DOMM HOLDINGS LTD.

STORMWATER MANAGEMENT REPORT

PROPOSED SUBDIVISION – AYTON

MUNICIPALITY OF WEST GREY

COUNTY OF GREY

OCTOBER 2024

COBIDE Engineering Inc
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TEL: 519-506-5959
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COBIDE ENGINEERING INC

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

1. INTRODUCTION

Cobide Engineering Inc. was retained by Domm Holdings Ltd. to complete a preliminary stormwater management report in support of a Draft Plan Approval Application. The application will be to subdivide the property into a 12 lot subdivision.

A copy of the proposed Draft Plan has been included in **Appendix A** as Drawing 05069-DP1.

1.1 LOCATION

The proposed subdivision development, herein referred to as the Site, is located on Lots 3, 4, 5, and 6 South of Victoria Street and Lots 4, 5, and 6 North of Albert Street, in the village of Ayton, within the former geographic Township of Normanby, Municipality of West Grey, County of Grey. There is no municipal address assigned to this property, but it is located within the settlement area of Ayton.

The subject lands in their entirety have been used for agricultural purposes and are currently farmed.

A Regional Location Map is included as **Figure 1**.

1.2 DEVELOPMENT PROPOSAL

The proposed development consists of 5.42 hectares (13.39 acres) of land within the Ayton settlement area.

The proposed plan is to develop the site into a residential subdivision. The subdivision will involve the extension of Victoria Street and Albert Street with the creation of lots of each street. The development will consist of the following:

Blocks/Lots	Description	Size
Lots 1 – 12	Detached Residential Lots	5.42 ha

Lots 1 through 11 will have frontage onto Victoria Street and Lot 12 will have frontage onto Albert Street. Both Victoria and Albert Streets will be extended and constructed to the Municipality of West Grey Standards for a rural road.

The Draft Plan showing the lot configuration has been included in **Appendix 1** and noted as Drawing 05069-DP1.

1.3 SCOPE OF WORK

The stormwater management report addresses the design and implementation of drainage and stormwater management facilities for the development.

The report includes:

- Details of erosion protection and sedimentation control for short-term, construction phase and the long-term;
- Rehabilitation/protection measures;
- Quantity Control;
- Quality Control;

- Established lot grading requirements for the proposed site based on existing topographic constraints, neighbouring properties, groundwater elevations and overall proposed drainage patterns;
- Provisions for the major and minor flows through the development;
- Summary of Peak Flows, Stormwater Management Facility Geometry and Performance, if applicable;
- Summary of how all County, Municipal and Watershed SWM criteria has been satisfied.

1.4 BACKGROUND INFORMATION

In support of this application, the following have been prepared or referenced:

- **Environmental Impact Study**, Domm Subdivision - Ayton, Aboud and Associates Inc., October 2024;
- **MECP D-5-5 Groundwater Supply Investigations**, Part Lot 15, Con. 10, Formerly Normanby Twp (Ayton), Municipality of West Grey, County of Grey, GAMAN Consultants Inc., June 2024;
- **Stage 1 – 2 Archaeological Assessment** of 1035 Victoria Road, In Part of Lot 14, Concession 10, Township of Normanby, Now Town of Ayton, Grey County, Ontario, Lincoln Environmental Consulting (LEC), October 2024;
- **Servicing Options Study**, Domm Subdivision - Ayton, Municipality of West Grey, Cobide Engineering Inc., October 2024;
- **Planning Justification Report**, Domm Subdivision - Ayton, Municipality of West Grey, Patterson Planning Consultants Inc., October 2024.
- **Geotechnical Investigation**, Proposed Residential Development, Victoria Street, Ayton, Ontario, CMT Engineering Inc., May 2024.
- **Grey County Planning and Development**, Pre-Submission Consultation Letter, March 16, 2023.

MAP SOURCE - MTO ROAD MAP

COBIDE ENGINEERING INC
517 - 10th STREET, Hanover, Ontario N4N 1R4
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Client/Project
PROPOSED RESIDENTIAL SUBDIVISION
VICTORIA STREET AND ALBERT STREET (AYTON)
MUNICIPALITY OF WEST GREY
COUNTY OF GREY
STORMWATER MANAGEMENT REPORT

Figure No.
1

Title
REGIONAL LOCATION MAP

ORIGINAL SHEET – 8 x 11
H:\Domm Construction\05069 – Domm Subdivision – Ayton\Drawings\Working Drawings\2024-06-11 SWM Regional Location 05069.dwg Jun 11, 2024 – 1:16pm

Figure 1 - Regional Location Map

2. DRAINAGE CHARACTERISTICS

2.1 REGIONAL

The site is bound by the South Saugeen River on the south and west sides. The subject property is part of a large watershed that is approximately 576 km^2 that outlets into the South Saugeen River.

2.2 LOCAL

The entire site and surrounding properties drain from northeast to southwest towards the valleylands of the South Saugeen River. The existing topography in the area is steeply sloped towards the valleylands and the river.

2.3 SOILS

According to the Grey County Soils Survey (1979), the soils on the site are classified as Harriston Silt Loam. Harriston Silt Loam is described as a well drained soil having the profile characteristics of the Grey-Brown Podzolic Soils which consist of medium textured till comprised of sandy silt to silty sand till with good drainage. These soils are typically associated with the Hydrologic Soils Group (HSG) BC.

2.4 DISCHARGE POINTS

For the purposes of the report, Discharge Point #1 is all the runoff that is conveyed by the subject property, flowing from northeast to the southwest towards the South Saugeen River.

3. STORMWATER CONTROL

The design guidelines and constraints utilized in the stormwater management review for the development are as follows:

3.1 DESIGN GUIDELINES

The main design guidelines utilized in this review is the Ministry of the Environment, Conservation and Parks "Stormwater Management Planning and Design (SWMP&D) Manual," dated March 2003 and Grey County's Stormwater Management Study Technical Guidelines dated July 12, 2024.

The SWMP&D Manual details the methodologies for the preparation and evaluation of urban/suburban stormwater management measures. Both documents provide direction on the design of drainage/ stormwater management facilities required to meet the goals and objectives of the various Municipal/ Provincial Review Agencies.

The SWMP&D Manual also provides information on the long-term operation and maintenance techniques for stormwater management facilities that may be implemented in the development of the subdivision.

While there will be no roads within the development, the existing road allowances for both Victoria Street and Albert Street will provide frontage for the proposed lots and will utilize a rural cross section with roadside ditches to convey the runoff from the right of way towards the South Saugeen River.

3.2 METHODOLOGY FOR COMPUTING STORMWATER RUNOFF

As noted previously, the objectives of the Stormwater Management (SWM) Plan for development is to ensure that there is an adequate outlet to convey the runoff from the minor and major storm systems.

The objectives are to be achieved by completing the following tasks:

i. Determining the existing drainage conditions.

ii. Determining the post-development drainage conditions.

iii. Design stormwater management measures that meet the criteria of the Municipality of West Grey, Ministry of Environment, Conservation and Parks (MECP), Grey County's Stormwater Management Study Technical Guidelines, and Saugeen Valley Conservation Authority (SVCA).

iv. Summarize the analysis by identifying conclusions and recommendations.

4. EXISTING CONDITIONS

The site is currently being used for agricultural purposes.

The existing catchments areas are delineated in Drawing 05069-SWM1 in **Appendix A**.

Summarized below is a description of each of the drainage catchment areas.

4.1 CATCHMENT AREA 101

- This catchment area encompasses the entire site and some of the neighbouring properties.
- Surface water flows by sheet flow from northeast to southwest and discharges to the South Saugeen River.
- Catchment Area 101 is considered to discharge at Discharge Point #1 for the purposes of this report.
- Drainage Area = 6.33 ha.

5. PROPOSED CONDITIONS

The proposed catchment area boundaries are delineated on Drawing 05069-SWM2 in **Appendix A**.

Summarized below is a description of each of the drainage catchment areas.

5.1 CATCHMENT AREA 201

- This catchment area is the same as Catchment 101.
- Minor and major flows will be flow overland, both discharging to the South Saugeen River.
- Catchment Area 201 is considered to discharge at Discharge Point #1 for the purposes of this report.
- Drainage Area = 6.33 ha

6. QUANTITY CONTROL MODELLING

The hydrologic modelling software PCSWMM Version 7.5.3406 Professional 2D was used to determine the pre and post-development peak flows of the 2 yr., 5 yr., 25 yr., 50 yr., and 100 yr. storm events (6 hour duration, SCS Type II, AMC II storm, Mount Forest IDF Parameters). Based on the pre-submission letter dated March 16, 2023, which reference the *Grey County Stormwater Management Study* guidelines, all post development flows must match pre-development levels to the respective outlets. A copy of the pre-submission letter has been included in **Appendix B**. A copy of the IDF Parameters has been included in **Appendix C**.

The pre-development and post development parameters and model outputs are contained in **Appendix D and E** respectively.

6.1 DESIGN REQUIREMENTS

The intent of stormwater quantity control is to limit the peak flows under proposed conditions to existing levels or less to protect the downstream watercourses, infrastructure, and properties.

Major and minor flows from Catchment Area 201 will be conveyed directly to the South Saugeen River via overland flow over and through grassed and vegetated areas. This approach mirrors the current flow and outlet pattern. Changes in grading will occur around the proposed dwellings to direct the runoff away. The majority of the grading within the rear of the proposed lots will remain unchanged since only a small portion of the overall lot area will be developed. A naturalized stormwater management system will be implemented and as such, no formal stormwater management facility is being proposed for this development. Disturbed areas will be revegetated using native species to promote both infiltration and filtration of the runoff.

6.2 MODELLING RESULTS

Based upon the above catchment areas, the following summarizes the pre-development and post development peak flows.

Table 6.1 – SWM Peak Flow Summary

RETURN PERIOD	DISCHARGE POINT #1 (L/S)	
	CATCHMENT 101	CATCHMENT 201
	PRE	POST
2 Year	139.3	245.1
5 Year	298.6	468.1
25 Year	643.4	907.3
50 Year	815.8	1,114.8
100 Year	1,002.4	1,333.4

As seen in the table above, all post development storm event flows are greater than the pre-development. A very small portion of the developed lots will be impervious allowing for natural infiltration and evaporation of the runoff generated from the proposed development. As previously mentioned, there will be no formal stormwater management facility (i.e., pond) for this development. While there will be an increase in the overall peak flows under the post development conditions, control to pre-development levels is not required since the South Saugeen River will provide adequate downstream attenuation of these flows.

7. QUALITY CONTROL

To meet the requirements of the SVCA and the MECP, stormwater quality control will be provided for the proposed development. The MECP SWMP&D Manual recommends that the required level of protection be associated with the habitat sensitivity of the receiving watercourse. The ultimate receiving watercourse for this development is the South Saugeen River. For the purposes of this report, an 'Enhanced' water quality protection level will be implemented in accordance to the MECP, Grey County and SVCA requirements.

Considering the proposed subdivision is a rural development, suspended solids, runoff temperatures, and runoff volumes will be significantly less than that for a typical urban development. The reduction of these parameters can be expected as a result of the following factors:

- Each lot is 0.35 hectares in area or greater compared to 0.05 hectares for a typical urban residential lot within the Municipality of West Grey. Impervious surfaces created by roof and driveways will comprise of less than 10% of the overall lot area and therefore, approximately, 90% of the lots will remain pervious with grassed or natural ground covering. Generally, the infiltration characteristics of the native soils will be preserved or be improved through the planting of turf grasses as opposed to field crops.
- The extensions of both Victoria and Albert Streets will not be part of the overall development boundary, therefore, the only vehicular traffic will be that of vehicles entering their driveways resulting in minimal pollutants being introduced.
- As stated above, the extensions of the roads will not be within the development boundary and will utilize the rural road cross section which provides less impervious area than that of the typical urban street cross section with curb and gutter and sidewalks.
- Typical urban developments provide the collection of runoff by storm sewers which results in poor water quality. This is due to direct discharge from imperious surfaces to storm sewers which provide no opportunity for the settling of suspended soils or temperature reduction. Grassed swales and overland flow through vegetation will be used in place of storm sewers and any runoff from the road extensions will be directed through grassed roadside ditches.

