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245 Church Street Subdivision Penetanguishene

FUNCTIONAL SERVICING AND PRELIMINARY STORMWATER MANAGEMENT REPORT

2857747 Ontario Inc.

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Issue	Date	Description
1	June 29, 2023	Preliminary Report

Document Contents

Tables

Figures

Drawings

Appendices

1 Introduction

Tatham Engineering Limited (Tatham) was retained to prepare a Functional Servicing and Preliminary Stormwater Management (SWM) Report in support of a Zoning By-law Amendment (ZBA) and a Draft Plan of Subdivision for the proposed development. Specifically, this report has been prepared to confirm the feasibility of the proposed development with respect to servicing and SWM for the site.

The 245 Church Street site consists of approximately 2.2 ha of undeveloped land located in the Town of Penetanguishene. The site is bound by residential properties, a dry SWM facility and a cul-de-sac within the Oxley Drive municipal ROW to the north; treed land and residential properties to the east; residential properties to the south; and residential properties and Church Street to the west. A key plan illustrating the site location is provided on the drawings enclosed at the back of this report.

The proposed development consists of 28 residential lots, a municipal road extension, and a cul-de-sac.

The preliminary servicing and SWM designs included herein were prepared based on a topographic survey completed by RS Surveying Limited on October 6, 2022.

2 Geotechnical and Hydrogeological Investigations

A geotechnical investigation to assess subsurface conditions was completed at the site by Cambium Inc. on July 21, 2021, and is documented in their report dated November 11, 2022. The report has been submitted under separate cover.

Four boreholes, BH101-21 to BH104-21, were advanced throughout the site and were terminated at a depth of 6.6 m below ground surface (mbgs).

The subsurface conditions at the site generally consist of surficial topsoil underlain by sand soil with varying silt contents and trace amounts of clay.

A layer of black sandy topsoil, ranging from 100 mm to 400 mm, was observed at the surface of each of borehole.

A layer of sand soil containing varying amounts of gravel, silt, and clay, and extending to depths of 1.5 mbgs in BH101-21, 4.6 mbgs in BH102-21 and to the termination depth of 6.6 mbgs in BH104-21, was encountered beneath the surficial topsoil layer.

A layer of silty sand soil, extending to the termination depth of 6.6 mbgs, was encountered beneath the upper sand deposit within boreholes BH101-21 and BH102-21.

A layer of silt and sand soil containing trace amounts of gravel and extending to the borehole termination depth of 6.6 mbgs, was encountered beneath the surficial topsoil layer within borehole BH103-21.

Bedrock was not encountered within any of the boreholes.

During the geotechnical investigation, monitoring wells were installed within BH102-21, BH103-21, and BH104-21. All three monitoring wells were utilized as part of a hydrogeological assessment, also undertaken by Cambium, with results documented in their report dated November 15, 2022. Groundwater level measurements were taken over a period of twelve months from August 2021 to July 2022. Groundwater recorded within the monitoring wells ranged between 5.9 mbgs and 6.2 mbgs. The hydrogeological report has been submitted under separate cover.

3 Water Supply and Distribution

Water supply for the proposed development will be provided from the Town's municipal water distribution system.

Lots 1 and 2 will be serviced by an existing external 150 mm diameter watermain on Church Street.

Lots 3 to 28 will be serviced internally with a new 200 mm diameter watermain connected to an existing external 200 mm diameter watermain on Oxley Drive. Two connections are proposed to the 200 mm diameter watermain on Oxley Drive to provide sufficient looping through the proposed development lands. The first connection point will be coincident with the Oxley Drive road access to the site; which is immediately south of the Oxley Drive and O'Reilley Street intersection, at the south end of the existing Oxley Drive cul-de-sac. At this location, a 200 mm diameter cap is readily available for the proposed service connection. The second connection point will be at the Oxley Drive and Sheffcote Street intersection, immediately beyond the site's northeast limit and will be provided through a 6.0 m wide servicing easement between the proposed cul-de-sac and the Oxley Drive and Sheffcote Street intersection. The existing 200 mm diameter watermain on Oxley Drive currently provides service to a handful of residential properties in the area and is supplied from the existing 150 mm diameter watermain on Church Street, via the existing 200 mm diameter watermain on O'Reilley Street, and the existing 250 mm watermain on Fuller Avenue, via the existing 200 mm diameter watermain on Sheffcote Street.

Each of the single detached and townhome lots will be serviced with an individual 19 mm diameter service. The water service for the double duplex lot will be sized at the detailed design stage. All service connections will be terminated at the property line with a curbstop.

One new fire hydrant is proposed on the subject site in order to provide the necessary fire protection.

Water demand calculations have been completed using the 2008 Ministry of the Environment, Conservation and Parks (MECP) Design Guidelines for Drinking-Water Systems. The peaking factors used in the calculations are based on Table 3-1 in the MECP Design Guidelines for drinking-water systems serving a population between 3001 and 10,000 people; which accounts for the Town of Penetanguishene population connected to this drinking-water network. Based on 450 L/c/day and a population of 87, the average daily water demand for the proposed development is 0.45 L/s. Daily and hourly peaking factors of 2 and 3 respectively were applied, resulting in a maximum daily demand of 0.91 L/s and a maximum hourly demand of 1.36 L/s. Sufficient capacity within the water treatment plant and sufficient storage capacity for

equalization storage and emergency supply requirements was assumed and is to be confirmed by the Town.

The estimated required fire flow rate was calculated in accordance with the 2020 Fire Underwriters Survey (FUS). This method is based on the largest building structure within the proposed development, as a worst-case scenario, and accounts for its type of building construction and floor area to be protected while considering reductions and surcharges related to combustibility of contents, presence of sprinkler system, and the building's exposure to other surrounding structures. The estimated required fire flow rate is 66.7 L/s. All building structures will be located within 90 m of a hydrant, in compliance with OBC requirements. Fire flow protection will be provided by the following three (3) hydrants:

- One existing Class AA blue bonnet hydrant located just outside the southwest corner of the proposed development, on the east side of Church Street, providing fire protection for Lots 1 and 2;
- One existing Class AA blue bonnet hydrant located just outside the north development limit, at the southwest corner of the Oxley Drive and O'Reilley Street intersection, providing fire protection for Lots 3 to 11 and 28; and
- One proposed Class AA blue bonnet hydrant located northeast of the proposed SWM Block 3, providing fire protection for Lots 10 to 27.

All fire hydrant bonnets are color coded to indicate the available flow at a residual pressure of 150 kPa (20 psi), in accordance with the NFPA 291 Fire Flow Testing and Marking of Hydrants Code. The two (2) existing hydrants near the site consist of blue bonnet hydrants, and as such are Class AA-rated hydrants. Due to the proximity of the proposed hydrant to the existing hydrants, and considering the elevation difference between they hydrants, we have assumed the proposed hydrant will also be a Class AA-rated hydrant.

Water demand and fire flow calculations are included in Appendix A and are summarized in Table 1 below.

Table 1: Water System Demand Scenarios

DEMAND SCENARIO	POPULATION	DEMAND (L/capita/day)	PEAKING FACTOR	TOTAL DEMAND (L/s)
Average Day	87	450	1	0.45
Maximum Day	87	450	2	0.91
Peak Hour	87	450	3	1.36
Fire Flow	-	-	-	66.7
Maximum Day + Fire Flow	-	-	-	67.61

A review of the serviceability of the adjacent lands to the south was completed and confirmed that extending water and sanitary services within a servicing easement along the east limit of SMW block 3 would be the preferred servicing option. A watermain stub is therefore proposed at this location, as is shown on Drawing SG-1.

At the detailed design stage, a WaterCAD model will be prepared and provided to the Town for inclusion into their municipal water distribution model to analyze the additional demands generated by the proposed development.

The Preliminary Site Grading, Servicing & SWM Plan (Drawing SG-1) shows the internal watermain system, hydrants, and the connections to the existing municipal system.

4 Sewage Collection

Sanitary service for the proposed development will be provided by the Town's municipal system.

Sanitary service for Lots 1 and 2 will be provided by an existing 200 mm diameter gravity sewer on Church Street.

Sanitary service for Lots 3 to 28 will be provided by a new internal 200 mm diameter gravity sewer which will direct all sewage flows to the northeast limit of the site. The proposed sewer will connect into an existing sanitary maintenance hole located at the Oxley Drive and Sheffcote Street intersection. Flows from this location are conveyed northwest on Oxley Drive via an existing 200 mm diameter municipal sanitary sewer. The new 200 mm diameter sewer will be sloped at a minimum of 0.5% to ensure full flow velocities remain higher than the MECP recommended minimum of 0.6 m/s.

All single detached and townhome lots will consist of a 1 or 2 storey structure and will have an individual 135 mm diameter service sloped at a minimum of 2.0% to the sanitary sewer. The sanitary service for the double duplex lot will be sized at the detailed design stage.

Sewage generation calculations have been completed using the 2022 MECP Design Criteria for Sanitary Sewers, Storm Sewers and Forcemains for Alterations Authorized under Environmental Compliance Approval. Based on an average sewage generation rate of 450 L/capita/day and a population of 87, the peak design flow generated from the proposed development is 2.55 L/s inclusive of extraneous flow. Sufficient capacity within the municipal system, including the sanitary collection system and the wastewater treatment plant, was assumed and is to be confirmed by the Town. The sewage generation calculations are included in Appendix B.

As described in Section 3, a review of the serviceability of the adjacent lands to the south was completed and confirmed that extending water and sanitary services within a servicing easement along the east limit of SWM block 3 would be the preferred option. A sanitary stub is therefore proposed at this location as is shown on Drawing SG-1.

The Preliminary Site Grading, Servicing & SWM Plan shows the overall sanitary sewer alignment and the connections to the existing municipal system.

5 Roads

The proposed roads, referred to as Street A and Street B, will meet the Town's standard 20.0 m wide road cross sections.

The major portion of Street A, which will provide access to the site from the south leg of the Oxley Drive and O'Reilley Street intersection and provide a road connection point for a potential future development to the south, will meet the Town's 20.0 m wide standard rural road cross section, whereas Street B will meet the Town's 20.0 m wide standard semi-urban road cross section.

Both rural and semi-urban road cross sections consist of a 7.0 m wide asphalt surface. The rural road cross section consists of gravel shoulders and ditches on either side of the road, whereas the semi-urban road cross section consists of paved shoulders and storm sewer pipes. The City's standard road cross sections are shown on Drawing DET-1.

The driveway approaches will consist of a light-duty pavement structure, whereas the Street A and B roadways will consist of a heavy-duty pavement structure. The pavement structure recommendations are provided in the geotechnical investigation report and are also specified in the Town's standards and are summarized in Table 2 below.

Table 2: Proposed Pavement Structures

PAVEMENT LAYER	DRIVEWAY APPROACHES (LIGHT DUTY ASPHALT)	ROAD (HEAVY DUTY ASPHALT)
HL-3 Asphaltic Concrete	40 mm	40 mm
HL-8 Asphaltic Concrete	50 mm	70 mm
Granular 'A'	150 mm	150 mm
Granular 'B'	300 mm	400 mm

In the future, the roadways will be assumed by the Town who will undertake routine maintenance and snow plowing.

6 Grading

The overall grading design matches the existing grade along the perimeter of the site. Existing drainage patterns will be maintained to the extent possible. Internal grading has been established to ensure the majority of stormwater runoff is conveyed to internal roadside ditches and storm sewers. In addition to conveying surface drainage to the storm sewers, the internal grading design minimizes the amount of earth cut or fill while providing sufficient cover over proposed services and directs stormwater runoff in excess of the storm sewer capacity to a proposed SWM facility.

Runoff from a large external area to the north and east of the site is conveyed, via existing roadside ditches and storm sewer pipes, to an existing dry SWM facility located immediately beyond the north property limit. The external flow will be safely conveyed from the existing SWM facility, through the site, to vegetated vacant lands beyond the south property limit via two corrugated steel pipes, crossing SWM Block 2 (located between Lots 13 and 14), the Street B right-of-way (ROW), and SWM Block 3 (located between Lots 22 and 23).

Runoff from only the front portion of Lots 1 and 2 will be conveyed westerly, ultimately and will ultimately be captured by the Church Street east roadside gutter, unchanged from the existing condition.

Runoff from a small portion of the site, in the southeast corner, will sheet flow southerly to the vegetated land beyond the south property limit, unchanged from the existing condition.

Runoff from the remaining major portion of the site will be safely conveyed, via roadside ditches, storm sewer pipes and a grassed swale, to a proposed SWM facility located within SWM Blocks 2 and 3 which are connected via a balancing pipe/cross culvert under the Street B right-of-way (ROW). Ultimately, the proposed SWM facility will discharge to the vegetated land beyond the south property limit.

The preliminary grading concept is shown on Drawing SG-1 attached at the back of this report.

7 Stormwater Management

The primary objective of the preliminary SWM plan is to demonstrate that the proposed development will not adversely impact the hydrologic cycle and surface water runoff characteristics of the area. This will be accomplished by evaluating the effect of the proposed development on local drainage conditions. Where necessary, solutions will be provided to mitigate any adverse impacts. Issues to be addressed and criteria to be met regarding drainage and SWM are summarized as follows:

- The site will be developed in accordance with all relevant Municipal, Provincial, and Agency SWM criteria;
- MECP 'Enhanced' treatment level water quality treatment will be provided to ensure the proposed development will have no negative impacts on the downstream receivers;
- All post development peak flows directed to each existing outlet will be reduced at or below existing condition peak flow rates during the 2- to 100-year design storm events based on the 4-hour Chicago and 24-hour SCS Type II design storms;
- Safe conveyance of storm flows from all storms up to and including the 100-year storm event; and
- Implementation of erosion and sediment control measures during and following construction until the ultimate build-out of the site to minimize erosion and sediment transport off-site.

The preliminary SWM plan was prepared recognizing provincial guidelines on water resources and the environment, including the following publications:

- Design Criteria for Sanitary Sewers, Storm Sewers and Forcemains for Alterations Authorized under Environmental Compliance Approval (The Ministry of the Environment, Conservation and Parks, 2022);
- Provincial Policy Statement (Ministry of Municipal Affairs and Housing, 2020);
- Low Impact Development Stormwater Management Planning and Design Guide (CVC/TRCA, 2010);
- Land Development Engineering Policy (The Town of Penetanguishene, 2009);
- Erosion and Sediment Control Guide for Urban Construction (Toronto and Region Conservation Authority, 2019);
- Natural Hazard Technical Guide (The Ministry of Natural Resources, 2001);

- Urban Stormwater Management Strategy (The Severn Sounds Environmental Association, 1998); and
- MTO Drainage Management Manual (Ministry of Transportation, 1997).

7.1 EXISTING SITE DRAINAGE CONDITIONS

The existing topography, ground cover, and drainage patterns were obtained through a review of available plans, base mapping, and site investigation. A detailed topographic survey of the site was completed by RS Surveying Limited on October 6, 2022 to confirm existing features and elevations.

The site consists primarily of undeveloped green space and treed areas. A well-defined ridge, extending across the site from north to south, bisects the site into two drainage areas with two distinct outlets.

Runoff from Drainage Area 101 (0.23 ha) drains overland, generally from east to west, to a roadside gutter along the east side of Church Street, which conveys flows northerly. As the proposed new lots within this drainage area are considered small infill-type developments, and since the drainage area to the Church Street right-of-way will be maintained in the proposed condition, there will be no measurable impacts to the existing municipal storm system. On this basis, Drainage Area 101 has been excluded from the hydrologic modelling analysis included herein.

