



2019-05-01

Town of Pelham  
20 Pelham Town Square  
P.O. Box 400  
Fonthill, ON L0S 1E0

**c/o Adam Keane, P.Eng., Upper Canada Consultants**

**Subject: 2018 Hydrologic Monitoring Program**

Dear Sir:

We are pleased to provide you the 2018 Hydrologic Monitoring Report for the East Fonthill Development.

The report provides background information on the physical setting, details of the work program completed, and a presentation of the monitoring data. Conclusions and recommendations for future monitoring programs are also included in the report. Relevant technical data is appended.

## INTRODUCTION

### BACKGROUND

Development activities are currently being undertaken at the proposed Village of East Fonthill Phase 1 Development. As part of the development, a storm water management pond was constructed at the northeast corner of the development area to manage storm water runoff. Pond construction occurred in 2015 and was fully constructed by October 2015. The pond has three inlets and one outlet, which discharges to the Twelve Mile Creek watershed. The storm water management pond is located on the southwest corner of Regional Road 20 and Rice Road, in the Town of Pelham, in the Regional Municipality of Niagara, as shown on Figure 1.

As part of the development, hydrologic monitoring of the storm water management pond is required. WSP Canada Limited (WSP) was retained to complete the hydrologic monitoring program, including the field investigation and reporting.

## OBJECTIVE AND SCOPE

The objective of the hydrologic monitoring program for the Village of East Fonthill Development is to evaluate if the storm water management pond is functioning as designed to ensure no significant adverse impacts upon the receiving watercourse.

The monitoring program included a data collection component, and an analysis and interpretation component. This report provides the results of the hydrologic monitoring program activities that occurred over the period of the 2018 calendar year.

## PHYSICAL SETTING

### GEOLOGY AND HYDROGEOLOGY

The site is located to the northeast of the Fonthill Kame Complex within the Haldimand Clay Plain physiographic region (Chapman and Putnam, 1984). The fine-grained glaciolacustrine overburden in the area, deposited by pro glacial Lake Warren, varies in thickness between 23 and 35 metres.

Local overburden thickness is mapped as approximately 21 m east of the site (near Highway 406) to 38 m west of the site (near Station Road) (Vos, 1969). The bedrock contact is located at approximately 160 mASL east of the site (near Highway 406) to 145 mASL west of the site (near Station Road) (Feenstra, 1981b). The underlying bedrock is a succession of Palaeozoic beds that dip slightly southward, toward Lake Erie.

Typical quaternary geology of the area (Fenco MacLaren, 1995) includes the following units:

**Table 1 Quaternary Geology**

| GEOLOGIC UNIT       | DESCRIPTION                                                                                                                                                                                                                                                                                                                         |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| QUATERNARY DEPOSITS | <b>Upper Glaciolacustrine Unit</b><br>The surficial overburden in the area is mapped as an upper glaciolacustrine unit that is composed of a brown, reddish, and grey silty clay to clayey silt that is massive to thinly-stratified. This unit may be present from ground surface to approximately 10 metres below ground surface. |
|                     | <b>Halton Till</b><br>Underlying the upper glaciolacustrine unit is the Halton Till, a brown to grey, massive to laminated clayey silt with a sand content of less than 20 percent. The till is approximately 10 metres thick.                                                                                                      |
|                     | <b>Lower Glaciolacustrine Unit</b><br>Beneath the Halton Till is a lower glaciolacustrine unit of silty clay that is approximately 10 metres thick.                                                                                                                                                                                 |
|                     | <b>Lower Till Unit</b><br>The Lower Till unit consists of sandy silt with lenses of silt, sand, and gravel. The Lower Till unit is approximately 5 metres thick.                                                                                                                                                                    |
| BEDROCK             | <b>Salina Formation</b><br>The bedrock consists of inter-bedded dolostones and shales of the Salina Formation.                                                                                                                                                                                                                      |

The upper glaciolacustrine unit, the Halton Till, and the lower glaciolacustrine unit are reportedly fairly uniform and predictable. The sand and gravel lenses within the lower till unit are considered non-uniform and unpredictable since they are laterally variable and discontinuous.

Generally, hydraulic conductivity in overburden soils is low due to the fine-grained nature of the material. Local topography (including existing ditches and swales) and seasonal precipitation strongly influence groundwater flow through fractures in the shallow, weathered overburden.

## STORMWATER MANAGEMENT POND

The pond is located on the Rice Road Tributary within the Twelve Mile Creek watershed. The pond has three inlet structures that collect runoff from roadside ditches along the east and west sides of Rice Road (south of Regional Road 20), and from manholes along the south side of Regional Road 20 (west of Rice Road). The pond discharges north through an existing 1.25 m diameter concrete culvert beneath Regional Road 20 into the Rice Road Tributary. On the north side of Regional Road 20, the Rice Road Tributary receives surface water runoff from Regional Road 20 storm drains and from the roadside ditch located on the north side of Regional Road 20. The collected runoff then flows north into the narrowly confined, densely wooded channel of the Rice Road Tributary. The Rice Road Tributary flows north to Twelve Mile Creek, ultimately to Lake Ontario.

## MONITORING PROGRAM

The hydrologic monitoring program for the Village of East Fonthill Development includes surface water quality monitoring and surface water flow and temperature monitoring.

The monitoring program will consist of two phases:

- Construction Monitoring – monitoring for the duration of the Village of East Fonthill Development construction activities to determine the hydrologic conditions during construction; and,
- Post-Construction Monitoring – monitoring for two full years once the Village of East Fonthill Development construction activities are completed to determine if the proposed storm water management strategy is functioning as designed.

This report presents the results of the construction monitoring phase, completed during 2018.

Five surface water monitoring stations were established for the monitoring program, as shown on Figure 1 and described below. As noted above, the north storm water management pond was fully constructed by October 2015. The locations of the stations included below.

- SW1 – Inlet to pond, northwest corner of pond
- SW2 – Inlet to pond, northeast corner of pond
- SW3 – Inlet to pond, east side of pond
- SW4 – Outlet from pond to box culvert beneath Regional Road 20 to the Rice Road Tributary
- SW5 – Downstream in the Rice Road Tributary, approximately 40 metres north of Regional Road 20

The monitoring program is summarized in Appendix A and discussed in the following sections.

Electronic flow and temperature monitoring in the pond was initiated in spring 2015. Pond construction activities, however, were not completed until October 2015. Additionally, in 2016 the pond was not operating at full capacity due to the time required for the pond to fill. Therefore,

it is interpreted that the monitoring data in 2015 and 2016 may not capture the pond operating as it is intended.

## SURFACE WATER QUALITY

The surface water quality monitoring program includes five sampling events throughout the year at stations SW1, SW2, SW3 and SW4. The events are undertaken to correspond with specific weather conditions that include the spring freshet (i.e., snow melt runoff) (approximately March/April), twice during dry periods (April/May and September/October), and twice during storm events (preferably >25 mm of precipitation) (May/June and October/November). The surface water monitoring protocols are presented in Table 3.

The surface water samples are analysed for the following water quality parameters:

- Total Suspended Solids (laboratory)
- pH, conductivity, temperature and dissolved oxygen (field measurement only)

**Table 2 Monitoring Protocols and Procedures**

### SURFACE WATER SAMPLING

Attempts are made to schedule surface water monitoring events to correspond with intended freshet, dry, or wet event monitoring.

Surface water samples at each location are collected prior to flow measurement.

Surface water samples are collected directly into the laboratory provided bottles that do not have preservatives. For bottles with preservatives added, standard grab sampling methods are used and then the water is decanted into laboratory provided bottles with the appropriate preservatives. The sample container is pointed upstream and care is taken to avoid particulate and organic matter in the water.

Sample bottles are marked, labelled, and sealed in the field.

Samples are stored in ice packed coolers, and delivered or couriered to the laboratory at the end of each day, under Chain of Custody procedures.

Field parameters (pH, conductivity, temperature and dissolved oxygen) are measured from a separate beaker of water using calibrated instruments.

When the flows are present, stream flow discharge is calculated based on the cross-sectional area of the stream, and the water velocity.

A cross-sectional profile of the stream is determined by measuring the cross sectional width and depth of the wetted stream at incremental sections. The velocity is measured using an electromagnetic velocity meter by measuring the average velocity of each section.

Field notes including date, weather, time, sampling data, staff, field parameters, visual observations, and number of bottles are marked on the Water Sampling Field Data sheets in the Project Field Book.

## SURFACE WATER FLOW AND TEMPERATURE

Manual flow measurements are completed at each surface water station during each monitoring event. Manual flow measurements are done generally following the USGS area-velocity method.

Future monitoring events will include submerged electronic temperature loggers at stations SW1, SW2 and SW3 to record water temperature at 10-minute intervals on a seasonal basis (i.e., during non-freezing conditions), and submerged electronic flow monitoring equipment at stations SW4 and SW5 to measure water level, velocity and temperature at 10-minute intervals on a seasonal basis (i.e., during non-freezing conditions).

## MONITORING PROGRAM RESULTS

Collection of surface water quality samples and flow measurements was attempted five times in 2018 to coincide with the following weather events:

- Spring Freshet/Spring Melt event
- Dry events (without precipitation)
- Wet events (with precipitation)

The table below indicates the dates of the monitoring events.

**Table 3 Sampling Event Dates**

| YEAR | SPRING<br>FRESHET | DRY EVENTS<br>(WITHOUT<br>PRECIPITATION) | WET EVENTS<br>(WITH<br>PRECIPITATION) |
|------|-------------------|------------------------------------------|---------------------------------------|
| 2018 | 4 April           | 8 May<br>18 September                    | 4 June<br>1 November                  |

## SURFACE WATER QUALITY

Surface water samples were submitted to AGAT Laboratories of Mississauga for analysis TSS. Field parameters pH, conductivity, temperature, and DO were measured at the time of sample collection.

Water quality results are presented in Table B-1. Laboratory certificates of analysis for the current reporting period are included in Appendix B. The results were compared to the Provincial Water Quality Objectives (PWQO), where available.

The 2018 water quality results met the PWQOs with the exception of dissolved oxygen at SW2 and SW4 in June.

Time-concentration graphs of parameter concentrations at the surface monitoring stations are presented in Figure B-1. During 2018, parameter concentrations generally were similar at the inlet stations (SW1, SW2 and SW3) and the outlet station (SW4).

In 2018, the TSS concentrations ranged from less than 10 mg/L to 89 mg/L. It is noted that the TSS concentration at the outlet (SW4) has decreased overall since completion of the pond construction activities.

The following table compares the average TSS concentrations at the inlets and the TSS concentrations at the outlet (SW4).

TSS at the outlet (SW4) was generally lower than at the inlets throughout 2018. With the exception of the spring freshet sampling event, the TSS concentrations at the outlet were less than 80% of that in the inlet.

**Table 4 Total Suspended Solids Concentrations**

| <b>SAMPLING<br/>EVENT</b> | <b>AVERAGE<br/>CONCENTRATIONS<br/>AT INLETS (SW1,<br/>SW2, SW3)</b> | <b>TSS<br/>CONCENTRATION AT<br/>OUTLET (SW4)</b> | <b>TSS AT<br/>OUTLET VS<br/>INLETS</b> |
|---------------------------|---------------------------------------------------------------------|--------------------------------------------------|----------------------------------------|
| Freshet                   | 38 mg/L                                                             | 45 mg/L                                          | 120 %                                  |
| May                       | 13 mg/L                                                             | <10 mg/L                                         | 77 %                                   |
| June                      | 41 mg/L                                                             | 25 mg/L                                          | 61 %                                   |
| September                 | 15 mg/L                                                             | <10 mg/L                                         | 67 %                                   |
| November                  | 55 mg/L                                                             | 12 mg/L                                          | 22 %                                   |

## **SURFACE WATER FLOW AND TEMPERATURE**

Manual flow measurements were obtained from each surface water station at the time of the sampling events listed in Section 3.1.

Manual flow measurements are presented in Table C-1. Electronic flow measurements at SW4 and SW5 are presented on Figure C-1 and Figure C-2 respectively. Flow rates typically were highest at the pond outlet (SW4) during each event. The flow rates typically corresponded to the type of event; that is, higher flows during the freshet and storm events, and lower flows during the dry period sampling events.

As previously mentioned, pond construction activities in 2015 and the pond not operating at full capacity in 2016 have impacted the monitoring data. For example, high flow rates observed early in 2015 are likely attributed to pumping of water directly to the outlet structure to accommodate construction activities. Additionally, low flow rates observed in 2016 are possibly attributed to the pond not operating at full capacity.

Electronic and manual temperature monitoring is presented on Figure C-3. The data indicates that, in the summer months, the outlet structures are effectively cooling the temperature of the pond water prior to reaching the downstream location (SW5).

It is noted that electronic monitoring of temperature within the pond was not initiated in 2015 due to the ongoing construction of the pond. In 2016, the electronic temperature devices were lost and/or stolen from SW1, SW2 and SW3 and, therefore, only manual temperature data is available at these locations.

## **CLIMATE DATA**

Climate data is included in Appendix D. Table D-1 summarizes the 2018 climate data from the Environment Canada Welland-Pelham climatological station.

Normal annual precipitation for the area is approximately 997.4 mm, based on the 1981-2010 30-Year Normals calculated from Environment Canada climatological station data located in Welland (approximately six kilometres north of the study area).

A total of 894 mm of precipitation was received in 2018 in the area, based on the total precipitation measured at the Environment Canada Welland-Pelham climatological station, indicating that the volume of precipitation received in 2018 was below normal.

## 2019 MONITORING PROGRAM

The monitoring program should be continued in 2019. The monitoring program is discussed in detail in Section 2 of this report and summarized below in Table 5. The 2019 program will consist of the construction monitoring phase.

**Table 6 2019 Monitoring Program**

| SURFACE WATER STATION ID | SURFACE WATER QUALITY MONITORING* | SURFACE WATER FLOW MONITORING (INCLUDING TEMPERATURE) |                                    |
|--------------------------|-----------------------------------|-------------------------------------------------------|------------------------------------|
|                          |                                   | MANUAL**                                              | ELECTRONIC***                      |
| SW1                      | ✓                                 | ✓                                                     | Temperature                        |
| SW2                      | ✓                                 | ✓                                                     | Temperature                        |
| SW3                      | ✓                                 | ✓                                                     | Temperature                        |
| SW4                      | ✓                                 | ✓                                                     | Water level, velocity, temperature |
| SW5                      | n/a                               | ✓                                                     | Water level, velocity, temperature |

**Notes:**

\* Frequency – five times per year (weather-based): spring freshet, two dry events and two storm events (preferably >25 mm of precipitation); Parameters – TSS (laboratory), pH/conductivity/temperature/DO (field)

\*\* Frequency – five times per year with sampling events

\*\*\* Frequency – continuous electronic measurement at 10-minute intervals during non-freezing conditions (approximately March to November (weather permitting))

## CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the 2018 monitoring program results presented in this report, the following conclusions are provided:

- The 2018 water quality results met the PWQOs with the exception of dissolved oxygen on one occasion.
- TSS concentration at the outlet (SW4) has decreased overall since completion of the pond construction activities and, with the exception of the spring freshet sampling event, the TSS concentrations at the outlet were less than 80% of that in the inlet.
- Flow rates were typically highest at the pond outlet (SW4) during each event. The flow rates corresponded to the type of event; that is, higher flows during the freshet and storm events, and lower flows during the dry events.
- Electronic and manual temperature monitoring indicates that, in the summer months, the outlet structures are effectively cooling the temperature of the pond water prior to reaching the downstream location (SW5).

Based on the findings of the 2018 monitoring program, the following recommendations are provided for consideration:

- The monitoring program should be continued in 2019 as outlined in Section 4 of this report.



Kind regards,

A handwritten signature in black ink, appearing to read 'C. Leger'.

