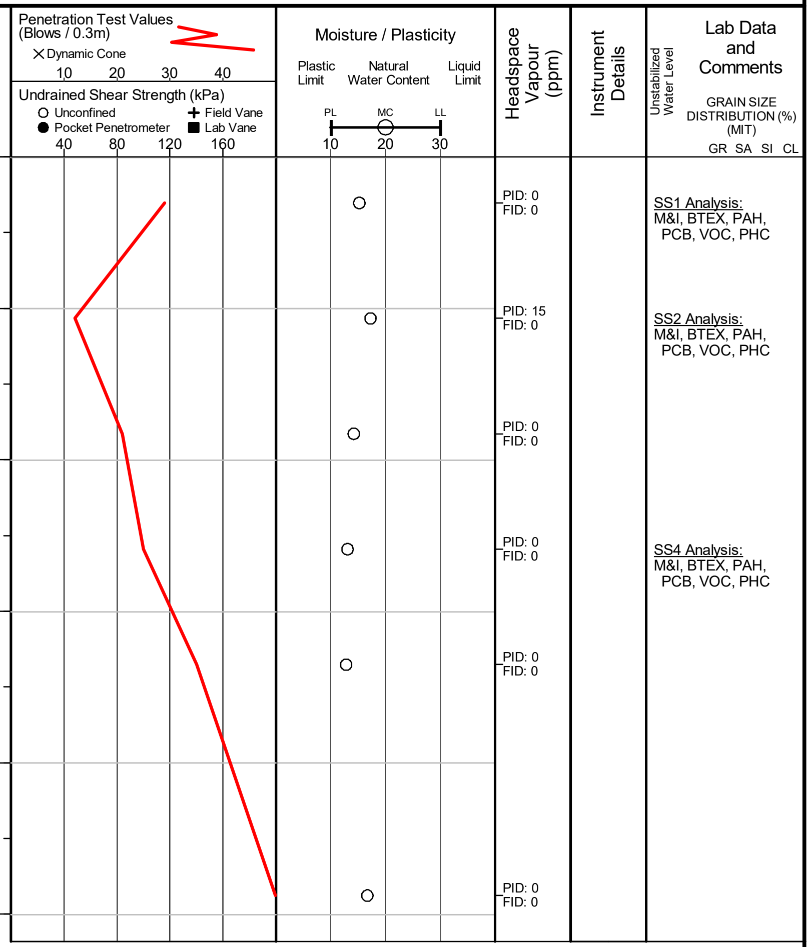
LOG OF BOREHOLE 24-17

Project No.	: 02310769.002	Client	: Oak Valley Health	Originated by	: BR
Date started	: June 17, 2024	Project	: Uxbridge Community Hospital	Compiled by	: AS
Sheet No.	: 1 of 1	Location	: Uxbridge, ON	Checked by	: AS

Position : E: 649904, N: 4885051 (UTM 17T) — Elevation Datum : Geodetic

Rig type : Track-mounted — Drilling Method : Solid stem augers

Depth Scale (m)	Elev Depth (m)	Description	Sample Number	Type	SPT 'N' Value	Elevation Scale (m)	Headspace Vapour (ppm)	Lab Data and Comments
0	277.0	**GROUND SURFACE**				277		
	276.8 / 0.2	150mm **ASPHALTIC CONCRETE**						
	276.6 / 0.4	240mm **AGGREGATE**	1	SS	29		PID: 0 FID: 0	SS1 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
	276.2 / 0.8	**FILL**, sandy silt, trace to some gravel, trace clay, trace organics, compact, dark brown, moist						
1		**SILT**, trace to some clay, trace to some sand, dilatant, compact to very dense, brown, wet	2	SS	12	276	PID: 15 FID: 0	SS2 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
		...brownish grey below	3	SS	21		PID: 0 FID: 0	
2						275		
			4	SS	25		PID: 0 FID: 0	SS4 Analysis: M&I, BTEX, PAH, PCB, VOC, PHC
3						274		
			5	SS	35		PID: 0 FID: 0	
4						273		
5			6	SS	65	272	PID: 0 FID: 0	
	271.8 / 5.2							



