Preliminary Servicing and Stormwater Management Report

Watermark Subdivision
Municipality of Central Elgin, Ontario

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Prepared For:
Wastell Homes Inc.

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Statement of Qualifications and Limitations

This report has been prepared for Wastell Homes Inc. based upon currently available information, to support the Draft Plan application to be filed for the proposed Watermark Subdivision. This report has been prepared for the sole use of Wastell Homes Inc. and any reliance upon this information by any third party is made at the risk of that party. Development Engineering (London) Limited assumes no liability for any injury, loss or damage suffered by any third party based upon decisions made or actions that arise due to that party's reliance upon or interpretation of the contents of this report.

This Statement of Qualifications and Limitations is attached to and forms part of the report; any use of the report is subject to the terms contained herein.

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1.0 Introduction

Development Engineering (London) Limited has been retained by Wastell Homes Inc. to provide a Preliminary Servicing and Stormwater Management Report in support of a Draft Approval. The proposed Draft Plan of Subdivision includes 32 single-family lots (1.49 ha), 63 street towns (1.93 ha), and 1 medium/high-density residential block (1.13 ha), and is to be named Watermark Subdivision (referred to herein as the 'subdivision'). The subject site is an 8.23 ha parcel and is currently comprised of 6.43 ha of developable agricultural lands to the south and 1.80 ha of wooded natural heritage/hazard lands to the north. Refer to Appendix A for the current Draft Plan of Subdivision concept.

The subdivision is proposed to be serviced with new municipal watermains, sanitary sewers, storm sewers, and a stormwater management facility (SWMF). Road access to the site is proposed from Beamish Street (Sunset Bluffs subdivision) to the west, and East Road to the east.

The purpose of this Preliminary Servicing and Stormwater Management Report is to support Draft Approval by demonstrating an effective approach to address servicing, grading, and stormwater management (SWM), while conforming to municipal and provincial design guidelines.

2.0 Background Information

2.1 Previous Consultations

The following pre-consultation comments were reviewed for the development of the servicing design and the preparation of this report:

- Pre-Consultation Meeting Notes, MBPC File#07-992 (November 5, 2020).

2.2 Previous and Concurrent Studies and Reports

The following studies and reports were reviewed for the development of the servicing design and the preparation of this report:

- Plan of Survey with Topographical Detail, Plan No. 9-L-5624 by AGM Ltd. (January 20, 2021).
- Draft Plan of Subdivision concept by MBPC (August 21, 2024).
- Geotechnical Investigation Letter by LDS Consultants Inc. (April 10, 2019).
- Sunset Bluffs Phase 1 & 2 Servicing Plan Record Drawing (2016).
- Sunset Bluffs Subdivision Stormwater Management Report by CJDL (Oct. 30, 2015).
- Little Creek Subwatershed Study (May 2000).
- Elgin Area Secondary Water Supply System (Port Stanley) Record Drawings (October 1996).
- Proposed Subdivision Draft Plan by Monteith Brown Planning Consultants (January 12, 2024).
- Environmental Compliance Approval for a Municipal Sewage Collection System, ECA No. 046-W601 (July 3, 2023).
- Environmental Compliance Approval for a Municipal Stormwater Management System, ECA No. 046-S701 (February 14, 2023).

2.3 Related Design Specifications

The following design specifications were reviewed for the development of the servicing design and the preparation of this report:

- Municipality of Central Elgin Design Guidelines Manual (Central Elgin, 2023).
- Ministry of Environment, Conservation and Parks (MECP) SWM Planning and Design Manual (2003).

3.0 Approval Agencies

3.1 Municipality of Central Elgin

The application for Draft Approval and any future detailed design applications must be submitted to and are subject to approval by the Municipality of Central Elgin as the local planning and engineering approval agency. Any building permits associated within the proposed subdivision are also subject to approval by the municipality. Municipal Consolidated Linear Infrastructure Environmental Compliance Approval (CLI-ECA) amendment applications are anticipated to be required for any proposed municipally assumed sewage and stormwater management works.

3.2 Elgin County

The application for Draft Approval must also be submitted to and is subject to the approval of Elgin County who act as a commenting agency and are the ultimate Approval Authority for Plans of Subdivision.

3.3 Kettle Creek Conservation Authority (KCCA)

A portion of the proposed subdivision lands are located within the KCCA regulated area and are therefore subject to approval under Section 28 of the Conservation Authorities Act.

4.0 Existing Conditions

The 8.23 ha site is bound by Sunset Road (CR No.4) to the north, East Road (CR No. 23) to the east, the Port Stanley Water Tower and Sunset Bluffs Subdivision to the south, and Sunset Bluffs Subdivision and a woodlot to the west. The subject site is described by AGM Plan of Survey no. 9-L-5624 (Jan. 20, 2021) as Part of Lot 2, Concession 2 (Geographic Township of Yarmouth), Municipality of Central Elgin. Refer to Appendix A for the Plan of Survey.

4.1 Site Topography and Drainage

A detailed topographic survey for the site was completed by AGM Ltd. on January 9, 2021, as part of the aforementioned Plan of Survey. Topography within the 6.43 ha existing agricultural area can be described as rolling, with an average slope of approximately 1.0%. The existing agricultural area slopes southeastward, directing runoff toward an open ditch along East Road, with geodetic elevations across the site ranging between ±215.52m along the northeastern site boundary, to ±213.31m along East Road and the Port Stanley Water Tower to the south.

The remaining 1.80 ha of existing natural heritage/hazard lands to the north slope northward towards the northern property boundary with an average slope of approximately 27.5%. The area slopes northward, conveying stormwater runoff towards the northern property boundary, with geodetic elevations ranging from ±215.30m from the south edge of wooded area to ±200.80m along the northern property boundary.

4.2 Soil Conditions

A geotechnical investigation was completed by LDS Consultants Inc. (LDS) on March 29, 2019, based on analysis of three (3) shallow test pits (denoted as TP1 to TP3), ranging in excavation depths of 3.9 to 4.5 m below grade.

4.2.1 Soil Stratigraphy and Groundwater

Surficial topsoil in the test pits was found to be approximately 300 to 450mm thick. Below the surficial topsoil, it is noted that natural silt and silt till soils were encountered within each test pit, extending throughout the pit depth. Within test pit TP3, it is mentioned that a wet sand seam was encountered from 2.4 to 2.6 m below the ground surface, which contributed to minor sidewall caving and groundwater seepage into the open test pit. The silt and silt till soils were described as stiff to very stiff, containing traces of fine sand and fine gravel, and was found in a moist state. The test pit results show the silt becoming grey between depths of 2.13 and 3.05 mbgs, which is often indicative of a seasonally high groundwater table. This should be confirmed during the detailed design phase.

The geotechnical investigation notes that shallow groundwater is not anticipated to be encountered and that conventional groundwater control methods are expected to be suitable for excavations at the site, to address surface water infiltration and shallow groundwater seepage for excavations above the stabilized groundwater table.

4.3 Existing Roads (Site Access)

The following public roadways near the subject site have been proposed to provide site access under a developed configuration:

- East Road (CR No. 23) – This existing County Road borders the southeastern property line. Connection to this road is proposed to serve as the primary subdivision access location.
- Beamish Street – There is currently a dead-end street from the Sunset Bluffs subdivision which borders the western property line. Extension of the road is proposed to serve as a secondary access to the subject site. As-built municipal servicing drawings indicate previous consideration of a road extension.

4.4 Existing Servicing

Based on our review of the existing site records identified in Section 2.0, the following observations in this section have been made regarding servicing in proximity to the site. Refer to the existing municipal servicing drawings and the *Sunset Bluffs Phase 1 & 2 Servicing Plan Record Drawing* and *Elgin Area Secondary Water Supply System (Port Stanley) Record Drawings,* located in Appendix A.

4.4.1 Watermain

An existing 300mm diameter watermain is located on East Road and an existing 200mm diameter watermain is located along Beamish Street, extending to a blowoff at the western property line. Both watermains are available to service the subject site. These local watermain connections are of sufficient diameter that friction losses are expected to be minimal.

Currently water pressures are unknown; however, the water tower block abuts the subject development and static water pressures are anticipated to be sufficient. Water pressures will be confirmed through hydrant flow tests during detailed design. The Municipality indicated during the pre-consultation meeting that water capacity is in place to service the subject site.

4.4.2 Sanitary Sewers

An existing 200mm diameter municipal sanitary sewer is located along Beamish Street, extending to MH SA39 by the western property line of the site. The sanitary sewer has been designed to service the Watermark Subdivision providing a sewage flow allocation of 8.49 L/s and supporting a design population of 362. The MH SA39 outlets northward to the sanitary sewer along Sunset Road (Hwy. 4). The municipality confirmed in a meeting on June 12, 2024, that the Wastewater Treatment Plant is currently allocating a 44 pp/ha for these lands, equating to a design population of 362 people.

4.4.3 Storm Sewers and SWM

There is currently no existing municipal storm sewer adjacent to the site through the Sunset Bluffs subdivision along East Road available to service the proposed development. Local drainage outlets appear to be largely available via the Little Creek, located southeast of the site, ultimately discharging into Lake Erie.

5.0 Proposed Conditions

5.1 Roads

A street network has been defined through draft plan concept development. Due to the site's proximity to East Road and Beamish Street, it is proposed that future right-of-way (ROW) access will be available from both roads: a primary access connection opportunity from the east at East Road (County Road 23), and secondary access connection from the west at Beamish Street.

The internal road network across Watermark Subdivision would provide access each block and parcel through the subdivision development. The design of the local streets will be completed within 20m right-of-way widths in accordance with the Municipality of Central Elgin design standards. The associated pavement design for local traffic has been established through LDS's Geotechnical Investigation, and at minimum will meet the municipal design standards.

5.2 Grading and Drainage Design

The proposed development grading would be designed to optimize cut/fill balance where feasible and in a manner that facilitates the orderly collection and conveyance of stormwater runoff through a proposed storm sewer system. Overland flow during major storm events would need to be safely conveyed along the internal roadways, to dedicated spillways or the SWMF.

The existing site topography for the development area tends to slope from north to south across the site at an average slope of approximately 1.0%, ranging in elevations from ±215.50m to ±213.30m. The existing topography of the northern natural heritage/hazard lot of the site slopes north at approximately 27.5% with elevations ranging from ±200.80m to ±215.30m. Pursuant to the servicing strategies to date, and in recognition of topographic trends and proposed road alignments, a dedicated block for the SWMF is proposed at the southern limit of the subject site.

Grading shall conform to typical municipal standards and generally conform to existing topographic constraints and drainage patterns. Throughout the site, conventional (split), and back-to-front grading patterns will most likely be used; however, for lots backing into the SWMF, lookout or walkout configurations would be considered where grade differentials are favourable.

5.3 Proposed Servicing

A pre-consultation meeting was held on November 5, 2020, during which municipal staff identified sufficient domestic water supply and sanitary sewer capacity were available externally to service the subject development. Since the residual capacity of the local ditch system is unknown, the proponent was tasked with establishing a sufficient outlet and proposing a strategy to the Municipality for approval.

5.3.1 Watermain

The proposed subdivision development would be provided with potable water for domestic use and fire protection via a new watermain system with pipe sizes ranging in diameter from 150-250mm. The watermain connections are proposed to connect to the existing watermain on East Road and the existing watermain along Beamish Street, contributing to the looping of the local municipal water distribution network. The looped configuration should serve to reduce residence time (improve disinfectant residual), increase turnover, provide a measure of water supply redundancy in the event of a watermain break, and generally improve system pressure. Typical residential water services would be proposed with 25mm diameter PEX.

In accordance with the Municipality of Central Elgin Design Guideline Manual, the average daily water demand per capita would be modelled as 250 L/d, with a Maximum Day demand factor of 3.5 and a Peak Hour demand factor of 7.8. Fire flow provisions would be incorporated into the distribution system design and based on proximity to the Port Stanley water tower. It is anticipated that during the Maximum Day domestic plus fire protection flow demands, adequate flows and pressures would be available through the distribution system while maintaining a residual pressure above the minimum requirement of 140 kPa (20 psi).

In accordance with the Municipality of Central Elgin Design Guidelines Manual, fire hydrants would be located at 150m maximum spacing measured along the centreline of the watermain. Hydrants would be placed at every second intersection and on the property line between lots whenever possible. Spacing would include 1.5m from the edge of a driveway and any physical obstruction which may impact fire fighting operations. Water valves would be placed no greater than 250m apart and be provided at intersections to isolate main sections for maintenance.

A water network model will need to be created to assess the demands, pressures, and water age. At this point, it is not anticipated that water supply will be a limiting constraint.

All proposed watermains will be located within the municipal right-of-ways (ROWs), and upon assumption of the subdivision, future operation and maintenance of this watermain would become the responsibility of the Municipality of Central Elgin. Individual homes within the subdivision would be fitted with residential water meters and remote readers to provide a means for the Municipality to issue monthly water bills to consumers.

Refer to Figure 1 - *Conceptual Water Servicing Strategy* in Appendix B for a visual representation of the water servicing strategy.

5.3.2 Sanitary Sewers

The subdivision would be serviced locally through a system of new 200mm diameter sanitary sewers which would convey sewage to the existing sanitary sewer on Beamish Street to the northwest. Approximately 700m of local sanitary sewers would be proposed to service the subdivision.

In accordance with the Municipality of Central Elgin Design Guidelines Manual, the average daily sewage flow per capita would be modelled at a rate of 250L/capita/day, the extraneous inflow/infiltration (I/I) allowance would be 0.100 L/s/ha, and the peak sewage flow would be derived using the Harmon Peaking Factor formula. The population densities were acquired through consultation with Central Elgin and would be as follows; 3.0 people per single family unit, 2.4 people per medium density unit, and 1.6 people per apartment medium/high-density unit.

The proposed Draft Plan concept includes 32 single detached units, 63 street town (semi-detached) units, and 72 apartment units or 47 medium-density townhouse residential units. This amounts to a maximum design population of 362 people resulting in a Harmon Peaking factor of 4.04. The sanitary catchment area accounts for 6.05 ha as it excludes the SWM block, resulting in an estimated extraneous inflow/infiltration rate of 0.61 L/s. The peak sanitary outflow from the subdivision is estimated to be 4.84 L/s. This is less than the allocated design flow of 8.49 L/s for the Watermark Subdivision, provided in the *Sunset Bluffs Phase 1 & 2 Servicing Plan Record Drawing*, as shown in Appendix A.

According to the Union Servicing EA Addendum and in alignment with the Municipality's Official Plan, the subject development is allocated 44 people/ha. The proposed subdivision is 8.23 ha, leading to an allowable population of 362 people, equal to the design population stated above.

Proposed sanitary sewers would be located within the municipal right-of-ways, and upon assumption of the subdivision, future maintenance of these sewers would become the responsibility of the Municipality of Central Elgin. Where possible, when profile conflicts are not present, the upper sewer reaches would typically be designed with a minimum 1.0% gradient to reduce potential for buildup, odour, and to help mitigate maintenance requirements for these low-flow sanitary sewer runs.

Refer to the *Conceptual Sanitary Servicing Strategy* and *Preliminary Sanitary Calculations* in Appendix C.

Table 1: Summary of Sanitary Areas and Daily Flows

Flow type	Area (ha)	Number of Units	Equivalent Population	Average Daily Flow (L/s)
Single Detached Lots	1.95	32	96	0.28
Street Towns (Semi-Detached)	2.86	63	151	0.44
Medium/High-Density Block	1.24	72 (Worst Case)	115	0.33
Total	6.05	167	362	1.05
Infiltration (1)	6.05	-	-	0.61

(1) Infiltration based on 0.100 L/s/ha for development area, excluding un-serviced blocks.

Table 2: Summary of Peak Sanitary Flows

Flow type	Sewage Flow (L/s)
Average Daily Flow	1.05
Peak dry-weather flow (1)	4.24
Wet-weather infiltration	0.61
Peak wet-weather flow	**4.84**

(1) peak flow based on Harmon's Peaking Factor.

5.3.3 Storm Sewers and Local Drainage

The subdivision storm sewer system would include approximately 730m of sewer to provide conveyance capacity for the minor storm events at an estimated post-development tributary area of 6.05 ha, directing flows to a proposed dry basin stormwater management facility (SWMF). The remaining 1.80 ha of the Natural Heritage/Hazard block is not tributary to the SWMF and will sheet flow north, as per existing conditions, towards Sunset Road.

In accordance with the Municipality of Central Elgin Design Guidelines Manual, the storm sewer would be designed to convey the 5-year storm event, with minimum and maximum allowable flow velocities at 0.90 m/s and 6.0 m/s, respectively. The storm sewer system would be designed to convey this minor discharge along Street A and the proposed Beamish Street extension, discharging into a proposed dry basin within the SWM block at the southeastern development boundary. The minor drainage would ultimately discharge into Little Creek via a proposed new municipal drain outlet.

Major overflow routes would be designed for events greater than the 5-year design storm. The roadway profiles would be designed to facilitate major overland flow conveyance toward the SWM Block through one of two dedicated major overland flow routes (OFRs), converging into the proposed SWMF. The SWMF major outflow would be conveyed east along a road-side ditch on the west side of East Road, ultimately discharging to Lake Erie.

For more detailed information regarding the storm sewer and SWM design, refer to Section 6 of this report as well as Appendix D for a preliminary Storm Servicing Figure.

6.0 Stormwater Management Strategy

The following sections of the report outline existing hydrologic conditions, and identify constraints, SWM targets for quality and quantity controls, and the SWM strategy for the proposed development. The conceptual design includes preliminary sizing for the SWMF, which is proposed to include an oil/grit separator and dry basin, inlet/outlet sewer connections, and high-level designs for minor and major flow conveyance. A future detailed SWM report will be prepared as required during the detailed design stage to support the proposed subdivision. The following subsections provide an overview of the proposed preliminary design SWM strategy.

6.1 SWM Design Approach

The 6.43 ha post-development tributary area will increase imperviousness above pre-development conditions, and if left uncontrolled, will increase runoff rate, runoff volume, and sediment loading to Little Creek. The total impervious area will increase to approximately 44% (C=0.51) for the whole site. To mitigate these impacts, the majority of development runoff will be directed into a dry basin SWMF to attenuate peak flows and remove suspended solids from stormwater via a manufactured treatment device. The treatment device is to provide quality control and meet local and provincial suspended solids removal requirements, before being released into Little Creek through a controlled outlet system, to improve outflow quality and help reduce turbidity and erosion downstream.

A preliminary SWM design is provided in the following sections and related appendices to support the proposed subdivision. This SWM design includes systems for minor and major flow conveyance, stormwater quality and quantity control, long-term erosion control, and inspection & maintenance.

Refer to *Figure 3.1 & 3.2 - Conceptual Storm Servicing Strategy & Storm Outlet Configurations* in Appendix D, *Figure 4 - Conceptual Catchment Plans* for the existing and proposed SWM catchment areas in Appendix E, and *Figure 5 - Conceptual Stormwater Management Facility* for the dry basin configuration in Appendix E.

6.2 SWM Targets

The following SWM targets have been established for the design of the proposed SWMF analysis via the Municipality of Central Elgin Design Guidelines Manual (2023):

- Match or reduce post-development peak discharge rates to those of the pre-development condition for all design storm events from the 5-year up to and including the 100-year return period while safely conveying the 250-year storm event.
- Provide safe and adequate conveyance of SWMF discharge such that the peak outflows do not exceed the capacity of the existing and/or proposed local drainage systems to mitigate local flooding risk to nearby properties and county road ditches.
- Provide an ‘enhanced’ Level 1 (80% TSS removal) quality control as defined by the Ministry of Environment, Conservation, and Parks to mitigate increases in suspended contaminant loads.

6.3 SWM Modeling

The SWM analysis was completed with the PCSWMM hydrologic modelling software using the Central Elgin IDF parameters in their 2023 Design Guidelines Manual.

An existing conditions model was completed to establish target peak SWMF outflows, and a proposed conditions model was completed to assess the performance and design of the proposed quantity control measures (i.e., the multi-stage outlet system and SWMF’s active storage volumes) to achieve the quantity control target outlined in Section 6.2. Refer to the SWM Calculation sheets and PCSWMM model schematics, inputs, and outputs in Appendix E for more information.

The geotechnical investigation generally describes the native subsoils found in the test pits to be silt and silt till which possess a low infiltration rate. The native subsoils described in Section 4.2 would be classified as hydrologic soil group B (silt and silt till). As such, the PCSWMM subcatchments were assigned a pervious runoff

Curve Number (CN) of 86, based on the hydrologic condition, cover type, and quality of vegetation coverage as per the USDA's TR-55 (Table 2-2a).

Figure 4 - Conceptual SWM Catchment Plans in Appendix E identifies the existing and proposed drainage conditions, showing the pre-development and post-development model subcatchment areas, runoff coefficients, and major overland flow routing directions.

6.3.1 Existing Conditions

The existing site is comprised of two subcatchments: 6.20 ha of undeveloped farmland tributary to East Road, and 2.03 ha of existing natural heritage/hazard area tributary to the north, resulting in a total catchment area of 8.23 ha. A SWM model was prepared using PCSWMM to assess hydrology and peak runoff rates for the two subcatchments in the pre-development condition. Refer to Figure 4 in Appendix E for pre-development conditions catchment areas, and the pre-development PCSWMM model inputs, outputs, and schematic.

6.3.2 Proposed Conditions

A Post-Development PCSWM model was prepared to simulate proposed runoff and assess the hydraulic performance of the SWMF's multi-stage outlet system and active storage. The proposed PCSWMM model would comprise of eight subcatchments. Subcatchments 1 to 7 would comprise 6.43 ha of the subdivision development area tributary to the SWMF and subcatchment 8 would comprise of the remaining 1.80 ha of undeveloped natural heritage/hazard block tributary to the north. In accordance with the Municipality of Central Elgin's Design Guidelines Manual, the impervious percentage for the PCSWMM subcatchments were approximated from assigned block runoff coefficients (C-values), through linear interpolation, which are based on individual block development density. Single Family/Semi Detached Residential would equate to a runoff coefficient of C=0.50, Townhouse/Row housing would use a runoff coefficient of C=0.65, and any apartments would utilize a runoff coefficient of C=0.70.

6.4 SWM Facility Design

6.4.1 SWMF Quantity Control

The SWMF is to be sized to accommodate the runoff from the 6.43 ha developable area. There is approximately 1.80 ha of existing natural heritage/hazard land which forms part of the subdivision draft plan extent, which sheet flows to the north as per existing conditions. This area will remain undeveloped and is not tributary to the SWMF, as discussed in Section 6.2.

The proposed SWMF would be designed to provide quantity control via a dry basin, which temporarily stores stormwater runoff and slowly releases it through a controlled outlet. For the purposes of block sizing, preliminary SWM models were prepared using PCSWMM to calculate storage requirements in the post-development condition such that release rates do not exceed the existing conditions. However, the outlet configuration will be finalized during the Functional SWM design process. Refer to Appendix E for related SWM summary tables, PCSWMM schematics, inputs, and outputs for existing and proposed conditions.

The dry basin is proposed to utilize quantity control to restrict post-development stormwater runoff, requiring an approximate active storage volume of 2,400m^3 necessary to attenuate runoff up to the 100-year storm event. Based on the current SWMF footprint, approximately 2,300m^3 of active storage is available to the top of the dry basin, with an additional emergency storage volume of approximately 3,100m^3 available to the top of

the overland flow slope. This volume will be further refined/optimized and additional detailed design information including maintenance access ramps, freeboard, and emergency overflow weir (to East Road.) is anticipated to be required during the functional SWM design process. Refer to Figure 5 in Appendix E for the conceptual SWMF design.

Table 3 below summarizes the pre-development and post-development outflows, and Table 4 summarizes the SWMF dry basin depth and storage volumes during the 2-year to 100-year, and regional design storms:

Table 3: Summary of Pre- and Post-Development Flows

Design Storm Event Return Period	Existing Peak Runoff Rate (L/s)	Post-Development Peak Release Rate (L/s)
2-year	48	42
5-year	99	48
10-year	143	51
25-year	210	125
50-year	267	190
100-year	332	272
Hurricane Hazel	796	439

Table 4: Summary of SWMF Depth/Active Storage Volumes Flows

Design Storm Event Return Period	SWMF Ponding Depth (m)	Active Storage Volume (m^3)
2-year	1.54	1,061
5-year	1.94	1,597
10-year	2.17	1,973
25-year	2.32	2,237
50-year	2.37	2,316
100-year	2.41	2,401
Hurricane Hazel	3.68	5,215

The Summary of Flows table in Appendix E provides approximate outflows and storage volumes for the various design storm events.

Operation and maintenance of the SWMF will ultimately become the responsibility of the Municipality upon assumption. Operations and maintenance guidelines will be included in a future Functional SWM Report, following acceptance of the SWM Design, to guide operations staff.

6.4.2 SWMF Quality Control

Quality control will be provided through the SWMF oil/grit separator to achieve Level 1 "Enhanced" level of protection (80% Annual TSS Removal) as defined by the Ministry of Environment, Conservation and Parks (MECP). Stormwater discharge from the subdivision will be conveyed to the SWM dry basin and OGS from Street A, for treatment of the minor discharge prior to outletting.

6.4.3 SWMF Inlet and Outlets

To convey the minor storm event for the site, a 675mm diameter inlet into the SWMF from Street A was proposed at a slope of 0.50%. The dry basin inlet pipe is sized to convey the 5-year storm event peak runoff generated from the development area, excluding the SWMF subcatchment, under uniform flow conditions. Conveyance of the runoff from the major storm events will be accommodated by an overland flow channel from Street A, discharging into the northwestern extent of the dry basin.

As discussed in section 6.3.1, a multi-stage outlet system consisting of a primary and secondary outlet is proposed to attenuate peak flows for all target storm events while mitigating overcontrol via the secondary outlet during the less frequent design storm events. The primary outlet is comprised of a 125mm diameter orifice outletting into a 250mm diameter pipe. The pipe is located at the bottom of the dry basin at an invert of 209.60m, with a slope of 0.50%. The secondary outlet is comprised of a ditch-inlet catch basin located at an elevation of 211.85m, discharging into a 250mm diameter pipe with a slope of 1.0%. An emergency overflow outlet is proposed along the southern extent of the dry basin to safely route any additional runoff from storm events greater than the 100-year return period towards the East Road right-of-way.

There are no existing storm sewers near the development along East Road; therefore, the developer will file a petition under the Drainage Act for a new municipal drain outlet. The outlet is proposed to be from the SWMF to Little Creek, located southeast of the intersection of East Road and Dexter Line, outletting at the low point west on Dexter Line. The proposed sewer outlet is approximately 576m long and would be sized to convey attenuated flows up to and including the 100-year return period from the SWMF.

An alternate municipal drain alignment could also be considered, extending the Hill Street Drain immediately south of Gentry Lane. The municipal sewer would be approximately 330m long, outletting to existing infrastructure on private property. Refer to Figure 3.2 in Appendix D for conceptual storm servicing outlet configurations.

Confirmation of the SWMF inlet, outlet, and municipal drain sizes, as well as detailed design calculations, will be finalized and provided as part of a Functional SWM Report.

6.4.4 SWMF and Downstream Erosion and Scour Protection

The SWMF is anticipated to implement various features for erosion and scour protection: The major and minor storm inlets, as well as the proposed emergency overflow outlet, are anticipated to be lined with rip-rap or cable concrete for energy dissipation and scour protection of the dry basin bed and overland flow channels. Confirmation of the inlet and outlet flow velocities, flow depths, and rip-rap/cable concrete sizing will be provided as part of the future detailed Servicing Report.

6.4.5 SWMF Maintenance and Accessibility

A suitable perimeter maintenance access pathway will be provided in proximity to the dry basin for regular inspections and maintenance of the oil/grit separator. Municipal operations will be required to provide regular maintenance of vegetation for invasive species management, and cleanout of sediment/debris within the dry basin. A detailed Operations and Maintenance Guide will be included as part of the future Functional SWM Report.

6.5 Minor and Major System Conveyance

As discussed in Section 5.3.3, the minor stormwater system will be designed in accordance with the Municipality of Central Elgin design guidelines for conveyance of a 5-year design storm.

The roadway profiles will be designed to facilitate major overland flow conveyance to the SWM Facility through one of two major overland flow routes. The northern portion of the site will be conveyed along the proposed Beamish Street extension to Street A, and the southern portion of the site will be conveyed southeast along Street A. The overland flow for the subdivision will converge at the western extent of the SWM block and discharge into the dry basin. The major flows in excess of the 100-year design storm event released from the SWMF to the county right-of-way would be conveyed south along a road-side ditch on the west side of East Road. Detailed design calculations for critical cross-sections and flow depths would be finalized and provided as part of the future Functional SWM Report.

7.0 Erosion and Sediment Control

Complementary to the site servicing and grading design for the on-site development, erosion and sediment control (ESC) details will be included with the detailed Engineering design drawings. Temporary ESC measures will be designed to mitigate the offsite migration of sediments by incorporation of various best management practices and control measures. Typical control measures to be implemented on site include:

- Installation of silt control fencing (light/heavy duty) around the site perimeter at down-gradient locations;
- Preventing silt or sediment laden runoff from entering inlets (catchbasins / catchbasin maintenance holes) by installing pre-fabricated temporary inlet filter bags and incorporating straw bale or rock dam flow checks;
- Temporary sediment traps/basins (dewatering stations where required);
- Sodding the invert of swales as soon as possible after being constructed to mitigate erosion and down cutting; in general, minimizing the duration of soil exposure in erosion prone areas by temporary vegetation coverage (i.e. hydro-seeding) is recommended;
- Maintaining sediment and erosion control structures in good repair (including periodic cleaning as required) until such time as the Engineer or the Municipality approves their removal;
- Incorporation of temporary measures at site construction entrances to minimize tracking of mud and debris onto municipal road allowances;
- Scheduling of critical conveyance works during forecasts of little to no precipitation.

Detailed ESC plans will be provided for review by the Municipality of Central Elgin at the detailed engineering stage.

8.0 Summary and Conclusions

Based on the preceding information, the following conclusions are provided with regards to the servicing of the subject development:

- The 8.23 ha residential subdivision includes 6.43 ha of developable agricultural area as well as 1.80 ha of natural heritage/hazard lands. The 6.43 ha development area includes: 32 single-family lots (1.49 ha), 63 street towns (1.93 ha), and 1 medium/high-density residential block (1.13 ha), yielding a design population of 362 people.
- There are existing municipal services available to facilitate development of the subject lands:
    - Two (2) watermain connections are available for the site; an existing 200mm diameter watermain extensions along Beamish Street to the proposed Beamish Street extension, and an existing 300mm diameter watermain extension along East Road.
    - An existing sanitary sewer connection is available for the site, located at the end of Beamish Street, which provides a maximum flow allocation of 8.49 L/s for the subject development.
- Coordination with Elgin County and approval for site access/transportation related items will be required.
- The proposed watermain, with an anticipated maximum diameter of 250mm, would form a looped system connecting to the existing 200mm diameter watermain on Beamish Street, and 300mm diameter watermain on East Road. Flow testing will be completed to confirm available static and residual pressures.
- Sanitary servicing for the development will be accommodated by local gravity sewers within the subdivision, draining to the sanitary connection on Beamish Street. Preliminary sanitary calculations estimate a peak flow rate of 4.84 L/s, less than the allocated 8.49 L/s.

The following conclusions are provided with regards to the drainage and stormwater management of the subject development:

- The 6.43 ha post-development developed tributary area will increase imperviousness above pre-development conditions, increasing runoff rate, runoff volume, and sediment loading to Little Creek. The total impervious area will increase to approximately 44% (C=0.51) for the whole site.
- Proposed lot grading shall conform to typical municipal standards and generally conform to the existing topographic constraints and drainage patterns.
- Proposed local storm sewer networks will provide conveyance of the minor 5-year storm runoff, to the SWMF, while major overland flow will be conveyed through right-of-ways and overland flow routes, directing runoff to the SWMF.
- A preliminary stormwater management model was completed using PCSWMM, to model the estimated inflow to the SWMF and the active storage volumes required to restrict post-development outflows to less than or equal to the pre-development outflows:
    - The proposed conceptual SWMF design can suitably reduce post-development peak discharge rates to below pre-development rates, with an active storage volume of 2,401m^3 to attenuate up to 100-year storm event.
- The OGS water quality unit will provide the required quality control treatment (Enhanced) prior to outletting from the site.
- Suitable Erosion and Sediment Controls and maintenance schedules will be established as part of the site alteration, servicing and grading works to mitigate transportation of sediment downstream.

We trust this report adequately addresses the design constraints and proposed servicing and stormwater management strategy in support of the Draft Approval for the Watermark Subdivision Development.

Development Engineering (London) Limited

Appendix A: Background Information

Monteith◆Brown
planning consultants

LAND USE SCHEDULE

REGULATION	AREA	%	UNITS	PPL
SINGLE DETACHED LOTS	1.49	23	32	96
STREET TOWNS	1.93	30	63	151
MEDIUM / HIGH DENSITY BLOCK	1.13	30	72	115
SWM BLOCK	0.38	6		
ROADS & RESERVES	1.50	23		
DEVELOPABLE AREA	6.43			
NATURAL HERITAGE / HAZARD BLOCK	1.80	22		
TOTAL SITE AREA	8.23	134		
UNITS / PEOPLE			167	362

ZONE TO PERMIT ADu's (IF NOT ALREADY IN THE PARENT ZONE)

PROPOSED SUBDIVISION

EAST ROAD

PORT STANLEY
WASTEL HOMES

PRELIMINARY

FOR DISCUSSION PURPOSES ONLY

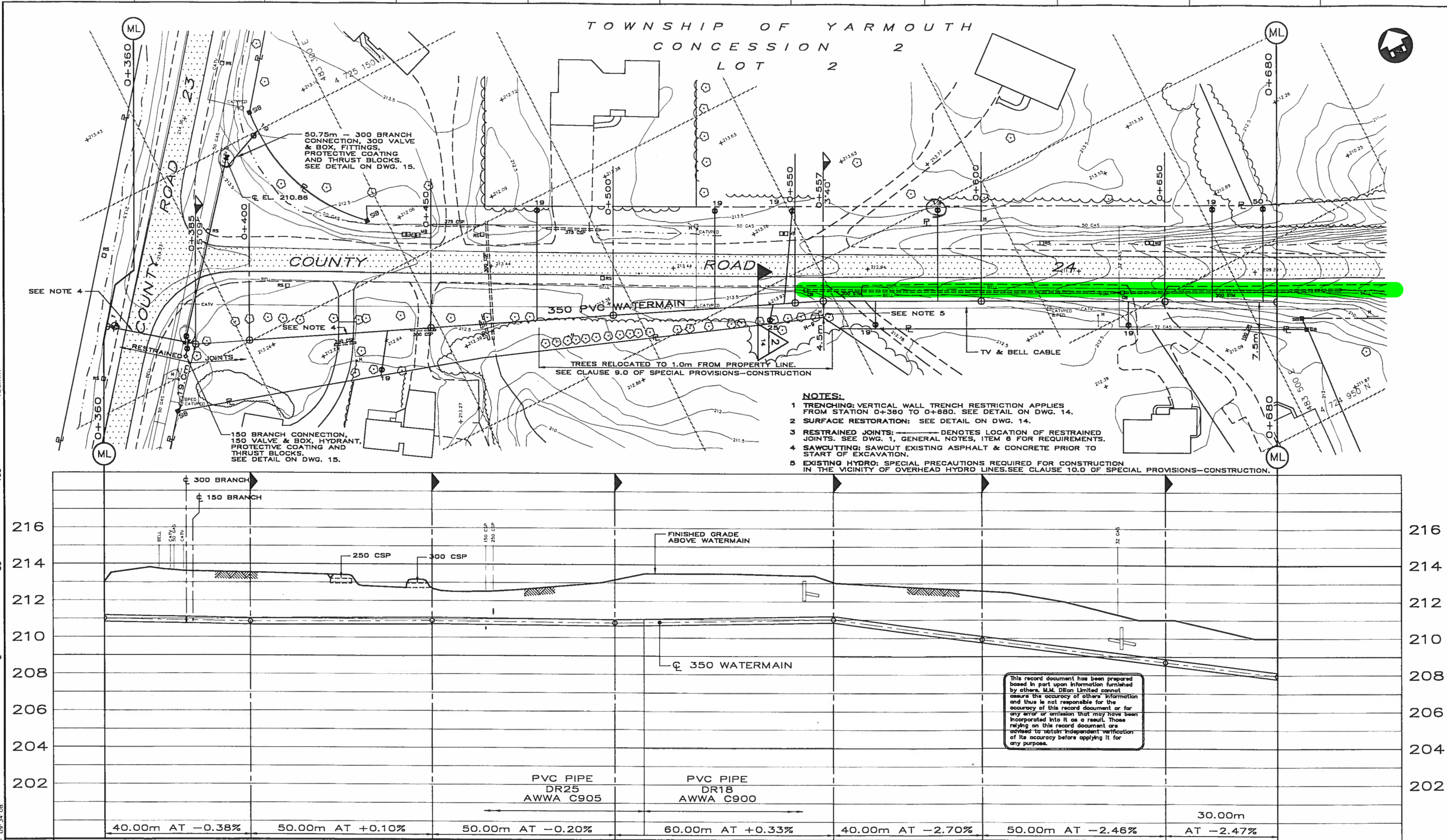
Aug 21, 2024

07-992

SCALE 1: 1500 (11x17)

0 15 30 45m

MONTEITH BROWN PLANNING CONSULTANTS
219 OXFORD STREET WEST, UNIT 302
LONDON, ONTARIO. N6H 1S5
519.686.1300 | WWW.MBPC.CA



GROUND ELEVATION	213.0		213.4	212.5	213.0		213.3		212.5	210.7	209.8	GROUND ELEVATION
C PIPE ELEVATION	211.00	210.86	210.85	210.90	210.80			211.00	209.92	208.69	207.85	C PIPE ELEVATION
STATION	0+360	0+382.3 0+384.1	0+400	0+450	0+500	0+508	0+550	0+560	0+600	0+650	0+680	STATION

PRINT RECORD		
NO.	FOR	DATE
1	OCWA REPORT	06/95
2	OCWA – 90%	07/95
3	TENDER	11/95

Photogrammetric compilation, contours and property lines by PHOTOMAP AIR SURVEYS LIMITED

Photography date: November 7, 1994

Contour intervals 0.5 metres.