Craig Leger, M.Sc., C.E.T.  
Environment Consultant

Encl. Appendix A: Work Program, Appendix B: SW Chemistry, Appendix C: SW Flows & Temperatures, Appendix D:  
Climate

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# APPENDIX

## A WORK PROGRAM







## 2018 MONITORING PROGRAM

| SURFACE WATER<br>STATION ID | SURFACE WATER<br>QUALITY<br>MONITORING* | SURFACE WATER FLOW MONITORING<br>(INCLUDING TEMPERATURE) |                                       |
|-----------------------------|-----------------------------------------|----------------------------------------------------------|---------------------------------------|
|                             |                                         | MANUAL**                                                 | ELECTRONIC***                         |
| SW1                         | ✓                                       | ✓                                                        | Temperature                           |
| SW2                         | ✓                                       | ✓                                                        | Temperature                           |
| SW3                         | ✓                                       | ✓                                                        | Temperature                           |
| SW4                         | ✓                                       | ✓                                                        | Water level, velocity,<br>temperature |
| SW5                         | n/a                                     | ✓                                                        | Water level, velocity,<br>temperature |

**Notes:**

\* Frequency – five times per year (weather-based): spring freshet, two dry events and two storm events (preferably >25 mm of precipitation)

Parameters – TSS (laboratory); pH/conductivity/temperature/DO (field)

\*\* Frequency – five times per year with sampling events

\*\*\* Frequency – continuous electronic measurement at 10-minute intervals during non-freezing conditions (approximately March to November (weather permitting))

# APPENDIX

**B**

SURFACE WATER  
CHEMISTRY



Table B-1  
Surface Water Quality Data  
East Fonthill Development



| Parameter                                      |                      | PWQO  | SW1              |                 |                  |                   |                      |                  |                   |                   |                   |              |
|------------------------------------------------|----------------------|-------|------------------|-----------------|------------------|-------------------|----------------------|------------------|-------------------|-------------------|-------------------|--------------|
| Event Type                                     | 3/12/2015<br>Freshet |       | 5/13/2015<br>Dry | 6/9/2015<br>Wet | 9/30/2015<br>Dry | 10/29/2015<br>Wet | 3/22/2016<br>Freshet | 4/26/2016<br>Wet | 6/29/2016<br>Dry  | 10/21/2016<br>Wet | 11/11/2016<br>Dry |              |
| Event Phase                                    | Construction         |       | Construction     | Construction    | Construction     | Construction      | Construction         | Construction     | Construction      | Construction      | Construction      | Construction |
| Field Analyses                                 |                      |       |                  |                 |                  |                   |                      |                  |                   |                   |                   |              |
| pH (unitless)                                  | 6.5 - 8.5            | 7.5   | 7.6              | 8.4             | 7.9              | 7.8               |                      | 8.4              | 8.2               | 8.2               | 7.4               |              |
| Conductivity (µS/cm)                           |                      | 4570  | 1215             | 370             | 195              | 1781              |                      | 1869             | 1514              | 380               | 760               |              |
| Temperature (°C)                               |                      | 0.8   | 11.6             | 18.0            | 16.4             | 11.4              |                      | 9.5              | 22.7              | 15.1              | 9.9               |              |
| Dissolved Oxygen (Cold Water Biota)            | >5 to >8*            | 11.2  | 11.0             | 9.5             | 7.4              | 6.6               |                      | 7.5              | 4.5               | 9.5               | 8.7               |              |
| DO temperature-dependent criteria calculation* |                      | 7.6   | 6.2              | 5.5             | 5.7              | 6.2               |                      | 6.4              | 5.0               | 5.8               | 6.4               |              |
| Appearance                                     |                      | Clear | Clear            | Brown, cloudy   | Clear            | Brown, cloudy     | Cloudy               | Brown, cloudy    | Clear, colourless | Slightly cloudy   | Clear             |              |
| Laboratory Analyses                            |                      |       |                  |                 |                  |                   |                      |                  |                   |                   |                   |              |
| Total Suspended Solids                         |                      | 28    | 31               | 353             | <10              | 240               | <10                  | 46               | 23                | 46                | 4                 |              |

| Parameter                                      |                      | PWQO  | SW2              |                      |                  |                   |                      |                     |                   |                   |                   |              |
|------------------------------------------------|----------------------|-------|------------------|----------------------|------------------|-------------------|----------------------|---------------------|-------------------|-------------------|-------------------|--------------|
| Event Type                                     | 3/12/2015<br>Freshet |       | 5/13/2015<br>Dry | 6/9/2015<br>Wet      | 9/30/2015<br>Dry | 10/29/2015<br>Wet | 3/22/2016<br>Freshet | 4/26/2016<br>Wet    | 6/29/2016<br>Dry  | 10/21/2016<br>Wet | 11/11/2016<br>Dry |              |
| Event Phase                                    | Construction         |       | Construction     | Construction         | Construction     | Construction      | Construction         | Construction        | Construction      | Construction      | Construction      | Construction |
| Field Analyses                                 |                      |       |                  |                      |                  |                   |                      |                     |                   |                   |                   |              |
| pH (unitless)                                  | 6.5 - 8.5            | 7.1   | 7.4              | 8.3                  | 7.8              | 8.0               | 8.5                  | 8.4                 | 8.1               | 8.4               | 8.0               |              |
| Conductivity (µS/cm)                           |                      | 8960  | 1675             | 571                  | 410              | 707               | 1884                 | 1421                | 1526              | 160               | 600               |              |
| Temperature (°C)                               |                      | 3.3   | 10.2             | 17.8                 | 14.9             | 11.2              | 6.9                  | 9.3                 | 23.2              | 14.3              | 10.5              |              |
| Dissolved Oxygen (Cold Water Biota)            | >5 to >8*            | 9.2   | 8.8              | 7.5                  | 7.2              | 6.3               | 11.4                 | 12.4                | 3.2               | 9.4               | 7.9               |              |
| DO temperature-dependent criteria calculation* |                      | 7.3   | 6.4              | 5.5                  | 5.8              | 6.2               | 6.8                  | 6.5                 | 5.0               | 5.9               | 6.3               |              |
| Appearance                                     |                      | Clear | Clear            | slight brown, cloudy | yellowish, clear | slight cloudy     | Cloudy               | Light brown, cloudy | Clear, colourless | Slightly cloudy   | Clear             |              |
| Laboratory Analyses                            |                      |       |                  |                      |                  |                   |                      |                     |                   |                   |                   |              |
| Total Suspended Solids                         |                      | <10   | <10              | 10                   | 17               | 84                | <10                  | 26                  | <10               | 38                | 9                 |              |

| Parameter                                      |                      | PWQO  | SW3              |                      |                  |                   |                      |                     |                   |                   |                   |              |
|------------------------------------------------|----------------------|-------|------------------|----------------------|------------------|-------------------|----------------------|---------------------|-------------------|-------------------|-------------------|--------------|
| Event Type                                     | 3/12/2015<br>Freshet |       | 5/13/2015<br>Dry | 6/9/2015<br>Wet      | 9/30/2015<br>Dry | 10/29/2015<br>Wet | 3/22/2016<br>Freshet | 4/26/2016<br>Wet    | 6/29/2016<br>Dry  | 10/21/2016<br>Wet | 11/11/2016<br>Dry |              |
| Event Phase                                    | Construction         |       | Construction     | Construction         | Construction     | Construction      | Construction         | Construction        | Construction      | Construction      | Construction      | Construction |
| Field Analyses                                 |                      |       |                  |                      |                  |                   |                      |                     |                   |                   |                   |              |
| pH (unitless)                                  | 6.5 - 8.5            | 7.4   | Dry              | 8.4                  | Dry              | 8.0               | 8.3                  | 8.4                 | 8.0               | 8.0               | 7.7               |              |
| Conductivity (µS/cm)                           |                      | 1226  |                  | 269                  |                  | 649               | 1280                 | 1479                | 1500              | 520               | 600               |              |
| Temperature (°C)                               |                      | 0.1   |                  | 18.9                 |                  | 10.8              | 5.7                  | 10.2                | 23.4              | 15.1              | 8.6               |              |
| Dissolved Oxygen (Cold Water Biota)            | >5 to >8*            | 9.8   |                  | 8.0                  |                  | 7.1               | 12.2                 | 12.8                | 4.5               | 6.7               | 8.1               |              |
| DO temperature-dependent criteria calculation* |                      | 7.7   |                  | 5.4                  |                  | 6.3               | 6.9                  | 6.4                 | 5.0               | 5.8               | 6.6               |              |
| Appearance                                     |                      | Clear |                  | slight brown, cloudy |                  | slight cloudy     | Cloudy               | Light brown, cloudy | Clear, colourless | Cloudy brown      | Clear             |              |
| Laboratory Analyses                            |                      |       |                  |                      |                  |                   |                      |                     |                   |                   |                   |              |
| Total Suspended Solids                         |                      | 10    |                  | 158                  |                  | 40                | <10                  | 24                  | <10               | 233               | 5                 |              |

| Parameter                                      |                      | PWQO  | SW4              |                 |                  |                   |                      |                     |                   |                   |                   |              |
|------------------------------------------------|----------------------|-------|------------------|-----------------|------------------|-------------------|----------------------|---------------------|-------------------|-------------------|-------------------|--------------|
| Event Type                                     | 3/12/2015<br>Freshet |       | 5/13/2015<br>Dry | 6/9/2015<br>Wet | 9/30/2015<br>Dry | 10/29/2015<br>Wet | 3/22/2016<br>Freshet | 4/26/2016<br>Wet    | 6/29/2016<br>Dry  | 10/21/2016<br>Wet | 11/11/2016<br>Dry |              |
| Event Phase                                    | Construction         |       | Construction     | Construction    | Construction     | Construction      | Construction         | Construction        | Construction      | Construction      | Construction      | Construction |
| Field Analyses                                 |                      |       |                  |                 |                  |                   |                      |                     |                   |                   |                   |              |
| pH (unitless)                                  | 6.5 - 8.5            | 7.4   | 7.7              | 8.4             | 7.7              | 7.9               | 8.9                  | 8.3                 | 8.2               | 8.2               | 7.5               |              |
| Conductivity (µS/cm)                           |                      | 3120  | 1631             | 1626            | 376              | 859               | 1880                 | 1308                | 1530              | 600               | 560               |              |
| Temperature (°C)                               |                      | 0.4   | 11.9             | 17.8            | 16.2             | 11.9              | 6.7                  | 8.0                 | 23.8              | 16.0              | 9.7               |              |
| Dissolved Oxygen (Cold Water Biota)            | >5 to >8*            | 11.0  | 10.4             | 8.2             | 3.4              | 8.2               | 10.8                 | 12.0                | 5.2               | 7.9               | 8.4               |              |
| DO temperature-dependent criteria calculation* |                      | 7.7   | 6.2              | 5.5             | 5.7              | 6.2               | 6.8                  | 6.6                 | 4.9               | 5.7               | 6.4               |              |
| Appearance                                     |                      | Clear | Clear            | Cloudy brown    | Clear            | slightly cloudy   | Cloudy               | Light brown, cloudy | Clear, colourless | Slightly cloudy   | Clear             |              |
| Laboratory Analyses                            |                      |       |                  |                 |                  |                   |                      |                     |                   |                   |                   |              |
| Total Suspended Solids                         |                      | 20    | <10              | 228             | 10               | 103               | <10                  | 25                  | <10               | <10               | 5                 |              |

Notes:  
· All parameters are mg/L, unless otherwise indicated.  
· PWQO - Provincial Water Quality Objectives (1999)  
· Shading indicates parameter exceeds PWQO  
\* - Cold Water Biota Criteria relative to temperature:  
 $y = 7.7259e^{-0.019x}$ , y=DO criteria x=temperature

Table B-1  
Surface Water Quality Data  
East Fonthill Development



| Parameter                                      |                      | PWQO            | SW1                |                 |                  |                    |                        |                 |                  |                  |                  |              |
|------------------------------------------------|----------------------|-----------------|--------------------|-----------------|------------------|--------------------|------------------------|-----------------|------------------|------------------|------------------|--------------|
| Event Type                                     | 3/28/2017<br>Freshet |                 | 5/3/2017<br>Wet    | 6/6/2017<br>Dry | 9/22/2017<br>Wet | 12/5/2017<br>Dry   | 4/4/2018<br>Freshet    | 5/8/2018<br>Dry | 6/4/2018<br>Wet  | 9/18/2018<br>Dry | 11/1/2018<br>Wet |              |
| Event Phase                                    | Construction         |                 | Construction       | Construction    | Construction     | Construction       | Construction           | Construction    | Construction     | Construction     | Construction     | Construction |
| Field Analyses                                 |                      |                 |                    |                 |                  |                    |                        |                 |                  |                  |                  |              |
| pH (unitless)                                  | 6.5 - 8.5            | 8.3             | 8.1                | 7.8             | 7.4              | 7.7                | 7.7                    | 7.7             | 7.9              | 7.8              | 7.9              |              |
| Conductivity (µS/cm)                           |                      | 1610            | 980                | 890             | 490              | 283                | 1529                   | 1694            | 1544             | 765              | 459              |              |
| Temperature (°C)                               |                      | 10.0            | 11.9               | 17.5            | 23.8             | 8.1                | 5.1                    | 15.0            | 19.4             | 24.1             | 8.1              |              |
| Dissolved Oxygen (Cold Water Biota)            | >5 to >8*            | 11.8            | 14.8               | 8.5             | 7.9              | 10.0               | 11.1                   | 9.0             | 6.8              | 7.4              | 8.9              |              |
| DO temperature-dependent criteria calculation* |                      | 6.4             | 6.2                | 5.5             | 4.9              | 6.6                | 7.0                    | 5.8             | 5.3              | 4.9              | 6.6              |              |
| Appearance                                     |                      | Slightly cloudy | Cloudy light brown | Clear           | Clear            | Cloudy light brown | Clear, slightly yellow | Clear           | Clear, yellowish | Clear            | Cloudy           |              |
| Laboratory Analyses                            |                      |                 |                    |                 |                  |                    |                        |                 |                  |                  |                  |              |
| Total Suspended Solids                         |                      | 30              | 32                 | <10             | 16               | 78                 | 57                     | <10             | 18               | <10              | 61               |              |

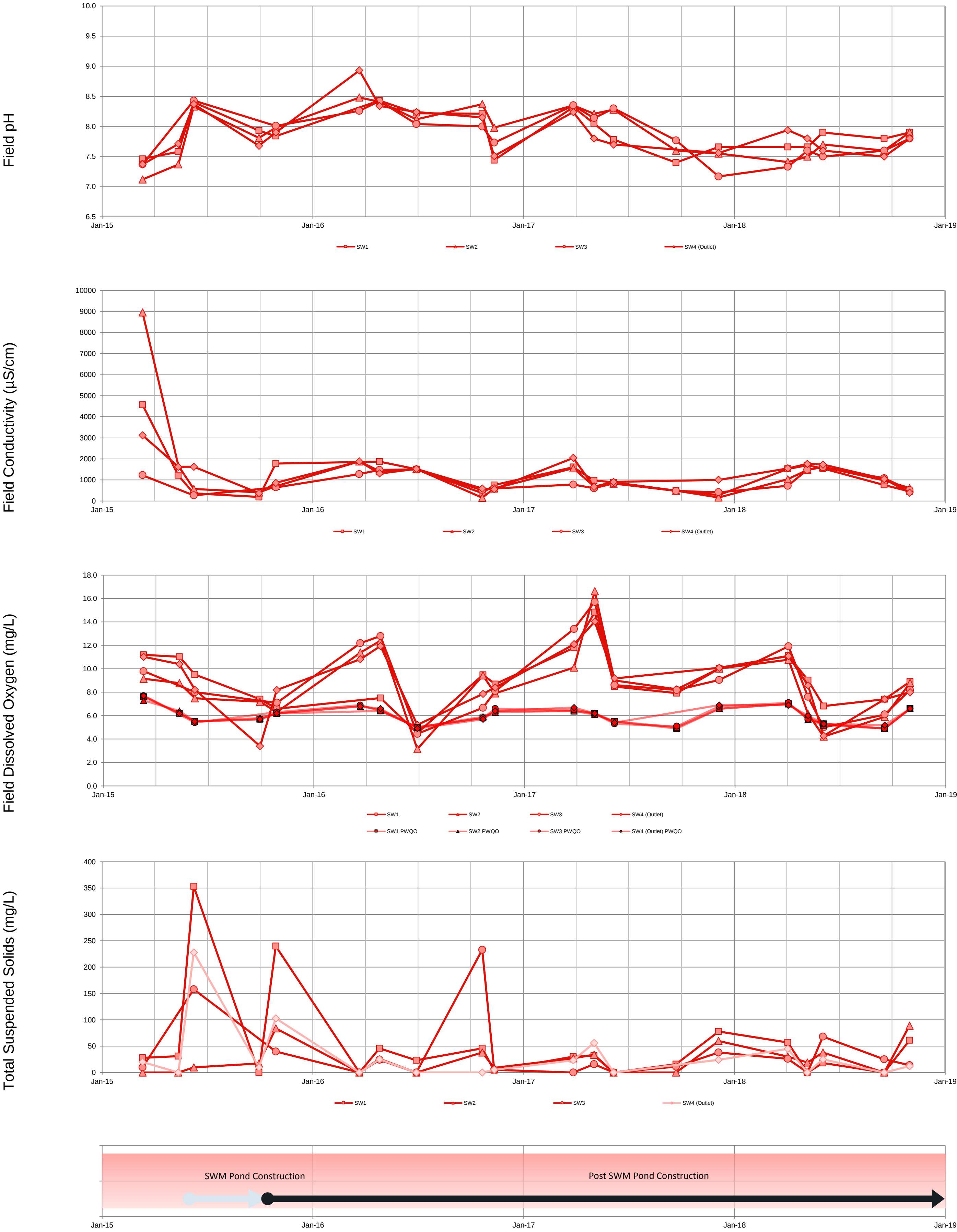
| Parameter                                      |                      | PWQO  | SW2                |                 |                  |                    |                        |                 |                        |                  |                  |  |
|------------------------------------------------|----------------------|-------|--------------------|-----------------|------------------|--------------------|------------------------|-----------------|------------------------|------------------|------------------|--|
| Event Type                                     | 3/28/2017<br>Freshet |       | 5/3/2017<br>Wet    | 6/6/2017<br>Dry | 9/22/2017<br>Wet | 12/5/2017<br>Dry   | 4/4/2018<br>Freshet    | 5/8/2018<br>Dry | 6/4/2018<br>Wet        | 9/18/2018<br>Dry | 11/1/2018<br>Wet |  |
| Event Phase                                    | Construction         |       | Construction       | Construction    | Construction     | Construction       | Construction           | Construction    | Construction           | Construction     | Construction     |  |
| Field Analyses                                 |                      |       |                    |                 |                  |                    |                        |                 |                        |                  |                  |  |
| pH (unitless)                                  | 6.5 - 8.5            | 8.4   | 8.2                | 8.3             | 7.6              | 7.6                | 7.4                    | 7.5             | 7.7                    | 7.6              | 7.9              |  |
| Conductivity (µS/cm)                           |                      | 1560  | 700                | 831             | 490              | 168                | 1036                   | 1478            | 1618                   | 983              | 618              |  |
| Temperature (°C)                               |                      | 10.1  | 12.6               | 17.6            | 22.9             | 8.0                | 4.9                    | 16.3            | 20.4                   | 24.3             | 8.2              |  |
| Dissolved Oxygen (Cold Water Biota)            | >5 to >8*            | 10.1  | 16.6               | 9.0             | 8.3              | 10.0               | 10.8                   | 6.2             | 4.2                    | 5.9              | 8.8              |  |
| DO temperature-dependent criteria calculation* |                      | 6.4   | 6.1                | 5.5             | 5.0              | 6.6                | 7.0                    | 5.7             | 5.2                    | 4.9              | 6.6              |  |
| Appearance                                     |                      | Clear | Cloudy light brown | Clear           | Clear            | Cloudy light brown | Clear, slightly yellow | Clear           | Clear, slightly yellow | Clear            | Cloudy           |  |
| Laboratory Analyses                            |                      |       |                    |                 |                  |                    |                        |                 |                        |                  |                  |  |
| Total Suspended Solids                         |                      | 27    | 34                 | <10             | <10              | 60                 | 30                     | 19              | 38                     | <10              | 89               |  |