Runoff from Drainage Area 102 (2.00 ha) drains overland, generally from north to south, to the vegetated land beyond the south property limit and ultimately to a larger wetland area located further south.

The Ontario Soil Survey Complex characterizes the native soils onsite as Tioga Sand Loam, having good drainage characteristics and a corresponding hydrologic soil group A. This generally matches the soil characteristics observed during the geotechnical investigation, as discussed in Section 2.

The Existing Condition Drainage Plan (DP-1), illustrating the existing condition drainage characteristics of the site, is attached at the back of this report.

7.2 EXTERNAL DRAINAGE CONDITIONS

Runoff from approximately 20.1 ha of external area (Drainage Area EXT-1), located north and east of the site, is conveyed to, and attenuated by, an existing SWM facility located immediately beyond the north property limit via existing roadside ditches and storm sewer pipes.

The existing SWM facility was analysed in detail to better understand how it functions under current conditions. Controlled peak flows from Drainage Area EXT-1 were estimated in Visual

OTTHYMO. Assuming an infiltration rate, which was referenced from the Subsurface Soil Investigation Report prepared by Barrie Inspection and Engineering Limited, commission by the Town in 2000, it was concluded that the facility does not have capacity to contain runoff from Drainage Area EXT-1 during storms in excess of a 10-year storm event. It is noted that infiltration is the primary outlet for runoff from the SWM facility up to the elevation of the emergency overflow. Outflow through the pond berm at the emergency overflow is also likely, as it was constructed using aggregate material. The outflow has not been considered in our analysis as it was determined to be fairly minor. Since the existing SWM facility is believed to be undersized it was not deemed practical to combine peak flows from the external area to those of the proposed development, the function of the existing SWM facility will remain unchanged and surface runoff form Drainage Area EXT-1 (after overtopping the emergency overflow) will by-pass the proposed development via two corrugated steel pipe (CSP) culverts which have been sized to safely convey all flows from Drainage Area EXT-1 up to and including the 100-year storm to the vegetated lands beyond the south property limit, unchanged from the existing condition. On this basis, Drainage Area EXT-1 has been excluded from the hydrologic modelling analysis completed in support of the SWM design for the site.

The external drainage area delineation was completed using contour mapping available from Land Information Ontario's digital elevation model.

The External Area Drainage Plan (EXT-1), illustrating the external drainage paths, is attached at the back of this report.

7.3 EXISTING CONDITION HYDROLOGIC ANALYSIS

A Visual OTTHYMO hydrologic model was developed to quantify existing condition peak flows from Drainage Area 102.

The drainage area delineation was completed based on the available topographic information in combination with the property boundaries. Existing condition land uses were established based on our review of online aerial photography and site investigation. The land uses and soil information were used to establish curve numbers and other hydrologic parameters used in the hydrologic model. The time to peak values for the drainage areas were calculated using the Bransby Williams and Airport Methods for runoff coefficients "C" greater than and less than 0.4 respectively.

A summary of all hydrologic parameters established for the existing condition hydrologic model has been included in Appendix C.

Peak flows for storms up to and including the 100-year storm event were calculated for the 4-hour Chicago and 24-hour SCS Type II design storms generated using historic rainfall data from

the Beausoleil climate station (Station ID 6110617 – included in Appendix C) as well as for the Regional (Timmins) Storm. Detailed calculations and Visual OTTHYMO modeling output are included in Appendix C with the results summarized below in Table 3.

Table 3: Existing Condition Peak Flow Summary – Outlet 2

DESIGN STORM	DRAINAGE AREA 102 2.00 ha (m^3/s)	
	CHI	SCS
2-Year	0.006	0.016
5-Year	0.015	0.034
10-Year	0.022	0.049
25-Year	0.033	0.070
50-Year	0.043	0.089
100-Year	0.054	0.109
Regional (Timmins)	0.138	-

7.4 STORMWATER MANAGEMENT ALTERNATIVES

The preliminary SWM plan is subject to the review and approval of the Town and the Severn Sound Environmental Association (SSEA). For intensive development, SWM practices providing both quantity and quality control of stormwater runoff are required. The MECP manual recommends using the methods of stormwater management described below:

Lot Level Source Controls

Lot level controls include measures such as downspout disconnection, surface ponding areas, reduced grading, perimeter swales and other localized lot grading. Other methods of at-source stormwater management controls include Low Impact Development (LID) practices including rainwater harvesting, green roofs, and soakaway pits. These methods of stormwater control are beneficial since they reduce peak flows at the source.

Conveyance Controls

Infiltration trenches, perforated storm pipes, enhanced grassed swales and dry swales are several examples of conveyance controls. Typically, these controls attempt to attenuate peak flows on route to the outlet by allowing the stormwater to infiltrate along the conveyance route. These

methods of controlling stormwater are only effective if the native soils have good drainage capabilities as exist for this site.

End of Pipe Facilities

End of pipe facilities are typically wet or dry ponds that control stormwater runoff from an entire development area. These facilities allow all stormwater to be retained and released at a rate equal to or less than pre-development and are able to provide effective quality and quantity control of stormwater runoff.

The preliminary SWM plan for the site includes a dry SWM facility and subsurface infiltration trenches. The SWM plan has been developed to meet the requisite water quantity and quality criteria for the proposed development.

7.5 PROPOSED SWM PLAN

In the proposed condition, the site will consist of 28 residential lots, a municipal road extension, and a cul-de-sac. The preliminary SWM plan recognizes the SWM requirements for the site and the proposed roads and overall grading have been developed to follow the existing topography of the site as much as possible thereby maintaining the existing condition drainage patterns, while safely conveying major flows overland to the existing outlets.

Low Impact Development (LID) infiltration practices have been incorporated into the preliminary SWM plan for the site. Subsurface infiltration trenches and a level spreader are proposed in specific areas for water quality treatment and to promote infiltration of runoff. The underlying soils are conducive to infiltration. The LID measures are intended to provide treatment of runoff upstream and downstream of the proposed SWM facility. While a certain amount of flood storage exists in these features, they are not relied on as water quantity controls for the site.

Runoff from Drainage Area 201 (0.23 ha) will continue to drain overland, generally from east to west, to the roadside gutter on the east side of Church Street which conveys flows northerly. As mentioned in Section 7.1, as the proposed new lots within this drainage area are considered small infill-type developments and since they are required to comply with the Town's lot grading and drainage requirements, adverse impacts to the existing municipal storm system are not anticipated. On this basis, Drainage Area 201 has been excluded from the hydrologic modelling analysis included herein.

Within Drainage Area 202 (1.82 ha), the internal roadways will be constructed to rural and semi-urban road standards as applicable. The majority of the roadway, which will consist of a semi-urban road section, will include storm sewer pipes on both sides of the roadway capable of conveying flow from a 5-year storm event. Runoff from Drainage Area 202 will be collected by the network of storm sewers, treated, and conveyed to a proposed two-cell dry SWM facility,

located between Lots 13 and 14, and Lots 22 and 23. Runoff will be controlled in the dry SWM facility prior to being discharged, via a level spreader, to the vegetated land beyond the south property limit and ultimately to the wetland area further south, unchanged from the existing condition. The proposed SWM facility is intended to provide post- to pre-development peak flow control at Outlet 2. A storm sewer design sheet will be included as part of the final design.

Runoff from Drainage Area 203 (0.18 ha) will sheet flow uncontrolled to the vegetated land beyond the south property limit, unchanged from the existing condition.

Peak flow rates from Drainage Area 202 will be overcontrolled to account for the uncontrolled peak flows from Drainage Area 203.

The Proposed Condition Drainage Plan (DP-2), illustrating the proposed condition drainage characteristics of the site, is attached at the back of this report.

Each component of the SWM plan is described in detail in the following sections.

7.6 WATER QUANTITY CONTROL

A Visual OTTHYMO hydrologic model was developed to quantify proposed condition peak flows from Drainage Areas 202 and 203. Peak flows for storms up to and including the 100-year storm event were calculated for the 4-hour Chicago and 24-hour SCS Type II design storms and the Regional (Timmins) storm.

The drainage area delineation for the contributing lands was completed utilizing the available topographic information, the Draft Plan of Subdivision (prepared by EcoVue Consulting Servicing Inc. dated May 24, 2023) available at the time of this report, and the proposed site grading illustrated on Drawing SG-1 which is attached at the back of this report. The impervious areas of the single-family residential dwellings, townhouses, double duplex, parking area, and roadways were calculated in AutoCAD and are believed to be conservative. The proposed surface cover and existing soil type were used to establish curve numbers and other hydrologic parameters used in the hydrologic model. A summary of all hydrologic parameters established for the proposed condition hydrologic model has been included in Appendix C.

The time to peak values for the drainage areas were calculated using the Bransby Williams and Airport Methods for runoff coefficients “C” greater than and less than 0.4 respectively.

Peak runoff rates are shown in Table 4 below and the results of the modelling are included in Appendix C.

Table 4: Proposed Condition Peak Flow Summary – Outlet 2

DESIGN STORM	DRAINAGE AREA 202 1.82 ha (m^3/s)		DRAINAGE AREA 203 0.18 ha (m^3/s)		TOTAL 2.00 ha (m^3/s)		ACTIVE DRY SWM FACILITY STORAGE REQUIRED (m^3)
	CHI	SCS	CHI	SCS	CHI	SCS	
2-Year	0.004	0.006	0.001	0.003	0.005 (0.006)	0.007 (0.016)	264
5-Year	0.009	0.013	0.003	0.006	0.009 (0.015)	0.014 (0.034)	384
10-Year	0.013	0.020	0.004	0.009	0.013 (0.022)	0.021 (0.049)	467
25-Year	0.019	0.028	0.006	0.012	0.020 (0.033)	0.032 (0.070)	576
50-Year	0.024	0.038	0.008	0.015	0.025 (0.043)	0.041 (0.089)	657
100-Year	0.028	0.050	0.010	0.019	0.030 (0.054)	0.054 (0.109)	737
Regional (Timmins)	0.004	0.006	0.001	0.003	0.005 (0.006)	0.007 (0.016)	264

Note: (0.100) – Existing Condition peak flow rate from Drainage Area 102.

Preliminary stage-storage-discharge data was input into the "route reservoir" commands of the hydrologic model to confirm the land allocation for the SWM blocks are appropriate. Specific details relating to the pond outlet control structure will be determined at the detailed design stage.

The proposed dry SWM facility has approximately 752 m^3 of active storage in the two cells combined excluding an additional 0.3 m of freeboard as illustrated on Drawing SG-1. The available SWM facility storage volumes were calculated using AutoCAD software and confirm that the required 100-year active pond storage volume of 737 m^3 is met and exceeded. Details related to the SWM facility will be provided at the final design stage.

A comparison of the proposed condition peak flow summary with the existing condition peak flow summary confirms the proposed SWM plan can attenuate the 2-year through 100-year proposed condition peak flows at or below existing peak flow rates.

A stage-volume table of the proposed dry SWM facility is included in Appendix C.

7.7 WATER QUALITY CONTROL

The proposed water quality treatment objective under the proposed condition is to provide MECP enhanced level treatment including 80% TSS removal from on-site runoff.

Water quality control for the development will be provided via LID practices consisting of subsurface infiltration trenches, a dry SWM facility, and a level spreader.

7.7.1 Subsurface Infiltration Trenches

Subsurface infiltration trenches are proposed on both sides of the semi-urban roadway and are proposed as part of the storm sewer system which consists of perforated pipes surrounded by clean sand (as per the Town's 20.0 m wide semi-urban cross section detail). These trenches are ideal for providing water quality treatment of runoff from residential drainage areas up to 2 ha where runoff from several households can drain to a single trench, as is proposed within Drainage Area 202.

The subsurface infiltration trenches consist of a subsurface storage component that will treat stormwater runoff from several lots. The storage media, consisting of clean sand, will hold the stormwater until it can infiltrate into the surrounding native material. The bottom of the subsurface infiltration trenches will be a minimum of 1.0 m above the high groundwater level as confirmed by the geotechnical investigation and report. The depth of the sand layer will be determined to ensure enhanced level water quality protection is provided in accordance with MECP guidelines.

The subsurface infiltration trenches will provide effective removal of pollutants through sedimentation, filtering, and soil adsorption. Infiltration trenches have a surface water pollutant removal efficiency of 70 to 90% for TSS, zinc, copper, and lead, 50 to 70% for total phosphorus and 40 to 70% for total nitrogen.

Detailed calculations related to sizing of the subsurface infiltration trenches and required and provided storage volumes, in accordance with table 3.2 of the MECP SWM design manual, will be provided at the final design stage.

7.7.2 Dry SWM Facility

Based on the native soil at the site, infiltration through the base of the dry SWM facility is expected. Infiltration from within the pond has not been relied on as part of the SWM plan for the site. However, as per the MECP SWM manual, the proposed dry SWM facility will provide basic level water quality treatment according to 60% TSS removal.

Erosion control by means of detaining and slowly releasing the total runoff volume from a 25 mm storm event, was deemed unnecessary due to the infiltration opportunities provided in the infiltration trenches upstream of the SWM facility and the size of Drainage Area 202 (1.82 ha).

7.7.3 Level Spreader

A level spreader is proposed at the dry SWM facility piped outlet. The level spreader will evenly disperse runoff from Drainage Area 202 that is directed towards the vegetated land beyond the south property limit. The level spreader will reduce the potential for erosion and will provide a final opportunity for infiltration upstream of the vegetated land. The final level spreader dimensions and design calculations will be provided at the final design stage.

7.8 INTERNAL CONVEYANCE OF EXTERNAL DRAINAGE

As mentioned in Section 7.3, surface runoff from Drainage Area EXT-1, which is controlled by the existing dry SWM facility located immediately beyond the north property limit, will by-pass the proposed development (specifically Drainage Areas 202 and 203) via twin 800 mm diameter corrugated steel pipe culverts (crossing SWM Block 2, the Street B ROW, and SWM Block 3) The CSP culverts have been sized to safely convey runoff from Drainage Area EXT-1 during storms up to and including the 100-year storm event, to the vegetated land beyond the south property limit, unchanged from the existing condition. On this basis, Drainage Area EXT-1 has been excluded from the hydrologic modelling analysis included herein.

Runoff from Drainage Area EXT-1 has been considered as part of the proposed SWM plan as it relates to safe conveyance of external flows through the site. Preliminary culvert capacity calculations for the twin 800 mm diameter CSP culverts are included in Appendix C and will be confirmed again at the final design stage.

The External Area Drainage Plan (EXT-1), illustrating the external drainage paths, is attached at the back of this report.

8 Erosion and Sediment Control

Erosion and sediment controls will be implemented for all construction activities, including topsoil stripping, material stockpiling, road construction and grading operations. A detailed erosion and sediment control plan for the site will be prepared at the final design stage and will include the following:

- All erosion control devices will be specified in accordance with City standards and the Erosion and Sediment Control Guide for Urban Construction (Toronto and Region Conservation Authority, December 2019);
- Silt control fences will be erected before any grading operations to control sediment movement;
- A construction vehicle entrance will be constructed for the proposed road with a stone mud mat to reduce off-site tracking of material;
- Regular inspection of control measures will be instituted, and repairs will be made as necessary;
- Temporary swales and check dams will be constructed to control runoff during construction by lowering velocities and promoting settling of particulates; and
- Long term siltation and erosion control will be enhanced with a revegetation strategy for disturbed areas.

