TATHAM ENGINEERING

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796060 Grey Road 19

PRELIMINARY STORMWATER MANAGEMENT REPORT

2483302 Ontario Inc.

File 123143 | February 5, 2026

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Prepared by:

Tatham Engineering Limited
115 Sandford Fleming Drive, Suite 200
Collingwood, Ontario L9Y 5A6

T 705-444-2565
tathameng.com

Prepared for:

2483302 Ontario Inc.
156 Jozo Weider Blvd., Unit 9B
The Blue Mountains, Ontario L9Y 0V2

Authored by:	Reviewed by:
	
Patrick Walsh, B.A.Sc Engineering Candidate - Water Resources	Randy Simpson, B.A.Sc., P.Eng. Manager – Land Development

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Issue	Date	Description
0	September 19, 2025	DRAFT for Client Review
1	February 5, 2026	1st Submission

Document Contents

Tables

Appendices

1 Introduction

Tatham Engineering Limited (Tatham) has been retained by 2483302 Ontario Inc. (Owner) to complete a Preliminary Stormwater Management (SWM) Report in support of an Official Plan Amendment (OPA) for the proposed development located at 796060 Grey Road 19 in the Town of The Blue Mountains.

1.1 SITE DESCRIPTION

The proposed development is legally described as Part of Lot 63, Registrar's Compiled Plan 950, Part 1, Plan 16R-2789. Municipally, it is identified as 796060 Grey Road 19, Town of The Blue Mountains, Grey County. The site is bound by Grey Road 19 and existing low density residential properties to the north, existing low density residential properties and undeveloped lands to the east and west, and undeveloped lands to the south. The subject property is approximately 9.9 ha in total area and comprised of undeveloped lands consisting of wooded, open space and agricultural areas. A tributary of Silver Creek flows through the site from southwest to northeast.

1.2 OBJECTIVES

The purpose of this report is to address the requirements of the Town of The Blue Mountains, Nottawasaga Valley Conservation Authority (NVCA), and the Ministry of Environment, Conservation and Parks (MECP) with respect to the relevant SWM design criteria and ultimately ensure the project is appropriately developed to minimize the impact on the downstream drainage system. Requisite criteria, hydrologic assessment methodology, and the results are summarized in the following sections.

1.3 BACKGROUND AND GUIDELINES

The Proposed SWM plan was developed recognizing the Municipal and Provincial guidelines on municipal design, water resources, and the environment as well as other reports prepared in support of the proposed development including the following:

- Ministry of Environment, Conservation and Parks (MECP), formerly the Ministry of the Environment (MOE), *Stormwater Management Practices and Design Manual* 2003;
- Nottawasaga Valley Conservation Authority (NVCA), *Stormwater Technical Guide*: December 2013;
- Town of The Blue Mountains, *Engineering Standards*: May 29, 2023;
- *Town of The Blue Mountains Drainage Master Plan.* Tatham Engineering Limited. (2023);

- *Preliminary Geotechnical Investigation, Proposed New Development, Lot 15, Concession 1, South of Grey Road 19 & Crosswinds Blvd, Town of Blue Mountain, Ontario*. Fisher Engineering. (December 2023);
- *796060 Grey Road 19 Hydrogeological Assessment*. Tatham Engineering Limited. (May 2024); and
- *796060 Grey Road 19 Natural Hazards Brief*. Tatham Engineering Limited. (August 2024).

1.4 PROPOSED DEVELOPMENT

The proposed development consists of 3 three-storey and 5 five-storey residential buildings (603 dwelling units in total). Parking for the site will be contained in an at-grade above ground parking lot with a total area of 19,240 m^2. Site access will be provided by a proposed road off of Grey Road 19, directly across from Crosswinds Boulevard. The site plan is provided in Appendix A for reference.

2 Existing Drainage Conditions

2.1 BACKGROUND INFORMATION

Information relating to existing topography, landcover and drainage patterns was obtained through a review of available plans and base mapping followed by a detailed topographic survey of the property in April, 2024.

2.2 LAND COVERAGE AND DRAINAGE PATTERNS

The site is currently vacant and consists of wetlands, pasture, and woodland areas, as well as an existing barn at the northeast corner of the property. The site is approximately 9.9 ha, however, due to the wetland, watercourse, and their associated buffers, approximately 4.0 ha has been deemed developable. An Existing Conditions Drainage Plan (Drawing DP.1) has been prepared and is enclosed for reference. Catchments delineated in the Existing Drainage Plan are comprised of external lands upstream of the proposed development, as well as the lands making up the subject site.

Runoff from the north portion of the drainage area (Catchment 101) drains overland towards an existing drainage easement along the northern property boundary along Grey Road 19. Runoff from the central and southwest portion of the drainage area (Catchment 102) drains overland into the tributary of Silver Creek crossing through the property. Runoff from the south and east portion of the drainage area (Catchment 103) drains overland towards an existing drainage easement along the northern property boundary, along Grey Road 19. All site runoff from the property eventually combines at an existing 1200 mm dia. CSP culvert crossing Grey Road 19, located northeast of the subject property.

The site is located within the Nottawasaga Valley Conservation Authority (NVCA) watershed and due to the existing wetland and Silver Creek's natural hazards, is partially located within the NVCA's regulated area.

2.3 EXISTING HYDROLOGY

A hydrologic model was developed to quantify pre-development peak flows for the 25 mm rainfall, 1:2-year through 1:100-year design storms and Regional (Timmins) storm for the site using Visual OTTHYMO (VO 6.2) modelling software. The 4-hour Chicago (CHI), 6-, 12-, and 24-hour SCS Type II storm distributions were modelled using rainfall data taken from the MTO IDF curve in accordance with NVCA and Town standards. All SCS Type II storm durations were modelled; however, the results presented herein focus on the 24-hour SCS Type II event, as it generated the highest peak flows.

The existing site has been modelled as three drainage catchments (Catchment 101, 102, and 103) and assessed at three drainage points of interest (POI):

- POI 1 (Route Channel 501) – Existing channel at the southwest corner of the residential lot at 796034 Grey Road 19.
- POI 2 (Node 903) – Junction of the drainage easement along Grey Road 19 and the Tributary of Silver Creek.
- POI 3 (Node 904) – Existing 1200 mm dia. CSP culvert crossing Grey Road 19 at the northeast corner of the subject site.

A summary of existing discharge rates for POI 1, POI 2, and POI 3 are provided in Table 1 while detailed model results and supporting calculations are provided in Appendix B for reference.

