TATHAM ENGINEERING

Enhancing our communities

4488 County Road 29

STORMWATER MANAGEMENT REPORT

Kawartha Utility Services Ltd.

File 523669 | November 15, 2024

Document Control

File:

523669

Date:

November 15, 2024

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Issue	Date	Description
0	September 20, 2024	Draft Report for Client Review
1	November 15, 2024	Final Report

Document Contents

Tables

Figures

Drawings

Appendices

1 Introduction

Tatham Engineering Limited (Tatham) has been retained by Kawartha Utility Services Ltd. to prepare a Stormwater Management (SWM) Report in support of a Zoning By-Law Amendment (ZBA), an Official Plan Amendment (OPA) and Site Plan Approval (SPA) for a proposed development located at 4488 County Road 29 in the Township of Douro-Dummer.

This report has been prepared to address the SWM requirements associated with the proposed development. The design is summarized herein and reflects the SWM guidelines set forth by the Township, the Otonabee Region Conservation Authority (ORCA), and the Ministry of the Environment Conservation and Parks (MECP).

1.1 SITE DESCRIPTION

The site is approximately 5.3 ha of undeveloped land that consists entirely of green space. The site is bound by County Road 29 to the west, a rural residential property to the north, and Highway 28 to the south and east.

A key plan illustrating the site location is provided on the detailed engineering drawings enclosed at the back of this report.

A detailed topographic survey of the site was completed by JBF Surveyors on August 19, 2022.

1.2 PROPOSED DEVELOPMENT

The area proposed for development, herein referred to as the site, represents approximately 1.07 ha of the overall subject property. The SWM plan has been developed for the site area only whereas the balance of the property will remain in its current condition. The proposed development includes a new 1-storey 1,650 m^2 service maintenance shop, gravel parking areas and drive aisles and landscaped areas.

A concept plan prepared by EcoVue Consulting Services Inc. dated August 22, 2023, illustrating the proposed site layout is provided in Appendix A for reference.

1.3 OBJECTIVES

The primary objective of the SWM plan is to demonstrate that post-development conditions will not adversely impact the hydrologic cycle and downstream surface water runoff characteristics of the area. This will be accomplished by evaluating the effects of the proposed development on local drainage conditions. Where necessary, solutions will be provided to mitigate any adverse impacts.

The SWM report will identify and present the following:

- Existing runoff conditions including constraints and opportunities for improvement;
- Criteria to be applied in the SWM design;
- An overall SWM plan that complies with the relevant technical SWM guidelines; and
- Siltation and erosion control strategies.

1.4 GUIDELINES AND BACKGROUND DOCUMENTS

The 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);
- Erosion and Sediment Control Guide for Urban Construction (Toronto and Region Conservation Authority, 2019);
- The Otonabee Region Conservation Authority (ORCA) Watershed Planning and Regulations Policy Manual (2015);
- Low Impact Development Stormwater Management Planning and Design Guide (CVC and TRCA, 2010); and
- The Ministry of Environment (MOE) Stormwater Management Practices Planning and Design Manual (2003).

2 Hydrogeological Assessment

A soil investigation for the site was completed by Cambium Inc. on October 25, 2023, and is documented in their report dated March 8, 2024. The report has been submitted under separate cover.

The investigation included advancing six (6) test pits to a maximum depth of 3.0 m to assess the composition and stratigraphy of the existing soils, the depth to groundwater and the depth to bedrock. A total of three (3) hand auger holes were also advanced to depths between 0.5 m and 1.0 m for infiltration testing.

The subsurface soil conditions at the site, in 5 of 6 test pits, consist of topsoil overlying a surficial layer of sandy silt with mixtures of clay and gravel extending to depths ranging from 0.38 to 0.86 metres below ground surface (mbgs). Underlying the topsoil in 1 of the test pits was a layer of loose sand/trace silt extending to a depth of 0.56 mbgs. Beneath the layer of sandy silt in all test pits was a loose sandy silty gravel with varying amounts of clay and cobble at depths ranging from 1.02 to 2.51 mbgs.

All test pits were terminated on bedrock at depths ranging from 1.22 to 2.51 mbgs, with overburden shale at varying thicknesses being reported above competent bedrock in 2 of the test pits.

Groundwater was not encountered in any of the test pits.

In-situ infiltration testing was completed at depths ranging from 0.5 m to 1.0 m in the native soils below the topsoil layer and confirmed infiltration rates to range between 34 and 61 mm/hr.

3 Existing Drainage Conditions

3.1 EXISTING SITE DRAINAGE CONDITIONS

The existing topography, ground cover, and drainage patterns were obtained through a review of the detailed topographic survey and aerial photography available online. The Ontario Soil Map for the County of Peterborough characterizes the native soil within the site as Dumfries loam having a corresponding hydrologic soil group 'AB'.

Runoff from Drainage Area 101 (4.28 ha) drains overland from east to west into the County Road 29 east ditch located immediately beyond the west property boundary (Outlet 1). The County Road 29 road ditch drains from south to north along the majority of the County Road 29 frontage of the site.

Runoff from Drainage Area 102 (0.25 ha) drains overland from north to south into the Highway 28 north ditch (Outlet 2). The Highway 28 north ditch drains from west to east at the outlet location.

Runoff from Drainage Area 103 (0.79 ha) drains overland from north to south to the most southerly portion of the property, eventually discharging into the Highway 28 west ditch (Outlet 3). The Highway 28 west ditch drains from north to south at the outlet location.

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

3.2 EXTERNAL DRAINAGE CONDITIONS

Based on a review of the detailed topographic survey, aerial photography and contour information obtained from Land Information Ontario's digital elevation model (2013), there is no external drainage conveyed through the site. However, Drainage Area EXT (0.7 ha), which consists of County Road 29 road runoff and localized runoff immediately beyond the west property boundary has been delineated and used to size the proposed culvert at the site entrance.

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

3.3 EXISTING CONDITION HYDROLOGIC ANALYSIS

A hydrologic analysis of the existing condition for Drainage Area 101 was completed utilizing the single event Visual Otthymo Hydrologic Model Version 6 (VO6). It is noted that runoff from Drainage Areas 102 and 103 are unchanged by the proposed development and therefore

establishing post development peak flow targets for these areas is not necessary. Peak flow rates for storms up to and including the 100-year storm were calculated for the 4-hour Chicago and 6- and 24-hour SCS Type II design storms generated using historic rainfall data from the Peterborough Airport climate station as well as for the Regional (Timmins) Storm.

The drainage area delineations were completed based on the detailed topographic survey in combination with the property boundaries. Existing condition land uses were established based on our review of online aerial photography. 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 catchment parameters established for the existing condition hydrologic model has been included in Appendix A.

Detailed calculations and Visual Otthymo modeling output are included in Appendix A with the results summarized below in Table 1.

Table 1: Existing Conditions Peak Flow Summary – Outlet 1

DESIGN STORM	DRAINAGE AREA 101 OUTLET 1 4.28 ha (m^3/s)		
	4-hr CHI	6-hr SCS	24-hr SCS
2-Year	0.029	0.061	0.071
5-Year	0.057	0.115	0.125
10-Year	0.080	0.158	0.167
25-Year	0.114	0.219	0.225
50-Year	0.141	0.270	0.273
100-Year	0.171	0.323	0.322
Regional Storm (Timmins)		0.400	

4 Stormwater Management Plan

4.1 SWM DESIGN CRITERIA

Issues to be addressed and criteria to be met regarding drainage and SWM on the site are summarized as follows:

- The site will be developed in accordance with Township, County, ORCA and MECP standards and design guidelines.
- Post- to pre-development peak flow control will be provided for all design storms up to and including the 100-year storm.
- Safe conveyance of runoff from all storms up to and including the 100-year storm through and around the site will be provided.
- Ministry of the Environment, Conservation and Parks (MECP) "Enhanced" level water quality control will be provided, to ensure the development will have no negative impacts on the downstream receivers.
- Erosion and sediment control measures will be implemented during construction and will remain in place until the ultimate build-out of the site to minimize erosion and sediment transport off-site.

4.2 SWM PLAN

The proposed SWM plan recognizes the SWM requirements for the site and has been developed to maintain the existing topography and drainage paths as much as possible while safely conveying stormwater to the existing outlets.

The SWM plan is summarized as follows:

- Runoff from Drainage Areas 102 (Outlet 2) and 103 (Outlet 3) will remain unchanged in the proposed condition. On this basis, they have not been modelled as no quantity or quality controls are required upstream of either outlet.
- Runoff from Drainage Area 201 (2.03 ha) will continue draining to the County Road 29 east ditch, unchanged from the existing drainage conditions for this area. A grassed swale, draining from east to west, is proposed along the south side of the proposed site entrance to intercept runoff from draining into the developed portion of the property.
- Runoff from Drainage Area 202 (1.32 ha), which represents the developed portion of the property, will be conveyed through enhanced grassed swales to a proposed dry SWM facility. The SWM facility has been sized to provide the requisite quantity control

requirement for the site and is equipped with a stormwater sand filter to also provide water quality control for the site. Due to local high bedrock conditions, and the assumption that the bottom of the stormwater sand filter will be within 1.0 m of the elevation of bedrock, the stormwater sand filter is equipped with a perforated underdrain system to ensure the long-term function of the filter.

- Two (2) orifice plates consisting of a 60 mm diameter orifice (bottom) and a 235 mm diameter orifice (top), installed in a storm control manhole located immediately upstream of the County Road 29 ditch, are proposed to attenuate post development peak flows within the dry pond. Outflow from the control manhole will discharge to the County Road 29 ditch via a proposed 300 mm diameter HDPE storm pipe.
- Under emergency situations (i.e. pipe blockages) surface flows will be released from the dry pond via an emergency overflow spillway.
- Runoff from Drainage Area 203 (0.93 ha) will continue draining to the County Road 29 east ditch, unchanged from the existing drainage conditions for this area.

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

4.3 WATER QUANTITY CONTROL

A hydrologic analysis of the post development condition was completed utilizing the single event Visual Otthymo Hydrologic Model (VO6). Peak flow rates for storms up to and including the 100-year storm were calculated for the 4-hour Chicago, and the 6-hr and 24-hour SCS Type II design storms.

The catchment delineations for the contributing lands were completed utilizing the available topographic survey information in combination with the proposed development plan. The total impervious (TIMP) for Drainage Area 202 was calculated assuming all of the proposed gravel surfaces as impervious surface. The percent directly connected imperviousness (XIMP) was determined to be 75% on the basis that the runoff from the impervious area is generally split west to east along the centre of the proposed building and runoff is conveyed to the dry pond via to separate enhanced grass swales. The time to peak values for the individual catchment areas were calculated using either the Bransby Williams and Airport Methods for runoff coefficient “C” values greater than and less than 0.4 respectively.

A summary of all catchment parameters established for the post development hydrologic model has been included in Appendix B.

Peak runoff rates at Outlet 1 as well as the proposed dry pond operating characteristics are shown in Tables 2 and 3 below and the results of the modelling are included in Appendix B.

Table 2: Proposed Conditions Peak Flow Summary – Outlet 1

DESIGN STORM	CATCHMENT 201 2.03 ha (m^3/s)			CATCHMENT 202 1.32 ha CONTROLLED (m^3/s)			CATCHMENT 203 0.93 ha (m^3/s)			TOTAL OUTLET 1 4.28 ha (m^3/s)		
	4-hr CHI	6-hr SCS Type II	12-hr SCS Type II	4-hr CHI	6-hr SCS Type II	12-hr SCS Type II	4-hr CHI	6-hr SCS Type II	12-hr SCS Type II	4-hr CHI	6-hr SCS Type II	12-hr SCS Type II
2-Year	0.013	0.028	0.033	0.008	0.010	0.009	0.007	0.016	0.018	0.028 *(0.029)*	0.051 *(0.061)*	0.058 *(0.071)*
5-Year	0.026	0.053	0.058	0.017	0.034	0.030	0.014	0.030	0.032	0.049 *(0.057)*	0.112 *(0.115)*	0.112 *(0.125)*
10-Year	0.037	0.073	0.078	0.027	0.045	0.041	0.020	0.041	0.043	0.073 *(0.080)*	0.155 *(0.158)*	0.155 *(0.167)*
25-Year	0.053	0.102	0.105	0.038	0.057	0.053	0.029	0.057	0.058	0.113 *(0.114)*	0.209 *(0.219)*	0.210 *(0.225)*
50-Year	0.065	0.125	0.127	0.046	0.065	0.061	0.036	0.070	0.071	0.141 *(0.141)*	0.253 *(0.270)*	0.251 *(0.273)*
100-Year	0.079	0.150	0.150	0.052	0.073	0.069	0.043	0.084	0.083	0.169 *(0.171)*	0.299 *(0.323)*	0.297 *(0.322)*
Regional Storm (Timmins)	0.189			0.143			0.088			0.421 *(0.400)*		

Notes: (0.477) refers to existing condition flow rate.

Table 3: Proposed Dry SWM Pond Operating Characteristics Summary (24-hr SCS Type II)

DESIGN STORM	DISCHARGE (m^3/s)	STORAGE (m^3)	WATER LEVEL (m)
2-Year	0.009	149	253.29
5-Year	0.030	186	253.35
10-Year	0.041	216	253.39
25-Year	0.053	261	253.45
50-Year	0.061	298	253.50
100-Year	0.069	343	253.56
Regional Storm (Timmins)	0.143	-	253.65

Table 2 above confirms the proposed SWM plan will attenuate the post-development peak flow rates equal to or less than pre-development peak flow rates from all storm events up to and including the 100-year storm.

The dry SWM facility has 375 m^3 of active flood storage available between the bottom of pond elevation of 252.90 and the spillway elevation of 253.60, whereas a maximum of 372 m^3 is required during the 100-year storm event.

The emergency spill-out elevation of 253.60 m is set at the 100-year water level of 253.60 m.

Calculations related to the SWM pond operating characteristics are included in Appendix B.

4.4 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.

Runoff from Drainage Area 202 will be directed to the dry pond and will be treated by a 3.9 m wide by 21.0 m long stormwater sand filter located in the base of the dry pond, prior to discharging to the County Road 29 east ditch. Pre-treatment for the stormwater sand filter is provided in the 0.5 m wide flat bottom enhanced grassed swales located upstream of both dry pond inlets.

The stormwater sand filter has been sized to provide the required water quality treatment volume of 81.1 m^3 for MEPC Enhanced level 80% TSS removal, which has been doubled to account for winter operation. The filter is equipped with a 0.1 m thick pea gravel choker layer to prevent blockages at the surface of the filter, and a perforated underdrain system to ensure the long-term function of the filter. The area of the filter was calculated based on the MECP guidelines.

The water quality calculations are included in Appendix B.

4.5 EMERGENCY OVERLAND FLOW ROUTES

Runoff from Drainage Area 202 will be conveyed to the dry pond via the proposed 0.5 m wide enhanced grass swales which encompass the north, east and south perimeter of the proposed building and gravel parking areas. The enhanced grassed swales and the culvert beneath the driveway immediately west of the parking area have been sized to convey the peak flow from all storms up to and including the 100-year storm to the dry pond.

Should ponding within the dry SWM facility exceed an elevation of 253.60 (which exceeds the 100-year flood elevation), runoff will spill out of the facility into the existing municipal ditch on County Road 29 immediately beyond the west property limit.

The proposed design has allowed for safe conveyance of all storms up to and including the 100-year peak flow through the site, including accommodation for runoff in excess of the 100-year peak flow.

Swale sizing calculations are provided in Appendix B.

4.6 CULVERT SIZING

Both the entrance culvert at County Road 29 and the culvert under the driveway immediately east of the dry pond have been sized to convey the peak runoff rate from storms up to and including the 100-year storm prior to overtopping.

Runoff from the external drainage area (EXT) and runoff from Drainage Area 201, as modelled using Visual Otthymo, totals 0.287 m^3/s during the 100-year 6 hr SCS design storm. A hydraulic analysis of the entrance culvert was completed using HY-8 software and confirms a 450 mm diameter HDPE culvert has sufficient capacity to convey the 100-year peak flow prior to overtopping the proposed driveway.

Runoff from a portion of Drainage Area 202 (EXT), totalling 0.173 m^3/s (after applying the MTO pro-rating formula based on a contributing area of 0.61 ha of the total drainage area of 1.32 ha) drains to the proposed culvert located immediately east of the dry pond. A hydraulic analysis of the culvert was completed using HY-8 software and confirms a 450 mm diameter HDPE culvert has sufficient capacity to convey the 100-year peak flow prior to overtopping the proposed driveway.

Hydraulic calculations supporting the proposed culvert sizing are attached in Appendix B.

5 Erosion and Sediment Control

Erosion and sediment control will be implemented for all construction activities within the development site, including fence removals, vegetation clearing, topsoil stripping, entrance drive, and parking area construction, and stockpiling of materials. The basic principles considered to minimize erosion and sedimentation, and resultant negative environmental impacts include:

- Minimize disturbance activities where possible.
- Expose the smallest possible land area to erosion for the shortest possible time.
- Institute erosion control measures as-required immediately.
- Implement sediment control measures before the outset of construction activities.
- Carry out regular inspections of erosion/sediment control measures and repair or maintain as necessary.
- Seed or sod exposed soils as soon as possible after construction and keep chemical applications to suppress dust and control pests and vegetation to a minimum.

The proposed grading and building construction should be carried out in such a manner that a minimum amount of erosion occurs and such that sedimentation facilities control any erosion that does occur. Additional erosion, sediment, and pollution control measures should include the following:

- Erecting of silt fences to prevent silt from discharging offsite.
- Providing sediment traps (e.g., berms, geotextile, and straw bale barriers in swales).
- Confining refuelling/servicing of equipment to areas well away from the minor/major system elements.
- Bi-weekly inspections of control measures to be instituted through a monitoring and mitigation plan and repairs made as necessary.

The proposed erosion and sediment controls are shown on the Removal, Siltation and Erosion Control Plan, Drawing SC-1.

6 Summary

The SWM plan has been designed recognizing the pertinent Municipal, Agency, and Provincial guidelines along with site specific constraints and criteria.