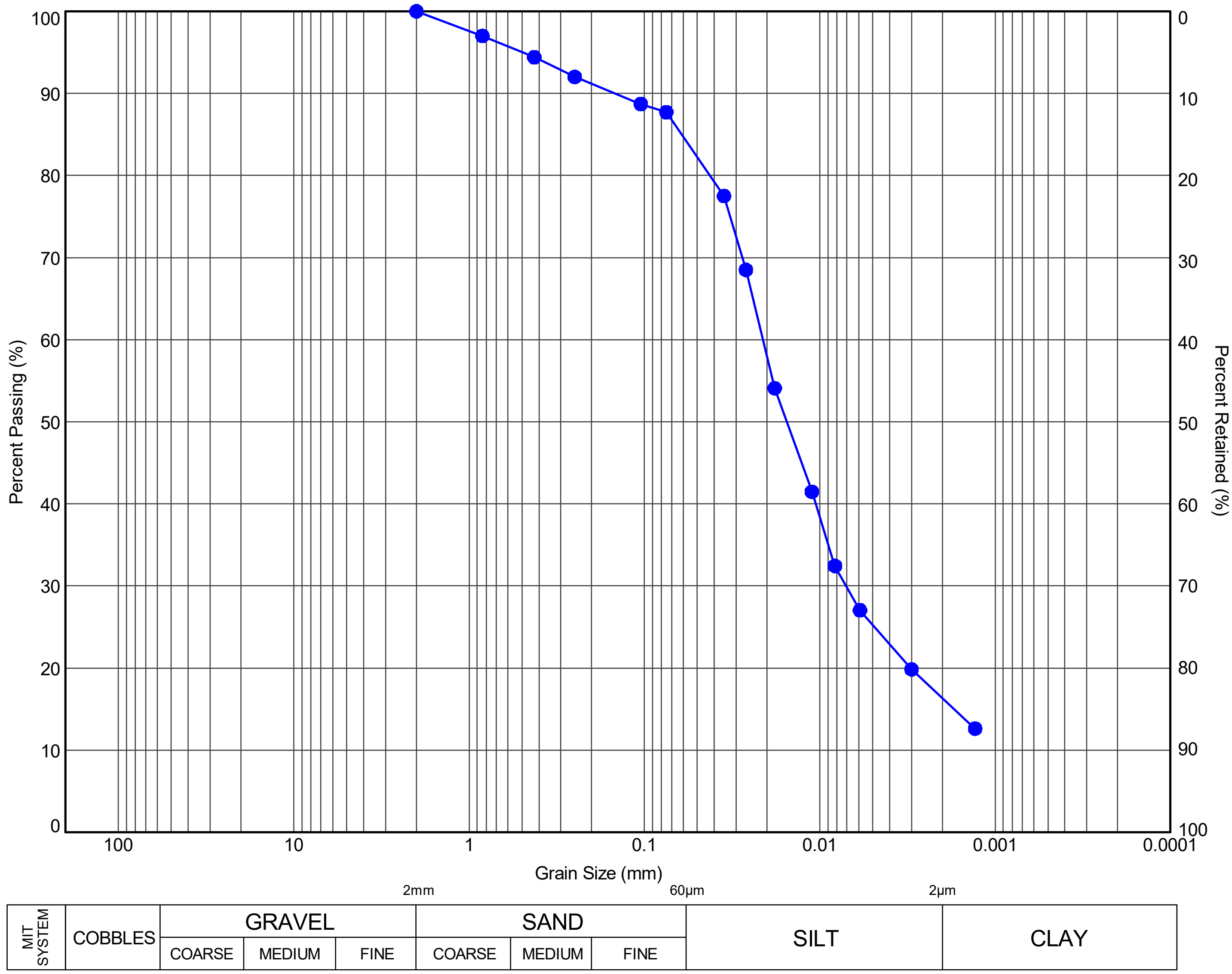
END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