Table 1: Existing Conditions Peak Flow Summary

STORM	PEAK FLOW (m^3/s)					
	POI 1		POI 2		POI 3	
	4-HR CHI	24-HR SCS	4-HR CHI	24-HR SCS	4-HR CHI	24-HR SCS
1:2-Year	0.098	0.368	0.135	0.488	0.225	0.779
1:5-Year	0.224	0.706	0.300	0.915	0.491	1.447
1:10-Year	0.336	0.965	0.444	1.240	0.718	1.953
1:25-Year	0.499	1.331	0.654	1.696	1.051	2.660
1:50-Year	0.641	1.624	0.834	2.058	1.332	3.221
1:100-Year	0.791	1.933	1.023	2.442	1.630	3.811
25 mm	0.067		0.096		0.159	
Regional (Timmins)	2.157		2.629		4.193	

3 Proposed Drainage Conditions

The SWM plan has been developed to address any potential adverse impacts the development will have on the local surface water features and on surface water quantity and quality and is outlined in the following sections.

3.1 DESIGN CRITERIA

This SWM report is subject to the review and approval of the Town of The Blue Mountains and the NVCA. The following design criteria are to be satisfied in the proposed SWM plan:

- Water quantity controls must be provided to ensure post-development peak flow rates do not exceed pre-development rates at any drainage outlet to ensure no adverse impacts to downstream landowners or surface water conditions;
- Safe conveyance of the Regional storm event through the site must be demonstrated;
- Water quality controls must be provided to satisfy the MECP SWM Planning and Design Manual. As such, "Enhanced" Level 1 water quality treatment is required which corresponds to 80% long-term total suspended solids (TSS) removal;
- In accordance with NVCA requirements, the equivalent runoff volume generated from the 5 mm storm must be retained on-site for erosion control;
- A Pre- and Post-development water balance assessment is required with a target of achieving pre-development annual infiltration volumes through best-efforts strategies;
- A phosphorous budget analysis must be completed and where necessary, mitigation efforts be provided to ensure post-development phosphorous loads match pre-development loads; and
- A detailed siltation and erosion control strategy must be provided for implementation during all construction activities.

3.2 EVALUATION OF SWM ALTERNATIVES

The site is split into a north development parcel and south development parcel, located on either side of Silver Creek. As a result, the smaller size of these individual parcels are not well suited for traditional end of pipe SWM facilities such as dry ponds, wet ponds, wetlands, etc.

SWM alternatives including underground stormwater storage chambers, and infiltration-based low impact development (LID) measures were considered to select the preferred solution, or

combination of solutions, to satisfy the appropriate SWM design criteria and the requirements of the MECP, NVCA, and Town for the proposed development.

The application of infiltration-based LID measures were initially considered. However, based on the Hydrogeological Assessment completed by Tatham Engineering (2024), the site is generally considered not suitable for infiltration practices as the native sandy clayey silt deposits encountered throughout the site have an anticipated low permeability. A recorded high ground water table of 218.11 m at the northeast portion of the site further opposes the use of infiltration-based measures.

A system of two underground stormwater storage chambers were selected as the preliminary preferred alternative for the proposed development. Cultec Recharger 902HD underground chamber systems will provide primary water quantity control. Stormceptor OGS units (EFO10) located upstream of each chamber will be utilized to achieve the requisite water quality treatment.

However, the application of dry swales and linear LIDs may be reconsidered and determined to be feasible options as the site plan and grading plan are advanced and further soil permeability investigations are completed.

3.3 PROPOSED DRAINAGE CONDITIONS

A Post Development Drainage Plan (Drawing DP-2) has been prepared for the proposed development and is enclosed for reference. Post-development drainage from the site is described as follows:

- Runoff from the undeveloped portion of the site, represented by Catchment 201, 202, and 203 which are comprised of mainly external and naturalized or landscaped areas and a small section of the driveway entrance, will drain from the subject development uncontrolled;
- Runoff from the north development parcel, represented with Catchment 204, will be collected by internal storm sewers and directed to an underground storage chamber with a total volume of 1540 m^3. The underground storage chamber will discharge to the Silver Creek Tributary northeast of the property (POI 1);
- Runoff from the south development parcel, represented with Catchment 205, will be collected by internal storm sewers and directed to an underground storage chamber with a total volume of 2134 m^3. The underground storage chamber will discharge to the drainage easement north of the property (POI 2); and
- OGS units upstream of the underground storage chambers will provide water quality treatment for runoff in a treatment train.

All discharge to the existing channels will be restricted to pre-development rates through over control of Catchments 204 and 205.

3.4 WATER QUANTITY CONTROL

As previously described, two underground stormwater chambers (401 and 402) will provide the requisite storage volume to attenuate post-development runoff to pre-development rates. Chamber 401 will provide runoff quantity control for Catchment 204, and discharge to the drainage easement at POI 2. Chamber 402 will provide runoff quantity control for catchment 205 and will discharge at POI 1. The design parameters of the proposed storage chambers can be found in Table 2.

Table 2: Stormwater Attenuation Chamber Design Parameters

PARAMETER	VALUE	
	Chamber 401	Chamber 402
Base of Module Elevation (masl)	219.00	219.50
Minimum Surface Elevation above module (masl)	221.15	221.65
Module Footprint (m^2)	1342	1902
Module Height (m)	1.219	1.219
Module Volume (m^3)	1503	2138
Orifice dia. (mm)	150	50
Invert of Orifice (from base of module) (m)	0.100	0.100

The VO hydrologic model was revised to compute the post-development peak flows from the subject development and quantify the storage volume required for the underground storage systems. The hydrologic model results and supporting calculations are included in Appendix C. The post-development peak flows and storage volumes discharging from the subject development are summarized in Table 3. Design details for the combined storage system is provided in Appendix C as well.

Table 3: Proposed Conditions Peak Flow Summary

STORM	PEAK FLOW (m^3/s)						MAX STORAGE (m^3)	
	POI 1		POI 2		POI 3		Chamber 401	Chamber 402
	4-HR CHI	24-HR SCS	4-HR CHI	24-HR SCS	4-HR CHI	24-HR SCS		
1:2-Year	0.096 *(0.098)*	0.358 *(0.368)*	0.139 *(0.135)*	0.471 *(0.488)*	0.221 *(0.225)*	0.737 *(0.779)*	590	800
1:5-Year	0.219 *(0.224)*	0.687 *(0.706)*	0.296 *(0.300)*	0.870 *(0.915)*	0.470 *(0.491)*	1.359 *(1.447)*	790	1100
1:10-Year	0.327 *(0.336)*	0.940 *(0.965)*	0.431 *(0.444)*	1.173 *(1.240)*	0.683 *(0.718)*	1.831 *(1.953)*	930	1300
1:25-Year	0.486 *(0.499)*	1.297 *(1.331)*	0.627 *(0.654)*	1.601 *(1.696)*	0.990 *(1.051)*	2.491 *(2.660)*	1100	1560
1:50-Year	0.623 *(0.641)*	1.582 *(1.624)*	0.794 *(0.834)*	1.943 *(2.058)*	1.253 *(1.332)*	3.016 *(3.221)*	1220	1750
1:100-Year	0.769 *(0.791)*	1.884 *(1.933)*	0.971 *(1.023)*	2.305 *(2.442)*	1.530 *(1.630)*	3.570 *(3.811)*	1350	1940
25 mm	0.065 *(0.067)*		0.099 *(0.096)*		0.157 *(0.159)*		340	400
Regional (Timmins)	2.152 *(2.157)*		2.589 *(2.629)*		4.033 *(4.193)*		1500	2240

Note: Values in italics denote existing condition discharge rates.