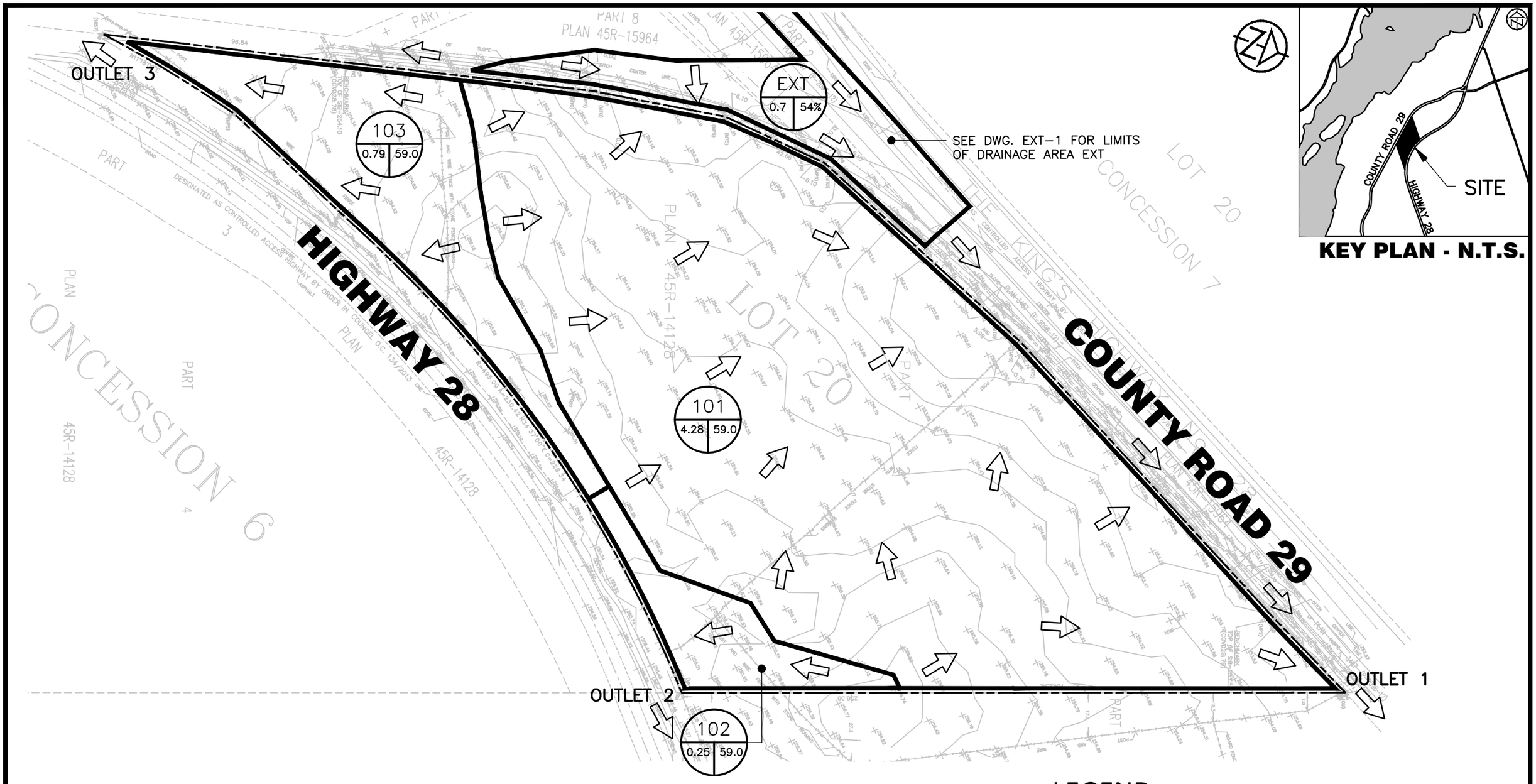
The SWM plan provides post- to pre-development peak flow control during all storms up to and including the 100-year storm thereby reducing the potential for adverse flood impacts in areas downstream.

The SWM plan provides MECP Enhanced Level water quality control for all runoff leaving the site.

Safe conveyance of all storms up to and including the 100-year storm and the Regional Storm (Timmins) peak flow through the site has been provided.

Construction and maintenance of siltation and erosion control facilities and adherence to strict housekeeping measures during site servicing and building construction will reduce the transportation of sediment from the site, improve stormwater quality and mitigate environmental impacts during construction.

In conclusion, the proposed SWM plan supports the concept of an environmentally sustainable development as it relates to stormwater management and will mitigate potential adverse impacts.



KEY PLAN - N.T.S.

CONTOUR INFORMATION OBTAINED FROM JBF SURVEYORS COMPLETED ON AUGUST 19, 2022.

CONTRACT DRAWINGS

CONTRACTOR MUST VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER BEFORE COMMENCING WORK. DRAWINGS ARE NOT TO BE SCALED.

LEGEND

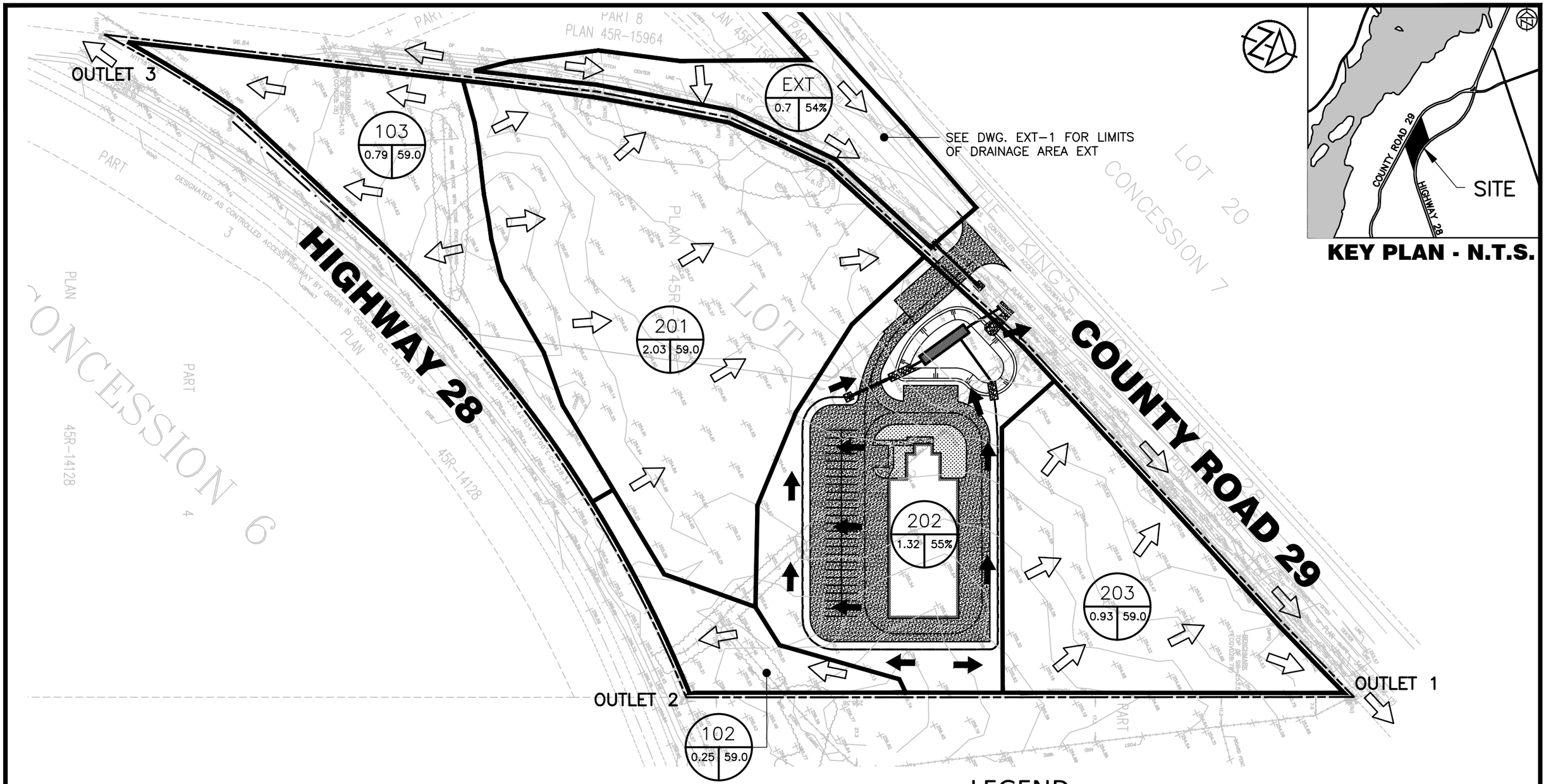
- SUBJECT PROPERTY BOUNDARY
- DRAINAGE AREA BOUNDARY
- EXISTING CONDITION DRAINAGE DIRECTION
- 101 / 4.22 / 59.0 — DRAINAGE AREA ID; RUNOFF COEFFICIENT /% IMPERVIOUS; AREA (ha.)

TATHAM ENGINEERING

4488 COUNTY ROAD 29
TOWNSHIP OF DOURO-DUMMER
EXISTING CONDITION DRAINAGE PLAN

DWG. No. **DP-1**

SCALE: 1:1500	DRAWN: HY	DATE: MAY, 2024	JOB NO. 523669



CONTOUR INFORMATION OBTAINED FROM JBF SURVEYORS COMPLETED ON AUGUST 19, 2022.

CONTRACT DRAWINGS

CONTRACTOR MUST VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER BEFORE COMMENCING WORK. DRAWINGS ARE NOT TO BE SCALED.

LEGEND

- SUBJECT PROPERTY BOUNDARY
- DRAINAGE AREA BOUNDARY
- EXISTING CONDITION DRAINAGE DIRECTION
- PROPOSED CONDITION DRAINAGE DIRECTION
- 201 — DRAINAGE AREA ID
- 2.03 | 59.0 — RUNOFF COEFFICIENT / % IMPERVIOUS
- AREA (ha.)

TATHAM ENGINEERING

4488 COUNTY ROAD 29
TOWNSHIP OF DOURO-DUMMER
PROPOSED CONDITION DRAINAGE PLAN

DWG. No. **DP-2**

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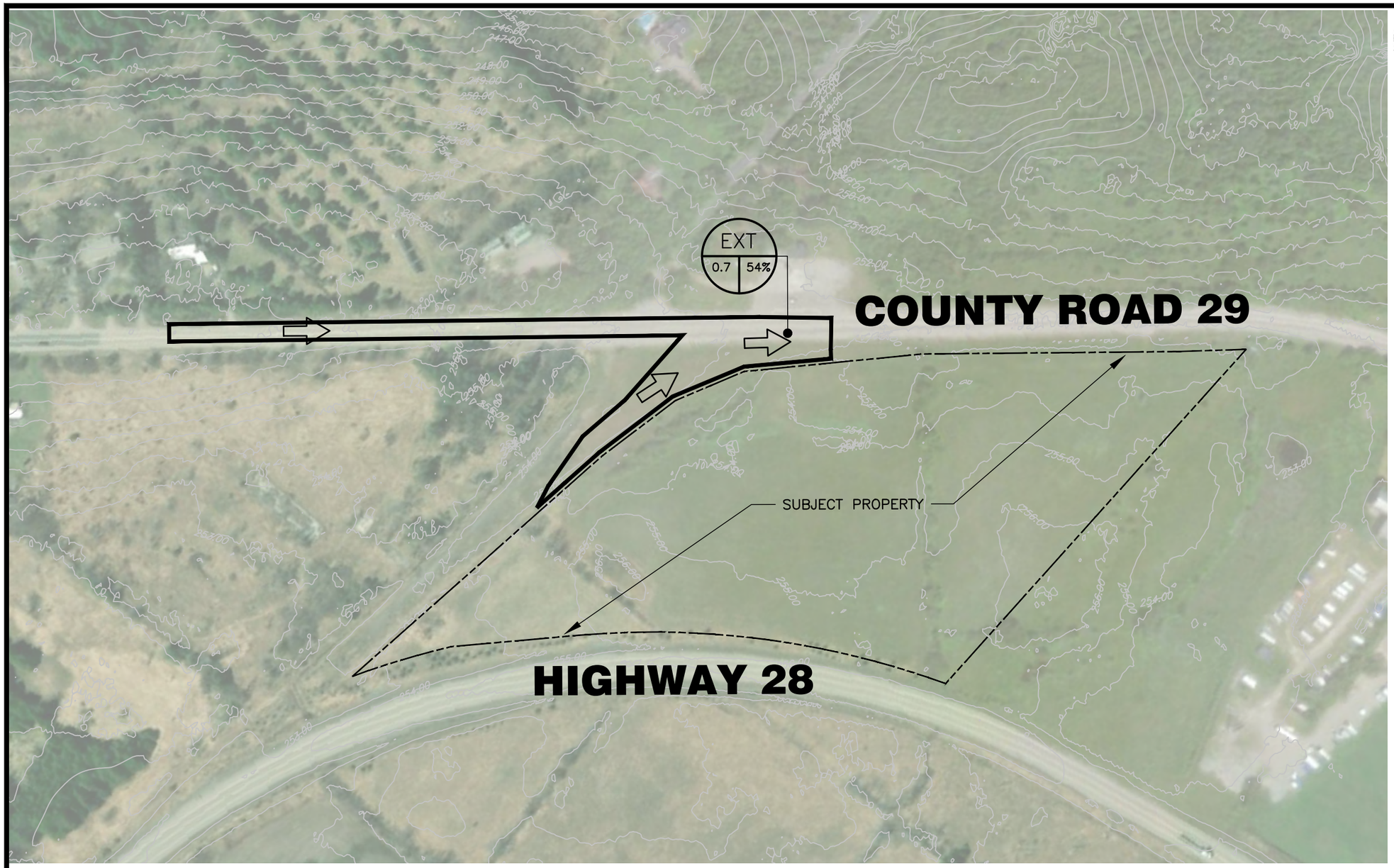
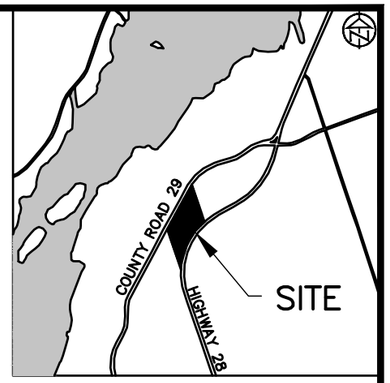




KEY PLAN - N.T.S.

CONTOUR INFORMATION OBTAINED FROM LAND INFORMATION ONTARIO 2013

CONTRACT DRAWINGS

CONTRACTOR MUST VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER BEFORE COMMENCING WORK. DRAWINGS ARE NOT TO BE SCALED.

LEGEND

SUBJECT PROPERTY BOUNDARY

DRAINAGE AREA BOUNDARY

EXISTING CONDITION DRAINAGE DIRECTION

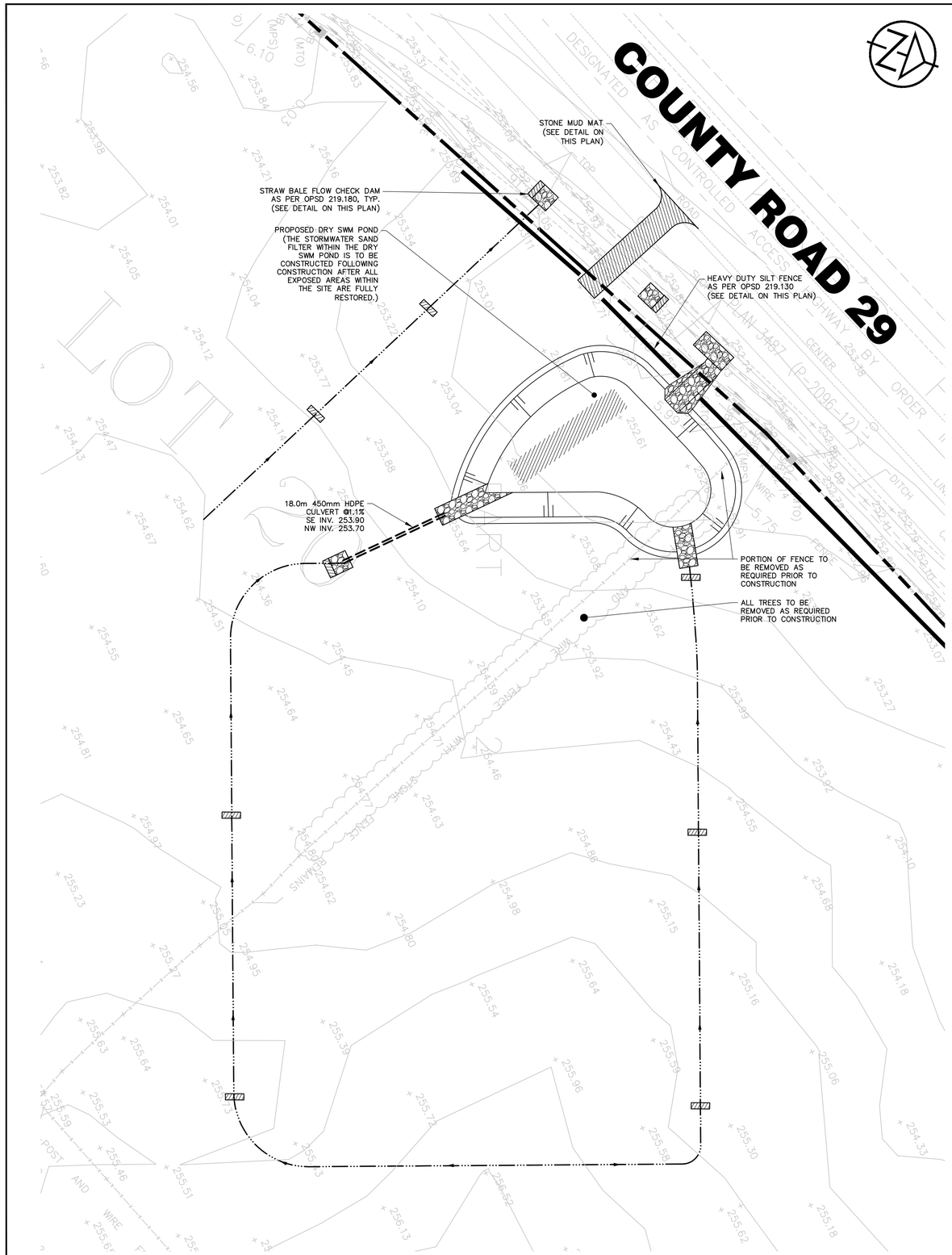
EXT — DRAINAGE AREA ID
0.7 — AREA (ha.)
54% — % OF IMPERVIOUS

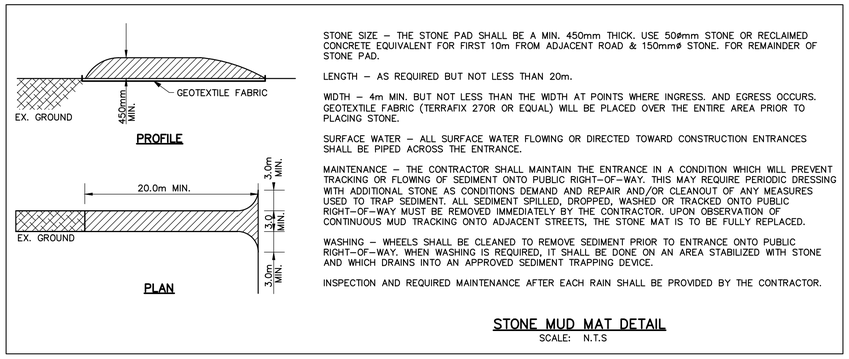
TATHAM ENGINEERING

4488 COUNTY ROAD 29
TOWNSHIP OF DOURO-DUMMER
EXTERNAL DRAINAGE PLAN

DWG. No. **EXT-1**

SCALE: 1:2500	DRAWN: HY	DATE: MAY, 2024	JOB NO. 523669





STONE SIZE – THE STONE PAD SHALL BE A MIN. 450mm THICK. USE 50#mm STONE OR RECLAIMED CONCRETE EQUIVALENT FOR FIRST 10m FROM ADJACENT ROAD & 150mmø STONE. FOR REMAINDER OF STONE PAD.