9 Utilities

Alectra Utilities Corporation, Bell Canada, and Canada Post have been contacted to confirm their capability to provide services to the site.

Overhead hydro service along Church Street and underground Hydro service along Oxley Drive is currently provided by Alectra Utilities Corporation (formerly PowerStream Barrie Hydro Distribution). New feeder lines will likely be required from Church Street to service the proposed development. Alectra will be consulted again during the final design stage to confirm the required service upgrades.

Bell Canada is the telephone service provider in the vicinity of the site. Existing telephone infrastructure from Church Street will be capable of supporting the proposed development. Bell will be consulted again during the final design stage to reconfirm the need for any service upgrades.

Rogers Cable will be consulted at the final design stage to confirm if the site is within their service area and to confirm if any additional infrastructure is required. Since cable TV is not an essential service, extending new cable service to the site would be at the discretion of the developer and the cable service provider.

Natural gas is available on Church Street and Oxley Drive. However, it is too early in the development process for Enbridge to confirm if gas will be available to service the proposed development. Coordination will be required with Enbridge during the final design stage to confirm the existing gas infrastructure and the potential of expanding their services to supply the proposed development.

Canada Post will be able to service the area through community mailboxes. Coordination will be required with Canada Post during the final design stage.

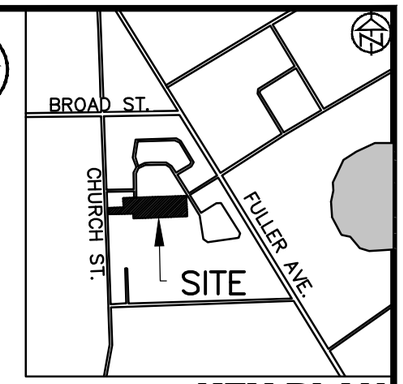
Additional details from each provider will be provided in the future at the final design stage.

10 Summary

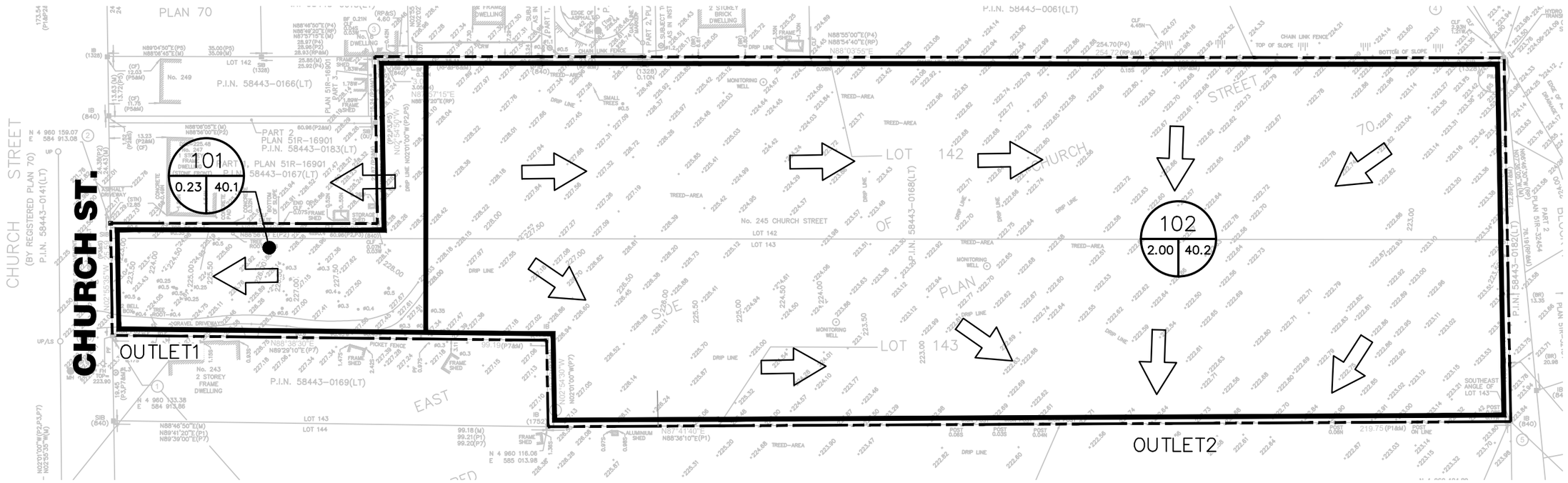
The servicing strategy presented demonstrates the proposed development can be readily serviced to accommodate the 28 new residential lots.

The preliminary SWM plan includes subsurface infiltration trenches to provide water quality control and a dry SWM facility to provide water quantity control for the site and provides safe conveyance of external drainage through the development.

Availability of existing utilities (communications, hydro, and gas) has been confirmed with the local utility providers. However, additional coordination and development of utility designs is required. Final utility designs will be completed as the project proceeds and plans are finalized.



KEY PLAN



LEGEND

- SUBJECT PROPERTY BOUNDARY
- DRAINAGE AREA BOUNDARY
- EXISTING CONDITION DRAINAGE DIRECTION
- 101 — DRAINAGE AREA ID
- 0.23 / 40.1 — CN/ % IMPERVIOUS
- AREA (ha.)

TOPOGRAPHIC SURVEY COMPLETED BY RS SURVEYING LTD, DATED OCT 07, 2022.

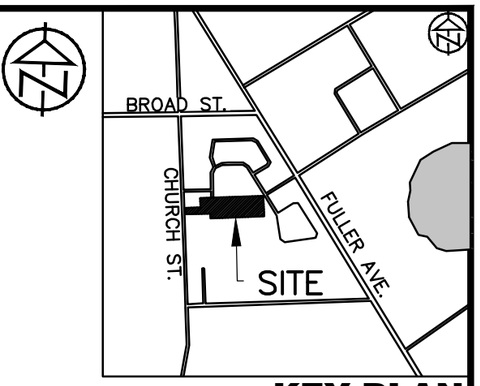
TATHAM ENGINEERING

245 CHURCH STREET SUBDIVISION
TOWN OF PENETANGUISHENE

EXISTING CONDITION DRAINAGE PLAN

DWG. No. **DP-1**

SCALE: 1:500	DRAWN: HY	DATE: APR, 2023	JOB NO. 522682



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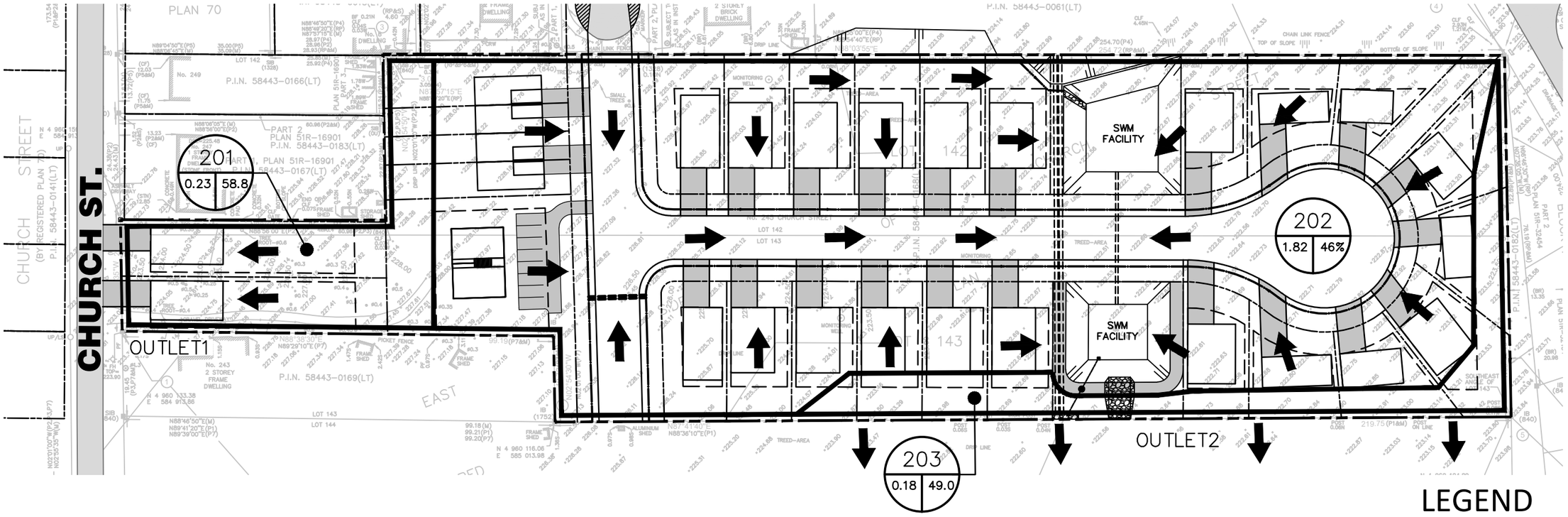


LEGEND

- SUBJECT PROPERTY BOUNDARY
- DRAINAGE AREA BOUNDARY
- PROPOSED CONDITION DRAINAGE DIRECTION
- 201 — DRAINAGE AREA ID
- 0.23 | 58.8 — CN/ % IMPERVIOUS
- AREA (ha.)

TOPOGRAPHIC SURVEY COMPLETED BY RS SURVEYING LTD, DATED OCT 07, 2022.

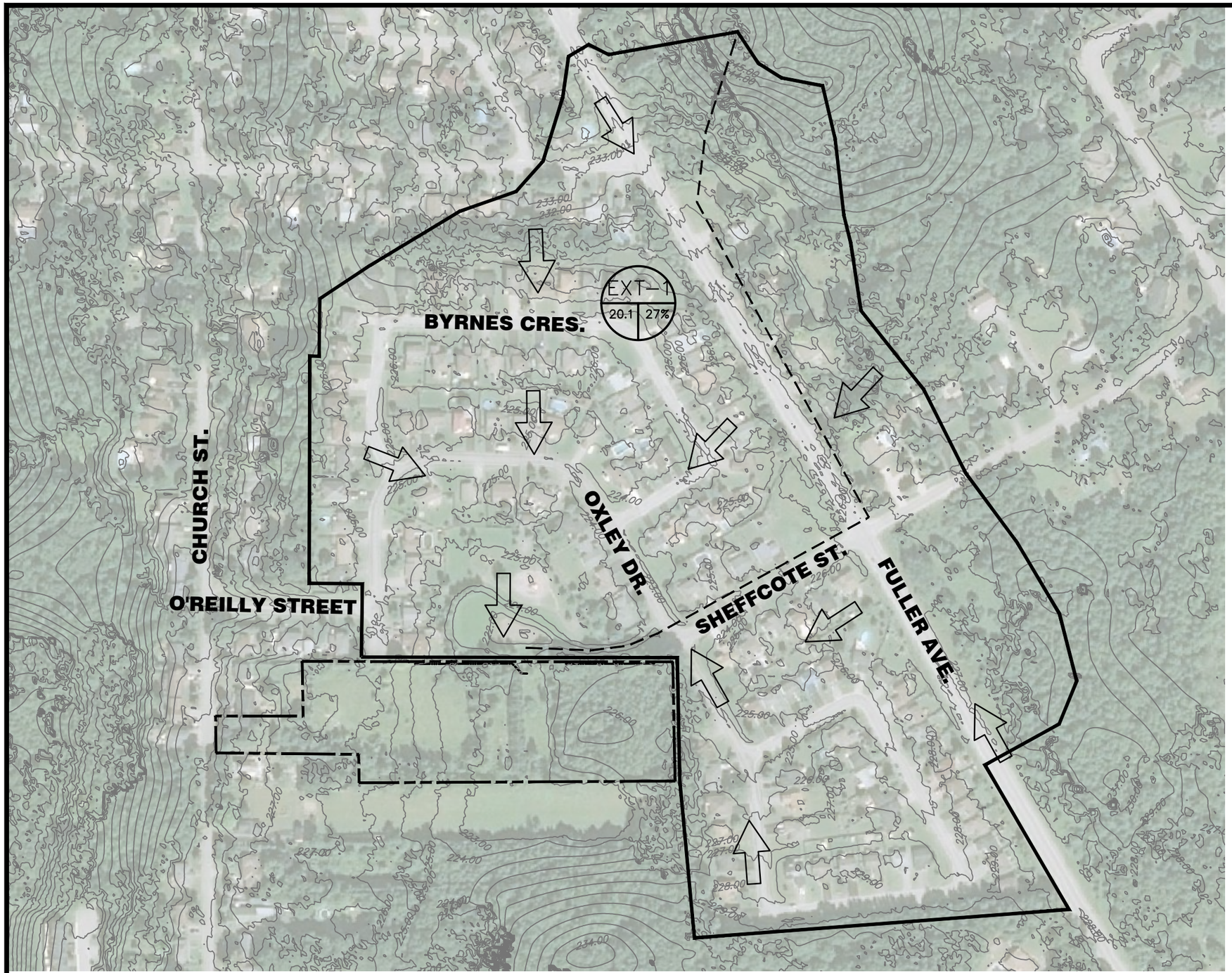
TATHAM ENGINEERING

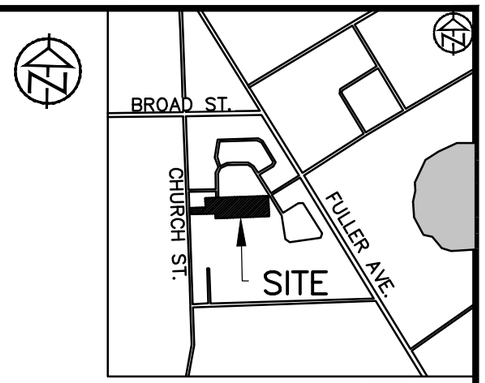
245 CHURCH STREET SUBDIVISION
TOWN OF PENETANGUISHENE

PROPOSED CONDITION DRAINAGE PLAN

DWG. No. **DP-2**

SCALE: 1:1000	DRAWN: HY	DATE: APR, 2023	JOB NO. 522682





KEY PLAN

LEGEND

- SUBJECT PROPERTY BOUNDARY
- DRAINAGE AREA BOUNDARY
- DRAINAGE AREA BOUNDARY
- EXISTING CONDITION DRAINAGE DIRECTION
- EXT-1 / 20.1 / 27% — DRAINAGE AREA ID / % IMPERVIOUS / AREA (ha.)