As shown, the proposed stormwater attenuation chambers provide adequate peak flow attenuation for the 1:2-year through 1:100-year at all points of interest. It is noted that proposed peak flows are marginally higher at POI 2 during the 25 mm storm event; however, this represents an increase of less than 4 L/s, and returns to matching existing flows at POI 3.

3.5 SITE CONVEYANCE

The internal sewer system (pipes and inlets) will be sized to ensure the 100-year storm event can enter the underground storage chambers. In the event the inlets become clogged, runoff will pond up to the top of curb and then overflow into existing ditches and drainage easements.

Tributary of Silver Creek Crossing

A paved right-of-way crossing the existing Tributary of Silver Creek (within Catchment 202) is proposed to provide access between the north and south development parcels. As per the NVCA guidelines, the proposed crossing must be capable of conveying the 1:25-year peak flows.

A 1050 mm diameter HDPE culvert is proposed for the crossing. The geometry of the proposed crossing is summarized in Table 4.

Table 4: Silver Creek Tributary Proposed Crossing Geometry

PARAMETER	VALUE
Structure Type	HDPE Culvert (smooth interior)
Roughness Coefficient	0.012 (culvert walls) 0.035 (substrate)
Inlet Elevation	221.40 m
Outlet Elevation	221.30 m
Diameter	1050 mm
Length	40 m
Minimum Road Elevation at Structure	223.21 m
Road Width	15 m

A HY-8 hydraulic model was developed to analyze the hydraulic performance of the proposed culvert. The hydraulic performance under the proposed conditions is summarized in Table 5 and detailed HY-8 model results are included in Appendix D for reference.

Table 5: Silver Creek Tributary Proposed Crossing Performance Summary

PARAMETER	CULVERT FLOW (m^3/s)	OVERTOPPING FLOW (m^3/s)	HEADWATER ELEVATION (m)	FLOW DEPTH OVER ROAD (m)
1:2-Year	0.37	0.00	222.08	0.00
1:5-Year	0.70	0.00	222.33	0.00
1:10-Year	0.96	0.00	222.52	0.00
1:25-Year	1.33	0.00	222.99	0.00
1:50-Year	1.62	0.15	223.22	0.01
1:100-Year	1.93	0.45	223.24	0.03
Regional (Timmins)	2.16	0.66	223.25	0.04

The proposed culvert has a conveyance property of 1.61 m^3/s which is equivalent to a 1:25-year design flood frequency. Flows exceeding this threshold result in overtopping of the roadway. The calculated headwater depths indicate that the maximum roadway flood depth during the Regional Storm will be 0.04 m.

3.6 WATER QUALITY CONTROL

Enhanced level water quality control corresponding to 80% TSS removal is required for developed areas of the site. Water quality controls for Catchment 204 and 205 will be provided via a treatment train comprised of an OGS unit and the vegetated drainage easement for each catchment.

The OGS units are located upstream of the proposed stormwater storage chambers. OGS units for both Catchment 204 and 205 are specified as Stormceptor EFO10 units which have been sized to provide up to 60% TSS removal using the ETV particle size distribution for a contributing drainage of 2.08 ha and 1.92 ha respectively. The location of the OGS and contributing drainage area is illustrated on Drawing DP-2 for reference.

With respect to the water quality treatment provided by the drainage easement, a TSS removal rate of 50% has been applied, consistent with the range of treatment provided by a vegetated filter strip. The combined TSS removal efficiency provided for Catchment 204 and 205 is 80%. Therefore, the treatment train approach will achieve "Enhanced" Level 1 quality treatment for the development site. Sizing reports for OGS units and treatment train calculations are provided in Appendix E.

3.7 5 MM RETENTION

Per NVCA requirements, the equivalent 5 mm runoff volume from impervious areas on site must be retained. As such, considering the total impervious area is approximately 3.4 ha, the equivalent 5 mm runoff volume is 168.45 m^3.

Although the Hydrogeological Report indicates that soil permeability is not suitable for infiltration, the groundwater table is located approximately 0.96 m below the base of the underground storage chambers. To allow some incidental infiltration without relying on it for quantity control, we propose that the chamber bottoms not be lined with impermeable geofabric. Accordingly, the void space within the bedding material has been considered in the SWM plan to provide supplementary infiltration and retention benefits.

As mentioned previously, two Cultec Recharger 902HD storage chambers will be used on site for stormwater quantity control. The storage units will have a layer of 25 mm-50 mm crushed stone (40% void ratio) below the storage tanks with a minimum depth of 229 mm. The combined footprint of the storage chambers is 0.3244 ha, allowing for a depression storage volume of 297 m^3, providing the requisite runoff volume retention.

3.8 PHOSPHORUS REMOVAL

A phosphorus budget was prepared to determine pre-development and post-development phosphorus loading rates from the development site. The pre-development phosphorus loading rate is estimated to be 0.65 kg/year and the post-development phosphorus loading rate is 5.64 kg/year for the 9.9 ha property before considering mitigative measures.

A removal efficiency of 20% and 25% were assumed for the OGS unit, and the underground storage chamber respectively (based on the LSRCA Stormwater Guidelines), reducing the post-development phosphorus loading rate to 2.89 kg/year. This approach reflects a best-efforts in pre-development phosphorus matching, with a total increase in phosphorus load of 2.24 kg/year. Detailed calculations have been provided in Appendix F.

3.9 WATER BALANCE ASSESSMENT

An evaluation of the anticipated changes in the water budget between pre-development and post-development conditions for the proposed development has been included to quantify the expected changes to infiltration and runoff within the north and south development parcels on-site before and after considering mitigation approaches.

Using historical Environment Canada precipitation data from the Thornbury Salma weather station (1984-2003) located approximately 17.6 kilometers northwest of the site, the pre-development infiltration volume for the development shows a total of 21,027 m^3 of annual infiltration volume is provided over the entire site area (9.9 ha).

Based on the preliminary site plans to date it is anticipated approximately 34% of the 9.9 ha developable area will be impervious. Considering no mitigative measures implemented, the post-development water budget assessment shows a reduction in annual infiltration volume of 7,108 m^3.

The stone bedding below the proposed underground storage chambers will provide an annual infiltration volume of 23,973 m^3 which will provide surplus infiltration opportunity. Therefore, the infiltration deficit will be mitigated under proposed conditions.

Climate data and water budget calculations are included in Appendix G for reference.

4 Erosion and Sediment Control

Erosion and sediment control will be implemented for all construction activities within the site including vegetation clearing, topsoil stripping, site access construction and stockpiling of materials. The basic principles considered to minimize erosion and sedimentation, and the potential negative environmental impacts include:

- Minimize disturbance activities where possible;
- Expose the smallest possible land area to erosion for the shortest amount of time;
- Institute erosion control measures as required immediately;
- Implement sediment control measures before the outset of construction activities; and
- Carry out regular inspection of erosion/sediment control measures and repair or maintain, as necessary.