LENGTH – AS REQUIRED BUT NOT LESS THAN 20m.

WIDTH – 4m MIN. BUT NOT LESS THAN THE WIDTH AT POINTS WHERE INGRESS. AND EGRESS OCCURS. GEOTEXTILE FABRIC (TERRAFIX 270R OR EQUAL) WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.

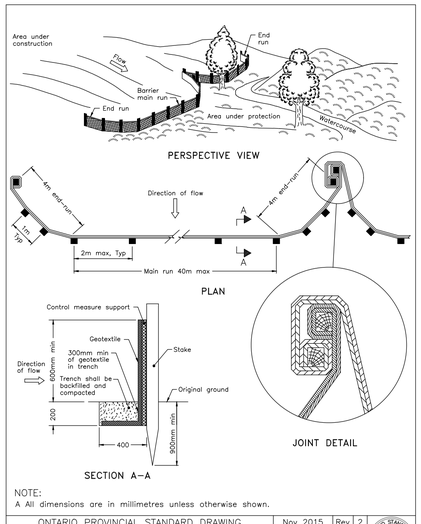
SURFACE WATER – ALL SURFACE WATER FLOWING OR DIRECTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE.

MAINTENANCE – THE CONTRACTOR SHALL MAINTAIN THE ENTRANCE IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY BY THE CONTRACTOR. UPON OBSERVATION OF CONTINUOUS MUD TRACKING ONTO ADJACENT STREETS, THE STONE MAT IS TO BE FULLY REPLACED.

WASHING – WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

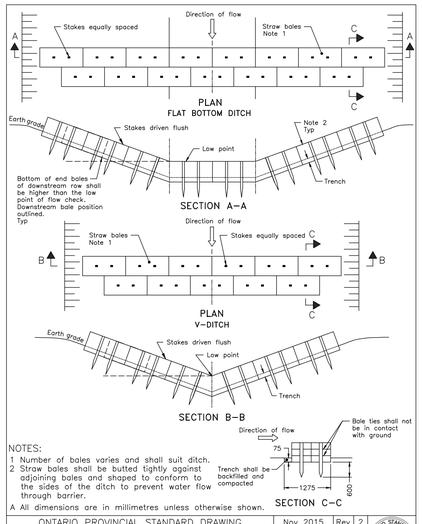
INSPECTION AND REQUIRED MAINTENANCE AFTER EACH RAIN SHALL BE PROVIDED BY THE CONTRACTOR.

STONE MUD MAT DETAIL
SCALE: N.T.S



NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2
HEAVY-DUTY SILT FENCE BARRIER		OPSD 219.130



NOTES:
1 Number of bales varies and shall suit ditch.
2 Straw bales shall be butted tightly against adjoining bales and shaped to conform to the sides of the ditch to prevent water flow through barrier.
A All dimensions are in millimetres unless otherwise shown.

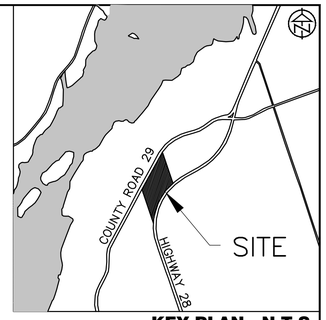
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2
STRAW BALE FLOW CHECK DAM		OPSD 219.180

GENERAL NOTES

1. CONTRACTOR TO INSTALL AND MAINTAIN CHECK DAMS AND SILT FENCE AT LOCATIONS SHOWN OR AS DIRECTED BY THE ENGINEER.
2. CONTRACTOR TO ARRANGE PRE-CONSTRUCTION MEETING WITH ENGINEER AFTER PLACING ALL SILTATION CONTROL WORKS.
3. SILTATION AND EROSION CONTROL WORKS MUST BE INSTALLED PRIOR TO CONSTRUCTION.
4. ALL SEDIMENT CONTROL WORKS MUST BE CLEANED AND MAINTAINED AFTER EACH MAJOR STORM EVENT OR AS DEEMED NECESSARY BY THE ENGINEER.
5. THE CONTRACTOR WILL INSPECT THE SEDIMENT AND EROSION CONTROL MEASURES WEEKLY AND AFTER EACH MAJOR STORM EVENT. THE CONTRACTOR WILL NOTIFY THE ENGINEER OF CORRECTIVE ACTIONS REQUIRED AS SOON AS DEFICIENCIES ARE NOTED. THE CONTRACTOR MAINTAINS ULTIMATE RESPONSIBILITY TO ENSURE PROPER SEDIMENT AND EROSION CONTROL MEASURES ARE IMPLEMENTED AND MAINTAINED. ALL DEFICIENCIES AND CORRECTIVE MEASURES WILL BE DOCUMENTED IN A WEEKLY INSPECTION REPORT. A COPY OF THE WEEKLY INSPECTION REPORT WILL BE PROVIDED TO THE ENGINEER.
6. IF CONSTRUCTION IS INTERRUPTED AND/OR INACTIVITY EXCEEDS 30 DAYS, THEN STOCKPILED, STRIPPED OR EXPOSED AREAS MUST BE STABILIZED BY HYDROSEEDING AND ANY OTHER APPROPRIATE GEOTEXTILE MATERIAL, IF REQUIRED.
7. REMOVAL OF ALL SILT FENCES AND CHECK DAMS AT THE END OF CONSTRUCTION TO BE APPROVED BY THE ENGINEER AFTER THE SITE HAS STABILIZED.
8. ALL TEMPORARY CHECK DAMS TO OPSD 219.180. SILT FENCE TO OPSD 219.130.
9. CLEARING OF VEGETATION AND TREE COVER IS TO OCCUR OUTSIDE OF BIRD BREEDING SEASON AS RECOMMENDED BY ENVIRONMENT CANADA (APRIL 15 – AUGUST 15)
10. ALL SIDE SLOPES 3:1 OR GREATER ARE TO BE STABILIZED IMMEDIATELY WITH HYDROSEED (USING A NATIVE SEED MIX) UNLESS OTHERWISE NOTED. USE OF AN EROSION CONTROL BLANKET SUCH AS TERRAFIX S-100 (OR APPROVED EQUAL) IS RECOMMENDED IF CONSTRUCTION OCCURS OUTSIDE OF THE GROWING SEASON.

SCHEDULE OF CONSTRUCTION WORKS

1. IMPLEMENTATION OF EROSION CONTROL MEASURES AS SPECIFIED ON THIS PLAN
2. REMOVALS AS SPECIFIED ON THIS PLAN
3. TOPSOIL STRIPPING AND STOCKPILING
4. EXCAVATION OF THE DRY SWM POND TO BE USED AS A TEMPORARY SETTLING BASIN DURING CONSTRUCTION. EXCAVATION OF PERIMETER SWALES TO INTERCEPT RUNOFF FROM THE CONSTRUCTION ZONE AND DIRECT IT TO THE SWM POND.
5. EARTH EXCAVATION AND ROUGH GRADING THROUGH OUT THE SITE



KEY PLAN - N.T.S.

LEGEND

- HEAVY DUTY SILT FENCE
- PROPERTY BOUNDARY
- GRASSED SWALE AND FLOW DIRECTION
- EXISTING CONTOUR
- TEMPORARY STRAW BALE FLOW CHECK DAM

TOPOGRAPHIC SURVEY WAS COMPLETED BY JBF SURVEYORS ON AUGUST 19 2022.

ELEVATION SHOWN HERON ARE DERIVED FROM GPS RTK OBSERVATIONS USING THE LEICA SMARTNET REFERENCING CGVD 28:78 DATUM

TBM1: TOP OF SIB LOCATED 180m NORTH OF THE PROPOSED ENTRANCE. ELEV. 253.58
TBM2: TOP OF SIB LOCATED ON SOUTH SIDE OF THE SITE. ELEV. 254.10

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR APPROVAL	SEPT. 2024

ENGINEER STAMP

LICENSED PROFESSIONAL ENGINEER
J. R. ASH
100123062
PROVINCE OF ONTARIO

4488 COUNTY ROAD 29
TOWNSHIP OF DOURO-DUMMER

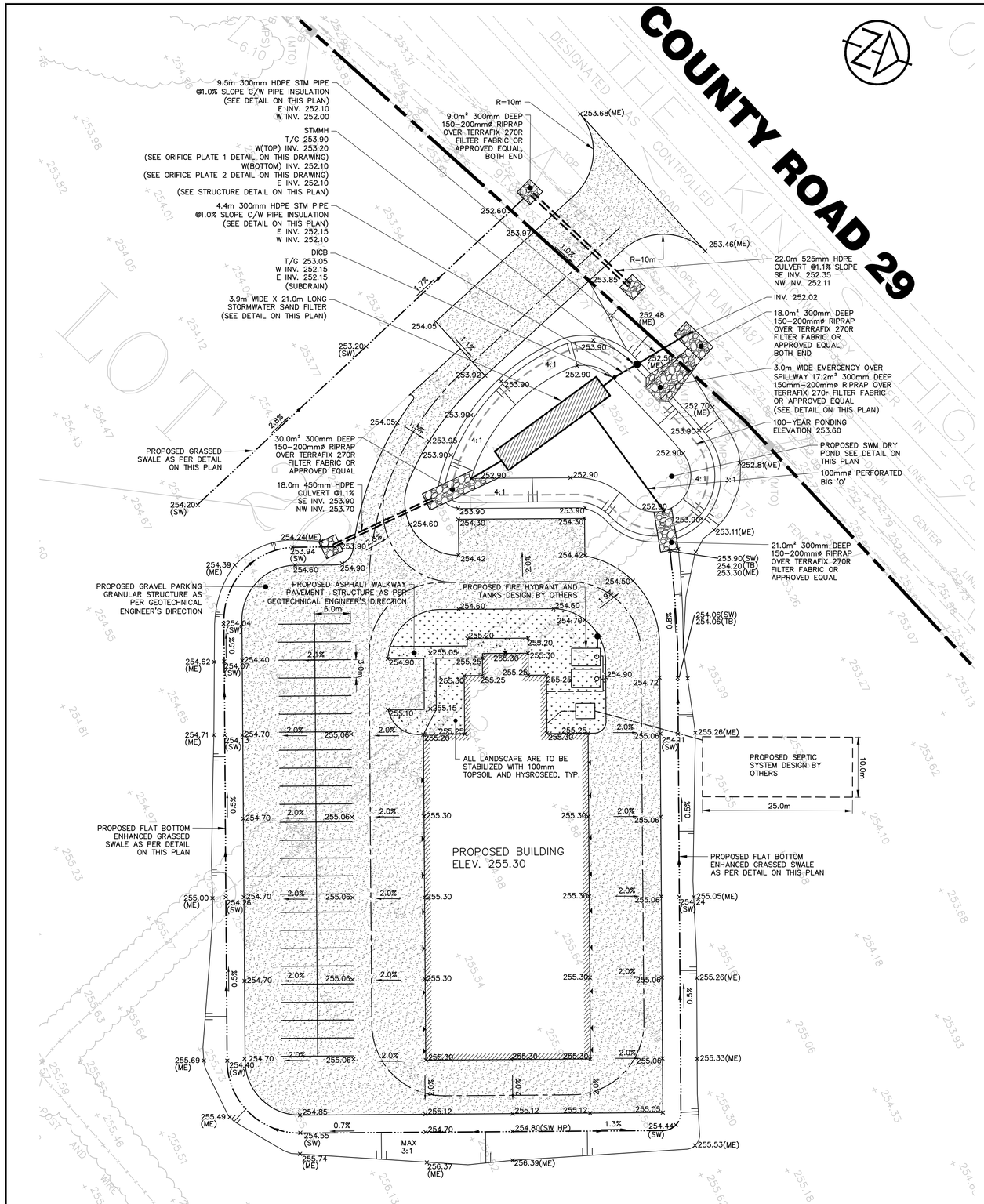
REMOVAL, SILTATION AND EROSION CONTROL PLAN

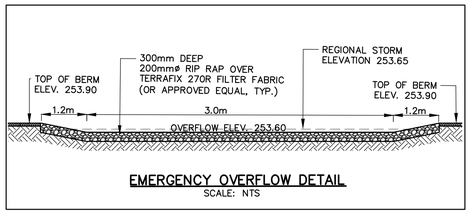
TATHAM ENGINEERING

DESIGN: HY	FILE: 523669	DWG: SC-1
DRAWN: HY	DATE: MAY 2024	
CHECK: GC	SCALE: 1:400	

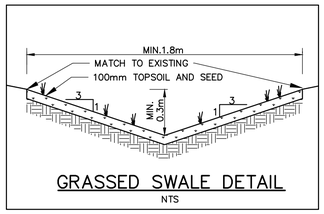
Drawing Name: 523669 – SC01.dwg, Plotted: Sep 20, 2024

COUNTY ROAD 29

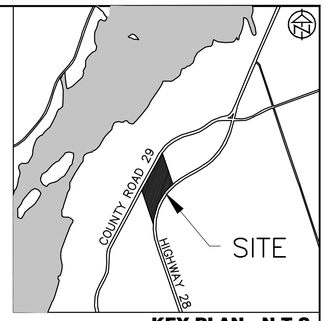




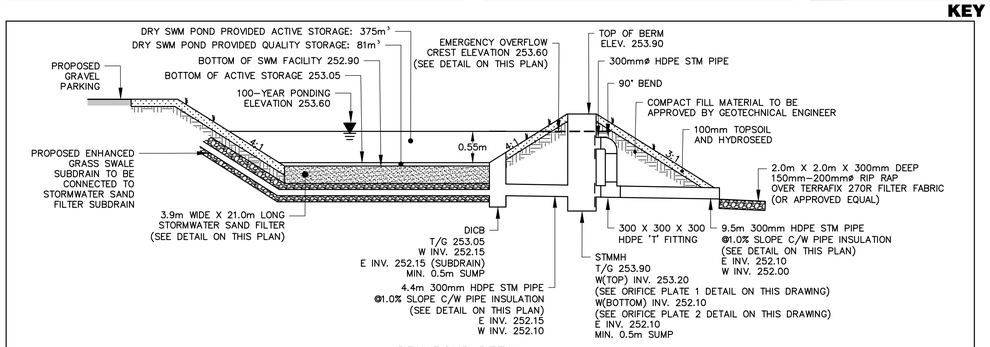
EMERGENCY OVERFLOW DETAIL
SCALE: NTS



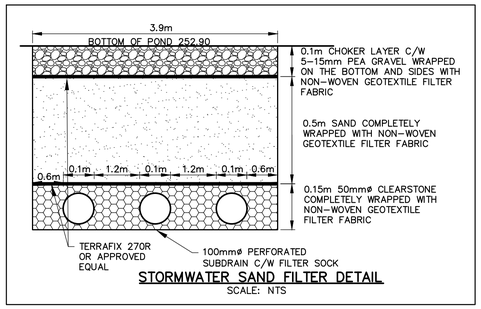
GRASSED SWALE DETAIL
NTS



KEY PLAN - N.T.S.



DRY POND DETAIL
SCALE: N.T.S



STORMWATER SAND FILTER DETAIL
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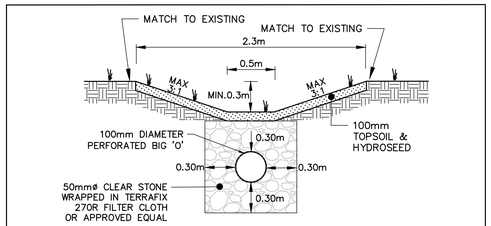
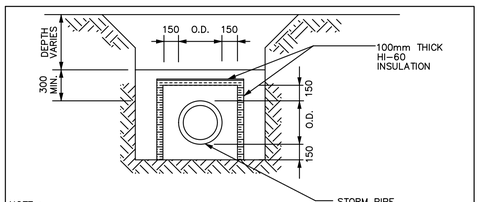
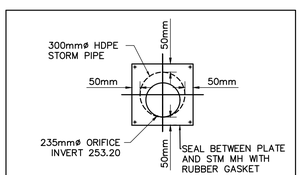


FLAT BOTTOM ENHANCED GRASSED SWALE DETAIL
NTS

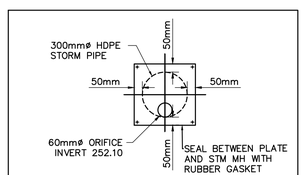


NOTE :
1. WHEREVER INSULATION IS USED; PROVIDE GRANULAR 'A' BEDDING AND COVER.
2. ALL NOTES PERTAINING TO BEDDING DETAILS SHALL APPLY.
3. FROST TAPERS TO OPSD 803.030 AND OPSD 803.031 AND AS DIRECTED BY THE ENGINEER.