| Parameter                                      |                      | PWQO  | SW3             |                 |                  |                    |                        |                 |                        |                  |                  |  |
|------------------------------------------------|----------------------|-------|-----------------|-----------------|------------------|--------------------|------------------------|-----------------|------------------------|------------------|------------------|--|
| Event Type                                     | 3/28/2017<br>Freshet |       | 5/3/2017<br>Wet | 6/6/2017<br>Dry | 9/22/2017<br>Wet | 12/5/2017<br>Dry   | 4/4/2018<br>Freshet    | 5/8/2018<br>Dry | 6/4/2018<br>Wet        | 9/18/2018<br>Dry | 11/1/2018<br>Wet |  |
| Event Phase                                    | Construction         |       | Construction    | Construction    | Construction     | Construction       | Construction           | Construction    | Construction           | Construction     | Construction     |  |
| Field Analyses                                 |                      |       |                 |                 |                  |                    |                        |                 |                        |                  |                  |  |
| pH (unitless)                                  | 6.5 - 8.5            | 8.4   | 8.1             | 8.3             | 7.8              | 7.2                | 7.3                    | 7.6             | 7.5                    | 7.6              | 7.8              |  |
| Conductivity (µS/cm)                           |                      | 780   | 610             | 839             | 480              | 418                | 722                    | 1485            | 1612                   | 1081             | 529              |  |
| Temperature (°C)                               |                      | 9.1   | 11.2            | 19.6            | 21.8             | 7.0                | 4.6                    | 16.2            | 20.0                   | 23.8             | 8.1              |  |
| Dissolved Oxygen (Cold Water Biota)            | >5 to >8*            | 13.4  | 15.7            | 8.6             | 8.2              | 9.0                | 11.9                   | 7.6             | 5.0                    | 6.1              | 8.2              |  |
| DO temperature-dependent criteria calculation* |                      | 6.5   | 6.2             | 5.3             | 5.1              | 6.8                | 7.1                    | 5.7             | 5.3                    | 4.9              | 6.6              |  |
| Appearance                                     |                      | Clear | Slightly cloudy | Clear           | Clear            | Cloudy light brown | Clear, slightly yellow | Clear           | Clear, slightly yellow | Clear            | Slightly cloudy  |  |
| Laboratory Analyses                            |                      |       |                 |                 |                  |                    |                        |                 |                        |                  |                  |  |
| Total Suspended Solids                         |                      | <10   | 16              | <10             | 11               | 38                 | 26                     | <10             | 68                     | 25               | 14               |  |

| Parameter                                      |                      | PWQO   | SW4                   |                 |                  |                    |                        |                 |                        |                  |                  |  |
|------------------------------------------------|----------------------|--------|-----------------------|-----------------|------------------|--------------------|------------------------|-----------------|------------------------|------------------|------------------|--|
| Event Type                                     | 3/28/2017<br>Freshet |        | 5/3/2017<br>Wet       | 6/6/2017<br>Dry | 9/22/2017<br>Wet | 12/5/2017<br>Dry   | 4/4/2018<br>Freshet    | 5/8/2018<br>Dry | 6/4/2018<br>Wet        | 9/18/2018<br>Dry | 11/1/2018<br>Wet |  |
| Event Phase                                    | Construction         |        | Construction          | Construction    | Construction     | Construction       | Construction           | Construction    | Construction           | Construction     | Construction     |  |
| Field Analyses                                 |                      |        |                       |                 |                  |                    |                        |                 |                        |                  |                  |  |
| pH (unitless)                                  | 6.5 - 8.5            | 8.2    | 7.8                   | 7.7             | Dry              | 7.6                | 7.9                    | 7.8             | 7.6                    | 7.5              | 7.8              |  |
| Conductivity (µS/cm)                           |                      | 2050   | 680                   | 908             |                  | 1009               | 1551                   | 1770            | 1728                   | 1045             | 396              |  |
| Temperature (°C)                               |                      | 7.4    | 11.3                  | 18.6            |                  | 5.6                | 5.7                    | 13.5            | 19.7                   | 20.7             | 8.0              |  |
| Dissolved Oxygen (Cold Water Biota)            | >5 to >8*            | 12.1   | 14.0                  | 9.2             |                  | 10.1               | 11.1                   | 8.6             | 4.3                    | 7.4              | 8.0              |  |
| DO temperature-dependent criteria calculation* |                      | 6.7    | 6.2                   | 5.4             |                  | 6.9                | 6.9                    | 6.0             | 5.3                    | 5.2              | 6.6              |  |
| Appearance                                     |                      | Cloudy | Slightly cloudy brown | Clear           |                  | Cloudy light brown | Clear, slightly yellow | Clear           | Clear, slightly yellow | Clear            | Clear            |  |
| Laboratory Analyses                            |                      |        |                       |                 |                  |                    |                        |                 |                        |                  |                  |  |
| Total Suspended Solids                         |                      | 23     | 56                    | <10             |                  | 24                 | 45                     | <10             | 25                     | <10              | 12               |  |

Notes:  
· All parameters are mg/L, unless otherwise indicated.  
· PWQO - Provincial Water Quality Objectives (1999)  
· Shading indicates parameter exceeds PWQO  
\* - Cold Water Biota Criteria relative to temperature:  
 $y = 7.7259e^{-0.019x}$ , y=DO criteria x=temperature

Figure B-1 Surface Water Quality  
East Fonthill Development



**CLIENT NAME: WSP CANADA INC.**  
**55 KING STREET, 7TH FLOOR**  
**ST CATHARINES, ON L2R3H5**  
**(905) 687-1771**

**ATTENTION TO: Craig Leger**

**PROJECT: 151-02661-00**

**AGAT WORK ORDER: 18T326648**

**WATER ANALYSIS REVIEWED BY: Parvathi Malemath, Data Reviewer**

**DATE REPORTED: Apr 13, 2018**

**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.**

**AGAT** Laboratories (V1)

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Western Enviro-Agricultural Laboratory Association (WEALA)  
Environmental Services Association of Alberta (ESAA)

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Page 1 of 5

*Results relate only to the items tested and to all the items tested*  
*All reportable information as specified by ISO 17025:2005 is available from AGAT Laboratories upon request*



**AGAT** Laboratories

## Certificate of Analysis

AGAT WORK ORDER: 18T326648

PROJECT: 151-02661-00

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
CANADA L4Z 1Y2  
TEL (905)712-5100  
FAX (905)712-5122  
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.

SAMPLING SITE: Fonthill East (Fonthill Sites)

ATTENTION TO: Craig Leger

SAMPLED BY: BC

### TSS (Water)

DATE RECEIVED: 2018-04-05

DATE REPORTED: 2018-04-13

|                        |      | SAMPLE DESCRIPTION: |     | SW1        | SW2        | SW3        | SW4        |
|------------------------|------|---------------------|-----|------------|------------|------------|------------|
|                        |      | SAMPLE TYPE:        |     | Water      | Water      | Water      | Water      |
|                        |      | DATE SAMPLED:       |     | 2018-04-04 | 2018-04-04 | 2018-04-04 | 2018-04-04 |
| Parameter              | Unit | G / S               | RDL | 9166604    | 9166605    | 9166606    | 9166607    |
| Total Suspended Solids | mg/L | 10                  | 57  | 30         | 26         | 45         |            |

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:





## Quality Assurance

CLIENT NAME: WSP CANADA INC.

PROJECT: 151-02661-00

SAMPLING SITE: Fonthill East (Fonthill Sites)

AGAT WORK ORDER: 18T326648

ATTENTION TO: Craig Leger

SAMPLED BY: BC

### Water Analysis

| RPT Date: Apr 13, 2018 |       |           | DUPLICATE |        |     | Method Blank | REFERENCE MATERIAL |                   | METHOD BLANK SPIKE |          | MATRIX SPIKE      |       |
|------------------------|-------|-----------|-----------|--------|-----|--------------|--------------------|-------------------|--------------------|----------|-------------------|-------|
| PARAMETER              | Batch | Sample Id | Dup #1    | Dup #2 | RPD |              | Measured Value     | Acceptable Limits |                    | Recovery | Acceptable Limits |       |
|                        |       |           |           |        |     |              |                    | Lower             | Upper              |          | Lower             | Upper |

#### TSS (Water)

|                        |         |     |     |    |      |     |     |      |
|------------------------|---------|-----|-----|----|------|-----|-----|------|
| Total Suspended Solids | 9167950 | <10 | <10 | NA | < 10 | 98% | 80% | 120% |
|------------------------|---------|-----|-----|----|------|-----|-----|------|

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the Reporting Limit (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: \_\_\_\_\_



## Method Summary

CLIENT NAME: WSP CANADA INC.

AGAT WORK ORDER: 18T326648

PROJECT: 151-02661-00

ATTENTION TO: Craig Leger

SAMPLING SITE: Fonthill East (Fonthill Sites)

SAMPLED BY: BC

| PARAMETER              | AGAT S.O.P   | LITERATURE REFERENCE | ANALYTICAL TECHNIQUE |
|------------------------|--------------|----------------------|----------------------|
| <b>Water Analysis</b>  |              |                      |                      |
| Total Suspended Solids | INOR-93-6028 | SM 2540 D            | BALANCE              |

CLIENT NAME: WSP CANADA INC.  
55 KING STREET, 7TH FLOOR  
ST CATHARINES, ON L2R3H5  
(905) 687-1771

ATTENTION TO: Craig Leger

PROJECT: 151-02661-00

AGAT WORK ORDER: 18T337487

WATER ANALYSIS REVIEWED BY: Yris Verastegui, Report Reviewer

DATE REPORTED: May 18, 2018

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.



**AGAT** Laboratories

## Certificate of Analysis

AGAT WORK ORDER: 18T337487

PROJECT: 151-02661-00

5835 COOPERS AVENUE  
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TEL (905)712-5100  
FAX (905)712-5122  
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.

SAMPLING SITE: Fonthill East (Fonthill Sites)

ATTENTION TO: Craig Leger

SAMPLED BY: CS/DBM

| TSS (Water)               |      |            |     |                           |         |            |         |
|---------------------------|------|------------|-----|---------------------------|---------|------------|---------|
| DATE RECEIVED: 2018-05-09 |      |            |     | DATE REPORTED: 2018-05-18 |         |            |         |
| SAMPLE DESCRIPTION:       |      | SW1        |     | SW2                       |         | SW3        |         |
| SAMPLE TYPE:              |      | Water      |     | Water                     |         | Water      |         |
| DATE SAMPLED:             |      | 2018-05-08 |     | 2018-05-08                |         | 2018-05-08 |         |
| Parameter                 | Unit | G / S      | RDL | 9231640                   | 9231641 | 9231642    | 9231643 |
| Total Suspended Solids    | mg/L | 10         | <10 | 19                        | <10     | <10        | <10     |

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

*Iris Veraistegui*



## Quality Assurance

CLIENT NAME: WSP CANADA INC.

PROJECT: 151-02661-00

SAMPLING SITE: Fonthill East (Fonthill Sites)

AGAT WORK ORDER: 18T337487

ATTENTION TO: Craig Leger

SAMPLED BY: CS/DBM

### Water Analysis

| RPT Date: May 18, 2018 |       |           | DUPLICATE |        |     | Method Blank | REFERENCE MATERIAL |                   | METHOD BLANK SPIKE |          | MATRIX SPIKE      |       |
|------------------------|-------|-----------|-----------|--------|-----|--------------|--------------------|-------------------|--------------------|----------|-------------------|-------|
| PARAMETER              | Batch | Sample Id | Dup #1    | Dup #2 | RPD |              | Measured Value     | Acceptable Limits |                    | Recovery | Acceptable Limits |       |
|                        |       |           |           |        |     |              |                    | Lower             | Upper              |          | Lower             | Upper |

TSS (Water)

|                        |         |     |     |    |      |      |     |      |    |    |
|------------------------|---------|-----|-----|----|------|------|-----|------|----|----|
| Total Suspended Solids | 9234875 | <10 | <10 | NA | < 10 | 102% | 80% | 120% | NA | NA |
|------------------------|---------|-----|-----|----|------|------|-----|------|----|----|

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:

*Iris Veraestegui*

## Method Summary

CLIENT NAME: WSP CANADA INC.

AGAT WORK ORDER: 18T337487

PROJECT: 151-02661-00

ATTENTION TO: Craig Leger

SAMPLING SITE: Fonthill East (Fonthill Sites)

SAMPLED BY: CS/DBM

| PARAMETER              | AGAT S.O.P   | LITERATURE REFERENCE | ANALYTICAL TECHNIQUE |
|------------------------|--------------|----------------------|----------------------|
| Water Analysis         |              |                      |                      |
| Total Suspended Solids | INOR-93-6028 | SM 2540 D            | BALANCE              |

CLIENT NAME: WSP CANADA INC.  
55 KING STREET, 7TH FLOOR  
ST CATHARINES, ON L2R3H5  
(905) 687-1771

ATTENTION TO: Craig Leger

PROJECT: 151-02661-00

AGAT WORK ORDER: 18T347030

WATER ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

DATE REPORTED: Jun 13, 2018

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.



**AGAT** Laboratories

## Certificate of Analysis

AGAT WORK ORDER: 18T347030

PROJECT: 151-02661-00

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FAX (905)712-5122  
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.

SAMPLING SITE: Fonthill, ON

ATTENTION TO: Craig Leger

SAMPLED BY: CS

| TSS (Water)               |      |            |     |                           |         |            |         |
|---------------------------|------|------------|-----|---------------------------|---------|------------|---------|
| DATE RECEIVED: 2018-06-05 |      |            |     | DATE REPORTED: 2018-06-13 |         |            |         |
| SAMPLE DESCRIPTION:       |      | SW1        |     | SW2                       |         | SW3        |         |
| SAMPLE TYPE:              |      | Water      |     | Water                     |         | Water      |         |
| DATE SAMPLED:             |      | 2018-06-04 |     | 2018-06-04                |         | 2018-06-04 |         |
| Parameter                 | Unit | G / S      | RDL | 9300724                   | 9300725 | 9300726    | 9300727 |
| Total Suspended Solids    | mg/L | 10         | 18  | 38                        | 68      | 25         |         |

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

*Divine Basily*



## Quality Assurance

CLIENT NAME: WSP CANADA INC.

PROJECT: 151-02661-00

SAMPLING SITE: Fonthill, ON

AGAT WORK ORDER: 18T347030

ATTENTION TO: Craig Leger

SAMPLED BY: CS

### Water Analysis

| RPT Date: Jun 13, 2018 |       |           | DUPLICATE |        |     | Method Blank | REFERENCE MATERIAL |                   | METHOD BLANK SPIKE |          | MATRIX SPIKE      |       |
|------------------------|-------|-----------|-----------|--------|-----|--------------|--------------------|-------------------|--------------------|----------|-------------------|-------|
| PARAMETER              | Batch | Sample Id | Dup #1    | Dup #2 | RPD |              | Measured Value     | Acceptable Limits |                    | Recovery | Acceptable Limits |       |
|                        |       |           |           |        |     |              |                    | Lower             | Upper              |          | Lower             | Upper |

TSS (Water)

|                        |         |     |     |    |      |     |     |      |
|------------------------|---------|-----|-----|----|------|-----|-----|------|
| Total Suspended Solids | 9298666 | <10 | <10 | NA | < 10 | 98% | 80% | 120% |
|------------------------|---------|-----|-----|----|------|-----|-----|------|

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: \_\_\_\_\_

*Divine Basily*

## Method Summary

CLIENT NAME: WSP CANADA INC.