A detailed Erosions and Sediment Control (ESC) plan will be developed as part of detailed design. ESC measures shall be implemented in accordance with the Erosion Sediment Control Best Management Practices Guide and the Town of The Blue Mountains Engineering Standards.

5 Summary

The SWM Plan ensures the development can be constructed in accordance with all applicable municipal, regional, and provincial guidelines while minimizing the negative impact of the development on the local drainage system.

Discharge under all storm events will be restricted to pre-development levels including the 1:2-year through 1:100-year design storms using underground storage chambers for peak flow attenuation. However, the application of dry swales and linear LIDs may be reconsidered and determined to be feasible options as the site plan and grading plan are advanced and further soil permeability investigations are completed.

Runoff producing volumes greater than the capacity of the combined storage volume will spill across to the existing watercourse flowing through the site, or the drainage easement north of the site.

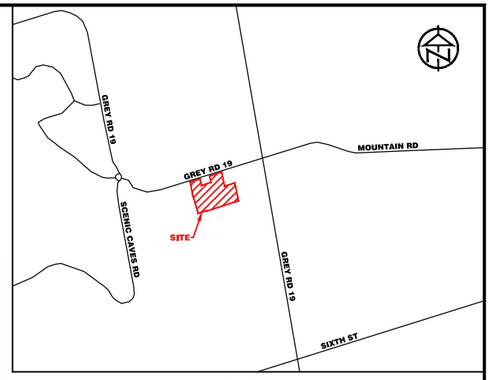
Water quality treatment to Level 1 “Enhanced” 80% TSS removal efficiency will be achieved through a treatment train comprised of an OGS unit and the vegetated drainage easement for each catchment.

The equivalent runoff volume generated from the 5 mm storm can be retained on-site through the underground storage chambers bedding material.

Best efforts to match post to pre phosphorus loading will be provided will be achieved through a treatment train approach provided by the Cultec separator row (25%) and the Stormceptor OGS unit (20%) for a total removal efficiency of 60%.

The stone bedding for underground storage chamber is estimated to provide 23,973 m^3 of annual infiltration volume, mitigating the infiltration deficit and providing a surplus infiltration volume.

As part of detailed design, an ESC plan will be developed to reduce the transportation of sediment from the site and mitigate erosion downstream during the construction activities.



KEY PLAN

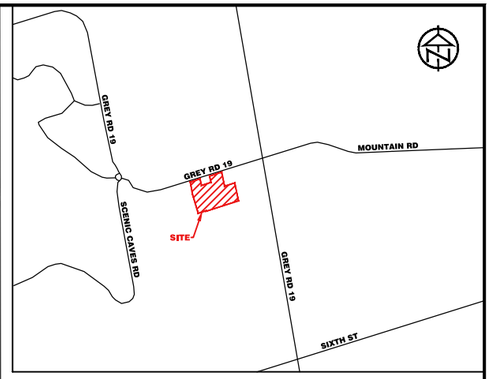
LEGEND

- CULVERT CROSSING
- CATCHMENT BOUNDARY
- PROPERTY BOUNDARY
- 396.00 EXISTING CONTOURS
- EXISTING WATERCOURSE
- EXISTING OVERLAND FLOW DIRECTION
- 101 / 0.50 | 0.60 — CATCHMENT ID; CN NUMBER/% IMPERVIOUS; CATCHMENT AREA (ha)

VERSION		DATE
1	FOR CLIENT REVIEW	2025 09 12

TATHAM ENGINEERING

PROJECT TITLE				DRAWING
796060 GREY ROAD 19 TOWN OF THE BLUE MOUNTAINS EXISTING DRAINAGE PLAN				DP.1
DATE 2025 09 12	DRAWN BY PNW	SCALE 1:6000	PROJECT 123143	



KEY PLAN

LEGEND

- CULVERT CROSSING
- CATCHMENT BOUNDARY
- PROPERTY BOUNDARY
- 396.00 EXISTING CONTOURS
- EXISTING WATERCOURSE
- EXISTING OVERLAND FLOW DIRECTION
- PROPOSED OVERLAND FLOW DIRECTION
- 101 / 0.50 / 0.60 — CATCHMENT ID; CN NUMBER/% IMPERVIOUS; CATCHMENT AREA (ha)

VERSION		DATE
1	FOR CLIENT REVIEW	2025 09 19

TATHAM ENGINEERING

PROJECT TITLE
796060 GREY ROAD 19
TOWN OF THE BLUE MOUNTAINS
PROPOSED DRAINAGE PLAN

DRAWING DP.2

DATE 2025 09 19 | **DRAWN BY** PNW | **SCALE** 1:6000 | **PROJECT** 123143

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EX. CULVERT

STORMWATER CHAMBER
OUTLET: 219.00 m

UNDERGROUND STORMWATER ATTENUATION CHAMBER 401
VOLUME = 1,053 m³

OGS UNIT

PROPOSED ROW

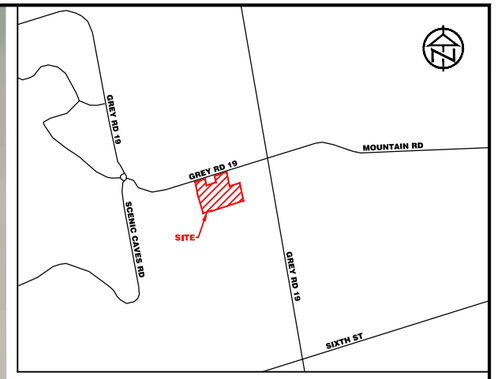
STORMWATER CHAMBER
OUTLET: 219.50 m

UNDERGROUND STORMWATER ATTENUATION CHAMBER 402
VOLUME = 2138 m³

OGS UNIT

PROPOSED 1050mm ø
HDPE CULVERT

WETLAND



KEY PLAN

LEGEND

- CULVERT CROSSING
- CATCHMENT BOUNDARY
- PROPERTY BOUNDARY
- EXISTING WATERCOURSE
- EXISTING OVERLAND FLOW DIRECTION
- PROPOSED OVERLAND FLOW DIRECTION

VERSION		DATE
1	FOR CLIENT REVIEW	2025 09 19

TATHAM ENGINEERING

PROJECT TITLE						DRAWING	
796060 GREY ROAD 19 TOWN OF THE BLUE MOUNTAINS PRELIMINARY SWM PLAN						SWM.1	
DATE	2025 09 19	DRAWN BY	PNW	SCALE	1:6000	PROJECT	123143