Ontario Clean Water Agency / Agence Ontarienne Des Eaux

PROJECT No. 5-0405-01-00
CONTRACT NO.1

DILLON
Consulting Engineers • Planners
Environmental Scientists

NO.	REVISIONS	DATE	BY
3	RECORD DRAWING	10/96	GOH
2	ISSUED FOR TENDER	11/17/95	GOH
1	ISSUED FOR COMMENT	07/17/95	GOH

DESIGN HJG
DRAWN KMcG
CHECKED HJG
APPROVED
DATE JULY 95
SCALE HORIZ: 1:500 VERT: 1:100

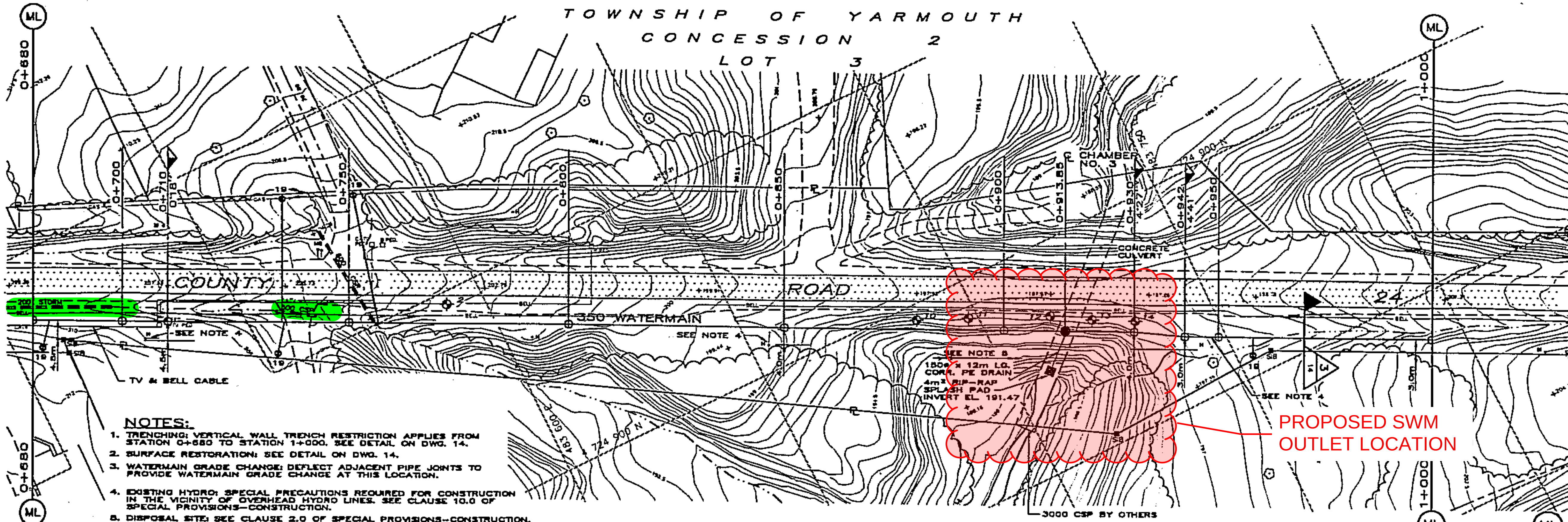
ELGIN AREA SECONDARY WATER SUPPLY SYSTEM

COUNTY ROAD 24
STATION 0+360 TO
STATION 0+680

FILE NO 2650–30

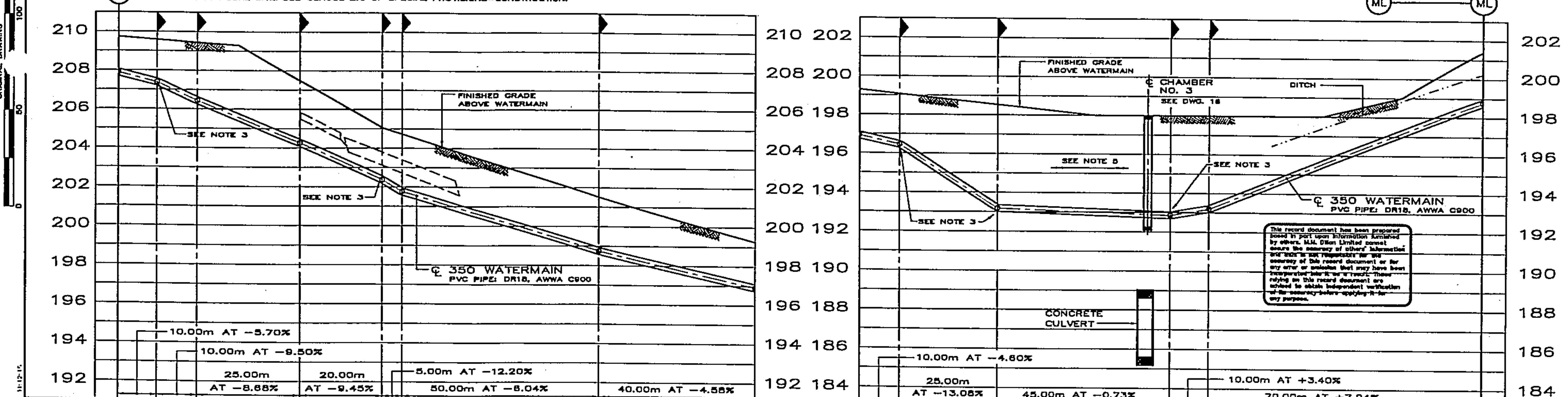
DRAWING NO 3

ACAD12 NAME 2650J03A DWG LAST EDITED Oct 25 1996 – 09:34:08



NOTES:

1. TRENCHING: VERTICAL WALL TRENCH RESTRICTION APPLIES FROM STATION 0+680 TO STATION 1+000. SEE DETAIL ON DWG. 14.
2. SURFACE RESTORATION: SEE DETAIL ON DWG. 14.
3. WATERMAIN GRADE CHANGE: DEFLECT ADJACENT PIPE JOINTS TO PROVIDE WATERMAIN GRADE CHANGE AT THIS LOCATION.
4. EXISTING HYDRO: SPECIAL PRECAUTIONS REQUIRED FOR CONSTRUCTION IN THE VICINITY OF OVERHEAD HYDRO LINES. SEE CLAUSE 10.0 OF SPECIAL PROVISIONS—CONSTRUCTION.
5. DISPOSAL SITE: SEE CLAUSE 2.0 OF SPECIAL PROVISIONS—CONSTRUCTION.



GROUND ELEVATION	209.8			209.3		205.1		203.4	201.8	199.8			199.1		198.0				198.0	201.4
C PIPE ELEVATION	207.95	207.38	206.43		204.26	202.37	201.78		198.74		196.91	196.91	196.45	193.18		192.84	192.88	193.19	194.78	198.75
STATION	0+680	0+690	0+700	0+710	0+725	0+745	0+750	0+770	0+800	0+830	0+840	0+840	0+850	0+875	0+900	0+913.85	0+920	0+930	0+950	1+000

Photogrammetric compilation, contours and property lines by PHOTOMAP AIR SURVEYS LIMITED
Photography date: November 7, 1994
Contour Intervals 0.5 metres.

Ontario Clean Water Agency / Agence Ontarienne Des Eaux
PROJECT No. 5-0405-01-00
CONTRACT NO.1

DILLON
Consulting Engineers • Planners
Environmental Scientists

NO.	REVISIONS	DATE	BY
3	RECORD DRAWING	10/96	GOH
2	ISSUED FOR TENDER	11/17/95	GOH
1	ISSUED FOR COMMENT	07/17/95	GOH

DESIGN: HJG,WEM
DRAWN: KMcG,WEM
CHECKED: HJG
APPROVED:
DATE: JULY 95
SCALE: HORIZ: 1:500 VERT: 1:100

ELGIN AREA SECONDARY WATER SUPPLY SYSTEM

COUNTY ROAD 24
STATION 0+680 TO
STATION 1+000

FILE NO: 2650-30
DRAWING NO: 4

No.	REVISION	DATE	BY
5	CONTRACT 2: RECORD DRAWINGS – 2016 OMEGA CONTRACTORS – LONDON	AUG 2017	CJDL
4	CONTRACT 1 RECORD DRAWINGS – 2016 TITAN GROUP CONSTRUCTION INC. – DUTTON	AUG 2017	CJDL
3	UPDATED FOR CONTRACT 2 CONSTRUCTION	21 MAR 2016	DJL
2	UPDATED FOR CONTRACT 2 TENDER	18 FEB 2016	TPT
1	UPDATED FOR CONTRACT 1 TENDER	11 FEB 2016	TPT

PLAN
SCALE 1:2000

CONTRACT 1: SUNSET ROAD SANITARY SEWER EXTENSION

COUNTY ROAD No. 4

SUNSET ROAD

NORTH

CREVITS FARM

AGRICULTURAL

WOODLAND

RAILWAY

BEAMISH STREET

LARRY STREET

EMERY STREET

OLD FIELD LANE

EAST STREET

BEAMISH PARK

EX. RESIDENTIAL

PORT STANLEY WATER TOWER

DEXTER LINE

COUNTY ROAD No. 4

GENTRY LANE

CONSTRUCTION ACCESS TO SUNSET BLUFFS SUBDIVISION SHALL BE VIA THE EXISTING GRAVEL ACCESS SOUTH OF THE WATER TOWER ON EAST ROAD

ALTERNATE SWMF MUNICIPAL DRAIN EXTENSION OUTLET LOCATION

HILL STREET

HIGH STREET

EAST ROAD

POSSIBLE FUTURE DEVELOPMENT

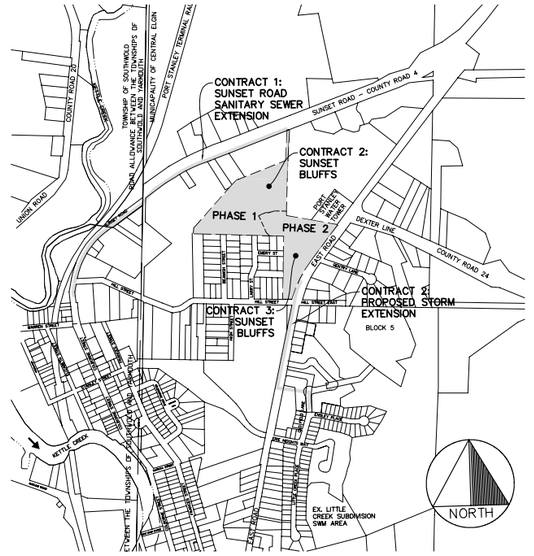
STORM SEWER OUTLET TO EXISTING LITTLE CREEK SUBDIVISION AND EXISTING LITTLE CREEK SWM SEE DRAWINGS 4 & 5

LEGEND

- PROPOSED/FUTURE STORM SEWER
- EXISTING STORM SEWER
- PROPOSED/FUTURE SANITARY SEWER
- EXISTING SANITARY SEWER
- PROPOSED/FUTURE WATERMAIN
- EXISTING WATERMAIN
- PROPOSED/FUTURE MANHOLE, EXISTING
- PROPOSED/FUTURE CATCHBASIN, EXISTING
- PROPOSED/FUTURE DOUBLE CATCHBASIN, EXISTING
- PROPOSED/FUTURE HYDRANT, EXISTING
- PROPOSED/FUTURE WATERVALVE, EXISTING
- 214.0 ORIGINAL CONTOURS PRIOR TO CONSTRUCTION (MAY NOT BE VALID NOW)
- SUNSET BLUFFS PHASE LIMITS
- SUNSET BLUFFS LIMIT

RECORD DRAWINGS – CONTRACT No. 1
TITAN CONSTRUCTION INC. – DUTTON (2016)
SUNSET ROAD SANITARY SEWER EXTENSION

RECORD DRAWINGS – CONTRACT No. 2
OMEGA CONTRACTORS – LONDON (2016)
SUNSET BLUFFS PHASE 1 – SEWERS, WATERMAIN & ROADBASE
SUNSET BLUFFS PHASE 2 – STORM SEWER
ERTH (HOLDINGS) INC. – INGERSOLL (2016)
SUNSET BLUFFS PHASE 1 – UTILITY ROAD CROSSINGS & COMPOSITE UTILITIES



KEY PLAN
SCALE 1:10,000

CONTRACT No. 3

	DWG	LIST OF DRAWINGS – DESCRIPTION	
CONTRACT No.1 & 2	1.	COVER SHEET – OVERALL SERVICING PLAN	*
CONTRACT No. 2	2.	GRADING PLAN – NORTH HALF	
	3.	GRADING PLAN – SOUTH HALF	*
CONTRACT No.1 & 2	4.	SANITARY DRAINAGE SYSTEM AND AREAS	*
CONTRACT No. 2	5.	STORM DRAINAGE SYSTEM AND AREAS	*
	6.	COMPOSITE UTILITY PLAN	*
CONTRACT No.1	7.	SUNSET ROAD STATION 1+700 TO 1+360	
	8.	SUNSET ROAD STATION 1+360 TO 0+970	
	9.	SUNSET ROAD STATION 0+970 TO 0+580	
CONTRACT No. 2	10.	SANITARY EASEMENT	
	11.	BEAMISH STREET	
	12.	LARRY STREET AND EMERY STREET (NORTH OF LARRY STREET)	*
	13.	EMERY STREET (SOUTH OF LARRY STREET)	*
	14.	STORM OUTLET, EAST STREET NORTH, AND BLOCK 114	*
	15.	STORM OUTLET–OLD FIELD LANE, EASEMENT, AND EAST STREET SOUTH	
	16.	STORMWATER MANAGEMENT AREA	
CONTRACT No.1 & 2	17.	MISCELLANEOUS DETAILS – SEWERS AND ROADWORK	*
	18.	MISCELLANEOUS DETAILS – WATERMAIN AND GENERAL NOTES	*

LICENSED PROFESSIONAL ENGINEER – T. P. TUFF – PROVINCE OF ONTARIO

CJDL Consulting Engineers
Cyril J. Demeyere Limited
P.O. Box 460, 261 Broadway
Tillsonburg, Ontario, N4G 4H8
Tel: 519-688-1000
866-302-9886
Fax: 519-842-3235
cjd@cjdeng.com

1423 NOVEMBER 2015
1722 AUG 2017

REGISTERED PROFESSIONAL ENGINEER – J. D. WIEBE – PROVINCE OF ONTARIO

RECORD DRAWING - 2016
CONTRACT 1: SUNSET ROAD SANITARY SEWER EXTENSION
(1423SART)

MUNICIPALITY OF CENTRAL ELGIN

CONTRACT # CE-001-16

CONTRACT 2: SUNSET BLUFFS - PHASE 1
(1423)

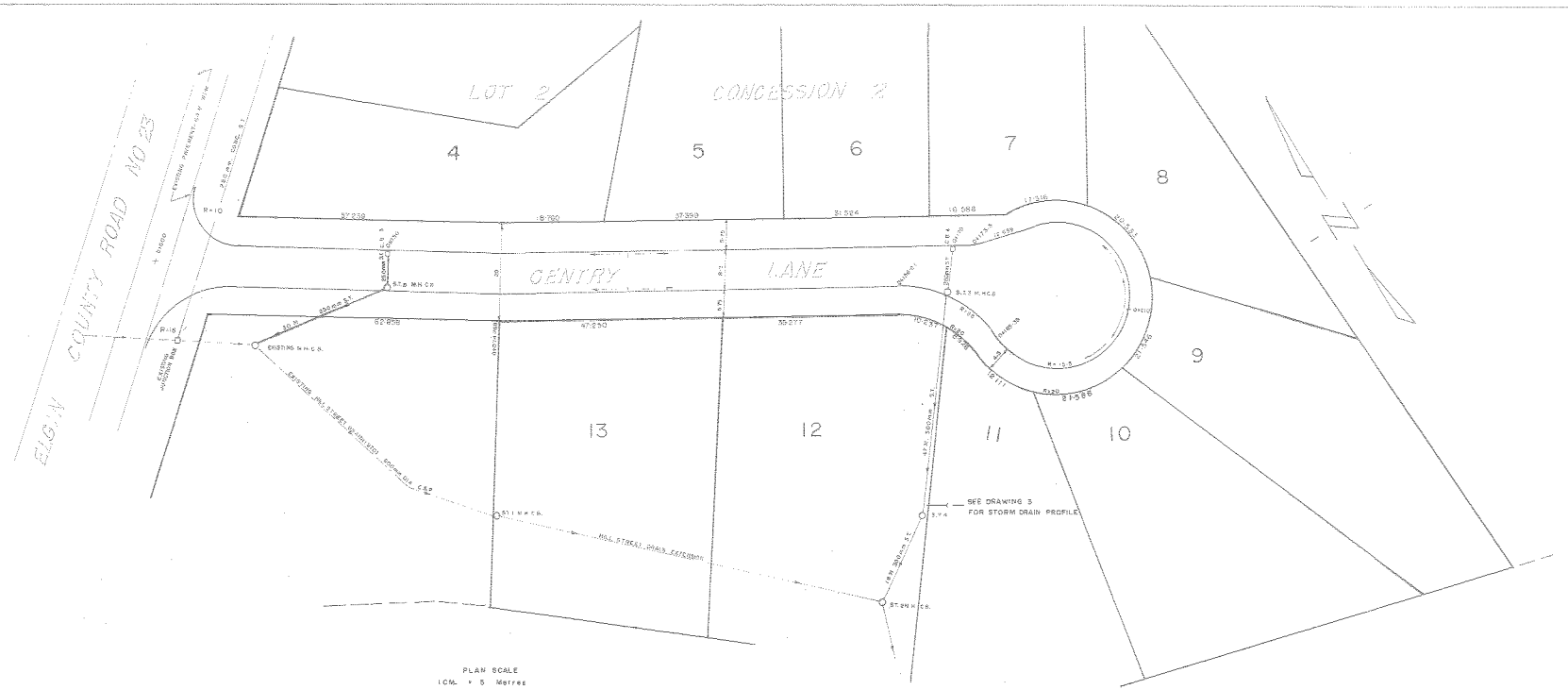
R.P. 11M-212

CONTRACT 3: SUNSET BLUFFS - PHASE 2
(1722)

R.P. 11M-???

DON WEST CONSTRUCTION LTD.
MUNICIPALITY OF CENTRAL ELGIN

DWG. 1



NO.	REVISIONS	BY	DATE

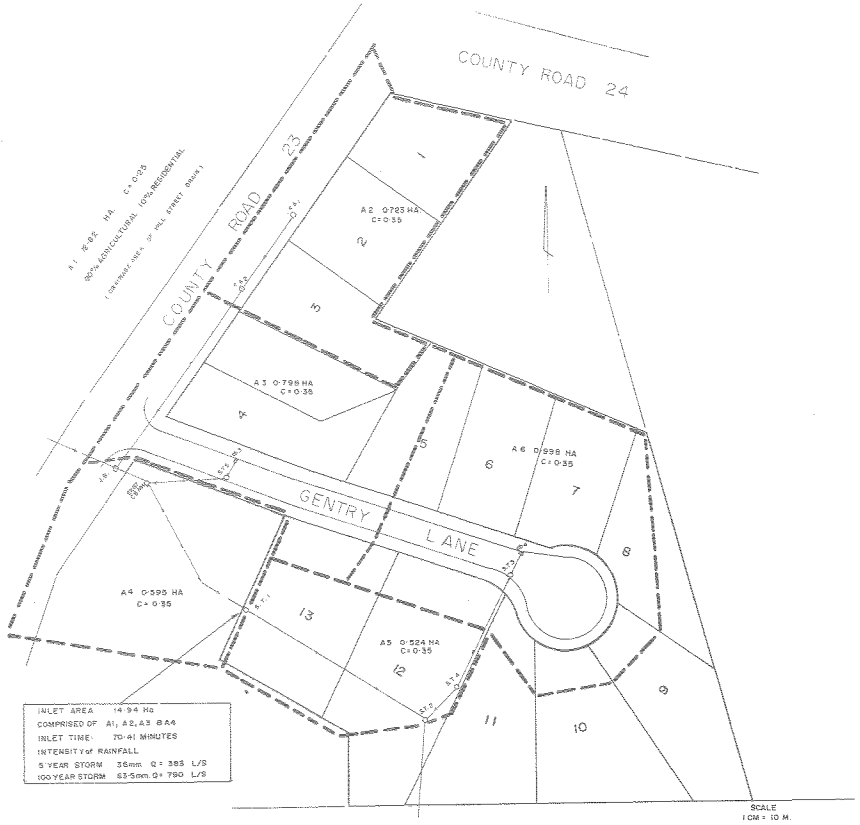
W. J. BARTLETT & ASSOCIATES LTD.
CONSULTING CIVIL ENGINEERS
DORCHESTER 519-268-7091 ONTARIO

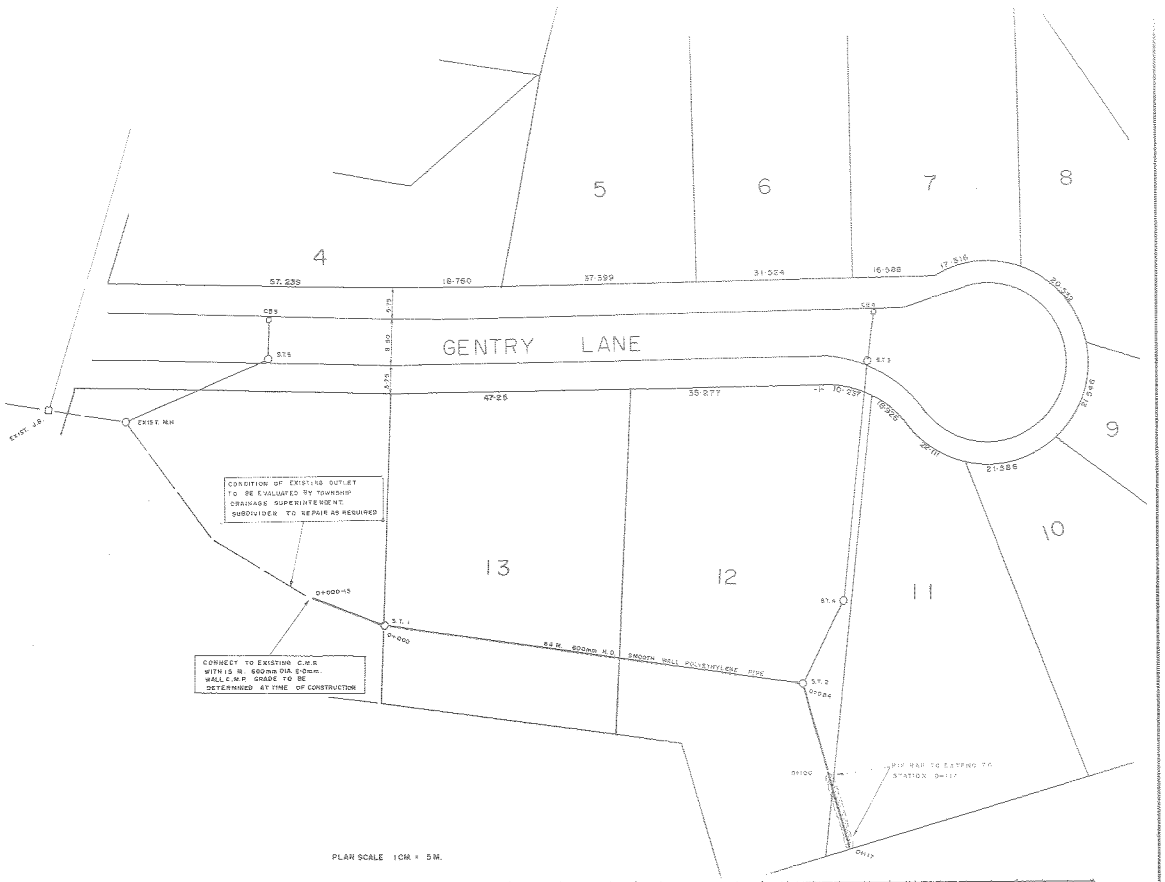
DESIGN	R.S.H.
CHECKED	W.J.B.
DRAWN	R.S.H.
SCALE	AS NOTED

GENTRY LANE SUBDIVISION
TOWNSHIP OF YARMOUTH

GENTRY LANE

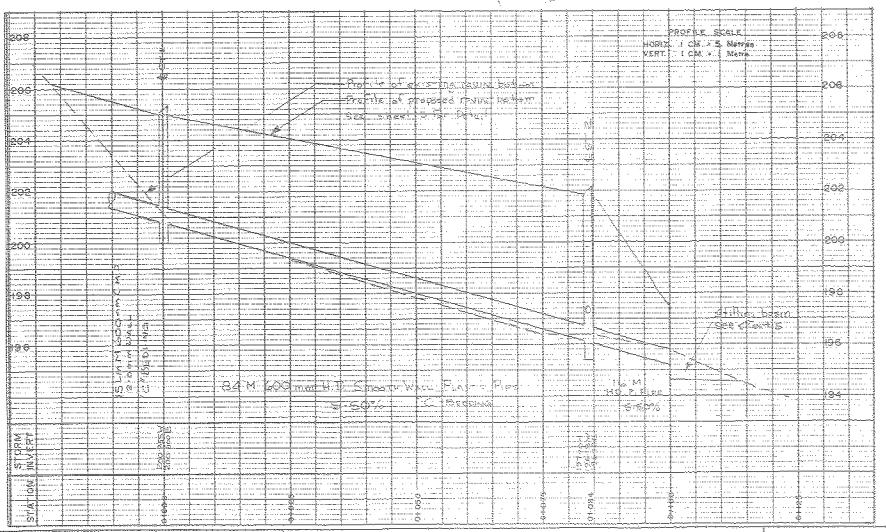
DATE	MARCH 23, 1989
SHEET	2 OF 5
FILE	8714





STORM SEWER DESIGN SHEET

Sewer Location Area	Street	From	To	Land Use	Area (ha.)	Total Area (ha.)	Runoff Co. 'C'	A x C Inc. AxC	A x C Total AxC	A x C Total 2.78AxC	Rainfall Intensity Time Entry Sect.	Time Entry Accum.	Intens i mm/hr.	Design Flow Q(l/s.)	Sewer Design Dia. (mm.)	Slope %	n	Actual Cap.(l/s)	Velocity (m/s.)	Length Metres	Flow (min.)	Profile (metres) Losses in MH.	Fall in Sewer	Invert Elev. U.S.	Invert Elev. D.S.
A2	County Rd 23	CB	SWM EXIST MH	RES.	0.723	0.723	0.35	0.253	0.253	0.704	20	20	56	39.4	250	0.80%	0.015	76	0.975	120	2.05		0.96 M	210.56	209.60
A3	Gentry Ln	ST 5	MH EXIST	RES.	0.798	0.798	0.35	0.2793	0.2793	0.7765	20	20	56	43.48	250	6.0%	0.015	142	2.32	30	0.22		1.8 M	208.75	206.95
A6	Gentry LE	ST 3	ST 4	RES.	0.998	0.998	0.35	0.349	0.349	0.971	20	20	56	54.37	250	6.0%	0.015	142	2.32	47	0.34		2.82	209.155	206.335
		ST 4	ST 2	RES.	—	0.998	—	—	0.349	0.971	20.34	20.34	56	54.37	300	40%	0.015			18				206.82	197.10
														5 YEAR STORM.											
A 12346		ST 1	ST 2	Res/Ag.	14.94	14.94	0.264	3.946	3.946	10.96	70.41	70.41	35	383	600	5.5%	0.013	1418	3.65	84	0.38		4.62	200.80	196.18
A5/A6		ST 2	OUTFALL	RES.	1.522	16.46	0.35	0.533	4.477	12.45	0.38	70.79	35	436	600	5.5%	0.013	1418	3.81	16	0.07			196.12	195.18



NO.	REVISIONS	BY	DATE
1.	RIP RAP NOTE ADDED	R.B.H.	OCT 10/89
2.	OUTLET PIPE REPAIR NOTE ADDED	R.B.H.	OCT 10/89

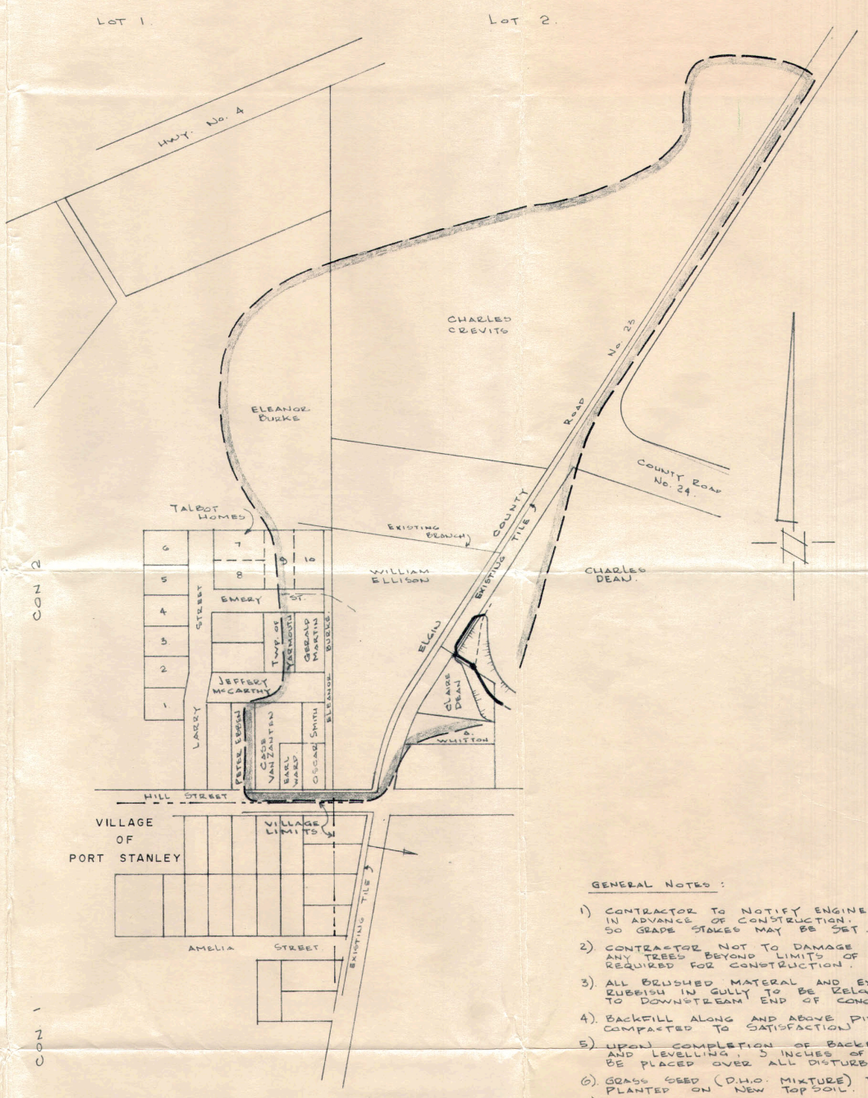
W.J. BARTLETT & ASSOCIATES LTD.
CONSULTING CIVIL ENGINEERS
DORCHESTER 519-268-7091 ONTARIO

DESIGN	R.B.H.
CHECKED	W.J.B.
DRAWN	R.B.H.
SCALE	AS NOTED

GENTRY LANE SUBDIVISION
TOWNSHIP OF YARMOUTH
STORM SEWER AREAS & HILL STREET DR. EXT'N

DATE	MARCH 23, 1989
SHEET	4 OF 5
FILE	8714

DETAIL SCALE 1"=20'



PLAN SCALE 1"=200'

GENERAL NOTES :

1) CONTRACTOR TO NOTIFY ENGINEER IN ADVANCE OF CONSTRUCTION. SO GRADE STAKES MAY BE SET.
2) CONTRACTOR NOT TO DAMAGE OR DESTROY ANY TREES BEYOND LIMITS OF AREA REQUIRED FOR CONSTRUCTION.
3) ALL BRUSHED MATERIAL AND EXISTING RUBBISH IN GULLY TO BE RELOCATED TO DOWNSTREAM END OF CONCRETE MAT.
4) BACKFILL ALONG AND ABOVE PIPE TO BE COMPACTED TO SATISFACTION OF ENGINEER.
5) UPON COMPLETION OF BACKFILLING AND LEVELLING, 3 INCHES OF TOPSOIL TO BE PLACED OVER ALL DISTURBED GROUND.
6) GRASS SEED (D.H.O. MIXTURE) TO BE PLANTED ON NEW TOPSOIL.
7) ALL CONCRETE TO BE 3,000 P.S.I. MINIMUM STRENGTH.

REGISTERED PROFESSIONAL ENGINEER K. A. SMART PROVINCE OF ONTARIO

REGISTERED PROFESSIONAL ENGINEER A. J. DEVOS PROVINCE OF ONTARIO

HILL STREET DRAIN EXTENSION

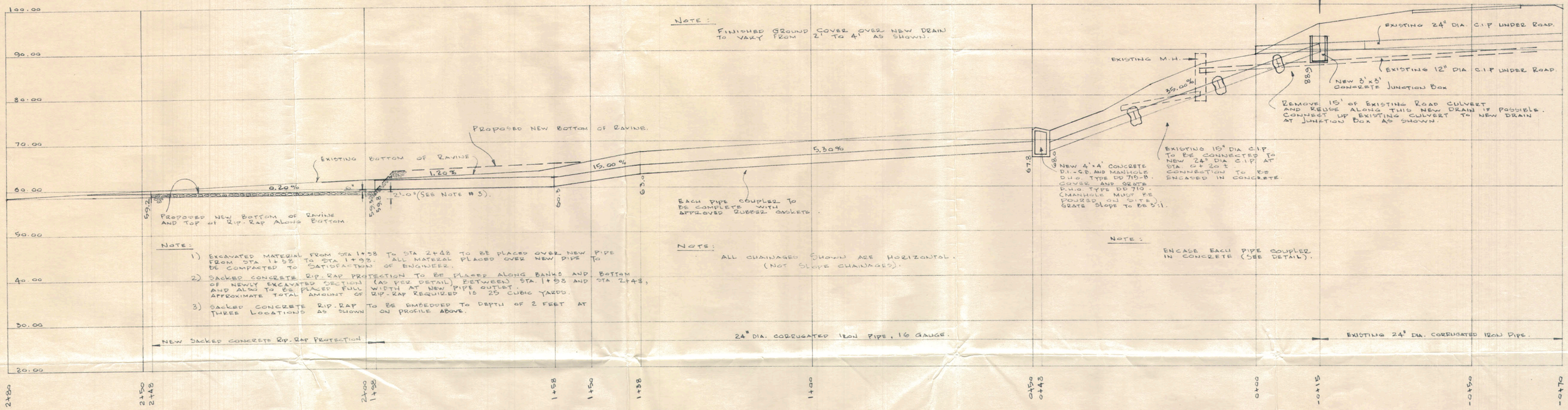
TOWNSHIP OF YARMOUTH

SCALE: As Shown	APPROVED BY:	JOB NO.	DRAWN BY
DATE: Nov 30-1970	F.B. # D 10	6 9 1 1 8	REVISED

PLAN

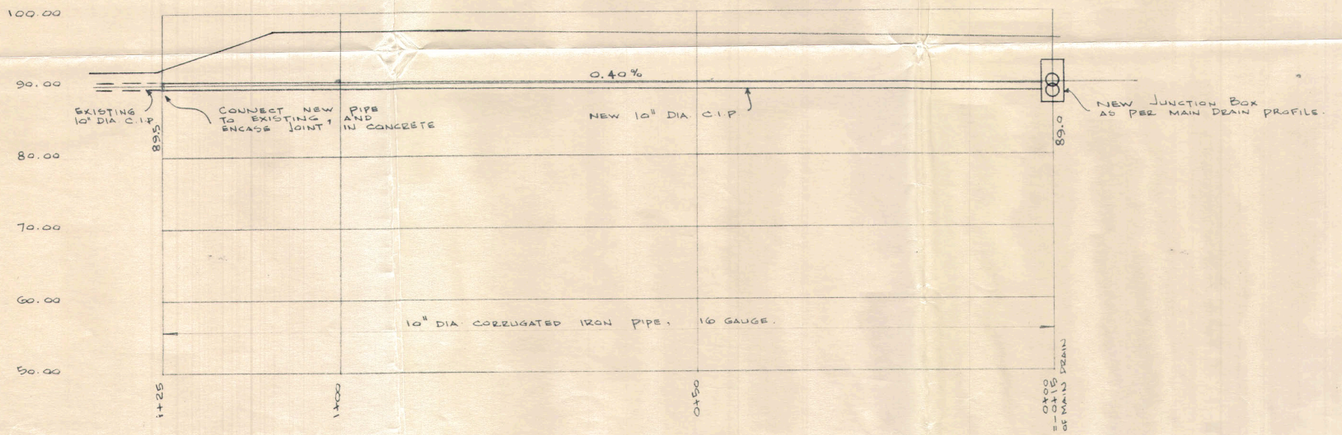
A. M. SPRIET & ASSOCIATES LTD. CONSULTING ENGINEERS

DRAWING NUMBER 1 OF 2

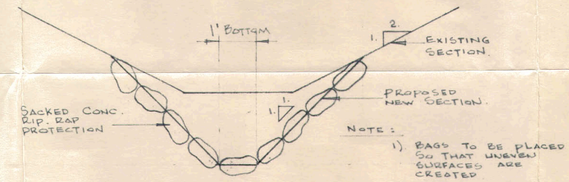


MAIN DRAIN PROFILE

SCALE: 1"=10' HOR. & VERT.