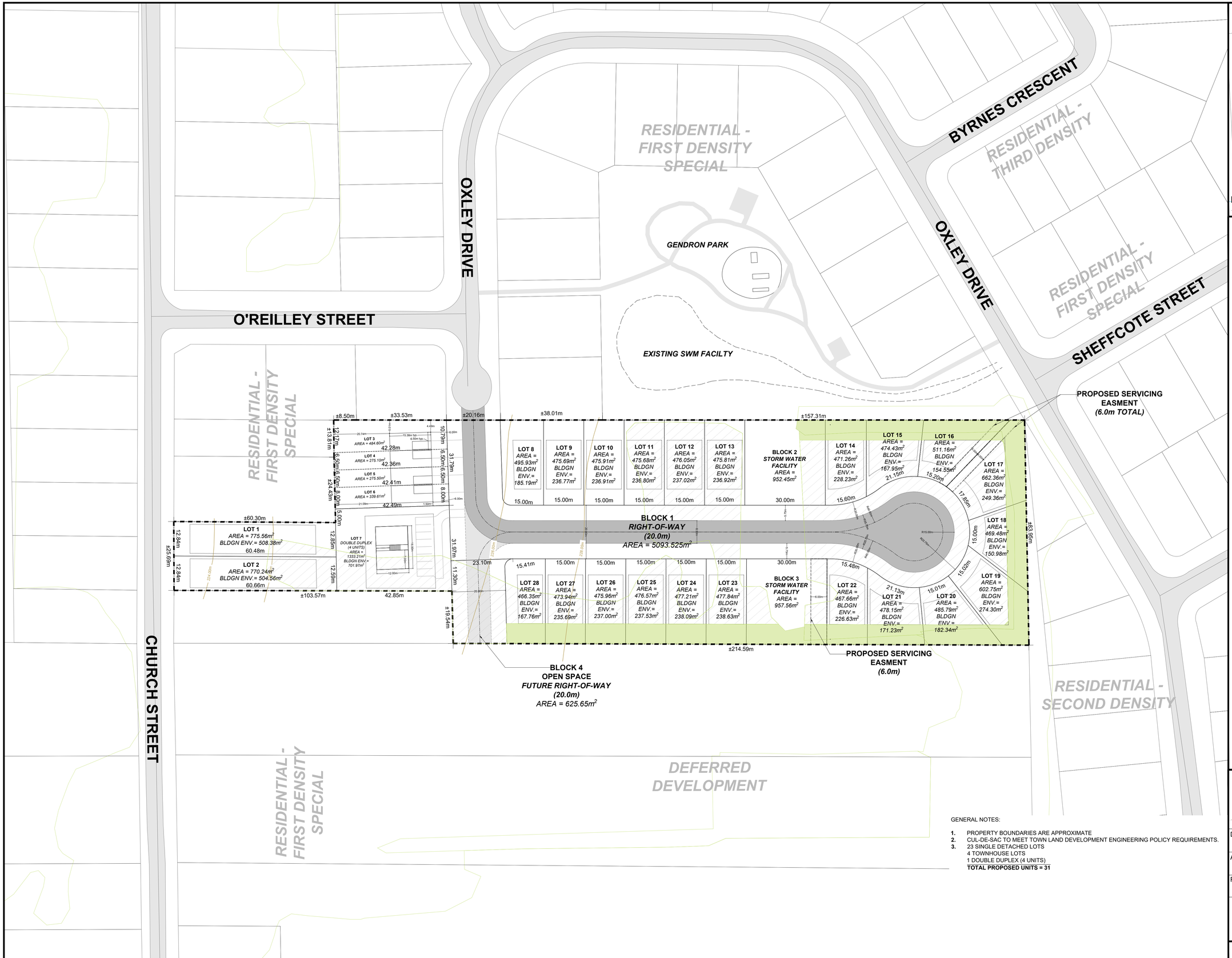
TOPOGRAPHIC INFO FROM LAND INFORMATION ONTARIO (LIO) 2013.

TATHAM ENGINEERING

245 CHURCH STREET SUBDIVISION
TOWN OF PENETANGUISHENE
EXTERNAL AREA DRAINAGE PLAN

DWG. No. **EXT-1**

SCALE: 1:3000	DRAWN: HY	DATE: APR, 2023	JOB NO. 522682



Key Map

1:10,000

- SUBJECT BOUNDARY
- EX. PARCEL
- EX. BUILDING
- EX. CONTOUR ELEVATION *(2.0m INTERVAL) (Retrieved from County GIS)*
- EX. WOODLAND TO REMAIN
- EX. WOODLAND TO BE REMOVED
- PR. LOT/BLOCK LINE
- PR. BUILDING ENVELOPE
- POTENTIAL BLDGN FOOTPRINT
- PR. RIGHT-OF-WAY CENTRELINE *(MIN. CL TURNING RADIUS = R12.0m)*

CONCEPT ZONING STATISTICS		
R3 - ZONE REGULATIONS - SINGLE DETACHED DWELLINGS	REQUIRED	PROPOSED
MIN. LOT FRONTAGE	15m	12.84m
MIN. LOT AREA	511 sq.m	MIN. 474.58 sq.m
MAX. LOT COVERAGE	35%	<35%
MIN. FRONT YARD SETBACK	6m	6.0m
MIN. SIDE YARD SETBACK	1m (w/ attached garage)	1.0m
MIN. EXT. SIDE YARD SETBACK	4.5m	4.5m
MIN. REAR YARD	7.5m	7.5m
MIN. GROUND FLOOR AREA	74 sq.m	>74 sq.m
MAX. HEIGHT	11m	<11.0m
MAX. ACC. BUILDING HEIGHT	4m	<4.0m
R3 - ZONE REGULATIONS - MAISONETTE AND ROW HOUSING DWELLINGS	REQUIRED	PROPOSED
MIN. LOT FRONTAGE	30m	31.79m
MIN. LOT AREA	230 sq.m/unit	333.30 sq.m/unit
MAX. LOT COVERAGE	35%	36.3%
MIN. FRONT YARD SETBACK	6m	6m
MIN. SIDE YARD SETBACK	2m plus 1m for each storey above the groundfloor on one side, and 6m on the other side.	1.5m on one side. 3.74m on the other
MIN. EXT. SIDE YARD SETBACK	4.5m	N/A
MIN. REAR YARD	7.5m	20.74m
MIN. GROSS FLOOR AREA PER DWELLING UNIT - *2 BEDROOM*	65 sq.m	>65 sq.m
MAX. HEIGHT	11m	<11.0m
MAX. ACC. BUILDING HEIGHT	4m	<4.0m
R3 - ZONE REGULATIONS - DOUBLE DUPLEX DWELLINGS	REQUIRED	PROPOSED
MIN. LOT FRONTAGE	21m	31.97m
MIN. LOT AREA	230 sq.m/unit	333.30 sq.m/unit
MAX. LOT COVERAGE	35%	14.33%
MIN. FRONT YARD SETBACK	6m	>6m
MIN. SIDE YARD SETBACK	1.0m on one side and 3.0m on the other	>1.0m on one side and >3.0m on the other
MIN. EXT. SIDE YARD SETBACK	4.5m	N/A
MIN. REAR YARD	11.0m	>11.0m
MIN. GROSS FLOOR AREA PER DWELLING UNIT - *2 BEDROOM*	65 sq.m	>65 sq.m
MAX. HEIGHT	11m	<11.0m
MAX. ACC. BUILDING HEIGHT	4m	<4.0m

GENERAL NOTES:

1. PROPERTY BOUNDARIES ARE APPROXIMATE
2. CUL-DE-SAC TO MEET TOWN LAND DEVELOPMENT ENGINEERING POLICY REQUIREMENTS.
3. 23 SINGLE DETACHED LOTS
   4 TOWNHOUSE LOTS
   1 DOUBLE DUPLEX (4 UNITS)
   TOTAL PROPOSED UNITS = 31

EcoVue Consulting Services Inc.

311 George St. N., Suite 200
Peterborough ON K9J 3H3
Tel: 705-876-8340 Fax: 705-742-8343
www.ecovueconsulting.com

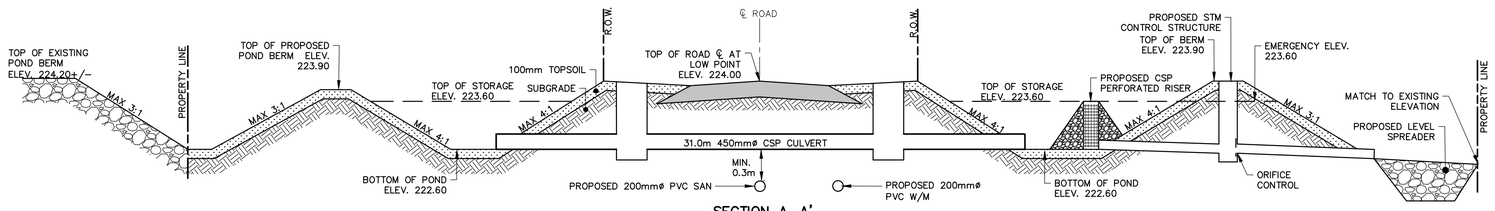
DRAWN BY: MC	PROJECT No.: 21-2132
APPROVED BY:	HORIZ. SCALE: 1:600
REVISION DATE: MAY 24, 2023	PLOT DATE: MAY 24, 2023

CHURCH STREET SUBDIVISION

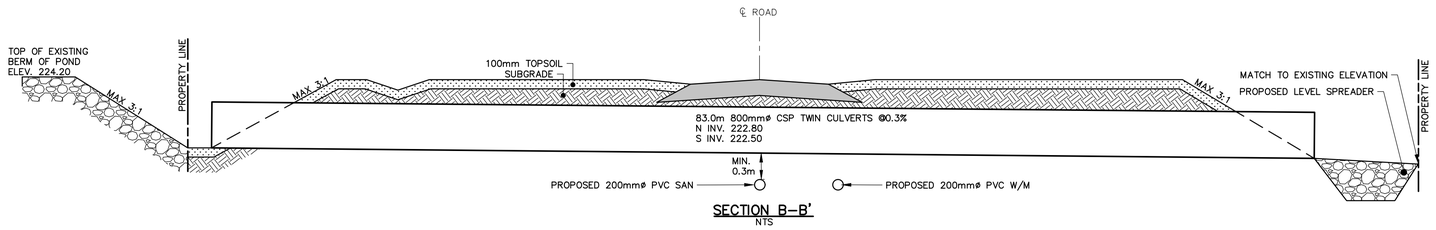
KOENIG DEVELOPMENTS LTD.

245 CHURCH STREET,
TOWN OF PENETANGUISHENE, ON

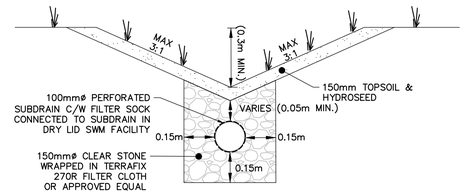
CONCEPT PLAN | **CP1**



SECTION A–A'
NTS

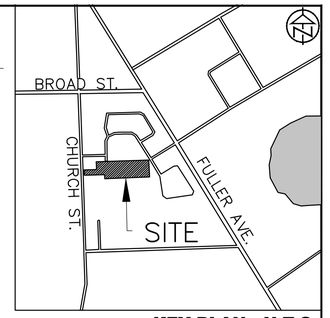


SECTION B–B'
NTS



NOTE: PERFORATED PIPE REQUIRED WHEN BACK YARD SWALE SLOPE LESS THAN 1.5%.

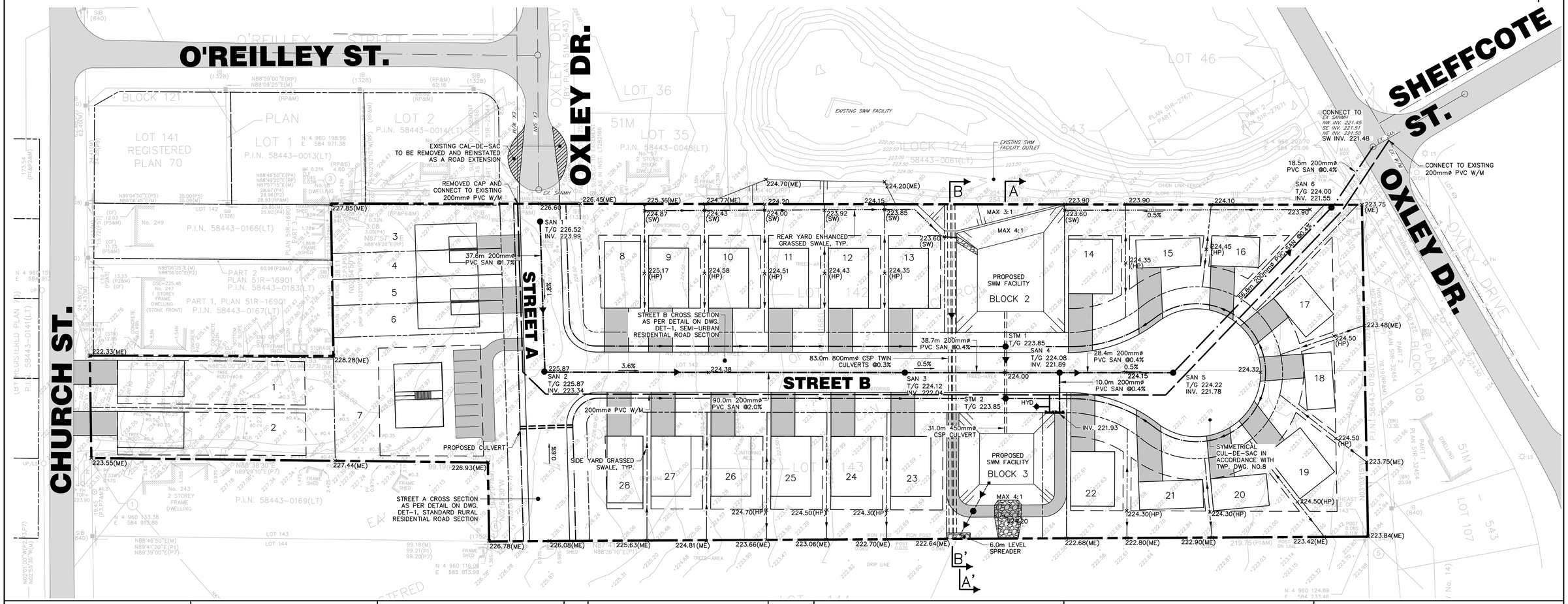
ENHANCED GRASSED SWALE DETAIL
NTS



KEY PLAN - N.T.S.