AGAT WORK ORDER: 18T347030

PROJECT: 151-02661-00

ATTENTION TO: Craig Leger

SAMPLING SITE: Fonthill, ON

SAMPLED BY: CS

| PARAMETER              | AGAT S.O.P   | LITERATURE REFERENCE | ANALYTICAL TECHNIQUE |
|------------------------|--------------|----------------------|----------------------|
| Water Analysis         |              |                      |                      |
| Total Suspended Solids | INOR-93-6028 | SM 2540 D            | BALANCE              |

CLIENT NAME: WSP CANADA INC.  
55 KING STREET, 7TH FLOOR  
ST CATHARINES, ON L2R3H5  
(905) 687-1771

ATTENTION TO: Craig Leger

PROJECT: Fonthill East 151-02661-02

AGAT WORK ORDER: 18H387561

WATER ANALYSIS REVIEWED BY: Yris Verastegui, Report Reviewer

DATE REPORTED: Sep 26, 2018

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.



**AGAT** Laboratories

## Certificate of Analysis

AGAT WORK ORDER: 18H387561

PROJECT: Fonthill East 151-02661-02

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FAX (905)712-5122  
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.

SAMPLING SITE:

ATTENTION TO: Craig Leger

SAMPLED BY:

| TSS                       |      |            |     |                           |         |            |         |
|---------------------------|------|------------|-----|---------------------------|---------|------------|---------|
| DATE RECEIVED: 2018-09-20 |      |            |     | DATE REPORTED: 2018-09-26 |         |            |         |
| SAMPLE DESCRIPTION:       |      | SW1        |     | SW2                       |         | SW3        |         |
| SAMPLE TYPE:              |      | Water      |     | Water                     |         | Water      |         |
| DATE SAMPLED:             |      | 2018-09-18 |     | 2018-09-18                |         | 2018-09-18 |         |
| Parameter                 | Unit | G / S      | RDL | 9561412                   | 9561415 | 9561418    | 9561419 |
| Total Suspended Solids    | mg/L | 10         | <10 | <10                       | 25      | <10        |         |

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

*Iris Veraástegui*

## Quality Assurance

CLIENT NAME: WSP CANADA INC.

AGAT WORK ORDER: 18H387561

PROJECT: Fonthill East 151-02661-02

ATTENTION TO: Craig Leger

SAMPLING SITE:

SAMPLED BY:

| Water Analysis         |       |           |           |        |     |              |                    |                   |       |                    |                   |       |              |                   |       |
|------------------------|-------|-----------|-----------|--------|-----|--------------|--------------------|-------------------|-------|--------------------|-------------------|-------|--------------|-------------------|-------|
| RPT Date: Sep 26, 2018 |       |           | DUPLICATE |        |     | Method Blank | REFERENCE MATERIAL |                   |       | METHOD BLANK SPIKE |                   |       | MATRIX SPIKE |                   |       |
| PARAMETER              | Batch | Sample Id | Dup #1    | Dup #2 | RPD |              | Measured Value     | Acceptable Limits |       | Recovery           | Acceptable Limits |       | Recovery     | Acceptable Limits |       |
|                        |       |           |           |        |     |              |                    | Lower             | Upper |                    | Lower             | Upper |              | Lower             | Upper |

TSS

|                        |         |     |     |    |      |     |     |      |    |    |
|------------------------|---------|-----|-----|----|------|-----|-----|------|----|----|
| Total Suspended Solids | 9566684 | <10 | <10 | NA | < 10 | 98% | 80% | 120% | NA | NA |
|------------------------|---------|-----|-----|----|------|-----|-----|------|----|----|

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:



## Method Summary

CLIENT NAME: WSP CANADA INC.

AGAT WORK ORDER: 18H387561

PROJECT: Fonthill East 151-02661-02

ATTENTION TO: Craig Leger

SAMPLING SITE:

SAMPLED BY:

| PARAMETER              | AGAT S.O.P   | LITERATURE REFERENCE | ANALYTICAL TECHNIQUE |
|------------------------|--------------|----------------------|----------------------|
| Water Analysis         |              |                      |                      |
| Total Suspended Solids | INOR-93-6028 | SM 2540 D            | BALANCE              |

CLIENT NAME: WSP CANADA INC.  
55 KING STREET, 7TH FLOOR  
ST CATHARINES, ON L2R3H5  
(905) 687-1771

ATTENTION TO: Leigh Davis

PROJECT: East Fonthill 151-02661-01

AGAT WORK ORDER: 18H404503

WATER ANALYSIS REVIEWED BY: Rocio Morales, Inorganics Lab Supervisor

DATE REPORTED: Nov 09, 2018

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.



**AGAT** Laboratories

## Certificate of Analysis

AGAT WORK ORDER: 18H404503

PROJECT: East Fonthill 151-02661-01

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<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.

ATTENTION TO: Leigh Davis

SAMPLING SITE:

SAMPLED BY:

### TSS

DATE RECEIVED: 2018-11-01

DATE REPORTED: 2018-11-09

|                        |      | SAMPLE DESCRIPTION: |     | SW1        | SW2        | SW3        | SW4        |
|------------------------|------|---------------------|-----|------------|------------|------------|------------|
|                        |      | SAMPLE TYPE:        |     | Water      | Water      | Water      | Water      |
|                        |      | DATE SAMPLED:       |     | 2018-11-01 | 2018-11-01 | 2018-11-01 | 2018-11-01 |
| Parameter              | Unit | G / S               | RDL | 9668441    | 9668442    | 9668443    | 9668444    |
| Total Suspended Solids | mg/L | 10                  | 61  | 89         | 14         | 12         |            |

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:



## Quality Assurance

CLIENT NAME: WSP CANADA INC.

PROJECT: East Fonthill 151-02661-01

SAMPLING SITE:

AGAT WORK ORDER: 18H404503

ATTENTION TO: Leigh Davis

SAMPLED BY:

### Water Analysis

| RPT Date: Nov 09, 2018 |       |              | DUPLICATE |        |     | Method<br>Blank | REFERENCE MATERIAL |                      | METHOD BLANK SPIKE |          | MATRIX SPIKE         |       |
|------------------------|-------|--------------|-----------|--------|-----|-----------------|--------------------|----------------------|--------------------|----------|----------------------|-------|
| PARAMETER              | Batch | Sample<br>Id | Dup #1    | Dup #2 | RPD |                 | Measured<br>Value  | Acceptable<br>Limits |                    | Recovery | Acceptable<br>Limits |       |
|                        |       |              |           |        |     |                 |                    | Lower                | Upper              |          | Lower                | Upper |

TSS

|                        |         |         |    |    |      |      |     |     |      |    |    |
|------------------------|---------|---------|----|----|------|------|-----|-----|------|----|----|
| Total Suspended Solids | 9668441 | 9668441 | 61 | 64 | 4.8% | < 10 | 98% | 80% | 120% | NA | NA |
|------------------------|---------|---------|----|----|------|------|-----|-----|------|----|----|

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: \_\_\_\_\_

## Method Summary

CLIENT NAME: WSP CANADA INC.

AGAT WORK ORDER: 18H404503

PROJECT: East Fonthill 151-02661-01

ATTENTION TO: Leigh Davis

SAMPLING SITE:

SAMPLED BY:

| PARAMETER              | AGAT S.O.P   | LITERATURE REFERENCE | ANALYTICAL TECHNIQUE |
|------------------------|--------------|----------------------|----------------------|
| Water Analysis         |              |                      |                      |
| Total Suspended Solids | INOR-93-6028 | SM 2540 D            | BALANCE              |

# APPENDIX

## C SURFACE WATER FLOWS AND TEMPERATURE



**Table C-1**  
**Surface Water Manual Flow Measurements**  
**East Fonthill Development**

| Date<br>(dd/mm/yyyy) | Event<br>Type | SW1<br>Discharge<br>Rate<br>(L/sec) | SW2<br>Discharge<br>Rate<br>(L/sec) | SW3<br>Discharge<br>Rate<br>(L/sec) | SW4<br>Discharge<br>Rate<br>(L/sec) | SW5<br>Discharge<br>Rate<br>(L/sec) |
|----------------------|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 3/12/2015            | Freshet       | 2.0                                 | 1.0                                 | 2.6                                 | 14.5                                | 3.5                                 |
| 5/13/2015            | Dry           | 0.02                                | 0.1                                 | Dry                                 | 0.2                                 | 0.4                                 |
| 6/9/2015             | Wet           | 10.4                                | 5.6                                 | 13.8                                | 43.9                                | 5.3                                 |
| 9/30/2015            | Dry           | No Flow                             | No Flow                             | Dry                                 | &                                   | 1.5                                 |
| 10/29/2015           | Wet           | Flooded                             | Flooded                             | 0.05                                | 27.5                                | 19.4                                |
| 3/22/2016            | Freshet       | No Flow                             | No Flow                             | No Flow                             | 8.9                                 | 4.6                                 |
| 4/26/2016            | Wet           | No Flow                             | No Flow                             | No Flow                             | No Flow                             | 7.4                                 |
| 6/29/2016            | Dry           | No Flow                             | No Flow                             | No Flow                             | No Flow                             | 0.2                                 |
| 9/1/2016             | Dry           | No Flow                             | No Flow                             | No Flow                             | No Flow                             | No Flow                             |
| 10/21/2016           | Wet           | Flooded                             | Flooded                             | Flooded                             | 12.8                                | 19.9                                |
| 3/28/2017            | Freshet       | 14.3                                | 1.5                                 | 0.7                                 | 24.2                                |                                     |
| 5/3/2017             | Dry           | 1.9                                 | 0.6                                 | 2.8                                 | 5.4                                 | 5.7                                 |
| 6/6/2017             | Wet           | 3.4                                 | 0.3                                 | 0.3                                 | 1.9                                 | 0.8                                 |
| 9/22/2017            | Dry           | 0.0                                 | 0.0                                 | 0.0                                 | Dry                                 | Dry                                 |
| 12/5/2017            | Wet           | 5.4                                 | 2.7                                 | 2.8                                 | 21.2                                | 22.2                                |
| 4/4/2018             | Freshet       | 3.2                                 | 4.8                                 | 3.5                                 | 24.9                                | 23.4                                |
| 5/8/2018             | Dry           | 0.8                                 | 0.8                                 | 0.3                                 | 2.9                                 | 0.5                                 |
| 6/4/2018             | Wet           | 3.6                                 | 0.2                                 | 0.2                                 | 2.5                                 | 2.3                                 |
| 9/18/2018            | Dry           | 0.2                                 | Dry                                 | 0.1                                 | 0.2                                 | 0.4                                 |
| 11/1/2018            | Wet           | 4.1                                 | 0.3                                 | 0.3                                 | 9.0                                 | 5.0                                 |

**Notes:**

Event type indicates weather conditions. Dry indicates no precipitation. Wet indicates precipitation.  
 & - Construction around station prevented flow measurement