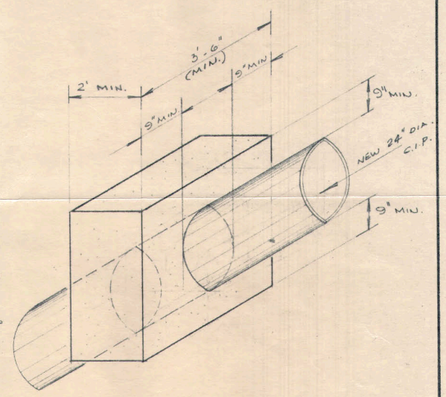


BRANCH "A"



NOTE:
1) BAGS TO BE PLACED SO THAT UNEVEN SURFACES ARE CREATED
2) EXISTING GROUND TO BE EXCAVATED TO DEPTH OF RIP. RAP BEFORE PLACEMENT OF RIP. RAP.

TYPICAL SECTION RAVINE BOTTOM BETWEEN STA. 1+98 AND STA. 2+48



DETAIL OF CONCRETE AT COUPLERS

FOR GENERAL NOTES SEE DRAWING No: 1.

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO K. A. SMART

REGISTERED PROFESSIONAL ENGINEER CIVIL PROVINCE OF ONTARIO A. J. DEVOS

HILL STREET DRAIN EXTENSION

TOWNSHIP OF YARMOUTH

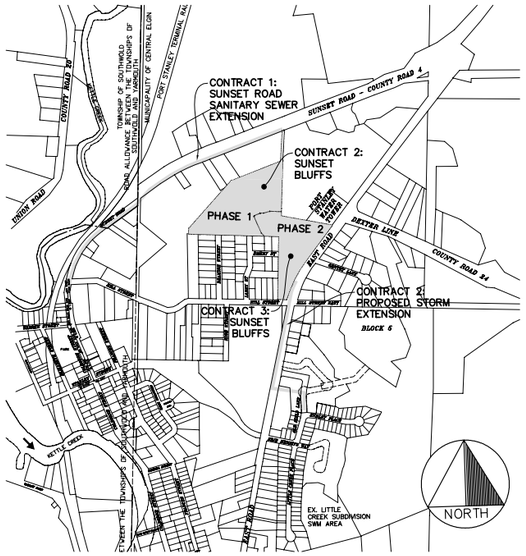
SCALE: As Shown	APPROVED BY: F.B. # D10	JOB NO. 69118	DRAWN BY
DATE: Nov. 30-1970			REVISED

PROFILES & DETAILS

A. M. SPRIET & ASSOCIATES LTD. CONSULTING ENGINEERS

DRAWING NUMBER 2 OF 2

TRANSTEX 15 200-6-70



CYRIL J. DEMEYERE LIMITED
CONSULTING ENGINEERS
BOX 460, TILLSONBURG, N4G 4H8
e-mail: cjd@cjdleng.com
PHONE: (519) 688-1000
FAX: (519)842-3235
website: www.cjdleng.com

SANITARY SEWER DESIGN SHEET - METRIC

PROJECT: Sunset Bluffs Sanitary Sewer & Sunset Drive Sanitary Sewer Extension
MUNICIPALITY: Central Elgin (Port Stanley)
DATE: 17 NOVEMBER 2015
DESIGNED BY: MRB
CHECKED BY: DJL, TPT
JOB No: 1423

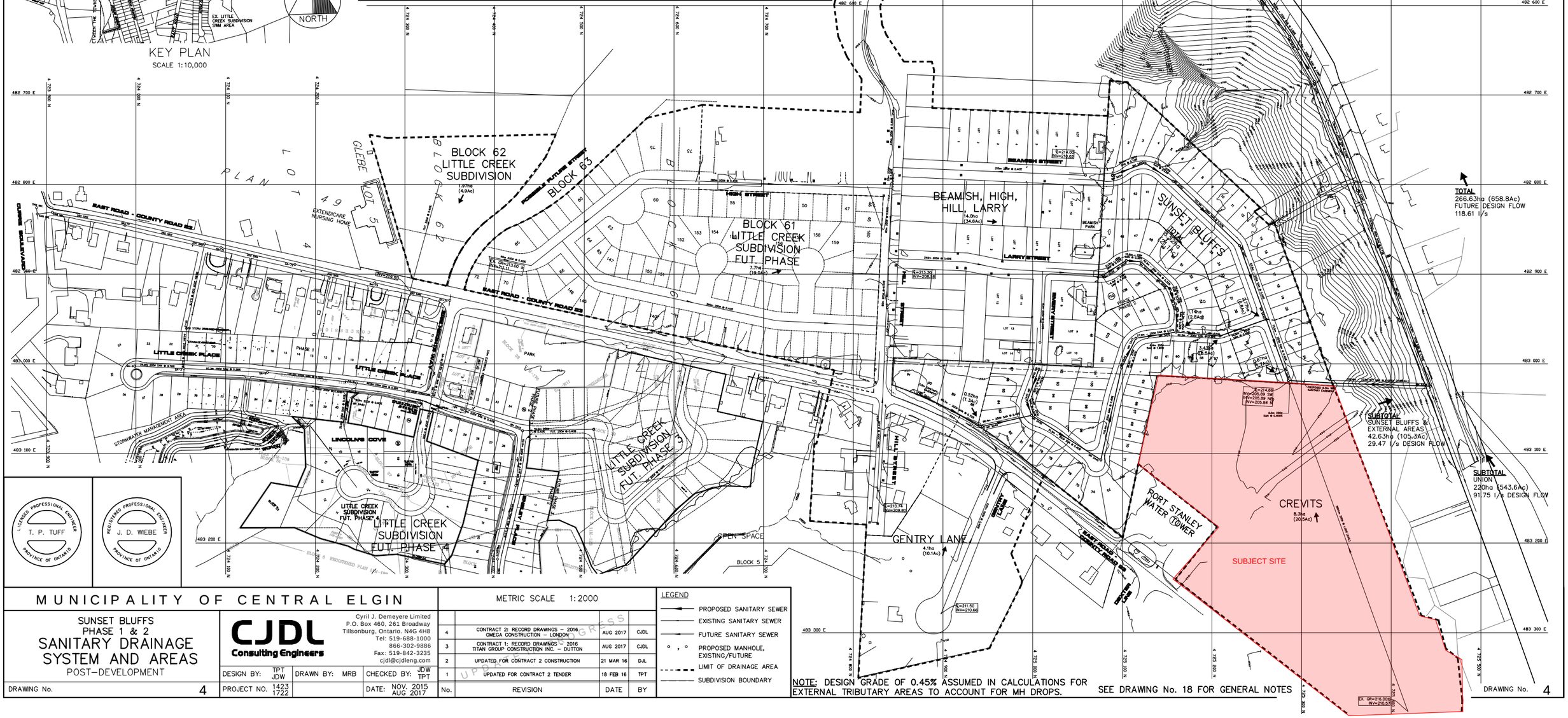
CENTRAL ELGIN DESIGN CRITERIA
POPULATION: 3.5 Persons/UNIT
LOW DENSITY: 44 Persons/ha (i.e. 12.57 UNITs/ha)
HIGH DENSITY: 140 Persons/ha
INFILTRATION: 0.200 l/s/ha
SEWAGE: 400 l/Person/Day

M=1+14/(4+P^0.5) (0≤)
P=Population in thousands

Cap=1000n^1/4*R^2/3*s^1/2 (l/s)
R=Hydraulic radius (=>/=) (m)
A=Pipe cross-sectional area (m²)
s=Slope of pipe

LOCATION				AREA			POPULATION				Peaking Factor, M	Sewage (l/s)	Infiltration (l/s)	Design Flow (l/s)	PROPOSED SEWER						
DWG #	STREET	FROM MH	TO MH	Net or Gross	∆ Area (ha)	Total Areas (ha)	PER ha.	NO. LOTS	∆ Pop	Total Pop.					Length (m)	Pipe Size (mm)	Type of Pipe	n	Min Slope (%)	Capacity (l/s)	Full Flow Velocity (m/s)
11	S.B.[1] - Beamish Street	SA54	SA40	Gross	2.77	2.77	-	35	123	123	4.218	2.392	0.554	2.95	-	200	PVC	0.013	0.40	20.74	0.66
	FUT Little Creek - Block 61	-	-	Gross	7.7	7.7	44	-	338	338	4.055	6.361	1.540	7.90	-	200	PVC	0.013	0.40	20.74	0.66
	FUT Beamish, High, Hill, Larry	-	SA59	Gross	14.0[2]	21.7	-	66	231	570	3.944	10.405	2.580	13.05	-	200	PVC	0.013	0.40	20.74	0.66
12	S.B. - Larry Street	SA59	SA42	Gross	1.14	22.84	-	14	49	618	3.925	11.244	2.818	14.06	-	200	PVC	0.013	0.32	18.55	0.59
	FUT Gentry Lane	-	SA49	Gross	4.1[2]	4.1	-	11	38	38	4.338	0.773	0.175	0.95	-	200	PVC	0.013	0.40	20.74	0.66
14	S.B. - Lots 88-91 (East Road)	SA50	SA49	Gross	0.52	0.52	-	2	14	14	4.399	0.285	0.104	0.39	-	200	PVC	0.013	0.70	27.44	0.87
13	S.B. - Ellery Street	SA49	SA40	Gross	3.43	30.89	-	48	168	638	3.946	14.951	3.783	18.73	-	200	PVC	0.013	0.39	20.45	0.65
11	S.B. - Beamish Street	SA40	SA39	Gross	0.67	34.33	-	9	32	993	3.802	17.483	4.471	21.95	-	200	PVC	0.013	0.44	21.74	0.69
	FUT Gravity Lands	-	SA39	Gross	8.3	8.3	44	-	365	365	4.041	6.833	1.660	8.49	-	200	PVC	0.013	0.40	20.74	0.66
10	S.B. - San Easement	SA39	SA38	Gross	-	42.63	-	-	-	1358	3.710	23.335	6.131	**29.47**	190.0	225	HDPE	0.013	6.65	109.05	2.87
															Note: 10" (250mm) HDPE DR11 pipe has 220mm I.D. overall						
	FUT Union - Developed [4]	-	-	Gross	140[3]	140	-	325	1138	1138	3.763	19.816	5.171	24.99							
	FUT Union - Poss. Future Dev.	-	SA38	Gross	66	220	44	-	3520	4658	3.273	70.583	21.171	91.75							
7, 8 & 9	Sunset Drive [4]	SA38	SA32	Gross	4.0[3]	266.63			50	170	6.09	3.158	90.508	28.102	118.61	-	300	PVC	0.013	0.73	82.62	1.17
7, 8 & 9	Sunset Drive	SA32	SA28	Gross	0	266.63					6.09	3.158	90.508	28.102	118.61	-	375	PVC	0.013	0.18	74.39	0.42
7, 8 & 9	Sunset Drive	SA28	SA26	Gross	0	266.63					6.09	3.158	90.508	28.102	118.61	-	450	PVC	0.013	0.10	90.16	0.52
7, 8 & 9	Sunset Drive	SA26	Ex SA25	Gross	0	266.63					6.09	3.158	90.508	28.102	118.61	-	300	PVC	0.013	0.12	33.52	0.48
7, 8 & 9	Sunset Drive [4]	EX SA25	EX SA7	Gross	3.5[3]			44	154	634.5	3.149	92.461	28.882	121.34	[5]	Ex. 200	PVC	0.013	0.7(Min.)	28.55[5]	0.88
2	CONTRACT 1 & 2 RECORD DWG	AUG 2017	CJDL																		
1	OUTLET CAPACITY	4 FEB 2016	TPT																		
NO	REVISION		BY																		

Notes:
(1) S.B. denotes tributary area within Sunset Bluffs Subdivision. FUT denotes possible future development tributary areas.
(2) Infiltration component of sewage flow (l/s) from existing areas has been calculated by pro-rating the area (ha) of developed lands to equivalent of low density development (12.6 units/ha). (e.g. Gentry Lane: 11 lots / 12.57 units/ha x 0.200 l/s/ha = 0.175 l/s)
(3) Possible future development area in Union is based on Village limits defined in Official Plan. A sanitary pumping station from Union is required to be constructed to convey sew age flow s.
(4) An allow ance of 50 lots and 4.0 hectares has been assigned for existing and possible future development along Sunset Road North of Ex. MH SA25. A futher allow ance of 44 lots and 3.5 hectares has been assigned for existing development between EX MH SA25 and EX MH SA7. Lot count or tributary area may be increased depending on development proposals.
(5) The timing of sew er upgrades dow nstream of MH SA26 w ill depend upon future flow monitoring.



T. P. TUFF — LICENSED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

J. D. WIEBE — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

MUNICIPALITY OF CENTRAL ELGIN

SUNSET BLUFFS
PHASE 1 & 2
SANITARY DRAINAGE SYSTEM AND AREAS
POST-DEVELOPMENT

DRAWING No. 4

CJDL Consulting Engineers
Cyril J. Demeyere Limited
P.O. Box 460, 261 Broadway
Tillsonburg, Ontario. N4G 4H8
Tel: 519-688-1000
866-302-9886
Fax: 519-842-3235
cjdl@cjdleng.com

DESIGN BY:	TPT JDW	DRAWN BY:	MRB	CHECKED BY:	JDW TPT
PROJECT NO.	1423 1722			DATE:	NOV. 2015 AUG 2017

METRIC SCALE 1:2000

No.	REVISION	DATE	BY
4	CONTRACT 2: RECORD DRAWINGS – 2016 OMEGA CONSTRUCTION – LONDON	AUG 2017	CJDL
3	CONTRACT 1: RECORD DRAWINGS – 2016 TITAN GROUP CONSTRUCTION INC. – DUTTON	AUG 2017	CJDL
2	UPDATED FOR CONTRACT 2 CONSTRUCTION	21 MAR 16	DJL
1	UPDATED FOR CONTRACT 2 TENDER	18 FEB 16	TPT

LEGEND
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- FUTURE SANITARY SEWER
- PROPOSED MANHOLE, EXISTING/FUTURE
- LIMIT OF DRAINAGE AREA
- SUBDIVISION BOUNDARY

NOTE: DESIGN GRADE OF 0.45% ASSUMED IN CALCULATIONS FOR EXTERNAL TRIBUTARY AREAS TO ACCOUNT FOR MH DROPS.

SEE DRAWING No. 18 FOR GENERAL NOTES

DRAWING No. 4

SEE DRAWING NO. 11

SEE DRAWING NO. 11

SEE DRAWING NO. 10

NORTH

BEAMISH STREET

EMERY STREET

LARRY STREET

BEAMISH PARK

CREVITS FARM

PROPOSED SANITARY SERVICE CONNECTION TO SUNSET BLUFFS SUBDIVISION

PHASE 1

PHASE 2

SERVICING NOTES
UNLESS OTHERWISE NOTED:
-SANITARY PDCS ARE 125ø PVC SDR28 (WHITE)
-STORM PDCS ARE 150ø PVC SDR28 (GREEN)
-CATCHBASIN LEADS ARE 200mmø PVC SDR35
FOR SINGLE CATCHBASINS, 250mmø PVC SDR35
FOR DOUBLE CATCHBASINS OR AS SHOWN
-WATER SERVICES ARE 25mmø PEX (MUNICIPEX)

SEE DRAWING No.13

SEE DRAWING NO. 18 FOR GENERAL NOTES

LARRY STREET

6.0m 200mmø PVC SDR35 @ 0.40%
30.2m – 375mmø PVC KOR-FLO @ 0.40%
18.9m – 375ø PVC KOR-FLO @ 0.37%
44.4m – 375mmø PVC KOR-FLO @ 0.36%
27.7m – 375mmø PVC KOR-FLO @ 0.32%
22.0m – 450mmø PVC KOR-FLO @ 0.32%
FUTURE 200ø PVC SDR35 @ 0.40%
30.8m – 200mmø PVC SDR35 @ 0.42%
15.8m – 200mmø PVC SDR35 @ 0.38%
42.9m – 200mmø PVC SDR35 @ 0.35%
26.9m – 200mmø PVC SDR35 @ 0.33%
24.3m – 200mmø PVC SDR35 @ 0.41%

EMERY STREET

51.1m – 600mmø CONC. PIPE CL65-D @ 0.31%
44.9m – 525mmø CONC. PIPE CL140-D @ 0.31%
52.2m – 525mmø CONC. PIPE CL140-D @ 0.31%
8.4m – 200ø PVC SDR35 @ 1.90%
37.3m – 200mmø PVC SDR35 @ 2.01%
49.3m – 200mmø PVC SDR35 @ 0.39%
54.8m – 200mmø PVC SDR35 @ 0.40%

DESIGN PROFILE GRADE
STORM INVERT
SANITARY INVERT
DESIGN STATION

LEGEND

- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- PROP. MANHOLE, EXISTING OR AS CONSTRUCTED
- PROP. CATCHBASIN, EXISTING OR AS CONST.
- PROPOSED WATERMAIN
- EXISTING WATERMAIN
- HYD PROPOSED HYDRANT, EXISTING OR AS-CONST.
- WV PROPOSED WATERVALVE, EXISTING OR AS-CONST.
- 6 LOT NUMBER
- G EXISTING GASMAIN
- (A), (B), (F) ADJUST, REMOVE, FUTURE
- C U/H T EXISTING JOINT UTILITY TRENCH
- PROPOSED DRIVEWAYS
- SUNSET BLUFFS SUBDIVISION PHASE LIMITS
- 234 ORIGINAL CONTOURS PRIOR TO CONSTRUCTION FROM CJDL SURVEY (MAY NOT BE VALID NOW)
- PROPOSED SILT FENCE
- B.O. ⊗ , ⊗ B.O. PROPOSED BLOW-OFF, EX. OR FUT.
- CMB , CMB PROPOSED COMMUNITY MAIL BOX, EXISTING
- EXISTING/PROPOSED TRANSFORMER, EXISTING PEDESTAL
- PROPOSED SWALE WITH REAR YARD SUBDRAIN
- ① TACTILE WALKING SURFACE INDICATORS (OPSD 310.039)

LICENSED PROFESSIONAL ENGINEER T. P. TUFF PROVINCE OF ONTARIO

REGISTERED PROFESSIONAL ENGINEER J. D. WIEBE PROVINCE OF ONTARIO

METRIC SCALE HORIZ. 1:500 , VERT. 1:50

No.	REVISION	DATE	BY
3	CONTRACT 2: RECORD DRAWINGS – 2016 OMEGA CONTRACTORS – LONDON	AUG 2017	CJDL
2	UPDATED FOR CONTRACT 2 CONSTRUCTION	21 MAR 16	DJL
1	UPDATED FOR CONTRACT 2 TENDER	18 FEB 16	TPT

MUNICIPALITY OF CENTRAL ELGIN

CJDL Consulting Engineers
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P.O. Box 460, 261 Broadway
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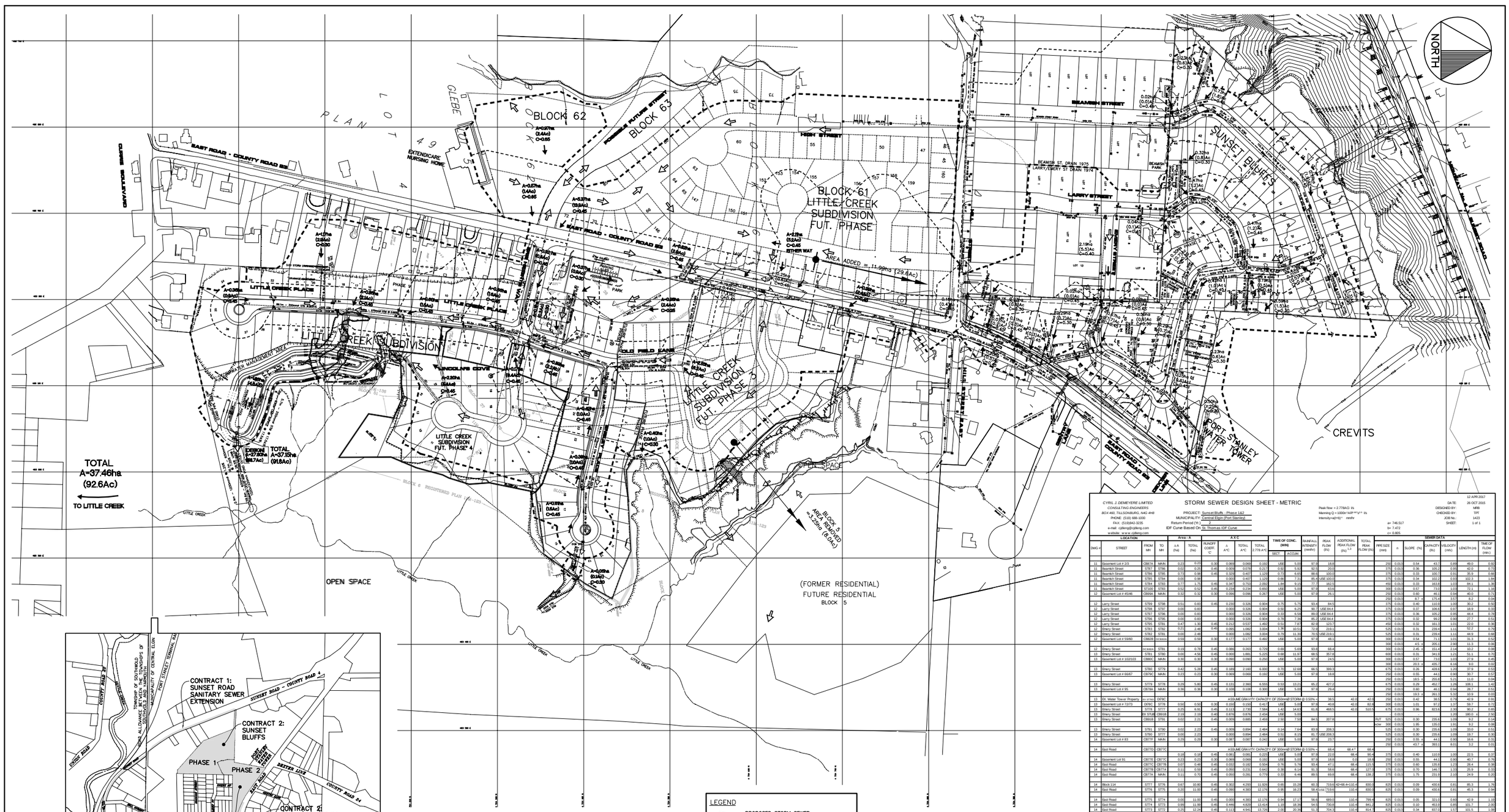
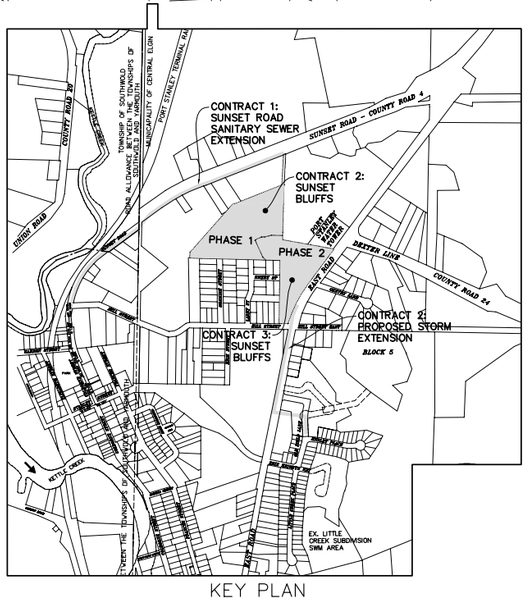
Tel: 519-688-1000
866-302-9886
Fax: 519-842-3235
cjdl@cjdleng.com

DESIGN BY: TPT JDW | DRAWN BY: STS | CHECKED BY: JDW TPT
PROJECT NO. 1423 1722 | SURVEY BY: TPM | DATE: NOV 2015 AUG 2017

SUNSET BLUFFS
PHASE 1 & 2, RP 11M–212
DONWEST CONSTRUCTION
LARRY STREET AND EMERY STREET
(NORTH OF LARRY STREET)

DRAWING No. 12





LEGEND

- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- PROPOSED STORM MANHOLE, EXISTING
- PROPOSED CATCHBASIN, EXISTING
- PROPOSED DOUBLE CATCHBASIN, EXISTING
- LIMIT OF DRAINAGE AREA
- SUBDIVISION BOUNDARY
- MAJOR OVERLAND FLOW ROUTE
- C=0.45 RUN-OFF COEFFICIENT

SEE DRAWING No. 18 FOR GENERAL NOTES

CYRIL J. DEMEYERE LIMITED
CONSULTING ENGINEERS
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STORM SEWER DESIGN SHEET - METRIC

PROJECT: Sunset Bluffs - Phase 1&2
MUNICIPALITY: Central Elgin (Port Stanley)
Return Period (Yr.) = 2
IDF Curve Based On St. Thomas IDF Curve

Peak flow = 2.778ACI its
Manning Q = 1000n^A/P^⅔s^½ its
Intensity=a/(t+b)^c mm/hr

a= 746.517
b= 7.472
c= 0.805

DATE: 12 APR 2017 / 26 OCT 2015
DESIGNED BY: MRB
CHECKED BY: TPT
JOB No.: 1423
SHEET: 1 of 1

DWG #	STREET	LOCATION FROM MH	TO MH	Area - A A-A (ha)	A-A TOTAL (ha)	RUNOFF COEFF. C	A x C A-A	A x C TOTAL A-C	A x C TOTAL 2.778 A-C	TIME OF CONC. (MIN) INDIV.	TIME OF CONC. (MIN) ACCUM.	RAINFALL INTENSITY (mm/hr)	PEAK FLOW (l/s)	ADDITIONAL PEAK FLOW (l/s) 1,2	TOTAL PEAK FLOW (l/s)	SEWER DATA PIPE SIZE (mm)	n	SLOPE (%)	CAPACITY (l/s)	VELOCITY (m/s)	LENGTH (m)	TIME OF FLOW (min.)
11	Easement Lot # 2/3	CB67A	MH3N	0.23	0.23	0.30	0.069	0.069	0.192	USE	5.00	97.9	18.8			250	0.013	0.54	43.7	0.89	49.0	0.92
11	Beamish Street	ST87	ST86	0.00	0.23	0.45	0.000	0.069	0.192	USE	5.92	92.5	20.0			375	0.013	0.36	105.2	0.95	42.0	0.74
11	Beamish Street	ST86	ST85	0.72	0.96	0.45	0.329	0.407	1.129	0.72	6.65	88.6	100.0			375	0.013	0.33	100.7	0.91	35.9	0.66
11	Beamish Street	ST85	ST84	0.00	0.96		0.000	0.407	1.129	0.66	7.31	85.4	USE 100.0			375	0.013	0.34	102.2	0.93	102.3	1.84
11	Beamish Street	ST84	ST83	0.77	1.75	0.45	0.347	0.753	2.092	1.84	9.15	77.7	162.5			450	0.013	0.33	163.8	1.03	84.1	1.36
11	Beamish Street	ST183	ST83	0.52	0.52	0.45	0.234	0.234	0.650	USE	5.00	97.9	63.6			300	0.013	0.57	73.0	1.03	72.1	1.17
12	Easement Lot # 45/46	CB95A	MH3N	0.30	0.30	0.30	0.090	0.090	0.267	USE	5.00	97.9	26.1			250	0.013	0.60	46.3	0.94	40.0	0.71
																250	0.013	8.7	175.4	3.57	8.2	0.04
12	Larry Street	ST89	ST88	0.51	0.83	0.45	0.230	0.326	0.904	0.75	5.75	93.4	84.5			375	0.013	0.40	110.9	1.00	30.2	0.50
12	Larry Street	ST88	ST87	0.00	0.83		0.000	0.326	0.904	0.50	6.25	90.7	USE 84.4			375	0.013	0.37	106.6	0.97	18.9	0.33
12	Larry Street	ST87	ST86	0.00	0.83		0.000	0.326	0.904	0.33	6.58	89.8	USE 84.4			375	0.013	0.36	105.2	0.95	44.4	0.78
12	Larry Street	ST86	ST85	0.00	0.83		0.000	0.326	0.904	0.78	7.36	86.2	USE 84.4			375	0.013	0.32	99.2	0.90	27.7	0.51
12	Larry Street	ST85	ST83	0.47	1.30	0.45	0.212	0.537	1.492	0.51	7.87	82.9	123.7			450	0.013	0.32	161.3	1.01	22.0	0.36
12	Grery Street	ST83	ST82	0.21	2.40	0.45	0.095	1.062	3.004	1.36	10.61	72.9	219.1			525	0.013	0.31	239.4	1.11	52.2	0.78
12	Grery Street	ST82	ST81	0.00	2.40		0.000	1.062	3.004	0.78	11.39	70.5	USE 219.1			525	0.013	0.31	239.4	1.11	44.9	0.68
12	Easement Lot # 93/60	CB62B	EX.SWMH	0.50	0.50	0.30	0.177	0.177	0.492	USE	5.00	97.9	48.1			300	0.013	0.54	71.1	1.01	31.3	0.52
																300	0.013	4.5	205.1	2.90	11.3	0.06
12	Grery Street	EX.MH3A	ST81	0.10	0.78	0.45	0.080	0.263	0.729	0.93	5.69	93.8	68.4			300	0.013	2.45	151.4	2.14	10.2	0.08
13	Grery Street	ST81	ST80	0.00	4.58	0.45	0.000	1.851	5.225	0.88	11.87	68.5	357.6			600	0.013	0.31	341.5	1.21	53.1	0.73
13	Easement Lot # 102/103	CB60C	MH3N	0.30	0.30	0.30	0.090	0.090	0.250	USE	5.00	97.9	24.5			300	0.013	0.57	73.0	1.03	27.9	0.45
																300	0.013	0.3	420.1	5.94	6.9	0.02
13	Grery Street	ST80	ST79	0.42	5.26	0.45	0.189	2.160	6.000	0.73	12.60	66.5	399.3			675	0.013	0.26	428.6	1.20	37.9	0.53
13	Easement Lot # 66/67	CB79C	MH3N	0.23	0.23	0.30	0.069	0.069	0.192	USE	5.00	97.9	18.8			250	0.013	0.55	44.5	0.90	39.7	0.74
																250	0.013	18.5	255.8	5.21	11.0	0.04
13	Grery Street	ST79	ST78	0.29	5.80	0.45	0.131	2.360	6.555	0.53	13.21	65.2	427.2			675	0.013	0.29	452.7	1.26	108.1	1.42
13	Easement Lot # 95	CB78A	MH3N	0.38	0.38	0.30	0.103	0.103	0.300	USE	5.00	97.9	29.4			300	0.013	0.80	85.3	1.21	28.7	0.39
																250	0.013	19.3	261.3	5.32	10.9	0.03
13	Dr. Water Tow er Property	ex cr bs	DITCH	ASSUME GRAVITY CAPACITY OF 250mm@ STORM @ 0.50% =												250	0.013	0.42	38.9	0.79	42.9	0.92
13	Easement Lot # 72/73	CB78C	ST78	0.50	0.50	0.30	0.150	0.150	0.417	USE	5.00	97.9	40.83	42.0	82.8	300	0.013	1.01	97.2	1.37	59.7	0.72
13	Grery Street	ST78	ST77	0.25	6.91	0.45	0.113	2.730	7.584	1.42	14.63	61.8	468.5	42.0	510.5	675	0.013	0.96	823.6	2.30	90.2	0.65
13	Grery Street	EX ST1/E CB91B		2.19	2.19	0.45	0.986	0.986	2.454	USE	5.00						0.013				180.0	2.10
13	Grery Street	CB91B	ST91	0.02	2.21	0.45	0.009	0.885	2.459	2.52	7.52	84.5	207.8			PUT	525	0.013	0.30	235.6	1.09	9.2	0.14
																new	300	0.013	1.95	135.0	1.91	9.2	0.08
13	Grery Street	ST91	ST90	0.02	2.23	0.45	0.009	0.894	2.484	0.14	7.64	83.9	208.3			525	0.013	0.30	235.6	1.09	33.0	0.51
13	Grery Street	ST90	ST77	0.00	2.23		0.000	0.894	2.484	0.51	8.15	81.7	USE 208.3			525	0.013	0.30	235.6	1.09	19.7	0.30
14	Easement Lot # 83	CB77F	MH3N	0.29	0.29	0.30	0.087	0.087	0.242	USE	5.00	97.9	23.7			250	0.013	0.55	44.5	0.90	36.6	0.68
																250	0.013	43.7	393.1	8.01	3.2	0.01
14	Gast Road	CB71G	CB77C	ASSUME GRAVITY CAPACITY OF 300mm@ STORM @ 0.50% =																		
14	Easement Lot 91	CB72E	CB72C	0.18	0.18	0.45	0.081	0.081	0.225	USE	5.00	97.9	22.0	68.4	90.4	375	0.013	0.40	110.9	1.00	22.5	0.37
14	Gast Road	CB72C	CB72B	0.23	0.23	0.30	0.069	0.069	0.192	USE	5.00	97.9	18.8	0	18.8	250	0.013	0.55	44.5	0.90	40.7	0.76
14	Gast Road	CB72C	CB72B	0.07	0.48	0.45	0.032	0.182	0.504	0.76	5.76	93.4	47.1	68.4	115.5	375	0.013	0.60	135.9	1.23	28.4	0.38
14	Gast Road	CB72B	CB72A	0.11	0.58	0.45	0.050	0.231	0.642	0.38	6.14	91.3	58.6	68.4	127.0	375	0.013	0.70	146.7	1.33	25.9	0.33
14	Gast Road	CB72A	MH3N	0.11	0.70	0.45	0.050	0.281	0.779	0.33	6.48	89.5	69.8	68.4	138.2	375	0.013	1.75	231.9	2.10	24.5	0.19
14	Block 114	ST77	ST76	0.67	10.80	0.45	0.302	4.293	11.926	0.65	15.28	60.3	719.6	42+68.4=110.4	830.0	825	0.013	0.09	430.6	0.81	85.3	1.76
14	Gast Road	ST76	ST75	0.20	11.00	0.45	0.090	4.383	12.176	0.95	16.23	58.4	Use 719.6	110.4	830.0	825	0.013	0.09	430.6	0.81	45.3	0.96
14	Gast Road	ST75	ST74	0.00	11.00	0.45	0.000	4.383	12.176	0.94	17.17	56.6	689.0	110.4	799.4	825	0.013	0.05	321.0	0.60	42.9	1.19
14	Gast Road	ST74	ST73	0.90	11.90	0.45	0.446	4.829	13.414	1.19	18.36	54.5	730.8	110.4	841.2	825	0.013	0.10	453.9	0.85	101.7	2.00
14	Gast Road	ST73	ST72	0.25	12.15	0.45	0.113	4.941	13.726	2.00	20.36	51.3	704.9	110.4	814.4	825	0.013	0.34	837.0	1.57	101.5	1.08
15	Gast Road	ST72	ST71	2.59	14.79	0.45	1.148	6.089	16.914	1.08	21.44	49.8	841.7	110.4	952.1	825	0.013	0.49	1004.8	1.88	101.3	0.90
15	Easement Pcl. Lot # 5	ST71	ST70	0.62	15.41	0.45	0.369	6.458	17.939	0.90	22.34	48.6	871.0	110.4	981.4	825	0.013	0.68	1183.7	2.21	103.9	0.78
15	Old Field Lane	ST60	EX ST5C	0.40	16.01	0.30	0.120	6.578														
				2.53	18.54	0.45	1.139	7.716	21.435	0.78	23.12	47.6	1019.2	110.4	1129.6	825	0.013	4.25	2959.2	5.54	65.9	0.20
																EX 900	0.013	0.30	991.5	1.56	20.0	0.21
15	Old Field Lane	EX ST5C	EX ST5B	0.98	19.52	0.25	0.245															
				0.40	20.02	0.30	0.144															
				2.31	22.33	0.45	1.040	9.145	25.403	0.41	23.53	47.0	1195.0	110.4	1305.4	975	0.013	0.30	1227.5	1.64	108.6	1.10

NO.	REVISION	DATE	BY
2	UPDATE FOR PHASE 2	AUG 2	TPT
1	ADD 1 ADDITIONAL CATCHBASIN	21 MAR 16	TPT

NOTES:
1. ADDITIONAL FLOW = GRAVITY CAPACITY OF 250Ø STORM @ 0.50% FROM WATER TOWER LANDS = 42.0 l/s
2. ACCEPTABLE AS SURCHARGING IS NEGLIGIBLE (575Ø @ 0.33% x or 3.3cm OVER THE 108.6m RUN)
3. ADDITIONAL FLOW = GRAVITY CAPACITY OF 300y STORM @ 0.50% FROM HILL STREET DRAIN (BRANCH 'A'=68.4L/S

METRIC SCALE 1:2000

No.	REVISION	DATE	BY
3	CONTRACT 2: RECORD DRAWINGS - 2016 OMEGA CONTRACTORS - LONDON	AUG 2017	CJDL
2	UPDATED FOR CONTRACT 2 CONSTRUCTION	21 MAR 16	DJL
1	UPDATED FOR CONTRACT 2 TENDER	18 FEB 16	TPT

LICENSED PROFESSIONAL ENGINEER — T. P. TUFF — PROVINCE OF ONTARIO

REGISTERED PROFESSIONAL ENGINEER — J. D. WIEBE — PROVINCE OF ONTARIO

UNDER CONSTRUCTION PROGRESS

MUNICIPALITY OF CENTRAL ELGIN

CJDL Consulting Engineers
Cyril J. Demeyere Limited
P.O. Box 460, 261 Broadway
Tillsonburg, Ontario. N4G 4H8
Tel: 519-688-1000
866-302-9886
Fax: 519-842-3235
cjdl@cjdleng.com