In keeping with the approach suggested in the SWMP&D manual however, a 'treatment train' approach to stormwater quality management has been proposed for this development. This approach consists of three (3) levels of treatment which are described as follows:

- Lot level control measures
- Conveyance control measures
- End-of-Pipe control measures

A review of each measure and its suitability for use in the development is discussed below:

7.1 LOT LEVEL CONTROL MEASURES

Typical municipal design standards require minimum grades of 2% from the back of curb to the property line. Due to the rural road cross section being proposed for both Victoria and Albert Street, no curb will be present. It is, however, good practice to provide a minimum of 2% grading away from a dwelling that would contain below grade living space (i.e., basement), thus, reduced lot grading of the front and side yards to less than 2% is not feasible. It is also not feasible due to the existing topography within the development boundary, to reduce the grading to less than 2% for the remainder of the yards.

In general, all soils will support some amount of infiltration. However, the native soils encountered on the subject site do not generally provide favourable conditions for significant stormwater infiltration. Therefore, the use of individual drainage pits and infiltration trenches has not been considered as a feasible option.

It is proposed that all runoff draining from rooftops be directed overland across the grass lawns to encourage infiltration and filtering of pollutants from this runoff. This can be done by encouraging the use of native plantings such as trees, shrubs, grasses and certain ground coverings such as mulch. Maintaining existing drainage conditions by maintaining existing features is the ultimate goal of lot level controls. The following note will also be added to the Lot Grading Plan “Roof drain downspouts shall be directed to grassed areas of the property and not to driveways or private drain connections”.

7.2 CONVEYANCE CONTROL MEASURES

Since this development will require the extension of Victoria Street and Albert Street in accordance with the *Municipality of West Grey’s Standard Rural Road* cross section, the use of grass roadside ditches as a conveyance control measure for runoff from the road right-of-way will be implemented.

For the development boundary (i.e., Catchment 201), bioswales such as grassed channels, wet swales or dry swales may be proposed to be constructed in the rear yards of the lots. These swales will provide rear yard drainage for the proposed lots. They will assist with slowing, cleansing and infiltration of stormwater runoff along the way by removing pollutants and sediment from the runoff prior to discharge into the South Saugeen River. A combination of grasses, perennials, shrubs, groundcover and trees can be implemented to aid in the overall aesthetics and stormwater management goals.

7.3 END-OF-PIPE CONTROL MEASURES

As discussed previously, there will be no formal stormwater management facility for this development. The proposed overland flow and discharge rates will be controlled by mirroring the existing drainage patterns and maintaining as much of the pre-development pervious areas as possible. Where required, vegetated drainage swales will be proposed as end-of-pipe treatment for the subject lands. The rear yard common swale that will discharge into the South Saugeen River will be engineered at the design stage through consultation with the Saugeen Valley Conservation Authority.

7.4 THERMAL REGIME

Detention facilities, such as stormwater management ponds, typically receive the stormwater runoff from relatively large contributing areas such as an entire subdivision and are located at the outfall of a storm sewer system prior to release of stormwater runoff to the receiving watercourse or waterbody. Stormwater management facilities are designed and constructed to hold or store stormwater runoff and release it in a controlled manner to the receiving waterbody or channel. According to the Low Impact Development (LID) Stormwater Management Guidance Manual, detention ponds can significantly alter the temperature of stormwater.

Taking the above factors into consideration as well as the existing runoff patterns and topography of the development lands, no formal stormwater detention facility is being proposed for this development. As such, it can be determined that the thermal regime of the South Saugeen River will not be negatively impacted as the intent of this approach is to keep the existing water balance as close to pre-development conditions as possible by continuing to promote overland flow directly to the river without detaining any runoff on the subdivision property.

The details of the fish habitat and thermal regime of the South Saugeen River can be found within the ***Environmental Impact Study*** that was completed by Aboud and Associates Inc.

8. EROSION & SEDIMENTATION CONTROL

8.1 CONSTRUCTION STAGE

Prior to the start of construction, appropriate sediment control facilities are to be in place. The following details regarding erosion and sediment control are to be implemented:

- Placement of heavy-duty siltation fencing is required along the southwest property boundary to intercept sediment that could potentially be transported by sheet flow across the site towards the South Saugeen River. Light Duty Siltation fence will also be installed at any development grading limits where runoff may discharge from the site.
- It is proposed that any stormwater controls be constructed first to control site runoff from entering directly into the South Saugeen River complete with an approved outlet.
- Placement of temporary straw check dams within swales and any other locations where a concentrated flow of runoff may occur. All proposed drainage swales are to be seeded during construction;
- Mud mats will be placed at construction accesses to keep public roadways free from debris during the construction period.
- Re-vegetate all disturbed areas after underground and surface works have been constructed.

Prior to removal of sediment control facilities, ensure that sediment that may have accumulated has been removed. Once the ground surface of the site has been stabilized, the rock check dams and siltation fences can then be removed.

During the construction phase, it is important to ensure that erosion/sediment control is in place to ensure against transport of sediment into the existing downstream drainage ditches.

8.2 LOT DEVELOPMENT

During individual construction of homes within the subdivision, silt barriers are to be constructed, as appropriate, to prevent the eroding of materials into the roadside drainage system. The sedimentation control can be in the form of siltation fences or coir logs placed in the direction of flow from the construction site and shallow excavated sediment traps (moats) should be constructed around any stockpiled materials.

The responsibility for the individual lot sediment control lies with the landowner/builder constructing the dwelling.

The proposed development grading design will generally follow the existing grade. The proposed grading design will match all existing grades at the property lines and will not alter or affect the drainage patterns of the neighbouring properties. The proposed site grading will drain the stormwater through the roadside ditches and grassed towards the South Saugeen River. The majority of the existing slopes found on site are greater than 6%. It is proposed that once developed, the lots will generally conform to the existing grades within the site. Some minor re-grading will be required for the proposed dwellings, driveways, septic beds, etc.

8.3 RESTORATION AND PROTECTION MEASURES

Every effort will be made to restore all disturbed areas as soon as possible after the completion of construction and lot development. A synergistic approach during construction, lot development and post-construction will be used to ensure adequate restoration to the disturbed areas has been completed to provide appropriate protection measures. This will be achieved by allowing disturbed areas to revegetate

before removing sediment and erosion control measures as to avoid their migration from the subject property to any to adjacent properties, infrastructure and/or the municipal right-of-way.

When and where beneficial, interim, and rough grading of the property shall be completed such that the drainage and runoff is contained on site or controlled to a positive outlet. Special care shall be taken to ensure that silt and sediment laden surface water does not enter any watercourses or environmentally sensitive areas, either overland or through the storm drainage system.

9. CONCLUSIONS & RECOMMENDATIONS

The above report presented the Preliminary Stormwater Management Plan in support of Re-Zoning and Draft Plan Approval Application. Based on the findings of this report, the following conclusions are made:

1. Stormwater quantity control will be provided through a natural stormwater management approach by utilizing native vegetation and plantings along with grassed/vegetated swales, where required. The majority of the proposed development will remain unchanged with a small percentage of the post development area becoming impervious. Post Development flows can be safely conveyed overland to the South Saugeen River.
2. Quality control will be provided by maintaining existing drainage conditions and existing drainage features along with the treatment train approach which will include lot level control, conveyance control and 'end-of-pipe' control measures.

   Lot level control will be provided by directing most impervious areas over vegetated areas and directing all rear yard drainage to or over vegetated areas prior to discharging into the South Saugeen River.

   Conveyance control will be achieved by use of bioswales which will assist with slowing, cleansing and infiltration along the way by removing pollutants and sediment from the runoff prior to discharge into the South Saugeen River.

   End-of-pipe control will be provided by mirroring the existing drainage patterns and maintaining as much of the pre-development pervious areas as possible. Where required, vegetated drainage swales will be proposed as end-of-pipe treatment for the subject lands

   All three levels of the treatment train approach will be used for the development to provide an "Enhanced" Level of protection for the development.

Based on the above conclusions of this report, it is recommended that the above Preliminary Stormwater Management Report for the subdivision be submitted to the County of Grey, the Municipality of West Grey, and SVCA as part of the Draft Plan Approval Application.

If you have any questions regarding the above, please contact either of the undersigned at 519-506-5959.

Sincerely,

Cobide Engineering Inc.

Amy Hoffarth, P.Eng.
Project Engineer
Ext. 104

Stephen Cobean, P.Eng.
Director
Ext. 102

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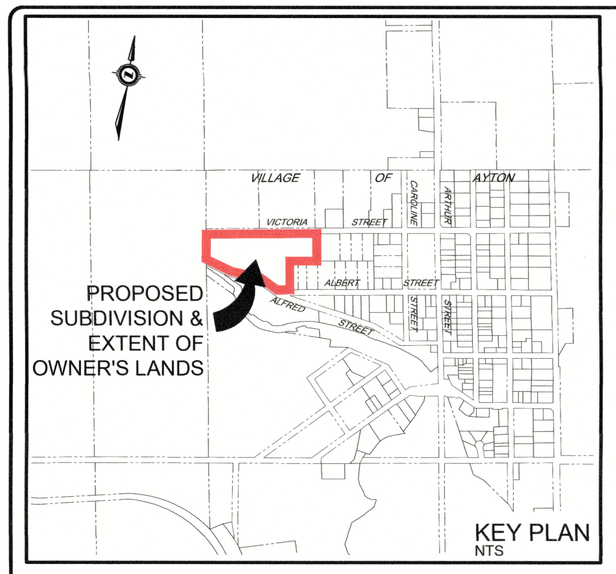
Appendix A

DRAWINGS

05069-DP1 – PROPOSED DRAFT PLAN

05069-SWM1 – PRE-DEVELOPMENT CATCHMENT AREAS

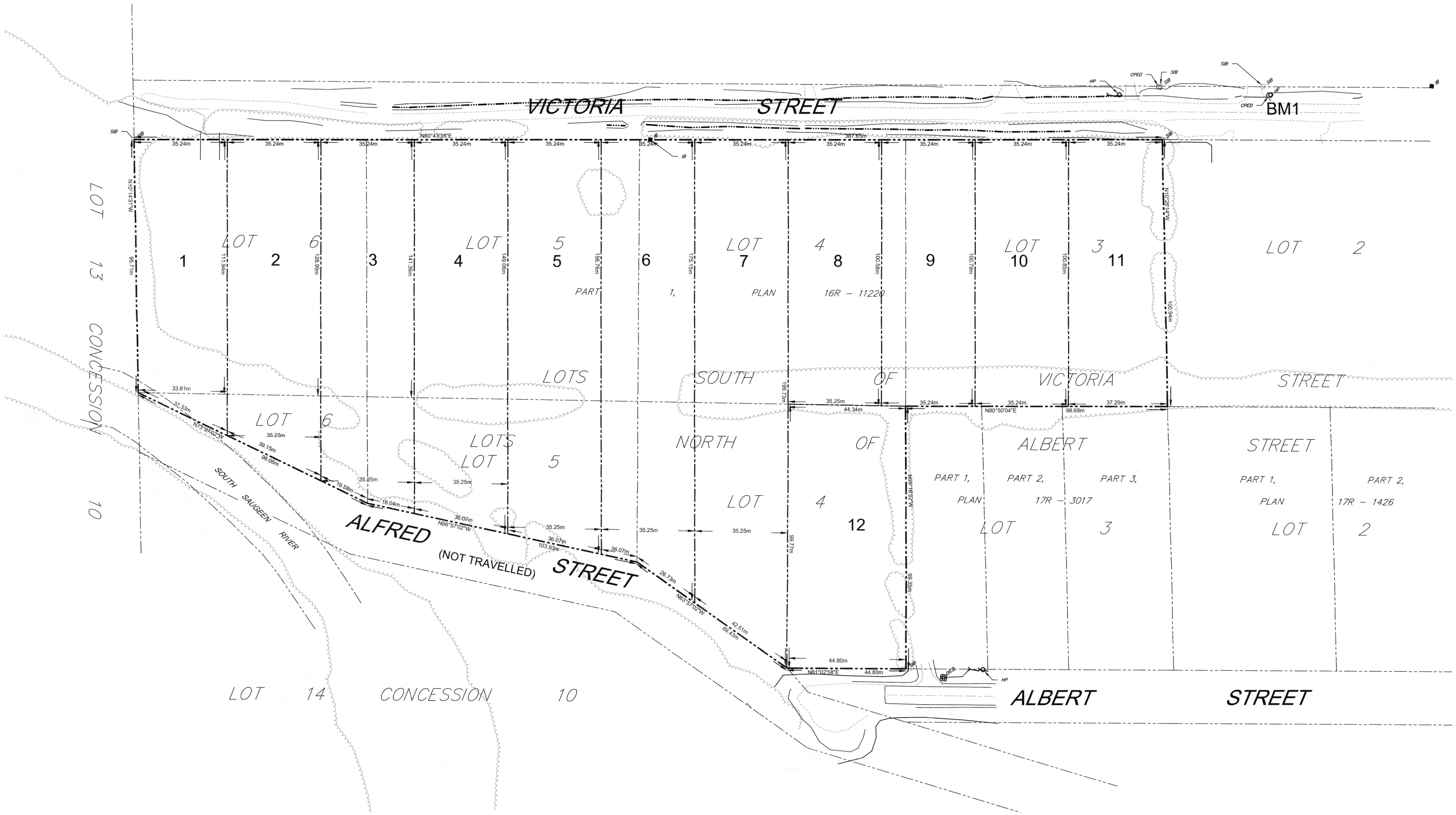
05069-SWM2 – POST DEVELOPMENT CATCHEMNT AREAS