file: 02310769.000 bh logs.gpj

Appendix B
Geotechnical Laboratory Test Results

ENGLOBE



MIT SYSTEM

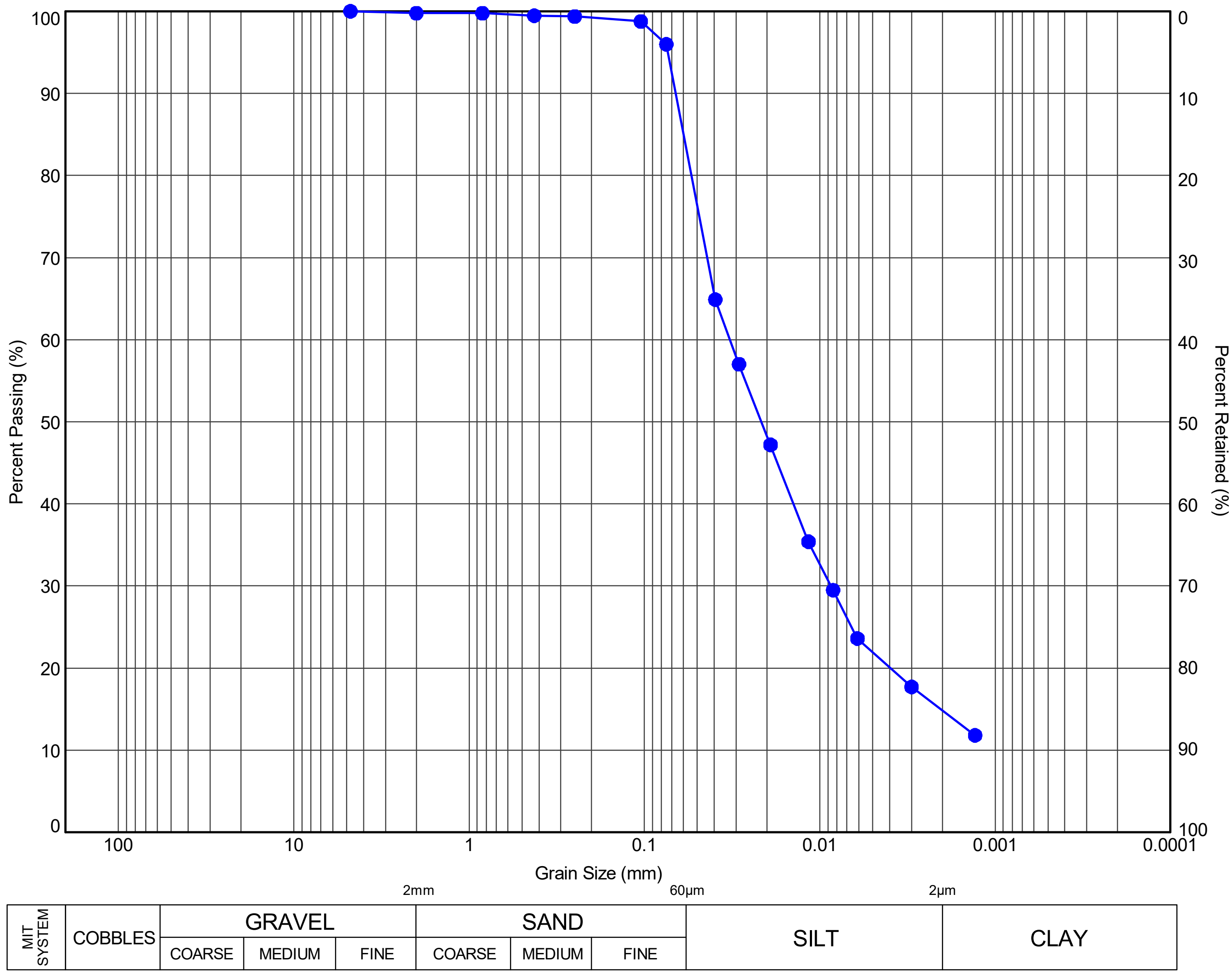
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**24-1**	SS3	1.8	274.8	0	16	68	16	

ENGLOBE

Title:

GRAIN SIZE DISTRIBUTION
SILT, SOME SAND, SOME CLAY

File No.: **02310769.002**



				MIT SYSTEM				
Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
● **24-6**	SS4	2.6	274.3	0	15	70	15	