SUNSET BLUFFS
PHASE 1 & 2
STORM DRAINAGE SYSTEM AND AREAS
POST-DEVELOPMENT

DESIGN BY:	TPT JDW	DRAWN BY:	MRB	CHECKED BY:	JDW TPT
PROJECT NO.	1423 1722			DATE:	NOV. 2015 AUG 2017

DRAWING No. 5

C:\Users\mreeves\Desktop\CAD\1721\1423_PLA_PLS.dwg, 01/09/2017 7:50:22 AM, mreeves, 1:28.4

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

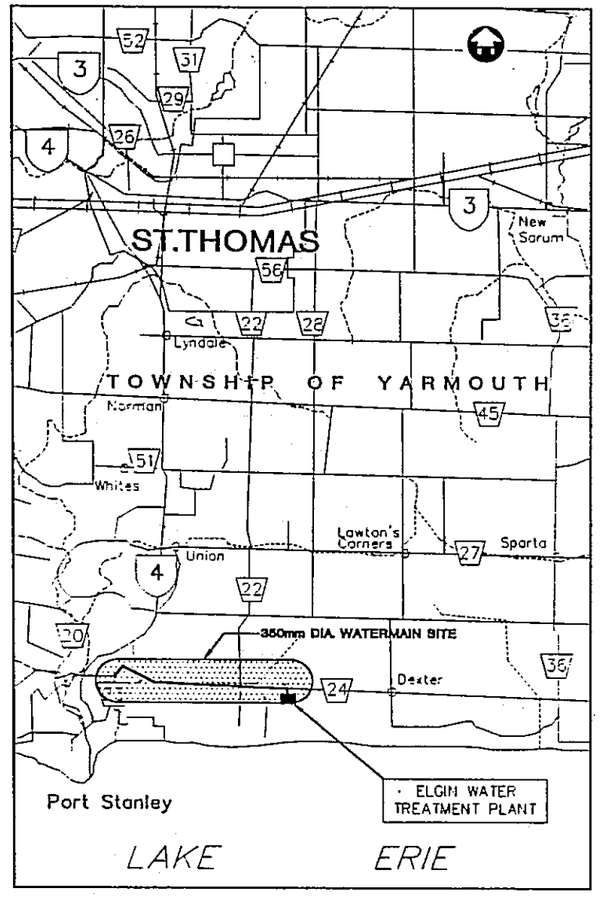
Project No. 5-0405-01-00

ELGIN AREA SECONDARY WATER SUPPLY SYSTEM (PORT STANLEY)

CONTRACT No. 1
350mm DIA. WATER TRANSMISSION MAIN

FROM ELGIN WATER TREATMENT PLANT TO THE VILLAGE OF PORT STANLEY

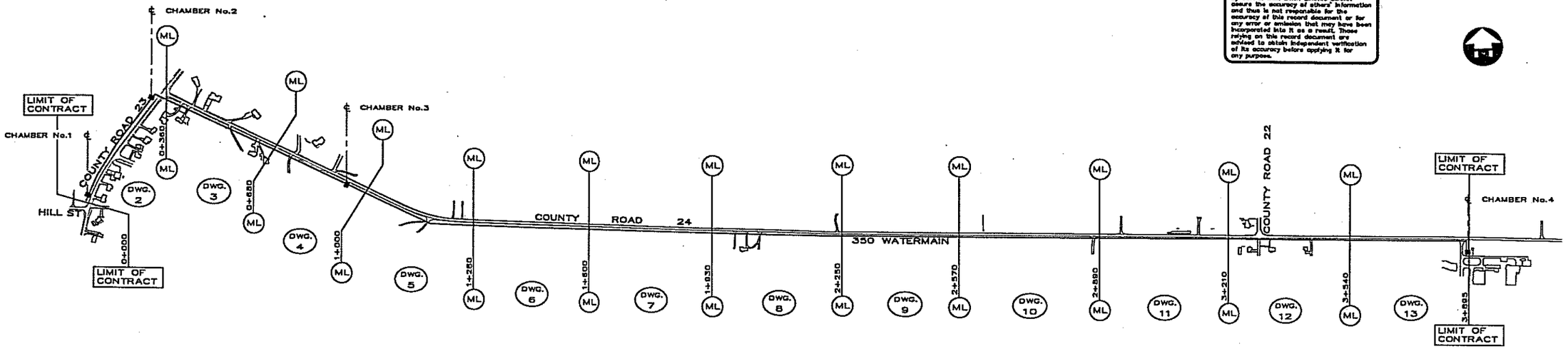
RECORD DRAWINGS
OCTOBER 1996



LOCATION PLAN
SCALE 1:75000

DILLON
Consulting Engineers • Planners
Environmental Scientists
M.M.D. Project No. 95-2650-30

DRAWING INDEX



ORIGINAL DRAWING 150mm 100 50 0

LEGEND

- PROPOSED WATERMAIN
- PROPOSED WATERMAIN CHAMBER (ACCESS MANHOLE LOCATION)
- PROPOSED BRANCH CONNECTION WITH VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED WATER SERVICE CONNECTION — 19
- ℄ WATERMAIN CHAINAGE POINT
- CHANGE OF DIRECTION (HORIZONTAL ANGLE)
- CHANGE OF GRADE (VERTICAL ANGLE)
- MATCH LINE — ML
- BOREHOLE
- PROPERTY LINE
- SURVEY BAR OR MONUMENT
- FENCE
- ASPHALT SURFACE
- GRAVEL SURFACE
- CONCRETE CURB
- SPOT ELEVATION + 254.5
- CONTOUR LINE & ELEVATION — 210
- TREE
- HEDGE OR BUSH

- ROAD SIGN — RS
- MAIL BOX — MB
- DITCH
- CSP (SIZE) — 300 CSP
- CATCHBASIN — CB
- MANHOLE — MH
- STORM SEWER OR TILE DRAIN — 600 STM
- SANITARY SEWER — 300 SAN
- SANITARY FORCEMAIN — 400 SAN FM
- GASMAIN — 75 GAS
- WATERMAIN — 300 W/M
- WATERMAIN VALVE
- FIRE HYDRANT — FH
- UNDERGROUND BELL — BELL
- U/G – (FIBER OPTICS CABLE) — U/G (F.O.C.)
- BELL PEDESTAL — B.PED
- UNDERGROUND T.V. CABLE — CATV
- HYDRO OR BELL POLE — H
- POLE WITH GUY WIRE — H
- LIGHT STANDARD — LS
- UNDERGROUND HYDRO — U/G

GENERAL NOTES

1. METRICATION: ALL PLANS AND SPECIFICATIONS HAVE BEEN PREPARED IN METRIC USING THE INTERNATIONAL SYSTEM OF UNITS (SI). REFER TO CLAUSE 40, INFORMATION FOR TENDERERS.
2. SOILS INVESTIGATION: WATERMAIN PLAN AND PROFILE DRAWINGS SHOW APPROXIMATE LOCATIONS OF BOREHOLES TAKEN FROM GEOTECHNICAL REPORT No. 931-3041 AND 931-3041-1 PREPARED BY GOLDER ASSOCIATES LTD. THE ACCURACY OF THESE REPORTS ARE NOT GUARANTEED BY THE ONTARIO CLEAN WATER AGENCY OR BY M. M. DILLON LIMITED.
3. UTILITIES: THE UTILITY LOCATIONS SHOWN ON THESE CONTRACT DRAWINGS HAVE BEEN OBTAINED FROM DRAWINGS AND DATA BELIEVED TO BE ACCURATE BUT CANNOT BE GUARANTEED TO BE COMPLETE OR CORRECT. THE CONTRACTOR SHALL CONTACT ALL APPLICABLE AUTHORITIES FOR THE EXACT LOCATIONS PRIOR TO CONSTRUCTION.
4. UTILITY SUPPORTS: ALL UTILITIES CROSSING THE WATERMAIN TRENCH SHALL BE SUPPORTED BY A PERMANENT UTILITY SUPPORT IN ACCORDANCE WITH OPSD 1007.01, OR AS REQUIRED BY THE UTILITY OWNER.
5. JOINTS OUTSIDE CHAMBERS: MAXIMUM DISTANCE TO FIRST JOINT FROM ANY CHAMBER WALL TO BE 500mm.
6. RESTRAINED JOINTS: RESTRAINED JOINTS ARE REQUIRED AT ALL HORIZONTAL AND VERTICAL DEFLECTIONS THAT EXCEED PIPE MANUFACTURER'S ALLOWABLE LIMITS AT FITTINGS, AND AT VALVE CHAMBERS. SUBMIT DESIGN CALCULATIONS AND RESTRAINT DETAILS TO THE ENGINEER PRIOR TO PIPE FABRICATION. ALL IN ACCORDANCE WITH CLAUSE 19.0 OF THE SPECIAL PROVISIONS-CONSTRUCTION. REFER TO PLAN & PROFILE DRAWINGS FOR LOCATIONS OF DEFLECTIONS.
7. BEDDING: ALL WATERMAINS TO HAVE BEDDING OF GRANULAR 'A' TO A MINIMUM DEPTH OF 300mm OVER THE TOP OF THE PIPE UNLESS OTHERWISE NOTED. SEE DRAWING No. 14.
8. BACKFILL AND RESTORATION: SEE DRAWING No. 14 FOR BACKFILL AND RESTORATION DETAILS.
9. PROFILES: GRADES, ELEVATIONS, DISTANCES AND ALIGNMENT AS SHOWN ON THE DRAWINGS REPRESENT THE THEORETICAL CENTERLINE OF THE WATERMAIN FOR THE PURPOSES OF DESIGN AND THE PREPARATION OF SHOP DRAWINGS. ALL PROFILES OF EXISTING GROUND ARE APPROXIMATE AND ARE ABOVE THE CENTERLINE OF THE PROPOSED WATERMAIN.
10. TREE PROTECTION: ALL TREES ALONG THE WATERMAIN ROUTE ARE TO BE PROTECTED UNLESS OTHERWISE NOTED.
11. MAINTENANCE OF FLOW: ALL EXISTING SURFACE AND UNDERGROUND DRAINAGE SYSTEMS MUST BE MAINTAINED DURING CONSTRUCTION.
12. GEODETIC BENCH MARK: DHO PRECISE BENCH MARK, ELEV. 218.546. BRASS TABLET IN WEST FACE OF CONCRETE FOUNDATION OF TWO STOREY RED BRICK HOUSE ON EAST SIDE OF ELGIN COUNTY ROAD 23, 171m SOUTHEAST OF HIGHWAY No.4.
13. CONSTRUCTION AND DETOUR SIGNING: MINIMUM CONSTRUCTION AND DETOUR SIGNS REQUIRED SHALL BE IN ACCORDANCE WITH MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES", METRIC EDITION, JANUARY 1978, AND THE LATEST REVISION OF THE ONTARIO MINISTRY OF TRANSPORTATION "TRAFFIC CONTROL MANUAL FOR ROADWAY WORK OPERATIONS".
14. PIPE MATERIALS: P.V.C. – AWWA C900, DR25
– AWWA C900, DR18

LIST OF DRAWINGS

PRINT RECORD

FOR	DATE
DETAIL REVIEW	96/03
DETAIL REVIEW	97/03
TENDER	11/95

Ontario Clean Water Agency / Agence Ontarienne Des Eaux

PROJECT No. 5-0405-01-00

DILLON
Consulting Engineers • Planners
Environmental Scientists

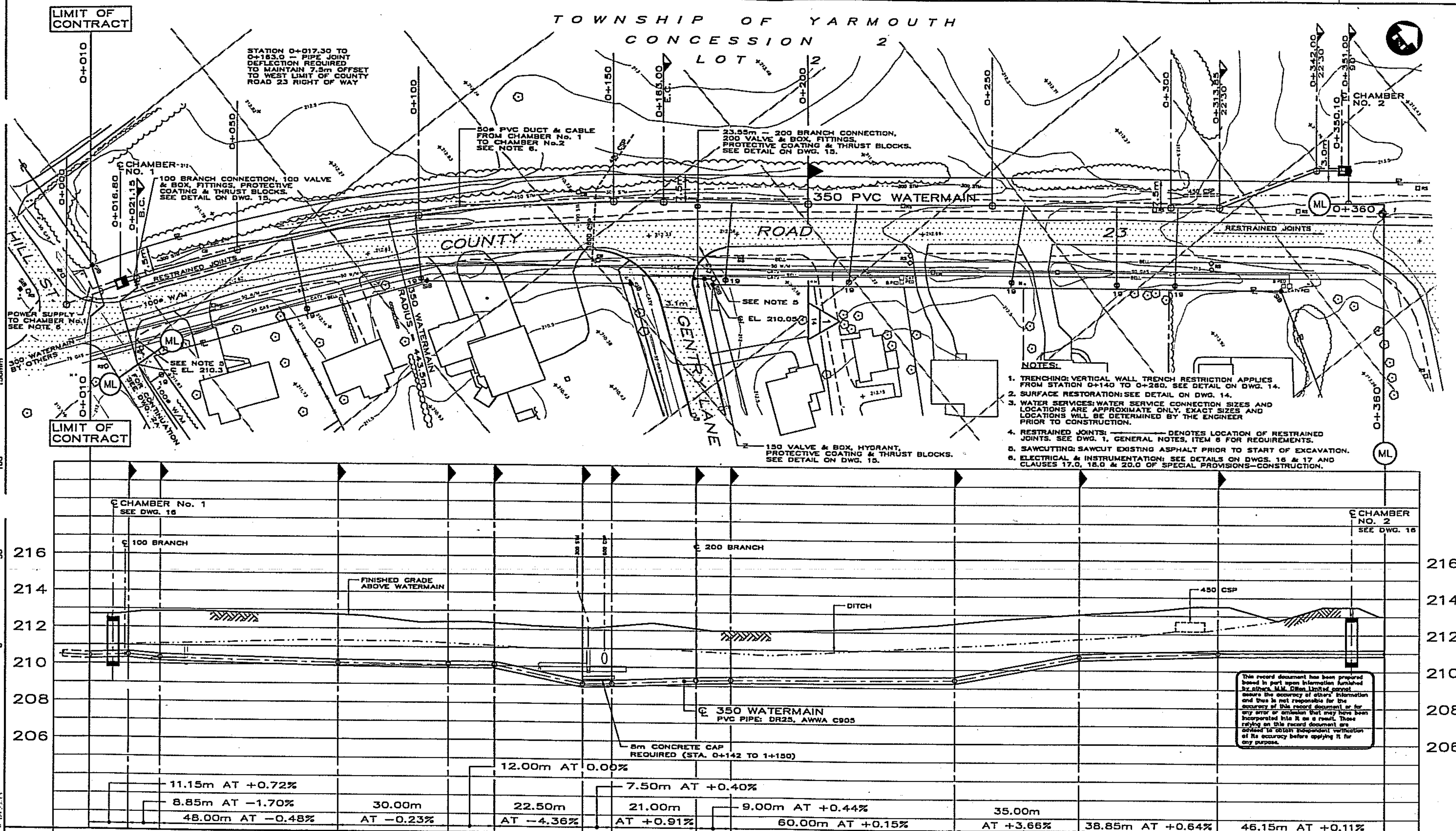
			DESIGN	HJG
			DRAWN	KMcG
3	RECORD DRAWING	10/96	CHECKED	HJG
2	ISSUED FOR TENDER	11/17/95	APPROVED	
1	ISSUED FOR COMMENT		DATE	

ELGIN AREA SECONDARY WATER SUPPLY SYSTEM

DRAWING INDEX, LEGEND, GENERAL NOTES AND

FILE NO 2650-30

DRAWING NO 1



GROUND ELEVATION	212.7	212.8	212.4	212.4	212.1	212.8	213.3	213.5	213.0

℄ PIPE ELEVATION	210.42	210.50	210.35	210.12	210.05	210.05	209.07	209.10	209.29	209.33	209.42	210.70	210.95	211.00

STATION	0+010	0+016.8	0+020.15	0+021.15	0+030	0+050	0+075	0+100	0+108	0+120	0+142.5	0+150	0+171	0+180	0+200	0+240	0+250	0+275	0+300	0+313.85	0+350	0+360

PRINT RECORD

NO.	FOR	DATE
1	OCWA REPORT	06/95
2	OCWA REVIEW	01/95
3	TENDER	11/95

Photogrammetric compilation, contours and property lines by PHOTOMAP AIR SURVEYS LIMITED
Photography date: November 7, 1994
Contour Intervals 0.5 metres.

Ontario Clean Water Agency / Agence Ontarienne Des Eaux

PROJECT No. 5-0405-01-00
CONTRACT NO.1

DILLON
Consulting Engineers • Planners
Environmental Scientists

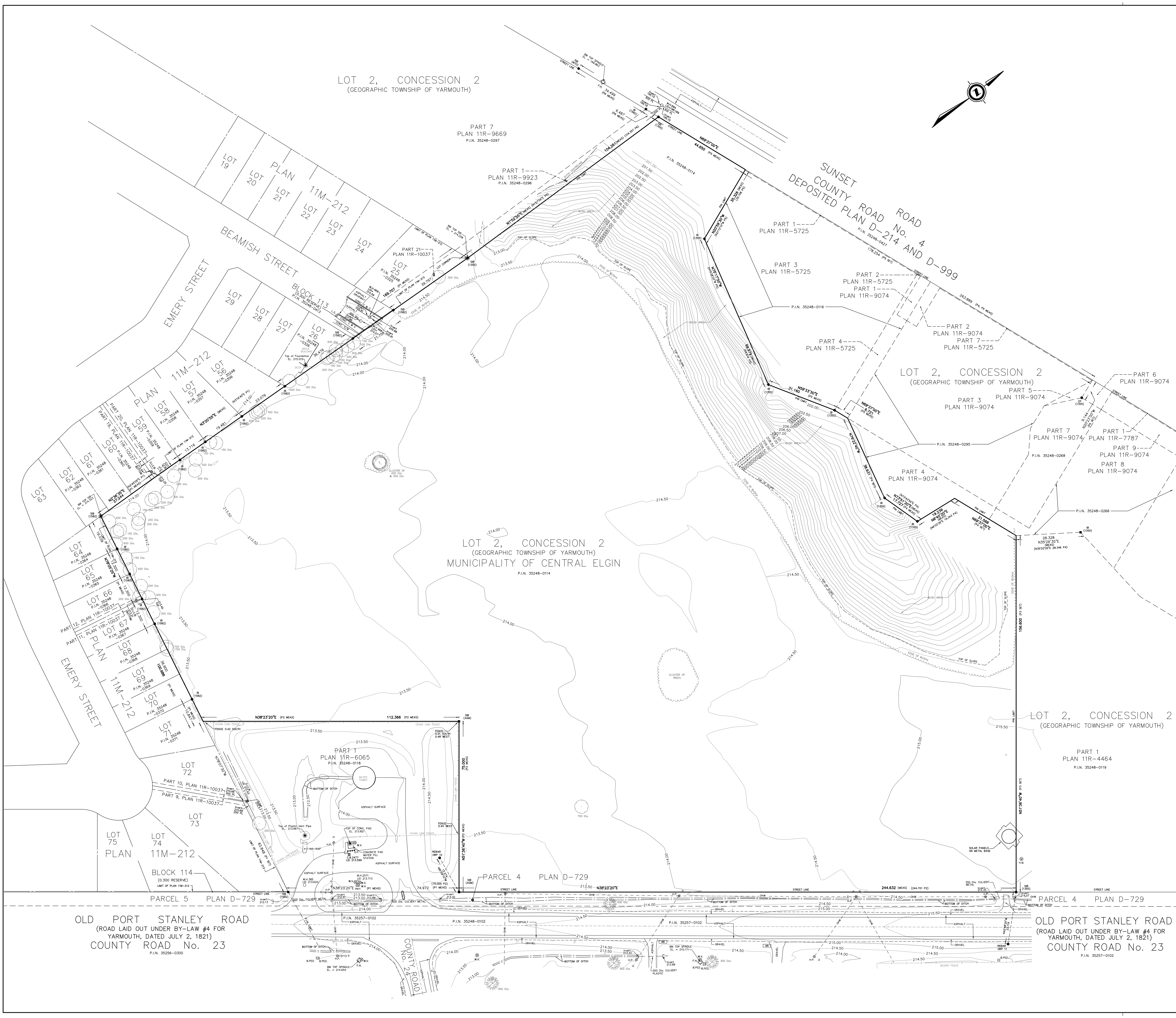
NO.	REVISIONS	DATE	BY
3	RECORD DRAWING	10/96	GOH
2	ISSUED FOR TENDER	11/17/95	GOH
1	ISSUED FOR COMMENT	07/17/95	GOH

DESIGN HJG
DRAWN KMcG
CHECKED HJG
APPROVED
DATE JULY 95
SCALE HORIZ: 1:500 VERT: 1:100

ELGIN AREA SECONDARY WATER SUPPLY SYSTEM

COUNTY ROAD 23
STATION 0+000 TO
STATION 0+360

FILE NO 2650-30
DRAWING NO 2



PLAN OF SURVEY WITH TOPOGRAPHICAL DETAIL

OF PART OF

LOT 2, CONCESSION 2

(GEOGRAPHIC TOWNSHIP OF YARMOUTH)

IN THE

MUNICIPALITY OF CENTRAL ELGIN

COUNTY OF ELGIN

SCALE 1:500

10 8 6 4 2 0 10 20 30

SCALE IN METRES

2021
ARCHIBALD, GRAY & McKAY LTD.
ONTARIO LAND SURVEYORS

CAUTION

1) STORM & SANITARY SEWER INFORMATION SHOWN IS BASED ON FIELD SURVEY.

TOPOGRAPHIC LEGEND

ASPH	DENOTES ASPHALT
BM	DENOTES BENCHMARK
BPED	DENOTES BELL PEDESTAL
CB	DENOTES CATCH BASIN
CONC	DENOTES CONCRETE
C&G	DENOTES CURB AND GUTTER
DIA	DENOTES DIAMETER IN mm
DICB	DENOTES DITCH INLET CATCH BASIN
EL	DENOTES ELEVATION
FH	DENOTES FIRE HYDRANT
GP	DENOTES GUARD POST
GV	DENOTES GAS VALVE
HH	DENOTES HAND HOLE
HM	DENOTES HYDRO METER
HP	DENOTES HYDRO POLE
INV	DENOTES INVERT
LS	DENOTES LIGHT STANDARD
MB	DENOTES MAIL BOX
MH	DENOTES MANHOLE
OHW	DENOTES OVERHEAD WIRE
S/W	DENOTES SIDEWALK
TW	DENOTES TOP OF WALL
T/S	DENOTES TOP SPINDLE OF FIRE HYDRANT
WV	DENOTES WATER VALVE
N	DENOTES NORTH
E	DENOTES EAST
W	DENOTES WEST
S	DENOTES SOUTH
NE	DENOTES NORTHEAST
SE	DENOTES SOUTHEAST
SW	DENOTES SOUTHWEST
NW	DENOTES NORTHWEST
	DENOTES POLE ANCHOR
	DENOTES SIGN
	DENOTES CONIFEROUS TREE
	DENOTES DECIDUOUS TREE

LEGAL LEGEND

■	DENOTES MONUMENT FOUND
□	DENOTES MONUMENT PLANTED
SIB	DENOTES STANDARD IRON BAR
SSIB	DENOTES SHORT STANDARD IRON BAR
IB	DENOTES IRON BAR
CP	DENOTES CONCRETE PIN
AGM	DENOTES ARCHIBALD, GRAY & McKAY LTD., O.L.S.'s
1355	DENOTES BRIAN VAUGHAN O.L.S.
1582	DENOTES KIM HUSTED SURVEYING LTD., O.L.S.
741	DENOTES D. I. HOUGHTON, O.L.S.
MTO	DENOTES THE MINISTRY OF TRANSPORTATION
P1	DENOTES PLAN 11M–212
P2	DENOTES PLAN 11R–6065
P3	DENOTES PLAN 11R–4464
P4	DENOTES PLAN 11R–9074
P5	DENOTES PLAN 11R–5725
P6	DENOTES PLAN 11R–9923

UTM GRID NOTES

BEARINGS ARE U.T.M. GRID NAD83 (CSRS) EPOCH(2010), DERIVED FROM G.N.S.S. OBSERVATIONS AND THE LEICA SMARTNET BASE STATION NETWORK AND ARE REFERRED TO THE CENTRAL MERIDIAN 81°00' WEST LONGITUDE, ZONE 17.

DISTANCES SHOWN ON THIS PLAN ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.999575378322.

OBSERVED REFERENCE POINTS (ORPs) DERIVED FROM G.N.S.S. OBSERVSTIONS USING REAL TIME NETWORK (RTN). U.T.M. ZONE 17, NAD83 (CSRS) EPOCH(2010). COORDINATES TO URBAN ACCURACY PER SEC. 14(2) OF O.REG. 216/10

POINT ID	NORTHING	EASTING
ORP 10	4725161.151	483223.628
ORP 11	4725333.207	483408.242

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE–ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

FOR BEARING COMPARISONS, A ROTATION OF 00°44'35" COUNTER CLOCKWISE WAS APPLIED TO BEARINGS ON PLAN 11M–212 AND PLAN 11R–9923, A ROTATION OF 00°08'50" COUNTER CLOCKWISE WAS APPLIED TO BEARINGS ON PLAN 11R–4464 AND PLAN 11R–6065, A ROTATION OF 00°06'30" CLOCKWISE WAS APPLIED TO BEARINGS ON PLAN 11R–5725 AND PLAN 11R–9074.

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

BENCHMARK

ELEVATIONS ARE GEODETIC CGVD28(HTV2.0), DERIVED FROM G.P.S. OBSERVATIONS AND THE LEICA GPS SMARTNET NETWORK AND ARE REFERRED TO POINT NO. ORP 10, BEING A RE–BAR AS NOTED ON THE PLAN. ELEVATION = 214.667m

SITE BENCHMARKS

AS INDICATED ON THE FACE OF THIS PLAN.

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
0000000
THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR
In accordance with Regulation 1026, Section 29(3).

SURVEYOR'S CERTIFICATE:

I CERTIFY THAT:

1) THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.

2) THE SURVEY WAS COMPLETED ON THE 9th DAY OF JANUARY, 2021.

JASON WILBAND
ONTARIO LAND SURVEYOR

AGM PLAN • SURVEY • ENGINEER
ARCHIBALD, GRAY & McKAY LTD.
3514 WHITE OAK ROAD, LONDON, ON, N6E 2Z9
PHONE 519-685-5300 FAX 519-685-5303
EMAIL info@agm.on.ca WEB www.agm.on.ca

DRAWN BY: CRC	DIGITAL FILE: YA2011TP1C13.dwg	PLAN No:
CHECKED BY: ?	JOB FILE: YA2011	9-L-5624
Plot date: Jan 20, 2021	FILE No: YA–02–02–1	

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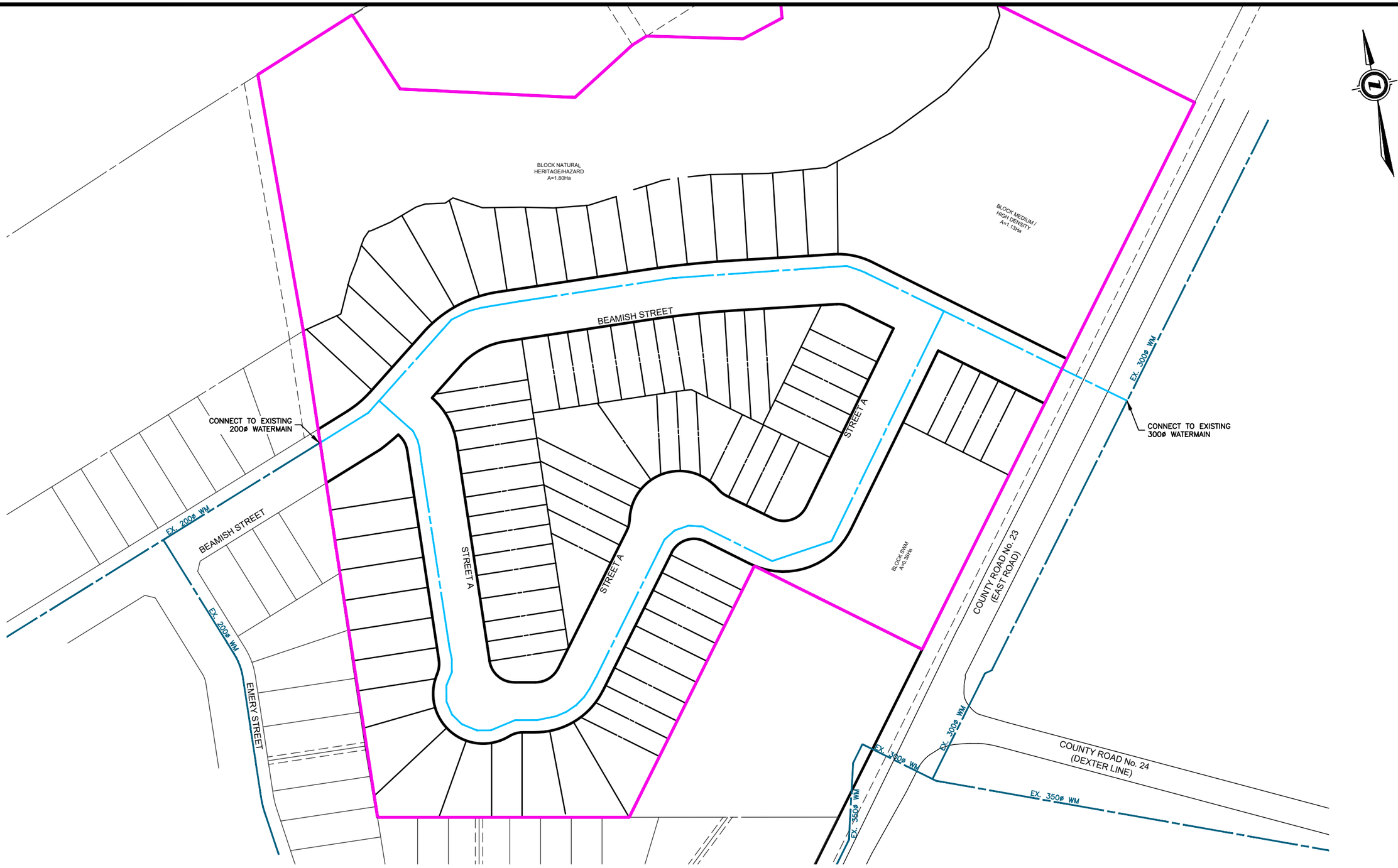
Appendix B: Water Servicing Figure



LEGEND

- PROPOSED LOCAL WATERMAIN
- EXISTING WATERMAIN
- LIMIT OF DRAFT PLAN

London Office
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Paris Office
31 Mechanic St., Unit 301
(519) 442-1441

development engineering (London) Limited
CONSULTING CIVIL ENGINEERS

CREVITS FARM SUBDIVISION
PORT STANLEY, ONTARIO

CONCEPTUAL WATER SERVICING STRATEGY

SCALE: 1:1500

PROJECT N°: DEL20-059

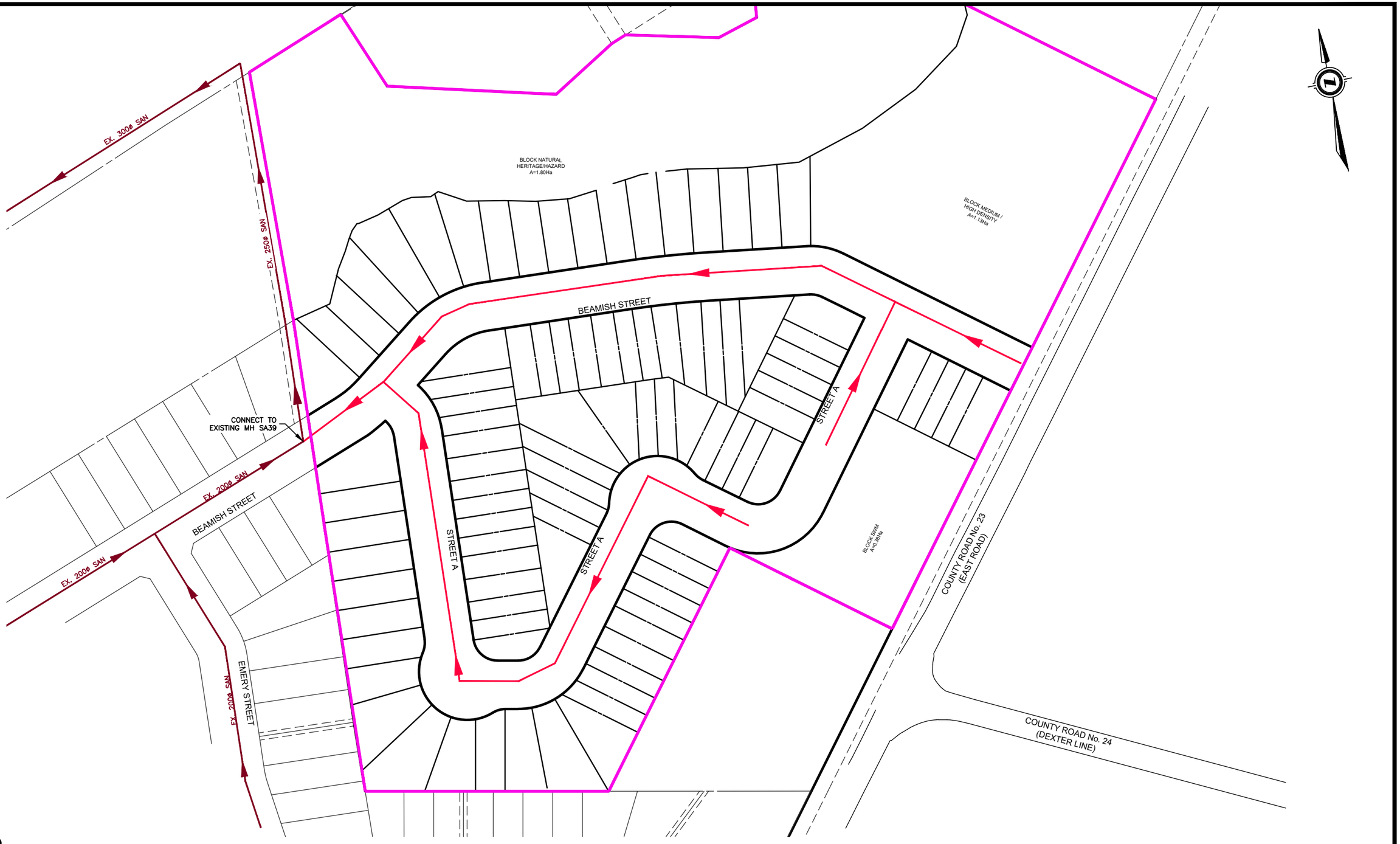
DRAWN BY: MG

DATE: SEP. 2024

Figure Number: 1

Plotted: Sep.25/24--3:52pm Name: DEL20-059 -- Servicing Figures.dwg

Appendix C: Sanitary Servicing Figure & Design Flow Calculations



LEGEND

- EXISTING GRAVITY SANITARY SYSTEM
- PROPOSED GRAVITY SANITARY SYSTEM
- LIMIT OF DRAFT PLAN

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CREVITS FARM SUBDIVISION
PORT STANLEY, ONTARIO

CONCEPTUAL SANITARY SERVICING STRATEGY

SCALE: 1:1500

PROJECT N°: DEL20-059

DRAWN BY: MG

DATE: SEP. 2024

Figure Number: 2

Preliminary Sanitary Calculations

Project Name:	**DEL20-059: Crevits Farm Subdivision**
Project Location:	**Port Stanley, ON**

Preliminary Subdivision Sewage Design Flows

Area No.	Area Name	Area (ha)	Equivalent Population	Ave. Day Volume (L/day)	Ave. Day Flow (L/s)	Infiltration (L/s)	Harmon Peaking Factor	Peak Flows (L/s)
1	Single Detached Lots	1.95	96	24,000	0.28	0.20	-	-
2	Street Towns (Semi Detached)	2.86	151	37,800	0.44	0.29	-	-
3	Medium/High-Density Residential	1.24	115	28,800	0.33	0.12	-	-
Total		6.05	362	90,600	1.05	0.61	4.04	4.84

Design Criteria: Residential population based on 32 Units of Single Family lots (3.0 p/unit), 63 units of semi-detatched lots (2.4 p/unit), and 72 medium/high density block residential units (1.6 p/unit).