LEGEND

- PROPERTY BOUNDARY
- PROPOSED STREET/PROPERTY LINES
- EDGE OF EXISTING PAVEMENT
- EDGE OF EXISTING GRAVEL
- BM — BENCHMARK
- 000.00 — EXISTING CONTOUR LINE
- EXISTING HYDRO GUY WIRE
- HP — EXISTING HYDRO POLE
- CATV — EXISTING CABLE TV PEDESTAL
- BPED — EXISTING TELEPHONE PEDESTAL
- SIB — STANDARD IRON BAR
- IB — IRON BAR
- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- EXISTING TREE LINE

Lot Information												
Lot Number	1	2	3	4	5	6	7	8	9	10	11	12
Frontage (m)	35.24	35.24	35.24	35.24	35.24	35.24	35.24	35.24	35.24	35.24	35.24	44.8
Area (sq.m)	3566.7	4245.2	4805.0	5117.5	5388.8	5776.6	6584.3	3533.6	3550.0	3552.9	3658.8	4447.8



DRAFT PLAN OF SUBDIVISION

LOTS 3, 4, 5 & 6 SOUTH OF VICTORIA STREET
AND LOTS 4, 5 & 6 NORTH OF ALBERT STREET
REGISTERED PLAN No. 153
(VILLAGE OF AYTON)
GEOGRAPHIC TOWNSHIP OF NORMANBY
MUNICIPALITY OF WEST GREY
COUNTY OF GREY

RELEVANT SITE INFORMATION

DETACHED RESIDENTIAL LOTS (LOTS 1-12)	5.423 ha.
TOTAL PROPOSED SUBDIVISION	5.423 ha.

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51 OF THE PLANNING ACT

a. AS SHOWN
b. AS SHOWN
c. AS SHOWN
d. SINGLE FAMILY RESIDENTIAL,
e. AS SHOWN
f. AS SHOWN
g. AS SHOWN
h. PRIVATE WELLS
i.SANDY SILT & GRAVEL
j. AS SHOWN
k. HYDRO, TELEPHONE
l. AS SHOWN

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:
THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE CORRECTLY SHOWN.

Sept. 26, 2024
DATE

D. A. CULBERT
ONTARIO LAND SURVEYOR
D. CULBERT LTD.

OWNER'S CERTIFICATE

I, THE REGISTERED OWNER OF THESE LANDS, HEREBY AUTHORIZE COBIDE ENGINEERING INC. TO SUBMIT THIS DRAFT PLAN FOR APPROVAL.

SEPT 30/24
DATE

JAKE DOMM
VICE PRESIDENT
DOMM HOLDINGS LTD.

Notes

1. PROPERTY BOUNDARY DERIVED FROM INFROMATION SHOWN ON PLAN 16R-11220.
2. TOPOGRAPHICAL INFORMATION DERIVED FROM SURVEY PERFORMED BY COBIDE ENGINEERING INC. ON DECEMBER 08, 2023 & JANUARY 03, 2024.

Benchmark Information

BM1 — NAIL IN HYDRO POLE ON VICTORIA STREET AS SHOWN
ELEVATION 348.18m

SCALE 1:750 (24 x 36)
10 0 10 20 50 METRES
50 0 25 50 100 FEET

No.	DATE	DESCRIPTION	BY	APPD
2	SEPT 25/24	REVISED PRELIMINARY SUBMISSION	TLB	SJC
1	FEB 14/24	REVISED PRELIMINARY SUBMISSION	TLB	SJC
0	OCT 23/23	PRELIMINARY SUBMISSION	TLB	SJC

REVISION / ISSUE

COBIDE ENGINEERING INC
517 - 10th STREET, Hanover, Ontario N4N 1R4
Telephone: (519) 506-5959
www.cobideeng.com

Client: DOMM CONSTRUCTION

Design:	TLB	Scale:	1:750
Drawn:	JAF	Approved:	
Checked:	SJC		
Date:	OCT 2023		Design Engineer

DRAWING No. 05069-DP1

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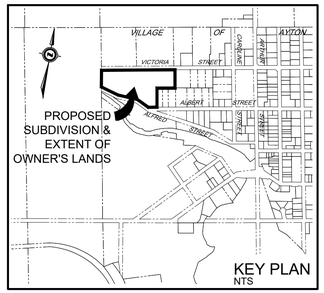
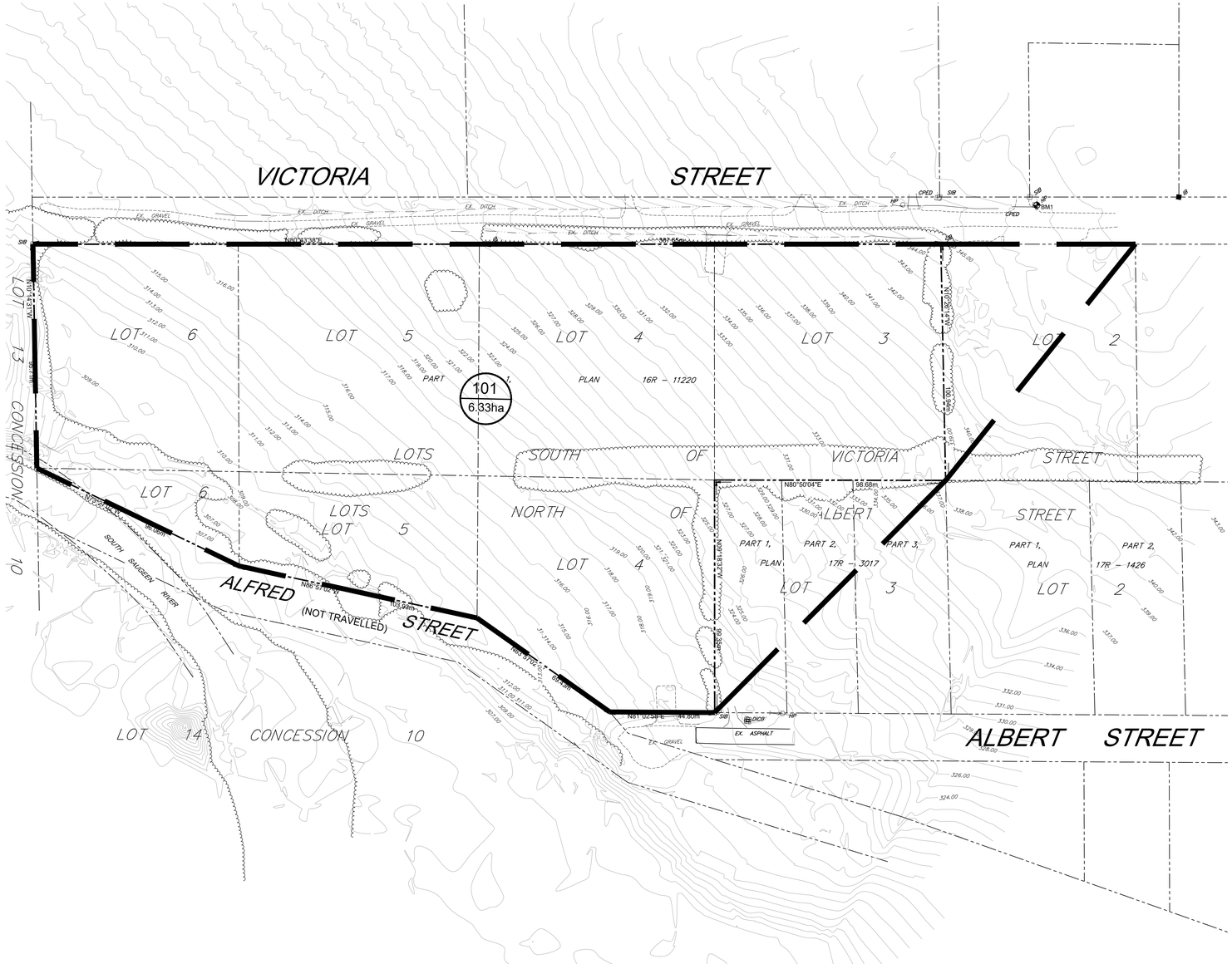


LEGEND

- PROPERTY BOUNDARY
- PROPOSED STREET/PROPERTY LINES
- EDGE OF EXISTING PAVEMENT
- EDGE OF EXISTING GRAVEL
- EXISTING TREE LINE
- EXISTING CONTOUR LINE
- BENCHMARK
- PRE-DEVELOPMENT CATCHMENT AREA
- POST DEVELOPMENT CATCHMENT AREA
- EXISTING HYDRO GUY WIRE
- HP EXISTING HYDRO POLE
- CATV EXISTING CABLE TV PEDESTAL
- BPED EXISTING TELEPHONE PEDESTAL
- SIB STANDARD IRON BAR
- IB IRON BAR
- 101 / 6.33ha — CATCHMENT No. / CATCHMENT AREA



CAUTION:
THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE DRAWINGS, AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

Notes

1. TOPOGRAPHICAL INFORMATION DERIVED FROM FIELD SURVEY BY COBIDE ENGINEERING INC. COMPLETED ON JANUARY 3, 2024 AND DRONE SURVEY.
2. PROPERTY BOUNDARY DERIVED FROM INFORMATION SHOWN ON PLAN 16R-11220.

SCALE 1:1000 (24 x 36)

10 0 5 15 25 50 75 METRES
50 0 25 50 100 250 FEET

Benchmark Information

BM1 NAIL IN HYDRO POLE ON NORTH SIDE OF VICTORIA STREET AS SHOWN.
ELEVATION 348.18m

No.	DATE	DESCRIPTION	BY	APPD
0	OCT 4/24	PRELIMINARY SUBMISSION	ARMH	SJC

REVISION / ISSUE

Seal not valid unless signed and dated

COBIDE ENGINEERING INC
517 - 10th STREET, Hanover, Ontario N4N 1R4
Telephone: (519) 506-5959
www.cobideeng.com

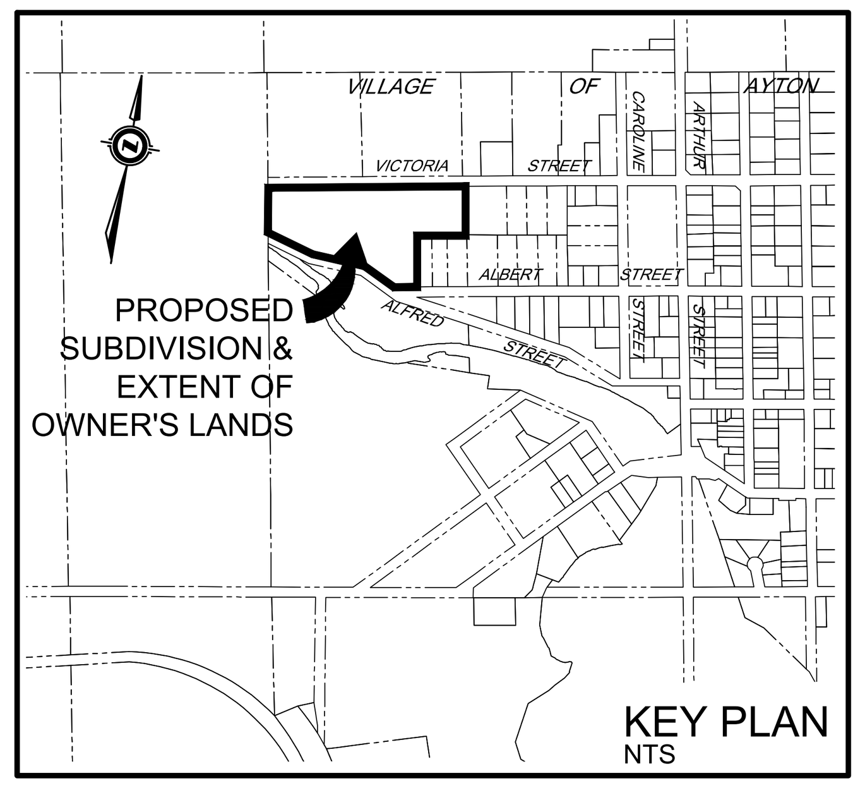
Title:
PROPOSED SUBDIVISION
(VILLAGE OF AYTON)
GEOGRAPHIC TOWNSHIP OF NORMANBY
MUNICIPALITY OF WEST GREY
PRE-DEVELOPMENT CATCHMENT AREAS