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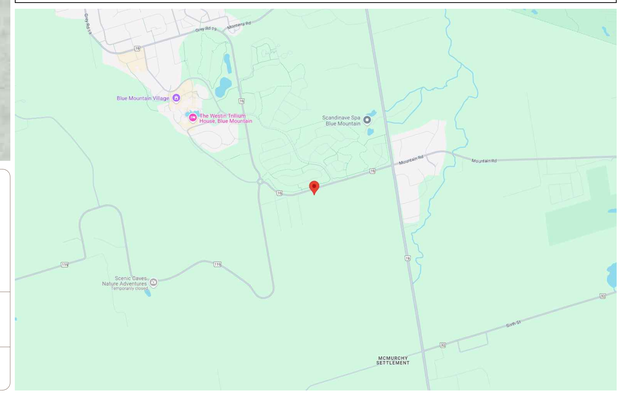
Appendix A:
Site Plan

Site Statistics		
GREY ROAD 19		
EXISTING ZONING CATEGORY	***D***	
	Development	
PROPOSED ZONING CATEGORY	***R2 / R3***	
	Residential	
(As per By-law No. 2018-65)		
GROSS SITE AREA	*24.58 ac*	99,465.06m²
BUILDING AREA	**100,000 SF**	**9,290.30 m²**
BUILDING - A	*12,500 SF*	*1,161.29 m²*
BUILDING - B	*12,500 SF*	*1,161.29 m²*
BUILDING - C	*12,500 SF*	*1,161.29 m²*
BUILDING - D	*12,500 SF*	*1,161.29 m²*
BUILDING - E	*12,500 SF*	*1,161.29 m²*
BUILDING - F	*12,500 SF*	*1,161.29 m²*
BUILDING - G	*12,500 SF*	*1,161.29 m²*
BUILDING - H	*12,500 SF*	*1,161.29 m²*
RESIDENTIAL GROSS FLOOR AREA	**418,750 SF**	**38,903.15 m²**
BUILDING - A	*31,250 SF*	*2,903.22 m²*
BUILDING - B	*37,500 SF*	*3,483.86 m²*
BUILDING - C	*37,500 SF*	*3,483.86 m²*
BUILDING - D	*62,500 SF*	*5,806.44 m²*
BUILDING - E	*62,500 SF*	*5,806.44 m²*
BUILDING - F	*62,500 SF*	*5,806.44 m²*
BUILDING - G	*62,500 SF*	*5,806.44 m²*
BUILDING - H	*62,500 SF*	*5,806.44 m²*
RESIDENTIAL UNIT COUNT		
BUILDING - A	*45 Units*	
BUILDING - B	*54 Units*	
BUILDING - C	*54 Units*	
BUILDING - D	*90 Units*	
BUILDING - E	*90 Units*	
BUILDING - F	*90 Units*	
BUILDING - G	*90 Units*	
BUILDING - H	*90 Units*	
TOTAL UNIT COUNT	**603 Units**	
Zoning Requirements	**Proposed**	**Required**
Min. Lot Area (Existing)	99,465.06m²	600.00 m²
Min. Lot Frontage (m)	300.97 m	20.00 m
Max. Lot Coverage	9.34%	-
Total Building Area	*9,290.30m²*	-
F.S.I.	0.39	-
Total Gross Floor Area	*38,903.15m²*	-
Maximum Building Height (Max) (m)	18.00 m	11.00 m
Min. Front Yard Building Setback (m)	7.50 m	7.50 m
Min. Rear Yard Building Setback (m)	7.50 m	7.50 m
Min. Int. Side Yard Building Set back (m)	2.40 m	2.40 m
Min. Int. Side Yard Building Set back (m)	2.40 m	2.40 m
Min. Landscape Area (% of Total Lot Area)	66.08%	-
Min. Landscape Area (SM)	*65,729.73m²*	-
Parking Calculations		
Residential		
1 Bedroom Unit	*@1.25 parking spaces per dwelling unit*	
2 Bedroom Unit	*@1.75 parking spaces per dwelling unit*	
3 Bedroom Unit	*@2.25 parking spaces per dwelling unit*	
Visitor	*@0.25 parking spaces per dwelling unit*	
Accessible Parking - For 201-1000 Required Spaces	*2 spaces + 2% of required spaces*	
	Proposed	**Required**
Proposed Parking Spaces *(Including Accessible Parking Spaces)*	**712**	**1096**
Total no. of Accessible Parking Spaces	*24*	*24*
Avg. Parking spaces/unit count	***1.18***	***1.82***
Parking Stall Dimensions	*STANDARD: 2.75m X 5.5m w/ 5.8m wide Two-way Aisle; ACCESSIBLE: Type-A 3.4m X 5.8m Type-B 2.4 X 5.8m w/ 1.5m access aisle*	



This conceptual design is based upon a preliminary review of entitlement requirements and on unverified and possibly incomplete site and/or building information, and is intended merely to assist in exploring how the project might be developed.

Stormwater Management Design:
ASSUMED OFF-SITE

Boundary Source:
CIVIL CAD FILE

1:800

0 10m 25m 50m 80m

NORTH

scheme: 03

Conceptual Site Plan

Rental Housing Project at Grey Road 19
The Blue Mountains, ON, CAN

WARE MALCOMB

TOR25-0039-00
2025.06.06

SHEET
1

Appendix B:
Existing Hydrology

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

796060 Grey Road 19- SWM	123143

Prepared By

PNW	August 13, 2025

Data Sources

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

Pre-Development Condition

Watershed	NVCA
Catchment ID	101
Catchment Area (ha)	6.23
Impervious %	8%

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

Soil Symbol	**Ksc**			
Soil Series	Kemble SC			
Hydrologic Soils Group	C			
Soil Texture	Silty Clay			
Runoff Coefficient Type	3			
Area (ha)	6.23			
Percentage of Catchment	100%			

Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2	0.48	100	0.95									
Gravel	3	0.24	89	0.60									
Woodland	10	0.52	73	0.35									
Pasture/Lawns	5	3.25	79	0.40									
Meadows	8		76	0.38									
Cultivated	7		82	0.55									
Waterbody	12	1.75	50	0.05									
Average CN		72.34											
Average C		0.35											
Average IA		7.08											

Time to Peak Calculations

Max Catchment Elevation (m)	227.00
Min Catchment Elevation (m)	217.00
Catchment Length (m)	455
Catchment Slope (%)	2.20%
Method Airport Method	
Time of Concentration (mins)	40.37

Summary

Catchment CN	72.3
Catchment C	0.35
Catchment IA (mm)	7.08
Time of Concentration (hrs)	0.67
Catchment Time to Peak (hrs)	0.45
Catchment Time Step (mins)	5.38

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

796060 Grey Road 19- SWM	123143

Prepared By

PNW	August 13, 2025

Data Sources

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

Pre-Development Condition

Watershed	NVCA
Catchment ID	102
Catchment Area (ha)	38.75
Impervious %	2%

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

Soil Symbol	**Ksc**			
Soil Series	Kemble SC			
Hydrologic Soils Group	C			
Soil Texture	Silty Clay			
Runoff Coefficient Type	3			
Area (ha)	38.75			
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	0.67	100	0.95									
Gravel	3	0.66	89	0.60									
Woodland	10	12.34	73	0.42									
Pasture/Lawns	5	2.46	79	0.45									
Meadows	8		76	0.44									
Cultivated	7		82	0.60									
Waterbody	12	22.63	50	0.05									
Average CN		60.70											
Average C		0.22											
Average IA		10.59											