STORM PIPE FROST PROTECTION DETAIL
SCALE: NTS



ORIFICE PLATE #1 PLATE DETAIL
NTS



ORIFICE PLATE #2 PLATE DETAIL
NTS

LEGEND

× 262.25	PROPOSED ELEVATION
× 262.25(ME)	PROPOSED ELEVATION MATCH EXISTING
× 262.25(HP)	DROPPED HIGH POINT ELEVATION
× 262.25(TB)	TOP OF BERM ELEVATION
× 262.25(SW)	BOTTOM OF SWALE ELEVATION
	PROPOSED GRAVEL
	PROPOSED ASPHALT WALKWAY
	PROPOSED GRASSED AREA
	PROPERTY BOUNDARY

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ENGINEER STAMP

LICENSED PROFESSIONAL ENGINEER
J. R. ASH
100123062
PROVINCE OF ONTARIO

4488 COUNTY ROAD 29
TOWNSHIP OF DOURO-DUMMER

TATHAM ENGINEERING

SITE GRADING PLAN

DESIGN: HY	FILE: 523669	DWG:
DRAWN: HY	DATE: MAY 2024	**SG-1**
CHECK: GC	SCALE: 1:400	

Drawing Name: 523669 – SG01.dwg, Plotted: Sep 20, 2024

A. GENERAL – CONSTRUCTION

1. ALL DIMENSIONS ARE IN METRES (m) OR MILLIMETRES (mm) UNLESS SPECIFIED OTHERWISE.
2. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH OCCUPATIONAL HEALTH AND SAFETY ACT.
3. ALL WORK SHALL BE IN ACCORDANCE WITH TOWNSHIP STANDARDS AND ONTARIO PROVINCIAL STANDARD SPECIFICATIONS AND DRAWINGS (OPSS & OPSD). WHERE CONFLICT OCCURS, TOWNSHIP STANDARDS GOVERN.
4. THE STANDARDS DRAWINGS INCLUDED WITH THESE PLANS ARE PROVIDED FOR CONVENIENCE ONLY AND ARE NOT TO BE CONSTRUCTED AS A COMPLETE SET. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL RELEVANT STANDARDS DRAWINGS AND SPECIFICATIONS AS SPECIFIED ON THE DRAWINGS.
5. THE CONTRACTOR SHALL OBTAIN ROAD OCCUPANCY AND ACCESS PERMITS FOR ALL WORK IN THE MUNICIPAL ROW. THE PERMIT(S) OBTAINED SHALL BE TAKEN OUT IN THE NAME OF THE CONTRACTOR.
6. THE ENGINEER SHALL PROVIDE THE BENCHMARK ELEVATIONS FOR THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DETAILED LAYOUT OF THE WORK IN ACCORDANCE WITH THE CONTRACT DRAWINGS.
7. THE CONTRACTOR SHALL PROTECT SURVEY MONUMENTS AND BENCHMARKS ENCOUNTERED DURING THE WORK. ALL SURVEY MONUMENTS AND BENCHMARKS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY AN ONTARIO LAND SURVEYOR, AT THE CONTRACTOR'S EXPENSE.
8. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR ALL MATERIALS TO CONTRACT ADMINISTRATOR FOR REVIEW PRIOR TO ORDERING.
9. THE CONTRACTOR IS REQUIRED TO CONFIRM EXISTING GRADES AND PIPE INVERTS AT CONNECTIONS AND REPORT ANY DISCREPANCIES TO THE CONTRACT ADMINISTRATOR BEFORE COMMENCING WORK.
10. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY WATER AND/OR CALCIUM CHLORIDE AS REQUIRED FOR COMPACTION AND/OR DUST CONTROL.
11. DISTURBED AREAS IN THE MUNICIPAL ROW TO BE REINSTATED TO ORIGINAL CONDITION OR BETTER AS DETERMINED BY THE CONTRACT ADMINISTRATOR.
12. TREES/SHRUBS THAT MUST BE REMOVED SHALL BE IDENTIFIED AND PERMISSION FOR REMOVAL SHALL BE OBTAINED FROM THE CONTRACT ADMINISTRATOR.
13. CONTRACTOR IS TO NOTIFY THE TOWNSHIP OF ALL CONSTRUCTION ACTIVITIES A MINIMUM OF 72 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
14. TRAFFIC CONTROL AND SIGNAGE DURING CONSTRUCTION SHALL CONFORM TO THE MOST CURRENT ONTARIO CONSTRUCTION REGULATIONS INCLUDING REGULATION No. 213 UNDER OHSA AND REFERENCE TO MTO TEMPORARY CONDITIONS MANUAL BOOK No. 7.
15. ALL EARTH GRADING TO OPSS 206.
16. EXCESS STOCKPILED OR UNSUITABLE MATERIALS TO BE DISPOSED OF WITHIN THE SITE OR ALTERNATIVELY MUST BE HANDLED IN ACCORDANCE WITH O.REG. 406/19.
17. FOR THE DURATION OF THE CONTRACT, MATERIAL THAT BECOMES CONTAMINATED DUE TO CONTRACTOR'S ACTIVITY SHALL BE REMOVED AND REPLACED AT THE CONTRACTORS EXPENSE.
18. PIPES SHALL BE CONSTRUCTED WITH EMBEDMENT AND BACKFILL AS PER OPSD 802.010 (GRANULAR 'A' EMBEDMENT MATERIAL) FOR FLEXIBLE PIPES UNLESS OTHERWISE APPROVED BY THE ENGINEER. IN WET AREAS EMBEDMENT MATERIAL TO BE 9.5 mm CLEAR LIMESTONE WRAPPED IN AN APPROVED GEOTEXTILE (TERRAFIX 270R OR APPROVED EQUAL)
19. ALL PIPE HANDLING AND INSTALLATION MUST BE IN STRICT COMPLIANCE WITH MANUFACTURERS INSTALLATION GUIDELINES

B. LANEWAY, DRIVEWAY ENTRANCE AND PARKING AREAS

1. ALL TOPSOIL MUST BE STRIPPED FROM LANEWAY AND PARKING AREAS PRIOR TO CONSTRUCTION.
2. FROST TREATMENT FOR ALL CULVERT AND STORM SEWERS IN ACCORDANCE WITH OPSD 803.030 AND 803.031.
3. CONTRACTOR TO REMOVE ALL TOPSOIL AND ORGANIC MATERIAL LOCATED BELOW EXISTING FILL MATERIAL WITHIN THE LANEWAY AND PARKING AREAS. BACKFILL TO BE APPROVED ENGINEERED FILL OR NATIVE MATERIAL COMPACTED TO 98% SPMDD. THE SUBGRADE SHOULD BE COMPACTED, PROOF ROLLED AND INSPECTED BY A GEOTECHNICAL ENGINEER.
4. BOULDER TREATMENT TO OPSD 204.010.
5. TRANSITION TREATMENT FOR EARTH/ROCK CUT/FILL OPERATIONS TO OPSD 205.010, 205.020, 205.040, 205.050 ACCORDINGLY.
6. GRANULAR 'B' SUBBASE TO BE PLACED IN 150mm MAXIMUM LOOSE LIFT AND COMPACTED TO 98% OF MATERIAL'S SPMDD
7. GRANULAR 'A' BASES TO BE PLACED IN 150mm MAXIMUM LOOSE LIFTS AND COMPACTED TO 100% OF MATERIAL'S SPMDD.
8. ALL ASPHALT MATERIAL AND PLACEMENT TO BE IN ACCORDANCE WITH OPSS 310.

C. STORM SEWER/CULVERT

1. HDPE STORM SEWER TO BE CORRUGATED DOUBLE WALL PIPE CONFORMING TO CSA B1 82.8 AND WITH MIN. 320 KPA PIPE STIFFNESS.
2. STORM SEWERS SHALL BE CONSTRUCTED WITH EMBEDMENT AND BACKFILL AS PER OPSD 802.010 (GRANULAR 'A' EMBEDMENT MATERIAL) FOR FLEXIBLE PIPES AND BEDDING, COVER AND BACKFILL AS PER OPSD 802.030, 802.031 OR 802.032 CLASS B (GRANULAR 'A' BEDDING AND COVER MATERIAL) FOR RIGID PIPES UNLESS OTHERWISE APPROVED BY THE CITY ENGENEER. IN WET AREAS BEDDING AND EMBEDMENT MATERIAL TO BE 9.5 mm CLEAR LIMESTONE WRAPPED IN AN APPROVED GEOTEXTILE (TERRAFIX 270R OR APPROVED EQUAL). TRENCH BACKFILL TO BE SELECT NATIVE MATERIAL AS APPROVED BY ENGINEER OR IMPORTED GRANULAR MATERIAL. BACKFILL AND EMBEDMENT MATERIAL TO BE COMPACTED TO A DRY DENSITY OF 98% OF THE MATERIAL'S SPMDD.
3. MANHOLES SHALL BE 1200 mm DIA. UNLESS OTHERWISE SPECIFIED, AND SHALL BE IN ACCORDANCE WITH OPSD 701.010, 701.030. FROST STRAPS TO OPSD 701.100. STEPS TO OPSD 405.010. GRADE ADJUSTMENT RINGS TO OPSD 704.011. COVER SHALL BE IN ACCORDANCE WITH OPSD 401.010.
4. DITCH INLET CATCHBASIN TO BE 600 mm SQUARE PRECAST CONCRETE TO OPSD 705.030. FRAME AND GRATE TO OPSD 403.010.
5. 500mm DEEP SUMPS ON DICB & STMMH.
6. STORM SEWER WITH LESS THAN 1.2 m COVER TO PIPE CROWN REQUIRES INSULATION AS PER DETAIL ON DWG SG–1 OR APPROVED EQUIVALENT.
7. TESTING OF STORM SEWERS SHALL INCLUDE:
   - –FLUSHING AND CLEANING
   - –CCTV VIDEO INSPECTION
8. ALL ENHANCED SWALES TO BE INSTALLED WITH 100mmø PERFORATED SUBDRAIN CONNECTED TO THEM AS PER DETAIL ON DWG. DET–1.
9. PIPE SUPPORT AT ALL STRUCTURES TO OPSD 708.020.
10. IF SEPARATION BETWEEN STORM SEWER AND OTHER STRUCTURES, PIPE OR UTILITIES IS LESS THAN 0.3m, INSTALL 50mm HI–60 INSULATION AS DIRECTED BY THE ENGINEER.

D. REINSTATEMENT

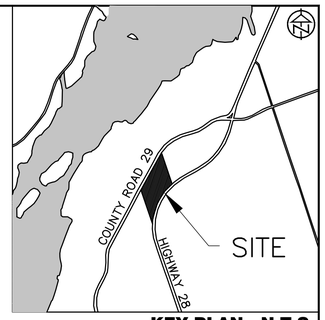
1. CONTRACTOR TO RECORD EXISTING GRADES AND CONDITIONS IN THE MUNICIPAL ROW OF THE ROAD. A COPY OF CONTRACTORS RECORDS TO BE PROVIDED TO THE CONTRACT ADMINISTRATOR PRIOR TO CONSTRUCTION.
2. ALL DISTURBED LANDSCAPE AREAS SHALL BE REINSTATED TO EXISTING CONDITIONS OR BETTER INCLUDING A MINIMUM 100mm OF TOPSOIL AND HYDROSEED.

E. UTILITIES

1. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE ONLY, ACTUAL LOCATION TO BE CONFIRMED BY CONTRACTOR.
2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING LOCATES AND INFORMATION IN REGARD TO EXACT LOCATION OF BURIED UTILITIES AND INFRASTRUCTURE. THIS SHALL INCLUDE HYDRO VACUUM EXCAVATION IF NECESSARY. THE CONTRACTOR MUST EXERCISE NECESSARY CARE IN CONSTRUCTION OPERATIONS INCLUDING IF NECESSARY HAND DIGGING TO SAFEGUARD UTILITIES AND ALL OTHER BURIED INFRASTRUCTURE FROM DAMAGE. THE CONTRACTOR IS LIABLE FOR ALL DAMAGE TO UTILITIES AND ALL BURIED INFRASTRUCTURE OCCURRING WITHIN OR OUTSIDE THE CONTRACT LIMITS CAUSED BY HIS OPERATIONS.
3. ANY AREA OF POSSIBLE CONFLICTS WITH EXISTING UTILITIES SHALL BE EXCAVATED BY HAND PRIOR TO CONSTRUCTION.
4. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO GIVE 72 HOURS WRITTEN NOTICE TO UTILITY CORPORATIONS PRIOR TO CROSSING UTILITIES FOR THE PURPOSE OF INSPECTION BY THE CONCERNED CORPORATION. THIS INSPECTION WILL BE FOR THE DURATION OF CONSTRUCTION WITH THE CONTRACTOR RESPONSIBLE FOR ALL COSTS ARISING FROM SUCH INSPECTION.

F. CONSTRUCTION DEWATERING

1. THE CONTRACTOR IS RESPONSIBLE FOR ALL DEWATERING THAT MAY BE REQUIRED TO PRODUCE A DRY AND STABLE TRENCH FOR CONSTRUCTION OF THE WORKS. WORK TO BE IN ACCORDANCE WITH ONTARIO REGULATION 63/16, OPSS 518.
2. DURING NORMAL OPERATIONS, THE MAXIMUM VOLUME OF WATER TO BE DISCHARGED FROM THE DEWATERING OPERATION ON A DAILY BASIS WITHOUT A MECP PERMIT TO TAKE WATER IS 50,000L/DAY.
3. ALL WATER DISCHARGED FROM THE DEWATERING OPERATION SHALL BE DISCHARGED TO AN APPROVED OUTLET AS DETERMINED BY THE CONTRACT ADMINISTRATOR.
4. DEWATERING PUMPS SHALL DISCHARGE TO A GEOTEXTILE FILTER BAG LOCATED ON A GENTLY SLOPING GRASSED SURFACE TOWARDS SWM DRY POND.
5. WHERE REQUIRED, SUPPLEMENTARY SEDIMENT AND EROSION CONTROL WORKS, SUCH AS SILT FENCE AND STRAW BALE CHECK DAMS, SHALL BE INSTALLED DOWN GRADIENT OF THE FILTER BAGS TO ENSURE DISCHARGE WATER IS FREE OF SEDIMENT AND TO PREVENT EROSION.
6. TO MINIMIZE THE VOLUME OF WATER TO BE REMOVED FROM EXCAVATIONS, THE WORK AREA SHALL BE GRADED TO DIRECT SURFACE RUNOFF AROUND AND AWAY FROM OPEN EXCAVATIONS.
7. THE CONTRACTOR SHALL MEASURE AND RECORD, ON A DAILY BASIS, THE TOTAL VOLUME OF WATER DISCHARGED (L/DAY) AND THE AVERAGE DISCHARGE RATE (L/S). THE CONTRACTOR SHALL SUBMIT COPIES OF THE DEWATERING DISCHARGE FLOW RECORDS TO THE CONTRACT ADMINISTRATOR ON A WEEKLY BASIS OR UPON REQUEST. THE METHOD OF MEASURING THE VOLUME OF WATER DISCHARGED SHALL BE APPROVED BY THE CONTRACT ADMINISTRATOR PRIOR TO COMMENCING DEWATERING OPERATIONS.
8. DEWATERING OPERATIONS ARE TO BE SUSPENDED DURING SEVERE STORM EVENTS.



KEY PLAN - N.T.S.

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ENGINEER STAMP

LICENSED PROFESSIONAL ENGINEER
J. R. ASH
100123062
PROVINCE OF ONTARIO
Nov. 15, 2024

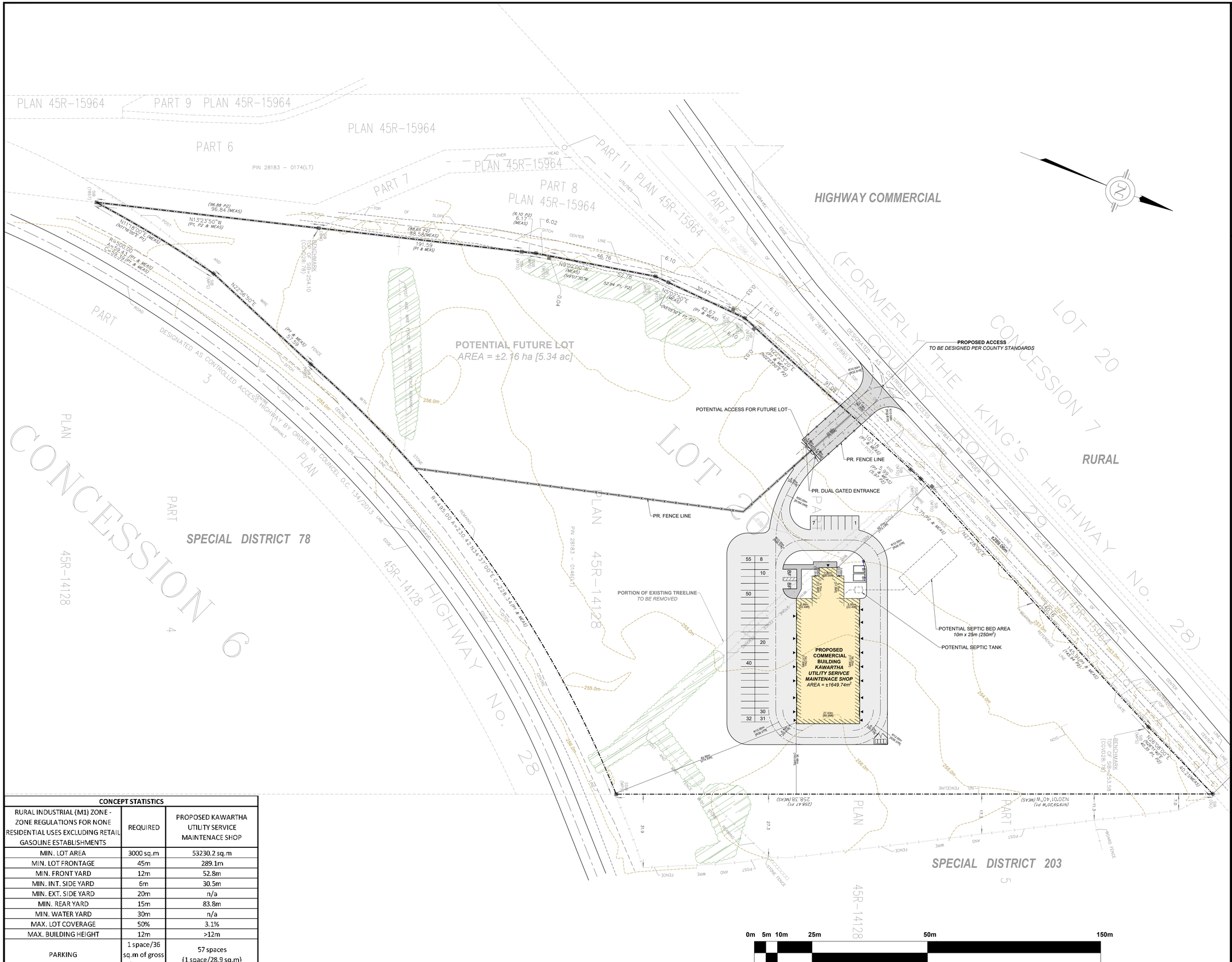
4488 COUNTY ROAD 29
TOWNSHIP OF DOURO-DUMMER

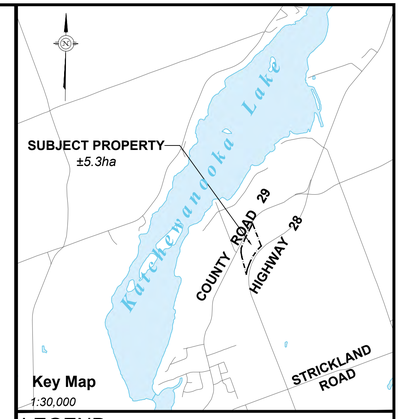
TATHAM ENGINEERING

NOTES AND DETAILS

DESIGN: HY	FILE: 523669	DWG: DET-1
DRAWN: HY	DATE: MAY 2024	
CHECK: GC	SCALE:	

Appendix A:
Concept Plan Prepared by EcoVue Consulting Services Inc.