Client: DOMM CONSTRUCTION

Design:	TLB	Scale:	1:1000
Drawn:	JAF	Approved:	
Checked:	SJC		
Date:	APR 2024		Design Engineer

DRAWING No. 05069-SWM1

H:\Domm Construction\05069 - Domm Subdivision - Ayton\Drawings\Submissions\2024-06-12 SWM\05069 SWM.dwg Oct 04, 2024 - 12:04pm



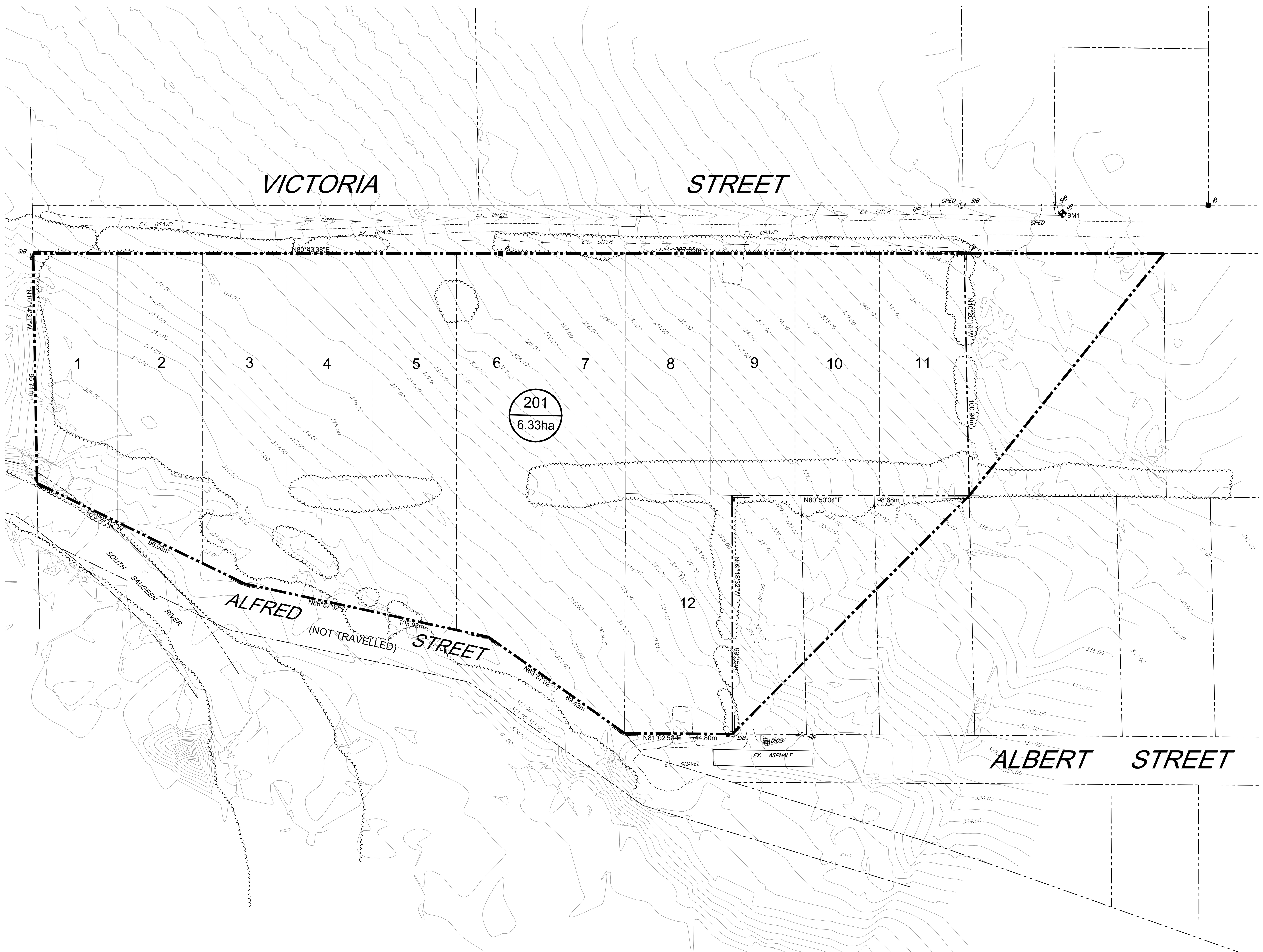
LEGEND

- PROPERTY BOUNDARY
- PROPOSED STREET/PROPERTY LINES
- EDGE OF EXISTING PAVEMENT
- EDGE OF EXISTING GRAVEL
- EXISTING TREE LINE
- EXISTING CONTOUR LINE
- BENCHMARK
- PRE-DEVELOPMENT CATCHMENT AREA
- POST DEVELOPMENT CATCHMENT AREA
- EXISTING HYDRO GUY WIRE
- EXISTING HYDRO POLE
- EXISTING CABLE TV PEDESTAL
- EXISTING TELEPHONE PEDESTAL
- STANDARD IRON BAR
- IRON BAR
- 101 CATCHMENT No.
- 6.33ha CATCHMENT AREA

CAUTION:
THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE DRAWINGS, AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

Notes

1. TOPOGRAPHICAL INFORMATION DERIVED FROM FIELD SURVEY BY COBIDE ENGINEERING INC. COMPLETED ON JANUARY 3, 2024 AND DRONE SURVEY.
2. PROPERTY BOUNDARY DERIVED FROM INFORMATION SHOWN ON PLAN 16R-11220.



SCALE 1:1000 (24 x 36)

Benchmark Information

BM1 NAIL IN HYDRO POLE ON NORTH SIDE OF VICTORIA STREET AS SHOWN.
ELEVATION 348.18m

No.	DATE	DESCRIPTION	BY	APPD
0	OCT 4/24	PRELIMINARY SUBMISSION	ARMH	SJC

REVISION / ISSUE

Seal not valid unless signed and dated

COBIDE ENGINEERING INC
517 - 10th STREET, Hanover, Ontario N4N 1R4
Telephone: (519) 506-5959
www.cobideeng.com

Title:
PROPOSED SUBDIVISION
(VILLAGE OF AYTON)
GEOGRAPHIC TOWNSHIP OF NORMANBY
MUNICIPALITY OF WEST GREY
POST DEVELOPMENT CATCHMENT AREAS

Client: DOMM CONSTRUCTION

Design:	TLB	Scale:	1:1000
Drawn:	JAF	Approved:	
Checked:	SJC		
Date:	APR 2024		Design Engineer

DRAWING No. 05069-SWM2

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Appendix B

PRE-SUBMISSION CONSULTATION LETTER

PLANNING AND DEVELOPMENT

595 9th Avenue East, Owen Sound Ontario N4K 3E3
519-372-0219 / 1-800-567-GREY / Fax: 519-376-7970

March 16, 2023

Scott Patterson
Patterson Planning Consultants Inc.
6095 Line 66
Monkton, ON
N0K 1P0
scott@lpplan.com

* Sent by Email only

RE: Pre-submission Consultation – Proposed 13-lot Residential Subdivision
Legal Description: PLAN 153 PARK LOT 4 TO 6;ALBERT N PLAN 153 PARK LOT 3;TO 6 VICTORIA S
Civic: 1035 Victoria Street, Ayton
Municipality of West Grey
Roll Number: 420501000820900

Dear Mr. Patterson:

This correspondence is in response to our meeting on March 2, 2023. Thank you for taking the time to meet with Municipal, County and Conservation Authority staff to gather feedback on your development proposal. The Municipality of West Grey and the County of Grey offer the following comments as a written record of our discussions and some next steps for the development process.

As discussed in the meeting, the applicant is proposing to develop a subdivision consisting of 13 residential lots, all of which would be at least 0.77 acres in size. The subject lands are located south of Victoria Street and north of Albert Street, in the village of Ayton, West Grey. The subject lands are presently vacant, and the proposed subdivision would likely make use of private individual services (septic and well water). Surrounding uses include low-density residential properties to the east, vacant properties to the north, and the Saugeen River directly south and west.

The County Official Plan maps the subject lands as:

- Within the 'Secondary Settlement Area' and 'Hazard Lands' designations on Schedule A,
- Containing Significant Woodlands, and within the adjacent lands of the Saugeen River to the south, and Significant Valleylands to the immediate west.
- Designations under the Municipality of West Grey do not apply to lands outside of the primary settlement areas of Durham and Neustadt.

Regarding access to the property, County and Municipal staff note that the property fronts on Victoria Street, which is currently part of an unopened road allowance (not presently upgraded or maintained by the Municipality). As part of the proposal, the applicant would be responsible for upgrading this section of the road to municipal standards. Any upgrades must consider adequate turning circles for snow ploughs, school busses, emergency vehicles, etc. at the end of the road. While the County's Official Plan discourages cul-de-sacs, staff recognize that there may be site-specific constraints that could limit a connecting road between Albert and Victoria Street. Staff would recommend that the proposed road network be explored and justified through a submitted Planning Justification Report.

To permit the proposed use on the subject property, a Plan of Subdivision Application would be required, in addition to a Zoning By-Law Amendment. Grey County is the decision-making authority for Plans of Subdivisions and West Grey is the decision-making authority for a Zoning By-Law Amendment.

For a complete Subdivision application, the following studies and reports would be required, per Section 9.17 of the County's Official Plan:

- Accurate and complete application forms
- Payment of applicable fees:
    - County Subdivision fee would be $7400.00 plus $114.00 per lot; in addition to a $5000 peer review fee.
    - The West Grey subdivision fee is required and is $1,000 plus $5,000 in contingency fees.
- Information as required in Ontario Regulation 544/06
- Environmental Impacts Study. A Technical Guide is available here.
- Servicing Options Study. A Technical Guide is available here.
- D-5-4 and D-5-5 studies (Note: these studies may be completed in conjunction with the above Servicing Options Study)
- Stormwater Management Study and Plan: A Technical Guide is available here.
- Grading and Drainage Plan (Note: A Grading a Drainage Plan/Report may be completed in conjunction with the Stormwater Management Study).
- Hydrogeological report
- Geotechnical report
- Archaeological assessment
- Planning justification report addressing the requirements of the Planning Act, Provincial Policy Statement, County Official Plan, and Municipal Zoning By-Law

Please send any Terms of Reference for the above studies to County and Municipal staff, prior to commencement.

West Grey staff request that the zoning amendment application only be submitted following a decision on the plan of subdivision application. Bill 109 imposes strict timeline requirements for zoning by-law amendments, and staff are committed to meeting these requirements. West Grey staff note that the Subdivision application process is often fluid with adjustments. To submit an application for a zoning amendment at this time could potentially create a duplication of process. Planning staff prefer that the application be submitted after sufficient review has been conducted on the subdivision application. The current fee for a zoning by-law amendment is $1,460.00 but this is subject to change, depending on when a formal zoning amendment application is submitted.

Staff would note that at least one-third of the property falls within a Saugeen Valley Conservation Authority (SVCA) regulatory area. The property is also situated within the traditional territory of the Saugeen Ojibway Nation (SON) and the Historic Métis community. Prior to moving forward with the above studies, the County would recommend that formal comments be received by SVCA, and that the applicant engage with local First Nations and Métis communities. It may be helpful for one or all of these partners to provide further insight into Terms of Reference for any of the above studies; to suggest other studies; and/or to provide general planning comments at an early stage. Staff would flag that SON may have interest in establishing Terms of Reference for any Archaeological Assessment.