LEGEND

262.25	PROPOSED ELEVATION
262.25(ME)	PROPOSED ELEVATION MATCH EXISTING
262.25(HP)	PROPOSED HIGH POINT
89.20	EXISTING COUNTOUR
	PROPERTY BOUNDARY
	PROPOSED CULVERT
	PROPOSED SANITARY SEWER
	PROPOSED STORM SEWER



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TOPOGRAPHIC SURVEY COMPLETED BY RS SURVEYING LTD, DATED OCT 07, 2022

EXISTING ELEVATIONS SHOWN ON THIS PLAN ARE REFER TO BENCHMARK No.0011928U136R. ELEV. 198.925

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR DPA	JUN. 2023

ENGINEER STAMP

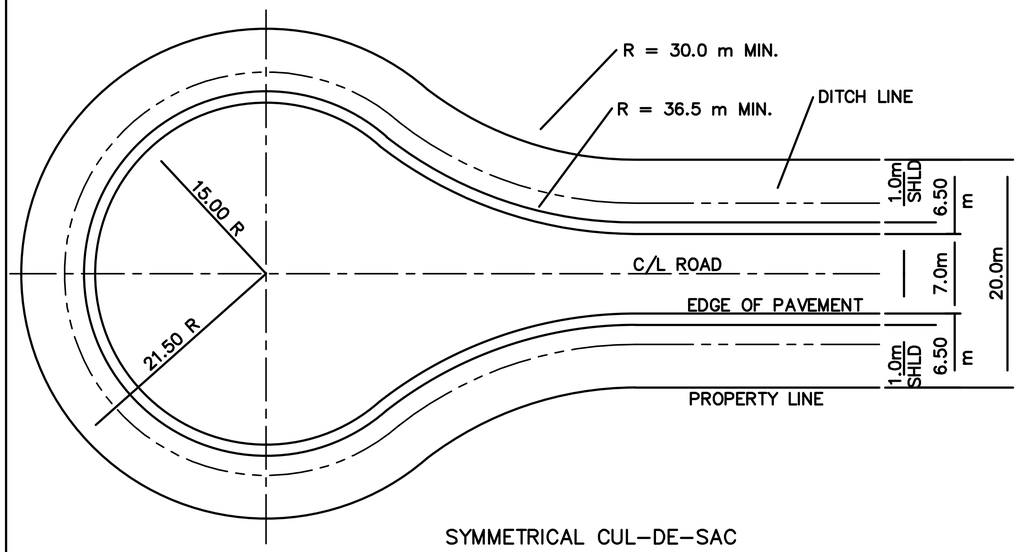
245 CHURCH STREET SUBDIVISION
TOWN OF PENETANGUISHENE

PRELIMINATY SITE GRADING, SERVICING & SWM PLAN

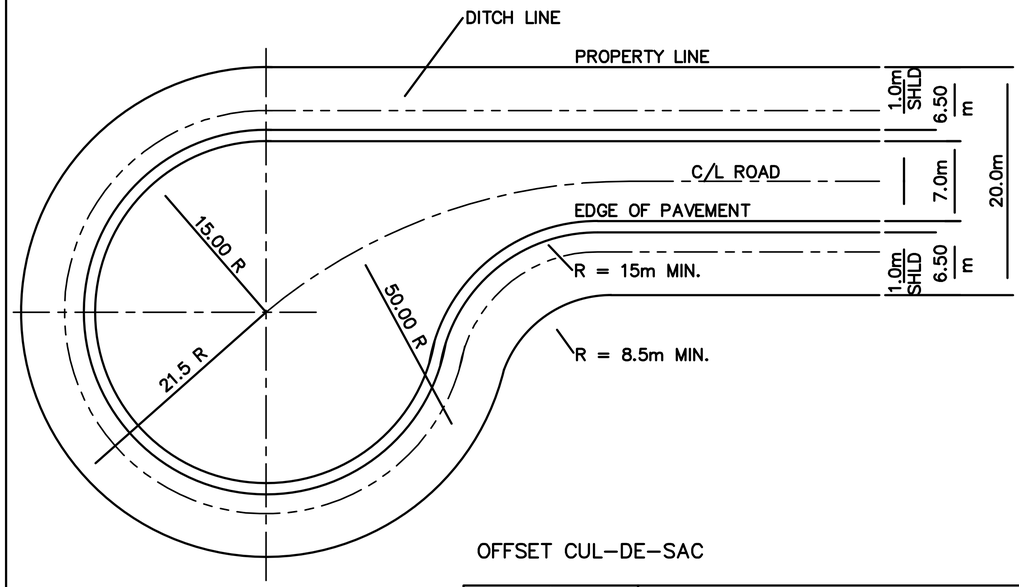
TATHAM ENGINEERING

DESIGN: HY	FILE: 522682	DWG: SG-1
DRAWN: HY	DATE: MAR 2023	
CHECK: JA	SCALE: 1:500	

Drawing Name: 522682-SG01.dwg, Plotted: Jun 26, 2023



SYMMETRICAL CUL–DE–SAC

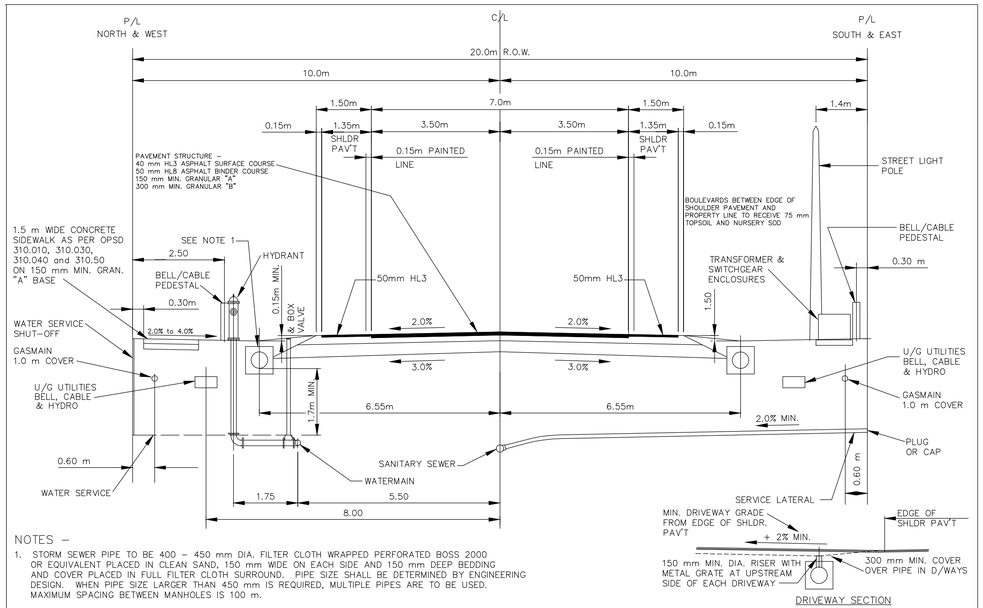


OFFSET CUL–DE–SAC

TOWN OF PENETANGUISHENE

PERMANENT RURAL RESIDENTIAL CUL–DE–SAC (20.0m R.O.W.)

DATE :	APRIL, 2008	SCALE:	1 : 50
DRAWN:	L. HUYER	DWG. NO.	8
CHECKED:	H. BORGDORFF		



DRIVEWAY SECTION

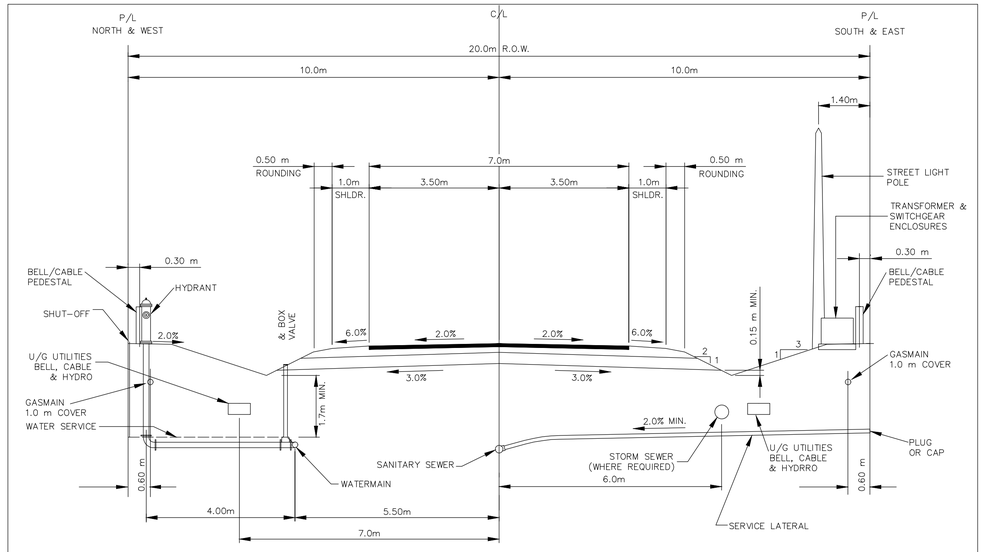
NOTES –

1. STORM SEWER PIPE TO BE 400 – 450 mm DIA. FILTER CLOTH WRAPPED PERFORATED BOSS 2000 OR EQUIVALENT PLACED IN CLEAN SAND, 150 mm WIDE ON EACH SIDE AND 150 mm DEEP BEDDING AND COVER PLACED IN FULL FILTER CLOTH SURROUND. PIPE SIZE SHALL BE DETERMINED BY ENGINEERING DESIGN. WHEN PIPE SIZE LARGER THAN 450 mm IS REQUIRED, MULTIPLE PIPES ARE TO BE USED. MAXIMUM SPACING BETWEEN MANHOLES IS 100 m.

TOWN OF PENETANGUISHENE

SEMI – URBAN RESIDENTIAL ROAD SECTION (20.0m R.O.W.)

DATE :	APRIL, 2008	SCALE:	1 : 100
DRAWN:	L. HUYER	DWG. NO.	5
CHECKED:	H. BORGDORFF		



NOTES :

ROAD BASE :
ASPHALT – BASE COURSE 50mm HL8
SURFACE COURSE 40mm HL3
GRANULAR 'A' 150mm (MIN.)
GRANULAR 'B' 300mm (MIN.)

ALL BOULEVARDS AND DITCHES SHALL RECEIVE EROSION PROTECTION OF 75 mm TOPSOIL AND SOD. WHERE MORE SUBSTANTIAL EROSION PROTECTION IS REQUIRED, IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED UNDER "ROADWAYS" IN SECTION 3.2.2, THE DETAILS OF SUCH EROSION PROTECTION SHALL BE SHOWN ON THE ENGINEERING DRAWINGS FOR THE SUBJECT DEVELOPMENT.

TOWN OF PENETANGUISHENE

STANDARD RURAL RESIDENTIAL ROAD SECTION (20.0m R.O.W.)

DATE :	APRIL, 2008	SCALE:	1 : 100
DRAWN:	L. HUYER	DWG. NO.	3
CHECKED:	H. BORGDORFF		

TOPOGRAPHIC SURVEY COMPLETED BY RS SURVEYING LTD, DATED OCT 07, 2022

EXISTING ELEVATIONS SHOWN ON THIS PLAN ARE REFER TO BENCHMARK No.0011928U136R. ELEV. 198.925

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR DPA	JUN. 2023

ENGINEER STAMP

245 CHURCH STREET SUBDIVISION
TOWN OF PENETANGUISHENE

NOTES & DETAILS

TATHAM ENGINEERING

DESIGN: HY	FILE: 522682	DWG:	**DET-1**
DRAWN: HY	DATE: MAR 2023		
CHECK: JA	SCALE: 1:500		

Drawing Name: 522682–DET01.dwg, Plotted: Jun 29, 2023

Appendix A: Water Supply and Fire Protection Calculations

TATHAM ENGINEERING

Water Service Calculations

Tatham File No. : 522682
Project : 245 Church Street
Date : June 29, 2023
Designed by : GC

Population of Proposed Development:

Townhouses =	4 townhouses X assumed 2.5 persons per townhouse =	10
Single Detached =	23 single detached X assumed 3 persons per single detached =	69
Double Duplex =	1 double duplex consisting of 4 units X assumed 2 persons per unit =	8
Total =		**87**

Water Demands:

Average day demand =	450	L/c/day	(As per MECP guidelines)
=	39,150	L/day	
=	**0.45**	**L / s**	
Max. day peaking factor:	2		(As per MECP Design Guidelines for Drinking Water Systems, Table 3-1)
Max. day demand =	78,300	L / day	
=	**0.91**	**L / s**	
Peak hour peaking factor:	3		(As per MECP Design Guidelines for Drinking Water Systems, Table 3-1)
Peak hour demand =	117,450	L / day	
=	**1.36**	**L / s**	

TATHAM ENGINEERING

FUS Fire Flow Calculations (Same for Blocks A & B)

Tatham File no. :	522682
Project:	245 Church Street
Date:	29-Jun-23
Designed by:	GC
Checked by:	JA

$$RFF = 220C\sqrt{A}$$

Where:

RFF = the Required Fire Flow in litres per minutes (LPM)
C = the Construction Coefficient is related to the type of construction of the building
A = the Total Effective Floor Area (effective building area) in square metres of the building

Determine the Construction Coefficient (C)

1	Choose frame used for building	Coefficient C related to the type of construction	Type V Wood Frame Construction	1.5	Type II Noncombustible Construction	0.8		
			Type IV-A Mass Timber Construction	0.8				
			Type IV-B Mass Timber Construction	0.9				
			Type IV-C Mass Timber Construction	1.0				
			Type IV-D Mass Timber Construction	1.5				
			Type III Ordinary Construction	1.0				
			Type II Noncombustible Construction	0.8				
			Type I Fire Resistive Construction	0.6				

Determine Total Effective Floor Area (A)

2	Option 1							
	The Construction coefficient is greater or equal to 1	FALSE	100% of all floor area (Excluding basements at least 50% below grade)			Total Effective Area	0	sq.m.
	Option 2							
	The Construction coefficient is less than 1	TRUE	Are vertical openings in the building protected? (Per NBC Division B, Section 3.5. Vertical Transportation)	NO		Are the floor areas uniform throughout the building	YES	
	Unprotected Vertical Openings, Uniform Floor Area							
	TRUE	Number of Floors	3	Area of Floor(s)	191	Total Effective Area	478	sq.m.
	Unprotected Verticle Openings, Dissimillar Floor Area							
	FALSE	Area of 2 largest adjoining floors		Area of floors above 2 largest adjoining floors (up to a maximum of 8 floors)		Total Effective Area	0	sq.m.
	Protected Verticle Openings, Uniform Floor Area							
	FALSE	Number of Floors		Area of Floor(s)		Total Effective Area	0	sq.m.
	Protected Verticle Openings, Dissimillar Floor Area							
	FALSE	Area of the largest floor		Area of floor directly above largest floor		Total Effective Area	0	sq.m.
				Area of floor directly below largest floor				

Determine the Required Fire Flow

3	Obtain Required Fire Flow	$RFF = 220C\sqrt{A}$	Required Fire Flow	4,000	L/min	
				66.7	L/s	

Reduction or Surcharge Due to Factors Affecting Burning

4	Choose combustibility of contents	Occupancy hazard reduction or surcharge	Non-combustible	-0.25	Limited combustible	-0.15		
			Limited combustible	-0.15				
			Combustible	0				
			Free burning	0.15			3,400	L/min
			Rapid burning	0.25			56.7	L/s
5	Choose reduction for sprinklers	Sprinkler reduction	Sprinklers conforming to NFPA13 (wet or dry system)	-0.30	NO	0		
			Water supply is standard for both the system and fire department hose lines (siamese connection)	-0.10	NO	0		
			Fully supervised system (electronic monitoring system on at all times)	-0.10	NO	0		
			All buildings within 30m of the proposed structure are confirmed to have a sprinkler system	-0.25	NO	0	3,400	L/min
							56.7	L/s

Exposure Adjustment Charge

6	Exposure distance between units	North side	3.1 to 10m	Length - Height Value Assumed worst case exposed building facing wall	>100	Exposure Adjustment Charge	0.11	
		East side	Over 30m		>100	Exposure Adjustment Charge	0	
		South side	Over 30m		>100	Exposure Adjustment Charge	0.00	
		West side	Over 30m		>100	Exposure Adjustment Charge	0.00	
	Cumulative Required Fire Flow						3,774	L/min
							62.9	L/s

Total Required Fire Flow

7	Obtain fire flow, duration	Minimum required fire flow rate (rounded to nearest 1000)	**4,000**	L/min
		Minimum required fire flow rate	**66.7**	L/s
		Required duration of fire flow	**2**	Hrs

Appendix B:
Sewage Collection Calculations

TATHAM ENGINEERING

Sewage Generation Calculations

Tatham File No. : 522682
Project : 245 Church Street
Date : June 29, 2023
Designed by : GC
Checked by : JA

Population of Proposed Development:

Townhouses =	4 townhouses X assumed 2.5 persons per townhouse =	10
Single Detached =	23 single detached X assumed 3 persons per single detached =	69
Double Duplex =	1 double duplex consisting of 4 units X assumed 2 persons per unit =	8
Total =		**87**

Sewage Generation:

Design flow = 450 L/capita/day (As per MECP Guidelines)
= 39,150 L / day
= **0.45** **L / s**

Peaking factor = Harmon formula = $M = 1 + \frac{14}{4 + \sqrt{\frac{P}{1000}}} \geq 2.0$ Where: P = 87
= 4.26