**Figure C-1 - SW4 Flow Monitoring and Precipitation  
East Fonthill Development**

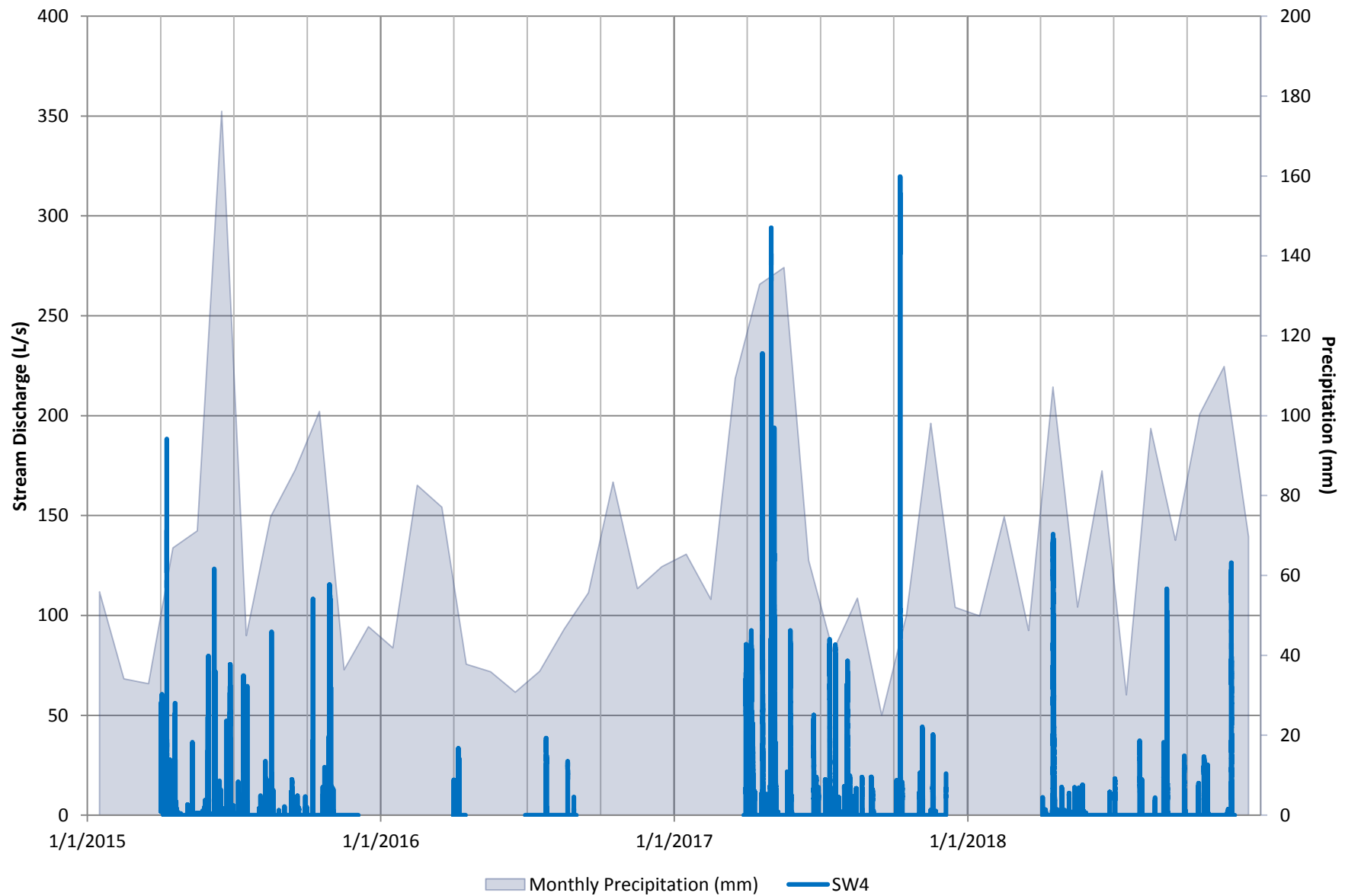


Figure C-2 - SW5 Flow Monitoring and Precipitation  
East Fonthill Development

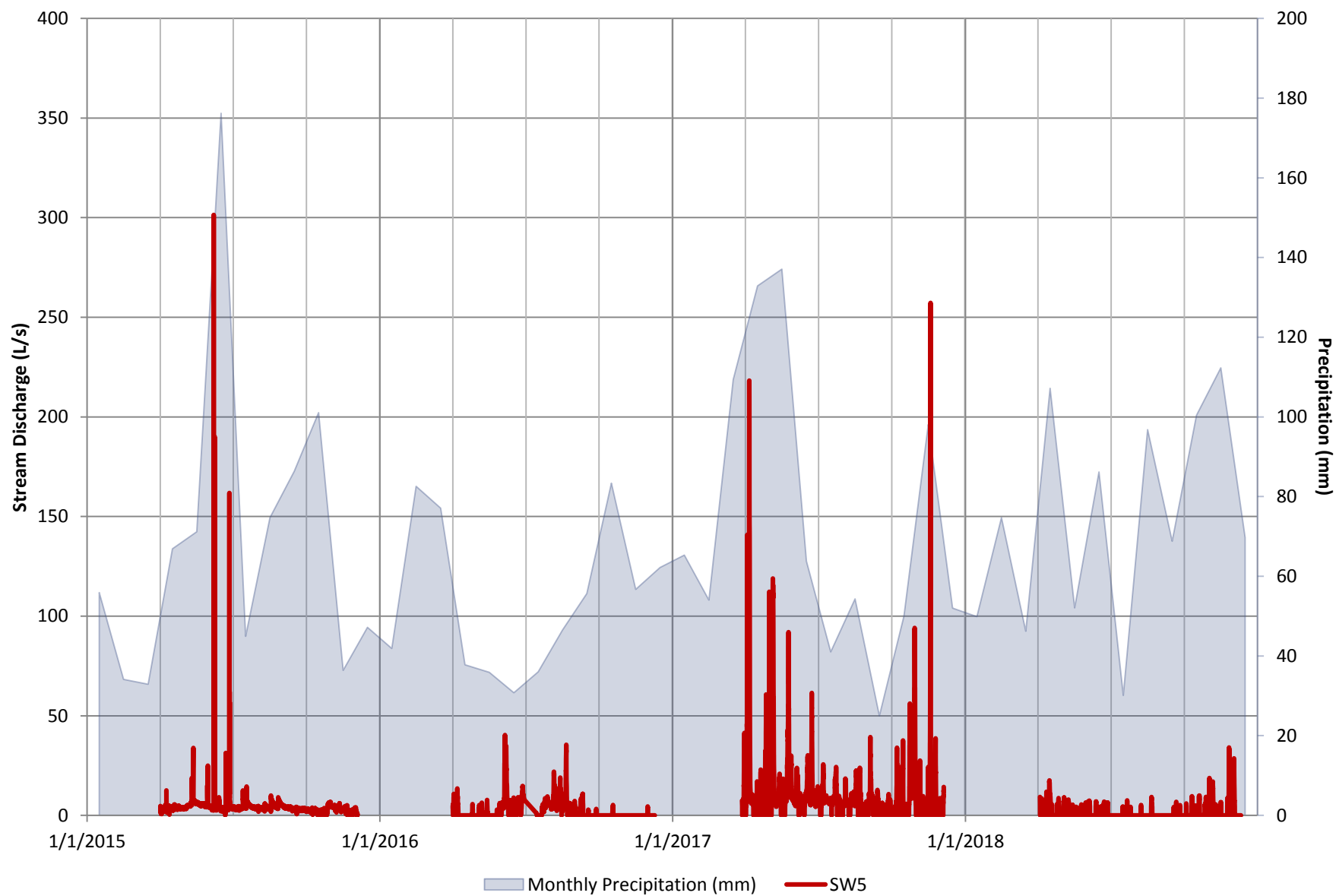
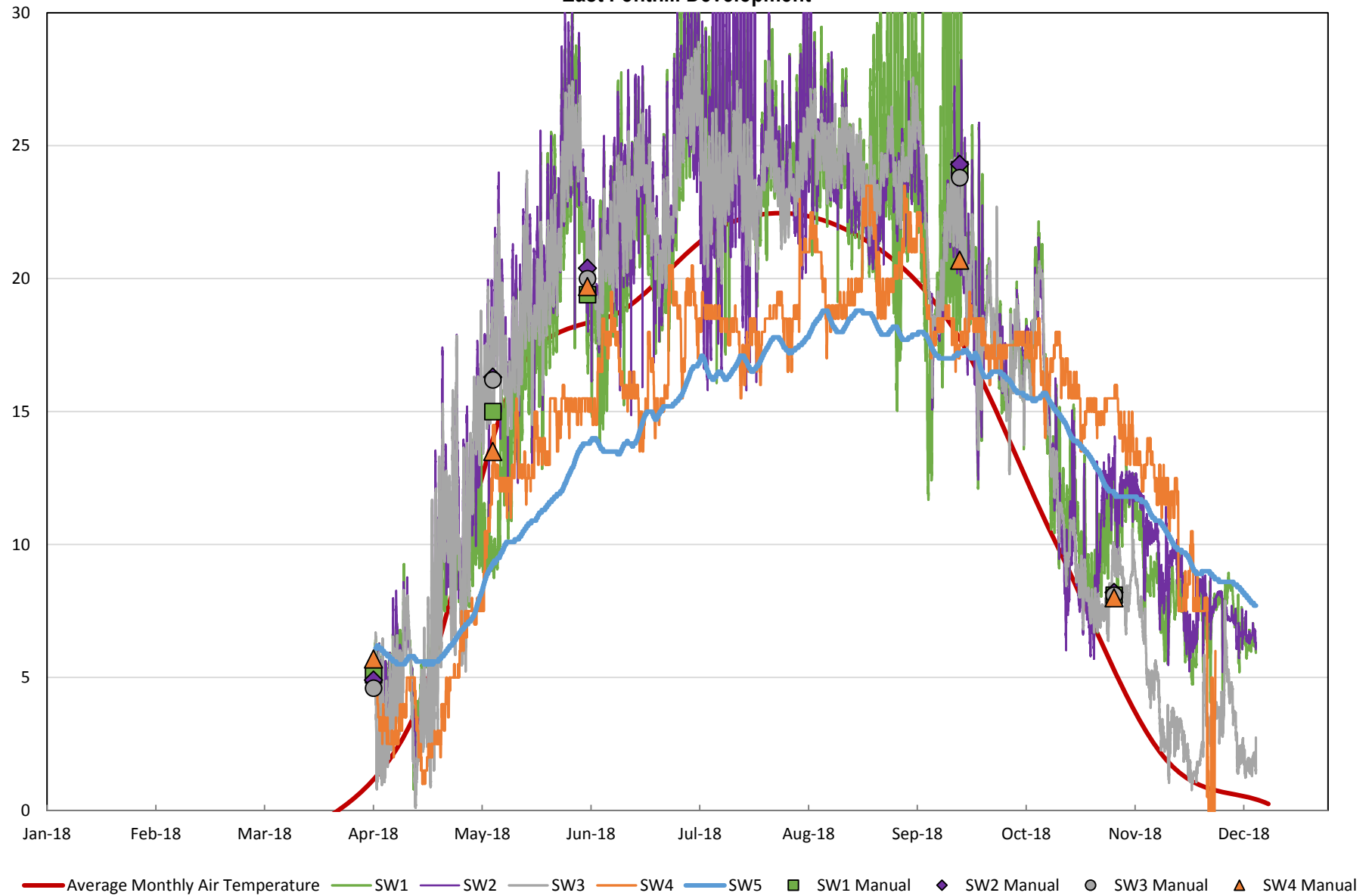


Figure C-3 - 2018 Temperature Monitoring  
East Fonthill Development



# APPENDIX

D

CLIMATE





Table D-1

## Environment Canada Climate Data - Temperature and Precipitation East Fonthill Development



Data Source: Environment Canada National Climate Data and Information Archive

Station Name Welland-Pelham

Province Ontario

Latitude 42.97

Longitude -79.33

Elevation 178

Climate Identifier 139449

WMO Identifier 71752

TC Identifier TWL

**Legend**

[Empty] No Data Available

M Missing

E Estimated

A Accumulated

C Precipitation Occurred; Amount Uncertain

L Precipitation May or May Not Have Occurred

F Accumulated and Estimated

N Temperature Missing but Known to be &gt; 0

Y Temperature Missing but Known to be &lt; 0

S More Than One Occurrence

T Trace

\* Data for this day has undergone only preliminary quality checking

\*\* Partner data that is not subject to review by the National Climate Archives.

| Date/Time | Maximum<br>Temperature<br>(°C) | Minimum<br>Temperature<br>(°C) | Mean<br>Temperature<br>(°C) | Heat<br>Degree<br>Days<br>(°C) | Cool<br>Degree<br>Days<br>(°C) | Total Rain<br>(mm) | Total<br>Snow<br>(cm) | Total<br>Precipitation<br>(mm) | Snow on<br>Ground<br>(cm) | Direction<br>of<br>Maximum<br>Gust<br>(10's deg) | Speed of<br>Maximum<br>Gust<br>(km/h) |
|-----------|--------------------------------|--------------------------------|-----------------------------|--------------------------------|--------------------------------|--------------------|-----------------------|--------------------------------|---------------------------|--------------------------------------------------|---------------------------------------|
| 1/1/2018  | -10.6                          | -26.1                          | -18.4                       | 36.4                           | 0                              |                    |                       | 0                              | 7                         |                                                  | <31                                   |
| 1/2/2018  | -6.3                           | -12.7                          | -9.5                        | 27.5                           | 0                              |                    |                       | 0                              | 7                         |                                                  | <31                                   |
| 1/3/2018  | -5.6                           | -9.7                           | -7.7                        | 25.7                           | 0                              |                    |                       | 0.7                            | 5                         |                                                  | <31                                   |
| 1/4/2018  | -9.5                           | -17.3                          | -13.4                       | 31.4                           | 0                              |                    |                       | 0.2                            | 4                         |                                                  | <31                                   |
| 1/5/2018  | -15.7                          | -20.8                          | -18.3                       | 36.3                           | 0                              |                    |                       | 0                              | 5                         |                                                  | <31                                   |
| 1/6/2018  | -15.7                          | -24                            | -19.9                       | 37.9                           | 0                              |                    |                       | 0                              | 5                         |                                                  | <31                                   |
| 1/7/2018  | 0.6                            | -25.2                          | -12.3                       | 30.3                           | 0                              |                    |                       | 0                              | 5                         |                                                  | <31                                   |
| 1/8/2018  | 1.4                            | -1                             | 0.2                         | 17.8                           | 0                              |                    |                       | 5.1                            | 5                         |                                                  | <31                                   |
| 1/9/2018  | 1                              | -10.6                          | -4.8                        | 22.8                           | 0                              |                    |                       | 0                              | 5                         |                                                  | <31                                   |
| 1/10/2018 | 7.4                            | -12                            | -2.3                        | 20.3                           | 0                              |                    |                       | 0.8                            | 5                         |                                                  | <31                                   |
| 1/11/2018 | 14                             | 6.8                            | 10.4                        | 7.6                            | 0                              |                    |                       | 7.9                            | 1                         |                                                  | <31                                   |
| 1/12/2018 | 12.5                           | -10                            | 1.3                         | 16.7                           | 0                              |                    |                       | 13.8                           | 2                         |                                                  | <31                                   |
| 1/13/2018 | -10                            | -16.8                          | -13.4                       | 31.4                           | 0                              |                    |                       | 0                              | 8                         |                                                  | <31                                   |
| 1/14/2018 | -7.6                           | -19.6                          | -13.6                       | 31.6                           | 0                              |                    |                       | 0                              | 5                         |                                                  | <31                                   |
| 1/15/2018 | -5.8                           | -13.2                          | -9.5                        | 27.5                           | 0                              |                    |                       | 0.9                            | 6                         |                                                  | <31                                   |
| 1/16/2018 | -3.6                           | -9.8                           | -6.7                        | 24.7                           | 0                              |                    |                       | 0.7                            | 8                         |                                                  | <31                                   |
| 1/17/2018 | -6.2                           | -10.1                          | -8.2                        | 26.2                           | 0                              |                    |                       | 0.4                            | 10                        |                                                  | <31                                   |
| 1/18/2018 | -2.4                           | -7.7                           | -5.1                        | 23.1                           | 0                              |                    |                       | 0                              | 6                         |                                                  | <31                                   |
| 1/19/2018 | 3                              | -2.6                           | 0.2                         | 17.8                           | 0                              |                    |                       | 0                              | 5                         |                                                  | <31                                   |
| 1/20/2018 | 3.2                            | -1.4                           | 0.9                         | 17.1                           | 0                              |                    |                       | 0                              | 5                         |                                                  | <31                                   |
| 1/21/2018 | 3.5                            | -3.1                           | 0.2                         | 17.8                           | 0                              |                    |                       | 0                              | 3                         |                                                  | <31                                   |
| 1/22/2018 | 7.3                            | 1.7                            | 4.5                         | 13.5                           | 0                              |                    |                       | 6.5                            | 1                         |                                                  | <31                                   |
| 1/23/2018 | 10.1                           | -3.2                           | 3.5                         | 14.5                           | 0                              |                    |                       | 3.8                            | 0                         |                                                  | <31                                   |
| 1/24/2018 | -3.1                           | -7.7                           | -5.4                        | 23.4                           | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 1/25/2018 | -2.5                           | -11.1                          | -6.8                        | 24.8                           | 0                              |                    |                       | 0                              | 2                         |                                                  | <31                                   |
| 1/26/2018 | 7.2                            | -5.8                           | 0.7                         | 17.3                           | 0                              |                    |                       | 0                              | 2                         |                                                  | <31                                   |
| 1/27/2018 | 8.3                            | -0.7                           | 3.8                         | 14.2                           | 0                              |                    |                       | 1.4                            | 1                         |                                                  | <31                                   |
| 1/28/2018 | 6.5                            | -2.8                           | 1.9                         | 16.1                           | 0                              |                    |                       | 0.2                            | 1                         |                                                  | <31                                   |
| 1/29/2018 | 0.8                            | -5.3                           | -2.3                        | 20.3                           | 0                              |                    |                       | 6.1                            | 2                         |                                                  | <31                                   |
| 1/30/2018 | -5.3                           | -21.6                          | -13.5                       | 31.5                           | 0                              |                    |                       | 1.4                            | 15                        |                                                  | <31                                   |
| 1/31/2018 | 2.4                            | -21.3                          | -9.5                        | 27.5                           | 0                              |                    |                       | 0                              | 12                        |                                                  | <31                                   |

**Table D-1**  
**Environment Canada Climate Data - Temperature and Precipitation**  
**East Fonthill Development**

| Date/Time | Maximum<br>Temperatu<br>re | Minimum<br>Temperatu<br>re | Mean<br>Temperatu<br>re | Heat<br>Degree<br>Days | Cool<br>Degree<br>Days | Total Rain | Total<br>Snow | Total<br>Precipitati<br>on | Snow on<br>Ground | Direction<br>of<br>Maximum<br>Gust | Speed of<br>Maximum<br>Gust |
|-----------|----------------------------|----------------------------|-------------------------|------------------------|------------------------|------------|---------------|----------------------------|-------------------|------------------------------------|-----------------------------|
|           | (°C)                       | (°C)                       | (°C)                    | (°C)                   | (°C)                   | (mm)       | (cm)          | (mm)                       | (cm)              | (10's deg)                         | (km/h)                      |
| 2/1/2018  | 4                          | -9.3                       | -2.7                    | 20.7                   | 0                      |            |               | 0                          | 10                |                                    | <31                         |
| 2/2/2018  | -8.4                       | -12                        | -10.2                   | 28.2                   | 0                      |            |               | 0                          | 7                 |                                    | <31                         |
| 2/3/2018  | 0                          | -10.2                      | -5.1                    | 23.1                   | 0                      |            |               | 0                          | 7                 |                                    | <31                         |
| 2/4/2018  | 2.5                        | -8.3                       | -2.9                    | 20.9                   | 0                      |            |               | 8.5                        | 7                 |                                    | <31                         |
| 2/5/2018  | -6.4                       | -12.7                      | -9.6                    | 27.6                   | 0                      |            |               | 0.2                        | 9                 |                                    | <31                         |
| 2/6/2018  | -5                         | -14.6                      | -9.8                    | 27.8                   | 0                      |            |               | 1.5                        | 10                |                                    | <31                         |
| 2/7/2018  | -4.4                       | -15.4                      | -9.9                    | 27.9                   | 0                      |            |               | 4.9                        | 10                |                                    | <31                         |
| 2/8/2018  | -7.1                       | -19.1                      | -13.1                   | 31.1                   | 0                      |            |               | 0                          | 14                |                                    | <31                         |
| 2/9/2018  | -4.8                       | -9.9                       | -7.4                    | 25.4                   | 0                      |            |               | 6.2                        | 13                |                                    | <31                         |
| 2/10/2018 | -1.6                       | -5                         | -3.3                    | 21.3                   | 0                      |            |               | 8                          | 20                |                                    | <31                         |
| 2/11/2018 | 2.4                        | -3.6                       | -0.6                    | 18.6                   | 0                      |            |               | 3.5                        | 23                |                                    | <31                         |
| 2/12/2018 | -2.4                       | -14                        | -8.2                    | 26.2                   | 0                      |            |               | 0.2                        | 18                |                                    | <31                         |
| 2/13/2018 | -1.8                       | -18.4                      | -10.1                   | 28.1                   | 0                      |            |               | 0                          | 18                |                                    | <31                         |
| 2/14/2018 | 4.5                        | -4                         | 0.3                     | 17.7                   | 0                      |            |               | 0                          | 18                |                                    | <31                         |
| 2/15/2018 | 8.1                        | 1.8                        | 5                       | 13                     | 0                      |            |               | 1.1                        | 11                |                                    | <31                         |
| 2/16/2018 | 3.7                        | -7.5                       | -1.9                    | 19.9                   | 0                      |            |               | 0.2                        | 3                 |                                    | <31                         |
| 2/17/2018 | -1.5                       | -7.9                       | -4.7                    | 22.7                   | 0                      |            |               | 0                          | 3                 |                                    | <31                         |
| 2/18/2018 | 1.6                        | -3.3                       | -0.9                    | 18.9                   | 0                      |            |               | 0                          | 2                 |                                    | <31                         |
| 2/19/2018 | 13.8                       | -0.8                       | 6.5                     | 11.5                   | 0                      |            |               | 16.7                       | 2                 |                                    | <31                         |
| 2/20/2018 | 17.9                       | 8.4                        | 13.2                    | 4.8                    | 0                      |            |               | 7.6                        | 2                 |                                    | <31                         |
| 2/21/2018 | 17.9                       | 0.1                        | 9                       | 9                      | 0                      |            |               | 4.6                        | 1                 |                                    | <31                         |
| 2/22/2018 | 3.7                        | -1.6                       | 1.1                     | 16.9                   | 0                      |            |               | 0.2                        | 1                 |                                    | <31                         |
| 2/23/2018 | 8.7                        | 0.4                        | 4.6                     | 13.4                   | 0                      |            |               | 5.7                        | 0                 |                                    | <31                         |
| 2/24/2018 | 5.4                        | 1.5                        | 3.5                     | 14.5                   | 0                      |            |               | 0                          | 0                 |                                    | <31                         |
| 2/25/2018 | 11.7                       | 1.5                        | 6.6                     | 11.4                   | 0                      |            |               | 5.4                        | 1                 |                                    | <31                         |
| 2/26/2018 | 6.7                        | -1.3                       | 2.7                     | 15.3                   | 0                      |            |               | 0.2                        | 0                 |                                    | <31                         |
| 2/27/2018 | 10.4                       | -0.4                       | 5                       | 13                     | 0                      |            |               | 0                          | 0                 |                                    | <31                         |
| 2/28/2018 | 12.6                       | 0.5                        | 6.6                     | 11.4                   | 0                      |            |               | 0                          |                   |                                    | <31                         |
| 3/1/2018  | 3                          | -0.6                       | 1.2                     | 16.8                   | 0                      |            |               | 4.8                        |                   |                                    | <31                         |
| 3/2/2018  | 0.1                        | -3.1                       | -1.5                    | 19.5                   | 0                      |            |               | 9                          | 9                 |                                    | <31                         |
| 3/3/2018  | 1.9                        | -7.7                       | -2.9                    | 20.9                   | 0                      |            |               | 0                          | 6                 |                                    | <31                         |
| 3/4/2018  | 1.2                        | -4.2                       | -1.5                    | 19.5                   | 0                      |            |               | 0                          | 5                 |                                    | <31                         |
| 3/5/2018  | 1.4                        | -9.4                       | -4                      | 22                     | 0                      |            |               | 0                          | 4                 |                                    | <31                         |
| 3/6/2018  | 1.4                        | -5.4                       | -2                      | 20                     | 0                      |            |               | 0                          | 2                 |                                    | <31                         |
| 3/7/2018  | 3.4                        | -4.3                       | -0.5                    | 18.5                   | 0                      |            |               | 0.4                        | 1                 |                                    | <31                         |
| 3/8/2018  | -1                         | -5.9                       | -3.5                    | 21.5                   | 0                      |            |               | 0.2                        | 0                 |                                    | <31                         |
| 3/9/2018  | 1.9                        | -4.1                       | -1.1                    | 19.1                   | 0                      |            |               | 0.2                        | 0                 |                                    | <31                         |
| 3/10/2018 | 1.3                        | -5.6                       | -2.2                    | 20.2                   | 0                      |            |               | 0                          | 0                 |                                    | <31                         |
| 3/11/2018 | 0.8                        | -7.8                       | -3.5                    | 21.5                   | 0                      |            |               | 0.2                        | 0                 |                                    | <31                         |
| 3/12/2018 | 0.3                        | -3.8                       | -1.8                    | 19.8                   | 0                      |            |               | 0                          | 0                 |                                    | <31                         |
| 3/13/2018 | 1.2                        | -6.5                       | -2.7                    | 20.7                   | 0                      |            |               | 1.6                        | 0                 |                                    | <31                         |
| 3/14/2018 | -0.7                       | -4.7                       | -2.7                    | 20.7                   | 0                      |            |               | 1.3                        | 6                 |                                    | <31                         |
| 3/15/2018 | 2.6                        | -7.2                       | -2.3                    | 20.3                   | 0                      |            |               | 0                          | 4                 |                                    | <31                         |
| 3/16/2018 | -1.2                       | -6.3                       | -3.8                    | 21.8                   | 0                      |            |               | 0                          | 1                 |                                    | <31                         |
| 3/17/2018 | 4                          | -5.4                       | -0.7                    | 18.7                   | 0                      |            |               | 0                          | 1                 |                                    | <31                         |
| 3/18/2018 | 6.6                        | -7.3                       | -0.4                    | 18.4                   | 0                      |            |               | 0                          | 0                 |                                    | <31                         |
| 3/19/2018 | 0.3                        | -5.6                       | -2.7                    | 20.7                   | 0                      |            |               | 0                          | 0                 |                                    | <31                         |
| 3/20/2018 | 2.7                        | -6.2                       | -1.8                    | 19.8                   | 0                      |            |               | 0                          | 0                 |                                    | <31                         |
| 3/21/2018 | 2.5                        | -3.1                       | -0.3                    | 18.3                   | 0                      |            |               | 0                          | 1                 |                                    | <31                         |
| 3/22/2018 | 5.2                        | -3.5                       | 0.9                     | 17.1                   | 0                      |            |               | 0                          |                   |                                    | <31                         |
| 3/23/2018 | 4.7                        | -5.2                       | -0.3                    | 18.3                   | 0                      |            |               | 0                          | 0                 |                                    | <31                         |
| 3/24/2018 | 1.7                        | -4.6                       | -1.5                    | 19.5                   | 0                      |            |               | 0                          | 0                 |                                    | <31                         |
| 3/25/2018 | 4.8                        | -6.4                       | -0.8                    | 18.8                   | 0                      |            |               | 0                          | 0                 |                                    | <31                         |
| 3/26/2018 | 10.6                       | -5.1                       | 2.8                     | 15.2                   | 0                      |            |               | 0                          | 0                 |                                    | <31                         |
| 3/27/2018 | 5.9                        | 2.6                        | 4.3                     | 13.7                   | 0                      |            |               | 3.2                        |                   |                                    | <31                         |
| 3/28/2018 |                            | 3.7                        |                         |                        |                        |            |               |                            | 0                 |                                    | <31                         |
| 3/29/2018 | 6.9                        | 3.8                        | 5.4                     | 12.6                   | 0                      |            |               | 20.4                       |                   |                                    | <31                         |
| 3/30/2018 | 6.4                        | -2.5                       | 2                       | 16                     | 0                      |            |               | 0                          | 0                 |                                    | <31                         |
| 3/31/2018 | 9.3                        | -2.5                       | 3.4                     | 14.6                   | 0                      |            |               | 4.9                        | 0                 |                                    | <31                         |