Copies of the County's application forms, as well as all Technical Guidelines documents can be found at the below link:

https://www.grey.ca/planning-development/planning-application-forms

A copy of the required application forms can be provided by contacting the West Grey Manager of Planning and Development by email: lspencer@westgrey.com

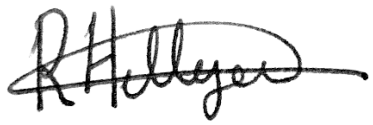
A link to the County's Public GIS Platform is available here: https://maps.grey.ca/

Tree removal in advance of any approvals of this development shall only be done in accordance with the County's Forest Management By-law, and any applicable by-laws or regulations at the Municipal, and GSCA levels. A link to the County's Forest Management By-law can be found at: https://www.grey.ca/by-laws

The County and Municipality reserve the right to request further information based on public or agency comments or detailed technical review after the applications have been submitted.

If you wish to discuss this matter further, please contact us.

Yours truly,



Becky Hillyer
Intermediate Planner
519-372-0219 ext. 1233
becky.hillyer@grey.ca
www.grey.ca

Cc Lorelie Spencer (by email only)
Hiba Hussain, County of Grey (by email only)
Michael Cook, SVCA

Appendix C

IDF PARAMETERS

Environment and Climate Change Canada
Environnement et Changement climatique Canada

Short Duration Rainfall Intensity-Duration-Frequency Data
Données sur l'intensité, la durée et la fréquence des chutes de pluie de courte durée

Gumbel - Method of moments/Méthode des moments

2022/10/31

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MOUNT FOREST (AUT) ON 6145504

Latitude: 43 59'N Longitude: 80 45'W Elevation/Altitude: 414 m

Years/Années : 1962 - 2020 # Years/Années : 43

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****

Table 1 : Annual Maximum (mm)/Maximum annuel (mm)

****

Year / Année	5 min	10 min	15 min	30 min	1 h	2 h	6 h	12 h	24 h
1962	10.4	14.7	18.0	18.0	19.6	23.9	33.0	38.9	45.0
1963	14.0	15.2	21.1	31.7	43.7	49.3	51.3	54.9	61.0
1964	10.4	12.2	14.7	25.7	28.4	29.5	35.3	37.6	61.2
1965	10.2	14.5	17.0	22.6	31.5	32.3	33.0	33.5	33.5
1966	9.9	15.2	19.3	21.1	24.6	27.2	28.2	38.1	56.1
1967	11.2	12.7	13.7	17.3	22.9	24.6	36.3	49.8	50.0
1968	8.4	13.5	17.8	28.7	43.4	52.1	74.4	74.7	83.8
1969	6.1	10.4	12.4	18.0	20.1	20.1	35.1	37.6	39.6
1970	8.6	13.2	13.5	15.7	19.0	20.1	36.8	53.6	56.9
1971	12.7	15.0	15.7	16.0	17.8	20.3	26.2	27.2	34.0
1972	6.9	10.2	13.0	18.0	22.4	33.3	45.2	47.5	50.3
1973	5.6	9.4	11.2	13.2	15.2	18.0	23.1	24.4	32.5
1974	5.3	7.1	9.7	19.0	35.6	40.6	42.7	42.7	42.7
1975	6.3	8.4	9.7	18.0	21.1	28.4	36.1	47.5	51.1
1976	9.1	13.5	16.5	19.0	27.7	33.8	35.8	35.8	43.4
1977	11.7	17.0	18.8	20.1	27.7	41.1	69.1	81.3	81.3
1978	14.8	15.4	18.0	21.2	21.6	25.6	40.3	43.7	52.5
1979	10.5	11.1	11.1	14.4	16.6	32.4	40.5	53.4	64.5
1980	8.9	16.3	19.3	25.4	34.3	43.5	48.3	49.4	49.4
1981	7.7	8.8	10.8	12.7	13.4	17.2	31.0	35.8	41.4
1982	6.9	10.9	13.9	18.6	24.6	29.6	30.4	30.6	32.6

1983	7.9	13.7	15.8	31.4	37.2	38.2	38.2	42.0	43.3
1984	6.8	9.2	11.2	14.6	14.6	20.2	25.2	32.8	33.0
1985	8.8	16.4	22.0	38.6	49.2	53.9	56.2	56.2	64.4
1986	8.2	12.7	15.7	22.7	27.2	39.8	46.8	64.4	93.3
2003	9.2	15.8	18.0	23.6	29.2	34.6	37.0	37.0	40.2
2004	8.4	13.0	16.0	20.0	22.4	25.0	39.0	39.4	39.4
2005	5.6	9.2	12.0	20.0	26.8	32.2	32.2	32.4	40.0
2006	8.6	15.2	20.0	21.0	23.2	34.0	48.8	55.2	55.4
2007	11.4	19.0	22.6	30.0	33.8	35.8	35.8	43.4	55.4
2008	9.8	12.8	14.0	19.0	23.2	33.4	47.0	53.0	78.4
2009	12.4	17.6	18.8	24.6	25.2	28.0	38.6	44.4	56.6
2010	8.0	11.6	12.2	17.6	22.8	31.4	59.2	64.8	65.4
2011	7.0	10.4	14.0	21.0	25.8	30.6	50.9	50.9	50.9
2012	6.8	7.8	8.2	12.4	17.0	20.8	34.8	45.4	53.8
2013	8.2	11.2	15.0	26.0	28.4	42.4	65.2	67.2	67.8
2014	9.8	15.4	18.0	25.4	28.0	29.2	33.2	40.2	40.6
2015	8.2	10.2	10.8	12.6	17.6	20.0	29.0	30.6	31.4
2016	9.0	12.0	15.8	24.4	44.4	51.2	52.2	53.8	54.2
2017	10.8	17.4	19.0	28.0	49.8	61.6	124.4	132.8	138.8
2018	8.6	15.0	19.8	25.2	34.0	39.2	43.2	54.4	66.8
2019	6.4	6.6	6.6	7.4	12.0	14.4	21.6	24.6	25.0
2020	6.8	12.0	16.0	20.0	22.4	24.2	42.8	45.0	59.6
# Yrs. Années	43	43	43	43	43	43	43	43	43
Mean Moyenne	8.9	12.8	15.3	20.9	26.6	32.2	42.6	47.6	53.9
Std. Dev. Écart-type	2.2	3.0	3.8	6.1	9.4	10.8	17.4	18.4	20.1
Skew. Dissymétrie	0.65	-0.11	-0.17	0.49	0.87	0.72	2.75	2.55	1.98
Kurtosis	3.37	2.45	2.57	3.90	3.50	3.39	14.00	13.18	9.57

*-99.9 Indicates Missing Data/Données manquantes

Warning: annual maximum amount greater than 100-yr return period amount
Avertissement : la quantité maximale annuelle excède la quantité pour une période de retour de 100 ans

Year/Année	Duration/Durée	Data/Données	100-yr/ans
2017	6 h	124.4	97.1
2017	12 h	132.8	105.3
2017	24 h	138.8	117.0

****

Table 2a : Return Period Rainfall Amounts (mm)
Quantité de pluie (mm) par période de retour

****

Duration/Durée	2 yr/ans	5 yr/ans	10 yr/ans	25 yr/ans	50 yr/ans	100 yr/ans	#Years Années
5 min	8.5	10.5	11.8	13.4	14.7	15.9	43
10 min	12.3	15.0	16.7	19.0	20.7	22.3	43
15 min	14.6	18.0	20.3	23.1	25.2	27.2	43
30 min	19.9	25.3	28.8	33.3	36.6	39.9	43
1 h	25.1	33.4	38.8	45.7	50.9	56.0	43
2 h	30.4	39.9	46.3	54.3	60.2	66.1	43
6 h	39.8	55.1	65.3	78.1	87.6	97.1	43
12 h	44.6	60.8	71.6	85.2	95.3	105.3	43
24 h	50.6	68.3	80.1	95.0	106.0	117.0	43

****

Table 2b :

Return Period Rainfall Rates (mm/h) - 95% Confidence limits
Intensité de la pluie (mm/h) par période de retour - Limites de confiance de 95%

****

Duration/Durée	2 yr/ans	5 yr/ans	10 yr/ans	25 yr/ans	50 yr/ans	100 yr/ans	#Years Années
5 min	102.3	125.9	141.5	161.3	175.9	190.4	43
	+/- 7.3	+/- 12.3	+/- 16.7	+/- 22.5	+/- 26.9	+/- 31.3	43
10 min	73.6	89.7	100.4	113.9	123.9	133.9	43
	+/- 5.0	+/- 8.4	+/- 11.4	+/- 15.4	+/- 18.4	+/- 21.4	43
15 min	58.6	72.1	81.0	92.3	100.7	109.0	43
	+/- 4.2	+/- 7.1	+/- 9.5	+/- 12.9	+/- 15.4	+/- 17.9	43
30 min	39.9	50.6	57.7	66.6	73.3	79.9	43
	+/- 3.3	+/- 5.6	+/- 7.6	+/- 10.2	+/- 12.2	+/- 14.2	43
1 h	25.1	33.4	38.8	45.7	50.9	56.0	43
	+/- 2.6	+/- 4.3	+/- 5.8	+/- 7.9	+/- 9.4	+/- 11.0	43
2 h	15.2	20.0	23.1	27.1	30.1	33.0	43
	+/- 1.5	+/- 2.5	+/- 3.4	+/- 4.5	+/- 5.4	+/- 6.3	43
6 h	6.6	9.2	10.9	13.0	14.6	16.2	43
	+/- 0.8	+/- 1.3	+/- 1.8	+/- 2.4	+/- 2.9	+/- 3.4	43
12 h	3.7	5.1	6.0	7.1	7.9	8.8	43
	+/- 0.4	+/- 0.7	+/- 1.0	+/- 1.3	+/- 1.5	+/- 1.8	43
24 h	2.1	2.8	3.3	4.0	4.4	4.9	43
	+/- 0.2	+/- 0.4	+/- 0.5	+/- 0.7	+/- 0.8	+/- 1.0	43

****

Table 3 : Interpolation Equation / Équation d'interpolation: R = A*T^B

R = Interpolated Rainfall rate (mm/h)/Intensité interpolée de la pluie (mm/h)
RR = Rainfall rate (mm/h) / Intensité de la pluie (mm/h)
T = Rainfall duration (h) / Durée de la pluie (h)

****

Statistics/Statistiques	2 yr/ans	5 yr/ans	10 yr/ans	25 yr/ans	50 yr/ans	100 yr/ans
Mean of RR/Moyenne de RR	36.3	45.4	51.4	59.0	64.6	70.2
Std. Dev. /Écart-type (RR)	35.2	42.9	48.0	54.4	59.2	63.9
Std. Error/Erreur-type	8.3	10.0	11.1	12.6	13.8	14.9
Coefficient (A)	22.0	28.4	32.7	38.0	41.9	45.9
Exponent/Exposant (B)	-0.694	-0.671	-0.661	-0.652	-0.646	-0.642
Mean % Error/% erreur moyenne	9.4	10.2	10.8	11.3	11.7	11.9

Appendix D

STORMWATER MANAGEMENT MODELLING - PRE-DEVELOPMENT AND POST DEVELOPMENT MODEL OUTPUTS

Table A.1 Parameter Summary Table

Existing Conditions										
Outlet Location	**Model Catchment ID**	**Description**	**Area (ha)**	**Drainage Channel (m)**	**Flow Length (m)**	**Gradient (%)**	**Total Imperv. Connected (%)**	**Not Connected Imperv. (%)**	**Manning's 'n' (Perv.)**	**CN (Perv.)**
South Saugeen River	101	Pre-Development Site	6.33	264	240	10.5	2.3	0.88	0.18	76.2

Table A.2 Site Soils: (as per Ontario Soil Survey Report No. 17 for Grey County)