Peak flow = 166,765 L / day
= **1.93** **L / s**

Extraneous flow = 0.28 L/s/ha (As per MECP Guidelines)
= 0.28 L/s * 2.2 ha (Tributary area accounts for entire site (conservative))
= 53,222 L/day
= **0.62** **L/s**

Combined flow = 219,987 L / day
= **2.55** **L / s**

Appendix C: Stormwater Management Calculations

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations

Project Details

Project Name	522682

Prepared By

Name	HY

Data Sources

Detailed Soil Survey Reports for Ontario, NVCA Stormwater Technical Guide (2013), MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	NVCA
Catchment ID:	EXT-1
Catchment Area (ha):	20.10
Impervious %:	27%

Average Curve Number (CN), Runoff Coefficient (C) and Initial Abstraction (IA)

Soil Symbol		**Tis**											
Soil Series		Tioga											
Hydrologic Soils Group		A											
Soil Texture		Sand Loam											
Runoff Coefficient Type		1											
Area (ha)		20.10											
Percentage of Catchment		100%											
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2	5.39	100	0.95									
Gravel	3		89	0.09									
Woodland	10		32	0.08									
Pasture/Lawns	5	14.71	49	0.10									
Meadows	8		38	0.09									
Cultivated	7		62	0.22									
Waterbody	12		50	0.05									
Average CN		62.68											
Average C		0.33											
Average IA		4.20											

Time to Peak Calculations

Max. Catchment Elev. (m):	245.00
Min. Catchment Elev. (m):	222.80
Catchment Length (m):	630
Catchment Slope (%):	3.52%
Method: Airport Method	
Time of Concentration (mins):	41.69

Summary

Catchment CN:	62.7
Catchment C:	0.33
Catchment IA (mm):	4.20
Time of Concentration (hrs):	0.69
Catchment Time to Peak (hrs):	0.46
Catchment Time Step (mins):	5.56

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Project Name	522682

Prepared By

Name	HY

Data Sources

Detailed Soil Survey Reports for Ontario, NVCA Stormwater Technical Guide (2013), MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	NVCA
Catchment ID:	101
Catchment Area (ha):	0.23
Impervious %:	

Average Curve Number (CN), Runoff Coefficient (C) and Initial Abstraction (IA)

Soil Symbol		**Tis**											
Soil Series		Tioga											
Hydrologic Soils Group		A											
Soil Texture		Sand Loam											
Runoff Coefficient Type		1											
Area (ha)		0.23											
Percentage of Catchment		100%											
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2		100	0.95									
Gravel	3		89	0.14									
Woodland	10	0.12	32	0.12									
Pasture/Lawns	5	0.11	49	0.15									
Meadows	8		38	0.14									
Cultivated	7		62	0.30									
Waterbody	12		50	0.05									
Average CN		40.13											
Average C		0.13											
Average IA		7.61											

Time to Peak Calculations

Max. Catchment Elev. (m):	228.40
Min. Catchment Elev. (m):	222.50
Catchment Length (m):	71
Catchment Slope (%):	8.31%
Method: Airport Method	
Time of Concentration (mins):	13.19

Summary

Catchment CN:	40.1
Catchment C:	0.13
Catchment IA (mm):	7.61
Time of Concentration (hrs):	0.22
Catchment Time to Peak (hrs):	0.15
Catchment Time Step (mins):	1.76

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Project Name	522682

Prepared By

Name	HY

Data Sources

Detailed Soil Survey Reports for Ontario, NVCA Stormwater Technical Guide (2013), MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	NVCA
Catchment ID:	102
Catchment Area (ha):	2.00
Impervious %:	

Average Curve Number (CN), Runoff Coefficient (C) and Initial Abstraction (IA)

Soil Symbol		**Tis**											
Soil Series		Tioga											
Hydrologic Soils Group		A											
Soil Texture		Sand Loam											
Runoff Coefficient Type		1											
Area (ha)		2.00											
Percentage of Catchment		100%											
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2		100	0.95									
Gravel	3		89	0.09									
Woodland	10	1.04	32	0.08									
Pasture/Lawns	5	0.96	49	0.10									
Meadows	8		38	0.09									
Cultivated	7		62	0.22									
Waterbody	12		50	0.05									
Average CN		40.16											
Average C		0.09											
Average IA		7.60											

Time to Peak Calculations

Max. Catchment Elev. (m):	228.40
Min. Catchment Elev. (m):	222.60
Catchment Length (m):	158
Catchment Slope (%):	3.67%
Method: Airport Method	
Time of Concentration (mins):	26.96

Summary

Catchment CN:	40.2
Catchment C:	0.09
Catchment IA (mm):	7.60
Time of Concentration (hrs):	0.45
Catchment Time to Peak (hrs):	0.30
Catchment Time Step (mins):	3.59

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Project Name	522682

Prepared By

Name	HY

Data Sources

Detailed Soil Survey Reports for Ontario, NVCA Stormwater Technical Guide (2013), MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	NVCA
Catchment ID:	201
Catchment Area (ha):	0.23
Impervious %:	19%

Average Curve Number (CN), Runoff Coefficient (C) and Initial Abstraction (IA)

Soil Symbol		**Tis**											
Soil Series		Tioga											
Hydrologic Soils Group		A											
Soil Texture		Sand Loam											
Runoff Coefficient Type		1											
Area (ha)		0.23											
Percentage of Catchment		100%											
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2	0.04	100	0.95									
Gravel	3		89	0.14									
Woodland	10		32	0.12									
Pasture/Lawns	5	0.19	49	0.15									
Meadows	8		38	0.14									
Cultivated	7		62	0.30									
Waterbody	12		50	0.05									
Average CN		58.85											
Average C		0.30											
Average IA		4.42											

Time to Peak Calculations

Max. Catchment Elev. (m):	228.40
Min. Catchment Elev. (m):	222.50
Catchment Length (m):	71
Catchment Slope (%):	8.31%
Method: Airport Method	
Time of Concentration (mins):	10.87

Summary

Catchment CN:	58.8
Catchment C:	0.30
Catchment IA (mm):	4.42
Time of Concentration (hrs):	0.18
Catchment Time to Peak (hrs):	0.12
Catchment Time Step (mins):	1.45

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations

Project Details

Project Name	522682

Prepared By

Name	HY

Data Sources

Detailed Soil Survey Reports for Ontario, MTO
Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	RRCA
Catchment ID:	202
Catchment Area (ha):	1.82
Impervious %:	46%

Average Curve Number (CN), Runoff Coefficient (C) and Initial Abstraction (IA)

Soil Symbol		**Tis**											
Soil Series		Tioga											
Hydrologic Soils Group		A											
Soil Texture		Sand Loam											
Runoff Coefficient Type		1											
Area (ha)		1.82											
Percentage of Catchment		100%											
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2	0.85	100	0.95									
Gravel	3		89	0.09									
Woodland	10		32	0.08									
Pasture/Lawns	5	0.97	49	0.10									
Meadows	8		38	0.09									
Cultivated	7		62	0.22									
Waterbody	12		50	0.05									
Average CN		72.71											
Average C		0.50											
Average IA		3.61											

Time to Peak Calculations

Max. Catchment Elev. (m):	228.40
Min. Catchment Elev. (m):	222.60
Catchment Length (m):	158
Catchment Slope (%):	3.67%
Method: Bransby-Williams Formula	
Time of Concentration (mins):	6.54

Summary

Catchment CN:	72.7
Catchment C:	0.50
Catchment IA (mm):	3.61
Time of Concentration (hrs):	0.11
Catchment Time to Peak (hrs):	0.07
Catchment Time Step (mins):	0.87

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Project Name	522682

Prepared By

Name	HY

Data Sources

Detailed Soil Survey Reports for Ontario, MTO
Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	RRCA
Catchment ID:	203
Catchment Area (ha):	0.18
Impervious %:	

Average Curve Number (CN), Runoff Coefficient (C) and Initial Abstraction (IA)

Soil Symbol		**Tis**											
Soil Series		Tioga											
Hydrologic Soils Group		A											
Soil Texture		Sand Loam											
Runoff Coefficient Type		1											
Area (ha)		0.18											
Percentage of Catchment		100%											
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2		100	0.95									
Gravel	3		89	0.20									
Woodland	10		32	0.18									
Pasture/Lawns	5	0.18	49	0.22									
Meadows	8		38	0.20									
Cultivated	7		62	0.40									
Waterbody	12		50	0.05									
Average CN		49.00											
Average C		0.22											
Average IA		5.00											

Time to Peak Calculations

Max. Catchment Elev. (m):	224.50
Min. Catchment Elev. (m):	222.60
Catchment Length (m):	10
Catchment Slope (%):	19.00%
Method: Airport Method	
Time of Concentration (mins):	3.43

Summary

Catchment CN:	49.0
Catchment C:	0.22
Catchment IA (mm):	5.00
Time of Concentration (hrs):	0.06
Catchment Time to Peak (hrs):	0.04
Catchment Time Step (mins):	0.46

Project :	245 Church Street
File No.	522682
Date:	Jun-23
Designed By:	HY
Checked By:	JA
Subject:	Impervious Area Calculations

Impervious Area Calculations

201	**Area (ha)**	**202**	**Area (ha)**
Asphalt	0.00	Asphalt	0.28
House	0.03	House	0.38
Driveway	0.01	Driveway	0.19
Total Impervious Area (ha)	**0.04**	**Total Impervious Area (**	**0.85**

TATHAM ENGINEERING

Project :	245 Church Street
File No.	522682
Date:	Jun-23
Designed By:	HY
Checked By:	JA
Subject:	SWM Facility

SWM Facility Storage

Elevation	Depth	Increasing Area	Accum Area	Volume	Total Volume
(m)	(m)	(m^2)	(m^2)	(m^3)	(m^3)
222.60	0.00	0.00	467.00	0.00	0.00
222.65	0.05	24.63	491.63	23.96	23.96
222.70	0.10	25.26	516.89	25.21	49.17
222.75	0.15	25.89	542.78	26.49	75.66
222.80	0.20	26.53	569.31	27.80	103.46
222.85	0.25	27.16	596.47	29.14	132.60
222.90	0.30	27.79	624.26	30.52	163.12
222.95	0.35	28.43	652.69	31.92	195.04
223.00	0.40	29.06	681.74	33.36	228.40
223.05	0.45	29.69	711.43	34.83	263.23
223.10	0.50	30.32	741.76	36.33	299.55
223.15	0.55	30.96	772.71	37.86	337.41
223.20	0.60	31.59	804.30	39.42	376.83
223.25	0.65	32.22	836.53	41.02	417.85
223.30	0.70	32.85	869.38	42.65	460.50
223.35	0.75	33.49	902.87	44.30	504.80
223.40	0.80	34.12	936.99	45.99	550.80
223.45	0.85	34.75	971.74	47.72	598.51
223.50	0.90	35.39	1007.13	49.47	647.98
223.55	0.95	36.02	1043.15	51.25	699.23
223.60	1.00	36.65	1079.80	53.07	752.31
223.65	1.05	37.28	1117.08	54.92	807.23
223.70	1.10	37.92	1155.00	56.80	864.02
223.75	1.15	38.55	1193.55	58.71	922.74
223.80	1.20	39.18	1232.74	60.65	983.39
223.85	1.25	39.82	1272.55	62.63	1046.02
223.90	1.30	40.45	1313.00	64.64	1110.66

TATHAM ENGINEERING	Project:	245 Church Street	Date:	June-2023
	File No.:	522682	Designed By:	HY
	Subject:	Culvert Calculation	Checked By:	GC

HY8 Culvert Calculatoin

Crossing Data - Crossing 1

Crossing Properties

Name: Crossing 1

Parameter	Value	Units
DISCHARGE DATA		
Discharge Method	Minimum, Design, and Maximum	
Minimum Flow	1.912	cms
Design Flow	1.912	cms
Maximum Flow	1.912	cms
TAILWATER DATA		
Channel Type	Enter Constant Tailwater Elevation	
Channel Invert Elevation	222.800	m
Constant Tailwater Elevation	222.500	m
Rating Curve	View...	
ROADWAY DATA		
Roadway Profile Shape	Constant Roadway Elevation	
First Roadway Station	0.000	m
Crest Length	10.000	m
Crest Elevation	224.500	m
Roadway Surface	Paved	
Top Width	50.000	m

Culvert Properties

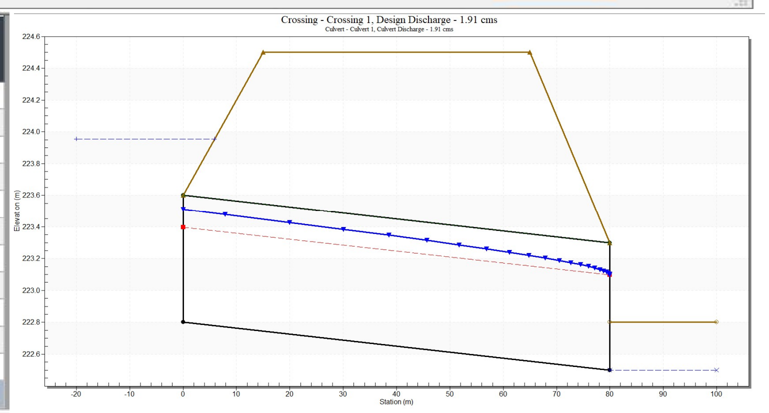
Culvert 1

Add Culvert | Duplicate Culvert | Delete Culvert

Parameter	Value	Units
CULVERT DATA		
Name	Culvert 1	
Shape	Circular	
Material	Corrugated Steel	
Diameter	800.000	mm
Embedment Depth	0.000	mm
Manning's n	0.012	
Culvert Type	Straight	
Inlet Configuration	Thin Edge Projecting (Ke=0.9)	
Inlet Depression?	No	
SITE DATA		
Site Data Input Option	Culvert Invert Data	
Inlet Station	0.000	m
Inlet Elevation	222.800	m
Outlet Station	80.000	m
Outlet Elevation	222.500	m
Number of Barrels	2	
Computed Culvert Slope	0.003750	m/m

Help | Click on any icon for help on a specific topic | Low Flow | AOP | Energy Dissipation | Analyze Crossing | OK | Cancel

Headwater Elevation (m)	Total Discharge (cms)	Culvert 1 Discharge (cms)	Roadway Discharge (cms)	Iterations
223.95	1.91	1.91	0.00	1
223.95	1.91	1.91	0.00	1
223.95	1.91	1.91	0.00	1
223.95	1.91	1.91	0.00	1
223.95	1.91	1.91	0.00	1
223.95	1.91	1.91	0.00	1
223.95	1.91	1.91	0.00	1
223.95	1.91	1.91	0.00	1
223.95	1.91	1.91	0.00	1
223.95	1.91	1.91	0.00	1
223.95	1.91	1.91	0.00	1
224.50	2.56	2.56	0.00	Overtopping



PRE SCS
==
======================

```
       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
```

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***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\388f50f6-d62e-4b5b-9f8d-5e9045d80cbb\scenario
Summary filename:
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DATE: 06/28/2023 TIME: 04:40:16

USER:

COMMENTS: _____

```
**********************************************
** SIMULATION : Run 01                       **
**********************************************
```