**Table D-1**  
**Environment Canada Climate Data - Temperature and Precipitation**  
**East Fonthill Development**

| Date/Time | Maximum<br>Temperature<br>(°C) | Minimum<br>Temperature<br>(°C) | Mean<br>Temperature<br>(°C) | Heat<br>Degree<br>Days<br>(°C) | Cool<br>Degree<br>Days<br>(°C) | Total Rain<br>(mm) | Total<br>Snow<br>(cm) | Total<br>Precipitation<br>(mm) | Snow on<br>Ground<br>(cm) | Direction<br>of<br>Maximum<br>Gust<br>(10's deg) | Speed of<br>Maximum<br>Gust<br>(km/h) |
|-----------|--------------------------------|--------------------------------|-----------------------------|--------------------------------|--------------------------------|--------------------|-----------------------|--------------------------------|---------------------------|--------------------------------------------------|---------------------------------------|
| 4/1/2018  | 2.6                            | -2.1                           | 0.3                         | 17.7                           | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 4/2/2018  | 4.7                            | -4.6                           | 0.1                         | 17.9                           | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 4/3/2018  | 5.6                            | -2.1                           | 1.8                         | 16.2                           | 0                              |                    |                       | 9.3                            |                           |                                                  | <31                                   |
| 4/4/2018  | 12.6                           | -3.2                           | 4.7                         | 13.3                           | 0                              |                    |                       | 3.9                            |                           |                                                  | <31                                   |
| 4/5/2018  | 1.2                            | -4.6                           | -1.7                        | 19.7                           | 0                              |                    |                       | 0.3                            |                           |                                                  | <31                                   |
| 4/6/2018  | 4.9                            | -2.5                           | 1.2                         | 16.8                           | 0                              |                    |                       | 4.4                            | 0                         |                                                  | <31                                   |
| 4/7/2018  | 0.3                            | -5                             | -2.4                        | 20.4                           | 0                              |                    |                       | 0                              | 0                         |                                                  | <31                                   |
| 4/8/2018  | 1.3                            | -4.9                           | -1.8                        | 19.8                           | 0                              |                    |                       | 0                              | 0                         |                                                  | <31                                   |
| 4/9/2018  | 3.8                            | -5.4                           | -0.8                        | 18.8                           | 0                              |                    |                       | 0                              | 1                         |                                                  | <31                                   |
| 4/10/2018 | 4.6                            | -4                             | 0.3                         | 17.7                           | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 4/11/2018 | 6.7                            | -2.3                           | 2.2                         | 15.8                           | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 4/12/2018 | 16.3                           | -2.7                           | 6.8                         | 11.2                           | 0                              |                    |                       | 3.2                            |                           |                                                  | <31                                   |
| 4/13/2018 | 9.1                            | 3.4                            | 6.3                         | 11.7                           | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 4/14/2018 | 3.8                            | -2.7                           | 0.6                         | 17.4                           | 0                              |                    |                       | 13.6                           |                           |                                                  | <31                                   |
| 4/15/2018 | 3.1                            | -2.2                           | 0.5                         | 17.5                           | 0                              |                    |                       | 29.4                           | 3                         |                                                  | <31                                   |
| 4/16/2018 | 4.1                            | 0.5                            | 2.3                         | 15.7                           | 0                              |                    |                       | 26.2                           | 0                         |                                                  | <31                                   |
| 4/17/2018 | 1.2                            | -1.4                           | -0.1                        | 18.1                           | 0                              |                    |                       | 0.4                            | 1                         |                                                  | <31                                   |
| 4/18/2018 | 4                              | 0.5                            | 2.3                         | 15.7                           | 0                              |                    |                       | 0.2                            |                           |                                                  | <31                                   |
| 4/19/2018 | 4.5                            | -0.8                           | 1.9                         | 16.1                           | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 4/20/2018 | 7.6                            | -2.5                           | 2.6                         | 15.4                           | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 4/21/2018 | 11.8                           | -3.3                           | 4.3                         | 13.7                           | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 4/22/2018 | 16.6                           | -3.1                           | 6.8                         | 11.2                           | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 4/23/2018 | 22.1                           | -0.6                           | 10.8                        | 7.2                            | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 4/24/2018 | 17.1                           | 6.3                            | 11.7                        | 6.3                            | 0                              |                    |                       | 3.8                            |                           |                                                  | <31                                   |
| 4/25/2018 | 12.5                           | 4                              | 8.3                         | 9.7                            | 0                              |                    |                       | 8.1                            |                           |                                                  | <31                                   |
| 4/26/2018 | 10.8                           | 1.5                            | 6.2                         | 11.8                           | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 4/27/2018 | 17.3                           | 0.1                            | 8.7                         | 9.3                            | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 4/28/2018 | 7.8                            | 1.3                            | 4.6                         | 13.4                           | 0                              |                    |                       | 4.2                            |                           |                                                  | <31                                   |
| 4/29/2018 | 11.8                           | 0.7                            | 6.3                         | 11.7                           | 0                              |                    |                       | 0.2                            |                           |                                                  | <31                                   |
| 4/30/2018 | 14.7                           | -0.9                           | 6.9                         | 11.1                           | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 5/1/2018  | 23.8                           | 3                              | 13.4                        | 4.6                            | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 5/2/2018  | 24.9                           | 13.1                           | 19                          | 0                              | 1                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 5/3/2018  | 19.7                           | 10.7                           | 15.2                        | 2.8                            | 0                              |                    |                       | 3.1                            |                           |                                                  | <31                                   |
| 5/4/2018  | 23.7                           | 6.6                            | 15.2                        | 2.8                            | 0                              |                    |                       | 4.5                            |                           |                                                  | <31                                   |
| 5/5/2018  | 22.2                           | 6.4                            | 14.3                        | 3.7                            | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 5/6/2018  |                                | 9.2                            |                             |                                |                                |                    |                       |                                |                           |                                                  | <31                                   |
| 5/7/2018  |                                | 9.9                            |                             |                                |                                |                    |                       |                                |                           |                                                  | <31                                   |
| 5/8/2018  | 23.5                           | 4.8                            | 14.2                        | 3.8                            | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 5/9/2018  | 26.9                           | 7.6                            | 17.3                        | 0.7                            | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 5/10/2018 | 21.1                           | 6                              | 13.6                        | 4.4                            | 0                              |                    |                       | 7.8                            |                           | 36                                               | 41                                    |
| 5/11/2018 | 11                             | 2.5                            | 6.8                         | 11.2                           | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 5/12/2018 | 15.4                           | 5.3                            | 10.4                        | 7.6                            | 0                              |                    |                       | 1.6                            |                           |                                                  | <31                                   |
| 5/13/2018 | 19.4                           | 4.5                            | 12                          | 6                              | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 5/14/2018 | 19.3                           | 7.5                            | 13.4                        | 4.6                            | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 5/15/2018 | 19.6                           | 11.2                           | 15.4                        | 2.6                            | 0                              |                    |                       | 8.4                            |                           | 3                                                | 33                                    |
| 5/16/2018 | 23.5                           | 7.7                            | 15.6                        | 2.4                            | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 5/17/2018 | 24.5                           | 9.8                            | 17.2                        | 0.8                            | 0                              |                    |                       | 0                              |                           | 7                                                | 32                                    |
| 5/18/2018 | 18.9                           | 10                             | 14.5                        | 3.5                            | 0                              |                    |                       | 0                              |                           | 5                                                | 44                                    |
| 5/19/2018 | 21.8                           | 13                             | 17.4                        | 0.6                            | 0                              |                    |                       | 18.6                           |                           |                                                  | <31                                   |
| 5/20/2018 | 20.1                           | 8.7                            | 14.4                        | 3.6                            | 0                              |                    |                       | 0                              |                           | 30                                               | 35                                    |
| 5/21/2018 | 23.2                           | 5.7                            | 14.4                        | 3.6                            | 0                              |                    |                       | 0.2                            |                           |                                                  |                                       |
| 5/22/2018 | 20.8                           | 13.8                           | 17.3                        | 0.7                            | 0                              |                    |                       | 7.7                            |                           |                                                  | <31                                   |
| 5/23/2018 | 19.1                           | 8.9                            | 14                          | 4                              | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 5/24/2018 | 25.2                           | 8.2                            | 16.7                        | 1.3                            | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 5/25/2018 | 26.6                           | 11.1                           | 18.9                        | 0                              | 0.9                            |                    |                       | 0                              |                           | 23                                               | 39                                    |
| 5/26/2018 | 24.8                           | 14                             | 19.4                        | 0                              | 1.4                            |                    |                       | 0                              |                           |                                                  | <31                                   |
| 5/27/2018 | 27.1                           | 15.2                           | 21.2                        | 0                              | 3.2                            |                    |                       | 0                              |                           |                                                  | <31                                   |
| 5/28/2018 | 28.8                           | 17.3                           | 23.1                        | 0                              | 5.1                            |                    |                       | 0                              |                           |                                                  | <31                                   |
| 5/29/2018 | 29.6                           | 17.1                           | 23.4                        | 0                              | 5.4                            |                    |                       | 0                              |                           |                                                  | <31                                   |
| 5/30/2018 | 31.2                           | 17.7                           | 24.5                        | 0                              | 6.5                            |                    |                       | 0.2                            |                           | 14                                               | 32                                    |
| 5/31/2018 | 28.6                           | 20.3                           | 24.5                        | 0                              | 6.5                            |                    |                       | 0                              |                           | 19                                               | 43                                    |