Soil Type
Harriston Silt Loam

Hydologic Soil Group
BC

TABLE OF CURVE NUMBERS (CN's)									
Land Use	Hydrologic Soil Type								
	A	AB	B	BC	C	CD	D	Manning's 'n'	
Meadow	50	54	58	64.5	71	74.5	78	0.4	continuous grass
Woodlot	50	55.3	60.5	67	73.5	76.8	80	0.4	forests
Long Grass	55	60	65	72	79	81.5	84	0.3	natural, not maintained
Lawns	60	65.5	71	77	83	86	89	0.25	maintained
Pasture/Range	58	61.5	65	70.5	76	78.5	81	0.17	farm pasture
Crop	66	70	74	78	82	84	86	0.13	farm land
Fallow (bare)	77	82	86	89	91	93	94	0.05	idle farm land (bare)
Built-up	60	65.5	71	77	83	89	89	0.25	Lawns Existing
Streets, paved	98	98	98	98	98	98	98	0.01	

HYDROLOGIC SOIL TYPE (%) - Existing Conditions								
Catchment	Hydrologic Soil Type							
	A	AB	B	BC	C	CD	D	TOTAL
101	0	0	0	100	0	0	0	100
102	0	0	0	100	0	0	0	100
103	0	0	0	100	0	0	0	100
104	0	0	0	100	0	0	0	100
105	0	0	0	100	0	0	0	100
106	0	0	0	100	0	0	0	100
107	0	0	0	100	0	0	0	100
108	0	0	0	100	0	0	0	100
109	0	0	0	100	0	0	0	100
110	0	0	0	100	0	0	0	100
111	0	0	0	100	0	0	0	100

LAND USE (%) - Existing Conditions										
Catchment	Meadow	Woodlot	Long Grass	Lawns	Pasture Range	Crop	Fallow (Bare)	Imperv. Not Connected (Rooftops)	Imperv. Connected	Total
101	0	16	0	3	0	79	0	0.9	1.5	100

CURVE NUMBER (CN) - Existing Conditions											
Catchment	Meadow	Woodlot	Long Grass	Lawns	Pasture Range	Crop	Fallow (Bare)	Built-up	Imperv. Not Connected (Rooftops)	Weighted CN - Pervious	Manning's 'n'
101	65	67	72	77	70.5	78	89	77	90	76.2	0.18

Table A.3: Impervious Area Determination for Subcatchment 101

Existing Conditions

Area of Concern	Total Area (ha)	Impervious Area Connected		Impervious Area Not Connected (Rooftops)		Total (%)
		(ha)	(%)	(ha)	(%)	
101	6.33	0.09	1.5	0.06	0.9	2.3

Table A.3 - Impervious Area Determination for Existing Catchments 101

Catchment					Imperv. Area		Imperv %
101	1	Existing Gravel Driveway	1669	m^2 @ 55% imperv. Gravel	0.09	ha	1.5 %
	1	Roof Area	556	m^2 @ 100% imperv.	0.06	ha	0.9 %
					0.15	**ha**	

Table B.1 Parameter Summary Table

Proposed Conditions										
Outlet Location	**Model Catchment ID**	**Description**	**Area (ha)**	**Drainage Channel (m)**	**Flow Length (m)**	**Gradient (%)**	**Total Imperv. (%)**	**Not Connected Imperv. (%)**	**Manning's 'n' (Perv.)**	**CN (Perv.)**
South Saugeen River	201	Post Development Site	6.33	734	86	10.5	8.7	64.6	0.28	74.8

Table B.2 Site Soils: (as per Ontario Soil Survey Report No. 17 for Grey County)

Soil Type
Harriston Silt Loam

Hydologic Soil Group
BC

TABLE OF CURVE NUMBERS (CN's)									
Land Use	Hydrologic Soil Type								
	A	AB	B	BC	C	CD	D	Manning's 'n'	
Meadow	50	54	58	64.5	71	74.5	78	0.4	continuous grass
Woodlot	50	55.3	60.5	67	73.5	76.8	80	0.4	forests
Long Grass	55	60	65	72	79	81.5	84	0.3	natural, not maintained
Lawns	60	65.5	71	77	83	86	89	0.25	maintained
Pasture/Range	58	61.5	65	70.5	76	78.5	81	0.17	farm pasture
Crop	66	70	74	78	82	84	86	0.13	farm land
Fallow (bare)	77	82	86	89	91	93	94	0.05	idle farm land (bare)
Built-up	60	65.5	71	77	83	89	89	0.25	Lawns Proposed
Streets, paved	98	98	98	98	98	98	98	0.01	

HYDROLOGIC SOIL TYPE (%) - Proposed Conditions								
Catchment	Hydrologic Soil Type							
	A	AB	B	BC	C	CD	D	TOTAL
201	0	0	0	100	0	0	0	100
202	0	0	0	100	0	0	0	100
203	0	0	0	100	0	0	0	100
204	0	0	0	100	0	0	0	100
205	0	0	0	100	0	0	0	100
206	0	0	0	100	0	0	0	100
207	0	0	0	100	0	0	0	100
208	0	0	0	100	0	0	0	100
209	0	0	0	100	0	0	0	100
210	0	0	0	100	0	0	0	100

LAND USE (%) - Proposed Conditions										
Catchment	Meadow	Woodlot	Long Grass	Lawns	Pasture Range	Crop	Fallow (Bare)	Imperv. Not Connected (Rooftops)	Imperv. Connected	Total
201	0	20	0	71	0	0	0	5.6	3.1	100

CURVE NUMBER (CN) - Proposed Conditions											
Catchment	Meadow	Woodlot	Long Grass	Lawns	Pasture Range	Crop	Fallow (Bare)	Built-up	Imperv. Not Connected (Rooftops)	Weighted CN - Pervious	Manning's 'n'
201	64.5	67	72	77	70.5	78	89	77	90	74.8	0.28

Table B.3: Impervious Area Determination for Subcatchments 201

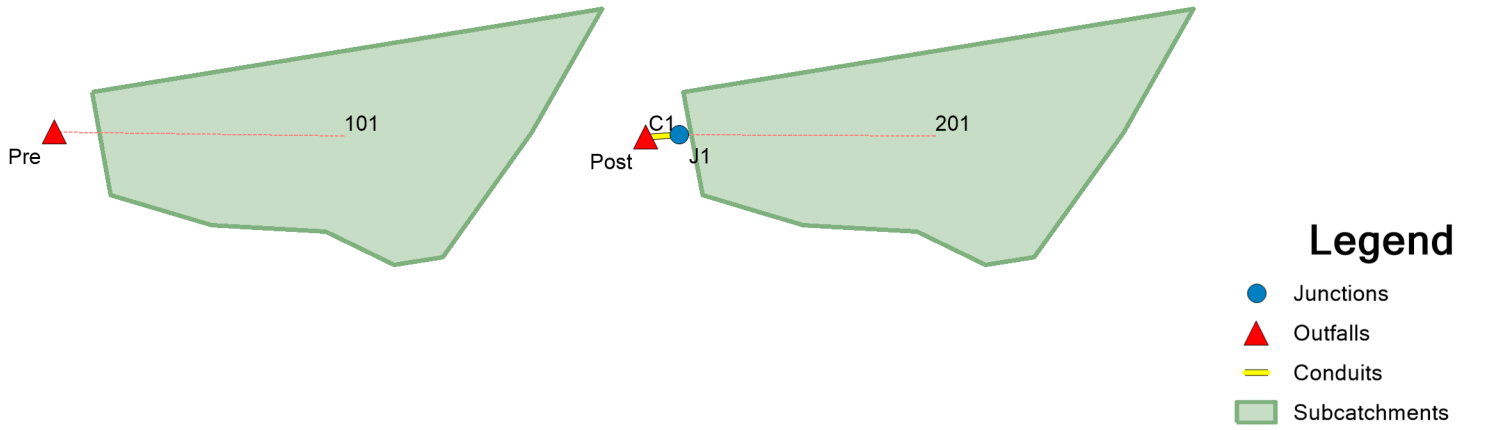
Proposed Conditions

Area of Concern	Total Area (ha)	Impervious Area Connected		Impervious Area Not Connected (Rooftops)		Total (%)
		(ha)	(%)	(ha)	(%)	
201	6.33	0.19	3.1	0.36	5.6	8.7

Table B.3 - Impervious Area Determination for Proposed Catchments 201

Catchment					Imperv. Area		Imperv %	
201	12	Proposed Roof Area	250.00	m^2 @ 100% imperv.	0.30	ha	4.7	%
	12	Proposed Driveway	150.00	m^2 @ 100% imperv.	0.18	ha	2.8	%
	1	Existing Dwellings	556.00	m^2 @ 100% imperv.	0.06	ha	0.9	%
	1	Existing Gravel Driveway	270.00	m^2 @ 55% imperv.	0.01	ha	0.2	%
					0.55	**ha**		

DOMM SUBDIVISION - SWM MODEL SCHEMATIC



COBIDE ENGINEERING INC

DOMM SUBDIVISION – SWM MODELLING – MODEL DETAILS

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

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

START_DATE           6/17/2024
START_TIME           00:00:00
REPORT_START_DATE    6/17/2024
REPORT_START_TIME    00:00:00
END_DATE             6/18/2024
END_TIME             00:00:00
SWEEP_START          1/1
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          00:01:00
WET_STEP             00:05:00
DRY_STEP             00:05:00
ROUTING_STEP         5
RULE_STEP            00:00:00

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

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

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- -------- -------- ----------
SCS_Type_II_39.8mm_2yr_MF INTENSITY 0:06     1.0      TIMESERIES SCS_Type_II_39.8mm_2yr_MF
SCS_Type_II_55.1mm_5yr_MF INTENSITY 0:06     1.0      TIMESERIES SCS_Type_II_55.1mm_5yr_MF
SCS_Type_II_78.1mm_25yr_MF INTENSITY 0:06     1.0      TIMESERIES SCS_Type_II_78.1mm_25yr_MF
SCS_Type_II_87.6mm_50yr_MF INTENSITY 0:06     1.0      TIMESERIES SCS_Type_II_87.6mm_50yr_MF
SCS_Type_II_97.1mm_100yr_MF INTENSITY 0:06     1.0      TIMESERIES SCS_Type_II_97.1mm_100yr_MF

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------
-
101              SCS_Type_II_97.1mm_100yr_MF Pre    6.3371   2.3      264      10.5     0
201              SCS_Type_II_97.1mm_100yr_MF J1     6.33     8.7      734      10.5     0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
101              0.01       0.18       0.05       0.05       25         OUTLET
201              0.01       0.28       0.05       0.05       25         OUTLET

[INFILTRATION]
;;Subcatchment   Param1     Param2     Param3     Param4     Param5
;;-------------- ---------- ---------- ---------- ---------- ----------
101              76.2       12.7       7          0          0
201              74.8       12.7       7          0          0
```

DOMM SUBDIVISION – SWM MODELLING – MODEL DETAILS

```
[JUNCTIONS]
;;Name           Elevation  MaxDepth   InitDepth  SurDepth   Aponded
;;-------------- ---------- ---------- ---------- ---------- ----------
J1               309        1          0          0          0

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
Post             0          FREE                        NO
Pre              0          FREE                        NO

[CONDUITS]
;;Name           From Node        To Node          Length     Roughness  InOffset   OutOffset  InitFlow
MaxFlow
;;-------------- ---------------- ---------------- ---------- ---------- ---------- ---------- ---------- -----
-----
C1               J1               Post             30.099     0.01       309        303        0          0

[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels    Culvert
;;-------------- ------------ ---------------- ---------- ---------- ---------- ---------- ----------
C1               RECT_OPEN    1                10         0          0          1

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

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
;SCS_Type_II_39.8mm design storm, total rainfall = 39.8 mm, rain interval = 6 minutes, rain units = mm/hr.
SCS_Type_II_39.8mm_2yr_MF

;SCS_Type_II_55.1mm design storm, total rainfall = 55.1 mm, rain interval = 6 minutes, rain units = mm/hr.
SCS_Type_II_55.1mm_5yr_MF

;SCS_Type_II_78.1mm design storm, total rainfall = 78.1 mm, rain interval = 6 minutes, rain units = mm/hr.
SCS_Type_II_78.1mm_25yr_MF

;SCS_Type_II_87.6mm design storm, total rainfall = 87.6 mm, rain interval = 6 minutes, rain units = mm/hr.
SCS_Type_II_87.6mm_50yr_MF

;SCS_Type_II_97.1mm design storm, total rainfall = 97.1 mm, rain interval = 6 minutes, rain units = mm/hr.
SCS_Type_II_97.1mm_100yr_MF

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

[TAGS]