W/E	COMMAND	HYD ID	DT min	AREA ha	' Qpeak ' cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
	START @ 0.00 hrs								

```
    READ STORM                  5.0
    [ Ptot= 52.22 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\983aa258-b0d8-4b75-832c-bc39dd07aa9e\c6c8c27e-eb2c-4
db7-b4e8-934208a
    remark: Beausoleil SCS24 2yr

*
 *  CALIB STANDHYD       0057  1  5.0   20.10    0.54 12.00  14.44 0.28   0.000
    [I%=14.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0058  1  5.0   20.10    0.04 11.67  14.44  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 52.22 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\983aa258-b0d8-4b75-832c-bc39dd07aa9e\c6c8c27e-eb2c-4
db7-b4e8-934208a
    remark: Beausoleil SCS24 2yr

*
 *  CALIB NASHYD         0062  1  5.0    2.00    0.02 12.17   4.71 0.09   0.000
    [CN=40.2         ]
    [ N = 3.0:Tp 0.30]
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                 *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
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Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\55b80e92-f2bf-4e0d-97bf-cd5f305cfa2d\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\55b80e92-f2bf-4e0d-97bf-cd5f305cfa2d\scenario

DATE: 06/28/2023 TIME: 04:40:16

USER:

COMMENTS: _____

****
** SIMULATION : Run 02 **
****

W/E	COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
	START @ 0.00 hrs								
	READ STORM		5.0						
	[Ptot= 73.22 mm]								
	fname : C:\Users\hyu\AppData\Local\Temp\983aa258-b0d8-4b75-832c-bc39dd07aa9e\47d4ea6f-5c56-46ca-ac64-2d5f1bd								
	remark: Beausoleil SCS24 5yr								
*									
*	CALIB STANDHYD	0057	1 5.0	20.10	0.94	12.00	24.06	0.33	0.000
	[I%=14.0:S%= 2.00]								
*									
**	Reservoir								
	OUTFLOW:	0058	1 5.0	20.10	0.20	12.92	24.06	n/a	0.000
*									
	READ STORM		5.0						
	[Ptot= 73.22 mm]								
	fname : C:\Users\hyu\AppData\Local\Temp\983aa258-b0d8-4b75-832c-bc39dd07aa9e\47d4ea6f-5c56-46ca-ac64-2d5f1bd								
	remark: Beausoleil SCS24 5yr								
*									
*	CALIB NASHYD	0062	1 5.0	2.00	0.03	12.17	9.71	0.13	0.000
	[CN=40.2]								
	[N = 3.0:Tp 0.30]								

```
*
================================================================================
======================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

  Output  filename:
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  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\784214b8-
2a33-402d-b320-f9c040141238\scenario


DATE: 06/28/2023                          TIME: 04:40:16

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : Run 03                         **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
```

```
    READ STORM                  5.0
    [ Ptot= 87.11 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\983aa258-b0d8-4b75-832c-bc39dd07aa9e\e313a315-cb95-4
46d-8dfa-d4911a9
    remark: Beausoleil SCS24 10yr

*
 *  CALIB STANDHYD       0057  1  5.0   20.10    1.23 12.00  31.28 0.36   0.000
    [I%=14.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0058  1  5.0   20.10    0.53 12.50  31.27  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 87.11 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\983aa258-b0d8-4b75-832c-bc39dd07aa9e\e313a315-cb95-4
46d-8dfa-d4911a9
    remark: Beausoleil SCS24 10yr

*
 *  CALIB NASHYD         0062  1  5.0    2.00    0.05 12.17  13.82 0.16   0.000
    [CN=40.2         ]
    [ N = 3.0:Tp 0.30]
*
 FINISH

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       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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```

***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\4567d5f9-9db9-40fa-9d1c-215f482a62b7\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\4567d5f9-9db9-40fa-9d1c-215f482a62b7\scenario

DATE: 06/28/2023 TIME: 04:40:16

USER:

COMMENTS: _____

****
** SIMULATION : Run 04 **
****

W/E	COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
	START @ 0.00 hrs								
	READ STORM	5.0							
	[Ptot=104.60 mm]								
	fname : C:\Users\hyu\AppData\Local\Temp\983aa258-b0d8-4b75-832c-bc39dd07aa9e\8591e4e1-8bed-42b4-80b4-2315313								
	remark: Beausoleil SCS24 25yr								
*									
*	CALIB STANDHYD	0057	1	5.0	20.10	1.84	12.00	41.17	0.39	0.000
	[I%=14.0:S%= 2.00]								
*									
**	Reservoir								
	OUTFLOW:	0058	1	5.0	20.10	1.14	12.25	41.17	n/a	0.000
*									
	READ STORM	5.0							
	[Ptot=104.60 mm]								
	fname : C:\Users\hyu\AppData\Local\Temp\983aa258-b0d8-4b75-832c-bc39dd07aa9e\8591e4e1-8bed-42b4-80b4-2315313								
	remark: Beausoleil SCS24 25yr								

```
*
 *  CALIB NASHYD         0062  1  5.0    2.00    0.07 12.17  19.81 0.19   0.000
    [CN=40.2         ]
    [ N = 3.0:Tp 0.30]
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L             (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\033f2704-
981b-488b-9d54-7ec84ca8959f\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\033f2704-
981b-488b-9d54-7ec84ca8959f\scenario


DATE: 06/28/2023                          TIME: 04:40:16

USER:


COMMENTS: _____________________________________________________________


  ********************************************
  ** SIMULATION : Run 05                     **
  ********************************************
```

```
  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    READ STORM                  5.0
    [ Ptot=117.60 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\983aa258-b0d8-4b75-832c-bc39dd07aa9e\3b15ae8e-39eb-4
a73-94d5-e2432cc
    remark: Beausoleil SCS24 50yr

*
 *  CALIB STANDHYD       0057  1  5.0   20.10    2.23 12.00  49.04 0.42   0.000
    [I%=14.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0058  1  5.0   20.10    1.70 12.17  49.04  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot=117.60 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\983aa258-b0d8-4b75-832c-bc39dd07aa9e\3b15ae8e-39eb-4
a73-94d5-e2432cc
    remark: Beausoleil SCS24 50yr

*
 *  CALIB NASHYD         0062  1  5.0    2.00    0.09 12.17  24.79 0.21   0.000
    [CN=40.2         ]
    [ N = 3.0:Tp 0.30]
*
================================================================================
======================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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```

***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\0b97325a-64f9-4f3f-ad4f-7bb5f8aa1b0a\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\0b97325a-64f9-4f3f-ad4f-7bb5f8aa1b0a\scenario

DATE: 06/28/2023 TIME: 04:40:16

USER:

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```
  ************************************************
  ** SIMULATION : Run 06                        **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    READ STORM                  5.0
    [ Ptot=130.54 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\983aa258-b0d8-4b75-832c-bc39dd07aa9e\7b2da275-f6ca-4
d6b-b9cb-5e55266
    remark: Beausoleil SCS24 100yr

*
 *  CALIB STANDHYD       0057  1  5.0   20.10    2.64 12.00  57.25 0.44   0.000
    [I%=14.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0058  1  5.0   20.10    2.29 12.08  57.25  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot=130.54 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\983aa258-b0d8-4b75-832c-bc39dd07aa9e\7b2da275-f6ca-4
d6b-b9cb-5e55266
    remark: Beausoleil SCS24 100yr
```

```
*
 *  CALIB NASHYD         0062  1  5.0    2.00    0.11 12.17  30.17 0.23   0.000
    [CN=40.2         ]
    [ N = 3.0:Tp 0.30]
*
```

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```
       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
```


***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\06cbe3e7-cbfb-4e85-83f6-ff073d28a2c8\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\06cbe3e7-cbfb-4e85-83f6-ff073d28a2c8\scenario

DATE: 06/28/2023 TIME: 04:40:24

USER:

COMMENTS: _____

****
** SIMULATION : Run 02 **
****

W/E	COMMAND	HYD ID	DT	AREA	Qpeak	Tpeak	R.V.	R.C.	Qbase
			min	ha	cms	hrs	mm		cms

START @ 0.00 hrs

```
    CHIC STORM                 10.0
    [ Ptot= 35.22 mm ]
*
 ** CALIB NASHYD         0062  1  5.0    2.00    0.01  1.67   1.88 0.05   0.000
    [CN=40.2         ]
    [ N = 3.0:Tp 0.30]
*
    CHIC STORM                 10.0
    [ Ptot= 35.22 mm ]
*
 *  CALIB STANDHYD       0022  1  5.0   20.10    0.52  1.33   8.02 0.23   0.000
    [I%=14.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0019  1  5.0   20.10    0.04  1.25   8.02  n/a   0.000
*
================================================================================
======================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\204892b8-
1629-4829-b418-748daab62217\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\204892b8-
1629-4829-b418-748daab62217\scenario


DATE: 06/28/2023                          TIME: 04:40:24
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COMMENTS: _____

```
  ***********************************************
  ** SIMULATION : Run 03                        **
  ***********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM                10.0
    [ Ptot= 49.52 mm ]
*
 ** CALIB NASHYD         0062  1  5.0    2.00    0.01  1.67   4.18 0.08   0.000
    [CN=40.2         ]
    [ N = 3.0:Tp 0.30]
*
    CHIC STORM                10.0
    [ Ptot= 49.52 mm ]
*
 *  CALIB STANDHYD       0022  1  5.0   20.10    0.78  1.33  13.33 0.27   0.000
    [I%=14.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:              0019  1  5.0   20.10    0.09  4.08  13.33  n/a   0.000
*
================================================================================
======================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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```

***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\e8d2ea16-9972-4435-b9ca-9ec3723a9661\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\e8d2ea16-9972-4435-b9ca-9ec3723a9661\scenario

DATE: 06/28/2023 TIME: 04:40:24

USER:

COMMENTS: _____

****
** SIMULATION : Run 04 **
****

W/E	COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
	START @ 0.00 hrs								
	CHIC STORM		10.0						
	[Ptot= 58.98 mm]								
*									
**	CALIB NASHYD	0062	1 5.0	2.00	0.02	1.67	6.15	0.10	0.000
	[CN=40.2]								
	[N = 3.0:Tp 0.30]								
*									
	CHIC STORM		10.0						
	[Ptot= 58.98 mm]								
*									
*	CALIB STANDHYD	0022	1 5.0	20.10	0.99	1.33	17.35	0.29	0.000
	[I%=14.0:S%= 2.00]								
*									
**	Reservoir								
	OUTFLOW:	0019	1 5.0	20.10	0.20	2.75	17.34	n/a	0.000
*									

==========

```
       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\c6f9a7e5-
2f2a-445d-8063-5324e2dc7486\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\c6f9a7e5-
2f2a-445d-8063-5324e2dc7486\scenario


DATE: 06/28/2023                          TIME: 04:40:24

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  ************************************************
  ** SIMULATION : Run 05                         **
  ************************************************

  W/E COMMAND            HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                 min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM                10.0
    [ Ptot= 70.88 mm ]
*
 ** CALIB NASHYD         0062  1  5.0    2.00    0.03  1.67   9.07 0.13   0.000
    [CN=40.2         ]
```

```
    [ N = 3.0:Tp 0.30]
*
    CHIC STORM                10.0
    [ Ptot= 70.88 mm ]
*
 *  CALIB STANDHYD       0022  1  5.0   20.10    1.25  1.33  22.90 0.32   0.000
    [I%=14.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0019  1  5.0   20.10    0.41  2.17  22.90  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\fba93ff2-
c0fe-400b-9fb0-9d1aa4a9ceff\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\fba93ff2-
c0fe-400b-9fb0-9d1aa4a9ceff\scenario


DATE: 06/28/2023                          TIME: 04:40:24

USER:


COMMENTS: _____________________________________________________________
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```
  ********************************************
  ** SIMULATION : Run 06                     **
  ********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM                10.0
    [ Ptot= 79.76 mm ]
*
 ** CALIB NASHYD         0062  1  5.0    2.00    0.04  1.67  11.57 0.15   0.000
    [CN=40.2         ]
    [ N = 3.0:Tp 0.30]
*
    CHIC STORM                10.0
    [ Ptot= 79.76 mm ]
*
 *  CALIB STANDHYD       0022  1  5.0   20.10    1.46  1.33  27.38 0.34   0.000
    [I%=14.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0019  1  5.0   20.10    0.61  1.92  27.38  n/a   0.000
*
 FINISH

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       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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```

***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\f5480d1d-5b89-4e16-b1d8-939a2053be4e\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\f5480d1d-5b89-4e16-b1d8-939a2053be4e\scenario

DATE: 06/28/2023 TIME: 04:40:24

USER:

COMMENTS: _____

****
** SIMULATION : Run 07 **
****

W/E	COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
	START @ 0.00 hrs								
	CHIC STORM		10.0						
	[Ptot= 88.57 mm]								
*									
**	CALIB NASHYD	0062	1 5.0	2.00	0.05	1.67	14.28	0.16	0.000
	[CN=40.2]								
	[N = 3.0:Tp 0.30]								
*									
	CHIC STORM		10.0						
	[Ptot= 88.57 mm]								
*									
*	CALIB STANDHYD	0022	1 5.0	20.10	1.83	1.33	32.07	0.36	0.000
	[I%=14.0:S%= 2.00]								
*									
**	Reservoir								
	OUTFLOW:	0019	1 5.0	20.10	0.91	1.75	32.07	n/a	0.000
*									

PRE TIMMINS
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======================

```
       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
```


***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\abac7dcd-812b-4b40-aa52-03fd81e8598d\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\abac7dcd-812b-4b40-aa52-03fd81e8598d\scenario

DATE: 06/28/2023 TIME: 04:40:33

USER:

COMMENTS: _____

****
** SIMULATION : Run 01 **
****

W/E	COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
	START @ 0.00 hrs								

```
    READ STORM                 12.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\ec314f64-5fef-41a5-9914-ef61f91802a2\8d70ea2f-9ffc-4
6b4-b154-53ee7cd
    remark: Timmins

*
 ** CALIB NASHYD         0062  1  5.0    2.00    0.14  7.00  98.79 0.51   0.000
    [CN=61.0         ]
    [ N = 3.0:Tp 0.30]
*
    READ STORM                 12.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\ec314f64-5fef-41a5-9914-ef61f91802a2\8d70ea2f-9ffc-4
6b4-b154-53ee7cd
    remark: Timmins

*
 *  CALIB STANDHYD       0022  1  5.0   20.10    1.32  7.00 101.04 0.52   0.000
    [I%=14.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0019  1  5.0   20.10    1.31  7.08 101.04  n/a   0.000
*
 FINISH

================================================================================
=======================
```

POST SCS
==
======================

```
       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
```


***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\28a9d267-048c-4516-997c-176a45559f3d\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\28a9d267-048c-4516-997c-176a45559f3d\scenario

DATE: 06/28/2023 TIME: 04:40:20

USER:

COMMENTS: _____

```
**********************************************
** SIMULATION : Run 01                       **
**********************************************
```