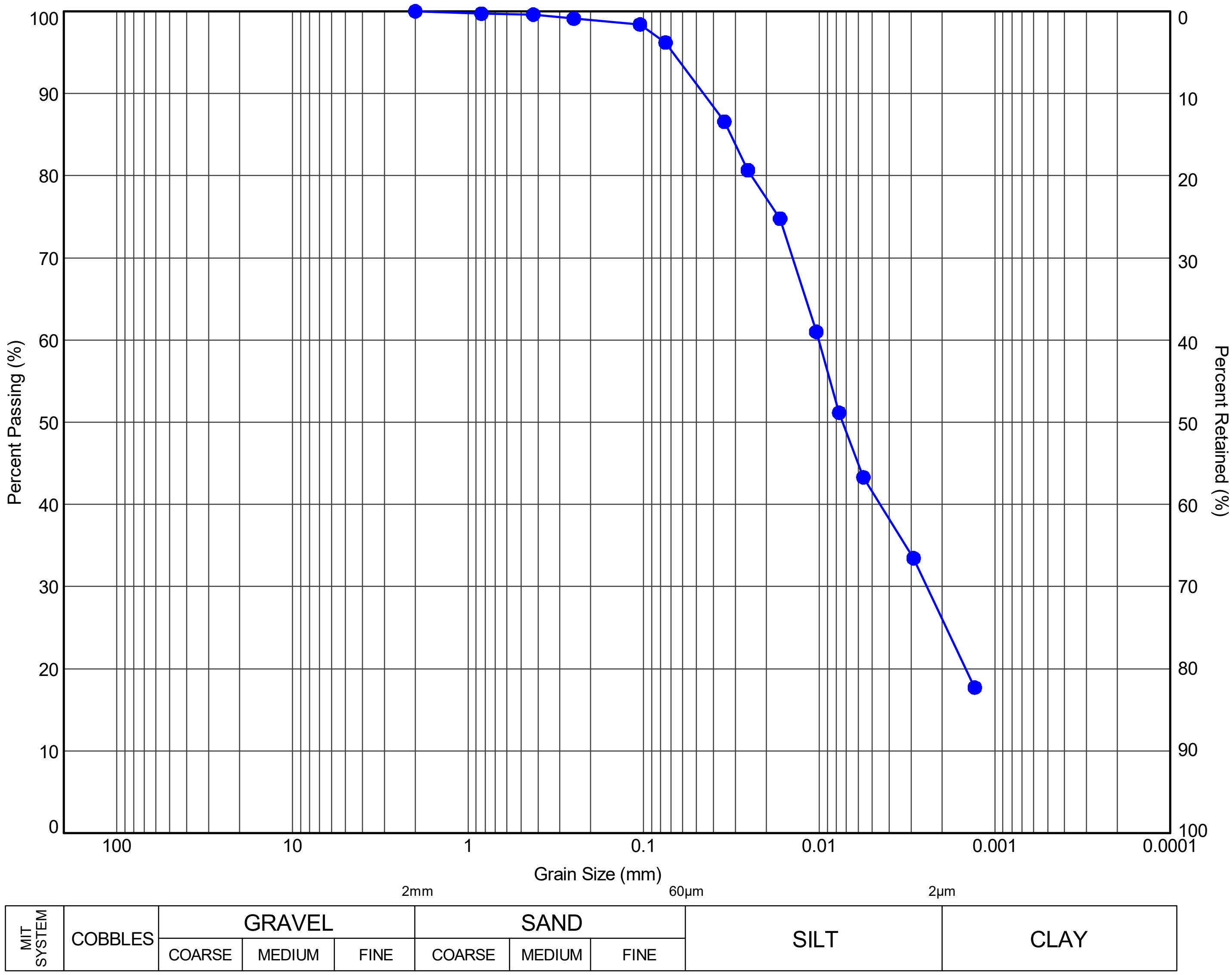
ENGLOBE

Title:

GRAIN SIZE DISTRIBUTION
SILT, SOME SAND, SOME CLAY

File No.:

02310769.002



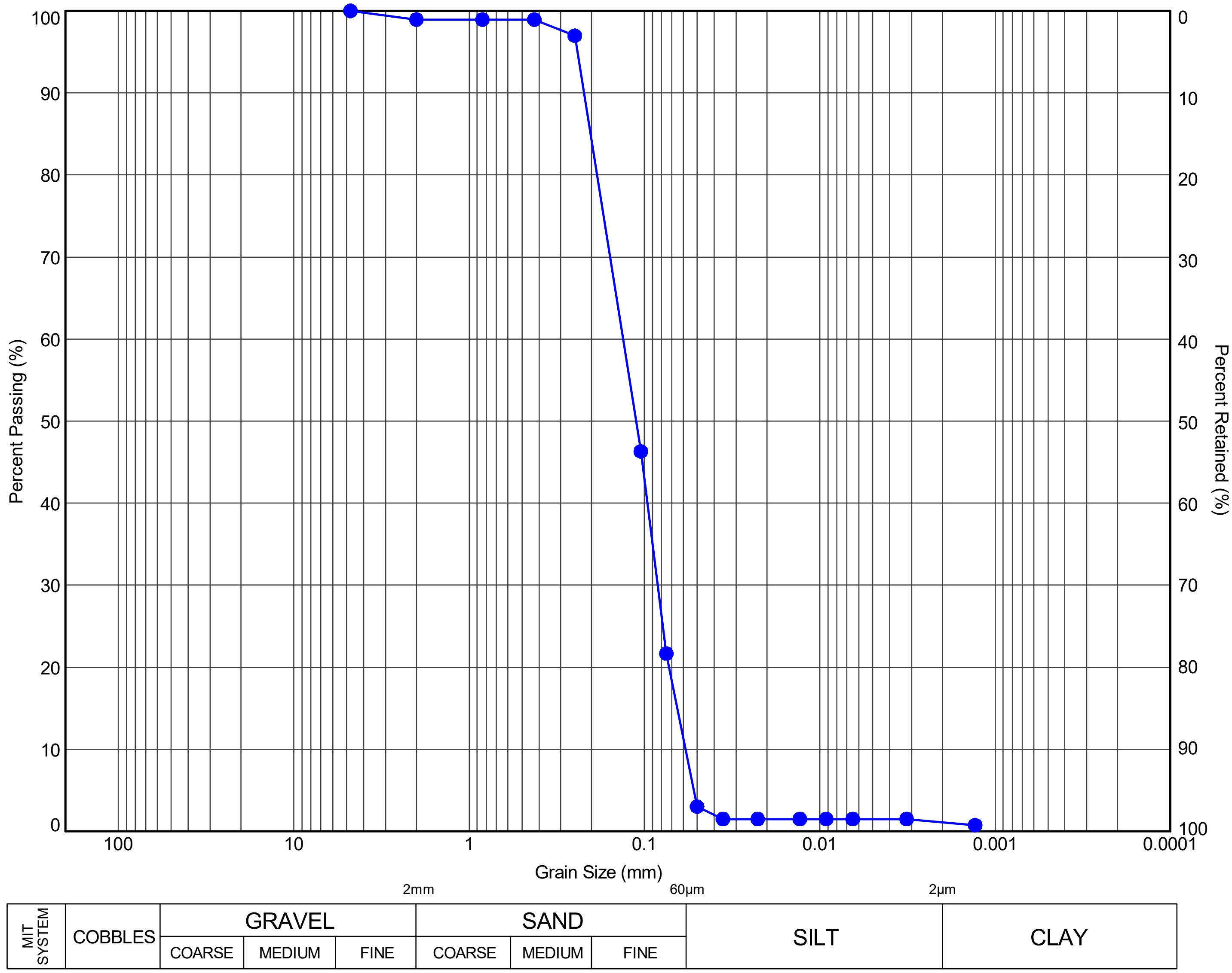
MIT SYSTEM

	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**24-8**	SS3	1.8	276.2	0	7	67	26	

Title:

GRAIN SIZE DISTRIBUTION
CLAYEY SILT, TRACE SAND

File No.: **02310769.002**



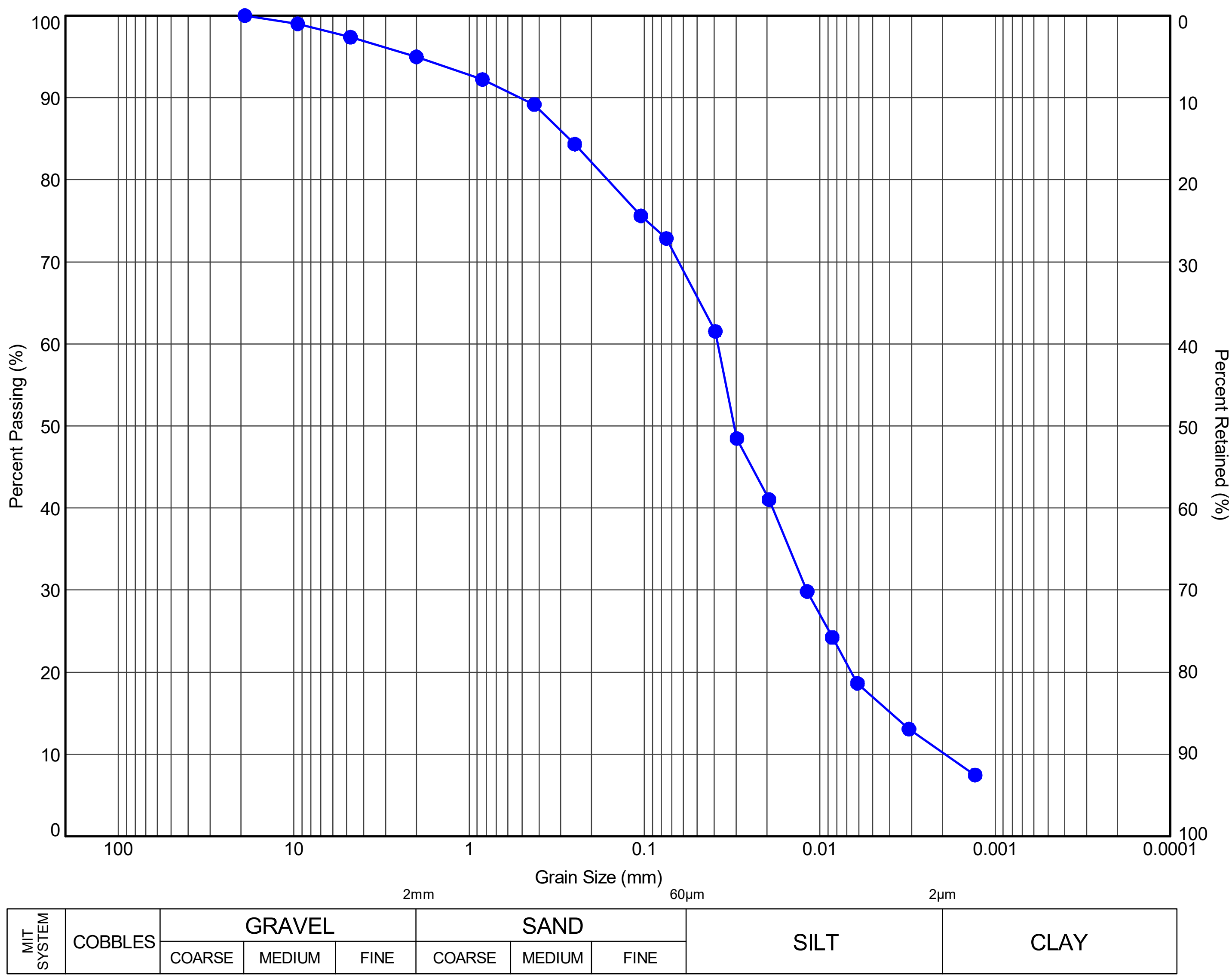
MIT SYSTEM

	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**24-12**	SS4	2.6	273.1	1	88	10	1	

Title:

GRAIN SIZE DISTRIBUTION
SAND, SOME SILT, TRACE CLAY, TRACE GRAVEL

File No.: **02310769.002**



MIT SYSTEM

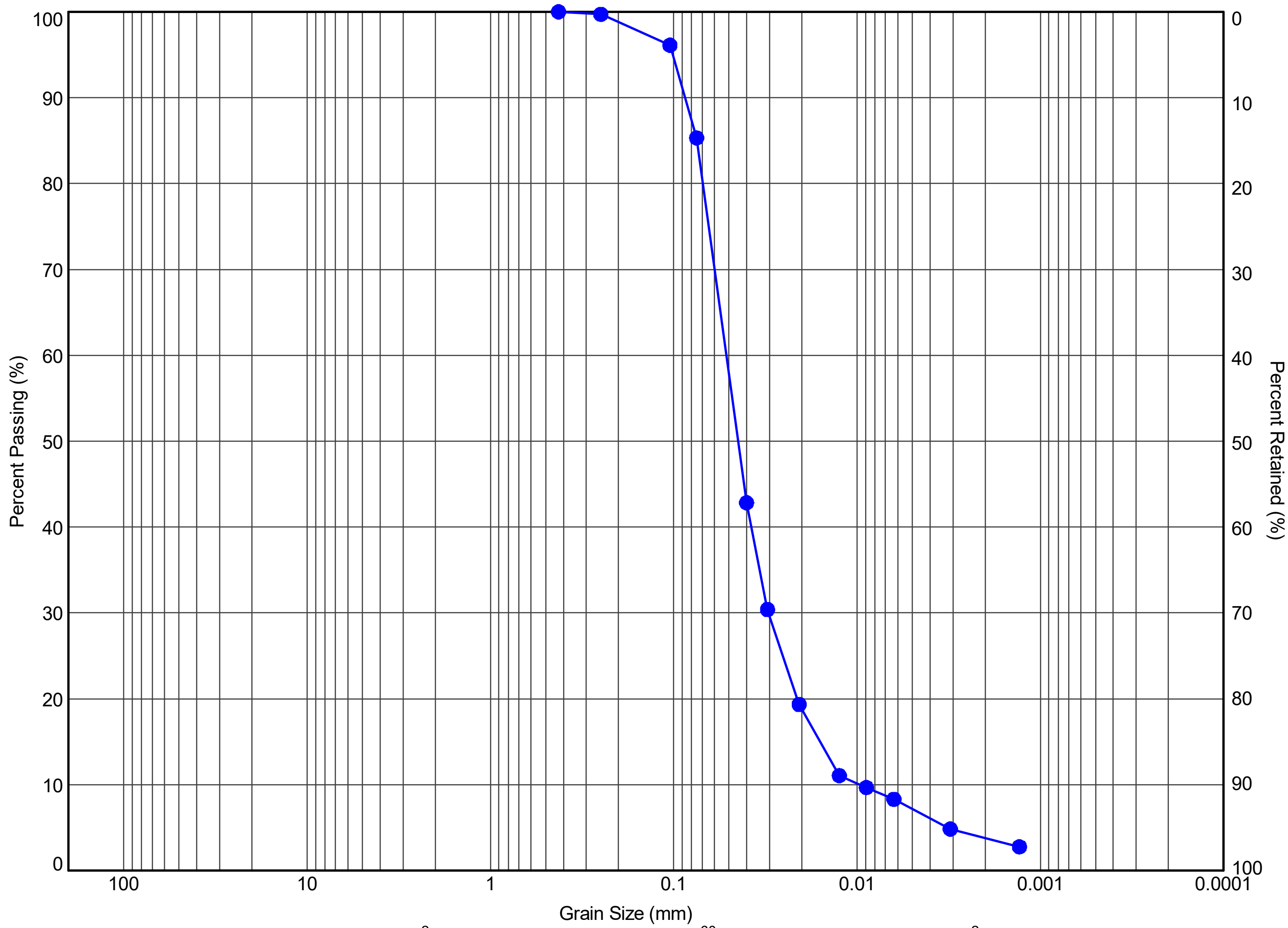
	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**24-15**	SS3	1.8	275.8	5	26	59	10	