[MAP]
DIMENSIONS       504248.06475     4877875.93205    505389.89225     4878132.67095
UNITS            Meters
```

DOMM SUBDIVISION – SWM MODELLING – 2 YEAR DESIGN STORM

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


*************
Element Count
*************
Number of rain gages ...... 5
Number of subcatchments ... 2
Number of nodes ........... 3
Number of links ........... 1
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
----------------------------------------------------------------------
SCS_Type_II_39.8mm_2yr_MF SCS_Type_II_39.8mm_2yr_MF      INTENSITY    6 min.
SCS_Type_II_55.1mm_5yr_MF SCS_Type_II_55.1mm_5yr_MF      INTENSITY    6 min.
SCS_Type_II_78.1mm_25yr_MF SCS_Type_II_78.1mm_25yr_MF     INTENSITY    6 min.
SCS_Type_II_87.6mm_50yr_MF SCS_Type_II_87.6mm_50yr_MF     INTENSITY    6 min.
SCS_Type_II_97.1mm_100yr_MF SCS_Type_II_97.1mm_100yr_MF    INTENSITY    6 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage            Outlet
-----------------------------------------------------------------------------------------------
101                          6.34    264.00      2.30   10.5000 SCS_Type_II_39.8mm_2yr_MF Pre
201                          6.33    734.00      8.70   10.5000 SCS_Type_II_39.8mm_2yr_MF J1


************
Node Summary
************
                                       Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
-----------------------------------------------------------------------------
J1                   JUNCTION           309.00      1.00       0.0
Post                 OUTFALL              0.00    304.00       0.0
Pre                  OUTFALL              0.00      0.00       0.0


************
Link Summary
************
Name             From Node        To Node          Type            Length    %Slope Roughness
-----------------------------------------------------------------------------------------------
C1               J1               Post             CONDUIT           30.1   20.3425    0.0100


********************
Cross Section Summary
********************
                                     Full     Full     Hyd.     Max.   No. of     Full
Conduit          Shape              Depth     Area     Rad.    Width  Barrels     Flow
-----------------------------------------------------------------------------------------
C1               RECT_OPEN           1.00    10.00     0.83    10.00        1 399430.05


****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
```

DOMM SUBDIVISION – SWM MODELLING – 2 YEAR DESIGN STORM

```
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... EXTRAN
Starting Date ..... 06/17/2024 00:00:00
Ending Date ..... 06/18/2024 00:00:00
Antecedent Dry Days ..... 0.0
Report Time Step ..... 00:01:00
Wet Time Step ..... 00:05:00
Dry Time Step ..... 00:05:00
Routing Time Step ..... 5.00 sec
Variable Time Step ..... YES
Maximum Trials ..... 8
Number of Threads ..... 1
Head Tolerance ..... 0.001524 m
```

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	0.504	39.800
Evaporation Loss	0.000	0.000
Infiltration Loss	0.327	25.821
Surface Runoff	0.175	13.845
Final Storage	0.002	0.133
Continuity Error (%)	0.003	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.176	1.756
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.176	1.756
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           :     4.50 sec
Average Time Step           :     5.00 sec
Maximum Time Step           :     5.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.00
% of Steps Not Converging   :     0.00
Time Step Frequencies       :
```

DOMM SUBDIVISION – SWM MODELLING – 2 YEAR DESIGN STORM

```
     5.000 -  3.155 sec      :   100.00 %
     3.155 -  1.991 sec      :     0.00 %
     1.991 -  1.256 sec      :     0.00 %
     1.256 -  0.792 sec      :     0.00 %
     0.792 -  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
  ------------------------------------------------------------------------------------------------------------------
----------------
  101                        39.80       0.00       0.00      26.65       0.92      12.06      12.97        0.82
139.32   0.326
  201                        39.80       0.00       0.00      24.99       3.46      11.25      14.72        0.93
245.08   0.370


  ******************
  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
  ---------------------------------------------------------------------------
  J1                   JUNCTION    0.00     0.01   309.01     0  03:06        0.01
  Post                 OUTFALL     0.00     0.00     0.00     0  00:00        0.00
  Pre                  OUTFALL     0.00     0.00     0.00     0  00:00        0.00


  ******************
  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
  ------------------------------------------------------------------------------------------------
  J1                   JUNCTION  245.08   245.08     0  03:06       0.933       0.933      -0.007
  Post                 OUTFALL     0.00   244.33     0  03:06           0       0.933       0.000
  Pre                  OUTFALL   139.32   139.32     0  03:06       0.823       0.823       0.000


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

  No nodes were surcharged.


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

  No nodes were flooded.


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

  ------------------------------------------------------------
```

DOMM SUBDIVISION – SWM MODELLING – 2 YEAR DESIGN STORM

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
Post	99.98	10.80	244.33	0.933
Pre	99.98	9.53	139.32	0.823
System	99.98	20.33	383.41	1.756

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	244.33	0 03:06	2.22	0.00	0.01

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C1	1.00	0.00	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: Thu Jun 20 11:52:36 2024
Analysis ended on: Thu Jun 20 11:52:37 2024
Total elapsed time: 00:00:01

DOMM SUBDIVISION – SWM MODELLING – 5 YEAR DESIGN STORM

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


*************
Element Count
*************
Number of rain gages ...... 5
Number of subcatchments ... 2
Number of nodes ........... 3
Number of links ........... 1
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
----------------------------------------------------------------------
SCS_Type_II_39.8mm_2yr_MF SCS_Type_II_39.8mm_2yr_MF      INTENSITY    6 min.
SCS_Type_II_55.1mm_5yr_MF SCS_Type_II_55.1mm_5yr_MF      INTENSITY    6 min.
SCS_Type_II_78.1mm_25yr_MF SCS_Type_II_78.1mm_25yr_MF     INTENSITY    6 min.
SCS_Type_II_87.6mm_50yr_MF SCS_Type_II_87.6mm_50yr_MF     INTENSITY    6 min.
SCS_Type_II_97.1mm_100yr_MF SCS_Type_II_97.1mm_100yr_MF    INTENSITY    6 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage            Outlet
-----------------------------------------------------------------------------------------------
101                          6.34    264.00      2.30   10.5000 SCS_Type_II_55.1mm_5yr_MF Pre
201                          6.33    734.00      8.70   10.5000 SCS_Type_II_55.1mm_5yr_MF J1


************
Node Summary
************
                                       Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
-----------------------------------------------------------------------------
J1                   JUNCTION           309.00      1.00       0.0
Post                 OUTFALL              0.00    304.00       0.0
Pre                  OUTFALL              0.00      0.00       0.0


************
Link Summary
************
Name             From Node        To Node          Type            Length    %Slope Roughness
-----------------------------------------------------------------------------------------------
C1               J1               Post             CONDUIT           30.1   20.3425    0.0100


*********************
Cross Section Summary
*********************
                                     Full     Full     Hyd.     Max.   No. of     Full
Conduit          Shape              Depth     Area     Rad.    Width  Barrels     Flow
-----------------------------------------------------------------------------------------
C1               RECT_OPEN           1.00    10.00     0.83    10.00        1 399430.05


****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
```

DOMM SUBDIVISION – SWM MODELLING – 5 YEAR DESIGN STORM

```
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... EXTRAN
Starting Date ..... 06/17/2024 00:00:00
Ending Date ..... 06/18/2024 00:00:00
Antecedent Dry Days ..... 0.0
Report Time Step ..... 00:01:00
Wet Time Step ..... 00:05:00
Dry Time Step ..... 00:05:00
Routing Time Step ..... 5.00 sec
Variable Time Step ..... YES
Maximum Trials ..... 8
Number of Threads ..... 1
Head Tolerance ..... 0.001524 m
```

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	0.698	55.100
Evaporation Loss	0.000	0.000
Infiltration Loss	0.404	31.906
Surface Runoff	0.292	23.061
Final Storage	0.002	0.134
Continuity Error (%)	-0.003	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.293	2.926
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.293	2.926
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           :     4.50 sec
Average Time Step           :     5.00 sec
Maximum Time Step           :     5.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.00
% of Steps Not Converging   :     0.00
Time Step Frequencies       :
```

DOMM SUBDIVISION – SWM MODELLING – 5 YEAR DESIGN STORM

```
      5.000 -  3.155 sec      :   100.00 %
      3.155 -  1.991 sec      :     0.00 %
      1.991 -  1.256 sec      :     0.00 %
      1.256 -  0.792 sec      :     0.00 %
      0.792 -  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
  ------------------------------------------------------------------------------------------------------------------
----------------
  101                        55.10       0.00       0.00      32.80       1.27      20.86      22.13        1.40
298.62   0.402
  201                        55.10       0.00       0.00      31.01       4.79      19.20      24.00        1.52
468.07   0.436


  ******************
  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
  ---------------------------------------------------------------------------
  J1                   JUNCTION    0.00     0.02   309.02     0  03:06        0.02
  Post                 OUTFALL     0.00     0.00     0.00     0  00:00        0.00
  Pre                  OUTFALL     0.00     0.00     0.00     0  00:00        0.00


  ******************
  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
  ------------------------------------------------------------------------------------------------
  J1                   JUNCTION  468.07   468.07     0  03:06        1.52        1.52      -0.008
  Post                 OUTFALL     0.00   467.04     0  03:06           0        1.52       0.000
  Pre                  OUTFALL   298.62   298.62     0  03:06         1.4         1.4       0.000


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

  No nodes were surcharged.


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

  No nodes were flooded.


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

  ------------------------------------------------------------
```

DOMM SUBDIVISION – SWM MODELLING – 5 YEAR DESIGN STORM

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
Post	99.98	17.61	467.04	1.522
Pre	99.98	16.25	298.62	1.404
System	99.98	33.87	765.55	2.926

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	467.04	0 03:06	2.87	0.00	0.02

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C1	1.00	0.00	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: Thu Jun 20 11:54:00 2024
Analysis ended on: Thu Jun 20 11:54:00 2024
Total elapsed time: < 1 sec

DOMM SUBDIVISION – SWM MODELLING – 25 YEAR DESIGN STORM

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


*************
Element Count
*************
Number of rain gages ...... 5
Number of subcatchments ... 2
Number of nodes ........... 3
Number of links ........... 1
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
----------------------------------------------------------------------
SCS_Type_II_39.8mm_2yr_MF SCS_Type_II_39.8mm_2yr_MF      INTENSITY    6 min.
SCS_Type_II_55.1mm_5yr_MF SCS_Type_II_55.1mm_5yr_MF      INTENSITY    6 min.
SCS_Type_II_78.1mm_25yr_MF SCS_Type_II_78.1mm_25yr_MF     INTENSITY    6 min.
SCS_Type_II_87.6mm_50yr_MF SCS_Type_II_87.6mm_50yr_MF     INTENSITY    6 min.
SCS_Type_II_97.1mm_100yr_MF SCS_Type_II_97.1mm_100yr_MF    INTENSITY    6 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage            Outlet
-----------------------------------------------------------------------------------------------
101                          6.34    264.00      2.30   10.5000 SCS_Type_II_78.1mm_25yr_MF Pre
201                          6.33    734.00      8.70   10.5000 SCS_Type_II_78.1mm_25yr_MF J1


************
Node Summary
************
                                       Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
-----------------------------------------------------------------------------
J1                   JUNCTION           309.00      1.00       0.0
Post                 OUTFALL              0.00    304.00       0.0
Pre                  OUTFALL              0.00      0.00       0.0


************
Link Summary
************
Name             From Node        To Node          Type            Length    %Slope Roughness
-----------------------------------------------------------------------------------------------
C1               J1               Post             CONDUIT           30.1   20.3425    0.0100


*********************
Cross Section Summary
*********************
                                     Full     Full     Hyd.     Max.   No. of     Full
Conduit          Shape              Depth     Area     Rad.    Width  Barrels     Flow
-----------------------------------------------------------------------------------------
C1               RECT_OPEN           1.00    10.00     0.83    10.00        1 399430.05


****************
Analysis Options
****************
Flow Units ..... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
```

DOMM SUBDIVISION – SWM MODELLING – 25 YEAR DESIGN STORM

```
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... EXTRAN
Starting Date ..... 06/17/2024 00:00:00
Ending Date ..... 06/18/2024 00:00:00
Antecedent Dry Days ..... 0.0
Report Time Step ..... 00:01:00
Wet Time Step ..... 00:05:00
Dry Time Step ..... 00:05:00
Routing Time Step ..... 5.00 sec
Variable Time Step ..... YES
Maximum Trials ..... 8
Number of Threads ..... 1
Head Tolerance ..... 0.001524 m
```