LEGEND

- DENOTES SURVEY MONUMENT, FOUND
- WT — DENOTES WITNESS
- MPS — DENOTES MCINTOSH PERRY SURVEYING INC.
- MTO — DENOTES MINISTRY OF TRANSPORTATION OF ONTARIO
- IBS7 — DENOTES THARMARAJAH SHANMUGARAJAH THAM SURVEYING LIMITED, O.L.S.
- OU — DENOTES ORIGIN UNKNOWN
- IBW — DENOTES IVAN B. WALLACE LTD, O.L.S.
- DENOTES STONE FENCE
- DENOTES FENCE LINE
- DENOTES GATE
- P1 — DENOTES PLAN 45R - 14128
- P2 — DENOTES PLAN 45R - 15964
- CGVD(28) — DENOTES CANADIAN GEODETIC VERTICAL DATUM OF 1928
- DENOTES SUBJECT PROPERTY BOUNDARY
- 256.0m — DENOTES CONTOUR ELEVATION (1.0m INTERVAL) DERIVED FROM ELEVATION DATA PROVIDED BY JBF SURVEYORS
- PROPOSED OVERHEAD DOOR ENTRANCE
- PROPOSED PEDESTRIAN ENTRANCE
- POTENTIAL FIRE HYDRANT
- POTENTIAL UNDERGROUND WATER STORAGE TANKS FOR FIRE SUPPRESSION (2) 3.05m x 4.88m (70m³)
- PROPOSED STANDARD PARKING SPACE (3m x 6m TYP.)
- BF — PROPOSED BARRIER FREE PARKING SPACE (3.4m x 6m w/ 1.5m AISLE TYP.)
- PROPOSED BUILDING FOOTPRINT
- PROPOSED DRIVEWAY (ASPHALT)
- PROPOSED DRIVEWAY (GRAVEL)
- PROPOSED PEDESTRIAN WALKWAY (CONCRETE) - 1.8m WIDTH
- PROPOSED LOTS
- PROPOSED GARBAGE/RECYCLING ENCLOSURE
- EXISTING TREE LINE (APPROX.)
- VEHICLE MOVEMENT LANEWAY CENTRE LINE
  MIN. WIDTH = 6.1m
  MIN. CENTRE LINE TURNING RADIUS = R12m

BEARINGS SHOWN HEREON ARE MTM GRID DERIVED FROM THE NORTH WESTERLY LIMIT OF PART 2, PLAN 45R–14128 HAVING A BEARING OF N27°28'00"E

NOTES:

1. SURVEY BASE PLAN PROVIDED BY JBF SURVEYORS, COMPLETED ON AUGUST 19TH, 2022.

CONCEPT STATISTICS		
RURAL INDUSTRIAL (M1) ZONE - ZONE REGULATIONS FOR NONE RESIDENTIAL USES EXCLUDING RETAIL GASOLINE ESTABLISHMENTS	REQUIRED	PROPOSED KAWARTHA UTILITY SERVICE MAINTENACE SHOP
MIN. LOT AREA	3000 sq.m	53230.2 sq.m
MIN. LOT FRONTAGE	45m	289.1m
MIN. FRONT YARD	12m	52.8m
MIN. INT. SIDE YARD	6m	30.5m
MIN. EXT. SIDE YARD	20m	n/a
MIN. REAR YARD	15m	83.8m
MIN. WATER YARD	30m	n/a
MAX. LOT COVERAGE	50%	3.1%
MAX. BUILDING HEIGHT	12m	>12m
PARKING	1 space/36 sq.m of gross floor area	57 spaces (1 space/28.9 sq.m)

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.: 22-2469
APPROVED BY:	HORIZ. SCALE: 1:700
REVISION DATE: AUGUST 22, 2023	PLOT DATE: AUGUST 22, 2023

KAWARTHA UTILITIES

4488 COUNTY ROAD 29
PART OF LOT 20, CONCESSION 06
GEOG. TWP. OF DOURO
TOWNSHIP OF DOURO-DUMMER
COUNTY OF PETERBOROUGH

CONCEPT PLAN

CP1

Appendix B: Stormwater Management Calculations

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Project Number	523669

Prepared By

Name	HY

Data Sources

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

Pre-Development Condition

Watershed:	ORCA
Catchment ID:	EXT
Catchment Area (ha):	0.70
Impervious %:	54%

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

Soil Symbol		**DI**											
Soil Series		Dumfries											
Hydrologic Soils Group		AB											
Soil Texture		Loam											
Runoff Coefficient Type		2											
Area (ha)		0.70											
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	0.38	100	0.95									
Gravel	3		89	0.60									
Woodland	10		46	0.25									
Pasture/Lawns	5	0.32	59	0.28									
Meadows	8		51	0.27									
Cultivated	7		68	0.35									
Waterbody	12		50	0.05									
Average CN		81.26											
Average C		0.64											
Average IA		3.37											

Time to Peak Calculations

Max. Catchment Elev. (m):	259.40
Min. Catchment Elev. (m):	252.96
Catchment Length (m):	380
Catchment Slope (%):	1.69%
Method: Bransby-Williams Formula	
Time of Concentration (mins):	20.20

Summary

Catchment CN:	81.3
Catchment C:	0.64
Catchment IA (mm):	3.37
Time of Concentration (hrs):	0.34
Catchment Time to Peak (hrs):	0.22
Catchment Time Step (mins):	2.69

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Project Number	523669

Prepared By

Name	HY

Data Sources

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

Pre-Development Condition

Watershed:	ORCA
Catchment ID:	101
Catchment Area (ha):	4.28
Impervious %:	

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

Soil Symbol		**DI**											
Soil Series		Dumfries											
Hydrologic Soils Group		AB											
Soil Texture		Loam											
Runoff Coefficient Type		2											
Area (ha)		4.28											
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	0.60									
Woodland	10		46	0.25									
Pasture/Lawns	5	4.28	59	0.28									
Meadows	8		51	0.27									
Cultivated	7		68	0.35									
Waterbody	12		50	0.05									
Average CN		59.00											
Average C		0.28											
Average IA		5.00											

Time to Peak Calculations

Max. Catchment Elev. (m):	256.60
Min. Catchment Elev. (m):	252.88
Catchment Length (m):	151.055
Catchment Slope (%):	2.46%
Method: Airport Method	
Time of Concentration (mins):	24.40

Summary

Catchment CN:	59.0
Catchment C:	0.28
Catchment IA (mm):	5.00
Time of Concentration (hrs):	0.41
Catchment Time to Peak (hrs):	0.27
Catchment Time Step (mins):	3.25

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Project Number	523669

Prepared By

Name	HY

Data Sources

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

Pre-Development Condition

Watershed:	ORCA
Catchment ID:	102
Catchment Area (ha):	0.25
Impervious %:	

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

Soil Symbol		**DI**											
Soil Series		Dumfries											
Hydrologic Soils Group		AB											
Soil Texture		Loam											
Runoff Coefficient Type		2											
Area (ha)		0.25											
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	0.60									
Woodland	10		46	0.25									
Pasture/Lawns	5	0.25	59	0.28									
Meadows	8		51	0.27									
Cultivated	7		68	0.35									
Waterbody	12		50	0.05									
Average CN		59.00											
Average C		0.28											
Average IA		5.00											

Time to Peak Calculations

Max. Catchment Elev. (m):	256.74
Min. Catchment Elev. (m):	255.74
Catchment Length (m):	93
Catchment Slope (%):	1.08%
Method: Airport Method	
Time of Concentration (mins):	25.17

Summary

Catchment CN:	59.0
Catchment C:	0.28
Catchment IA (mm):	5.00
Time of Concentration (hrs):	0.42
Catchment Time to Peak (hrs):	0.28
Catchment Time Step (mins):	3.36

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Project Number	523669

Prepared By

Name	HY

Data Sources

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

Pre-Development Condition

Watershed:	ORCA
Catchment ID:	103
Catchment Area (ha):	0.79
Impervious %:	

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

Soil Symbol		**DI**											
Soil Series		Dumfries											
Hydrologic Soils Group		AB											
Soil Texture		Loam											
Runoff Coefficient Type		2											
Area (ha)		0.79											
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	0.60									
Woodland	10		46	0.25									
Pasture/Lawns	5	0.79	59	0.28									
Meadows	8		51	0.27									
Cultivated	7		68	0.35									
Waterbody	12		50	0.05									
Average CN		59.00											
Average C		0.28											
Average IA		5.00											

Time to Peak Calculations

Max. Catchment Elev. (m):	256.18
Min. Catchment Elev. (m):	252.70
Catchment Length (m):	161
Catchment Slope (%):	2.16%
Method: Airport Method	
Time of Concentration (mins):	26.30

Summary

Catchment CN:	59.0
Catchment C:	0.28
Catchment IA (mm):	5.00
Time of Concentration (hrs):	0.44
Catchment Time to Peak (hrs):	0.29
Catchment Time Step (mins):	3.51

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Project Number	523669

Prepared By

Name	HY

Data Sources

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

Pre-Development Condition

Watershed:	ORCA
Catchment ID:	201
Catchment Area (ha):	2.03
Impervious %:	

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

Soil Symbol		**DI**											
Soil Series		Dumfries											
Hydrologic Soils Group		AB											
Soil Texture		Loam											
Runoff Coefficient Type		2											
Area (ha)		2.03											
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	0.60									
Woodland	10		46	0.25									
Pasture/Lawns	5	2.03	59	0.28									
Meadows	8		51	0.27									
Cultivated	7		68	0.35									
Waterbody	12		50	0.05									
Average CN		59.00											
Average C		0.28											
Average IA		5.00											

Time to Peak Calculations

Max. Catchment Elev. (m):	256.74
Min. Catchment Elev. (m):	252.88
Catchment Length (m):	157
Catchment Slope (%):	2.46%
Method: Airport Method	
Time of Concentration (mins):	24.89

Summary

Catchment CN:	59.0
Catchment C:	0.28
Catchment IA (mm):	5.00
Time of Concentration (hrs):	0.41
Catchment Time to Peak (hrs):	0.28
Catchment Time Step (mins):	3.32

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Project Number	523669

Prepared By

Name	HY

Data Sources

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

Pre-Development Condition

Watershed:	ORCA
Catchment ID:	202
Catchment Area (ha):	1.32
Impervious %:	55%

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

Soil Symbol		**DI**											
Soil Series		Dumfries											
Hydrologic Soils Group		AB											
Soil Texture		Loam											
Runoff Coefficient Type		2											
Area (ha)		1.32											
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	0.73	100	0.95									
Gravel	3		89	0.60									
Woodland	10		46	0.25									
Pasture/Lawns	5	0.59	59	0.28									
Meadows	8		51	0.27									
Cultivated	7		68	0.35									
Waterbody	12		50	0.05									
Average CN		81.67											
Average C		0.65											
Average IA		3.34											

Time to Peak Calculations

Max. Catchment Elev. (m):	256.74
Min. Catchment Elev. (m):	252.88
Catchment Length (m):	157
Catchment Slope (%):	2.46%
Method: Bransby-Williams Formula	
Time of Concentration (mins):	7.27

Summary

Catchment CN:	81.7
Catchment C:	0.65
Catchment IA (mm):	3.34
Time of Concentration (hrs):	0.12
Catchment Time to Peak (hrs):	0.08
Catchment Time Step (mins):	0.97

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Project Number	523669

Prepared By

Name	HY

Data Sources

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

Pre-Development Condition

Watershed:	ORCA
Catchment ID:	203
Catchment Area (ha):	0.93
Impervious %:	

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

Soil Symbol		**DI**											
Soil Series		Dumfries											
Hydrologic Soils Group		AB											
Soil Texture		Loam											
Runoff Coefficient Type		2											
Area (ha)		0.93											
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	0.60									
Woodland	10		46	0.25									
Pasture/Lawns	5	0.93	59	0.28									
Meadows	8		51	0.27									
Cultivated	7		68	0.35									
Waterbody	12		50	0.05									
Average CN		59.00											
Average C		0.28											
Average IA		5.00											

Time to Peak Calculations

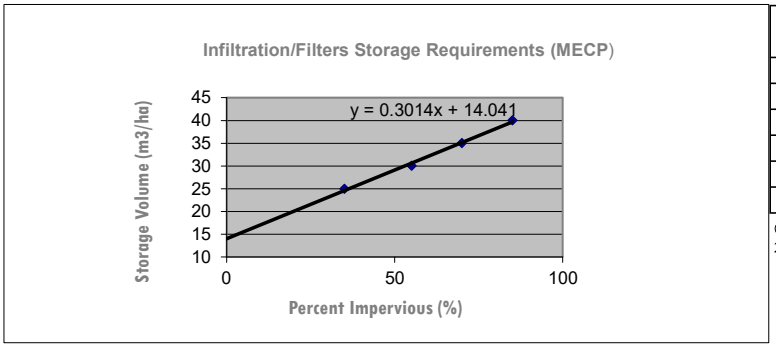
Max. Catchment Elev. (m):	255.75
Min. Catchment Elev. (m):	252.88
Catchment Length (m):	100
Catchment Slope (%):	2.87%
Method: Airport Method	
Time of Concentration (mins):	18.88

Summary

Catchment CN:	59.0
Catchment C:	0.28
Catchment IA (mm):	5.00
Time of Concentration (hrs):	0.31
Catchment Time to Peak (hrs):	0.21
Catchment Time Step (mins):	2.52

Project:	4488 County Road 29
File No.:	523669
Date:	September 20, 2024
Designed by:	HY
Checked by:	JA
Subject:	Quality Storage Calculations - SWM Sand Filter

Contributing Drainage Area to Stormwater Sand Filter = 1.32 ha (Catchment 202)
Percent Impervious = 55% (Weighted Imperviousness of catchment 202)



MECP Table 3-2 Infiltration Practices	
80% Enhanced Level Treatment	
% Imp	m^3/ha
35	25
55	30
70	35
85	40

(As per MECP SWM Planning & Design Manual, 2003, Table 3-2)

Required Water Quality Storage Volume = 30.71 m^3/ha
= 40.5 m^3

Required Water Quality Storage Volume = 81 m^3
(Doubled to account for winter conditions)

Sand filter depth = 0.50 m (excludes 0.1m thick choker layer and 0.15 m thick underdrain layer)
Sand filter surface area = 81.9 m^2 (21 m long x 3.9 m wide)
Void ratio of sand = 0.4

Total water quality volume provided in filter = 16.4 m^3
Total water quality volume provided above filter = 81 m^3 (exceeds the required water quality volume, therefore OK)

Since the underlying bedrock is anticipated to be within 1.0 m of the bottom of the filter, an underdrain is proposed to promote long-term infiltration. Maximum spacing of drainage tile is 1.2 m per Section 4.6.7 of the MECP SWM Manual.

Stormwater Sand Filter Design

Sand filter media depth = 0.5 m (min. 500 mm as specified in Table 4.10 of the MECP manual)

Maximum contributing drainage area = 5 ha (as specified in Table 4.10 of the MECP SWM Manual)
Proposed drainage area to sand filter = 1.3 ha

Maximum surface storage depth = 1 m (for storage above a sand filter as per Section 4.6.7 of the MECP SWM Manual)
Proposed max. surface storage depth = 0.7 m (at the maximum 100 -year pond water level, therefore OK)

Surface Area of Filter $A=1000Vd/k(h+d)t$ (Equation 4.12: Surface Area of filter, MECP SWM Manual
Where V = 81.07 m^3 (V = design volume m^3 derived from Table 3.2)
d= 0.50 m (depth,m, of the controlling filter medium)
k= 45.0 mm/hr (coefficient of permeability of sand, 45mm/hr, per MECP SWM Manual)
h= 0.0 m (operating head of water on the filter, m
t= 24.0 hrs (design drawdown time in hours)

Required Surface Area of Filter = 75.1 m^2

Total water filter footprint surface area provided = 81.9 m^2 (exceeds the required footprint surface area, therefore OK)

Project :	1525 Ashton Station Street
File No.	523669
Date:	Sep-24
Designed By:	HY
Checked By:	JA
Subject:	Stage Storage Discharge Table

OUTLET CONTROL

Orifice Control

	Orifice #1	Orifice #2	Emergency Overflow	
Orifice Size (mm):	60	235	Weir Length (m)	3
Cross-Sectional Area (sq.m):	0.0028	0.0434	Sill elevation (m)	253.60
Orifice Coefficient:	0.63	0.63	Weir Coefficient	1.7
Invert Elevation (m):	252.10	253.20	Weir Side Slopes (H:V)	4H : 1V
Outlet Pipe Size (mm):	300	300	Downstream Weir Length (m)	3

STAGE DISCHARGE TABLE & CONTROL STRUCTURE CONFIGURATION

Water Level	60mm dia. Orifice		235 mm dia. Orifice		Emergency Overflow		Total Discharge	Active Storage
	Head	Discharge	Head	Discharge	Head	Discharge		
(m)	(m)	(cms)	(m)	(cms)	(m)	(cms)	(cms)	(cm)
253.05	0.92	0.008	0.00	0.000	0.000	0.000	0.008	0
253.10	0.97	0.008	0.00	0.000	0.000	0.000	0.008	29
253.15	1.02	0.008	0.00	0.000	0.000	0.000	0.008	59
253.20	1.07	0.008	0.00	0.000	0.000	0.000	0.008	90
253.25	1.12	0.008	0.00	0.000	0.000	0.000	0.008	121
253.30	1.17	0.009	0.00	0.000	0.000	0.000	0.009	154
253.35	1.22	0.009	0.03	0.022	0.000	0.000	0.031	188
253.40	1.27	0.009	0.08	0.035	0.000	0.000	0.044	223
253.45	1.32	0.009	0.13	0.044	0.000	0.000	0.053	260
253.50	1.37	0.009	0.18	0.052	0.000	0.000	0.061	297
253.55	1.42	0.009	0.23	0.058	0.000	0.000	0.068	335
253.60	1.47	0.010	0.28	0.064	0.000	0.000	0.074	375
253.65	1.52	0.010	0.33	0.070	0.050	0.061	0.140	416
253.70	1.57	0.010	0.38	0.075	0.100	0.183	0.267	458
253.75	1.62	0.010	0.43	0.080	0.150	0.356	0.445	501
253.80	1.67	0.010	0.48	0.084	0.200	0.578	0.672	545
253.85	1.72	0.010	0.53	0.088	0.250	0.850	0.949	591
253.90	1.77	0.010	0.58	0.092	0.300	1.173	1.276	637

6 hr SCS Design Storms

Design Storm	Pond Operating Characteristics		
	Storage (m^3)	Total Outlfow (m^3/s)	Water Level (m)
2 year	156	0.010	253.30
5 year	195	0.034	253.36
10 year	228	0.045	253.41
25 year	280	0.057	253.48
50 year	322	0.065	253.53
100 year	372	0.073	253.60

4 hr Chicago Design Storms

Design Storm	Pond Operating Characteristics		
	Storage (m^3)	Total Outlfow (m^3/s)	Water Level (m)
2 year	118	0.008	253.24
5 year	166	0.017	253.32
10 year	182	0.027	253.34
25 year	207	0.038	253.38
50 year	230	0.046	253.41
100 year	257	0.052	253.45

24 hr SCS Design Storms

Design Storm	Pond Operating Characteristics		
	Storage (m^3)	Total Outlfow (m^3/s)	Water Level (m)
2 year	149	0.009	253.29
5 year	186	0.030	253.35
10 year	216	0.041	253.39
25 year	261	0.053	253.45
50 year	298	0.061	253.50
100 year	343	0.069	253.56

Regional Storm

Design Storm	Pond Operating Characteristics		
		Total Outlfow (m^3/s)	Water Level (m)
Timmins		0.143	253.65

TATHAM ENGINEERING

Project :	4488 County Road 29
File No.	523669
Date:	Sep-24
Designed By:	HY
Checked By:	JA
Subject:	Storm Pond Stage Storage

Dry SWM Facility

Elevation	Depth	Increasing Area	Accum Area	Volume	Quality Storage	Quantity Storage
(m)	(m)	(m^2)	(m^2)	(m^3)	(m^3)	(m^3)
252.90	0.00	0.0	510.0	0.0	0.0	0.0
252.95	0.05	18.7	528.7	26.0	26.0	0.0
253.00	0.10	19.1	547.8	26.9	52.9	0.0
253.05	0.15	19.4	567.2	27.9	80.8	0.0
253.10	0.20	19.8	587.0	28.9	0.0	28.9
253.15	0.25	20.1	607.1	29.8	0.0	58.7
253.20	0.30	20.4	627.5	30.9	0.0	89.6
253.25	0.35	20.8	648.3	31.9	0.0	121.5
253.30	0.40	21.1	669.4	32.9	0.0	154.4
253.35	0.45	21.4	690.8	34.0	0.0	188.4
253.40	0.50	21.8	712.6	35.1	0.0	223.5
253.45	0.55	22.1	734.7	36.2	0.0	259.7
253.50	0.60	22.5	757.2	37.3	0.0	297.0
253.55	0.65	22.8	780.0	38.4	0.0	335.4
253.60	0.70	23.1	803.1	39.6	0.0	375.0
253.65	0.75	23.5	826.6	40.7	0.0	415.7
253.70	0.80	23.8	850.4	41.9	0.0	457.6
253.75	0.85	24.1	874.5	43.1	0.0	500.8
253.80	0.90	24.5	899.0	44.3	0.0	545.1
253.85	0.95	24.8	923.8	45.6	0.0	590.7
253.90	1.00	169.0	949.0	46.8	0.0	637.5

Project:	4488 County Road 29	**Date:**	September 20, 2024
File No.:	523669	**Designed By:**	HY
Subject:	Swale Capacity Calcs.	**Checked By:**	JA

Catchment 201 North Swale

Swale Characteristics

Design Storms
100 year flow (m^3/s)
0.150

(100-year storm peak flow from Drainage Area 201)

Channel Depth	Channel Type	Manning's N	Base Width	Side Slopes	Min. Slope	Total Area (ha)	Area Contributing (ha)
0.30 m	Grass Ditch	0.035	0.00 m	3H : 1V	1.70%	2.030	2.030

Storm Conditions		**Swale Flow Conditions**					
Return Period	**Peak Flow (m^3/s)**	**Flow Depth**	**Area (m^2)**	**WP**	**R**	**Q (m^3/s)**	**V (m/s)**
100-year storm	**0.150**	**0.300**	**0.27**	**1.90**	**0.14**	**0.274**	**1.02**
Comments:							
1. A 0.3 m deep grassed swale has sufficient capacity to convey the 100-year storm peak flow to the County Road 29 east ditch.							