**Table D-1**  
**Environment Canada Climate Data - Temperature and Precipitation**  
**East Fonthill Development**

| Date/Time | Maximum<br>Temperature<br>(°C) | Minimum<br>Temperature<br>(°C) | Mean<br>Temperature<br>(°C) | Heat<br>Degree<br>Days<br>(°C) | Cool<br>Degree<br>Days<br>(°C) | Total Rain<br>(mm) | Total<br>Snow<br>(cm) | Total<br>Precipitation<br>(mm) | Snow on<br>Ground<br>(cm) | Direction<br>of<br>Maximum<br>Gust<br>(10's deg) | Speed of<br>Maximum<br>Gust<br>(km/h) |
|-----------|--------------------------------|--------------------------------|-----------------------------|--------------------------------|--------------------------------|--------------------|-----------------------|--------------------------------|---------------------------|--------------------------------------------------|---------------------------------------|
| 6/1/2018  | 26.8                           | 17.6                           | 22.2                        | 0                              | 4.2                            |                    |                       | 0                              |                           |                                                  | <31                                   |
| 6/2/2018  | 20.5                           | 13.4                           | 17                          | 1                              | 0                              |                    |                       | 0                              |                           | 4                                                | 32                                    |
| 6/3/2018  | 23.3                           | 13.1                           | 18.2                        | 0                              | 0.2                            |                    |                       | 8.6                            |                           | 16                                               | 35                                    |
| 6/4/2018  | 19.8                           | 12.4                           | 16.1                        | 1.9                            | 0                              |                    |                       | 0                              |                           | 28                                               | 52                                    |
| 6/5/2018  | 17.8                           | 10.6                           | 14.2                        | 3.8                            | 0                              |                    |                       | 1.7                            |                           | 29                                               | 39                                    |
| 6/6/2018  | 14.4                           | 8.7                            | 11.6                        | 6.4                            | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 6/7/2018  | 22.9                           | 9                              | 16                          | 2                              | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 6/8/2018  | 24.9                           | 11                             | 18                          | 0                              | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 6/9/2018  | 23.2                           | 11.4                           | 17.3                        | 0.7                            | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 6/10/2018 | 23.8                           | 15.2                           | 19.5                        | 0                              | 1.5                            |                    |                       | 0                              |                           | 8                                                | 35                                    |
| 6/11/2018 | 25                             | 12.6                           | 18.8                        | 0                              | 0.8                            |                    |                       | 0                              |                           | 1                                                | 37                                    |
| 6/12/2018 | 27.4                           | 11.8                           | 19.6                        | 0                              | 1.6                            |                    |                       | 0                              |                           |                                                  | <31                                   |
| 6/13/2018 | 25                             | 15.6                           | 20.3                        | 0                              | 2.3                            |                    |                       | 2.4                            |                           | 31                                               | 54                                    |
| 6/14/2018 | 26.6                           | 11.3                           | 19                          | 0                              | 1                              |                    |                       | 0                              |                           | 30                                               | 54                                    |
| 6/15/2018 | 24.4                           | 9.6                            | 17                          | 1                              | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 6/16/2018 | 27.6                           | 11.3                           | 19.5                        | 0                              | 1.5                            |                    |                       | 0                              |                           |                                                  | <31                                   |
| 6/17/2018 | 29.7                           | 13.8                           | 21.8                        | 0                              | 3.8                            |                    |                       | 0                              |                           |                                                  | <31                                   |
| 6/18/2018 | 29.7                           | 20                             | 24.9                        | 0                              | 6.9                            |                    |                       | 28                             |                           | 23                                               | 33                                    |
| 6/19/2018 | 23.5                           | 16.4                           | 20                          | 0                              | 2                              |                    |                       | 0                              |                           | 6                                                | 32                                    |
| 6/20/2018 | 23.7                           | 14.1                           | 18.9                        | 0                              | 0.9                            |                    |                       | 0                              |                           |                                                  | <31                                   |
| 6/21/2018 | 23                             | 12.3                           | 17.7                        | 0.3                            | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 6/22/2018 | 23.3                           | 10.8                           | 17.1                        | 0.9                            | 0                              |                    |                       | 1.8                            |                           |                                                  | <31                                   |
| 6/23/2018 | 24.2                           | 16.4                           | 20.3                        | 0                              | 2.3                            |                    |                       | 7.8                            |                           |                                                  | <31                                   |
| 6/24/2018 | 18.9                           | 15.1                           | 17                          | 1                              | 0                              |                    |                       | 25                             |                           |                                                  | <31                                   |
| 6/25/2018 | 22                             | 10.6                           | 16.3                        | 1.7                            | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 6/26/2018 | 26.3                           | 8.7                            | 17.5                        | 0.5                            | 0                              |                    |                       | 0                              |                           |                                                  | <31                                   |
| 6/27/2018 | 22.4                           | 18.6                           | 20.5                        | 0                              | 2.5                            |                    |                       | 8.9                            |                           |                                                  | <31                                   |
| 6/28/2018 | 27.6                           | 18.8                           | 23.2                        | 0                              | 5.2                            |                    |                       | 2                              |                           |                                                  | <31                                   |
| 6/29/2018 | 28                             | 16.4                           | 22.2                        | 0                              | 4.2                            |                    |                       | 0                              |                           |                                                  | <31                                   |
| 6/30/2018 | 29.9                           | 19.9                           | 24.9                        | 0                              | 6.9                            |                    |                       | 0                              |                           | 22                                               | 35                                    |
| 7/1/2018  | 32.3                           | 20.3                           | 26.3                        | 0                              | 8.3                            |                    |                       | 0.2                            |                           |                                                  | <31                                   |
| 7/2/2018  | 29.9                           | 22.6                           | 26.3                        | 0                              | 8.3                            |                    |                       | 0                              |                           | 25                                               | 33                                    |
| 7/3/2018  | 31.4                           | 20.2                           | 25.8                        | 0                              | 7.8                            |                    |                       | 0                              |                           |                                                  |                                       |
| 7/4/2018  |                                |                                |                             |                                |                                |                    |                       |                                |                           |                                                  |                                       |
| 7/5/2018  |                                |                                |                             |                                |                                |                    |                       |                                |                           |                                                  | <31                                   |
| 7/6/2018  | 23.9                           | 14.5                           | 19.2                        | 0                              | 1.2                            |                    |                       | 0                              |                           | 33                                               | 37                                    |
| 7/7/2018  | 25.5                           | 12                             | 18.8                        | 0                              | 0.8                            |                    |                       | 0.5                            |                           |                                                  | <31                                   |
| 7/8/2018  | 27.5                           | 12.1                           | 19.8                        | 0                              | 1.8                            |                    |                       | 0                              |                           |                                                  | <31                                   |
| 7/9/2018  | 28.7                           | 13.6                           | 21.2                        | 0                              | 3.2                            |                    |                       | 0                              |                           | 21                                               | 35                                    |
| 7/10/2018 | 30.8                           | 18.2                           | 24.5                        | 0                              | 6.5                            |                    |                       | 0.2                            |                           | 2                                                | 35                                    |
| 7/11/2018 | 26.9                           | 14.6                           | 20.8                        | 0                              | 2.8                            |                    |                       | 0                              |                           |                                                  | <31                                   |
| 7/12/2018 | 28.3                           | 12.8                           | 20.6                        | 0                              | 2.6                            |                    |                       | 0.2                            |                           |                                                  | <31                                   |
| 7/13/2018 | 29.7                           | 19.7                           | 24.7                        | 0                              | 6.7                            |                    |                       | 0                              |                           |                                                  | <31                                   |
| 7/14/2018 | 28.1                           | 20.5                           | 24.3                        | 0                              | 6.3                            |                    |                       | 0.3                            |                           |                                                  | <31                                   |
| 7/15/2018 | 30.2                           | 19.9                           | 25.1                        | 0                              | 7.1                            |                    |                       | 0                              |                           |                                                  | <31                                   |
| 7/16/2018 | 31.8                           | 19.1                           | 25.5                        | 0                              | 7.5                            |                    |                       | 0                              |                           |                                                  |                                       |
| 7/17/2018 | 28.8                           | 15.6                           | 22.2                        | 0                              | 4.2                            |                    |                       | 0                              |                           | 31                                               | 39                                    |
| 7/18/2018 | 24.9                           | 15.9                           | 20.4                        | 0                              | 2.4                            |                    |                       | 0.2                            |                           |                                                  |                                       |
| 7/19/2018 | 27.1                           | 12.6                           | 19.8                        | 0                              | 1.8                            |                    |                       | 0                              |                           |                                                  |                                       |
| 7/20/2018 | 31.6                           | 15.1                           | 23.3                        | 0                              | 5.3                            |                    |                       | 0                              |                           | 14                                               | 42                                    |
| 7/21/2018 | 28.9                           | 15.7                           | 22.3                        | 0                              | 4.3                            |                    |                       | 2.4                            |                           | 14                                               | 35                                    |
| 7/22/2018 | 23.2                           | 15.4                           | 19.3                        | 0                              | 1.3                            |                    |                       | 24.3                           |                           | 2                                                | 35                                    |
| 7/23/2018 | 27.7                           | 19.8                           | 23.7                        | 0                              | 5.7                            |                    |                       | 0                              |                           |                                                  |                                       |
| 7/24/2018 |                                |                                |                             |                                |                                |                    |                       |                                |                           |                                                  |                                       |
| 7/25/2018 |                                |                                |                             |                                |                                |                    |                       |                                |                           |                                                  |                                       |
| 7/26/2018 | 27.4                           | 16.2                           | 21.8                        | 0                              | 3.8                            |                    |                       | 0                              |                           | 29                                               | 47                                    |
| 7/27/2018 | 25.3                           | 18.4                           | 21.8                        | 0                              | 3.8                            |                    |                       | 0.3                            |                           | 20                                               | 32                                    |
| 7/28/2018 | 23                             | 13.5                           | 18.3                        | 0                              | 0.3                            |                    |                       | 0.4                            |                           | 28                                               | 32                                    |
| 7/29/2018 | 25.4                           | 12.4                           | 18.9                        | 0                              | 0.9                            |                    |                       | 1.1                            |                           |                                                  |                                       |
| 7/30/2018 | 25.6                           | 14.9                           | 20.3                        | 0                              | 2.3                            |                    |                       | 0                              |                           |                                                  |                                       |
| 7/31/2018 | 27.4                           | 17.3                           | 22.3                        | 0                              | 4.3                            |                    |                       | 0                              |                           |                                                  |                                       |

**Table D-1**  
**Environment Canada Climate Data - Temperature and Precipitation**  
**East Fonthill Development**

| Date/Time | Maximum<br>Temperatu<br>re<br>(°C) | Minimum<br>Temperatu<br>re<br>(°C) | Mean<br>Temperatu<br>re<br>(°C) | Heat<br>Degree<br>Days<br>(°C) | Cool<br>Degree<br>Days<br>(°C) | Total Rain<br>(mm) | Total<br>Snow<br>(cm) | Total<br>Precipitati<br>on<br>(mm) | Snow on<br>Ground<br>(cm) | Direction<br>of<br>Maximum<br>Gust<br>(10's deg) | Speed of<br>Maximum<br>Gust<br>(km/h) |
|-----------|------------------------------------|------------------------------------|---------------------------------|--------------------------------|--------------------------------|--------------------|-----------------------|------------------------------------|---------------------------|--------------------------------------------------|---------------------------------------|
| 8/1/2018  | 25.9                               | 20.1                               | 23                              | 0                              | 5                              |                    |                       | 0                                  |                           | 20                                               | 43                                    |
| 8/2/2018  | 26.7                               | 18.4                               | 22.6                            | 0                              | 4.6                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 8/3/2018  | 27.5                               | 17.1                               | 22.3                            | 0                              | 4.3                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 8/4/2018  | 28.6                               | 17                                 | 22.8                            | 0                              | 4.8                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 8/5/2018  | 30.7                               | 15.7                               | 23.2                            | 0                              | 5.2                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 8/6/2018  | 31.2                               | 22.2                               | 26.7                            | 0                              | 8.7                            |                    |                       | 3.5                                |                           | 34                                               | 41                                    |
| 8/7/2018  | 27.3                               | 21                                 | 24.1                            | 0                              | 6.1                            |                    |                       | 1.3                                |                           |                                                  |                                       |
| 8/8/2018  | 25.4                               | 19.2                               | 22.3                            | 0                              | 4.3                            |                    |                       | 18.3                               |                           | 25                                               | 34                                    |
| 8/9/2018  | 26.9                               | 16                                 | 21.5                            | 0                              | 3.5                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 8/10/2018 | 26.4                               | 12.9                               | 19.6                            | 0                              | 1.6                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 8/11/2018 | 27.4                               | 10.7                               | 19.1                            | 0                              | 1.1                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 8/12/2018 | 28.5                               | 14.2                               | 21.3                            | 0                              | 3.3                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 8/13/2018 | 26.4                               | 16.9                               | 21.7                            | 0                              | 3.7                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 8/14/2018 | 29.4                               | 17.7                               | 23.6                            | 0                              | 5.6                            |                    |                       | 0.2                                |                           |                                                  |                                       |
| 8/15/2018 | 29.2                               | 17.3                               | 23.2                            | 0                              | 5.2                            |                    |                       | 0                                  |                           | 24                                               | 31                                    |
| 8/16/2018 | 29                                 | 17.7                               | 23.4                            | 0                              | 5.4                            |                    |                       | 0.9                                |                           | 18                                               | 38                                    |
| 8/17/2018 | 27.8                               | 21.7                               | 24.7                            | 0                              | 6.7                            |                    |                       | 17                                 |                           |                                                  |                                       |
| 8/18/2018 | 24                                 | 15.1                               | 19.6                            | 0                              | 1.6                            |                    |                       | 21.7                               |                           | 4                                                | 33                                    |
| 8/19/2018 | 25.1                               | 14.3                               | 19.7                            | 0                              | 1.7                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 8/20/2018 | 26.1                               | 15.2                               | 20.6                            | 0                              | 2.6                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 8/21/2018 | 27.3                               | 18.5                               | 22.9                            | 0                              | 4.9                            |                    |                       | 28                                 |                           | 18                                               | 41                                    |
| 8/22/2018 | 23.1                               | 11.8                               | 17.4                            | 0.6                            | 0                              |                    |                       | 0                                  |                           | 34                                               | 38                                    |
| 8/23/2018 | 24.9                               | 12.4                               | 18.7                            | 0                              | 0.7                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 8/24/2018 | 25.8                               | 13.7                               | 19.8                            | 0                              | 1.8                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 8/25/2018 | 26.5                               | 20.2                               | 23.4                            | 0                              | 5.4                            |                    |                       | 2.1                                |                           | 20                                               | 36                                    |
| 8/26/2018 | 26.5                               | 20.3                               | 23.4                            | 0                              | 5.4                            |                    |                       | 0                                  |                           | 25                                               | 31                                    |
| 8/27/2018 | 28.7                               | 20.1                               | 24.4                            | 0                              | 6.4                            |                    |                       | 3.8                                |                           | 25                                               | 38                                    |
| 8/28/2018 | 28.9                               | 23.4                               | 26.1                            | 0                              | 8.1                            |                    |                       | 0                                  |                           | 22                                               | 48                                    |
| 8/29/2018 | 28.6                               | 19.6                               | 24.1                            | 0                              | 6.1                            |                    |                       | 0                                  |                           | 27                                               | 53                                    |
| 8/30/2018 | 20.9                               | 13.2                               | 17                              | 1                              | 0                              |                    |                       | 0                                  |                           |                                                  |                                       |
| 8/31/2018 | 24.1                               | 12.4                               | 18.2                            | 0                              | 0.2                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 9/1/2018  | 28.9                               | 13.7                               | 21.3                            | 0                              | 3.3                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 9/2/2018  | 27.3                               | 22.5                               | 24.9                            | 0                              | 6.9                            |                    |                       | 1.1                                |                           |                                                  |                                       |
| 9/3/2018  | 29.7                               | 19.9                               | 24.8                            | 0                              | 6.8                            |                    |                       | 7                                  |                           | 32                                               | 51                                    |
| 9/4/2018  | 30.3                               | 19.1                               | 24.7                            | 0                              | 6.7                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 9/5/2018  | 30.8                               | 19.9                               | 25.3                            | 0                              | 7.3                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 9/6/2018  | 24.5                               | 18.3                               | 21.4                            | 0                              | 3.4                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 9/7/2018  | 24.9                               | 16.8                               | 20.8                            | 0                              | 2.8                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 9/8/2018  | 17.6                               | 9.7                                | 13.6                            | 4.4                            | 0                              |                    |                       | 0                                  |                           | 4                                                | 37                                    |
| 9/9/2018  | 15.1                               | 10                                 | 12.6                            | 5.4                            | 0                              |                    |                       | 1.9                                |                           | 6                                                | 38                                    |
| 9/10/2018 | 17.7                               | 11.9                               | 14.8                            | 3.2                            | 0                              |                    |                       | 22.3                               |                           | 10                                               | 38                                    |
| 9/11/2018 | 19.3                               | 12.3                               | 15.8                            | 2.2                            | 0                              |                    |                       | 4.4                                |                           |                                                  |                                       |
| 9/12/2018 | 24.6                               | 12.6                               | 18.6                            | 0                              | 0.6                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 9/13/2018 | 27.8                               | 15.8                               | 21.8                            | 0                              | 3.8                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 9/14/2018 | 29.1                               | 17.7                               | 23.4                            | 0                              | 5.4                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 9/15/2018 | 29.1                               | 17.5                               | 23.3                            | 0                              | 5.3                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 9/16/2018 | 29.9                               | 16.2                               | 23                              | 0                              | 5                              |                    |                       | 0                                  |                           |                                                  |                                       |
| 9/17/2018 | 25.7                               | 16.6                               | 21.1                            | 0                              | 3.1                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 9/18/2018 | 27.8                               | 16.4                               | 22.1                            | 0                              | 4.1                            |                    |                       | 0                                  |                           |                                                  |                                       |
| 9/19/2018 | 21.1                               | 13.2                               | 17.2                            | 0.8                            | 0                              |                    |                       | 0                                  |                           |                                                  |                                       |
| 9/20/2018 | 22.2                               | 11.4                               | 16.8                            | 1.2                            | 0                              |                    |                       | 0.3                                |                           |                                                  |                                       |
| 9/21/2018 | 30.2                               | 13.6                               | 21.9                            | 0                              | 3.9                            |                    |                       | 0.8                                |                           | 29                                               | 53                                    |
| 9/22/2018 | 15.5                               | 5.6                                | 10.5                            | 7.5                            | 0                              |                    |                       | 0.2                                |                           | 32                                               | 39                                    |
| 9/23/2018 | 20.5                               | 3.9                                | 12.2                            | 5.8                            | 0                              |                    |                       | 0                                  |                           |                                                  |                                       |
| 9/24/2018 | 20.4                               | 10.7                               | 15.6                            | 2.4                            | 0                              |                    |                       | 8.1                                |                           | 16                                               | 38                                    |
| 9/25/2018 | 22.3                               | 15.4                               | 18.9                            | 0                              | 0.9                            |                    |                       | 13.2                               |                           | 16                                               | 39                                    |
| 9/26/2018 | 22.9                               | 7.8                                | 15.3                            | 2.7                            | 0                              |                    |                       | 6.5                                |                           | 30                                               | 43                                    |
| 9/27/2018 | 17.9                               | 6.3                                | 12.1                            | 5.9                            | 0                              |                    |                       | 0                                  |                           |                                                  |                                       |
| 9/28/2018 | 19.8                               | 8.8                                | 14.3                            | 3.7                            | 0                              |                    |                       | 1                                  |                           | 31                                               | 41                                    |
| 9/29/2018 | 16.9                               | 6.8                                | 11.9                            | 6.1                            | 0                              |                    |                       | 0.2                                |                           | 27                                               | 35                                    |
| 9/30/2018 | 14.3                               | 8.5                                | 11.4                            | 6.6                            | 0                              |                    |                       | 1.8                                |                           |                                                  |                                       |