Res. Peaking Factor (M) = $1 + 14 / (4 + \sqrt{P})$

Residential Design Flow (L/person/day) = 250 County Design Standard

MOE Infiltraton Rate (L/ha/day) = 8,640 (0.10 L/s/ha) (Central Elgin Design Guidelines)

ADF = Pop x Per Capita Unit Flow

Sewage = (ADF x 1.1 x / 86,400) + Infiltration x Area

Appendix D: Storm Servicing Figure

LEGEND

- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- MAJOR OVERLAND FLOW PATH
- LIMIT OF DRAFT PLAN
- SWMF DRAINAGE AREA
- UNCONTROLLED DRAINAGE AREA

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CONSULTING CIVIL ENGINEERS

CREVITS FARM SUBDIVISION
PORT STANLEY, ONTARIO

CONCEPTUAL STORM SERVICING STRATEGY

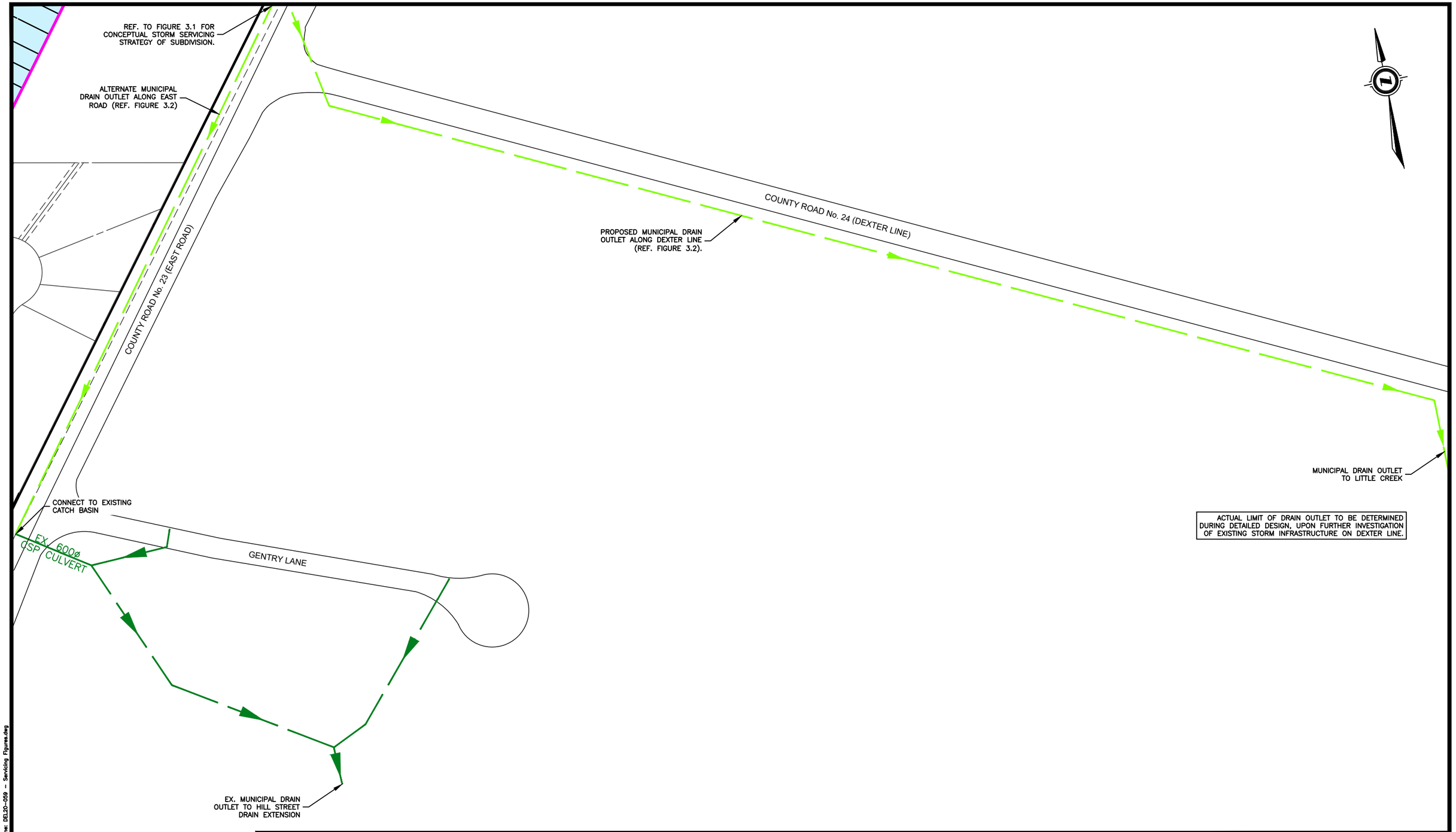
SCALE: 1:1500

PROJECT N°: DEL20-059

DRAWN BY: MG/KZ

DATE: OCT. 2024

Figure Number 3.1



LEGEND

EXISTING STORM SEWER

PROPOSED STORM SEWER

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CONSULTING CIVIL ENGINEERS

CREVITS FARM SUBDIVISION
PORT STANLEY, ONTARIO

CONCEPTUAL STORM OUTLET CONFIGURATIONS

SCALE: 1:1500

PROJECT N°: DEL20-059

DRAWN BY: MG/KZ

DATE: OCT. 2024

Figure Number 3.2

Appendix E: SWM Modelling & Calculations

EXISTING NATURAL HERITAGE/HAZARD AREA TRIBUTARY TO NORTH

E2
2.03 | 0.20

E1
6.20 | 0.20

P8
1.80 | 0.20

P5
1.04 | 0.50

P2
1.24 | 0.70

P4
1.00 | 0.65

P7
0.64 | 0.65

P3
1.14 | 0.65

P1
0.47 | 0.35

P6
0.91 | 0.50

BEAMISH STREET
STREET A
EMERY STREET
COUNTY ROAD No. 24 (DEXTER LINE)
COUNTY ROAD No. 23 (EAST ROAD)

EXISTING CONDITIONS

PROPOSED CONDITIONS

LEGEND

- MAJOR OVERLAND FLOW PATH
- LIMIT OF DRAFT PLAN
- CATCHMENT AREA BOUNDARY
- UNCONTROLLED DRAINAGE AREA
- EX. TRIB. AREA TO EAST ROAD
- PROP. SWMF DRAINAGE AREA

AREA (Ha) | A0 (AREA NUMBER) | 99.99 | 0.95 (RUNOFF COEFF. (C))

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development engineering (London) Limited
CONSULTING CIVIL ENGINEERS

CREVITS FARM SUBDIVISION PORT STANLEY, ONTARIO

CONCEPTUAL SWM CATCHMENT PLANS

SCALE: 1:2000

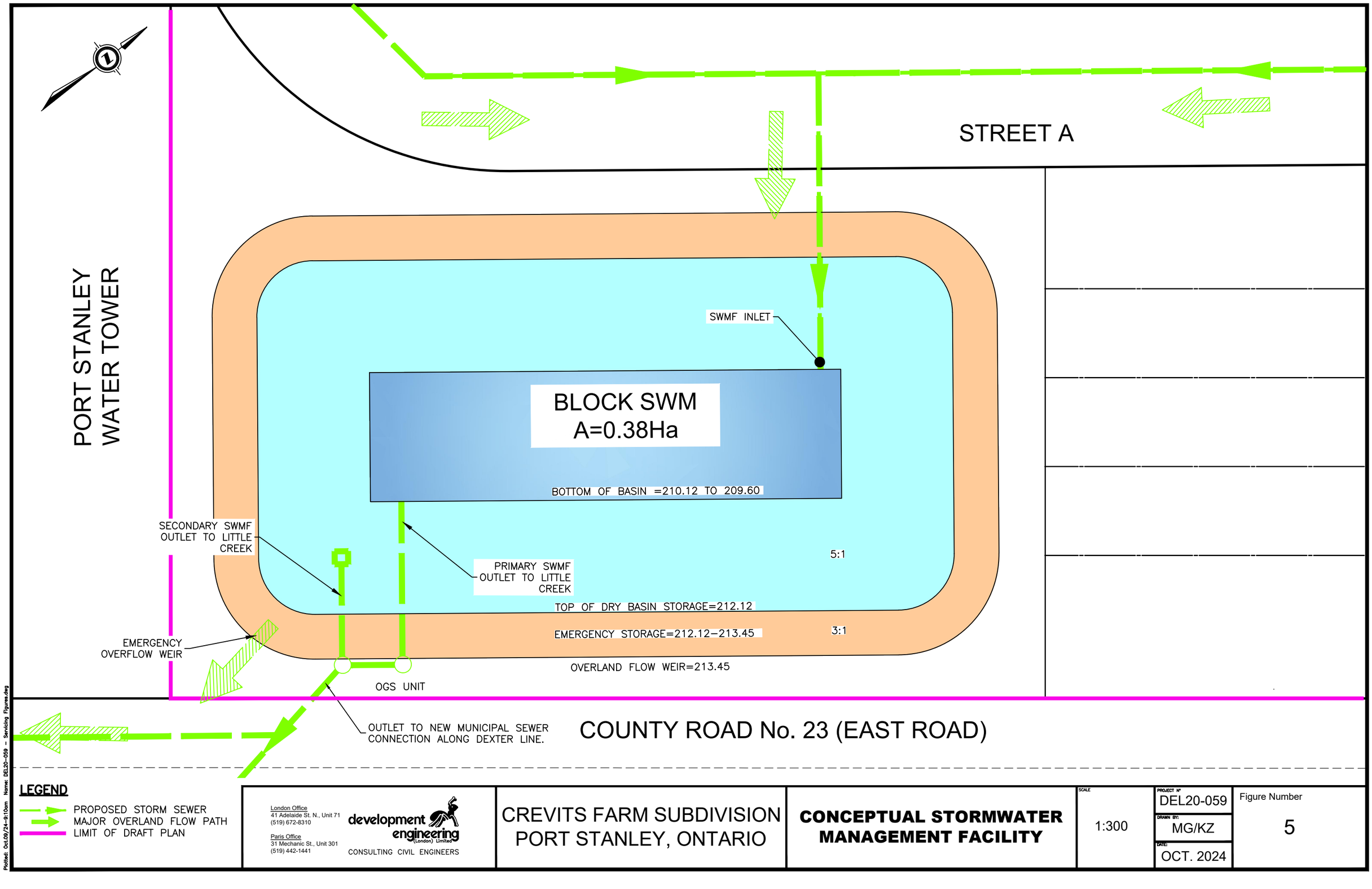
PROJECT N°: DEL20-059

DRAWN BY: MG

DATE: SEP. 2024

Figure Number 4

Plotted: Sep.18/24–3:51pm Name: DEL20-059 – Servicing Figures.dwg



LEGEND

- PROPOSED STORM SEWER
- MAJOR OVERLAND FLOW PATH
- LIMIT OF DRAFT PLAN

London Office
41 Adelaide St. N., Unit 71
(519) 672-8310

Paris Office
31 Mechanic St., Unit 301
(519) 442-1441

development engineering (London) Limited
CONSULTING CIVIL ENGINEERS

CREVITS FARM SUBDIVISION
PORT STANLEY, ONTARIO

CONCEPTUAL STORMWATER MANAGEMENT FACILITY

SCALE: 1:300

PROJECT N°: DEL20-059

DRAWN BY: MG/KZ

DATE: OCT. 2024

Figure Number 5

Plotted: Oct.09/24-9:10am Name: DEL20-059 - Servicing Figures.dwg

development engineering (London) Limited

CONSULTING CIVIL ENGINEERS

DEL20-059: Crevits Farm Subdivision, Port Stanley
Prepared By: M. Gabion, E.I.T.
Checked By: K.Zehr, P.Eng. & J. Bakker, P. Eng.
Date: Wednesday, September 18, 2024

Summary of Site Characteristics

Runoff Area	Area (m^2)	Area (Ha)	Imp. Area (m^2)	Imperv. (%)	Runoff Coeff. (C)
Existing Conditions					
E1 - Existing Farm Field	62,000	6.20	0	0%	0.20
E2 - Existing Natural Heritage/Hazard Area	20,302	2.03	0	0%	0.20
Total Tributary Area =	**82,302**	**8.23**	**0**	**0%**	**0.20**
Proposed Conditions					
P1 - SWM Block & Fronting ROW	4,720	0.47	1,416	30%	0.41
P2 - Medium / High Density Block	12,350	1.24	8,769	71%	0.70
P3 - Street Towns - Units 12-36	11,400	1.14	7,296	64%	0.65
P4 - Street Towns - Units 1-11, 52-63	9,985	1.00	6,390	64%	0.65
P5 - Single Detatched Lots - Lots 1-18	10,410	1.04	4,476	43%	0.50
P6 - Single Detatched Lots - Lots 19-32	9,065	0.91	3,898	43%	0.50
P7 - Street Towns - Units 37-51	6,380	0.64	4,083	64%	0.65
P8 - Natural Heritage / Hazard Block	17,992	1.80	0	0%	0.20
Total Tributary Area =	**82,302**	**8.23**	**36,328**	**44%**	**0.51**

development engineering (London) Limited
CONSULTING CIVIL ENGINEERS

DEL20-059: Crevits Farm Subdivision, Port Stanley
Prepared By: M. Gabion, E.I.T.
Checked By: K.Zehr, P.Eng. & J. Bakker, P. Eng.
Date: September 25, 2024

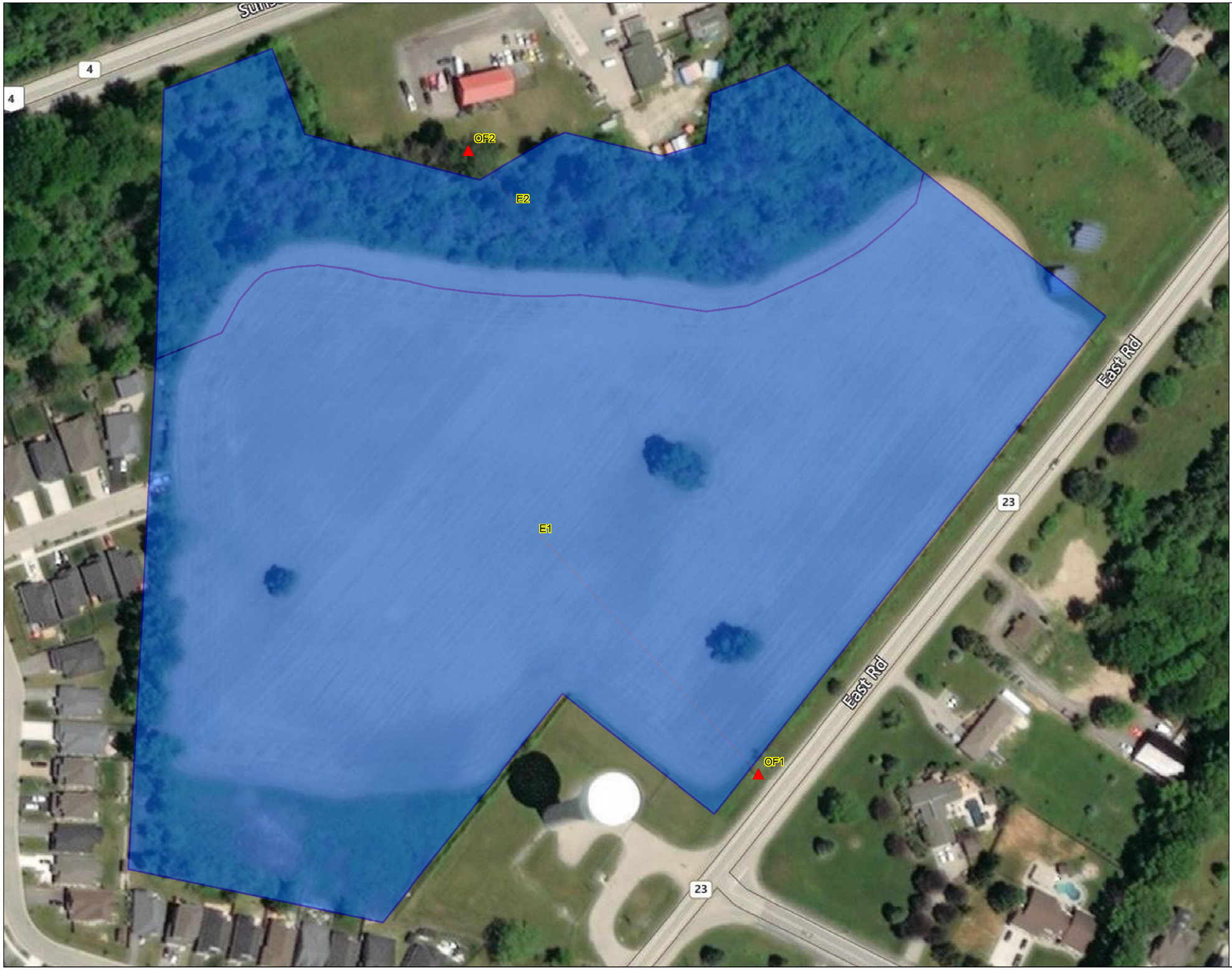
Table 2: Summary of Flows

SITE CHARACTERISTICS

Existing Conditions =	8.23	ha	Proposed Conditions =	8.23	ha
Runoff Coefficient =	0.20	C	Runoff Coefficient =	0.51	C
% Imperviousness =	0%	%	% Imperviousness =	44%	%

Storm Event	Existing Conditions		Proposed Conditions							
	Peak Site Runoff - South (L/s)	Peak Site Runoff - Heritage Block (L/s)	Site Peak Runoff (L/s)	Max. Basin Storage Volume (m^3)	Max. Ponding Depth / HGL (m)	Peak Minor Outflow - 125mm Orifice (L/s)	Peak Minor Outflow - DICB (L/s)	Peak Major Overland Flow (L/s)	Peak Uncontrolled Runoff - Heritage Block (L/s)	Total Peak Site Outflow to Little Creek* (L/s)
2-year	48	26	1,070	1,061	1.54 / 211.14	42	0	0	23	42
5-year	99	70	1,606	1,597	1.94 / 211.54	48	0	0	62	48
10-year	143	117	2,032	1,973	2.17 / 211.77	51	0	0	104	51
25-year	210	187	2,594	2,237	2.32 / 211.92	52	73	0	166	125
50-year	267	265	3,038	2,316	2.37 / 211.97	53	137	0	235	190
100-year	332	360	3,513	2,401	2.41 / 212.01	53	219	0	319	272
Hurricane Hazel (48hr)	796	285	1191	5,215	3.68 / 213.28	66	377	0	176	439

*Note: Total peak site outflows do not necessarily reflect actual peak outflows due to hydrograph time shifts.



Legend

- Outfalls

Subcatchments

- < 20 %
- 20 - 40 %
- 40 - 60 %
- 60 - 80 %
- > 80 %
- Building

DEL20-059 - Crevits Farm
Existing Conditions
Schematic

N

50 m

```
[TITLE]
DEL20-059 - Existing Conditions

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

START_DATE           04/10/2015
START_TIME           00:00:00
REPORT_START_DATE    04/10/2015
REPORT_START_TIME    00:00:00
END_DATE             04/12/2015
END_TIME             00:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          00:01:00
WET_STEP             00:01:00
DRY_STEP             00:01:00
ROUTING_STEP         1

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
MAX_TRIALS           8
HEAD_TOLERANCE       0.0015
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              2

[EVAPORATION]
;;Type          Parameters
;;------------- ----------
CONSTANT         0.0
DRY_ONLY         NO

[RAINGAGES]
;;               Rain      Time     Snow     Data
;;Name           Type      Intrvl   Catch    Source
;;-------------- --------- -------- -------- ----------
Central_elgin    INTENSITY 0:05     1.0      TIMESERIES 2-yr_Central_Elgin

[SUBCATCHMENTS]
;;                                              Total     Pcnt.             Pcnt.    Curb     Snow
;;Name           Raingage         Outlet          Area      Imperv   Width    Slope    Length   Pack
;;-------------- ---------------- --------------- -------- -------- -------- -------- -------- --------
E1               Central_elgin    OF1             6.2      0        335.135  1        0
E2               Central_elgin    OF2             2.03     0        253.75   27.5     0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
E1               0.013      0.15       2          4          25         OUTLET
E2               0.013      0.15       2          4          25         OUTLET

[INFILTRATION]
;;Subcatchment   CurveNum   HydCon     DryTime
;;-------------- ---------- ---------- ----------
E1               86         0.5        7
E2               80         12.7       7

[OUTFALLS]
;;               Invert     Outfall    Stage/Table      Tide
;;Name           Elev.      Type       Time Series      Gate     Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
OF1              0          FREE                        NO
OF2              0          FREE                        NO

[TIMESERIES]
```

DEL20-059: Crevits Farm Subdivision
Existing Conditions PCSWMM Input

```
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
100-yr_Central_Elgin            0:00       7.364
100-yr_Central_Elgin            0:05       7.825
100-yr_Central_Elgin            0:10       8.364
100-yr_Central_Elgin            0:15       9.002
100-yr_Central_Elgin            0:20       9.773
100-yr_Central_Elgin            0:25       10.726
100-yr_Central_Elgin            0:30       11.942
100-yr_Central_Elgin            0:35       13.559
100-yr_Central_Elgin            0:40       15.836
100-yr_Central_Elgin            0:45       19.346
100-yr_Central_Elgin            0:50       25.676
100-yr_Central_Elgin            0:55       42.252
100-yr_Central_Elgin            1:00       289.329
100-yr_Central_Elgin            1:05       70.319
100-yr_Central_Elgin            1:10       43.093
100-yr_Central_Elgin            1:15       31.536
100-yr_Central_Elgin            1:20       25.459
100-yr_Central_Elgin            1:25       21.619
100-yr_Central_Elgin            1:30       18.94
100-yr_Central_Elgin            1:35       16.946
100-yr_Central_Elgin            1:40       15.395
100-yr_Central_Elgin            1:45       14.149
100-yr_Central_Elgin            1:50       13.123
100-yr_Central_Elgin            1:55       12.26
100-yr_Central_Elgin            2:00       11.523
100-yr_Central_Elgin            2:05       10.886
100-yr_Central_Elgin            2:10       10.327
100-yr_Central_Elgin            2:15       9.833
100-yr_Central_Elgin            2:20       9.393
100-yr_Central_Elgin            2:25       8.998
100-yr_Central_Elgin            2:30       8.641
100-yr_Central_Elgin            2:35       8.316
100-yr_Central_Elgin            2:40       8.02
100-yr_Central_Elgin            2:45       7.748
100-yr_Central_Elgin            2:50       7.497
100-yr_Central_Elgin            2:55       7.265
100-yr_Central_Elgin            3:00       0

10-yr_Central_Elgin             0:00       5.147
10-yr_Central_Elgin             0:05       5.469
10-yr_Central_Elgin             0:10       5.846
10-yr_Central_Elgin             0:15       6.293
10-yr_Central_Elgin             0:20       6.833
10-yr_Central_Elgin             0:25       7.5
10-yr_Central_Elgin             0:30       8.352
10-yr_Central_Elgin             0:35       9.484
10-yr_Central_Elgin             0:40       11.08
10-yr_Central_Elgin             0:45       13.54
10-yr_Central_Elgin             0:50       17.977
10-yr_Central_Elgin             0:55       29.606
10-yr_Central_Elgin             1:00       203.6
10-yr_Central_Elgin             1:05       49.313
10-yr_Central_Elgin             1:10       30.196
10-yr_Central_Elgin             1:15       22.087
10-yr_Central_Elgin             1:20       17.825
10-yr_Central_Elgin             1:25       15.133
10-yr_Central_Elgin             1:30       13.255
10-yr_Central_Elgin             1:35       11.857
10-yr_Central_Elgin             1:40       10.771
10-yr_Central_Elgin             1:45       9.898
10-yr_Central_Elgin             1:50       9.179
10-yr_Central_Elgin             1:55       8.575
10-yr_Central_Elgin             2:00       8.059
10-yr_Central_Elgin             2:05       7.612
10-yr_Central_Elgin             2:10       7.221
10-yr_Central_Elgin             2:15       6.875
10-yr_Central_Elgin             2:20       6.567
10-yr_Central_Elgin             2:25       6.29
10-yr_Central_Elgin             2:30       6.04
10-yr_Central_Elgin             2:35       5.813
10-yr_Central_Elgin             2:40       5.606
10-yr_Central_Elgin             2:45       5.415
10-yr_Central_Elgin             2:50       5.24
10-yr_Central_Elgin             2:55       5.077
10-yr_Central_Elgin             3:00       0

25-yr_Central_Elgin             0:00       6.054
25-yr_Central_Elgin             0:05       6.433
```

```
25-yr_Central_Elgin          0:10       6.876
25-yr_Central_Elgin          0:15       7.401
25-yr_Central_Elgin          0:20       8.034
25-yr_Central_Elgin          0:25       8.818
25-yr_Central_Elgin          0:30       9.818
25-yr_Central_Elgin          0:35       11.147
25-yr_Central_Elgin          0:40       13.019
25-yr_Central_Elgin          0:45       15.905
25-yr_Central_Elgin          0:50       21.108
25-yr_Central_Elgin          0:55       34.736
25-yr_Central_Elgin          1:00       237.862
25-yr_Central_Elgin          1:05       57.81
25-yr_Central_Elgin          1:10       35.428
25-yr_Central_Elgin          1:15       25.927
25-yr_Central_Elgin          1:20       20.93
25-yr_Central_Elgin          1:25       17.774
25-yr_Central_Elgin          1:30       15.57
25-yr_Central_Elgin          1:35       13.931
25-yr_Central_Elgin          1:40       12.657
25-yr_Central_Elgin          1:45       11.632
25-yr_Central_Elgin          1:50       10.789
25-yr_Central_Elgin          1:55       10.079
25-yr_Central_Elgin          2:00       9.474
25-yr_Central_Elgin          2:05       8.949
25-yr_Central_Elgin          2:10       8.49
25-yr_Central_Elgin          2:15       8.084
25-yr_Central_Elgin          2:20       7.722
25-yr_Central_Elgin          2:25       7.397
25-yr_Central_Elgin          2:30       7.104
25-yr_Central_Elgin          2:35       6.837
25-yr_Central_Elgin          2:40       6.593
25-yr_Central_Elgin          2:45       6.369
25-yr_Central_Elgin          2:50       6.163
25-yr_Central_Elgin          2:55       5.973
25-yr_Central_Elgin          3:00       0

2-yr_Central_Elgin           0:00       3.377
2-yr_Central_Elgin           0:05       3.589
2-yr_Central_Elgin           0:10       3.836
2-yr_Central_Elgin           0:15       4.128
2-yr_Central_Elgin           0:20       4.482
2-yr_Central_Elgin           0:25       4.919
2-yr_Central_Elgin           0:30       5.477
2-yr_Central_Elgin           0:35       6.218
2-yr_Central_Elgin           0:40       7.263
2-yr_Central_Elgin           0:45       8.873
2-yr_Central_Elgin           0:50       11.775
2-yr_Central_Elgin           0:55       19.378
2-yr_Central_Elgin           1:00       132.694
2-yr_Central_Elgin           1:05       32.25
2-yr_Central_Elgin           1:10       19.764
2-yr_Central_Elgin           1:15       14.463
2-yr_Central_Elgin           1:20       11.676
2-yr_Central_Elgin           1:25       9.915
2-yr_Central_Elgin           1:30       8.686
2-yr_Central_Elgin           1:35       7.772
2-yr_Central_Elgin           1:40       7.061
2-yr_Central_Elgin           1:45       6.489
2-yr_Central_Elgin           1:50       6.018
2-yr_Central_Elgin           1:55       5.623
2-yr_Central_Elgin           2:00       5.285
2-yr_Central_Elgin           2:05       4.992
2-yr_Central_Elgin           2:10       4.736
2-yr_Central_Elgin           2:15       4.51
2-yr_Central_Elgin           2:20       4.308
2-yr_Central_Elgin           2:25       4.127
2-yr_Central_Elgin           2:30       3.963
2-yr_Central_Elgin           2:35       3.814
2-yr_Central_Elgin           2:40       3.678
2-yr_Central_Elgin           2:45       3.553
2-yr_Central_Elgin           2:50       3.438
2-yr_Central_Elgin           2:55       3.332
2-yr_Central_Elgin           3:00       0

50-yr_Central_Elgin          0:00       6.701
50-yr_Central_Elgin          0:05       7.121
50-yr_Central_Elgin          0:10       7.611
50-yr_Central_Elgin          0:15       8.192
50-yr_Central_Elgin          0:20       8.893
50-yr_Central_Elgin          0:25       9.761
```

DEL20-059: Crevits Farm Subdivision
Existing Conditions PCSWMM Input

```
50-yr_Central_Elgin          0:30       10.868
50-yr_Central_Elgin          0:35       12.339
50-yr_Central_Elgin          0:40       14.411
50-yr_Central_Elgin          0:45       17.605
50-yr_Central_Elgin          0:50       23.365
50-yr_Central_Elgin          0:55       38.45
50-yr_Central_Elgin          1:00       263.294
50-yr_Central_Elgin          1:05       63.991
50-yr_Central_Elgin          1:10       39.216
50-yr_Central_Elgin          1:15       28.699
50-yr_Central_Elgin          1:20       23.168
50-yr_Central_Elgin          1:25       19.674
50-yr_Central_Elgin          1:30       17.235
50-yr_Central_Elgin          1:35       15.421
50-yr_Central_Elgin          1:40       14.01
50-yr_Central_Elgin          1:45       12.876
50-yr_Central_Elgin          1:50       11.942
50-yr_Central_Elgin          1:55       11.157
50-yr_Central_Elgin          2:00       10.486
50-yr_Central_Elgin          2:05       9.906
50-yr_Central_Elgin          2:10       9.398
50-yr_Central_Elgin          2:15       8.948
50-yr_Central_Elgin          2:20       8.548
50-yr_Central_Elgin          2:25       8.188
50-yr_Central_Elgin          2:30       7.863
50-yr_Central_Elgin          2:35       7.568
50-yr_Central_Elgin          2:40       7.298
50-yr_Central_Elgin          2:45       7.05
50-yr_Central_Elgin          2:50       6.822
50-yr_Central_Elgin          2:55       6.611
50-yr_Central_Elgin          3:00       0

5-yr_Central_Elgin           0:00       4.446
5-yr_Central_Elgin           0:05       4.725
5-yr_Central_Elgin           0:10       5.05
5-yr_Central_Elgin           0:15       5.435
5-yr_Central_Elgin           0:20       5.9
5-yr_Central_Elgin           0:25       6.476
5-yr_Central_Elgin           0:30       7.21
5-yr_Central_Elgin           0:35       8.186
5-yr_Central_Elgin           0:40       9.561
5-yr_Central_Elgin           0:45       11.681
5-yr_Central_Elgin           0:50       15.502
5-yr_Central_Elgin           0:55       25.51
5-yr_Central_Elgin           1:00       174.688
5-yr_Central_Elgin           1:05       42.457
5-yr_Central_Elgin           1:10       26.018
5-yr_Central_Elgin           1:15       19.041
5-yr_Central_Elgin           1:20       15.371
5-yr_Central_Elgin           1:25       13.053
5-yr_Central_Elgin           1:30       11.435
5-yr_Central_Elgin           1:35       10.231
5-yr_Central_Elgin           1:40       9.295
5-yr_Central_Elgin           1:45       8.543
5-yr_Central_Elgin           1:50       7.923
5-yr_Central_Elgin           1:55       7.402
5-yr_Central_Elgin           2:00       6.957
5-yr_Central_Elgin           2:05       6.572
5-yr_Central_Elgin           2:10       6.235
5-yr_Central_Elgin           2:15       5.937
5-yr_Central_Elgin           2:20       5.671
5-yr_Central_Elgin           2:25       5.433
5-yr_Central_Elgin           2:30       5.217
5-yr_Central_Elgin           2:35       5.021
5-yr_Central_Elgin           2:40       4.842
5-yr_Central_Elgin           2:45       4.678
5-yr_Central_Elgin           2:50       4.526
5-yr_Central_Elgin           2:55       4.386
5-yr_Central_Elgin           3:00       0

Hazel48                      0          2.0278
Hazel48                      1          2.0278
Hazel48                      2          2.0278
Hazel48                      3          2.0278
Hazel48                      4          2.0278
Hazel48                      5          2.0278
Hazel48                      6          2.0278
Hazel48                      7          2.0278
Hazel48                      8          2.0278
Hazel48                      9          2.0278
```

```
Hazel48                  10         2.0278
Hazel48                  11         2.0278
Hazel48                  12         2.0278
Hazel48                  13         2.0278
Hazel48                  14         2.0278
Hazel48                  15         2.0278
Hazel48                  16         2.0278
Hazel48                  17         2.0278
Hazel48                  18         2.0278
Hazel48                  19         2.0278
Hazel48                  20         2.0278
Hazel48                  21         2.0278
Hazel48                  22         2.0278
Hazel48                  23         2.0278
Hazel48                  24         2.0278
Hazel48                  25         2.0278
Hazel48                  26         2.0278
Hazel48                  27         2.0278
Hazel48                  28         2.0278
Hazel48                  29         2.0278
Hazel48                  30         2.0278
Hazel48                  31         2.0278
Hazel48                  32         2.0278
Hazel48                  33         2.0278
Hazel48                  34         2.0278
Hazel48                  35         2.0278
Hazel48                  36         6
Hazel48                  37         4
Hazel48                  38         6
Hazel48                  39         13
Hazel48                  40         17
Hazel48                  41         13
Hazel48                  42         23
Hazel48                  43         13
Hazel48                  44         13
Hazel48                  45         53
Hazel48                  46         38
Hazel48                  47         13
Hazel48                  48         0

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

[TAGS]

[MAP]
DIMENSIONS       482994.61275     4725100.11105    483411.56225     4725471.00795
UNITS            Meters

[COORDINATES]
;;Node            X-Coord          Y-Coord
;;--------------- ---------------- ----------------
OF1              483257.738       4725173.948
OF2              483145.936       4725414.825

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

[POLYGONS]
;;Subcatchment    X-Coord          Y-Coord
;;--------------- ---------------- ----------------
E1               483024.719       4725334.396
E1               483050.196       4725344.626
E1               483057.184       4725357.221
E1               483063.253       4725364.409
E1               483067.033       4725367.546
E1               483071.102       4725368.8
E1               483079.262       4725370.02
E1               483087.675       4725370.662
E1               483099.568       4725369.087
E1               483111.798       4725365.813
E1               483122.26        4725364.419
E1               483133.393       4725362.005
E1               483147.862       4725360.027
```

DEL20-059: Crevits Farm Subdivision
Existing Conditions PCSWMM Input

```
E1               483164.293       4725358.586
E1               483176.089       4725358.397
E1               483188.68        4725358.896
E1               483209.545       4725356.916
E1               483223.003       4725354.558
E1               483238.207       4725352.421
E1               483253.94        4725354.581
E1               483271.692       4725362.247
E1               483283.35        4725367.501
E1               483296.451       4725374.904
E1               483299.371       4725376.656
E1               483310.838       4725385.929
E1               483319.34        4725393.941
E1               483322.409       4725405.859
E1               483392.61        4725350.242
E1               483240.741       4725158.45
E1               483181.907       4725205.071
E1               483112.108       4725116.97
E1               483013.565       4725137.766
E1               483024.719       4725334.396
E2               483024.719       4725334.396
E2               483028.142       4725438.601
E2               483069.987       4725454.149
E2               483082.642       4725421.168
E2               483150.33        4725403.407
E2               483177.178       4725419.19
E2               483183.492       4725421.543
E2               483221.008       4725412.455
E2               483238.037       4725417.384
E2               483240.273       4725436.493
E2               483269.864       4725447.488
E2               483322.409       4725405.859
E2               483319.34        4725393.941
E2               483310.838       4725385.929
E2               483299.371       4725376.656
E2               483296.236       4725374.752
E2               483283.35        4725367.501
E2               483271.692       4725362.247
E2               483253.94        4725354.581
E2               483238.207       4725352.421
E2               483223.003       4725354.558
E2               483209.545       4725356.916
E2               483188.68        4725358.896
E2               483176.089       4725358.397
E2               483164.293       4725358.586
E2               483146.832       4725360.037
E2               483132.921       4725361.889
E2               483120.365       4725364.85
E2               483111.798       4725365.813
E2               483105.073       4725367.613
E2               483104.978       4725367.876
E2               483099.568       4725369.087
E2               483087.675       4725370.662
E2               483079.262       4725370.02
E2               483071.102       4725368.8
E2               483067.033       4725367.546
E2               483063.253       4725364.409
E2               483057.184       4725357.221
E2               483050.196       4725344.626
E2               483024.719       4725334.396

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

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.012)
--------------------------------------------------------------

DEL20-059 - Existing Conditions


*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 2
Number of nodes ........... 2
Number of links ........... 0
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
------------------------------------------------------------------------
Central_elgin        2-yr_Central_Elgin          INTENSITY    5 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage            Outlet
-------------------------------------------------------------------------------------------
E1                           6.20    335.13      0.00    1.0000 Central_elgin        OF1
E2                           2.03    253.75      0.00   27.5000 Central_elgin        OF2


************
Node Summary
************
                                       Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
-----------------------------------------------------------------------------
OF1                  OUTFALL             0.00      0.00       0.0
OF2                  OUTFALL             0.00      0.00       0.0



**********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
**********************************************************

****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Starting Date ............ 04/10/2015 00:00:00
Ending Date .............. 04/12/2015 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00


*************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
*************************     ---------       -------
Total Precipitation ......         0.271        32.955
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.205        24.856
Surface Runoff ...........         0.056         6.838
```

DEL20-059: Crevits Farm Subdivision
2-Year Design Storm Event - Existing Conditions PCSWMM Output

```
Final Storage ............         0.010         1.261
Continuity Error (%) .....        -0.002


*************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
*************************     ---------      ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.056         0.563
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.056         0.563
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


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

-----------------------------------------------------------------------------------------------------------------
                         Total      Total      Total      Total      Total       Total      Peak    Runoff
                        Precip      Runon       Evap      Infil     Runoff      Runoff    Runoff    Coeff
Subcatchment                mm         mm         mm         mm         mm  10^6 ltr       LPS
-----------------------------------------------------------------------------------------------------------------
E1                       32.96       0.00       0.00      24.72       6.97        0.43     48.00    0.212
E2                       32.96       0.00       0.00      25.26       6.43        0.13     26.14    0.195


Analysis begun on:  Wed Sep 25 20:00:32 2024
Analysis ended on:  Wed Sep 25 20:00:32 2024
Total elapsed time: < 1 sec
```

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.012)
--------------------------------------------------------------

DEL20-059 - Existing Conditions


*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 2
Number of nodes ........... 2
Number of links ........... 0
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
------------------------------------------------------------------------
Central_elgin        5-yr_Central_Elgin          INTENSITY    5 min.