Mannings Equation

$$Q = (1.00/n)AR^{2/3}S^{1/2}$$

Where Q = Peak Flow (m^3)
n = Roughness Coefficient
A = Cross Sectional Area (m^2)
R = Hydraulic Radius
S = Channel Slope (m/m)

MTO Pro-rating Methodology for Obtaining Peak Flow

$$Q_2 = Q_1(A_2/A_1)^{0.75}$$

Where Q_1 = Total Peak Flow for Catchment
Q_2 = Pro-Rated Peak Flow
A_1 = Total Area
A_2 = Area Contributing

TATHAM ENGINEERING	**Project:**	4488 County Road 29	**Date:**	September 20, 2024
	File No.:	523669	**Designed By:**	HY
	Subject:	Swale Capacity Calcs.	**Checked By:**	JA

Catchment 202 South Swale

Swale Characteristics

Design Storms
100 year flow (m^3/s)
0.309

(100-year storm peak flow from Drainage Area 202)

Channel Depth	Channel Type	Manning's N	Base Width	Side Slopes	Min. Slope	Total Area (ha)	Area Contributing (ha)
0.30 m	Grass Ditch	0.035	0.50 m	3H : 1V	0.50%	1.320	0.610

Storm Conditions		**Swale Flow Conditions**					
Return Period	**Peak Flow (m^3/s)**	**Flow Depth**	**Area (m^2)**	**WP**	**R**	**Q (m^3/s)**	**V (m/s)**
100-year storm	**0.173**	**0.300**	**0.42**	**2.40**	**0.18**	**0.266**	**0.63**
Comments:							
1. A min. 0.3 m deep, 0.5 m wide flat bottom grassed swale has sufficient capacity to convey the 100-year storm peak flow.							

Mannings Equation

$$Q = (1.00/n)AR^{2/3}S^{1/2}$$

Where Q = Peak Flow (m^3)
n = Roughness Coefficient
A = Cross Sectional Area (m^2)
R = Hydraulic Radius
S = Channel Slope (m/m)

MTO Pro-rating Methodology for Obtaining Peak Flow

$$Q_2 = Q_1(A_2/A_1)^{0.75}$$

Where Q_1 = Total Peak Flow for Catchment
Q_2 = Pro-Rated Peak Flow
A_1 = Total Area
A_2 = Area Contributing

TATHAM ENGINEERING	**Project:**	4488 County Road 29	**Date:**	September 20, 2024
	File No.:	523669	**Designed By:**	HY
	Subject:	Swale Capacity Calcs.	**Checked By:**	JA

Catchment 202 North Swale

Swale Characteristics

Design Storms
100 year flow (m^3/s)
0.309

(100-year storm peak flow from Drainage Area 202)

Channel Depth	Channel Type	Manning's N	Base Width	Side Slopes	Min. Slope	Total Area (ha)	Area Contributing (ha)
0.30 m	Grass Ditch	0.035	0.50 m	3H : 1V	0.50%	1.320	0.483

Storm Conditions		**Swale Flow Conditions**					
Return Period	**Peak Flow (m^3/s)**	**Flow Depth**	**Area (m^2)**	**WP**	**R**	**Q (m^3/s)**	**V (m/s)**
100-year storm	**0.145**	**0.300**	**0.42**	**2.40**	**0.18**	**0.266**	**0.63**
Comments:							
1. A min. 0.3 m deep, 0.5 m wide flat bottom grassed swale has sufficient capacity to convey the 100-year storm peak flow.							

Mannings Equation

$$Q = (1.00/n)AR^{2/3}S^{1/2}$$

Where Q = Peak Flow (m^3)
n = Roughness Coefficient
A = Cross Sectional Area (m^2)
R = Hydraulic Radius
S = Channel Slope (m/m)

MTO Pro-rating Methodology for Obtaining Peak Flow

$$Q_2 = Q_1(A_2/A_1)^{0.75}$$

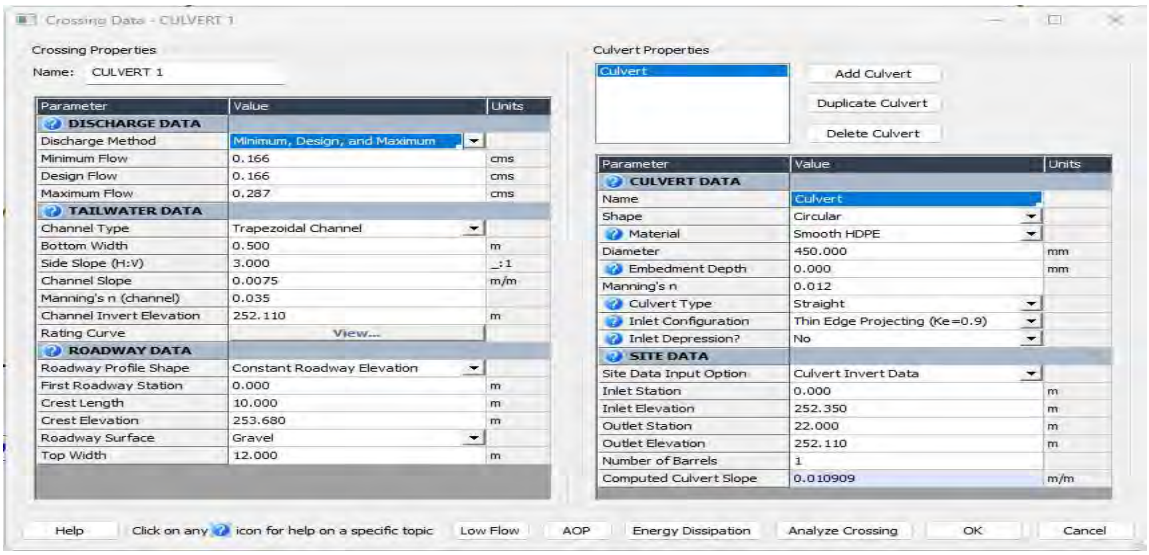
Where Q_1 = Total Peak Flow for Catchment
Q_2 = Pro-Rated Peak Flow
A_1 = Total Area
A_2 = Area Contributing

TATHAM ENGINEERING	Project:	4488 County Road 29	Date:	9/11/2024
	File No.:	523669	Designed by:	HY
	Subject:	Culvert 1 Hydraulic Calculation Check	Checked by:	GC

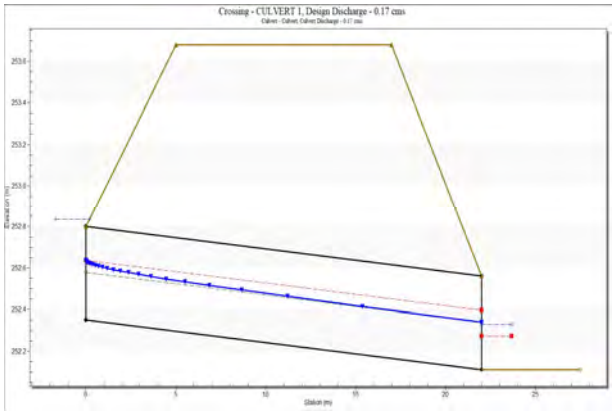
Description - Culvert 1 - Entrance Culvert at County Road 29 (Catchment EXT + 201)

Design Storms	
10 year flow (m^3/s)	100 year flow (m^3/s)
0.166	0.287

(VO6, 6 HR SCS STORM)



Headwater Elevation (m)	Total Discharge (cms)	Culvert Discharge (cms)	Roadway Discharge (cms)	Iterations
252.84	0.17	0.17	0.00	1
252.86	0.18	0.18	0.00	1
252.90	0.19	0.19	0.00	1
252.93	0.20	0.20	0.00	1
252.96	0.21	0.21	0.00	1
253.00	0.23	0.23	0.00	1
253.03	0.24	0.24	0.00	1
253.07	0.25	0.25	0.00	1
253.12	0.26	0.26	0.00	1
253.16	0.27	0.27	0.00	1
253.21	0.29	0.29	0.00	1
253.68	0.39	0.39	0.00	Overtopping

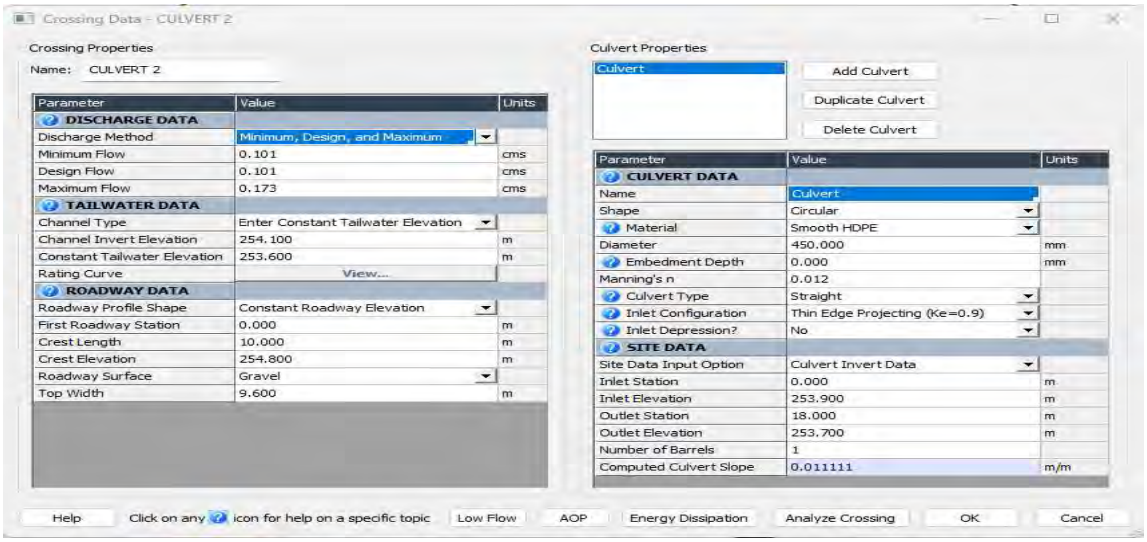


TATHAM ENGINEERING	Project:	4488 County Road 29	Date:	9/11/2024
	File No.:	523669	Designed by:	HY
	Subject:	Culvert 2 Hydraulic Calculation Check	Checked by:	GC

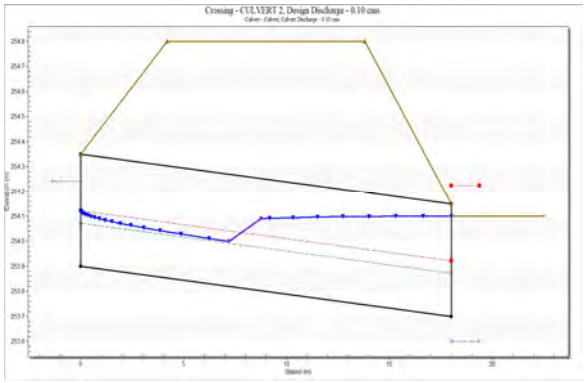
Description - Culvert 2 (Portion of Catchment 202, see south swale calculation)

Design Storms
100 year flow (m^3/s)
0.173

(VO6, 6 HR SCS STORM)



Headwater Elevation (m)	Total Discharge (cms)	Culvert Discharge (cms)	Roadway Discharge (cms)	Iterations
254.24	0.10	0.10	0.00	1
254.26	0.11	0.11	0.00	1
254.27	0.12	0.12	0.00	1
254.29	0.12	0.12	0.00	1
254.30	0.13	0.13	0.00	1
254.32	0.14	0.14	0.00	1
254.34	0.14	0.14	0.00	1
254.35	0.15	0.15	0.00	1
254.37	0.16	0.16	0.00	1
254.38	0.17	0.17	0.00	1
254.40	0.17	0.17	0.00	1
254.80	0.30	0.30	0.00	Overtopping



PRE CHI
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```
       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\edf014ea-8e2f-4caa-8ba4-532b1c7dade1\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\edf014ea-8e2f-4caa-8ba4-532b1c7dade1\scenario

DATE: 09/20/2024 TIME: 03:19:48

USER:

COMMENTS: _____

```
**********************************************
** SIMULATION : 1                            **
**********************************************
```

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= 31.93 mm ]
*
 ** CALIB NASHYD         0101  1  5.0    4.28    0.03  1.58   3.56 0.11   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.27]
*
 FINISH

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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
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  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\a5071a97-
95c3-4748-940e-0464ebfcdb31\scenario


DATE: 09/20/2024                          TIME: 03:19:47

USER:


COMMENTS: _____________________________________________________________
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```
  ***********************************************
  ** SIMULATION : 2                             **
  ***********************************************

  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= 42.98 mm ]
*
 ** CALIB NASHYD         0101  1  5.0    4.28    0.06  1.58   6.72 0.16   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.27]
*
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
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  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\d950ff37-
edfa-4619-b277-a6156e23fa9f\scenario
```

DATE: 09/20/2024 TIME: 03:19:47

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : 3                          **
  ********************************************

  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= 50.25 mm ]
*
 ** CALIB NASHYD         0101  1  5.0    4.28    0.08  1.58   9.23 0.18   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.27]
*
================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\dbc335df-
```

297f-4cac-905f-2a41d20bd76e\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\dbc335df-297f-4cac-905f-2a41d20bd76e\scenario

DATE: 09/20/2024   TIME: 03:19:47

USER:

COMMENTS: _____

  ****
  ** SIMULATION : 4   **
  ****

  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= 59.55 mm]
*
 ** CALIB NASHYD   0101 1 5.0   4.28   0.11 1.58 12.87 0.22   0.000
    [CN=59.0   ]
    [N = 3.0:Tp 0.27]
*
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       V   V   I   SSSSS U   U   A   L   (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\58138a1e-
a0bc-4843-92bc-867bebb4b3bc\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\58138a1e-
a0bc-4843-92bc-867bebb4b3bc\scenario


DATE: 09/20/2024                          TIME: 03:19:47

USER:


COMMENTS: _____________________________________________________________


  ********************************************
  ** SIMULATION : 5                          **
  ********************************************

  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= 66.27 mm ]
*
 ** CALIB NASHYD         0101  1  5.0    4.28    0.14  1.58  15.78 0.24   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.27]
*
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       V    V   I    SSSSS  U   U    A    L             (v 6.2.2015)
       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 6.2\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\43837a6e-0d28-4d31-ac2d-11c98199e071\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\43837a6e-0d28-4d31-ac2d-11c98199e071\scenario

DATE: 09/20/2024 TIME: 03:19:47

USER:

COMMENTS: _____

****
** SIMULATION : 6 **
****

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= 73.02 mm]								
*									
**	CALIB NASHYD	0101	1	5.0	4.28	0.17	1.58	18.91	0.26	0.000
	[CN=59.0]								
	[N = 3.0:Tp 0.27]								
*									

PRE SCS 6
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```
       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\f08f9556-10bc-4ceb-a1bb-a08e38cabc48\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\f08f9556-10bc-4ceb-a1bb-a08e38cabc48\scenario

DATE: 09/20/2024 TIME: 03:21:39

USER:

COMMENTS: _____

```
**********************************************
** SIMULATION : 1                           **
**********************************************
```

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= 38.70 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\795369de-345f-4ebe-ba2f-5cfe8b97f4c0\0a5062ff-03ce-4
fef-8577-c5c3c93
    remark: Peterborough SCS6 2yr

*
 ** CALIB NASHYD         0101  1  5.0    4.28    0.06  3.17   5.40 0.14   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.27]
*
 FINISH

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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\97910078-
b4e5-4576-ad5a-add875b09b23\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\97910078-
b4e5-4576-ad5a-add875b09b23\scenario


DATE: 09/20/2024                          TIME: 03:21:39
```

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : 2                          **
  ********************************************

  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= 52.40 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\795369de-345f-4ebe-ba2f-5cfe8b97f4c0\4298c358-f2d6-4
37c-9a84-241e822
    remark: Peterborough SCS6 5yr

*
 ** CALIB NASHYD         0101  1  5.0    4.28    0.12  3.17  10.03 0.19   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.27]
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\661d4077-
6ac6-4261-aaa1-be7f1d98ca7d\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\661d4077-
6ac6-4261-aaa1-be7f1d98ca7d\scenario


DATE: 09/20/2024                          TIME: 03:21:39

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  ********************************************
  ** SIMULATION : 3                          **
  ********************************************

  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= 61.50 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\795369de-345f-4ebe-ba2f-5cfe8b97f4c0\0298b90b-9515-4
160-a05f-20b52dc
    remark: Peterborough SCS6 10yr

*
 ** CALIB NASHYD         0101  1  5.0    4.28    0.16  3.17  13.69 0.22   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.27]
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\8f9c5f0b-
c1d9-43d4-b004-80b5983d8c74\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\8f9c5f0b-
c1d9-43d4-b004-80b5983d8c74\scenario


DATE: 09/20/2024                            TIME: 03:21:39

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  ************************************************
  ** SIMULATION : 4                              **
  ************************************************

  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= 72.90 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\795369de-345f-4ebe-ba2f-5cfe8b97f4c0\b2d8cc56-157a-4
adf-8b9a-8922f07
    remark: Peterborough SCS6 25yr

*
 ** CALIB NASHYD         0101  1  5.0    4.28    0.22  3.17  18.85 0.26   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.27]
*
```