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	0.989	78.100
Evaporation Loss	0.000	0.000
Infiltration Loss	0.491	38.792
Surface Runoff	0.496	39.185
Final Storage	0.002	0.136
Continuity Error (%)	-0.015	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.497	4.972
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.497	4.972
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	-0.001	

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


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


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


************************
Routing Time Step Summary
************************
Minimum Time Step           :     4.50 sec
Average Time Step           :     5.00 sec
Maximum Time Step           :     5.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.00
% of Steps Not Converging   :     0.00
Time Step Frequencies       :
```

DOMM SUBDIVISION – SWM MODELLING – 25 YEAR DESIGN STORM

```
     5.000 -  3.155 sec      :   100.00 %
     3.155 -  1.991 sec      :     0.00 %
     1.991 -  1.256 sec      :     0.00 %
     1.256 -  0.792 sec      :     0.00 %
     0.792 -  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
  ------------------------------------------------------------------------------------------------------------
----------------
  101                       78.10       0.00       0.00      39.73       1.80      36.40      38.20        2.42
643.36   0.489
  201                       78.10       0.00       0.00      37.85       6.80      33.37      40.17        2.54
907.25   0.514


  ******************
  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
  ---------------------------------------------------------------------------
  J1                   JUNCTION    0.00     0.02   309.02     0  03:06        0.02
  Post                 OUTFALL     0.00     0.00     0.00     0  00:00        0.00
  Pre                  OUTFALL     0.00     0.00     0.00     0  00:00        0.00


  ******************
  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
  ------------------------------------------------------------------------------------------------
  J1                   JUNCTION 907.25   907.25     0  03:06        2.55        2.55      -0.001
  Post                 OUTFALL    0.00   906.33     0  03:06           0        2.55       0.000
  Pre                  OUTFALL  643.36   643.36     0  03:06        2.42        2.42       0.000


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

  No nodes were surcharged.


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

  No nodes were flooded.


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

  ------------------------------------------------------------
```

DOMM SUBDIVISION – SWM MODELLING – 25 YEAR DESIGN STORM

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
Post	99.99	29.49	906.33	2.548
Pre	99.98	28.07	643.36	2.425
System	99.99	57.55	1549.49	4.972

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	906.33	0 03:06	3.74	0.00	0.02

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C1	1.00	0.00	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: Thu Jun 20 11:54:56 2024
Analysis ended on: Thu Jun 20 11:54:56 2024
Total elapsed time: < 1 sec

DOMM SUBDIVISION – SWM MODELLING – 50 YEAR DESIGN STORM

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


*************
Element Count
*************
Number of rain gages ...... 5
Number of subcatchments ... 2
Number of nodes ........... 3
Number of links ........... 1
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                 Data       Recording
Name                 Data Source                 Type       Interval
----------------------------------------------------------------------
SCS_Type_II_39.8mm_2yr_MF SCS_Type_II_39.8mm_2yr_MF      INTENSITY    6 min.
SCS_Type_II_55.1mm_5yr_MF SCS_Type_II_55.1mm_5yr_MF      INTENSITY    6 min.
SCS_Type_II_78.1mm_25yr_MF SCS_Type_II_78.1mm_25yr_MF     INTENSITY    6 min.
SCS_Type_II_87.6mm_50yr_MF SCS_Type_II_87.6mm_50yr_MF     INTENSITY    6 min.
SCS_Type_II_97.1mm_100yr_MF SCS_Type_II_97.1mm_100yr_MF    INTENSITY    6 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage            Outlet
------------------------------------------------------------------------------------------------
101                          6.34    264.00      2.30   10.5000 SCS_Type_II_87.6mm_50yr_MF Pre
201                          6.33    734.00      8.70   10.5000 SCS_Type_II_87.6mm_50yr_MF J1


************
Node Summary
************
                                      Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
----------------------------------------------------------------------------
J1                   JUNCTION          309.00      1.00       0.0
Post                 OUTFALL             0.00    304.00       0.0
Pre                  OUTFALL             0.00      0.00       0.0


************
Link Summary
************
Name             From Node        To Node          Type            Length    %Slope Roughness
-----------------------------------------------------------------------------------------------
C1               J1               Post             CONDUIT           30.1   20.3425    0.0100


*********************
Cross Section Summary
*********************
                                    Full     Full     Hyd.     Max.   No. of     Full
Conduit          Shape             Depth     Area     Rad.    Width  Barrels     Flow
-----------------------------------------------------------------------------------
C1               RECT_OPEN          1.00    10.00     0.83    10.00        1 399430.05


****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
```

DOMM SUBDIVISION – SWM MODELLING – 50 YEAR DESIGN STORM

```
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... EXTRAN
Starting Date ..... 06/17/2024 00:00:00
Ending Date ..... 06/18/2024 00:00:00
Antecedent Dry Days ..... 0.0
Report Time Step ..... 00:01:00
Wet Time Step ..... 00:05:00
Dry Time Step ..... 00:05:00
Routing Time Step ..... 5.00 sec
Variable Time Step ..... YES
Maximum Trials ..... 8
Number of Threads ..... 1
Head Tolerance ..... 0.001524 m
```

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	1.110	87.600
Evaporation Loss	0.000	0.000
Infiltration Loss	0.521	41.094
Surface Runoff	0.588	46.389
Final Storage	0.002	0.136
Continuity Error (%)	-0.022	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.589	5.887
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.589	5.887
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	-0.001	

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


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


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


************************
Routing Time Step Summary
************************
Minimum Time Step           :     0.34 sec
Average Time Step           :     5.00 sec
Maximum Time Step           :     5.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.00
% of Steps Not Converging   :     0.00
Time Step Frequencies       :
```

```
     5.000 -  3.155 sec      :   100.00 %
     3.155 -  1.991 sec      :     0.00 %
     1.991 -  1.256 sec      :     0.00 %
     1.256 -  0.792 sec      :     0.00 %
     0.792 -  0.500 sec      :     0.00 %
```

Subcatchment Runoff Summary

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Peak Runoff LPS	Runoff Coeff
101	87.60	0.00	0.00	42.02	2.02	43.40	45.41	815.80	0.518
201	87.60	0.00	0.00	40.17	7.62	39.74	47.37	1114.80	0.541

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
J1	JUNCTION	0.00	0.03	309.03	0 03:06	0.03
Post	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
Pre	OUTFALL	0.00	0.00	0.00	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
J1	JUNCTION	1114.80	1114.80	0 03:06	3	3	-0.001
Post	OUTFALL	0.00	1114.10	0 03:06	0	3	0.000
Pre	OUTFALL	815.80	815.80	0 03:06	2.88	2.88	0.000

Node Surcharge Summary

No nodes were surcharged.

Node Flooding Summary

No nodes were flooded.

Outfall Loading Summary

DOMM SUBDIVISION – SWM MODELLING – 50 YEAR DESIGN STORM

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
Post	99.99	34.78	1114.10	3.004
Pre	99.99	33.37	815.80	2.883
System	99.99	68.15	1929.87	5.887

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	1114.10	0 03:06	4.06	0.00	0.03

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C1	1.00	0.00	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: Thu Jun 20 11:55:30 2024
Analysis ended on: Thu Jun 20 11:55:30 2024
Total elapsed time: < 1 sec

DOMM SUBDIVISION – SWM MODELLING – 100 YEAR DESIGN STORM

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


*************
Element Count
*************
Number of rain gages ...... 5
Number of subcatchments ... 2
Number of nodes ........... 3
Number of links ........... 1
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                  Data       Recording
Name                 Data Source                  Type       Interval
----------------------------------------------------------------------
SCS_Type_II_39.8mm_2yr_MF SCS_Type_II_39.8mm_2yr_MF      INTENSITY    6 min.
SCS_Type_II_55.1mm_5yr_MF SCS_Type_II_55.1mm_5yr_MF      INTENSITY    6 min.
SCS_Type_II_78.1mm_25yr_MF SCS_Type_II_78.1mm_25yr_MF     INTENSITY    6 min.
SCS_Type_II_87.6mm_50yr_MF SCS_Type_II_87.6mm_50yr_MF     INTENSITY    6 min.
SCS_Type_II_97.1mm_100yr_MF SCS_Type_II_97.1mm_100yr_MF    INTENSITY    6 min.


********************
Subcatchment Summary
********************
Name                         Area     Width   %Imperv    %Slope Rain Gage            Outlet
-----------------------------------------------------------------------------------------------
101                          6.34    264.00      2.30   10.5000 SCS_Type_II_97.1mm_100yr_MF Pre
201                          6.33    734.00      8.70   10.5000 SCS_Type_II_97.1mm_100yr_MF J1


************
Node Summary
************
                                       Invert      Max.    Ponded    External
Name                 Type                Elev.     Depth      Area    Inflow
-----------------------------------------------------------------------------
J1                   JUNCTION           309.00      1.00       0.0
Post                 OUTFALL              0.00    304.00       0.0
Pre                  OUTFALL              0.00      0.00       0.0


************
Link Summary
************
Name             From Node        To Node          Type            Length    %Slope Roughness
-----------------------------------------------------------------------------------------------
C1               J1               Post             CONDUIT           30.1   20.3425    0.0100


*********************
Cross Section Summary
*********************
                                     Full     Full     Hyd.     Max.   No. of     Full
Conduit          Shape              Depth     Area     Rad.    Width  Barrels     Flow
-----------------------------------------------------------------------------------------
C1               RECT_OPEN           1.00    10.00     0.83    10.00        1 399430.05


****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
```

DOMM SUBDIVISION – SWM MODELLING – 100 YEAR DESIGN STORM

```
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... EXTRAN
Starting Date ..... 06/17/2024 00:00:00
Ending Date ..... 06/18/2024 00:00:00
Antecedent Dry Days ..... 0.0
Report Time Step ..... 00:01:00
Wet Time Step ..... 00:05:00
Dry Time Step ..... 00:05:00
Routing Time Step ..... 5.00 sec
Variable Time Step ..... YES
Maximum Trials ..... 8
Number of Threads ..... 1
Head Tolerance ..... 0.001524 m
```

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	1.230	97.100
Evaporation Loss	0.000	0.000
Infiltration Loss	0.546	43.118
Surface Runoff	0.682	53.872
Final Storage	0.002	0.137
Continuity Error (%)	-0.028	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.684	6.837
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.684	6.837
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	-0.001	

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


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


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


************************
Routing Time Step Summary
************************
Minimum Time Step           :     0.52 sec
Average Time Step           :     5.00 sec
Maximum Time Step           :     5.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     2.00
% of Steps Not Converging   :     0.00
Time Step Frequencies       :
```

```
     5.000 -  3.155 sec      :    99.99 %
     3.155 -  1.991 sec      :     0.00 %
     1.991 -  1.256 sec      :     0.00 %
     1.256 -  0.792 sec      :     0.00 %
     0.792 -  0.500 sec      :     0.01 %
```

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
101	97.10	0.00	0.00	44.06	2.23	50.64	52.88	3.35	1002.39	0.545
201	97.10	0.00	0.00	42.17	8.45	46.42	54.87	3.47	1333.39	0.565

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
J1	JUNCTION	0.00	0.03	309.03	0 03:06	0.03
Post	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
Pre	OUTFALL	0.00	0.00	0.00	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
J1	JUNCTION	1333.39	1333.39	0 03:06	3.48	3.48	-0.001
Post	OUTFALL	0.00	1331.69	0 03:06	0	3.48	0.000
Pre	OUTFALL	1002.39	1002.39	0 03:06	3.36	3.36	0.000

Node Surcharge Summary

No nodes were surcharged.

Node Flooding Summary

No nodes were flooded.

Outfall Loading Summary

DOMM SUBDIVISION – SWM MODELLING – 100 YEAR DESIGN STORM

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
Post	99.99	40.72	1331.69	3.480
Pre	99.99	39.16	1002.39	3.357
System	99.99	79.88	2332.74	6.837

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	1331.69	0 03:06	4.36	0.00	0.03

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C1	1.00	0.00	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: Thu Jun 20 11:56:03 2024
Analysis ended on: Thu Jun 20 11:56:03 2024
Total elapsed time: < 1 sec