**Table D-1**  
**Environment Canada Climate Data - Temperature and Precipitation**  
**East Fonthill Development**

| Date/Time  | Maximum<br>Temperature<br>(°C) | Minimum<br>Temperature<br>(°C) | Mean<br>Temperature<br>(°C) | Heat<br>Degree<br>Days<br>(°C) | Cool<br>Degree<br>Days<br>(°C) | Total Rain<br>(mm) | Total<br>Snow<br>(cm) | Total<br>Precipitation<br>(mm) | Snow on<br>Ground<br>(cm) | Direction<br>of<br>Maximum<br>Gust<br>(10's deg) | Speed of<br>Maximum<br>Gust<br>(km/h) |
|------------|--------------------------------|--------------------------------|-----------------------------|--------------------------------|--------------------------------|--------------------|-----------------------|--------------------------------|---------------------------|--------------------------------------------------|---------------------------------------|
| 10/1/2018  | 12.6                           | 10.3                           | 11.5                        | 6.5                            | 0                              |                    |                       | 3.8                            |                           | 7                                                | 32                                    |
| 10/2/2018  | 21.4                           | 10.6                           | 16                          | 2                              | 0                              |                    |                       | 19.6                           |                           |                                                  |                                       |
| 10/3/2018  | 22                             | 11.7                           | 16.8                        | 1.2                            | 0                              |                    |                       | 0                              |                           | 20                                               | 33                                    |
| 10/4/2018  | 23.3                           | 5.5                            | 14.4                        | 3.6                            | 0                              |                    |                       | 8.5                            |                           | 25                                               | 45                                    |
| 10/5/2018  | 14                             | 6.6                            | 10.3                        | 7.7                            | 0                              |                    |                       | 0                              |                           |                                                  |                                       |
| 10/6/2018  | 21.9                           | 10.9                           | 16.4                        | 1.6                            | 0                              |                    |                       | 22.7                           |                           |                                                  |                                       |
| 10/7/2018  | 17.5                           | 12.2                           | 14.9                        | 3.1                            | 0                              |                    |                       | 0                              |                           |                                                  |                                       |
| 10/8/2018  | 25.4                           | 11.9                           | 18.7                        | 0                              | 0.7                            |                    |                       | 2.7                            |                           |                                                  |                                       |
| 10/9/2018  | 27.8                           | 18.7                           | 23.2                        | 0                              | 5.2                            |                    |                       | 0                              |                           | 21                                               | 34                                    |
| 10/10/2018 | 27.4                           | 19                             | 23.2                        | 0                              | 5.2                            |                    |                       | 0                              |                           | 20                                               | 32                                    |
| 10/11/2018 | 22.8                           | 9.4                            | 16.1                        | 1.9                            | 0                              |                    |                       | 0.2                            |                           | 29                                               | 41                                    |
| 10/12/2018 | 10.4                           | 4.9                            | 7.7                         | 10.3                           | 0                              |                    |                       | 0.8                            |                           | 30                                               | 39                                    |
| 10/13/2018 | 10.9                           | 2                              | 6.4                         | 11.6                           | 0                              |                    |                       | 0.9                            |                           | 27                                               | 35                                    |
| 10/14/2018 | 14.9                           | 2.6                            | 8.7                         | 9.3                            | 0                              |                    |                       | 0                              |                           |                                                  |                                       |
| 10/15/2018 | 14.4                           | 3                              | 8.7                         | 9.3                            | 0                              |                    |                       | 2.5                            |                           | 29                                               | 56                                    |
| 10/16/2018 | 12.3                           | 1.2                            | 6.7                         | 11.3                           | 0                              |                    |                       | 0.2                            |                           | 26                                               | 51                                    |
| 10/17/2018 | 11.5                           | 2.4                            | 7                           | 11                             | 0                              |                    |                       | 0                              |                           | 30                                               | 52                                    |
| 10/18/2018 | 9.6                            | -1.6                           | 4                           | 14                             | 0                              |                    |                       | 0                              |                           | 26                                               | 33                                    |
| 10/19/2018 | 13.6                           | 9.1                            | 11.4                        | 6.6                            | 0                              |                    |                       | 0                              |                           | 24                                               | 55                                    |
| 10/20/2018 | 14.1                           | 4.5                            | 9.3                         | 8.7                            | 0                              |                    |                       | 5.3                            |                           | 25                                               | 48                                    |
| 10/21/2018 | 6.2                            | 1.8                            | 4                           | 14                             | 0                              |                    |                       | 0.2                            |                           | 32                                               | 43                                    |
| 10/22/2018 | 10.7                           | 0                              | 5.4                         | 12.6                           | 0                              |                    |                       | 0                              |                           | 21                                               | 39                                    |
| 10/23/2018 | 12.1                           | -1                             | 5.5                         | 12.5                           | 0                              |                    |                       | 0                              |                           | 28                                               | 54                                    |
| 10/24/2018 |                                |                                |                             |                                |                                |                    |                       |                                |                           |                                                  |                                       |
| 10/25/2018 | 7.6                            | 2.5                            | 5.1                         | 12.9                           | 0                              |                    |                       | 0                              |                           |                                                  |                                       |
| 10/26/2018 | 9.2                            | 1.1                            | 5.2                         | 12.8                           | 0                              |                    |                       | 0.5                            |                           | 8                                                | 33                                    |
| 10/27/2018 | 6.7                            | 2.5                            | 4.6                         | 13.4                           | 0                              |                    |                       | 15.6                           |                           | 7                                                | 38                                    |
| 10/28/2018 | 6.2                            | 2                              | 4.1                         | 13.9                           | 0                              |                    |                       | 3.2                            |                           |                                                  |                                       |
| 10/29/2018 | 8.9                            | -0.1                           | 4.4                         | 13.6                           | 0                              |                    |                       | 2.4                            |                           | 28                                               | 41                                    |
| 10/30/2018 | 11.6                           | -1.5                           | 5.1                         | 12.9                           | 0                              |                    |                       | 1.4                            |                           |                                                  |                                       |
| 10/31/2018 | 14.2                           | 7.3                            | 10.8                        | 7.2                            | 0                              |                    |                       | 9.9                            |                           | 22                                               | 43                                    |
| 11/1/2018  | 7.9                            | 6.5                            | 7.2                         | 10.8                           | 0                              |                    |                       | 46.4                           |                           | 5                                                | 45                                    |
| 11/2/2018  | 6.9                            | 3.7                            | 5.3                         | 12.7                           | 0                              |                    |                       | 3.4                            |                           | 5                                                | 45                                    |
| 11/3/2018  | 6.8                            | 3                              | 4.9                         | 13.1                           | 0                              |                    |                       | 1.3                            |                           | 29                                               | 40                                    |
| 11/4/2018  | 10.1                           | -1.3                           | 4.4                         | 13.6                           | 0                              |                    |                       | 0.4                            |                           |                                                  |                                       |
| 11/5/2018  | 12.6                           | 7                              | 9.8                         | 8.2                            | 0                              |                    |                       | 1.3                            |                           | 19                                               | 34                                    |
| 11/6/2018  | 14.7                           | 9.2                            | 12                          | 6                              | 0                              |                    |                       | 6.6                            |                           | 27                                               | 65                                    |
| 11/7/2018  | 9.6                            | 3.9                            | 6.7                         | 11.3                           | 0                              |                    |                       | 0                              |                           | 24                                               | 51                                    |
| 11/8/2018  | 6.9                            | -0.8                           | 3                           | 15                             | 0                              |                    |                       | 0.2                            |                           | 31                                               | 33                                    |
| 11/9/2018  | 6.1                            | -1.3                           | 2.4                         | 15.6                           | 0                              |                    |                       | 7.9                            |                           | 28                                               | 48                                    |
| 11/10/2018 | 1.6                            | -2.7                           | -0.5                        | 18.5                           | 0                              |                    |                       | 0                              |                           | 27                                               | 57                                    |
| 11/11/2018 | 4.2                            | -3.6                           | 0.3                         | 17.7                           | 0                              |                    |                       | 0                              |                           |                                                  |                                       |
| 11/12/2018 | 6.3                            | -0.1                           | 3.1                         | 14.9                           | 0                              |                    |                       | 0                              |                           |                                                  |                                       |
| 11/13/2018 |                                |                                |                             |                                |                                |                    |                       |                                |                           |                                                  |                                       |
| 11/14/2018 | 1.4                            | -4.3                           | -1.5                        | 19.5                           | 0                              |                    |                       | 0                              |                           | 28                                               | 36                                    |
| 11/15/2018 | 0.4                            | -3.5                           | -1.5                        | 19.5                           | 0                              |                    |                       | 7.5                            |                           |                                                  |                                       |
| 11/16/2018 | 2.8                            | 0.1                            | 1.4                         | 16.6                           | 0                              |                    |                       | 3                              | 4                         | 29                                               | 44                                    |
| 11/17/2018 | 3.2                            | -0.9                           | 1.1                         | 16.9                           | 0                              |                    |                       | 0                              | 0                         | 29                                               | 36                                    |
| 11/18/2018 | 2.8                            | -1                             | 0.9                         | 17.1                           | 0                              |                    |                       | 1                              | 1                         |                                                  |                                       |
| 11/19/2018 | 4.5                            | -3.9                           | 0.3                         | 17.7                           | 0                              |                    |                       | 0.2                            | 0                         |                                                  |                                       |
| 11/20/2018 | 1.3                            | -3                             | -0.9                        | 18.9                           | 0                              |                    |                       | 0.9                            | 0                         | 28                                               | 41                                    |
| 11/21/2018 | 2.1                            | -9.3                           | -3.6                        | 21.6                           | 0                              |                    |                       | 1.5                            | 1                         | 30                                               | 51                                    |
| 11/22/2018 | -5.8                           | -11.1                          | -8.4                        | 26.4                           | 0                              |                    |                       | 0                              | 0                         | 2                                                | 34                                    |
| 11/23/2018 | 3.8                            | -5.8                           | -1                          | 19                             | 0                              |                    |                       | 0                              | 1                         |                                                  |                                       |
| 11/24/2018 | 7.9                            | 0.1                            | 4                           | 14                             | 0                              |                    |                       | 3.4                            | 0                         | 19                                               | 44                                    |
| 11/25/2018 | 8                              | 2.4                            | 5.2                         | 12.8                           | 0                              |                    |                       | 0                              | 0                         |                                                  |                                       |
| 11/26/2018 | 7.5                            | 1.6                            | 4.6                         | 13.4                           | 0                              |                    |                       | 18.3                           |                           | 20                                               | 36                                    |
| 11/27/2018 | 1.7                            | -1.3                           | 0.2                         | 17.8                           | 0                              |                    |                       | 5.1                            | 0                         | 28                                               | 49                                    |
| 11/28/2018 | 2                              | -1.6                           | 0.2                         | 17.8                           | 0                              |                    |                       | 3.9                            | 17                        | 30                                               | 42                                    |
| 11/29/2018 | 0.8                            | -1.8                           | -0.5                        | 18.5                           | 0                              |                    |                       | 0                              | 11                        | 28                                               | 34                                    |
| 11/30/2018 | 1.1                            | -0.5                           | 0.3                         | 17.7                           | 0                              |                    |                       | 0                              | 9                         |                                                  |                                       |

**Table D-1**  
**Environment Canada Climate Data - Temperature and Precipitation**  
**East Fonthill Development**

| Date/Time  | Maximum<br>Temperatu<br>re<br>(°C) | Minimum<br>Temperatu<br>re<br>(°C) | Mean<br>Temperatu<br>re<br>(°C) | Heat<br>Degree<br>Days<br>(°C) | Cool<br>Degree<br>Days<br>(°C) | Total Rain<br>(mm) | Total<br>Snow<br>(cm) | Total<br>Precipitati<br>on<br>(mm) | Snow on<br>Ground<br>(cm) | Direction<br>of<br>Maximum<br>Gust<br>(10's deg) | Speed of<br>Maximum<br>Gust<br>(km/h) |
|------------|------------------------------------|------------------------------------|---------------------------------|--------------------------------|--------------------------------|--------------------|-----------------------|------------------------------------|---------------------------|--------------------------------------------------|---------------------------------------|
| 12/1/2018  | 2.4                                | -0.1                               | 1.2                             | 16.8                           | 0                              |                    |                       | 3.8                                | 5                         |                                                  |                                       |
| 12/2/2018  | 14.1                               | 2.4                                | 8.2                             | 9.8                            | 0                              |                    |                       | 4.8                                | 0                         | 26                                               | 56                                    |
| 12/3/2018  | 6                                  | -0.5                               | 2.8                             | 15.2                           | 0                              |                    |                       | 0.7                                | 0                         | 27                                               | 55                                    |
| 12/4/2018  | 0.3                                | -6.8                               | -3.3                            | 21.3                           | 0                              |                    |                       | 0                                  | 0                         |                                                  |                                       |
| 12/5/2018  | 0.5                                | -7.5                               | -3.5                            | 21.5                           | 0                              |                    |                       | 0                                  | 0                         |                                                  |                                       |
| 12/6/2018  | 1.2                                | -7.2                               | -3                              | 21                             | 0                              |                    |                       | 5.7                                |                           | 21                                               | 38                                    |
| 12/7/2018  | -3.1                               | -8.9                               | -6                              | 24                             | 0                              |                    |                       | 0.4                                | 5                         |                                                  |                                       |
| 12/8/2018  | -1.8                               | -7                                 | -4.4                            | 22.4                           | 0                              |                    |                       | 1.5                                | 10                        | 29                                               | 31                                    |
| 12/9/2018  | -0.3                               | -10                                | -5.1                            | 23.1                           | 0                              |                    |                       | 0                                  | 9                         |                                                  |                                       |
| 12/10/2018 | 1.4                                | -4.2                               | -1.4                            | 19.4                           | 0                              |                    |                       | 0                                  | 8                         |                                                  |                                       |
| 12/11/2018 | -0.1                               | -2.2                               | -1.1                            | 19.1                           | 0                              |                    |                       | 0                                  | 7                         | 24                                               | 33                                    |
| 12/12/2018 | 1.6                                | -8.6                               | -3.5                            | 21.5                           | 0                              |                    |                       | 0                                  | 6                         |                                                  |                                       |
| 12/13/2018 | 5.3                                | -0.6                               | 2.4                             | 15.6                           | 0                              |                    |                       | 1.2                                | 6                         |                                                  |                                       |
| 12/14/2018 | 6.5                                | 0                                  | 3.3                             | 14.7                           | 0                              |                    |                       | 0                                  | 2                         |                                                  |                                       |
| 12/15/2018 | 3.7                                | -0.2                               | 1.8                             | 16.2                           | 0                              |                    |                       | 0                                  | 1                         |                                                  |                                       |
| 12/16/2018 | 4.7                                | 1.1                                | 2.9                             | 15.1                           | 0                              |                    |                       | 0                                  | 1                         | 25                                               | 38                                    |
| 12/17/2018 | 3.3                                | -0.6                               | 1.3                             | 16.7                           | 0                              |                    |                       | 0                                  | 0                         | 31                                               | 46                                    |
| 12/18/2018 | -0.3                               | -6.1                               | -3.2                            | 21.2                           | 0                              |                    |                       | 0.2                                |                           | 31                                               | 38                                    |
| 12/19/2018 | 5.1                                | -5.3                               | -0.1                            | 18.1                           | 0                              |                    |                       | 0                                  |                           | 18                                               | 31                                    |
| 12/20/2018 | 6.8                                | -2.1                               | 2.3                             | 15.7                           | 0                              |                    |                       | 13.1                               |                           | 5                                                | 36                                    |
| 12/21/2018 | 5.3                                | 0.2                                | 2.8                             | 15.2                           | 0                              |                    |                       | 10.8                               | 0                         | 31                                               | 41                                    |
| 12/22/2018 | 0.3                                | -1.2                               | -0.5                            | 18.5                           | 0                              |                    |                       | 0                                  |                           | 29                                               | 44                                    |
| 12/23/2018 | 2.3                                | -1.3                               | 0.5                             | 17.5                           | 0                              |                    |                       | 0                                  |                           |                                                  |                                       |
| 12/24/2018 | 2.2                                | -0.7                               | 0.8                             | 17.2                           | 0                              |                    |                       | 0                                  |                           | 28                                               | 40                                    |
| 12/25/2018 | 1.4                                | -1.5                               | -0.1                            | 18.1                           | 0                              |                    |                       | 0                                  |                           |                                                  |                                       |
| 12/26/2018 | 2.9                                | -1.7                               | 0.6                             | 17.4                           | 0                              |                    |                       | 0                                  |                           |                                                  |                                       |
| 12/27/2018 | 7                                  | -4.3                               | 1.3                             | 16.7                           | 0                              |                    |                       | 5.7                                |                           | 19                                               | 43                                    |
| 12/28/2018 | 11.9                               | 3.1                                | 7.5                             | 10.5                           | 0                              |                    |                       | 4.2                                |                           | 25                                               | 48                                    |
| 12/29/2018 | 3.1                                | -3                                 | 0.1                             | 17.9                           | 0                              |                    |                       | 0.4                                |                           | 27                                               | 39                                    |
| 12/30/2018 | 1.1                                | -4.1                               | -1.5                            | 19.5                           | 0                              |                    |                       | 1                                  |                           |                                                  |                                       |
| 12/31/2018 | 13.1                               | -4.1                               | 4.5                             | 13.5                           | 0                              |                    |                       | 16.2                               | 2                         | 27                                               | 77                                    |