ENGLOBE

Title:

GRAIN SIZE DISTRIBUTION
SANDY SILT, SOME CLAY, TRACE GRAVEL

File No.: **02310769.002**



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

	Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	*(Fines, %)*
●	**24-16**	SS3	1.8	278.3	0	30	66	4	

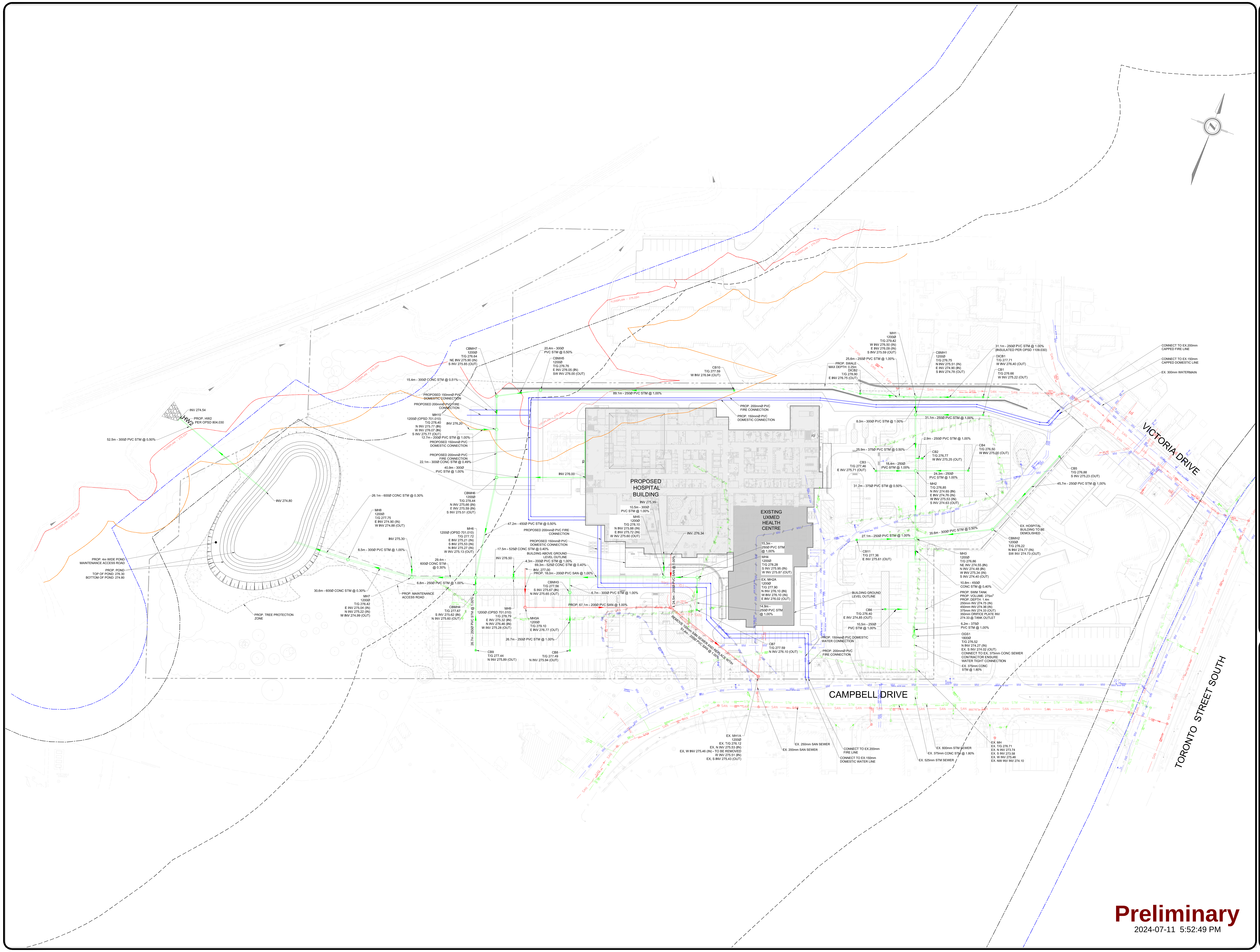
ENGLOBE

Title:

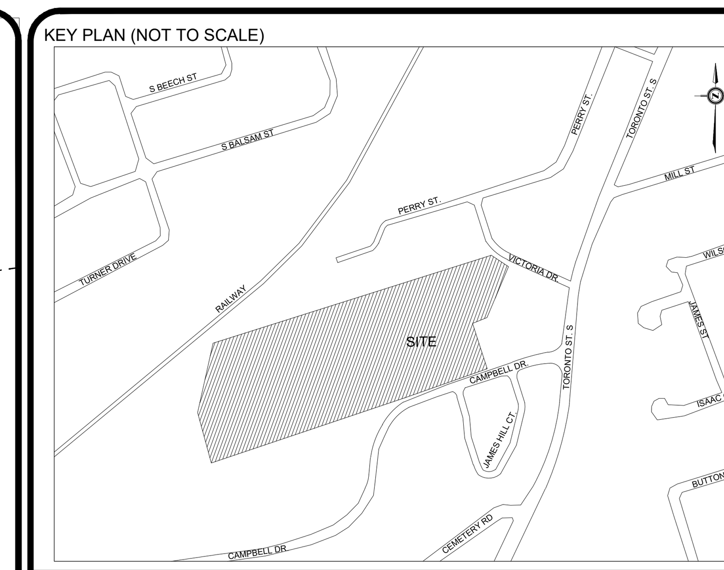
GRAIN SIZE DISTRIBUTION
SANDY SILT, TRACE CLAY

File No.: **02310769.002**

Appendix C
Site Servicing Plan



KEY PLAN (NOT TO SCALE)



LEGEND:

- STM — EXISTING STORM SEWER
- SAN — EXISTING SANITARY SEWER
- WM — EXISTING WATERMAIN
- H — EXISTING HYDRO
- GAS — EXISTING GAS MAIN
- SL — EXISTING STREET LIGHT
- R — EXISTING ROGERS
- BT — EXISTING BELL
- EXISTING STORM MANHOLE
- EXISTING SANITARY AND/OR COMBINED SEWER MANHOLE
- EXISTING CATCHBASIN
- LS — EXISTING LIGHT STANDARD
- WV — EXISTING WATER VALVE
- FH — EXISTING FIRE HYDRANT
- MH — PROPOSED STORM MANHOLE
- MH — PROPOSED SANITARY MANHOLE
- CB — PROPOSED CATCHBASIN
- CBMH — PROPOSED CATCHBASIN MANHOLE
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATER MAIN
- EXISTING UTILITY REMOVAL
- HEADWALL AND RIPRAP
- PROPERTY LINE
- REGIONAL FLOOD LINE
- REGIONAL FLOOD LINE OFFSET
- MEANDERBELT LIMIT
- MEANDERBELT LIMIT OFFSET
- LSRCA REGULATION LIMIT
- PROPOSED BUILDIN
- EXISTING BUILDING TO REMAIN
- BUILDING GROUND LEVEL OUTLINE
- BUILDING ABOVE GROUND LEVEL OUTLINE
- PROPOSED TREE PROTECTION ZONE

BEARING

BEARINGS ARE UTM GRID, DERIVED BY REAL TIME NETWORK (RTN) OBSERVATIONS, UTM ZONE 17, NAD83 (CSRS) (2010.0). FOR BEARING COMPARISONS, A ROTATION OF 1°06'00" COUNTER-CLOCKWISE WASAPPLIED TO BEARINGS ON PLAN P1, P2, AND P4.
DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BYTHE COMBINED SCALE FACTOR OF 0.999757.
ALL BUILDING TIES ARE TAKEN TO CONCRETE FOUNDATION.

ELEVATION

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM AND ARE DERIVED FROM THE ONTARIO MINISTRY OF NATURAL RESOURCES AND FORESTRY BENCHMARK No. 00819728024 HAVING A PUBLISHED ELEVATION OF 261.000 METRES.

SURVEYING INFORMATION

SURVEYING INFORMATION IS REFERENCED FROM J. D. BARNES LIMITED - REFERENCE NO: 22-21-9=877-00, DATED JANUARY 03, 2023.

No.	Revision	Date	By	App.
2	ISSUED FOR STAGE 2.1 BLOCK SCHEMATICS	MAY 02, 2024	H.B.	G.S
1	ISSUED FOR SD COSTING	APR. 01, 2024	H.B.	G.S.

FOR DISCUSSION PURPOSES ONLY

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Owner/Client:

Location:
OAK VALLEY HEALTH UXBRIDGE HOSPITAL
UXBRIDGE, ON

Title:
SITE SERVICING PLAN (FINAL WORKS)

Designed By:	J.P.	Drawn By:	J.P.	Checked By:	F.F.
Scale:	1:750 (FULL SIZE)	Date:	JAN. 17, 2024	Drawing No.:	C-02
Project No.:	24163				

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LEA