W/E	COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
	START @ 0.00 hrs								

```
    READ STORM                  5.0
    [ Ptot= 52.22 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\6e7d39f3-0a61-4d58-ae9f-9da6d7abe6f8\c6c8c27e-eb2c-4
db7-b4e8-934208a
    remark: Beausoleil SCS24 2yr

*
 ** CALIB NASHYD         0221  1  5.0    0.18    0.00 12.08   7.13 0.14   0.000
    [CN=49.0         ]
    [ N = 3.0:Tp 0.17]
*
    READ STORM                  5.0
    [ Ptot= 52.22 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\6e7d39f3-0a61-4d58-ae9f-9da6d7abe6f8\c6c8c27e-eb2c-4
db7-b4e8-934208a
    remark: Beausoleil SCS24 2yr

*
 *  CALIB STANDHYD       0224  1  5.0    1.82    0.11 12.00  23.19 0.44   0.000
    [I%=34.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0222  1  5.0    1.82    0.01 14.17  22.51  n/a   0.000
*
    ADD [  0221+  0222]  0223  3  5.0    2.00    0.01 12.08  21.13  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  S U M M A R Y   O U T P U T  *****
```

```
  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\a2832344-
46b1-4880-bb31-ed3d7022b61a\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\a2832344-
46b1-4880-bb31-ed3d7022b61a\scenario


DATE: 06/28/2023                          TIME: 04:40:20

USER:


COMMENTS: _____________________________________________________________


  ********************************************
  ** SIMULATION : Run 02                     **
  ********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    READ STORM                  5.0
    [ Ptot= 73.22 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\6e7d39f3-0a61-4d58-ae9f-9da6d7abe6f8\47d4ea6f-5c56-4
6ca-ac64-2d5f1bd
    remark: Beausoleil SCS24 5yr

*
 ** CALIB NASHYD         0221  1  5.0    0.18    0.01 12.00  13.94 0.19   0.000
    [CN=49.0         ]
    [ N = 3.0:Tp 0.17]
*
    READ STORM                  5.0
    [ Ptot= 73.22 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\6e7d39f3-0a61-4d58-ae9f-9da6d7abe6f8\47d4ea6f-5c56-4
6ca-ac64-2d5f1bd
    remark: Beausoleil SCS24 5yr

*
 *  CALIB STANDHYD       0224  1  5.0    1.82    0.17 12.00  35.60 0.49   0.000
    [I%=34.0:S%= 2.00]
*
```

```
 ** Reservoir
    OUTFLOW:             0222  1  5.0    1.82    0.01 13.08  34.92  n/a   0.000
*
    ADD [  0221+  0222]  0223  3  5.0    2.00    0.01 12.08  33.03  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\dd52b50f-
d5f6-42cf-bee3-58cedcab3b5a\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\dd52b50f-
d5f6-42cf-bee3-58cedcab3b5a\scenario


DATE: 06/28/2023                          TIME: 04:40:20

USER:


COMMENTS: _____________________________________________________________


  ********************************************
  ** SIMULATION : Run 03                     **
  ********************************************

  W/E COMMAND            HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
```

```
                                  min     ha    '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    READ STORM                  5.0
    [ Ptot= 87.11 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\6e7d39f3-0a61-4d58-ae9f-9da6d7abe6f8\e313a315-cb95-4
46d-8dfa-d4911a9
    remark: Beausoleil SCS24 10yr

*
 ** CALIB NASHYD         0221  1  5.0    0.18    0.01 12.00  19.39 0.22   0.000
    [CN=49.0         ]
    [ N = 3.0:Tp 0.17]
*
    READ STORM                  5.0
    [ Ptot= 87.11 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\6e7d39f3-0a61-4d58-ae9f-9da6d7abe6f8\e313a315-cb95-4
46d-8dfa-d4911a9
    remark: Beausoleil SCS24 10yr

*
 *  CALIB STANDHYD       0224  1  5.0    1.82    0.22 12.00  44.47 0.51   0.000
    [I%=34.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0222  1  5.0    1.82    0.02 13.00  43.79  n/a   0.000
*
    ADD [  0221+  0222]  0223  3  5.0    2.00    0.02 12.58  41.59  n/a   0.000
*
 FINISH

================================================================================
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================================================================================
======================


       V    V   I    SSSSS  U   U    A    L             (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
```

***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\a52894df-cf9f-41a3-9c45-54ed6422e0c8\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\a52894df-cf9f-41a3-9c45-54ed6422e0c8\scenario

DATE: 06/28/2023 TIME: 04:40:20

USER:

COMMENTS: _____

****
** SIMULATION : Run 04 **
****

W/E	COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
	START @ 0.00 hrs								
	READ STORM		5.0						
	[Ptot=104.60 mm]								
	fname : C:\Users\hyu\AppData\Local\Temp\6e7d39f3-0a61-4d58-ae9f-9da6d7abe6f8\8591e4e1-8bed-42b4-80b4-2315313								
	remark: Beausoleil SCS24 25yr								
*									
**	CALIB NASHYD	0221	1 5.0	0.18	0.01	12.00	27.15	0.26	0.000
	[CN=49.0]								
	[N = 3.0:Tp 0.17]								
*									
	READ STORM		5.0						
	[Ptot=104.60 mm]								

```
    fname :
C:\Users\hyu\AppData\Local\Temp\6e7d39f3-0a61-4d58-ae9f-9da6d7abe6f8\8591e4e1-8bed-4
2b4-80b4-2315313
    remark: Beausoleil SCS24 25yr

*
 *  CALIB STANDHYD       0224  1  5.0    1.82    0.28 12.00  56.26 0.54   0.000
    [I%=34.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0222  1  5.0    1.82    0.03 12.92  55.58  n/a   0.000
*
    ADD [  0221+  0222]  0223  3  5.0    2.00    0.03 12.08  53.02  n/a   0.000
*
================================================================================
========================


       V    V   I    SSSSS  U   U    A    L             (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\57a10aea-
f9bb-4566-96ea-97f05fbe225d\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\57a10aea-
f9bb-4566-96ea-97f05fbe225d\scenario


DATE: 06/28/2023                          TIME: 04:40:20

USER:
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```
COMMENTS: ____________________________________________________________


  ********************************************
  ** SIMULATION : Run 05                     **
  ********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    READ STORM                  5.0
    [ Ptot=117.60 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\6e7d39f3-0a61-4d58-ae9f-9da6d7abe6f8\3b15ae8e-39eb-4
a73-94d5-e2432cc
    remark: Beausoleil SCS24 50yr

*
 ** CALIB NASHYD         0221  1  5.0    0.18    0.02 12.00  33.51 0.28   0.000
    [CN=49.0         ]
    [ N = 3.0:Tp 0.17]
*
    READ STORM                  5.0
    [ Ptot=117.60 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\6e7d39f3-0a61-4d58-ae9f-9da6d7abe6f8\3b15ae8e-39eb-4
a73-94d5-e2432cc
    remark: Beausoleil SCS24 50yr

*
 *  CALIB STANDHYD       0224  1  5.0    1.82    0.32 12.00  65.42 0.56   0.000
    [I%=34.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0222  1  5.0    1.82    0.04 12.75  64.74  n/a   0.000
*
    ADD [  0221+  0222]  0223  3  5.0    2.00    0.04 12.58  61.93  n/a   0.000
*
================================================================================
======================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL
```

```
        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
```


***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\6336e2e4-3913-4aa2-b19a-bbcb0be44234\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\6336e2e4-3913-4aa2-b19a-bbcb0be44234\scenario

DATE: 06/28/2023 TIME: 04:40:20

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : Run 06                     **
  ********************************************

  W/E COMMAND            HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                 min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    READ STORM                 5.0
    [ Ptot=130.54 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\6e7d39f3-0a61-4d58-ae9f-9da6d7abe6f8\7b2da275-f6ca-4d6b-b9cb-5e55266
    remark: Beausoleil SCS24 100yr

*
 ** CALIB NASHYD         0221  1  5.0    0.18    0.02 12.00  40.27 0.31   0.000
    [CN=49.0         ]
```

```
    [ N = 3.0:Tp 0.17]
*
    READ STORM                  5.0
    [ Ptot=130.54 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\6e7d39f3-0a61-4d58-ae9f-9da6d7abe6f8\7b2da275-f6ca-4
d6b-b9cb-5e55266
    remark: Beausoleil SCS24 100yr

*
 *  CALIB STANDHYD       0224  1  5.0    1.82    0.37 12.00  74.83 0.57   0.000
    [I%=34.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0222  1  5.0    1.82    0.05 12.67  74.15  n/a   0.000
*
    ADD [  0221+  0222]  0223  3  5.0    2.00    0.05 12.58  71.10  n/a   0.000
*
```

POST CHI
==
======================

```
       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
```


***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\106e875e-f4e9-4a12-bb38-061c099e4306\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\106e875e-f4e9-4a12-bb38-061c099e4306\scenario

DATE: 06/28/2023 TIME: 04:40:28

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : Run 01                     **
  ********************************************
```

W/E	COMMAND	HYD ID	DT min	AREA ha	' Qpeak ' cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
	START @ 0.00 hrs								

```
    CHIC STORM                10.0
    [ Ptot= 35.22 mm ]
*
 ** CALIB NASHYD         0221  1  5.0    0.18    0.00  1.50   3.09 0.09   0.000
    [CN=49.0         ]
    [ N = 3.0:Tp 0.17]
*
    CHIC STORM                10.0
    [ Ptot= 35.22 mm ]
*
 *  CALIB STANDHYD       0224  1  5.0    1.82    0.13  1.33  14.21 0.40   0.000
    [I%=34.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:              0222  1  5.0    1.82    0.00  4.08  13.53  n/a   0.000
*
    ADD [  0221+  0222]   0223  3  5.0    2.00    0.00  4.00  12.59  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\15c86a8f-
f246-4f30-8881-be79122ca42a\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\15c86a8f-
f246-4f30-8881-be79122ca42a\scenario
```

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COMMENTS: _____

```
  ************************************************
  ** SIMULATION : Run 02                        **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM                10.0
    [ Ptot= 49.52 mm ]
*
 ** CALIB NASHYD         0221  1  5.0    0.18    0.00  1.42   6.39 0.13   0.000
    [CN=49.0         ]
    [ N = 3.0:Tp 0.17]
*
    CHIC STORM                10.0
    [ Ptot= 49.52 mm ]
*
 *  CALIB STANDHYD       0224  1  5.0    1.82    0.19  1.33  21.69 0.44   0.000
    [I%=34.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:              0222  1  5.0    1.82    0.01  4.00  21.01  n/a   0.000
*
    ADD [  0221+  0222]   0223  3  5.0    2.00    0.01  4.00  19.70  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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```

***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\13e3b764-ca5e-4956-83d5-923494b080c6\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\13e3b764-ca5e-4956-83d5-923494b080c6\scenario

DATE: 06/28/2023 TIME: 04:40:28

USER:

COMMENTS: _____

****
** SIMULATION : Run 03 **
****

W/E	COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
	START @ 0.00 hrs								
	CHIC STORM		10.0						
	[Ptot= 58.98 mm]								
*									
**	CALIB NASHYD	0221	1 5.0	0.18	0.00	1.42	9.12	0.15	0.000
	[CN=49.0]								
	[N = 3.0:Tp 0.17]								
*									
	CHIC STORM		10.0						
	[Ptot= 58.98 mm]								
*									
*	CALIB STANDHYD	0224	1 5.0	1.82	0.22	1.33	27.04	0.46	0.000
	[I%=34.0:S%= 2.00]								
*									
**	Reservoir								
	OUTFLOW:	0222	1 5.0	1.82	0.01	4.00	26.36	n/a	0.000
*									

```
    ADD [  0221+  0222]  0223  3  5.0    2.00    0.01  4.00  24.81  n/a   0.000
*
================================================================================
======================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\22206e29-
44c7-4ca9-b159-71a6fb6edf2e\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\22206e29-
44c7-4ca9-b159-71a6fb6edf2e\scenario


DATE: 06/28/2023                          TIME: 04:40:28

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : Run 04                         **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
```

```
      --------------------
    CHIC STORM                 10.0
    [ Ptot= 70.88 mm ]
*
 ** CALIB NASHYD         0221  1  5.0    0.18    0.01  1.42  13.09 0.18   0.000
    [CN=49.0         ]
    [ N = 3.0:Tp 0.17]
*
    CHIC STORM                 10.0
    [ Ptot= 70.88 mm ]
*
 *  CALIB STANDHYD       0224  1  5.0    1.82    0.28  1.33  34.15 0.48   0.000
    [I%=34.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:               0222  1  5.0    1.82    0.02  3.83  33.47  n/a   0.000
*
    ADD [  0221+  0222]  0223  3  5.0    2.00    0.02  3.67  31.64  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\2768f3af-
5415-4eb0-a5f8-a072cfc557a2\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\2768f3af-
5415-4eb0-a5f8-a072cfc557a2\scenario
```

DATE: 06/28/2023 TIME: 04:40:28

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : Run 05                     **
  ********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM                10.0
    [ Ptot= 79.76 mm ]
*
 ** CALIB NASHYD         0221  1  5.0    0.18    0.01  1.42  16.42 0.21   0.000
    [CN=49.0         ]
    [ N = 3.0:Tp 0.17]
*
    CHIC STORM                10.0
    [ Ptot= 79.76 mm ]
*
 *  CALIB STANDHYD       0224  1  5.0    1.82    0.32  1.33  39.72 0.50   0.000
    [I%=34.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:              0222  1  5.0    1.82    0.02  3.67  39.04  n/a   0.000
*
    ADD [  0221+  0222]   0223  3  5.0    2.00    0.03  3.42  37.00  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
```

***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\b7fb9893-9d1f-407f-b3ad-824ae6053d0a\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\b7fb9893-9d1f-407f-b3ad-824ae6053d0a\scenario

DATE: 06/28/2023 TIME: 04:40:28

USER:

COMMENTS: _____

****
** SIMULATION : Run 06 **
****

W/E	COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
	START @ 0.00 hrs								
	CHIC STORM		10.0						
	[Ptot= 88.57 mm]								
*									
**	CALIB NASHYD	0221	1 5.0	0.18	0.01	1.42	20.00	0.23	0.000
	[CN=49.0]								
	[N = 3.0:Tp 0.17]								
*									
	CHIC STORM		10.0						
	[Ptot= 88.57 mm]								
*									
*	CALIB STANDHYD	0224	1 5.0	1.82	0.36	1.33	45.43	0.51	0.000
	[I%=34.0:S%= 2.00]								
*									
**	Reservoir								
	OUTFLOW:	0222	1 5.0	1.82	0.03	3.42	44.75	n/a	0.000

```
*
    ADD [  0221+  0222]  0223  3  5.0    2.00    0.03  3.25  42.52  n/a   0.000
*
 FINISH

================================================================================
=======================
```

POST TIMMINS
==
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```
       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
```


***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\6b0e885c-21ec-47b4-973d-231493a91f69\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\d26c4025-12e9-4b5b-8ca9-5854fc23b703\6b0e885c-21ec-47b4-973d-231493a91f69\scenario

DATE: 06/28/2023 TIME: 04:40:39

USER:

COMMENTS: _____

****
** SIMULATION : Run 01 **
****

W/E	COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
	START @ 0.00 hrs								

```
    READ STORM                 12.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\7295ec77-51a9-4164-a8ee-04c374755d42\8d70ea2f-9ffc-4
6b4-b154-53ee7cd
    remark: Timmins

*
 ** CALIB NASHYD         0221  1  5.0    0.18    0.02  7.00 116.57 0.60   0.000
    [CN=69.0         ]
    [ N = 3.0:Tp 0.17]
*
    READ STORM                 12.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\7295ec77-51a9-4164-a8ee-04c374755d42\8d70ea2f-9ffc-4
6b4-b154-53ee7cd
    remark: Timmins

*
 *  CALIB STANDHYD       0224  1  5.0    1.82    0.15  7.00 123.40 0.64   0.000
    [I%=34.0:S%= 2.00]
*
    ADD [  0221+  0224]  0223  3  5.0    2.00    0.16  7.00 122.79  n/a   0.000
*
 FINISH

================================================================================
=======================
```