*******************
Subcatchment Summary
*******************
Name                         Area     Width   %Imperv    %Slope Rain Gage            Outlet
-------------------------------------------------------------------------------------------
E1                           6.20    335.13      0.00    1.0000 Central_elgin        OF1
E2                           2.03    253.75      0.00   27.5000 Central_elgin        OF2


************
Node Summary
************
                                       Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
------------------------------------------------------------------------------
OF1                  OUTFALL             0.00      0.00       0.0
OF2                  OUTFALL             0.00      0.00       0.0



*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

***************
Analysis Options
***************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Starting Date ............ 04/10/2015 00:00:00
Ending Date .............. 04/12/2015 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00


*************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
*************************     ---------       -------
Total Precipitation ......         0.357        43.385
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.234        28.447
Surface Runoff ...........         0.113        13.683
```

DEL20-059: Crevits Farm Subdivision
5-Year Design Storm Event - Existing Conditions PCSWMM Output

```
Final Storage ............         0.010         1.258
Continuity Error (%) .....        -0.007


*************************        Volume         Volume
Flow Routing Continuity        hectare-m       10^6 ltr
*************************     ---------       ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.113         1.126
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.113         1.126
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


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

-----------------------------------------------------------------------------------------------------------------
                         Total      Total      Total      Total      Total       Total      Peak    Runoff
                        Precip      Runon       Evap      Infil     Runoff      Runoff     Runoff    Coeff
Subcatchment                mm         mm         mm         mm         mm  10^6 ltr        LPS
-----------------------------------------------------------------------------------------------------------------
E1                       43.38       0.00       0.00      28.11      14.02        0.87     98.55    0.323
E2                       43.38       0.00       0.00      29.49      12.65        0.26     70.20    0.292


Analysis begun on:  Wed Sep 25 20:01:23 2024
Analysis ended on:  Wed Sep 25 20:01:23 2024
Total elapsed time: < 1 sec
```

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.012)
--------------------------------------------------------------

DEL20-059 - Existing Conditions


*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 2
Number of nodes ........... 2
Number of links ........... 0
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
----------------------------------------------------------------------
Central_elgin        10-yr_Central_Elgin         INTENSITY    5 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage            Outlet
-------------------------------------------------------------------------------------------
E1                           6.20    335.13      0.00    1.0000 Central_elgin        OF1
E2                           2.03    253.75      0.00   27.5000 Central_elgin        OF2


************
Node Summary
************
                                       Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
-----------------------------------------------------------------------------
OF1                  OUTFALL             0.00      0.00       0.0
OF2                  OUTFALL             0.00      0.00       0.0



**********************************************************
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not just on results from each reporting time step.
**********************************************************

****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Starting Date ............ 04/10/2015 00:00:00
Ending Date .............. 04/12/2015 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00


*************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
*************************     ---------       -------
Total Precipitation ......         0.415        50.386
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.250        30.347
Surface Runoff ...........         0.155        18.788
```

DEL20-059: Crevits Farm Subdivision
10-Year Design Storm Event - Existing Conditions PCSWMM Output

```
Final Storage ............         0.010         1.256
Continuity Error (%) .....        -0.011


*************************        Volume         Volume
Flow Routing Continuity        hectare-m       10^6 ltr
*************************     ---------       ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.155         1.546
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.155         1.546
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


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

-----------------------------------------------------------------------------------------------------------------
                         Total      Total      Total      Total      Total       Total      Peak    Runoff
                        Precip      Runon       Evap      Infil     Runoff      Runoff    Runoff    Coeff
Subcatchment                mm         mm         mm         mm         mm  10^6 ltr       LPS
-----------------------------------------------------------------------------------------------------------------
E1                       50.39       0.00       0.00      29.85      19.28        1.20    143.44    0.383
E2                       50.39       0.00       0.00      31.86      17.28        0.35    117.42    0.343


Analysis begun on:  Wed Sep 25 20:02:02 2024
Analysis ended on:  Wed Sep 25 20:02:02 2024
Total elapsed time: < 1 sec
```

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.012)
--------------------------------------------------------------

DEL20-059 - Existing Conditions


*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 2
Number of nodes ........... 2
Number of links ........... 0
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
------------------------------------------------------------------------
Central_elgin        25-yr_Central_Elgin         INTENSITY    5 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage            Outlet
------------------------------------------------------------------------------------------------
E1                           6.20    335.13      0.00    1.0000 Central_elgin        OF1
E2                           2.03    253.75      0.00   27.5000 Central_elgin        OF2


************
Node Summary
************
                                       Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
------------------------------------------------------------------------------
OF1                  OUTFALL             0.00      0.00       0.0
OF2                  OUTFALL             0.00      0.00       0.0


*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Starting Date ............ 04/10/2015 00:00:00
Ending Date .............. 04/12/2015 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00


*************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
*************************     ---------       -------
Total Precipitation ......         0.486        59.074
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.266        32.320
Surface Runoff ...........         0.210        25.506
```

DEL20-059: Crevits Farm Subdivision
25-Year Design Storm Event - Existing Conditions PCSWMM Output

```
Final Storage ............         0.010         1.256
Continuity Error (%) .....        -0.014


*************************        Volume         Volume
Flow Routing Continuity        hectare-m       10^6 ltr
*************************     ---------       ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.210         2.099
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.210         2.099
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


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

-----------------------------------------------------------------------------------------------------------------
                         Total       Total       Total       Total       Total       Total      Peak  Runoff
                        Precip       Runon        Evap       Infil      Runoff      Runoff    Runoff  Coeff
Subcatchment                mm          mm          mm          mm          mm    10^6 ltr       LPS
-----------------------------------------------------------------------------------------------------------------
E1                       59.07        0.00        0.00       31.62       26.20        1.62    210.19   0.443
E2                       59.07        0.00        0.00       34.45       23.39        0.47    187.02   0.396


Analysis begun on:  Wed Sep 25 20:02:35 2024
Analysis ended on:  Wed Sep 25 20:02:35 2024
Total elapsed time: < 1 sec
```

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.012)
--------------------------------------------------------------

DEL20-059 - Existing Conditions


*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 2
Number of nodes ........... 2
Number of links ........... 0
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
------------------------------------------------------------------------
Central_elgin        50-yr_Central_Elgin         INTENSITY    5 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage            Outlet
------------------------------------------------------------------------------------------------
E1                           6.20    335.13      0.00    1.0000 Central_elgin        OF1
E2                           2.03    253.75      0.00   27.5000 Central_elgin        OF2


************
Node Summary
************
                                       Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
------------------------------------------------------------------------------
OF1                  OUTFALL             0.00      0.00       0.0
OF2                  OUTFALL             0.00      0.00       0.0



***********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
***********************************************************

****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Starting Date ............ 04/10/2015 00:00:00
Ending Date .............. 04/12/2015 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00


*************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
*************************     ---------       -------
Total Precipitation ......         0.538        65.391
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.276        33.535
Surface Runoff ...........         0.252        30.608
```

DEL20-059: Crevits Farm Subdivision
50-Year Design Storm Event - Existing Conditions PCSWMM Output

```
Final Storage ............         0.010         1.257
Continuity Error (%) .....        -0.015


*************************        Volume         Volume
Flow Routing Continuity        hectare-m       10^6 ltr
*************************     ---------       ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.252         2.519
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.252         2.519
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


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

-----------------------------------------------------------------------------------------------------------------
                         Total      Total      Total      Total      Total       Total      Peak    Runoff
                        Precip      Runon       Evap      Infil     Runoff      Runoff     Runoff    Coeff
Subcatchment                mm         mm         mm         mm         mm  10^6 ltr        LPS
-----------------------------------------------------------------------------------------------------------------
E1                       65.39       0.00       0.00      32.70      31.44        1.95    266.68    0.481
E2                       65.39       0.00       0.00      36.10      28.06        0.57    265.28    0.429


Analysis begun on:  Wed Sep 25 20:03:00 2024
Analysis ended on:  Wed Sep 25 20:03:00 2024
Total elapsed time: < 1 sec
```

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.012)
--------------------------------------------------------------

DEL20-059 - Existing Conditions


*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 2
Number of nodes ........... 2
Number of links ........... 0
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
------------------------------------------------------------------------
Central_elgin        100-yr_Central_Elgin        INTENSITY    5 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage            Outlet
-------------------------------------------------------------------------------------------
E1                           6.20    335.13      0.00    1.0000 Central_elgin        OF1
E2                           2.03    253.75      0.00   27.5000 Central_elgin        OF2


************
Node Summary
************
                                       Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
------------------------------------------------------------------------------
OF1                  OUTFALL             0.00      0.00       0.0
OF2                  OUTFALL             0.00      0.00       0.0


***********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
***********************************************************

****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Starting Date ............ 04/10/2015 00:00:00
Ending Date .............. 04/12/2015 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00


*************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
*************************     ---------       -------
Total Precipitation ......         0.591        71.857
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.285        34.634
Surface Runoff ...........         0.296        35.980
```

DEL20-059: Crevits Farm Subdivision
100-Year Design Storm Event - Existing Conditions PCSWMM Output

```
Final Storage ............         0.010         1.255
Continuity Error (%) .....        -0.018


*************************        Volume         Volume
Flow Routing Continuity        hectare-m       10^6 ltr
*************************     ---------       ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.296         2.961
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.296         2.961
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


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

-----------------------------------------------------------------------------------------------------------------
                          Total       Total       Total       Total       Total       Total      Peak  Runoff
                         Precip       Runon        Evap       Infil      Runoff      Runoff    Runoff  Coeff
Subcatchment                 mm          mm          mm          mm          mm    10^6 ltr       LPS
-----------------------------------------------------------------------------------------------------------------
E1                        71.86        0.00        0.00       33.65       36.95        2.29    331.80   0.514
E2                        71.86        0.00        0.00       37.63       33.01        0.67    360.08   0.459


Analysis begun on:  Wed Sep 25 20:03:31 2024
Analysis ended on:  Wed Sep 25 20:03:31 2024
Total elapsed time: < 1 sec
```

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.012)
--------------------------------------------------------------

DEL20-059 - Existing Conditions


*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 2
Number of nodes ........... 2
Number of links ........... 0
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
----------------------------------------------------------------------
Central_elgin        Hazel48                     VOLUME      60 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage            Outlet
-------------------------------------------------------------------------------------------
E1                           6.20    335.13      0.00    1.0000 Central_elgin        OF1
E2                           2.03    253.75      0.00   27.5000 Central_elgin        OF2


************
Node Summary
************
                                       Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
-----------------------------------------------------------------------------
OF1                  OUTFALL             0.00      0.00       0.0
OF2                  OUTFALL             0.00      0.00       0.0



***********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
***********************************************************

***************
Analysis Options
***************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Starting Date ............ 04/10/2015 00:00:00
Ending Date .............. 04/12/2015 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00


*************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
*************************     ---------       -------
Total Precipitation ......         2.346       285.001
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.329        40.012
Surface Runoff ...........         1.861       226.128
```

DEL20-059: Crevits Farm Subdivision
Hurricane Hazel Design Storm Event - Existing Conditions PCSWMM Output

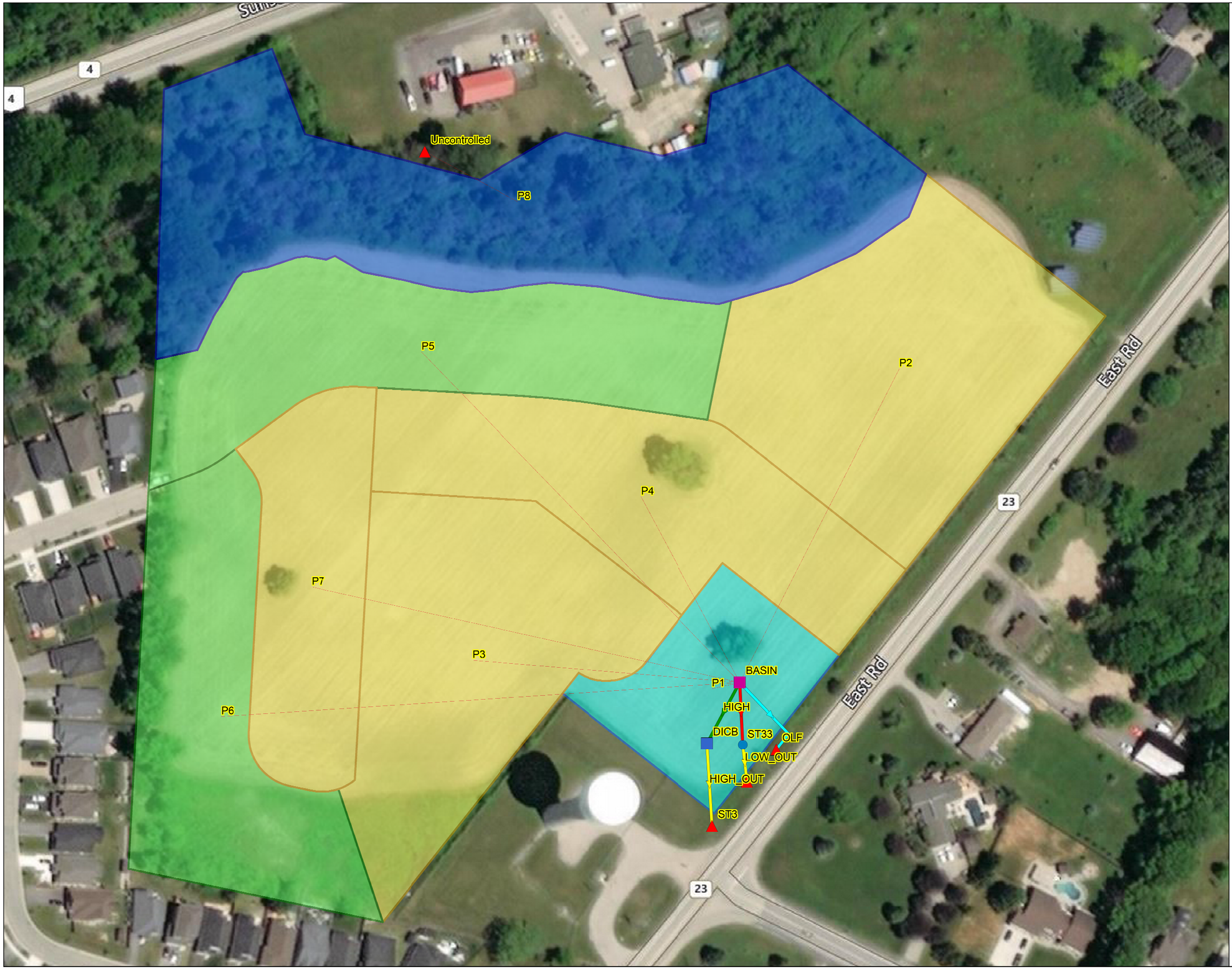
```
Final Storage ............         0.156        18.996
Continuity Error (%) .....        -0.047


*************************        Volume         Volume
Flow Routing Continuity        hectare-m       10^6 ltr
*************************     ---------       ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         1.860        18.599
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         1.860        18.599
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


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

-----------------------------------------------------------------------------------------------------------------------
                          Total      Total      Total      Total      Total       Total      Peak    Runoff
                         Precip      Runon       Evap      Infil     Runoff      Runoff    Runoff    Coeff
Subcatchment                 mm         mm         mm         mm         mm  10^6 ltr       LPS
-----------------------------------------------------------------------------------------------------------------------
E1                       285.00       0.00       0.00      36.11     226.27       14.03    796.36    0.794
E2                       285.00       0.00       0.00      51.93     225.70        4.58    284.75    0.792


Analysis begun on:  Wed Sep 25 20:04:33 2024
Analysis ended on:  Wed Sep 25 20:04:33 2024
Total elapsed time: < 1 sec
```



Legend

- Junctions
- Outfalls

Storages

- Visible
- Underground Storage
- Surface Ponding
- Wet Pond
- Dry Pond

Conduits

- Minor Sewer System
- Major Overland Flow: Street
- Overland Flow Routes
- Culvert
- Municipal Drain
- Backflow Preventer
- Orifices
- Weirs

Outlets

- Roof Drains
- Inlet Control Device
- Catchbasin Inlet

Subcatchments

- < 20 %
- 20 - 40 %
- 40 - 60 %
- 60 - 80 %
- > 80 %
- Building

DEL20-059 - Crevits Farm
Proposed Conditions
Schematic

N

50 m

```
[TITLE]
;;Project Title/Notes
DEL20-059 - Proposed Conditions - Dry Pond - New DP 240913

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

START_DATE           04/10/2015
START_TIME           00:00:00
REPORT_START_DATE    04/10/2015
REPORT_START_TIME    00:00:00
END_DATE             04/12/2015
END_TIME             00:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          00:01:00
WET_STEP             00:01:00
DRY_STEP             00:01:00
ROUTING_STEP         1
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
MAX_TRIALS           8
HEAD_TOLERANCE       0.0015
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              2

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

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- -------- -------- ----------
Central_Elgin    INTENSITY 0:05     1.0      TIMESERIES 2-yr_Central_Elgin

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------
P1               Central_Elgin    BASIN            0.47     30       63       5        0
P2               Central_Elgin    BASIN            1.24     71       82.667   2        0
P3               Central_Elgin    BASIN            1.14     64       152      2        0
P4               Central_Elgin    BASIN            1        64       133.333  2        0
P5               Central_Elgin    BASIN            1.04     43       138.667  2        0
P6               Central_Elgin    BASIN            0.91     43       121.333  2        0
P7               Central_Elgin    BASIN            0.64     64       85.333   2        0
P8               Central_Elgin    Uncontrolled     1.8      0        225      27.5     0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
P1               0.013      0.15       2          4          25         OUTLET
P2               0.013      0.15       2          4          25         OUTLET
P3               0.013      0.15       2          4          25         PERVIOUS   30
P4               0.013      0.15       2          4          25         PERVIOUS   30
P5               0.013      0.15       2          4          25         PERVIOUS   30
P6               0.013      0.15       2          4          25         PERVIOUS   30
P7               0.013      0.15       2          4          25         PERVIOUS   30
P8               0.013      0.15       2          4          25         OUTLET

[INFILTRATION]
;;Subcatchment   Param1     Param2     Param3     Param4     Param5
```

DEL20-059: Crevits Farm Subdivision
Proposed Conditions PCSWMM Input

```
;;-------------- ---------- ---------- ---------- ---------- ----------
P1               86         12.7       7          0          0
P2               86         12.7       7          0          0
P3               86         12.7       7          0          0
P4               86         12.7       7          0          0
P5               86         12.7       7          0          0
P6               86         12.7       7          0          0
P7               86         12.7       7          0          0
P8               80         12.7       7          0          0

[JUNCTIONS]
;;Name           Elevation  MaxDepth   InitDepth  SurDepth   Aponded
;;-------------- ---------- ---------- ---------- ---------- ----------
ST33             209.422    3.928      0          0          0

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
OF1              0          FREE                        NO
OLF              213.2      FREE                        NO
ST3              209.392    FREE                        NO
Uncontrolled     0          FREE                        NO

[STORAGE]
;;Name           Elev.    MaxDepth   InitDepth  Shape      Curve Name/Params            SurDepth Fevap
Psi      Ksat     IMD
;;-------------- -------- ---------- ---------- ---------- ---------------------------- -------- -------- --
------ -------- --------
BASIN            209.6    4          0          TABULAR    BASIN                        0        0
DICB             210.34   3.66       0          TABULAR    DICB                         0        0

[CONDUITS]
;;Name           From Node        To Node          Length     Roughness  InOffset   OutOffset  InitFlow
MaxFlow
;;-------------- ---------------- ---------------- ---------- ---------- ---------- ---------- ---------- ---
-------
HIGH_OUT         DICB             ST3              7.06       0.013      210.36     210.29     0          0
LOW_OUT          ST33             OF1              6.674      0.013      209.492    209.422    0          0

[ORIFICES]
;;Name           From Node        To Node          Type         Offset     Qcoeff     Gated    CloseTime
;;-------------- ---------------- ---------------- ------------ ---------- ---------- -------- ----------
LOW              BASIN            ST33             SIDE         209.6      0.64       NO       0

[WEIRS]
;;Name           From Node        To Node          Type         CrestHt    Qcoeff     Gated    EndCon
EndCoeff   Surcharge  RoadWidth  RoadSurf   Coeff. Curve
;;-------------- ---------------- ---------------- ------------ ---------- ---------- -------- --------- -----
----- ---------- ---------- ---------- ----------------
3                BASIN            OLF              TRANSVERSE   213.45     1.84       NO       0         0
YES

[OUTLETS]
;;Name           From Node        To Node          Offset     Type             QTable/Qcoeff    Qexpon
Gated
;;-------------- ---------------- ---------------- ---------- ---------------- ---------------- ---------- --
------
HIGH             BASIN            DICB             211.85     TABULAR/DEPTH    MTO-DICB_5:1                NO

[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels    Culvert
;;-------------- ------------ ---------------- ---------- ---------- ---------- ---------- ----------
HIGH_OUT         CIRCULAR     0.25             0          0          0          1
LOW_OUT          CIRCULAR     0.25             0          0          0          1
LOW              CIRCULAR     0.125            0          0          0
3                RECT_OPEN    0.2              5          0          0

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

[CURVES]
;;Name           Type       X-Value    Y-Value
;;-------------- ---------- ---------- ----------
MTO-DICB_5:1     Rating     0          0
MTO-DICB_5:1                0.05       39
MTO-DICB_5:1                0.1        108
MTO-DICB_5:1                0.15       185
MTO-DICB_5:1                0.2        300
MTO-DICB_5:1                0.3        635
```

```
MTO-DICB_5:1                0.4         1100
MTO-DICB_5:1                0.5         1600
MTO-DICB_5:1                1           2000

BASIN             Storage   0           231.84
BASIN                       0.52        483
BASIN                       2.52        1931.5
BASIN                       3.85        2693.4
BASIN                       4           2693.4

DICB              Storage   0           1.13
DICB                        2.6         1.13

SWMPOND           Storage   0           483
SWMPOND                     2           1931.5

[TIMESERIES]
;;Name            Date      Time        Value
;;--------------- ---------- ---------- ----------
;Chicago design storm, a = 918.019202851565, b = 0.18, c = 0.702, Duration = 180 minutes, r = 0.35, rain
units = mm/hr.
100-yr_Central_Elgin            0:00        7.364
100-yr_Central_Elgin            0:05        7.825
100-yr_Central_Elgin            0:10        8.364
100-yr_Central_Elgin            0:15        9.002
100-yr_Central_Elgin            0:20        9.773
100-yr_Central_Elgin            0:25        10.726
100-yr_Central_Elgin            0:30        11.942
100-yr_Central_Elgin            0:35        13.559
100-yr_Central_Elgin            0:40        15.836
100-yr_Central_Elgin            0:45        19.346
100-yr_Central_Elgin            0:50        25.676
100-yr_Central_Elgin            0:55        42.252
100-yr_Central_Elgin            1:00        289.329
100-yr_Central_Elgin            1:05        70.319
100-yr_Central_Elgin            1:10        43.093
100-yr_Central_Elgin            1:15        31.536
100-yr_Central_Elgin            1:20        25.459
100-yr_Central_Elgin            1:25        21.619
100-yr_Central_Elgin            1:30        18.94
100-yr_Central_Elgin            1:35        16.946
100-yr_Central_Elgin            1:40        15.395
100-yr_Central_Elgin            1:45        14.149
100-yr_Central_Elgin            1:50        13.123
100-yr_Central_Elgin            1:55        12.26
100-yr_Central_Elgin            2:00        11.523
100-yr_Central_Elgin            2:05        10.886
100-yr_Central_Elgin            2:10        10.327
100-yr_Central_Elgin            2:15        9.833
100-yr_Central_Elgin            2:20        9.393
100-yr_Central_Elgin            2:25        8.998
100-yr_Central_Elgin            2:30        8.641
100-yr_Central_Elgin            2:35        8.316
100-yr_Central_Elgin            2:40        8.02
100-yr_Central_Elgin            2:45        7.748
100-yr_Central_Elgin            2:50        7.497
100-yr_Central_Elgin            2:55        7.265
100-yr_Central_Elgin            3:00        0

;Chicago design storm, a = 647.069265257524, b = 0.18, c = 0.703, Duration = 180 minutes, r = 0.35, rain
units = mm/hr.
10-yr_Central_Elgin           0:00        5.147
10-yr_Central_Elgin           0:05        5.469
10-yr_Central_Elgin           0:10        5.846
10-yr_Central_Elgin           0:15        6.293
10-yr_Central_Elgin           0:20        6.833
10-yr_Central_Elgin           0:25        7.5
10-yr_Central_Elgin           0:30        8.352
10-yr_Central_Elgin           0:35        9.484
10-yr_Central_Elgin           0:40        11.08
10-yr_Central_Elgin           0:45        13.54
10-yr_Central_Elgin           0:50        17.977
10-yr_Central_Elgin           0:55        29.606
10-yr_Central_Elgin           1:00        203.6
10-yr_Central_Elgin           1:05        49.313
10-yr_Central_Elgin           1:10        30.196
10-yr_Central_Elgin           1:15        22.087
10-yr_Central_Elgin           1:20        17.825
10-yr_Central_Elgin           1:25        15.133
10-yr_Central_Elgin           1:30        13.255
```

DEL20-059: Crevits Farm Subdivision
Proposed Conditions PCSWMM Input

```
10-yr_Central_Elgin           1:35        11.857
10-yr_Central_Elgin           1:40        10.771
10-yr_Central_Elgin           1:45        9.898
10-yr_Central_Elgin           1:50        9.179
10-yr_Central_Elgin           1:55        8.575
10-yr_Central_Elgin           2:00        8.059
10-yr_Central_Elgin           2:05        7.612
10-yr_Central_Elgin           2:10        7.221
10-yr_Central_Elgin           2:15        6.875
10-yr_Central_Elgin           2:20        6.567
10-yr_Central_Elgin           2:25        6.29
10-yr_Central_Elgin           2:30        6.04
10-yr_Central_Elgin           2:35        5.813
10-yr_Central_Elgin           2:40        5.606
10-yr_Central_Elgin           2:45        5.415
10-yr_Central_Elgin           2:50        5.24
10-yr_Central_Elgin           2:55        5.077
10-yr_Central_Elgin           3:00        0

;Chicago design storm, a = 754.716603050453, b = 0.18, c = 0.702, Duration = 180 minutes, r = 0.35, rain
units = mm/hr.
25-yr_Central_Elgin           0:00        6.054
25-yr_Central_Elgin           0:05        6.433
25-yr_Central_Elgin           0:10        6.876
25-yr_Central_Elgin           0:15        7.401
25-yr_Central_Elgin           0:20        8.034
25-yr_Central_Elgin           0:25        8.818
25-yr_Central_Elgin           0:30        9.818
25-yr_Central_Elgin           0:35        11.147
25-yr_Central_Elgin           0:40        13.019
25-yr_Central_Elgin           0:45        15.905
25-yr_Central_Elgin           0:50        21.108
25-yr_Central_Elgin           0:55        34.736
25-yr_Central_Elgin           1:00        237.862
25-yr_Central_Elgin           1:05        57.81
25-yr_Central_Elgin           1:10        35.428
25-yr_Central_Elgin           1:15        25.927
25-yr_Central_Elgin           1:20        20.93
25-yr_Central_Elgin           1:25        17.774
25-yr_Central_Elgin           1:30        15.57
25-yr_Central_Elgin           1:35        13.931
25-yr_Central_Elgin           1:40        12.657
25-yr_Central_Elgin           1:45        11.632
25-yr_Central_Elgin           1:50        10.789
25-yr_Central_Elgin           1:55        10.079
25-yr_Central_Elgin           2:00        9.474
25-yr_Central_Elgin           2:05        8.949
25-yr_Central_Elgin           2:10        8.49
25-yr_Central_Elgin           2:15        8.084
25-yr_Central_Elgin           2:20        7.722
25-yr_Central_Elgin           2:25        7.397
25-yr_Central_Elgin           2:30        7.104
25-yr_Central_Elgin           2:35        6.837
25-yr_Central_Elgin           2:40        6.593
25-yr_Central_Elgin           2:45        6.369
25-yr_Central_Elgin           2:50        6.163
25-yr_Central_Elgin           2:55        5.973
25-yr_Central_Elgin           3:00        0

;Chicago design storm, a = 421.026691960112, b = 0.18, c = 0.702, Duration = 180 minutes, r = 0.35, rain
units = mm/hr.
2-yr_Central_Elgin            0:00        3.377
2-yr_Central_Elgin            0:05        3.589
2-yr_Central_Elgin            0:10        3.836
2-yr_Central_Elgin            0:15        4.128
2-yr_Central_Elgin            0:20        4.482
2-yr_Central_Elgin            0:25        4.919
2-yr_Central_Elgin            0:30        5.477
2-yr_Central_Elgin            0:35        6.218
2-yr_Central_Elgin            0:40        7.263
2-yr_Central_Elgin            0:45        8.873
2-yr_Central_Elgin            0:50        11.775
2-yr_Central_Elgin            0:55        19.378
2-yr_Central_Elgin            1:00        132.694
2-yr_Central_Elgin            1:05        32.25
2-yr_Central_Elgin            1:10        19.764
2-yr_Central_Elgin            1:15        14.463
2-yr_Central_Elgin            1:20        11.676
2-yr_Central_Elgin            1:25        9.915
2-yr_Central_Elgin            1:30        8.686
```

```
2-yr_Central_Elgin            1:35       7.772
2-yr_Central_Elgin            1:40       7.061
2-yr_Central_Elgin            1:45       6.489
2-yr_Central_Elgin            1:50       6.018
2-yr_Central_Elgin            1:55       5.623
2-yr_Central_Elgin            2:00       5.285
2-yr_Central_Elgin            2:05       4.992
2-yr_Central_Elgin            2:10       4.736
2-yr_Central_Elgin            2:15       4.51
2-yr_Central_Elgin            2:20       4.308
2-yr_Central_Elgin            2:25       4.127
2-yr_Central_Elgin            2:30       3.963
2-yr_Central_Elgin            2:35       3.814
2-yr_Central_Elgin            2:40       3.678
2-yr_Central_Elgin            2:45       3.553
2-yr_Central_Elgin            2:50       3.438
2-yr_Central_Elgin            2:55       3.332
2-yr_Central_Elgin            3:00       0

;Chicago design storm, a = 835.411466900114, b = 0.18, c = 0.702, Duration = 180 minutes, r = 0.35, rain
units = mm/hr.
50-yr_Central_Elgin            0:00       6.701
50-yr_Central_Elgin            0:05       7.121
50-yr_Central_Elgin            0:10       7.611
50-yr_Central_Elgin            0:15       8.192
50-yr_Central_Elgin            0:20       8.893
50-yr_Central_Elgin            0:25       9.761
50-yr_Central_Elgin            0:30       10.868
50-yr_Central_Elgin            0:35       12.339
50-yr_Central_Elgin            0:40       14.411
50-yr_Central_Elgin            0:45       17.605
50-yr_Central_Elgin            0:50       23.365
50-yr_Central_Elgin            0:55       38.45
50-yr_Central_Elgin            1:00       263.294
50-yr_Central_Elgin            1:05       63.991
50-yr_Central_Elgin            1:10       39.216
50-yr_Central_Elgin            1:15       28.699
50-yr_Central_Elgin            1:20       23.168
50-yr_Central_Elgin            1:25       19.674
50-yr_Central_Elgin            1:30       17.235
50-yr_Central_Elgin            1:35       15.421
50-yr_Central_Elgin            1:40       14.01
50-yr_Central_Elgin            1:45       12.876
50-yr_Central_Elgin            1:50       11.942
50-yr_Central_Elgin            1:55       11.157
50-yr_Central_Elgin            2:00       10.486
50-yr_Central_Elgin            2:05       9.906
50-yr_Central_Elgin            2:10       9.398
50-yr_Central_Elgin            2:15       8.948
50-yr_Central_Elgin            2:20       8.548
50-yr_Central_Elgin            2:25       8.188
50-yr_Central_Elgin            2:30       7.863
50-yr_Central_Elgin            2:35       7.568
50-yr_Central_Elgin            2:40       7.298
50-yr_Central_Elgin            2:45       7.05
50-yr_Central_Elgin            2:50       6.822
50-yr_Central_Elgin            2:55       6.611
50-yr_Central_Elgin            3:00       0

;Chicago design storm, a = 554.272403272885, b = 0.18, c = 0.702, Duration = 180 minutes, r = 0.35, rain
units = mm/hr.
5-yr_Central_Elgin             0:00       4.446
5-yr_Central_Elgin             0:05       4.725
5-yr_Central_Elgin             0:10       5.05
5-yr_Central_Elgin             0:15       5.435
5-yr_Central_Elgin             0:20       5.9
5-yr_Central_Elgin             0:25       6.476
5-yr_Central_Elgin             0:30       7.21
5-yr_Central_Elgin             0:35       8.186
5-yr_Central_Elgin             0:40       9.561
5-yr_Central_Elgin             0:45       11.681
5-yr_Central_Elgin             0:50       15.502
5-yr_Central_Elgin             0:55       25.51
5-yr_Central_Elgin             1:00       174.688
5-yr_Central_Elgin             1:05       42.457
5-yr_Central_Elgin             1:10       26.018
5-yr_Central_Elgin             1:15       19.041
5-yr_Central_Elgin             1:20       15.371
5-yr_Central_Elgin             1:25       13.053
5-yr_Central_Elgin             1:30       11.435
```