Time to Peak Calculations

Max Catchment Elevation (m)	308.00
Min Catchment Elevation (m)	219.00
Catchment Length (m)	1319
Catchment Slope (%)	6.75%
Method Airport Method	
Time of Concentration (mins)	55.61

Summary

Catchment CN	60.7
Catchment C	0.22
Catchment IA (mm)	10.59
Time of Concentration (hrs)	0.93
Catchment Time to Peak (hrs)	0.62
Catchment Time Step (mins)	7.41

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

796060 Grey Road 19- SWM	123143

Prepared By

PNW	August 13, 2025

Data Sources

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

Pre-Development Condition

Watershed	NVCA
Catchment ID	103
Catchment Area (ha)	26.71
Impervious %	3%

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

Soil Symbol	**Ksc**			
Soil Series	Kemble SC			
Hydrologic Soils Group	C			
Soil Texture	Silty Clay			
Runoff Coefficient Type	3			
Area (ha)	26.71			
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	0.88	100	0.95									
Gravel	3		89	0.60									
Woodland	10	5.29	73	0.35									
Pasture/Lawns	5	8.88	79	0.40									
Meadows	8		76	0.38									
Cultivated	7		82	0.55									
Waterbody	12	11.66	50	0.05									
Average CN		65.85											
Average C		0.26											
Average IA		8.95											

Time to Peak Calculations

Max Catchment Elevation (m)	237.00
Min Catchment Elevation (m)	218.00
Catchment Length (m)	900
Catchment Slope (%)	2.11%
Method Airport Method	
Time of Concentration (mins)	64.55

Summary

Catchment CN	65.8
Catchment C	0.26
Catchment IA (mm)	8.95
Time of Concentration (hrs)	1.08
Catchment Time to Peak (hrs)	0.72
Catchment Time Step (mins)	8.61

Active coordinate

44° 29' 45" N, 80° 17' 45" W (44.495833,-80.295833)

Retrieved: Wed, 10 Sep 2025 13:50:00 GMT

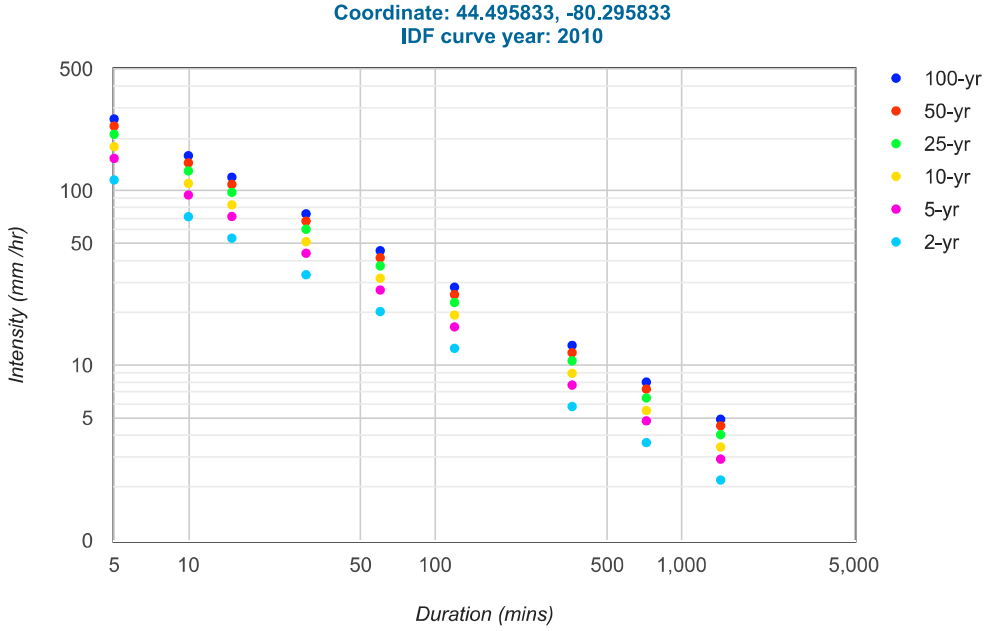
Location summary

These are the locations in the selection.

IDF Curve: 44° 29' 45" N, 80° 17' 45" W (44.495833,-80.295833)

Results

An IDF curve was found.



Coefficient summary

IDF Curve: 44° 29' 45" N, 80° 17' 45" W (44.495833,-80.295833)

Retrieved: Wed, 10 Sep 2025 13:50:00 GMT

Data year: 2010
IDF curve year: 2010

Return period	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
A	20.3	27.0	31.5	37.1	41.3	45.4
B	-0.699	-0.699	-0.699	-0.699	-0.699	-0.699

Statistics

Rainfall intensity (mm hr^{-1})

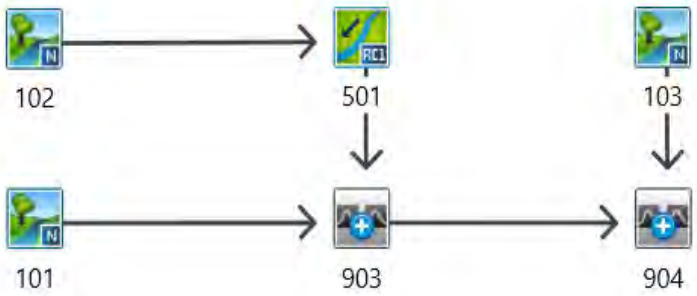
Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr	115.3	71.0	53.5	33.0	20.3	12.5	5.8	3.6	2.2
5-yr	153.4	94.5	71.2	43.8	27.0	16.6	7.7	4.8	2.9
10-yr	178.9	110.2	83.0	51.1	31.5	19.4	9.0	5.5	3.4
25-yr	210.7	129.8	97.8	60.2	37.1	22.9	10.6	6.5	4.0
50-yr	234.6	144.5	108.8	67.0	41.3	25.4	11.8	7.3	4.5
100-yr	257.9	158.8	119.6	73.7	45.4	28.0	13.0	8.0	4.9

Rainfall depth (mm)

Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr	9.6	11.8	13.4	16.5	20.3	25.0	34.8	42.9	52.8
5-yr	12.8	15.7	17.8	21.9	27.0	33.3	46.3	57.0	70.3
10-yr	14.9	18.4	20.8	25.6	31.5	38.8	54.0	66.5	82.0
25-yr	17.6	21.6	24.4	30.1	37.1	45.7	63.6	78.4	96.6
50-yr	19.5	24.1	27.2	33.5	41.3	50.9	70.8	87.3	107.5
100-yr	21.5	26.5	29.9	36.9	45.4	55.9	77.9	95.9	118.2