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

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\1c5a1ae9-
aec8-410e-b283-763c1998fa5f\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\1c5a1ae9-
aec8-410e-b283-763c1998fa5f\scenario


DATE: 09/20/2024                           TIME: 03:21:39

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  ********************************************
  ** SIMULATION : 5                          **
  ********************************************

  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= 81.40 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\795369de-345f-4ebe-ba2f-5cfe8b97f4c0\fd7270bd-a7d0-4
dec-af71-e6330cc
    remark: Peterborough SCS6 50yr

*
 ** CALIB NASHYD         0101  1  5.0    4.28    0.27  3.17  23.07 0.28   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.27]
*
================================================================================
======================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\ad3fa909-
b432-46e5-bcac-bc52dba5fe74\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\ad3fa909-
b432-46e5-bcac-bc52dba5fe74\scenario


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```
  ********************************************
  ** SIMULATION : 6                          **
  ********************************************

  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= 89.90 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\795369de-345f-4ebe-ba2f-5cfe8b97f4c0\b8fd4286-826f-4
b04-93f1-e59a278
    remark: Peterborough SCS6 100yr

*
 ** CALIB NASHYD         0101  1  5.0    4.28    0.32  3.17  27.56 0.31   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.27]
*
```

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```
       V    V   I    SSSSS  U   U    A    L             (v 6.2.2015)
       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 6.2\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\11ae8ec6-ce0d-48c3-95db-5472697f739e\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\11ae8ec6-ce0d-48c3-95db-5472697f739e\scenario

DATE: 09/20/2024 TIME: 03:22:03

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```
**********************************************
** SIMULATION : 1                            **
**********************************************
```

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= 49.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\a3913cbf-fd48-4164-ae96-8d5fb28e98a6\03b7f323-97a3-4
aaf-8401-381ba2f
    remark: Peterborough SCS 24 2yr

*
 ** CALIB NASHYD         0101  1  5.0    4.28    0.07 12.17   8.77 0.18   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.27]
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\80b9046e-
0123-4298-8798-f73571a3b20b\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\80b9046e-
0123-4298-8798-f73571a3b20b\scenario


DATE: 09/20/2024                          TIME: 03:22:03

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COMMENTS: _____________________________________________________________
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```
  ********************************************
  ** SIMULATION : 2                          **
  ********************************************

  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= 65.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\a3913cbf-fd48-4164-ae96-8d5fb28e98a6\4a8cde72-c45e-4
fdb-a5f4-af208a5
    remark: Peterborough SCS 24 5yr

*
 ** CALIB NASHYD         0101  1  5.0    4.28    0.12 12.17  15.21 0.23   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.27]
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\5d712361-
eab6-4930-be15-5c50b6776d87\scenario
```

Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\5d712361-eab6-4930-be15-5c50b6776d87\scenario

DATE: 09/20/2024 TIME: 03:22:03

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```
  ********************************************
  ** SIMULATION : 3                          **
  ********************************************

  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= 75.60 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\a3913cbf-fd48-4164-ae96-8d5fb28e98a6\60f08d78-9ec0-4
d7e-b3a1-b1dc575
    remark: Peterborough SCS 24 10yr

*
 ** CALIB NASHYD         0101  1  5.0    4.28    0.17 12.17  20.16 0.27   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.27]
*
================================================================================
======================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\1de6fe3f-dea3-4264-9d7c-3da4eef72f5a\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\1de6fe3f-dea3-4264-9d7c-3da4eef72f5a\scenario

DATE: 09/20/2024 TIME: 03:22:03

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****
** SIMULATION : 4 **
****

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= 88.92 mm]								
	fname : C:\Users\hyu\AppData\Local\Temp\a3913cbf-fd48-4164-ae96-8d5fb28e98a6\99b5331e-77bd-4327-a8d1-f09caab								
	remark: Peterborough SCS 24 25yr								
*									
**	CALIB NASHYD	0101	1 5.0	4.28	0.23	12.17	27.03	0.30	0.000
	[CN=59.0]								
	[N = 3.0:Tp 0.27]								
*									

V V I SSSSS U U A L (v 6.2.2015)

```
       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 6.2\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\3270eb1a-c1f0-4791-b07d-2bb7dd18129c\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\3270eb1a-c1f0-4791-b07d-2bb7dd18129c\scenario

DATE: 09/20/2024 TIME: 03:22:03

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```
**********************************************
** SIMULATION : 5                            **
**********************************************
```

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= 98.92 mm]								
	fname : C:\Users\hyu\AppData\Local\Temp\a3913cbf-fd48-4164-ae96-8d5fb28e98a6\6c7598b2-9944-4f26-ba80-e8c471c								
	remark: Peterborough SCS 24 50yr								

```
*
 ** CALIB NASHYD         0101  1  5.0    4.28    0.27 12.17  32.60 0.33   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.27]
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\a7d99db5-
25e0-45a8-a562-183ea644b1ab\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\a7d99db5-
25e0-45a8-a562-183ea644b1ab\scenario


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  ********************************************
  ** SIMULATION : 6                          **
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```

```
  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=108.68 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\a3913cbf-fd48-4164-ae96-8d5fb28e98a6\12b334c1-9449-4
c7b-bee4-18bb033
    remark: Peterborough SCS 24 100yr

*
 ** CALIB NASHYD         0101  1  5.0    4.28    0.32 12.17  38.34 0.35   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.27]
*
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```
       V    V   I    SSSSS  U   U    A    L             (v 6.2.2015)
       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 6.2\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\9bb7a644-808a-40c4-861a-d50a1e12183b\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\9bb7a644-808a-40c4-861a-d50a1e12183b\scenario

DATE: 09/20/2024 TIME: 03:22:33

USER:

COMMENTS: _____

****
** SIMULATION : 1 **
****

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= 31.93 mm ]
*
 ** CALIB NASHYD         0301  1  5.0    2.03    0.01  1.67   3.56 0.11   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    CHIC STORM                10.0
    [ Ptot= 31.93 mm ]
*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.07  1.33  18.32 0.57   0.000
    [I%=54.0:S%= 2.00]
*
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.08  1.33   7.35  n/a   0.000
*
    CHIC STORM                10.0
    [ Ptot= 31.93 mm ]
*
 *  CALIB NASHYD         0201  1  5.0    2.03    0.01  1.67   3.56 0.11   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    CHIC STORM                10.0
    [ Ptot= 31.93 mm ]
*
 *  CALIB NASHYD         0203  1  5.0    0.93    0.01  1.50   3.56 0.11   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.21]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.02  1.58   3.56  n/a   0.000
*
    CHIC STORM                10.0
    [ Ptot= 31.93 mm ]
*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.10  1.33  15.54 0.49   0.000
    [I%=41.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.01  1.25  15.47  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.03  1.58   7.24  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2015)
       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 6.2\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\44a96805-01a2-4332-b20e-35a430fdf936\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\44a96805-01a2-4332-b20e-35a430fdf936\scenario

DATE: 09/20/2024 TIME: 03:22:32

USER:

COMMENTS: _____

****
** SIMULATION : 2 **
****

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= 42.98 mm]								
*									
**	CALIB NASHYD	0301	1 5.0	2.03	0.03	1.58	6.72	0.16	0.000
	[CN=59.0]								
	[N = 3.0:Tp 0.28]								
*									
	CHIC STORM		10.0						
	[Ptot= 42.98 mm]								

```
*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.10  1.33  25.74 0.60   0.000
    [I%=54.0:S%= 2.00]
*
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.11  1.33  11.60  n/a   0.000
*
    CHIC STORM                10.0
    [ Ptot= 42.98 mm ]
*
 *  CALIB NASHYD         0201  1  5.0    2.03    0.03  1.58   6.72 0.16   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    CHIC STORM                10.0
    [ Ptot= 42.98 mm ]
*
 *  CALIB NASHYD         0203  1  5.0    0.93    0.01  1.50   6.71 0.16   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.21]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.04  1.58   6.72  n/a   0.000
*
    CHIC STORM                10.0
    [ Ptot= 42.98 mm ]
*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.14  1.33  22.41 0.52   0.000
    [I%=41.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.02  2.33  22.35  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.05  1.58  11.54  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2015)
       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 6.2\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\2acc7867-5d86-42b3-9e04-7d40269b824d\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\2acc7867-5d86-42b3-9e04-7d40269b824d\scenario

DATE: 09/20/2024 TIME: 03:22:32

USER:

COMMENTS: _____

****
** SIMULATION : 3 **
****

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= 50.25 mm]								
*									
**	CALIB NASHYD	0301	1 5.0	2.03	0.04	1.58	9.23	0.18	0.000
	[CN=59.0]								
	[N = 3.0:Tp 0.28]								
*									
	CHIC STORM		10.0						
	[Ptot= 50.25 mm]								
*									
*	CALIB STANDHYD	0300	1 5.0	0.70	0.11	1.33	30.82	0.61	0.000
	[I%=54.0:S%= 2.00]								
*									
	ADD [0300+ 0301]	0097	3 5.0	2.73	0.13	1.33	14.76	n/a	0.000
*									
	CHIC STORM		10.0						
	[Ptot= 50.25 mm]								
*									

```
 *  CALIB NASHYD         0201  1  5.0    2.03    0.04  1.58   9.23 0.18   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    CHIC STORM                10.0
    [ Ptot= 50.25 mm ]
*
 *  CALIB NASHYD         0203  1  5.0    0.93    0.02  1.50   9.22 0.18   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.21]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.06  1.58   9.22  n/a   0.000
*
    CHIC STORM                10.0
    [ Ptot= 50.25 mm ]
*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.17  1.33  27.21 0.54   0.000
    [I%=41.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.03  2.00  27.14  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.07  1.67  14.75  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\4dafd6b6-
```

8cad-4bde-9856-f7bc5d3d0f53\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\4dafd6b6-8cad-4bde-9856-f7bc5d3d0f53\scenario

DATE: 09/20/2024 TIME: 03:22:32

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : 4                         **
  ********************************************

  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= 59.55 mm ]
*
 ** CALIB NASHYD         0301  1  5.0    2.03    0.05  1.58  12.87 0.22   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    CHIC STORM                10.0
    [ Ptot= 59.55 mm ]
*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.13  1.33  37.52 0.63   0.000
    [I%=54.0:S%= 2.00]
*
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.16  1.33  19.19  n/a   0.000
*
    CHIC STORM                10.0
    [ Ptot= 59.55 mm ]
*
 *  CALIB NASHYD         0201  1  5.0    2.03    0.05  1.58  12.87 0.22   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    CHIC STORM                10.0
    [ Ptot= 59.55 mm ]
*
 *  CALIB NASHYD         0203  1  5.0    0.93    0.03  1.50  12.86 0.22   0.000
    [CN=59.0         ]
```

```
    [ N = 3.0:Tp 0.21]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.08  1.58  12.87  n/a   0.000
*
    CHIC STORM                10.0
    [ Ptot= 59.55 mm ]
*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.20  1.33  33.63 0.56   0.000
    [I%=41.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.04  1.92  33.56  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.11  1.58  19.25  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\f6d0306b-
b565-463b-a18e-0f33cde098ba\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\f6d0306b-
b565-463b-a18e-0f33cde098ba\scenario


DATE: 09/20/2024                          TIME: 03:22:33

USER:
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COMMENTS: _____

```
  ********************************************
  ** SIMULATION : 5                          **
  ********************************************

  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= 66.27 mm ]
*
 ** CALIB NASHYD         0301  1  5.0    2.03    0.07  1.58  15.78 0.24   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    CHIC STORM                10.0
    [ Ptot= 66.27 mm ]
*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.15  1.33  42.50 0.64   0.000
    [I%=54.0:S%= 2.00]
*
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.18  1.33  22.63  n/a   0.000
*
    CHIC STORM                10.0
    [ Ptot= 66.27 mm ]
*
 *  CALIB NASHYD         0201  1  5.0    2.03    0.07  1.58  15.78 0.24   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    CHIC STORM                10.0
    [ Ptot= 66.27 mm ]
*
 *  CALIB NASHYD         0203  1  5.0    0.93    0.04  1.50  15.76 0.24   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.21]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.10  1.58  15.77  n/a   0.000
*
    CHIC STORM                10.0
    [ Ptot= 66.27 mm ]
*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.23  1.33  38.44 0.58   0.000
    [I%=41.0:S%= 2.00]
```

```
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.05  1.83  38.37  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.14  1.58  22.74  n/a   0.000
*
 FINISH

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

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


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\75520c57-
8278-4be8-ac4e-a496b3e834f1\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\75520c57-
8278-4be8-ac4e-a496b3e834f1\scenario


DATE: 09/20/2024                          TIME: 03:22:33

USER:


COMMENTS: _____________________________________________________________
```

```
  ************************************************
  ** SIMULATION : 6                              **
  ************************************************

  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= 73.02 mm ]
*
 ** CALIB NASHYD         0301  1  5.0    2.03    0.08  1.58  18.91 0.26   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    CHIC STORM                10.0
    [ Ptot= 73.02 mm ]
*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.17  1.33  47.58 0.65   0.000
    [I%=54.0:S%= 2.00]
*
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.20  1.33  26.26  n/a   0.000
*
    CHIC STORM                10.0
    [ Ptot= 73.02 mm ]
*
 *  CALIB NASHYD         0201  1  5.0    2.03    0.08  1.58  18.91 0.26   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    CHIC STORM                10.0
    [ Ptot= 73.02 mm ]
*
 *  CALIB NASHYD         0203  1  5.0    0.93    0.04  1.50  18.89 0.26   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.21]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.12  1.58  18.90  n/a   0.000
*
    CHIC STORM                10.0
    [ Ptot= 73.02 mm ]
*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.25  1.33  43.38 0.59   0.000
    [I%=41.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.05  1.83  43.32  n/a   0.000
*
```

```
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.17  1.58  26.43  n/a   0.000
*
```

POST SCS 6
==
======================

```
       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\f1b89b04-548b-489f-a46c-4392a5b29cde\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\f1b89b04-548b-489f-a46c-4392a5b29cde\scenario

DATE: 09/20/2024 TIME: 03:23:06

USER:

COMMENTS: _____

****
** SIMULATION : 1 **
****

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= 38.70 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\0a5062ff-03ce-4
fef-8577-c5c3c93
    remark: Peterborough SCS6 2yr

*
 ** CALIB NASHYD         0203  1  5.0    0.93    0.02  3.08   5.39 0.14   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.21]
*
    READ STORM                  5.0
    [ Ptot= 38.70 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\0a5062ff-03ce-4
fef-8577-c5c3c93
    remark: Peterborough SCS6 2yr

*
 ** CALIB NASHYD         0201  1  5.0    2.03    0.03  3.17   5.40 0.14   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.04  3.17   5.40  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 38.70 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\0a5062ff-03ce-4
fef-8577-c5c3c93
    remark: Peterborough SCS6 2yr

*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.10  3.00  19.68 0.51   0.000
    [I%=41.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.01  3.92  19.62  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.05  3.17   9.78  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 38.70 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\0a5062ff-03ce-4
fef-8577-c5c3c93
    remark: Peterborough SCS6 2yr

*
```

```
 *  CALIB NASHYD         0301  1  5.0    2.03    0.03  3.17   5.40 0.14   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    READ STORM                  5.0
    [ Ptot= 38.70 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\0a5062ff-03ce-4
fef-8577-c5c3c93
    remark: Peterborough SCS6 2yr

*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.07  3.00  22.82 0.59   0.000
    [I%=54.0:S%= 2.00]
*
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.09  3.00   9.87  n/a   0.000
*
 FINISH

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

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


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\a634ced6-
a71d-4859-9490-d4913a0b52d8\scenario
  Summary filename:
```

C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\a634ced6-a71d-4859-9490-d4913a0b52d8\scenario

DATE: 09/20/2024 TIME: 03:23:06

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : 2                         **
  ********************************************

  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= 52.40 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\4298c358-f2d6-437c-9a84-241e822
    remark: Peterborough SCS6 5yr

*
 ** CALIB NASHYD         0203  1  5.0    0.93    0.03  3.08  10.02 0.19   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.21]
*
    READ STORM                  5.0
    [ Ptot= 52.40 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\4298c358-f2d6-437c-9a84-241e822
    remark: Peterborough SCS6 5yr

*
 ** CALIB NASHYD         0201  1  5.0    2.03    0.05  3.17  10.03 0.19   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.08  3.17  10.03  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 52.40 mm ]
    fname :
```

```
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\4298c358-f2d6-4
37c-9a84-241e822
    remark: Peterborough SCS6 5yr

*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.15  3.00  28.67 0.55   0.000
    [I%=41.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.03  3.42  28.61  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.11  3.17  15.76  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 52.40 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\4298c358-f2d6-4
37c-9a84-241e822
    remark: Peterborough SCS6 5yr

*
 *  CALIB NASHYD         0301  1  5.0    2.03    0.05  3.17  10.03 0.19   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    READ STORM                  5.0
    [ Ptot= 52.40 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\4298c358-f2d6-4
37c-9a84-241e822
    remark: Peterborough SCS6 5yr

*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.09  3.00  32.36 0.62   0.000
    [I%=54.0:S%= 2.00]
*
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.13  3.00  15.75  n/a   0.000
*
================================================================================
======================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\3053f406-5e3c-45bb-bab5-fa1ddadbe93d\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\3053f406-5e3c-45bb-bab5-fa1ddadbe93d\scenario

DATE: 09/20/2024 TIME: 03:23:05

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : 3                          **
  ********************************************

  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= 61.50 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\0298b90b-9515-4160-a05f-20b52dc
    remark: Peterborough SCS6 10yr

*
 ** CALIB NASHYD         0203  1  5.0    0.93    0.04  3.08  13.68 0.22   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.21]
*
    READ STORM                  5.0
```

```
    [ Ptot= 61.50 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\0298b90b-9515-4
160-a05f-20b52dc
    remark: Peterborough SCS6 10yr

*
 ** CALIB NASHYD         0201  1  5.0    2.03    0.07  3.17  13.69 0.22   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.11  3.17  13.69  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 61.50 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\0298b90b-9515-4
160-a05f-20b52dc
    remark: Peterborough SCS6 10yr

*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.18  3.00  35.01 0.57   0.000
    [I%=41.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.05  3.33  34.94  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.15  3.17  20.24  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 61.50 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\0298b90b-9515-4
160-a05f-20b52dc
    remark: Peterborough SCS6 10yr

*
 *  CALIB NASHYD         0301  1  5.0    2.03    0.07  3.17  13.69 0.22   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    READ STORM                  5.0
    [ Ptot= 61.50 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\0298b90b-9515-4
160-a05f-20b52dc
    remark: Peterborough SCS6 10yr

*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.11  3.00  38.96 0.63   0.000
```

```
    [I%=54.0:S%= 2.00]
*
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.17  3.00  20.17  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\a8264c02-
aa12-485a-952e-4f102ce842d5\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\a8264c02-
aa12-485a-952e-4f102ce842d5\scenario


DATE: 09/20/2024                            TIME: 03:23:06

USER:


COMMENTS: _____________________________________________________________


  ********************************************
  ** SIMULATION : 4                          **
  ********************************************

  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= 72.90 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\b2d8cc56-157a-4
adf-8b9a-8922f07
    remark: Peterborough SCS6 25yr

*
 ** CALIB NASHYD         0203  1  5.0    0.93    0.06  3.08  18.83 0.26   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.21]
*
    READ STORM                  5.0
    [ Ptot= 72.90 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\b2d8cc56-157a-4
adf-8b9a-8922f07
    remark: Peterborough SCS6 25yr

*
 ** CALIB NASHYD         0201  1  5.0    2.03    0.10  3.17  18.85 0.26   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.15  3.17  18.85  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 72.90 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\b2d8cc56-157a-4
adf-8b9a-8922f07
    remark: Peterborough SCS6 25yr

*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.22  3.00  43.30 0.59   0.000
    [I%=41.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.06  3.33  43.23  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.21  3.17  26.37  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 72.90 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\b2d8cc56-157a-4
adf-8b9a-8922f07
```

```
    remark: Peterborough SCS6 25yr

*
 *  CALIB NASHYD         0301  1  5.0    2.03    0.10  3.17  18.85 0.26   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    READ STORM                  5.0
    [ Ptot= 72.90 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\b2d8cc56-157a-4
adf-8b9a-8922f07
    remark: Peterborough SCS6 25yr

*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.14  3.00  47.49 0.65   0.000
    [I%=54.0:S%= 2.00]
*
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.21  3.00  26.20  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\4261f5c2-
4353-4846-904d-ad4c327ca990\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\4261f5c2-
4353-4846-904d-ad4c327ca990\scenario
```

DATE: 09/20/2024 TIME: 03:23:05

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : 5                          **
  ********************************************

  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= 81.40 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\fd7270bd-a7d0-4
dec-af71-e6330cc
    remark: Peterborough SCS6 50yr

*
 ** CALIB NASHYD         0203  1  5.0    0.93    0.07  3.08  23.04 0.28   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.21]
*
    READ STORM                  5.0
    [ Ptot= 81.40 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\fd7270bd-a7d0-4
dec-af71-e6330cc
    remark: Peterborough SCS6 50yr

*
 ** CALIB NASHYD         0201  1  5.0    2.03    0.13  3.17  23.07 0.28   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.19  3.08  23.06  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 81.40 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\fd7270bd-a7d0-4
dec-af71-e6330cc
```

```
    remark: Peterborough SCS6 50yr

*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.26  3.00  49.69 0.61   0.000
    [I%=41.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.07  3.33  49.63  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.25  3.17  31.25  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 81.40 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\fd7270bd-a7d0-4
dec-af71-e6330cc
    remark: Peterborough SCS6 50yr

*
 *  CALIB NASHYD         0301  1  5.0    2.03    0.13  3.17  23.07 0.28   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    READ STORM                  5.0
    [ Ptot= 81.40 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\fd7270bd-a7d0-4
dec-af71-e6330cc
    remark: Peterborough SCS6 50yr

*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.15  3.00  54.02 0.66   0.000
    [I%=54.0:S%= 2.00]
*
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.25  3.00  31.00  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\d2f0d2e1-4598-4c66-818f-2a8f35c1b182\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\d2f0d2e1-4598-4c66-818f-2a8f35c1b182\scenario

DATE: 09/20/2024 TIME: 03:23:06

USER:

COMMENTS: _____

****
** SIMULATION : 6 **
****

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= 89.90 mm]								
	fname : C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\b8fd4286-826f-4b04-93f1-e59a278								
	remark: Peterborough SCS6 100yr								
*									
**	CALIB NASHYD	0203 1	5.0	0.93	0.08	3.08	27.53	0.31	0.000
	[CN=59.0]								
	[N = 3.0:Tp 0.21]								
*									
	READ STORM	5.0							
	[Ptot= 89.90 mm]								
	fname :								

```
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\b8fd4286-826f-4
b04-93f1-e59a278
    remark: Peterborough SCS6 100yr

*
 ** CALIB NASHYD         0201  1  5.0    2.03    0.15  3.17  27.56 0.31   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.23  3.08  27.55  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 89.90 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\b8fd4286-826f-4
b04-93f1-e59a278
    remark: Peterborough SCS6 100yr

*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.31  3.00  56.26 0.63   0.000
    [I%=41.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.07  3.33  56.19  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.30  3.17  36.38  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 89.90 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\b8fd4286-826f-4
b04-93f1-e59a278
    remark: Peterborough SCS6 100yr

*
 *  CALIB NASHYD         0301  1  5.0    2.03    0.15  3.17  27.56 0.31   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    READ STORM                  5.0
    [ Ptot= 89.90 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\22549092-24fa-4e97-96ec-7aac5e4b574b\b8fd4286-826f-4
b04-93f1-e59a278
    remark: Peterborough SCS6 100yr

*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.17  3.00  60.68 0.67   0.000
    [I%=54.0:S%= 2.00]
*
```

```
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.29  3.00  36.05  n/a   0.000
*
```

POST SCS 24
==
======================

```
       V    V   I    SSSSS  U   U    A    L             (v 6.2.2015)
       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 6.2\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\4a15dda3-e527-494e-99e3-7a69bdead470\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\4a15dda3-e527-494e-99e3-7a69bdead470\scenario

DATE: 09/20/2024 TIME: 03:23:24

USER:

COMMENTS: _____

```
**********************************************
** SIMULATION : 1                            **
**********************************************
```

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= 49.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\03b7f323-97a3-4
aaf-8401-381ba2f
    remark: Peterborough SCS 24 2yr

*
 ** CALIB NASHYD         0203  1  5.0    0.93    0.02 12.08   8.77 0.18   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.21]
*
    READ STORM                  5.0
    [ Ptot= 49.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\03b7f323-97a3-4
aaf-8401-381ba2f
    remark: Peterborough SCS 24 2yr

*
 ** CALIB NASHYD         0201  1  5.0    2.03    0.03 12.17   8.77 0.18   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.05 12.08   8.77  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 49.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\03b7f323-97a3-4
aaf-8401-381ba2f
    remark: Peterborough SCS 24 2yr

*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.09 12.00  26.37 0.54   0.000
    [I%=41.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.01 13.00  26.31  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.06 12.08  14.18  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 49.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\03b7f323-97a3-4
aaf-8401-381ba2f
    remark: Peterborough SCS 24 2yr

*
```

```
 *  CALIB NASHYD         0301  1  5.0    2.03    0.03 12.17   8.77 0.18   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    READ STORM                  5.0
    [ Ptot= 49.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\03b7f323-97a3-4
aaf-8401-381ba2f
    remark: Peterborough SCS 24 2yr

*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.06 12.00  29.94 0.61   0.000
    [I%=54.0:S%= 2.00]
*
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.09 12.00  14.20  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\cce859a0-
6ec5-49c9-b3aa-a4f2f1a2d2ea\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\cce859a0-
6ec5-49c9-b3aa-a4f2f1a2d2ea\scenario


DATE: 09/20/2024                          TIME: 03:23:24
```

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : 2                          **
  ********************************************

  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= 65.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\4a8cde72-c45e-4
fdb-a5f4-af208a5
    remark: Peterborough SCS 24 5yr

*
 ** CALIB NASHYD         0203  1  5.0    0.93    0.03 12.08  15.20 0.23   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.21]
*
    READ STORM                   5.0
    [ Ptot= 65.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\4a8cde72-c45e-4
fdb-a5f4-af208a5
    remark: Peterborough SCS 24 5yr

*
 ** CALIB NASHYD         0201  1  5.0    2.03    0.06 12.17  15.22 0.23   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.09 12.08  15.21  n/a   0.000
*
    READ STORM                   5.0
    [ Ptot= 65.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\4a8cde72-c45e-4
fdb-a5f4-af208a5
    remark: Peterborough SCS 24 5yr

*
```

```
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.14 12.00  37.52 0.58   0.000
    [I%=41.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.03 12.42  37.45  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.11 12.17  22.07  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 65.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\4a8cde72-c45e-4
fdb-a5f4-af208a5
    remark: Peterborough SCS 24 5yr

*
 *  CALIB NASHYD         0301  1  5.0    2.03    0.06 12.17  15.22 0.23   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    READ STORM                  5.0
    [ Ptot= 65.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\4a8cde72-c45e-4
fdb-a5f4-af208a5
    remark: Peterborough SCS 24 5yr

*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.08 12.00  41.55 0.64   0.000
    [I%=54.0:S%= 2.00]
*
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.13 12.00  21.97  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\37b17f84-dc0e-4a89-81a0-a6df1cfd7b06\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\37b17f84-dc0e-4a89-81a0-a6df1cfd7b06\scenario

DATE: 09/20/2024 TIME: 03:23:23

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : 3                          **
  ********************************************

  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= 75.60 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\60f08d78-9ec0-4d7e-b3a1-b1dc575
    remark: Peterborough SCS 24 10yr

*
 ** CALIB NASHYD         0203  1  5.0    0.93    0.04 12.08  20.14 0.27   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.21]
*
    READ STORM                  5.0
    [ Ptot= 75.60 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\60f08d78-9ec0-4d7e-b3a1-b1dc575
    remark: Peterborough SCS 24 10yr
```

```
*
 ** CALIB NASHYD         0201  1  5.0    2.03    0.08 12.17  20.16 0.27   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.12 12.08  20.15  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 75.60 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\60f08d78-9ec0-4
d7e-b3a1-b1dc575
    remark: Peterborough SCS 24 10yr

*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.16 12.00  45.31 0.60   0.000
    [I%=41.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.04 12.33  45.25  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.16 12.17  27.89  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 75.60 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\60f08d78-9ec0-4
d7e-b3a1-b1dc575
    remark: Peterborough SCS 24 10yr

*
 *  CALIB NASHYD         0301  1  5.0    2.03    0.08 12.17  20.16 0.27   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    READ STORM                  5.0
    [ Ptot= 75.60 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\60f08d78-9ec0-4
d7e-b3a1-b1dc575
    remark: Peterborough SCS 24 10yr

*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.10 12.00  49.55 0.66   0.000
    [I%=54.0:S%= 2.00]
*
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.16 12.00  27.70  n/a   0.000
*
================================================================================
```

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


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\4b7da5f2-
63b6-4a18-977d-e20fb0b0b8f9\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\4b7da5f2-
63b6-4a18-977d-e20fb0b0b8f9\scenario


DATE: 09/20/2024                          TIME: 03:23:24

USER:


COMMENTS: _____________________________________________________________


  ********************************************
  ** SIMULATION : 4                          **
  ********************************************

  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= 88.92 mm ]
```

```
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\99b5331e-77bd-4
327-a8d1-f09caab
    remark: Peterborough SCS 24 25yr

*
 ** CALIB NASHYD         0203  1  5.0    0.93    0.06 12.08  27.00 0.30   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.21]
*
    READ STORM                  5.0
    [ Ptot= 88.92 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\99b5331e-77bd-4
327-a8d1-f09caab
    remark: Peterborough SCS 24 25yr

*
 ** CALIB NASHYD         0201  1  5.0    2.03    0.10 12.17  27.03 0.30   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.16 12.08  27.02  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 88.92 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\99b5331e-77bd-4
327-a8d1-f09caab
    remark: Peterborough SCS 24 25yr

*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.20 12.00  55.49 0.62   0.000
    [I%=41.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.05 12.33  55.43  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.21 12.08  35.78  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 88.92 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\99b5331e-77bd-4
327-a8d1-f09caab
    remark: Peterborough SCS 24 25yr

*
 *  CALIB NASHYD         0301  1  5.0    2.03    0.10 12.17  27.03 0.30   0.000
    [CN=59.0         ]
```

```
    [ N = 3.0:Tp 0.28]
*
    READ STORM                  5.0
    [ Ptot= 88.92 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\99b5331e-77bd-4
327-a8d1-f09caab
    remark: Peterborough SCS 24 25yr

*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.12 12.00  59.91 0.67   0.000
    [I%=54.0:S%= 2.00]
*
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.20 12.00  35.46  n/a   0.000
*
================================================================================
=======================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\dd77bf7e-
0bd5-4ca3-86be-ddc15ca49e12\scenario
  Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\dd77bf7e-
0bd5-4ca3-86be-ddc15ca49e12\scenario


DATE: 09/20/2024                          TIME: 03:23:24

USER:
```

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : 5                          **
  ********************************************

  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= 98.92 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\6c7598b2-9944-4
f26-ba80-e8c471c
    remark: Peterborough SCS 24 50yr

*
 ** CALIB NASHYD         0203  1  5.0    0.93    0.07 12.08  32.57 0.33   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.21]
*
    READ STORM                   5.0
    [ Ptot= 98.92 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\6c7598b2-9944-4
f26-ba80-e8c471c
    remark: Peterborough SCS 24 50yr

*
 ** CALIB NASHYD         0201  1  5.0    2.03    0.13 12.17  32.60 0.33   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.20 12.08  32.59  n/a   0.000
*
    READ STORM                   5.0
    [ Ptot= 98.92 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\6c7598b2-9944-4
f26-ba80-e8c471c
    remark: Peterborough SCS 24 50yr

*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.23 12.00  63.37 0.64   0.000
    [I%=41.0:S%= 2.00]
```

```
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.06 12.33  63.31  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.25 12.08  42.07  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 98.92 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\6c7598b2-9944-4
f26-ba80-e8c471c
    remark: Peterborough SCS 24 50yr

*
 *  CALIB NASHYD         0301  1  5.0    2.03    0.13 12.17  32.60 0.33   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    READ STORM                  5.0
    [ Ptot= 98.92 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\6c7598b2-9944-4
f26-ba80-e8c471c
    remark: Peterborough SCS 24 50yr

*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.14 12.00  67.87 0.69   0.000
    [I%=54.0:S%= 2.00]
*
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.24 12.00  41.65  n/a   0.000
*
 FINISH

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

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


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\d3f0ba18-e387-45cf-bcd3-f3bab2fddb57\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\d3f0ba18-e387-45cf-bcd3-f3bab2fddb57\scenario

DATE: 09/20/2024 TIME: 03:23:24

USER:

COMMENTS: _____

****
** SIMULATION : 6 **
****

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=108.68 mm]								
	fname : C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\12b334c1-9449-4c7b-bee4-18bb033								
	remark: Peterborough SCS 24 100yr								
*									
**	CALIB NASHYD	0203 1	5.0	0.93	0.08	12.08	38.30	0.35	0.000
	[CN=59.0]								
	[N = 3.0:Tp 0.21]								
*									
	READ STORM	5.0							
	[Ptot=108.68 mm]								
	fname :								

```
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\12b334c1-9449-4
c7b-bee4-18bb033
    remark: Peterborough SCS 24 100yr

*
 ** CALIB NASHYD         0201  1  5.0    2.03    0.15 12.17  38.35 0.35   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    ADD [  0201+  0203]  0099  3  5.0    2.96    0.23 12.08  38.33  n/a   0.000
*
    READ STORM                   5.0
    [ Ptot=108.68 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\12b334c1-9449-4
c7b-bee4-18bb033
    remark: Peterborough SCS 24 100yr

*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.28 12.00  71.24 0.66   0.000
    [I%=41.0:S%= 2.00]
*
 ** Reservoir
    OUTFLOW:             0101  1  5.0    1.32    0.07 12.25  71.17  n/a   0.000
*
    ADD [  0101+  0099]  0100  3  5.0    4.28    0.30 12.08  48.46  n/a   0.000
*
    READ STORM                   5.0
    [ Ptot=108.68 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\12b334c1-9449-4
c7b-bee4-18bb033
    remark: Peterborough SCS 24 100yr

*
 *  CALIB NASHYD         0301  1  5.0    2.03    0.15 12.17  38.35 0.35   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 0.28]
*
    READ STORM                   5.0
    [ Ptot=108.68 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\1a178655-d737-456b-8a91-e09aa6c58b19\12b334c1-9449-4
c7b-bee4-18bb033
    remark: Peterborough SCS 24 100yr

*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.15 12.00  75.79 0.70   0.000
    [I%=54.0:S%= 2.00]
*
```

```
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.27 12.00  47.95  n/a   0.000
*
```

REGIONAL
==
======================

```
       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       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 6.2\VO2\voin.dat

Output filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\666657de-d981-440a-9a70-24b3453cadd8\scenario
Summary filename:
C:\Users\hyu\AppData\Local\Civica\VH5\8748c4e4-abe2-4707-83c6-2ead1231dcb1\666657de-d981-440a-9a70-24b3453cadd8\scenario

DATE: 09/20/2024 TIME: 03:24:36

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : Timmins                    **
  ********************************************

  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                12.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\d54a9589-cb7b-4873-aa6a-540548c119f4\56ae2050-65c9-4
c12-8504-1c539fe
    remark: Timmins

*
 ** CALIB NASHYD         0201  1  5.0    2.03    0.19  7.00 131.71 0.68   0.000
    [CN=76.0         ]
    [ N = 3.0:Tp 0.28]
*
    READ STORM                12.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\d54a9589-cb7b-4873-aa6a-540548c119f4\56ae2050-65c9-4
c12-8504-1c539fe
    remark: Timmins

*
 ** CALIB NASHYD         0203  1  5.0    0.93    0.09  7.00 131.57 0.68   0.000
    [CN=76.0         ]
    [ N = 3.0:Tp 0.21]
*
    READ STORM                12.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\d54a9589-cb7b-4873-aa6a-540548c119f4\56ae2050-65c9-4
c12-8504-1c539fe
    remark: Timmins

*
 *  CALIB STANDHYD       0202  1  5.0    1.32    0.14  7.00 163.06 0.84   0.000
    [I%=41.0:S%= 2.00]
*
    ADD [  0201+  0202]  0099  3  5.0    3.35    0.33  7.00 144.06  n/a   0.000
*
    ADD [  0099+  0203]  0099  1  5.0    4.28    0.42  7.00 141.35  n/a   0.000
*
    READ STORM                12.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\d54a9589-cb7b-4873-aa6a-540548c119f4\56ae2050-65c9-4
c12-8504-1c539fe
    remark: Timmins

*
 *  CALIB NASHYD         0301  1  5.0    2.03    0.19  7.00 131.71 0.68   0.000
    [CN=76.0         ]
    [ N = 3.0:Tp 0.28]
```

```
*
    READ STORM                 12.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\d54a9589-cb7b-4873-aa6a-540548c119f4\56ae2050-65c9-4
c12-8504-1c539fe
    remark: Timmins

*
 *  CALIB STANDHYD       0300  1  5.0    0.70    0.08  7.00 164.29 0.85   0.000
    [I%=54.0:S%= 2.00]
*
    ADD [  0300+  0301]  0097  3  5.0    2.73    0.26  7.00 140.06  n/a   0.000
*
    READ STORM                 12.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\hyu\AppData\Local\Temp\d54a9589-cb7b-4873-aa6a-540548c119f4\56ae2050-65c9-4
c12-8504-1c539fe
    remark: Timmins

*
 *  CALIB NASHYD         0101  1  5.0    4.28    0.40  7.00 131.70 0.68   0.000
    [CN=76.0         ]
    [ N = 3.0:Tp 0.27]
*
 FINISH

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