DEL20-059: Crevits Farm Subdivision
Proposed Conditions PCSWMM Input

```
5-yr_Central_Elgin             1:35       10.231
5-yr_Central_Elgin             1:40       9.295
5-yr_Central_Elgin             1:45       8.543
5-yr_Central_Elgin             1:50       7.923
5-yr_Central_Elgin             1:55       7.402
5-yr_Central_Elgin             2:00       6.957
5-yr_Central_Elgin             2:05       6.572
5-yr_Central_Elgin             2:10       6.235
5-yr_Central_Elgin             2:15       5.937
5-yr_Central_Elgin             2:20       5.671
5-yr_Central_Elgin             2:25       5.433
5-yr_Central_Elgin             2:30       5.217
5-yr_Central_Elgin             2:35       5.021
5-yr_Central_Elgin             2:40       4.842
5-yr_Central_Elgin             2:45       4.678
5-yr_Central_Elgin             2:50       4.526
5-yr_Central_Elgin             2:55       4.386
5-yr_Central_Elgin             3:00       0

Hazel48                        0          2.0278
Hazel48                        1          2.0278
Hazel48                        2          2.0278
Hazel48                        3          2.0278
Hazel48                        4          2.0278
Hazel48                        5          2.0278
Hazel48                        6          2.0278
Hazel48                        7          2.0278
Hazel48                        8          2.0278
Hazel48                        9          2.0278
Hazel48                        10         2.0278
Hazel48                        11         2.0278
Hazel48                        12         2.0278
Hazel48                        13         2.0278
Hazel48                        14         2.0278
Hazel48                        15         2.0278
Hazel48                        16         2.0278
Hazel48                        17         2.0278
Hazel48                        18         2.0278
Hazel48                        19         2.0278
Hazel48                        20         2.0278
Hazel48                        21         2.0278
Hazel48                        22         2.0278
Hazel48                        23         2.0278
Hazel48                        24         2.0278
Hazel48                        25         2.0278
Hazel48                        26         2.0278
Hazel48                        27         2.0278
Hazel48                        28         2.0278
Hazel48                        29         2.0278
Hazel48                        30         2.0278
Hazel48                        31         2.0278
Hazel48                        32         2.0278
Hazel48                        33         2.0278
Hazel48                        34         2.0278
Hazel48                        35         2.0278
Hazel48                        36         6
Hazel48                        37         4
Hazel48                        38         6
Hazel48                        39         13
Hazel48                        40         17
Hazel48                        41         13
Hazel48                        42         23
Hazel48                        43         13
Hazel48                        44         13
Hazel48                        45         53
Hazel48                        46         38
Hazel48                        47         13
Hazel48                        48         0

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

[TAGS]
Node       BASIN           WetPond
Link       HIGH            CB
```

```
[MAP]
DIMENSIONS       482994.61275     4725100.11105    483411.56225     4725471.00795
UNITS            Meters

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
ST33             483251.743         4725185.094
OF1              483253.327         4725170.853
OLF              483264.671         4725183.161
ST3              483239.826         4725153.743
Uncontrolled     483129.146         4725414.284
BASIN            483250.643         4725209.144
DICB             483237.957         4725185.584

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
3                483269.507         4725189.179

[POLYGONS]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
P1               483181.907         4725205.071
P1               483188.178         4725212.985
P1               483189.389         4725212.266
P1               483190.648         4725211.633
P1               483191.948         4725211.091
P1               483193.283         4725210.642
P1               483194.646         4725210.288
P1               483196.031         4725210.031
P1               483197.431         4725209.872
P1               483198.838         4725209.812
P1               483200.246         4725209.851
P1               483201.648         4725209.988
P1               483203.036         4725210.225
P1               483204.405         4725210.558
P1               483205.747         4725210.987
P1               483207.055         4725211.509
P1               483208.323         4725212.123
P1               483209.545         4725212.823
P1               483210.714         4725213.608
P1               483211.826         4725214.474
P1               483212.873         4725215.415
P1               483213.852         4725216.428
P1               483214.757         4725217.508
P1               483214.757         4725217.508
P1               483228.393         4725235.176
P1               483244.087         4725255.269
P1               483289.109         4725219.601
P1               483240.697         4725158.494
P1               483240.277         4725158.826
P1               483181.907         4725205.071
P2               483315.196         4725252.516
P2               483246.747         4725306.662
P2               483246.412         4725306.918
P2               483246.073         4725307.167
P2               483245.728         4725307.408
P2               483245.378         4725307.642
P2               483245.023         4725307.869
P2               483244.664         4725308.088
P2               483244.3           4725308.299
P2               483243.931         4725308.503
P2               483243.559         4725308.699
P2               483243.182         4725308.887
P2               483242.801         4725309.067
P2               483242.417         4725309.24
P2               483242.03          4725309.404
P2               483241.638         4725309.559
P2               483241.244         4725309.707
P2               483240.847         4725309.846
P2               483240.447         4725309.977
P2               483240.044         4725310.099
P2               483239.639         4725310.213
P2               483239.231         4725310.318
P2               483238.821         4725310.415
P2               483238.41          4725310.503
P2               483240.398         4725320.303
P2               483247.771         4725356.652
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DEL20-059: Crevits Farm Subdivision
Proposed Conditions PCSWMM Input

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P2               483271.427         4725363.536
P2               483283.812         4725369.138
P2               483296.236         4725374.752
P2               483316.415         4725388.64
P2               483323.329         4725405.13
P2               483392.61          4725350.242
P2               483315.196         4725252.516
P3               483101.388         4725171.821
P3               483107.865         4725283.281
P3               483171.747         4725279.373
P3               483179.266         4725273.506
P3               483220.601         4725241.253
P3               483228.393         4725235.176
P3               483213.106         4725215.644
P3               483212.061         4725214.674
P3               483210.949         4725213.781
P3               483209.777         4725212.97
P3               483208.55          4725212.244
P3               483207.274         4725211.608
P3               483205.956         4725211.064
P3               483204.603         4725210.615
P3               483203.221         4725210.264
P3               483201.818         4725210.012
P3               483200.4           4725209.861
P3               483198.975         4725209.811
P3               483197.551         4725209.863
P3               483196.133         4725210.016
P3               483194.73          4725210.27
P3               483193.349         4725210.623
P3               483191.996         4725211.073
P3               483190.679         4725211.619
P3               483189.404         4725212.257
P3               483188.178         4725212.985
P3               483188.178         4725212.985
P3               483181.907         4725205.069
P3               483112.108         4725116.97
P3               483098.187         4725158.839
P3               483095.037         4725168.33
P3               483095.35          4725168.437
P3               483095.662         4725168.549
P3               483095.972         4725168.666
P3               483096.28          4725168.788
P3               483096.586         4725168.916
P3               483096.889         4725169.048
P3               483097.191         4725169.186
P3               483097.49          4725169.328
P3               483097.786         4725169.476
P3               483098.08          4725169.628
P3               483098.372         4725169.785
P3               483098.661         4725169.947
P3               483098.947         4725170.114
P3               483099.231         4725170.286
P3               483099.511         4725170.462
P3               483099.789         4725170.642
P3               483100.064         4725170.828
P3               483100.335         4725171.018
P3               483100.603         4725171.212
P3               483100.868         4725171.411
P3               483101.13          4725171.614
P3               483101.388         4725171.821
P3               483101.388         4725171.821
P4               483110.199         4725323.213
P4               483107.865         4725283.281
P4               483171.747         4725279.373
P4               483179.266         4725273.506
P4               483220.601         4725241.253
P4               483228.393         4725235.176
P4               483244.087         4725255.269
P4               483289.109         4725219.601
P4               483315.19          4725252.521
P4               483246.747         4725306.662
P4               483246.43          4725306.905
P4               483246.108         4725307.141
P4               483245.782         4725307.371
P4               483245.451         4725307.594
P4               483245.115         4725307.811
P4               483244.776         4725308.021
P4               483244.432         4725308.224
P4               483244.084         4725308.42
P4               483243.733         4725308.609
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P4	483243.378	4725308.791
P4	483243.019	4725308.966
P4	483242.657	4725309.133
P4	483242.291	4725309.294
P4	483241.923	4725309.447
P4	483241.551	4725309.593
P4	483241.177	4725309.731
P4	483240.799	4725309.862
P4	483240.42	4725309.985
P4	483240.038	4725310.101
P4	483239.653	4725310.209
P4	483239.267	4725310.309
P4	483238.879	4725310.402
P4	483238.879	4725310.402
P4	483238.81	4725310.418
P4	483238.74	4725310.433
P4	483238.671	4725310.448
P4	483238.602	4725310.463
P4	483238.533	4725310.478
P4	483238.463	4725310.492
P4	483238.394	4725310.506
P4	483238.324	4725310.52
P4	483238.255	4725310.534
P4	483238.185	4725310.547
P4	483238.115	4725310.56
P4	483238.046	4725310.573
P4	483237.976	4725310.586
P4	483237.906	4725310.598
P4	483237.836	4725310.611
P4	483237.766	4725310.623
P4	483237.697	4725310.634
P4	483237.627	4725310.646
P4	483237.557	4725310.657
P4	483237.487	4725310.668
P4	483237.417	4725310.678
P4	483237.346	4725310.689
P4	483237.346	4725310.689
P4	483196.81	4725316.656
P4	483195.268	4725316.886
P4	483193.725	4725317.108
P4	483192.18	4725317.324
P4	483190.635	4725317.534
P4	483189.089	4725317.736
P4	483187.541	4725317.932
P4	483185.994	4725318.121
P4	483184.445	4725318.304
P4	483182.895	4725318.48
P4	483181.345	4725318.649
P4	483179.794	4725318.811
P4	483178.242	4725318.967
P4	483176.69	4725319.116
P4	483175.137	4725319.258
P4	483173.584	4725319.394
P4	483172.03	4725319.523
P4	483170.475	4725319.645
P4	483168.92	4725319.76
P4	483167.364	4725319.869
P4	483165.808	4725319.971
P4	483164.251	4725320.066
P4	483162.695	4725320.154
P4	483162.695	4725320.154
P4	483110.199	4725323.213
P5	483247.771	4725356.652
P5	483240.398	4725320.303
P5	483238.41	4725310.503
P5	483238.361	4725310.513
P5	483238.313	4725310.522
P5	483238.265	4725310.532
P5	483238.217	4725310.541
P5	483238.169	4725310.55
P5	483238.121	4725310.559
P5	483238.072	4725310.568
P5	483238.024	4725310.577
P5	483237.976	4725310.586
P5	483237.928	4725310.595
P5	483237.879	4725310.603
P5	483237.831	4725310.612
P5	483237.783	4725310.62
P5	483237.734	4725310.628
P5	483237.686	4725310.636

DEL20-059: Crevits Farm Subdivision
Proposed Conditions PCSWMM Input

P5	483237.637	4725310.644
P5	483237.589	4725310.652
P5	483237.54	4725310.659
P5	483237.492	4725310.667
P5	483237.443	4725310.674
P5	483237.395	4725310.682
P5	483237.346	4725310.689
P5	483237.346	4725310.689
P5	483196.81	4725316.656
P5	483195.267	4725316.88
P5	483193.723	4725317.098
P5	483192.178	4725317.31
P5	483190.633	4725317.515
P5	483189.086	4725317.715
P5	483187.539	4725317.908
P5	483185.99	4725318.095
P5	483184.442	4725318.275
P5	483182.892	4725318.45
P5	483181.342	4725318.618
P5	483179.791	4725318.781
P5	483178.239	4725318.937
P5	483176.687	4725319.086
P5	483175.135	4725319.23
P5	483173.581	4725319.367
P5	483172.027	4725319.498
P5	483170.473	4725319.623
P5	483168.918	4725319.742
P5	483167.363	4725319.854
P5	483165.807	4725319.961
P5	483164.251	4725320.061
P5	483162.695	4725320.154
P5	483162.695	4725320.154
P5	483110.199	4725323.213
P5	483103.605	4725323.597
P5	483102.348	4725323.651
P5	483101.09	4725323.664
P5	483099.832	4725323.639
P5	483098.576	4725323.574
P5	483097.322	4725323.469
P5	483096.072	4725323.325
P5	483094.828	4725323.141
P5	483093.589	4725322.919
P5	483092.359	4725322.658
P5	483091.137	4725322.358
P5	483089.925	4725322.02
P5	483088.725	4725321.644
P5	483087.536	4725321.23
P5	483086.362	4725320.779
P5	483085.202	4725320.292
P5	483084.058	4725319.768
P5	483082.931	4725319.209
P5	483081.822	4725318.614
P5	483080.733	4725317.985
P5	483079.664	4725317.322
P5	483078.616	4725316.626
P5	483077.591	4725315.897
P5	483077.591	4725315.897
P5	483055.591	4725299.729
P5	483051.513	4725296.732
P5	483050.985	4725296.349
P5	483050.452	4725295.973
P5	483049.914	4725295.604
P5	483049.371	4725295.242
P5	483048.824	4725294.887
P5	483048.272	4725294.539
P5	483047.715	4725294.199
P5	483047.154	4725293.866
P5	483046.589	4725293.54
P5	483046.02	4725293.222
P5	483045.446	4725292.911
P5	483044.869	4725292.607
P5	483044.287	4725292.312
P5	483043.702	4725292.023
P5	483043.113	4725291.743
P5	483042.521	4725291.47
P5	483041.924	4725291.205
P5	483041.325	4725290.947
P5	483040.722	4725290.698
P5	483040.116	4725290.456
P5	483039.507	4725290.223

P5	483038.895	4725289.997
P5	483038.895	4725289.997
P5	483025.792	4725285.262
P5	483021.758	4725283.803
P5	483024.719	4725334.396
P5	483040.833	4725337.939
P5	483047.352	4725351.373
P5	483051.639	4725357.997
P5	483054.214	4725362.658
P5	483056.135	4725365.713
P5	483058.689	4725368.125
P5	483059.469	4725368.033
P5	483067.928	4725369.823
P5	483079.077	4725373.583
P5	483082.923	4725374.061
P5	483090.836	4725372.726
P5	483094.271	4725374.157
P5	483104.978	4725367.876
P5	483120.365	4725364.85
P5	483132.921	4725361.889
P5	483146.832	4725360.037
P5	483159.172	4725361.259
P5	483165.724	4725362.439
P5	483174.399	4725363.278
P5	483177.559	4725363.696
P5	483183.828	4725363.396
P5	483196.819	4725362.061
P5	483219.959	4725357.665
P5	483242.865	4725355.224
P5	483247.771	4725356.652
P6	483055.591	4725299.729
P6	483051.513	4725296.732
P6	483050.985	4725296.349
P6	483050.452	4725295.973
P6	483049.914	4725295.604
P6	483049.371	4725295.242
P6	483048.824	4725294.887
P6	483048.272	4725294.539
P6	483047.715	4725294.199
P6	483047.154	4725293.866
P6	483046.589	4725293.54
P6	483046.02	4725293.222
P6	483045.446	4725292.911
P6	483044.869	4725292.607
P6	483044.287	4725292.312
P6	483043.702	4725292.023
P6	483043.113	4725291.743
P6	483042.521	4725291.47
P6	483041.924	4725291.205
P6	483041.325	4725290.947
P6	483040.722	4725290.698
P6	483040.116	4725290.456
P6	483039.507	4725290.223
P6	483038.895	4725289.997
P6	483038.895	4725289.997
P6	483025.792	4725285.262
P6	483021.758	4725283.803
P6	483013.565	4725137.766
P6	483112.08	4725116.976
P6	483098.187	4725158.839
P6	483095.037	4725168.33
P6	483094.76	4725168.24
P6	483094.481	4725168.154
P6	483094.202	4725168.073
P6	483093.921	4725167.995
P6	483093.639	4725167.922
P6	483093.356	4725167.852
P6	483093.072	4725167.787
P6	483092.787	4725167.726
P6	483092.502	4725167.669
P6	483092.215	4725167.616
P6	483091.928	4725167.568
P6	483091.64	4725167.523
P6	483091.352	4725167.483
P6	483091.062	4725167.447
P6	483090.773	4725167.416
P6	483090.483	4725167.388
P6	483090.193	4725167.365
P6	483089.902	4725167.346
P6	483089.611	4725167.331

DEL20-059: Crevits Farm Subdivision
Proposed Conditions PCSWMM Input

P6	483089.32	4725167.32
P6	483089.029	4725167.314
P6	483088.737	4725167.312
P6	483088.737	4725167.312
P6	483088.548	4725167.313
P6	483088.359	4725167.315
P6	483088.17	4725167.32
P6	483087.981	4725167.326
P6	483087.792	4725167.334
P6	483087.603	4725167.344
P6	483087.415	4725167.355
P6	483087.226	4725167.369
P6	483087.038	4725167.384
P6	483086.849	4725167.401
P6	483086.661	4725167.42
P6	483086.473	4725167.44
P6	483086.285	4725167.463
P6	483086.098	4725167.487
P6	483085.911	4725167.512
P6	483085.724	4725167.54
P6	483085.537	4725167.569
P6	483085.35	4725167.601
P6	483085.164	4725167.633
P6	483084.978	4725167.668
P6	483084.793	4725167.705
P6	483084.607	4725167.743
P6	483084.607	4725167.743
P6	483076.222	4725169.512
P6	483074.843	4725169.854
P6	483073.491	4725170.292
P6	483072.174	4725170.826
P6	483070.898	4725171.451
P6	483069.67	4725172.166
P6	483068.496	4725172.966
P6	483067.382	4725173.848
P6	483066.333	4725174.807
P6	483065.355	4725175.838
P6	483064.453	4725176.935
P6	483063.631	4725178.095
P6	483062.894	4725179.309
P6	483062.245	4725180.573
P6	483061.687	4725181.88
P6	483061.223	4725183.223
P6	483060.857	4725184.596
P6	483060.588	4725185.991
P6	483060.42	4725187.402
P6	483060.352	4725188.822
P6	483060.386	4725190.242
P6	483060.386	4725190.242
P6	483065.514	4725278.463
P6	483065.541	4725279.099
P6	483065.548	4725279.735
P6	483065.534	4725280.372
P6	483065.5	4725281.007
P6	483065.446	4725281.642
P6	483065.372	4725282.274
P6	483065.277	4725282.904
P6	483065.163	4725283.53
P6	483065.029	4725284.152
P6	483064.875	4725284.77
P6	483064.701	4725285.382
P6	483064.508	4725285.989
P6	483064.296	4725286.589
P6	483064.065	4725287.182
P6	483063.815	4725287.768
P6	483063.546	4725288.345
P6	483063.26	4725288.913
P6	483062.955	4725289.472
P6	483062.633	4725290.021
P6	483062.293	4725290.56
P6	483061.937	4725291.087
P6	483061.563	4725291.603
P6	483061.563	4725291.603
P6	483055.591	4725299.729
P7	483095.037	4725168.33
P7	483094.76	4725168.24
P7	483094.481	4725168.154
P7	483094.202	4725168.073
P7	483093.921	4725167.995
P7	483093.639	4725167.922

P7	483093.356	4725167.852
P7	483093.072	4725167.787
P7	483092.787	4725167.726
P7	483092.502	4725167.669
P7	483092.215	4725167.616
P7	483091.928	4725167.568
P7	483091.64	4725167.523
P7	483091.352	4725167.483
P7	483091.062	4725167.447
P7	483090.773	4725167.416
P7	483090.483	4725167.388
P7	483090.193	4725167.365
P7	483089.902	4725167.346
P7	483089.611	4725167.331
P7	483089.32	4725167.32
P7	483089.029	4725167.314
P7	483088.737	4725167.312
P7	483088.737	4725167.312
P7	483088.548	4725167.313
P7	483088.359	4725167.315
P7	483088.17	4725167.32
P7	483087.981	4725167.326
P7	483087.792	4725167.334
P7	483087.603	4725167.344
P7	483087.415	4725167.355
P7	483087.226	4725167.369
P7	483087.038	4725167.384
P7	483086.849	4725167.401
P7	483086.661	4725167.42
P7	483086.473	4725167.44
P7	483086.285	4725167.463
P7	483086.098	4725167.487
P7	483085.911	4725167.512
P7	483085.724	4725167.54
P7	483085.537	4725167.569
P7	483085.35	4725167.601
P7	483085.164	4725167.633
P7	483084.978	4725167.668
P7	483084.793	4725167.705
P7	483084.607	4725167.743
P7	483084.607	4725167.743
P7	483076.222	4725169.512
P7	483074.842	4725169.853
P7	483073.49	4725170.291
P7	483072.173	4725170.824
P7	483070.897	4725171.449
P7	483069.669	4725172.164
P7	483068.494	4725172.964
P7	483067.379	4725173.846
P7	483066.33	4725174.804
P7	483065.352	4725175.835
P7	483064.45	4725176.933
P7	483063.628	4725178.092
P7	483062.891	4725179.307
P7	483062.241	4725180.571
P7	483061.684	4725181.878
P7	483061.221	4725183.222
P7	483060.854	4725184.595
P7	483060.586	4725185.991
P7	483060.419	4725187.402
P7	483060.352	4725188.821
P7	483060.386	4725190.242
P7	483060.386	4725190.242
P7	483065.514	4725278.463
P7	483065.541	4725279.099
P7	483065.548	4725279.735
P7	483065.534	4725280.372
P7	483065.5	4725281.007
P7	483065.446	4725281.642
P7	483065.372	4725282.274
P7	483065.277	4725282.904
P7	483065.163	4725283.53
P7	483065.029	4725284.152
P7	483064.875	4725284.77
P7	483064.701	4725285.382
P7	483064.508	4725285.989
P7	483064.296	4725286.589
P7	483064.065	4725287.182
P7	483063.815	4725287.768
P7	483063.546	4725288.345

DEL20-059: Crevits Farm Subdivision
Proposed Conditions PCSWMM Input

P7	483063.26	4725288.913
P7	483062.955	4725289.472
P7	483062.633	4725290.021
P7	483062.293	4725290.56
P7	483061.937	4725291.087
P7	483061.563	4725291.603
P7	483061.563	4725291.603
P7	483055.591	4725299.729
P7	483077.591	4725315.897
P7	483078.616	4725316.626
P7	483079.664	4725317.322
P7	483080.733	4725317.985
P7	483081.822	4725318.614
P7	483082.931	4725319.209
P7	483084.058	4725319.768
P7	483085.202	4725320.292
P7	483086.362	4725320.779
P7	483087.536	4725321.23
P7	483088.725	4725321.644
P7	483089.925	4725322.02
P7	483091.137	4725322.358
P7	483092.359	4725322.658
P7	483093.589	4725322.919
P7	483094.828	4725323.141
P7	483096.072	4725323.325
P7	483097.322	4725323.469
P7	483098.576	4725323.574
P7	483099.832	4725323.639
P7	483101.09	4725323.664
P7	483102.348	4725323.651
P7	483103.605	4725323.597
P7	483103.605	4725323.597
P7	483110.199	4725323.213
P7	483107.865	4725283.281
P7	483101.388	4725171.821
P7	483101.13	4725171.614
P7	483100.868	4725171.411
P7	483100.603	4725171.212
P7	483100.335	4725171.018
P7	483100.064	4725170.828
P7	483099.789	4725170.642
P7	483099.511	4725170.462
P7	483099.231	4725170.286
P7	483098.947	4725170.114
P7	483098.661	4725169.947
P7	483098.372	4725169.785
P7	483098.08	4725169.628
P7	483097.786	4725169.476
P7	483097.49	4725169.328
P7	483097.191	4725169.186
P7	483096.889	4725169.048
P7	483096.586	4725168.916
P7	483096.28	4725168.788
P7	483095.972	4725168.666
P7	483095.662	4725168.549
P7	483095.35	4725168.437
P7	483095.037	4725168.33
P7	483095.037	4725168.33
P8	483024.719	4725334.396
P8	483028.142	4725438.601
P8	483069.987	4725454.149
P8	483082.642	4725421.168
P8	483150.33	4725403.407
P8	483177.178	4725419.19
P8	483183.492	4725421.543
P8	483221.008	4725412.455
P8	483238.037	4725417.384
P8	483240.273	4725436.493
P8	483269.864	4725447.488
P8	483323.329	4725405.13
P8	483316.415	4725388.64
P8	483296.236	4725374.752
P8	483271.427	4725363.536
P8	483242.865	4725355.224
P8	483219.959	4725357.665
P8	483196.819	4725362.061
P8	483177.559	4725363.696
P8	483165.724	4725362.439
P8	483159.172	4725361.259
P8	483146.832	4725360.037

```
P8               483132.921         4725361.889
P8               483120.365         4725364.85
P8               483104.978         4725367.876
P8               483094.271         4725374.157
P8               483090.836         4725372.726
P8               483082.923         4725374.061
P8               483079.077         4725373.583
P8               483067.928         4725369.823
P8               483059.469         4725368.033
P8               483058.689         4725368.125
P8               483056.135         4725365.713
P8               483054.214         4725362.658
P8               483051.639         4725357.997
P8               483047.352         4725351.373
P8               483040.833         4725337.939
P8               483024.719         4725334.396

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

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

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

DEL20-059 - Proposed Conditions - Dry Pond - New DP 240913

*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 8
Number of nodes ........... 7
Number of links ........... 5
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
----------------------------------------------------------------------
Central_Elgin        2-yr_Central_Elgin          INTENSITY    5 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage            Outlet
-------------------------------------------------------------------------------------------------
P1                           0.47     63.00     30.00    5.0000 Central_Elgin        BASIN
P2                           1.24     82.67     71.00    2.0000 Central_Elgin        BASIN
P3                           1.14    152.00     64.00    2.0000 Central_Elgin        BASIN
P4                           1.00    133.33     64.00    2.0000 Central_Elgin        BASIN
P5                           1.04    138.67     43.00    2.0000 Central_Elgin        BASIN
P6                           0.91    121.33     43.00    2.0000 Central_Elgin        BASIN
P7                           0.64     85.33     64.00    2.0000 Central_Elgin        BASIN
P8                           1.80    225.00      0.00   27.5000 Central_Elgin        Uncontrolled


************
Node Summary
************
                                       Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
-----------------------------------------------------------------------------
ST33                 JUNCTION           209.42      3.93       0.0
OF1                  OUTFALL              0.00    209.67       0.0
OLF                  OUTFALL            213.20      0.00       0.0
ST3                  OUTFALL            209.39      1.15       0.0
Uncontrolled         OUTFALL              0.00      0.00       0.0
BASIN                STORAGE            209.60      4.00       0.0
DICB                 STORAGE            210.34      3.66       0.0


************
Link Summary
************
Name             From Node        To Node          Type            Length    %Slope Roughness
---------------------------------------------------------------------------------------------
HIGH_OUT         DICB             ST3              CONDUIT            7.1    0.9916    0.0130
LOW_OUT          ST33             OF1              CONDUIT            6.7    1.0489    0.0130
LOW              BASIN            ST33             ORIFICE
3                BASIN            OLF              WEIR
HIGH             BASIN            DICB             OUTLET


********************
Cross Section Summary
********************
                                     Full     Full     Hyd.     Max.   No. of     Full
Conduit          Shape              Depth     Area     Rad.    Width  Barrels     Flow
---------------------------------------------------------------------------------------
HIGH_OUT         CIRCULAR            0.25     0.05     0.06     0.25        1    59.22
LOW_OUT          CIRCULAR            0.25     0.05     0.06     0.25        1    60.91


****************
Analysis Options
```

DEL20-059: Crevits Farm Subdivision
2-year Design Storm Event - Proposed Conditions PCSWMM Output

```
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ YES
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/10/2015 00:00:00
Ending Date .............. 04/12/2015 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


*************************       Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
*************************     ---------       -------
Total Precipitation ......         0.272        32.955
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.108        13.108
Surface Runoff ...........         0.152        18.504
Final Storage ............         0.011         1.370
Continuity Error (%) .....        -0.083


*************************       Volume         Volume
Flow Routing Continuity        hectare-m       10^6 ltr
*************************     ---------       ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.152         1.525
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.152         1.525
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.005


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


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


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


************************
Routing Time Step Summary
************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.00 sec
Maximum Time Step           :     1.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.00
```

```
  % of Steps Not Converging   :     0.00
  Time Step Frequencies       :
      1.000 -  0.871 sec      :   100.00 %
      0.871 -  0.758 sec      :     0.00 %
      0.758 -  0.660 sec      :     0.00 %
      0.660 -  0.574 sec      :     0.00 %
      0.574 -  0.500 sec      :     0.00 %
```

Subcatchment Runoff Summary

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
P1	32.96	0.00	0.00	15.49	9.46	6.70	16.16	0.08	53.65	0.490
P2	32.96	0.00	0.00	6.48	22.36	2.72	25.07	0.31	268.43	0.761
P3	32.96	0.00	0.00	8.01	20.17	9.45	23.56	0.27	210.19	0.715
P4	32.96	0.00	0.00	8.01	20.17	9.45	23.56	0.24	184.38	0.715
P5	32.96	0.00	0.00	12.80	13.55	9.34	18.83	0.20	125.72	0.571
P6	32.96	0.00	0.00	12.80	13.55	9.34	18.83	0.17	110.00	0.571
P7	32.96	0.00	0.00	8.01	20.17	9.45	23.56	0.15	118.00	0.715
P8	32.96	0.00	0.00	25.26	0.00	6.43	6.43	0.12	23.18	0.195

Node Depth Summary

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
ST33	JUNCTION	0.11	0.22	209.65	0 03:03	0.22
OF1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
OLF	OUTFALL	0.00	0.00	213.20	0 00:00	0.00
ST3	OUTFALL	0.00	0.00	209.39	0 00:00	0.00
Uncontrolled	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
BASIN	STORAGE	0.25	1.54	211.14	0 03:03	1.54
DICB	STORAGE	0.00	0.00	210.34	0 00:00	0.00

Node Inflow Summary

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
ST33	JUNCTION	0.00	42.37	0 03:03	0	1.41	0.006
OF1	OUTFALL	0.00	42.37	0 03:03	0	1.41	0.000
OLF	OUTFALL	0.00	0.00	0 00:00	0	0	0.000 ltr
ST3	OUTFALL	0.00	0.00	0 00:00	0	0	0.000 ltr
Uncontrolled	OUTFALL	23.18	23.18	0 01:30	0.116	0.116	0.000
BASIN	STORAGE	1070.36	1070.36	0 01:05	1.41	1.41	0.000
DICB	STORAGE	0.00	0.00	0 00:00	0	0	0.000 ltr

Node Surcharge Summary

DEL20-059: Crevits Farm Subdivision
2-year Design Storm Event - Proposed Conditions PCSWMM Output

No nodes were surcharged.

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
BASIN	0.136	2.2	0.0	0.0	1.061	17.5	0 03:03	42.37
DICB	0.000	0.0	0.0	0.0	0.000	0.0	0 00:00	0.00

Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
OF1	49.66	16.41	42.37	1.409
OLF	0.00	0.00	0.00	0.000
ST3	0.00	0.00	0.00	0.000
Uncontrolled	5.15	13.01	23.18	0.116
System	13.70	29.42	61.87	1.525

Link Flow Summary

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
HIGH_OUT	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
LOW_OUT	CONDUIT	42.37	0 03:03	1.34	0.70	0.61
LOW	ORIFICE	42.37	0 03:03			1.00
3	WEIR	0.00	0 00:00			0.00
HIGH	DUMMY	0.00	0 00:00			

Flow Classification Summary

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
HIGH_OUT	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LOW_OUT	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00

Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Wed Sep 25 20:08:42 2024
Analysis ended on: Wed Sep 25 20:08:42 2024

```
Total elapsed time: < 1 sec
```

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

DEL20-059 - Proposed Conditions - Dry Pond - New DP 240913

*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 8
Number of nodes ........... 7
Number of links ........... 5
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
------------------------------------------------------------------
Central_Elgin        5-yr_Central_Elgin          INTENSITY    5 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage           Outlet
-------------------------------------------------------------------------------------------
P1                           0.47     63.00     30.00    5.0000 Central_Elgin       BASIN
P2                           1.24     82.67     71.00    2.0000 Central_Elgin       BASIN
P3                           1.14    152.00     64.00    2.0000 Central_Elgin       BASIN
P4                           1.00    133.33     64.00    2.0000 Central_Elgin       BASIN
P5                           1.04    138.67     43.00    2.0000 Central_Elgin       BASIN
P6                           0.91    121.33     43.00    2.0000 Central_Elgin       BASIN
P7                           0.64     85.33     64.00    2.0000 Central_Elgin       BASIN
P8                           1.80    225.00      0.00   27.5000 Central_Elgin       Uncontrolled


************
Node Summary
************
                                    Invert      Max.    Ponded    External
Name                 Type            Elev.     Depth      Area    Inflow
-----------------------------------------------------------------------
ST33                 JUNCTION       209.42      3.93       0.0
OF1                  OUTFALL          0.00    209.67       0.0
OLF                  OUTFALL        213.20      0.00       0.0
ST3                  OUTFALL        209.39      1.15       0.0
Uncontrolled         OUTFALL          0.00      0.00       0.0
BASIN                STORAGE        209.60      4.00       0.0
DICB                 STORAGE        210.34      3.66       0.0


************
Link Summary
************
Name             From Node        To Node          Type            Length    %Slope Roughness
---------------------------------------------------------------------------------------------
HIGH_OUT         DICB             ST3              CONDUIT            7.1    0.9916    0.0130
LOW_OUT          ST33             OF1              CONDUIT            6.7    1.0489    0.0130
LOW              BASIN            ST33             ORIFICE
3                BASIN            OLF              WEIR
HIGH             BASIN            DICB             OUTLET


********************
Cross Section Summary
********************
                                     Full     Full     Hyd.     Max.   No. of     Full
Conduit          Shape              Depth     Area     Rad.    Width  Barrels     Flow
---------------------------------------------------------------------------------------
HIGH_OUT         CIRCULAR            0.25     0.05     0.06     0.25        1    59.22
LOW_OUT          CIRCULAR            0.25     0.05     0.06     0.25        1    60.91


****************
Analysis Options
```

DEL20-059: Crevits Farm Subdivision
5-year Design Storm Event - Proposed Conditions PCSWMM Output

```
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ YES
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/10/2015 00:00:00
Ending Date .............. 04/12/2015 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


*************************       Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
*************************     ---------       -------
Total Precipitation ......         0.357        43.384
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.124        15.030
Surface Runoff ...........         0.223        27.031
Final Storage ............         0.011         1.365
Continuity Error (%) .....        -0.096


*************************       Volume         Volume
Flow Routing Continuity        hectare-m       10^6 ltr
*************************     ---------       ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.223         2.227
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.223         2.227
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.004


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


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


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


************************
Routing Time Step Summary
************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.00 sec
Maximum Time Step           :     1.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.00
```

```
  % of Steps Not Converging   :     0.00
  Time Step Frequencies       :
      1.000 -  0.871 sec      :   100.00 %
      0.871 -  0.758 sec      :     0.00 %
      0.758 -  0.660 sec      :     0.00 %
      0.660 -  0.574 sec      :     0.00 %
      0.574 -  0.500 sec      :     0.00 %
```

Subcatchment Runoff Summary

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
P1	43.38	0.00	0.00	17.55	12.60	11.94	24.55	0.12	79.55	0.566
P2	43.38	0.00	0.00	7.33	29.77	4.88	34.66	0.43	377.46	0.799
P3	43.38	0.00	0.00	9.06	26.86	14.17	32.96	0.38	312.31	0.760
P4	43.38	0.00	0.00	9.06	26.86	14.17	32.96	0.33	273.96	0.760
P5	43.38	0.00	0.00	14.47	18.05	14.96	27.59	0.29	188.94	0.636
P6	43.38	0.00	0.00	14.47	18.05	14.96	27.59	0.25	165.32	0.636
P7	43.38	0.00	0.00	9.06	26.86	14.17	32.96	0.21	175.33	0.760
P8	43.38	0.00	0.00	29.49	0.00	12.65	12.65	0.23	62.25	0.292

Node Depth Summary

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
ST33	JUNCTION	0.12	0.24	209.66	0 03:05	0.24
OF1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
OLF	OUTFALL	0.00	0.00	213.20	0 00:00	0.00
ST3	OUTFALL	0.00	0.00	209.39	0 00:00	0.00
Uncontrolled	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
BASIN	STORAGE	0.38	1.94	211.54	0 03:05	1.94
DICB	STORAGE	0.00	0.00	210.34	0 00:00	0.00

Node Inflow Summary

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
ST33	JUNCTION	0.00	47.64	0 03:05	0	2	0.004
OF1	OUTFALL	0.00	47.64	0 03:05	0	2	0.000
OLF	OUTFALL	0.00	0.00	0 00:00	0	0	0.000 ltr
ST3	OUTFALL	0.00	0.00	0 00:00	0	0	0.000 ltr
Uncontrolled	OUTFALL	62.25	62.25	0 01:15	0.228	0.228	0.000
BASIN	STORAGE	1572.87	1572.87	0 01:05	2	2	0.000
DICB	STORAGE	0.00	0.00	0 00:00	0	0	0.000 ltr

Node Surcharge Summary

DEL20-059: Crevits Farm Subdivision
5-year Design Storm Event - Proposed Conditions PCSWMM Output

No nodes were surcharged.

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
BASIN	0.250	4.1	0.0	0.0	1.597	26.3	0 03:05	47.64
DICB	0.000	0.0	0.0	0.0	0.000	0.0	0 00:00	0.00

Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
OF1	56.60	20.44	47.64	1.999
OLF	0.00	0.00	0.00	0.000
ST3	0.00	0.00	0.00	0.000
Uncontrolled	5.32	24.80	62.25	0.228
System	15.48	45.23	102.31	2.227

Link Flow Summary

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
HIGH_OUT	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
LOW_OUT	CONDUIT	47.64	0 03:05	1.37	0.78	0.67
LOW	ORIFICE	47.64	0 03:05			1.00
3	WEIR	0.00	0 00:00			0.00
HIGH	DUMMY	0.00	0 00:00			

Flow Classification Summary

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
HIGH_OUT	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LOW_OUT	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00

Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Wed Sep 25 20:10:03 2024
Analysis ended on: Wed Sep 25 20:10:04 2024

```
Total elapsed time: 00:00:01
```

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

DEL20-059 - Proposed Conditions - Dry Pond - New DP 240913

*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 8
Number of nodes ........... 7
Number of links ........... 5
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
------------------------------------------------------------------
Central_Elgin        10-yr_Central_Elgin         INTENSITY    5 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage           Outlet
-----------------------------------------------------------------------------------------------
P1                           0.47     63.00     30.00    5.0000 Central_Elgin       BASIN
P2                           1.24     82.67     71.00    2.0000 Central_Elgin       BASIN
P3                           1.14    152.00     64.00    2.0000 Central_Elgin       BASIN
P4                           1.00    133.33     64.00    2.0000 Central_Elgin       BASIN
P5                           1.04    138.67     43.00    2.0000 Central_Elgin       BASIN
P6                           0.91    121.33     43.00    2.0000 Central_Elgin       BASIN
P7                           0.64     85.33     64.00    2.0000 Central_Elgin       BASIN
P8                           1.80    225.00      0.00   27.5000 Central_Elgin       Uncontrolled


************
Node Summary
************
                                       Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
-----------------------------------------------------------------------------
ST33                 JUNCTION           209.42      3.93       0.0
OF1                  OUTFALL              0.00    209.67       0.0
OLF                  OUTFALL            213.20      0.00       0.0
ST3                  OUTFALL            209.39      1.15       0.0
Uncontrolled         OUTFALL              0.00      0.00       0.0
BASIN                STORAGE            209.60      4.00       0.0
DICB                 STORAGE            210.34      3.66       0.0


************
Link Summary
************
Name             From Node        To Node          Type            Length    %Slope Roughness
---------------------------------------------------------------------------------------------
HIGH_OUT         DICB             ST3              CONDUIT            7.1    0.9916    0.0130
LOW_OUT          ST33             OF1              CONDUIT            6.7    1.0489    0.0130
LOW              BASIN            ST33             ORIFICE
3                BASIN            OLF              WEIR
HIGH             BASIN            DICB             OUTLET


********************
Cross Section Summary
********************
                                    Full     Full     Hyd.     Max.   No. of     Full
Conduit          Shape             Depth     Area     Rad.    Width  Barrels     Flow
---------------------------------------------------------------------------------------
HIGH_OUT         CIRCULAR           0.25     0.05     0.06     0.25        1    59.22
LOW_OUT          CIRCULAR           0.25     0.05     0.06     0.25        1    60.91


***************
Analysis Options
***************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ YES
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/10/2015 00:00:00
Ending Date .............. 04/12/2015 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


*************************       Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
*************************     ---------       -------
Total Precipitation ......         0.415        50.386
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.133        16.083
Surface Runoff ...........         0.272        32.986
Final Storage ............         0.011         1.369
Continuity Error (%) .....        -0.104


*************************       Volume         Volume
Flow Routing Continuity        hectare-m       10^6 ltr
*************************     ---------       ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.272         2.718
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.272         2.718
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.003


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


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


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


************************
Routing Time Step Summary
************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.00 sec
Maximum Time Step           :     1.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.00
```

```
  % of Steps Not Converging   :     0.00
  Time Step Frequencies       :
      1.000 -  0.871 sec      :   100.00 %
      0.871 -  0.758 sec      :     0.00 %
      0.758 -  0.660 sec      :     0.00 %
      0.660 -  0.574 sec      :     0.00 %
      0.574 -  0.500 sec      :     0.00 %
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
P1	50.39	0.00	0.00	18.66	14.71	15.74	30.45	0.14	101.01	0.604
P2	50.39	0.00	0.00	7.79	34.75	6.45	41.21	0.51	456.62	0.818
P3	50.39	0.00	0.00	9.63	31.35	17.47	39.41	0.45	387.76	0.782
P4	50.39	0.00	0.00	9.63	31.35	17.47	39.41	0.39	340.14	0.782
P5	50.39	0.00	0.00	15.38	21.07	18.96	33.71	0.35	238.74	0.669
P6	50.39	0.00	0.00	15.38	21.07	18.96	33.71	0.31	208.90	0.669
P7	50.39	0.00	0.00	9.63	31.35	17.47	39.41	0.25	217.69	0.782
P8	50.39	0.00	0.00	31.86	0.00	17.28	17.28	0.31	104.12	0.343

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
ST33	JUNCTION	0.13	0.24	209.67	0 03:06	0.24
OF1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
OLF	OUTFALL	0.00	0.00	213.20	0 00:00	0.00
ST3	OUTFALL	0.00	0.00	209.39	0 00:00	0.00
Uncontrolled	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
BASIN	STORAGE	0.49	2.17	211.77	0 03:06	2.17
DICB	STORAGE	0.00	0.00	210.34	0 00:00	0.00

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
ST33	JUNCTION	0.00	50.50	0 03:06	0	2.41	0.003
OF1	OUTFALL	0.00	50.50	0 03:06	0	2.41	0.000
OLF	OUTFALL	0.00	0.00	0 00:00	0	0	0.000 ltr
ST3	OUTFALL	0.00	0.00	0 00:00	0	0	0.000 ltr
Uncontrolled	OUTFALL	104.12	104.12	0 01:10	0.311	0.311	0.000
BASIN	STORAGE	1950.84	1950.84	0 01:05	2.41	2.41	0.000
DICB	STORAGE	0.00	0.00	0 00:00	0	0	0.000 ltr

****
Node Surcharge Summary
****

No nodes were surcharged.