Terms of Use

PROJECT	796060 Grey Road 19	FILE	123143
		DATE	9/5/2025
SUBJECT	Existing Conditions VO Schematic	NAME	PNW
		PAGE	1 OF 1



NASHYD

ROUTE PIPE

DUHYD

STANDHYD

ROUTE CHANNEL

DIVERT HYD

ADDHYD

ROUTE RESERVOIR

```
================================================================================
======================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        V  V    I     SS    U   U  AAAAA  L
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         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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DATE: 09/05/2025                          TIME: 09:18:03

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 1.1 - 2yr 6hr 5min SCS       **
  ************************************************

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

      START @  0.00 hrs
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    remark: 2yr 6hr 5min SCS

*
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    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
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    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    0.18  3.75   3.36  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    0.24  3.67   3.80  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 35.84 mm ]
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C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\12105d10-ca0
5-490c-8163-6655
    remark: 2yr 6hr 5min SCS

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    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
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*
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======================


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        V  V    I     SS    U   U  AAAAA  L
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         VV     I    SSSSS  UUUUU  A   A  LLLLL
```

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       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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DATE: 09/05/2025                          TIME: 09:18:04

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 1.2 - 5yr 6hr 5min SCS       **
  ************************************************

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

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      --------------------
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*
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*
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*
    ADD [  0101+  0501]  0903  3  5.0   44.98    0.50  3.67   7.53  n/a   0.000
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    [ Ptot= 47.67 mm ]
    fname :
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    remark: 5yr 6hr 5min SCS

*
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*
    ADD [  0103+  0903]  0904  3  5.0   71.69    0.80  3.75   8.00  n/a   0.000
*
================================================================================
======================


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        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
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       O   O    T      T    H   H    Y    M   M  O   O
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DATE: 09/05/2025                          TIME: 09:18:03

USER:


COMMENTS: _____________________________________________________________


  ************************************************
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  ************************************************

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     --------------------
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    remark: 10yr 6hr 5min SCS

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1-4fcd-aff0-343d
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*
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*
    ADD [  0101+  0501]  0903  3  5.0   44.98    0.71  3.67  10.48  n/a   0.000
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*
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```
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\3eadd0
b8-b751-4fef-85be-633d73f779d7\scena


DATE: 09/05/2025                          TIME: 09:18:03

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : 1.4 - 25yr 6hr 5min SCS       **
  ************************************************

  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= 65.16 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\52749b54-a62
9-4054-bbe5-535d
    remark: 25yr 6hr 5min SCS

*
 ** CALIB NASHYD         0101  1  5.0    6.23    0.26  3.42  21.71 0.33   0.000
    [CN=72.3         ]
    [ N = 3.0:Tp 0.45]
*
    READ STORM                 5.0
    [ Ptot= 65.16 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\52749b54-a62
9-4054-bbe5-535d
    remark: 25yr 6hr 5min SCS

*
 ** CALIB NASHYD         0102  1  5.0   38.75    0.78  3.75  13.60 0.21   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    0.78  3.75  13.60  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    1.01  3.67  14.72  n/a   0.000
*
```

```
    READ STORM                 5.0
    [ Ptot= 65.16 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\52749b54-a62
9-4054-bbe5-535d
    remark: 25yr 6hr 5min SCS

*
 ** CALIB NASHYD         0103  1  5.0   26.71    0.61  3.83  16.79 0.26   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    1.60  3.75  15.49  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\0145aa
ab-767d-469b-b03d-430e6ee5471f\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\0145aa
ab-767d-469b-b03d-430e6ee5471f\scena


DATE: 09/05/2025                          TIME: 09:18:03

USER:
```

```
COMMENTS: _____________________________________________________


  ***********************************************
  ** SIMULATION : 1.5 - 50yr 6hr 5min SCS       **
  ***********************************************

  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= 72.37 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\24847a70-578
0-48fe-ab65-7ab5
    remark: 50yr 6hr 5min SCS

*
 ** CALIB NASHYD        0101  1  5.0    6.23    0.32  3.42  26.21 0.36   0.000
    [CN=72.3        ]
    [ N = 3.0:Tp 0.45]
*
    READ STORM                  5.0
    [ Ptot= 72.37 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\24847a70-578
0-48fe-ab65-7ab5
    remark: 50yr 6hr 5min SCS

*
 ** CALIB NASHYD        0102  1  5.0   38.75    0.98  3.67  16.87 0.23   0.000
    [CN=60.7        ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    0.98  3.75  16.87  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    1.26  3.67  18.16  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 72.37 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\24847a70-578
0-48fe-ab65-7ab5
    remark: 50yr 6hr 5min SCS

*
 ** CALIB NASHYD        0103  1  5.0   26.71    0.75  3.83  20.58 0.28   0.000
```

```
    [CN=65.8        ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    1.99  3.67  19.06  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\e1defb
f2-ae4e-4a36-bb54-1d7d19f925bd\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\e1defb
f2-ae4e-4a36-bb54-1d7d19f925bd\scena


DATE: 09/05/2025                          TIME: 09:18:04

USER:


COMMENTS: _____________________________________________________


  ***********************************************
  ** SIMULATION : 1.6 - 100yr 6hr 5min SCS      **
  ***********************************************

  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= 79.57 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\a94c2015-a56
7-4802-9496-597f
    remark: 100yr 6hr 5min SCS

*
 ** CALIB NASHYD        0101  1  5.0    6.23    0.38  3.42  30.94 0.39   0.000
    [CN=72.3        ]
    [ N = 3.0:Tp 0.45]
*
    READ STORM                  5.0
    [ Ptot= 79.57 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\a94c2015-a56
7-4802-9496-597f
    remark: 100yr 6hr 5min SCS

*
 ** CALIB NASHYD        0102  1  5.0   38.75    1.19  3.67  20.38 0.26   0.000
    [CN=60.7        ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    1.19  3.75  20.38  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    1.53  3.67  21.85  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 79.57 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\a94c2015-a56
7-4802-9496-597f
    remark: 100yr 6hr 5min SCS

*
 ** CALIB NASHYD        0103  1  5.0   26.71    0.90  3.83  24.61 0.31   0.000
    [CN=65.8        ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    2.40  3.67  22.88  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\911999
ac-02d9-40ff-b65b-89dc83748209\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\911999
ac-02d9-40ff-b65b-89dc83748209\scena


DATE: 09/05/2025                          TIME: 09:18:04

USER:


COMMENTS: _____________________________________________________


  ***********************************************
  ** SIMULATION : 2.1 - 2yr 12hr 5min SCS       **
  ***********************************************

  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= 44.15 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\d222cee8-6f6
e-4d1b-a7f3-688b
```

```
    remark: 2yr 12hr 5min SCS

*
 ** CALIB NASHYD        0101  1  5.0    6.23    0.10  6.42  10.22 0.23   0.000
    [CN=72.3        ]
    [ N = 3.0:Tp 0.45]
*
    READ STORM                 5.0
    [ Ptot= 44.15 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\d222cee8-6f6
e-4d1b-a7f3-688b
    remark: 2yr 12hr 5min SCS