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
BASIN	0.345	5.7	0.0	0.0	1.973	32.4	0 03:06	50.50
DICB	0.000	0.0	0.0	0.0	0.000	0.0	0 00:00	0.00

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
OF1	61.08	22.80	50.50	2.407
OLF	0.00	0.00	0.00	0.000
ST3	0.00	0.00	0.00	0.000
Uncontrolled	5.41	33.25	104.12	0.311
System	16.62	56.05	144.27	2.718

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
HIGH_OUT	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
LOW_OUT	CONDUIT	50.50	0 03:06	1.39	0.83	0.70
LOW	ORIFICE	50.50	0 03:06			1.00
3	WEIR	0.00	0 00:00			0.00
HIGH	DUMMY	0.00	0 00:00			

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
HIGH_OUT	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LOW_OUT	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Wed Sep 25 20:10:40 2024
Analysis ended on: Wed Sep 25 20:10:41 2024

```
Total elapsed time: 00:00:01
```

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

DEL20-059 - Proposed Conditions - Dry Pond - New DP 240913

*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 8
Number of nodes ........... 7
Number of links ........... 5
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
------------------------------------------------------------------
Central_Elgin        25-yr_Central_Elgin         INTENSITY    5 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage           Outlet
-------------------------------------------------------------------------------------------
P1                           0.47     63.00     30.00    5.0000 Central_Elgin       BASIN
P2                           1.24     82.67     71.00    2.0000 Central_Elgin       BASIN
P3                           1.14    152.00     64.00    2.0000 Central_Elgin       BASIN
P4                           1.00    133.33     64.00    2.0000 Central_Elgin       BASIN
P5                           1.04    138.67     43.00    2.0000 Central_Elgin       BASIN
P6                           0.91    121.33     43.00    2.0000 Central_Elgin       BASIN
P7                           0.64     85.33     64.00    2.0000 Central_Elgin       BASIN
P8                           1.80    225.00      0.00   27.5000 Central_Elgin       Uncontrolled


************
Node Summary
************
                                       Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
-----------------------------------------------------------------------------
ST33                 JUNCTION          209.42      3.93       0.0
OF1                  OUTFALL             0.00    209.67       0.0
OLF                  OUTFALL           213.20      0.00       0.0
ST3                  OUTFALL           209.39      1.15       0.0
Uncontrolled         OUTFALL             0.00      0.00       0.0
BASIN                STORAGE           209.60      4.00       0.0
DICB                 STORAGE           210.34      3.66       0.0


************
Link Summary
************
Name             From Node        To Node          Type            Length    %Slope Roughness
---------------------------------------------------------------------------------------------
HIGH_OUT         DICB             ST3              CONDUIT            7.1    0.9916    0.0130
LOW_OUT          ST33             OF1              CONDUIT            6.7    1.0489    0.0130
LOW              BASIN            ST33             ORIFICE
3                BASIN            OLF              WEIR
HIGH             BASIN            DICB             OUTLET


********************
Cross Section Summary
********************
                                    Full     Full     Hyd.     Max.   No. of     Full
Conduit          Shape             Depth     Area     Rad.    Width  Barrels     Flow
---------------------------------------------------------------------------------------
HIGH_OUT         CIRCULAR           0.25     0.05     0.06     0.25        1    59.22
LOW_OUT          CIRCULAR           0.25     0.05     0.06     0.25        1    60.91


***************
Analysis Options
```

DEL20-059: Crevits Farm Subdivision
25-year Design Storm Event - Proposed Conditions PCSWMM Output

```
***************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ YES
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/10/2015 00:00:00
Ending Date .............. 04/12/2015 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


*************************       Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
*************************     ---------       -------
Total Precipitation ......         0.487        59.074
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.142        17.211
Surface Runoff ...........         0.334        40.565
Final Storage ............         0.011         1.364
Continuity Error (%) .....        -0.111


*************************       Volume         Volume
Flow Routing Continuity        hectare-m       10^6 ltr
*************************     ---------       ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.334         3.343
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.334         3.342
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.002


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


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


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


************************
Routing Time Step Summary
************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.00 sec
Maximum Time Step           :     1.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.00
```

```
  % of Steps Not Converging   :     0.00
  Time Step Frequencies       :
      1.000 -  0.871 sec      :   100.00 %
      0.871 -  0.758 sec      :     0.00 %
      0.758 -  0.660 sec      :     0.00 %
      0.660 -  0.574 sec      :     0.00 %
      0.574 -  0.500 sec      :     0.00 %


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

  ---------------------------------------------------------------------------------------------------------------
                                Total      Total      Total      Total     Imperv      Perv     Total
Total     Peak  Runoff
                               Precip     Runon       Evap      Infil    Runoff    Runoff    Runoff
Runoff   Runoff   Coeff
  Subcatchment                    mm         mm         mm         mm        mm        mm        mm    10^6
ltr      LPS
  ---------------------------------------------------------------------------------------------------------------
  P1                           59.07       0.00       0.00      19.82     17.33     20.67     38.00
0.18   130.17   0.643
  P2                           59.07       0.00       0.00       8.28     40.93      8.49     49.43
0.61   554.75   0.837
  P3                           59.07       0.00       0.00      10.22     36.92     21.69     47.53
0.54   482.06   0.805
  P4                           59.07       0.00       0.00      10.22     36.92     21.69     47.53
0.48   422.86   0.805
  P5                           59.07       0.00       0.00      16.32     24.82     24.09     41.47
0.43   304.63   0.702
  P6                           59.07       0.00       0.00      16.32     24.82     24.09     41.47
0.38   266.55   0.702
  P7                           59.07       0.00       0.00      10.22     36.92     21.69     47.53
0.30   270.63   0.805
  P8                           59.07       0.00       0.00      34.45      0.00     23.39     23.39
0.42   165.83   0.396


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

  ---------------------------------------------------------------------------
                                Average  Maximum  Maximum  Time of Max    Reported
                                  Depth    Depth      HGL   Occurrence   Max Depth
Node                 Type        Meters   Meters   Meters  days hr:min      Meters
---------------------------------------------------------------------------
ST33                 JUNCTION      0.13     0.25   209.67     0  02:36        0.25
OF1                  OUTFALL       0.00     0.00     0.00     0  00:00        0.00
OLF                  OUTFALL       0.00     0.00   213.20     0  00:00        0.00
ST3                  OUTFALL       0.00     0.00   209.39     0  00:00        0.00
Uncontrolled         OUTFALL       0.00     0.00     0.00     0  00:00        0.00
BASIN                STORAGE       0.55     2.32   211.92     0  02:36        2.32
DICB                 STORAGE       0.03     0.28   210.62     0  02:36        0.28


  ******************
  Node Inflow Summary
  ******************

  ---------------------------------------------------------------------------------------------
                                Maximum  Maximum                  Lateral      Total       Flow
                                Lateral    Total  Time of Max     Inflow     Inflow    Balance
                                 Inflow   Inflow   Occurrence     Volume     Volume      Error
Node                 Type           LPS      LPS  days hr:min  10^6 ltr   10^6 ltr    Percent
---------------------------------------------------------------------------------------------
ST33                 JUNCTION      0.00    52.25     0  02:36          0       2.63      0.003
OF1                  OUTFALL       0.00    52.25     0  02:36          0       2.63      0.000
OLF                  OUTFALL       0.00     0.00     0  00:00          0          0      0.000 ltr
ST3                  OUTFALL       0.00    73.10     0  02:37          0      0.291      0.000
Uncontrolled         OUTFALL     165.83   165.83     0  01:10      0.421      0.421      0.000
BASIN                STORAGE    2431.66  2431.66     0  01:05       2.92       2.92      0.000
DICB                 STORAGE       0.00    73.10     0  02:36          0      0.291      0.000


  **********************
  Node Surcharge Summary
```

DEL20-059: Crevits Farm Subdivision
25-year Design Storm Event - Proposed Conditions PCSWMM Output

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

  No nodes were surcharged.


  **********************
  Node Flooding Summary
  **********************

  No nodes were flooded.


  **********************
  Storage Volume Summary
  **********************

  ---------------------------------------------------------------------------------------------------------------
                               Average     Avg    Evap   Exfil     Maximum     Max    Time of Max     Maximum
                                Volume    Pcnt    Pcnt    Pcnt      Volume    Pcnt     Occurrence     Outflow
Storage Unit                 1000 m³    Full    Loss    Loss    1000 m³    Full   days hr:min         LPS
---------------------------------------------------------------------------------------------------------------
BASIN                          0.407     6.7     0.0     0.0       2.237    36.8      0  02:36      125.35
DICB                           0.000     0.7     0.0     0.0       0.000     7.6      0  02:36       73.10


  ***********************
  Outfall Loading Summary
  ***********************

  ---------------------------------------------------------
                               Flow      Avg      Max    Total
                               Freq     Flow     Flow   Volume
Outfall Node                   Pcnt      LPS      LPS  10^6 ltr
---------------------------------------------------------
OF1                           63.33    24.03    52.25     2.630
OLF                            0.00     0.00     0.00     0.000
ST3                            3.71    45.41    73.10     0.291
Uncontrolled                   5.52    44.18   165.83     0.421
---------------------------------------------------------
System                        18.14   113.61   208.74     3.342


  *******************
  Link Flow Summary
  *******************

  ---------------------------------------------------------------------------
                                Maximum  Time of Max   Maximum    Max/    Max/
                                 |Flow|   Occurrence  |Veloc|    Full    Full
Link                 Type          LPS  days hr:min     m/sec    Flow   Depth
---------------------------------------------------------------------------
HIGH_OUT             CONDUIT     73.10     0  02:37      1.53    1.23    0.93
LOW_OUT              CONDUIT     52.25     0  02:36      1.39    0.86    0.71
LOW                  ORIFICE     52.25     0  02:36                      1.00
3                    WEIR         0.00     0  00:00                      0.00
HIGH                 DUMMY       73.10     0  02:36


  **************************
  Flow Classification Summary
  **************************

  ---------------------------------------------------------------------------------------------
                              Adjusted     ---------- Fraction of Time in Flow Class ----------
                               /Actual         Up    Down    Sub     Sup     Up    Down    Norm   Inlet
Conduit                        Length    Dry  Dry     Dry     Crit    Crit    Crit  Crit    Ltd    Ctrl
---------------------------------------------------------------------------------------------
HIGH_OUT                         1.00   0.04  0.00    0.00    0.00    0.00    0.00  0.96    0.00   0.00
LOW_OUT                          1.00   0.00  0.00    0.00    0.00    0.00    0.00  1.00    0.00   0.00


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

  ---------------------------------------------------------------------------
                                                                    Hours        Hours
                              --------- Hours Full --------     Above Full   Capacity
Conduit                     Both Ends  Upstream  Dnstream     Normal Flow    Limited
---------------------------------------------------------------------------
```

```
HIGH_OUT                  0.01      0.26      0.01      0.78         0.01


Analysis begun on:  Wed Sep 25 20:11:11 2024
Analysis ended on:  Wed Sep 25 20:11:12 2024
Total elapsed time: 00:00:01
```

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

DEL20-059 - Proposed Conditions - Dry Pond - New DP 240913

*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 8
Number of nodes ........... 7
Number of links ........... 5
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
------------------------------------------------------------------
Central_Elgin        50-yr_Central_Elgin         INTENSITY    5 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage           Outlet
-------------------------------------------------------------------------------------------
P1                           0.47     63.00     30.00    5.0000 Central_Elgin       BASIN
P2                           1.24     82.67     71.00    2.0000 Central_Elgin       BASIN
P3                           1.14    152.00     64.00    2.0000 Central_Elgin       BASIN
P4                           1.00    133.33     64.00    2.0000 Central_Elgin       BASIN
P5                           1.04    138.67     43.00    2.0000 Central_Elgin       BASIN
P6                           0.91    121.33     43.00    2.0000 Central_Elgin       BASIN
P7                           0.64     85.33     64.00    2.0000 Central_Elgin       BASIN
P8                           1.80    225.00      0.00   27.5000 Central_Elgin       Uncontrolled


************
Node Summary
************
                                       Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
-----------------------------------------------------------------------------
ST33                 JUNCTION          209.42      3.93       0.0
OF1                  OUTFALL             0.00    209.67       0.0
OLF                  OUTFALL           213.20      0.00       0.0
ST3                  OUTFALL           209.39      1.15       0.0
Uncontrolled         OUTFALL             0.00      0.00       0.0
BASIN                STORAGE           209.60      4.00       0.0
DICB                 STORAGE           210.34      3.66       0.0


************
Link Summary
************
Name             From Node        To Node          Type            Length    %Slope Roughness
---------------------------------------------------------------------------------------------
HIGH_OUT         DICB             ST3              CONDUIT            7.1    0.9916    0.0130
LOW_OUT          ST33             OF1              CONDUIT            6.7    1.0489    0.0130
LOW              BASIN            ST33             ORIFICE
3                BASIN            OLF              WEIR
HIGH             BASIN            DICB             OUTLET


********************
Cross Section Summary
********************
                                    Full     Full     Hyd.     Max.   No. of     Full
Conduit          Shape             Depth     Area     Rad.    Width  Barrels     Flow
---------------------------------------------------------------------------------------
HIGH_OUT         CIRCULAR           0.25     0.05     0.06     0.25        1    59.22
LOW_OUT          CIRCULAR           0.25     0.05     0.06     0.25        1    60.91


***************
Analysis Options
***************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ YES
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/10/2015 00:00:00
Ending Date .............. 04/12/2015 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


**************************       Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.539        65.391
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.148        17.918
Surface Runoff ...........         0.381        46.183
Final Storage ............         0.011         1.366
Continuity Error (%) .....        -0.116


**************************       Volume         Volume
Flow Routing Continuity        hectare-m       10^6 ltr
**************************     ---------       ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.381         3.806
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.381         3.805
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.002


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


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


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


************************
Routing Time Step Summary
************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.00 sec
Maximum Time Step           :     1.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.00
```

DEL20-059: Crevits Farm Subdivision
50-year Design Storm Event - Proposed Conditions PCSWMM Output

```
  % of Steps Not Converging   :     0.00
  Time Step Frequencies       :
      1.000 -  0.871 sec      :   100.00 %
      0.871 -  0.758 sec      :     0.00 %
      0.758 -  0.660 sec      :     0.00 %
      0.660 -  0.574 sec      :     0.00 %
      0.574 -  0.500 sec      :     0.00 %


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

  ---------------------------------------------------------------------------------------------------------------
                                Total      Total      Total      Total     Imperv       Perv      Total
Total     Peak  Runoff
                               Precip     Runon       Evap      Infil     Runoff     Runoff     Runoff
Runoff   Runoff   Coeff
  Subcatchment                    mm         mm         mm         mm         mm         mm         mm    10^6
ltr      LPS
  ---------------------------------------------------------------------------------------------------------------
  P1                           65.39       0.00       0.00      20.54      19.23      24.38      43.61
0.20   153.75   0.667
  P2                           65.39       0.00       0.00       8.57      45.42      10.03      55.45
0.69   629.73   0.848
  P3                           65.39       0.00       0.00      10.59      40.98      24.81      53.49
0.61   553.66   0.818
  P4                           65.39       0.00       0.00      10.59      40.98      24.81      53.49
0.53   485.67   0.818
  P5                           65.39       0.00       0.00      16.90      27.54      27.93      47.21
0.49   356.72   0.722
  P6                           65.39       0.00       0.00      16.90      27.54      27.93      47.21
0.43   312.13   0.722
  P7                           65.39       0.00       0.00      10.59      40.98      24.81      53.49
0.34   310.83   0.818
  P8                           65.39       0.00       0.00      36.10       0.00      28.06      28.06
0.51   235.22   0.429


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

  ---------------------------------------------------------------------------
                                Average  Maximum  Maximum  Time of Max    Reported
                                  Depth    Depth      HGL   Occurrence   Max Depth
Node                 Type        Meters   Meters   Meters  days hr:min      Meters
  ---------------------------------------------------------------------------
ST33                 JUNCTION      0.13     0.25   209.67     0  02:06        0.25
OF1                  OUTFALL       0.00     0.00     0.00     0  00:00        0.00
OLF                  OUTFALL       0.00     0.00   213.20     0  00:00        0.00
ST3                  OUTFALL       0.00     0.00   209.39     0  00:00        0.00
Uncontrolled         OUTFALL       0.00     0.00     0.00     0  00:00        0.00
BASIN                STORAGE       0.55     2.37   211.97     0  02:06        2.37
DICB                 STORAGE       0.03     0.57   210.91     0  02:06        0.57


  ******************
  Node Inflow Summary
  ******************

  ---------------------------------------------------------------------------------------------
                                Maximum  Maximum                  Lateral       Total        Flow
                                Lateral    Total  Time of Max      Inflow      Inflow     Balance
                                 Inflow   Inflow   Occurrence      Volume      Volume       Error
Node                 Type           LPS      LPS  days hr:min    10^6 ltr    10^6 ltr     Percent
  ---------------------------------------------------------------------------------------------
ST33                 JUNCTION      0.00    52.74     0  02:06           0        2.65       0.003
OF1                  OUTFALL       0.00    52.74     0  02:06           0        2.65       0.000
OLF                  OUTFALL       0.00     0.00     0  00:00           0           0       0.000 ltr
ST3                  OUTFALL       0.00   136.81     0  02:06           0       0.648       0.000
Uncontrolled         OUTFALL     235.22   235.22     0  01:05       0.505       0.505       0.000
BASIN                STORAGE    2802.48  2802.48     0  01:05         3.3         3.3       0.000
DICB                 STORAGE       0.00   136.81     0  02:06           0       0.648      -0.000


  **********************
  Node Surcharge Summary
```

DEL20-059: Crevits Farm Subdivision
50-year Design Storm Event - Proposed Conditions PCSWMM Output

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

  No nodes were surcharged.


  **********************
  Node Flooding Summary
  **********************

  No nodes were flooded.


  **********************
  Storage Volume Summary
  **********************

  ---------------------------------------------------------------------------------------------------------------
                                Average    Avg   Evap  Exfil      Maximum    Max    Time of Max    Maximum
                                 Volume   Pcnt   Pcnt   Pcnt       Volume   Pcnt     Occurrence    Outflow
Storage Unit                  1000 m³   Full   Loss   Loss      1000 m³   Full   days hr:min        LPS
  ---------------------------------------------------------------------------------------------------------------
BASIN                           0.416    6.8    0.0    0.0        2.316   38.1      0  02:06     189.55
DICB                            0.000    0.9    0.0    0.0        0.001   15.7      0  02:06     136.81


  ************************
  Outfall Loading Summary
  ************************

  ---------------------------------------------------------
                                Flow       Avg       Max       Total
                                Freq      Flow      Flow      Volume
Outfall Node                    Pcnt       LPS       LPS    10^6 ltr
  ---------------------------------------------------------
OF1                            63.47     24.17     52.74       2.652
OLF                             0.00      0.00      0.00       0.000
ST3                             4.62     81.21    136.81       0.648
Uncontrolled                    5.57     52.45    235.22       0.505
  ---------------------------------------------------------
System                         18.42    157.83    273.77       3.805


  ********************
  Link Flow Summary
  ********************

  ---------------------------------------------------------------------------
                                Maximum  Time of Max   Maximum    Max/    Max/
                                 |Flow|   Occurrence  |Veloc|    Full    Full
Link                 Type          LPS  days hr:min     m/sec    Flow   Depth
  ---------------------------------------------------------------------------
HIGH_OUT             CONDUIT    136.81     0  02:06      2.79    2.31    1.00
LOW_OUT              CONDUIT     52.74     0  02:06      1.40    0.87    0.72
LOW                  ORIFICE     52.74     0  02:06                      1.00
3                    WEIR         0.00     0  00:00                      0.00
HIGH                 DUMMY      136.81     0  02:06


  **************************
  Flow Classification Summary
  **************************

  ---------------------------------------------------------------------------------------------
                               Adjusted     ---------- Fraction of Time in Flow Class ----------
                                /Actual         Up    Down   Sub    Sup    Up    Down   Norm   Inlet
Conduit                         Length    Dry  Dry    Dry    Crit   Crit   Crit  Crit   Ltd    Ctrl
  ---------------------------------------------------------------------------------------------
HIGH_OUT                          1.00   0.03 0.00   0.00   0.00   0.00   0.00  0.97   0.00   0.00
LOW_OUT                           1.00   0.00 0.00   0.00   0.00   0.00   0.00  1.00   0.00   0.00


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

  ---------------------------------------------------------------------------
                                                                    Hours        Hours
                                --------- Hours Full --------    Above Full   Capacity
Conduit                       Both Ends  Upstream  Dnstream    Normal Flow    Limited
  ---------------------------------------------------------------------------
```

HIGH_OUT	0.84	1.39	0.84	1.49	0.84

Analysis begun on: Wed Sep 25 20:11:51 2024
Analysis ended on: Wed Sep 25 20:11:51 2024
Total elapsed time: < 1 sec

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

DEL20-059 - Proposed Conditions - Dry Pond - New DP 240913

*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 8
Number of nodes ........... 7
Number of links ........... 5
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
------------------------------------------------------------------
Central_Elgin        100-yr_Central_Elgin        INTENSITY    5 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage            Outlet
-----------------------------------------------------------------------------------------------
P1                           0.47     63.00     30.00    5.0000 Central_Elgin        BASIN
P2                           1.24     82.67     71.00    2.0000 Central_Elgin        BASIN
P3                           1.14    152.00     64.00    2.0000 Central_Elgin        BASIN
P4                           1.00    133.33     64.00    2.0000 Central_Elgin        BASIN
P5                           1.04    138.67     43.00    2.0000 Central_Elgin        BASIN
P6                           0.91    121.33     43.00    2.0000 Central_Elgin        BASIN
P7                           0.64     85.33     64.00    2.0000 Central_Elgin        BASIN
P8                           1.80    225.00      0.00   27.5000 Central_Elgin        Uncontrolled


************
Node Summary
************
                                       Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
-----------------------------------------------------------------------------
ST33                 JUNCTION           209.42      3.93       0.0
OF1                  OUTFALL              0.00    209.67       0.0
OLF                  OUTFALL            213.20      0.00       0.0
ST3                  OUTFALL            209.39      1.15       0.0
Uncontrolled         OUTFALL              0.00      0.00       0.0
BASIN                STORAGE            209.60      4.00       0.0
DICB                 STORAGE            210.34      3.66       0.0


************
Link Summary
************
Name             From Node        To Node          Type            Length    %Slope Roughness
---------------------------------------------------------------------------------------------
HIGH_OUT         DICB             ST3              CONDUIT            7.1    0.9916    0.0130
LOW_OUT          ST33             OF1              CONDUIT            6.7    1.0489    0.0130
LOW              BASIN            ST33             ORIFICE
3                BASIN            OLF              WEIR
HIGH             BASIN            DICB             OUTLET


********************
Cross Section Summary
********************
                                    Full     Full     Hyd.     Max.   No. of     Full
Conduit          Shape             Depth     Area     Rad.    Width  Barrels     Flow
---------------------------------------------------------------------------------------
HIGH_OUT         CIRCULAR           0.25     0.05     0.06     0.25        1    59.22
LOW_OUT          CIRCULAR           0.25     0.05     0.06     0.25        1    60.91


***************
Analysis Options
***************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ YES
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/10/2015 00:00:00
Ending Date .............. 04/12/2015 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


*************************       Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
*************************     ---------       -------
Total Precipitation ......         0.592        71.857
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.153        18.567
Surface Runoff ...........         0.429        52.013
Final Storage ............         0.011         1.364
Continuity Error (%) .....        -0.121


*************************       Volume         Volume
Flow Routing Continuity        hectare-m       10^6 ltr
*************************     ---------       ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.429         4.286
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.429         4.286
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.002


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


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


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


************************
Routing Time Step Summary
************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.00 sec
Maximum Time Step           :     1.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.00
```

DEL20-059: Crevits Farm Subdivision
100-year Design Storm Event - Proposed Conditions PCSWMM Output

```
  % of Steps Not Converging   :     0.00
  Time Step Frequencies       :
      1.000 -  0.871 sec      :   100.00 %
      0.871 -  0.758 sec      :     0.00 %
      0.758 -  0.660 sec      :     0.00 %
      0.660 -  0.574 sec      :     0.00 %
      0.574 -  0.500 sec      :     0.00 %


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

  ---------------------------------------------------------------------------------------------------------------
                                Total      Total      Total      Total     Imperv      Perv     Total
Total     Peak  Runoff
                               Precip     Runon       Evap      Infil    Runoff    Runoff    Runoff
Runoff   Runoff   Coeff
  Subcatchment                    mm         mm         mm         mm        mm        mm        mm    10^6
ltr      LPS
  ---------------------------------------------------------------------------------------------------------------
  P1                           71.86       0.00       0.00      21.18     21.18     28.26     49.43
0.23   179.46   0.688
  P2                           71.86       0.00       0.00       8.84     50.02     11.64     61.66
0.76   708.27   0.858
  P3                           71.86       0.00       0.00      10.92     45.13     28.06     59.64
0.68   628.34   0.830
  P4                           71.86       0.00       0.00      10.92     45.13     28.06     59.64
0.60   551.17   0.830
  P5                           71.86       0.00       0.00      17.43     30.33     31.93     53.16
0.55   412.60   0.740
  P6                           71.86       0.00       0.00      17.43     30.33     31.93     53.16
0.48   361.03   0.740
  P7                           71.86       0.00       0.00      10.92     45.13     28.06     59.64
0.38   352.75   0.830
  P8                           71.86       0.00       0.00      37.63      0.00     33.01     33.01
0.59   319.29   0.459


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

  ------------------------------------------------------------------------------
                                Average  Maximum  Maximum  Time of Max    Reported
                                  Depth    Depth      HGL   Occurrence   Max Depth
Node                 Type        Meters   Meters   Meters  days hr:min      Meters
  ------------------------------------------------------------------------------
ST33                 JUNCTION      0.13     0.25   209.67     0  01:49        0.25
OF1                  OUTFALL       0.00     0.00     0.00     0  00:00        0.00
OLF                  OUTFALL       0.00     0.00   213.20     0  00:00        0.00
ST3                  OUTFALL       0.00     0.00   209.39     0  00:00        0.00
Uncontrolled         OUTFALL       0.00     0.00     0.00     0  00:00        0.00
BASIN                STORAGE       0.56     2.41   212.01     0  01:49        2.41
DICB                 STORAGE       0.05     1.16   211.50     0  01:49        1.16


  ******************
  Node Inflow Summary
  ******************

  ------------------------------------------------------------------------------------------
                                Maximum  Maximum                  Lateral       Total        Flow
                                Lateral    Total  Time of Max     Inflow      Inflow     Balance
                                 Inflow   Inflow   Occurrence     Volume      Volume       Error
Node                 Type           LPS      LPS  days hr:min  10^6 ltr    10^6 ltr     Percent
  ------------------------------------------------------------------------------------------
ST33                 JUNCTION      0.00    53.25     0  01:49          0        2.67       0.003
OF1                  OUTFALL       0.00    53.25     0  01:49          0        2.67       0.000
OLF                  OUTFALL       0.00     0.00     0  00:00          0           0       0.000 ltr
ST3                  OUTFALL       0.00   219.20     0  01:49          0        1.02       0.000
Uncontrolled         OUTFALL     319.29   319.29     0  01:05      0.594       0.594       0.000
BASIN                STORAGE    3193.63  3193.63     0  01:05       3.69        3.69       0.000
DICB                 STORAGE       0.00   219.21     0  01:49          0        1.02      -0.000


  **********************
  Node Surcharge Summary
```

DEL20-059: Crevits Farm Subdivision
100-year Design Storm Event - Proposed Conditions PCSWMM Output

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

  No nodes were surcharged.


  **********************
  Node Flooding Summary
  **********************

  No nodes were flooded.


  **********************
  Storage Volume Summary
  **********************

  ---------------------------------------------------------------------------------------------------------------
                                Average    Avg   Evap  Exfil      Maximum    Max    Time of Max    Maximum
                                 Volume   Pcnt   Pcnt   Pcnt       Volume   Pcnt     Occurrence    Outflow
Storage Unit                  1000 m³   Full   Loss   Loss    1000 m³   Full   days hr:min        LPS
  ---------------------------------------------------------------------------------------------------------------
BASIN                           0.422    6.9    0.0    0.0        2.401   39.5        0  01:49     272.46
DICB                            0.000    1.3    0.0    0.0        0.001   31.7        0  01:49     219.20


  ************************
  Outfall Loading Summary
  ************************

  ------------------------------------------------------------
                                Flow      Avg      Max    Total
                                Freq     Flow     Flow   Volume
Outfall Node                    Pcnt      LPS      LPS  10^6 ltr
  ------------------------------------------------------------
OF1                            63.57    24.29    53.25    2.668
OLF                             0.00     0.00     0.00    0.000
ST3                             5.09   116.27   219.20    1.023
Uncontrolled                    5.65    60.89   319.29    0.594
  ------------------------------------------------------------
System                         18.58   201.44   359.44    4.286


  ********************
  Link Flow Summary
  ********************

  ------------------------------------------------------------------------------
                                Maximum  Time of Max   Maximum    Max/    Max/
                                 |Flow|   Occurrence  |Veloc|    Full    Full
Link                 Type          LPS  days hr:min     m/sec    Flow   Depth
  ------------------------------------------------------------------------------
HIGH_OUT             CONDUIT    219.20     0  01:49      4.47    3.70    1.00
LOW_OUT              CONDUIT     53.25     0  01:49      1.40    0.87    0.72
LOW                  ORIFICE     53.25     0  01:49                      1.00
3                    WEIR         0.00     0  00:00                      0.00
HIGH                 DUMMY      219.21     0  01:49


  ***************************
  Flow Classification Summary
  ***************************

  ---------------------------------------------------------------------------------------------
                               Adjusted     ---------- Fraction of Time in Flow Class ----------
                                /Actual         Up   Down  Sub   Sup   Up    Down  Norm  Inlet
Conduit                         Length  Dry  Dry  Dry   Crit  Crit  Crit  Crit  Ltd   Ctrl
  ---------------------------------------------------------------------------------------------
HIGH_OUT                          1.00 0.03 0.00 0.00  0.00  0.00  0.00  0.97  0.00  0.00
LOW_OUT                           1.00 0.00 0.00 0.00  0.00  0.00  0.00  1.00  0.00  0.00


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

  ---------------------------------------------------------------------------
                                                          Hours        Hours
                                --------- Hours Full --------   Above Full   Capacity
Conduit                       Both Ends  Upstream  Dnstream   Normal Flow   Limited
  ---------------------------------------------------------------------------
```

HIGH_OUT	1.43	1.72	1.43	1.79	1.43

Analysis begun on: Wed Sep 25 20:12:24 2024
Analysis ended on: Wed Sep 25 20:12:24 2024
Total elapsed time: < 1 sec

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

DEL20-059 - Proposed Conditions - Dry Pond - New DP 240913

*************
Element Count
*************
Number of rain gages ...... 1
Number of subcatchments ... 8
Number of nodes ........... 7
Number of links ........... 5
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
----------------------------------------------------------------------
Central_Elgin        Hazel48                     VOLUME      60 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage           Outlet
-------------------------------------------------------------------------------------------
P1                           0.47     63.00     30.00    5.0000 Central_Elgin       BASIN
P2                           1.24     82.67     71.00    2.0000 Central_Elgin       BASIN
P3                           1.14    152.00     64.00    2.0000 Central_Elgin       BASIN
P4                           1.00    133.33     64.00    2.0000 Central_Elgin       BASIN
P5                           1.04    138.67     43.00    2.0000 Central_Elgin       BASIN
P6                           0.91    121.33     43.00    2.0000 Central_Elgin       BASIN
P7                           0.64     85.33     64.00    2.0000 Central_Elgin       BASIN
P8                           1.80    225.00      0.00   27.5000 Central_Elgin       Uncontrolled


************
Node Summary
************
                                    Invert      Max.    Ponded    External
Name                 Type            Elev.     Depth      Area    Inflow
-----------------------------------------------------------------------
ST33                 JUNCTION       209.42      3.93       0.0
OF1                  OUTFALL          0.00    209.67       0.0
OLF                  OUTFALL        213.20      0.00       0.0
ST3                  OUTFALL        209.39      1.15       0.0
Uncontrolled         OUTFALL          0.00      0.00       0.0
BASIN                STORAGE        209.60      4.00       0.0
DICB                 STORAGE        210.34      3.66       0.0


************
Link Summary
************
Name             From Node        To Node          Type            Length    %Slope Roughness
---------------------------------------------------------------------------------------------
HIGH_OUT         DICB             ST3              CONDUIT            7.1    0.9916    0.0130
LOW_OUT          ST33             OF1              CONDUIT            6.7    1.0489    0.0130
LOW              BASIN            ST33             ORIFICE
3                BASIN            OLF              WEIR
HIGH             BASIN            DICB             OUTLET


********************
Cross Section Summary
********************
                                     Full     Full     Hyd.     Max.   No. of     Full
Conduit          Shape              Depth     Area     Rad.    Width  Barrels     Flow
---------------------------------------------------------------------------------------
HIGH_OUT         CIRCULAR            0.25     0.05     0.06     0.25        1    59.22
LOW_OUT          CIRCULAR            0.25     0.05     0.06     0.25        1    60.91


****************
Analysis Options
```

DEL20-059: Crevits Farm Subdivision
Hurricane Hazel Design Storm Event - Proposed Conditions PCSWMM Output

```
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ YES
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 04/10/2015 00:00:00
Ending Date .............. 04/12/2015 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


*************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
*************************     ---------       -------
Total Precipitation ......         2.348       285.001
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.195        23.618
Surface Runoff ...........         2.104       255.332
Final Storage ............         0.051         6.153
Continuity Error (%) .....        -0.036


*************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
*************************     ---------      ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         2.103        21.030
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         1.635        16.352
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.467         4.674
Continuity Error (%) .....         0.024


************************
Highest Continuity Errors
************************
Node DICB (-5.73%)


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


********************************
Highest Flow Instability Indexes
********************************
Link HIGH (9)
Link HIGH_OUT (8)


********************************
Most Frequent Nonconverging Nodes
********************************
Node OF1 (3.38%)
Node OLF (3.38%)
Node ST3 (3.38%)
Node Uncontrolled (3.38%)
```

Node DICB (3.38%)

****
Routing Time Step Summary
****
Minimum Time Step : 0.50 sec
Average Time Step : 1.00 sec
Maximum Time Step : 1.00 sec
% of Time in Steady State : 0.00
Average Iterations per Step : 2.26
% of Steps Not Converging : 3.38
Time Step Frequencies :
1.000 - 0.871 sec : 100.00 %
0.871 - 0.758 sec : 0.00 %
0.758 - 0.660 sec : 0.00 %
0.660 - 0.574 sec : 0.00 %
0.574 - 0.500 sec : 0.00 %

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
P1	285.00	0.00	0.00	25.28	84.90	168.31	253.20	1.19	68.03	0.888
P2	285.00	0.00	0.00	10.47	199.85	69.48	269.33	3.34	181.23	0.945
P3	285.00	0.00	0.00	13.00	180.67	140.50	266.97	3.04	166.42	0.937
P4	285.00	0.00	0.00	13.00	180.67	140.50	266.97	2.67	145.98	0.937
P5	285.00	0.00	0.00	20.58	121.51	172.64	257.70	2.68	150.97	0.904
P6	285.00	0.00	0.00	20.58	121.51	172.64	257.70	2.35	132.10	0.904
P7	285.00	0.00	0.00	13.00	180.67	140.50	266.97	1.71	93.43	0.937
P8	285.00	0.00	0.00	51.93	0.00	225.70	225.70	4.06	252.49	0.792

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
ST33	JUNCTION	0.20	0.28	209.71	1 23:04	0.28
OF1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
OLF	OUTFALL	0.00	0.00	213.20	0 00:00	0.00
ST3	OUTFALL	0.00	0.00	209.39	0 00:00	0.00
Uncontrolled	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
BASIN	STORAGE	1.04	3.68	213.28	1 23:04	3.68
DICB	STORAGE	0.25	3.09	213.43	1 23:08	3.01

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
ST33	JUNCTION	0.00	65.74	1 23:04	0	5.46	0.007
OF1	OUTFALL	0.00	65.74	1 23:04	0	5.46	0.000
OLF	OUTFALL	0.00	0.00	0 00:00	0	0	0.000 ltr
ST3	OUTFALL	0.00	377.16	1 23:08	0	6.83	0.000
Uncontrolled	OUTFALL	252.49	252.49	1 22:00	4.06	4.06	0.000
BASIN	STORAGE	938.17	2418.17	1 21:52	17	18.6	2.560
DICB	STORAGE	0.00	2000.00	1 22:00	0	8.01	-5.422

****
Node Surcharge Summary
****

No nodes were surcharged.

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
BASIN	0.785	12.9	0.0	0.0	5.215	85.8	1 23:04	2065.74
DICB	0.000	6.9	0.0	0.0	0.003	84.5	1 23:08	1814.58

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
OF1	99.17	31.86	65.74	5.459
OLF	0.00	0.00	0.00	0.000
ST3	15.23	259.65	377.16	6.832
Uncontrolled	81.35	28.89	252.49	4.061
System	48.94	320.39	658.78	16.352

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
HIGH_OUT	CONDUIT	377.16	1 23:08	7.68	6.37	1.00
LOW_OUT	CONDUIT	65.74	1 23:04	1.49	1.08	0.84
LOW	ORIFICE	65.74	1 23:04			1.00
3	WEIR	0.00	0 00:00			0.00
HIGH	DUMMY	2000.00	1 22:00			

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
HIGH_OUT	1.00	0.85	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00
LOW_OUT	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00

****
Conduit Surcharge Summary
****

Conduit	Hours Full: Both Ends	Hours Full: Upstream	Hours Full: Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
HIGH_OUT	7.05	7.14	7.05	7.17	7.05
LOW_OUT	0.01	0.01	0.01	2.12	0.01

Analysis begun on: Wed Sep 25 20:05:27 2024
Analysis ended on: Wed Sep 25 20:05:27 2024
Total elapsed time: < 1 sec