*
 ** CALIB NASHYD        0102  1  5.0   38.75    0.26  6.75   5.69 0.13   0.000
    [CN=60.7        ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    0.26  6.75   5.69  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    0.35  6.67   6.32  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 44.15 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\d222cee8-6f6
e-4d1b-a7f3-688b
    remark: 2yr 12hr 5min SCS

*
 ** CALIB NASHYD        0103  1  5.0   26.71    0.22  6.83   7.41 0.17   0.000
    [CN=65.8        ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    0.57  6.75   6.72  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
```

```
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\9fc37b81-f5f
a-4b03-975c-73ec
    remark: 5yr 12hr 5min SCS

*
 ** CALIB NASHYD        0102  1  5.0   38.75    0.53  6.67  10.90 0.19   0.000
    [CN=60.7        ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    0.53  6.75  10.90  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    0.69  6.67  11.87  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 58.73 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\9fc37b81-f5f
a-4b03-975c-73ec
    remark: 5yr 12hr 5min SCS

*
 ** CALIB NASHYD        0103  1  5.0   26.71    0.42  6.83  13.63 0.23   0.000
    [CN=65.8        ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    1.10  6.67  12.53  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  *****
```

```
       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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\25ff47
71-816c-48dd-84ca-6d511ee2ef5b\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\25ff47
71-816c-48dd-84ca-6d511ee2ef5b\scena


DATE: 09/05/2025                          TIME: 09:18:04

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 2.2 - 5yr 12hr 5min SCS       **
  ************************************************

  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= 58.73 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\9fc37b81-f5f
a-4b03-975c-73ec
    remark: 5yr 12hr 5min SCS

*
 ** CALIB NASHYD        0101  1  5.0    6.23    0.18  6.42  17.91 0.30   0.000
    [CN=72.3        ]
    [ N = 3.0:Tp 0.45]
*
    READ STORM                 5.0
    [ Ptot= 58.73 mm ]
```

```
  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\29ed82
9d-b299-4628-9344-0c7dcb00d9f7\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\29ed82
9d-b299-4628-9344-0c7dcb00d9f7\scena


DATE: 09/05/2025                          TIME: 09:18:04

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 2.3 - 10yr 12hr 5min SCS      **
  ************************************************

  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= 68.24 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\9a067529-fce
0-452f-a8b2-1ad4
    remark: 10yr 12hr 5min SCS

*
 ** CALIB NASHYD        0101  1  5.0    6.23    0.25  6.42  23.60 0.35   0.000
    [CN=72.3        ]
    [ N = 3.0:Tp 0.45]
*
    READ STORM                 5.0
    [ Ptot= 68.24 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\9a067529-fce
0-452f-a8b2-1ad4
    remark: 10yr 12hr 5min SCS

*
 ** CALIB NASHYD        0102  1  5.0   38.75    0.74  6.67  14.96 0.22   0.000
    [CN=60.7        ]
    [ N = 3.0:Tp 0.62]
```

```
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    0.74  6.67  14.96  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    0.96  6.58  16.16  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 68.24 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\9a067529-fce
0-452f-a8b2-1ad4
    remark: 10yr 12hr 5min SCS

*
 ** CALIB NASHYD         0103  1  5.0   26.71    0.57  6.75  18.37 0.27   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    1.52  6.67  16.99  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\8e040c
1c-cf40-47d9-9180-0e7e748f05a0\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\8e040c
1c-cf40-47d9-9180-0e7e748f05a0\scena
```

```
DATE: 09/05/2025                          TIME: 09:18:04

USER:


COMMENTS: _____________________________________________________


  ***********************************************
  ** SIMULATION : 2.4 - 25yr 12hr 5min SCS      **
  ***********************************************

  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= 80.28 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\d998724f-9fe
e-4b97-86af-becb
    remark: 25yr 12hr 5min SCS

*
 ** CALIB NASHYD         0101  1  5.0    6.23    0.33  6.42  31.42 0.39   0.000
    [CN=72.3         ]
    [ N = 3.0:Tp 0.45]
*
    READ STORM                 5.0
    [ Ptot= 80.28 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\d998724f-9fe
e-4b97-86af-becb
    remark: 25yr 12hr 5min SCS

*
 ** CALIB NASHYD         0102  1  5.0   38.75    1.04  6.67  20.74 0.26   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    1.04  6.67  20.74  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    1.34  6.58  22.22  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 80.28 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\d998724f-9fe
```

```
e-4b97-86af-becb
    remark: 25yr 12hr 5min SCS

*
 ** CALIB NASHYD         0103  1  5.0   26.71    0.79  6.75  25.02 0.31   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    2.12  6.67  23.26  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\9ff524
44-f49a-4fcf-9aaa-878c4ac4bbb5\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\9ff524
44-f49a-4fcf-9aaa-878c4ac4bbb5\scena


DATE: 09/05/2025                          TIME: 09:18:04

USER:


COMMENTS: _____________________________________________________
```

```
  ***********************************************
  ** SIMULATION : 2.5 - 50yr 12hr 5min SCS      **
  ***********************************************

  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= 89.16 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\699f770a-f1c
4-49ff-8116-3581
    remark: 50yr 12hr 5min SCS

*
 ** CALIB NASHYD         0101  1  5.0    6.23    0.40  6.42  37.55 0.42   0.000
    [CN=72.3         ]
    [ N = 3.0:Tp 0.45]
*
    READ STORM                 5.0
    [ Ptot= 89.16 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\699f770a-f1c
4-49ff-8116-3581
    remark: 50yr 12hr 5min SCS

*
 ** CALIB NASHYD         0102  1  5.0   38.75    1.29  6.67  25.40 0.28   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    1.29  6.67  25.40  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    1.64  6.58  27.08  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 89.16 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\699f770a-f1c
4-49ff-8116-3581
    remark: 50yr 12hr 5min SCS

*
 ** CALIB NASHYD         0103  1  5.0   26.71    0.97  6.75  30.31 0.34   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    2.59  6.67  28.29  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\c9bdc4
b3-dbc3-42e3-bb84-2ce1b2868419\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\c9bdc4
b3-dbc3-42e3-bb84-2ce1b2868419\scena


DATE: 09/05/2025                          TIME: 09:18:04

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : 2.6 - 100yr 12hr 5min SCS     **
  ************************************************

  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= 98.03 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\dcc7dc83-bfe
9-4b14-a68b-3370
    remark: 100yr 12hr 5min SCS

*
 ** CALIB NASHYD         0101  1  5.0    6.23    0.47  6.42  43.93 0.45   0.000
    [CN=72.3         ]
    [ N = 3.0:Tp 0.45]
*
    READ STORM                 5.0
    [ Ptot= 98.03 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\dcc7dc83-bfe
9-4b14-a68b-3370
    remark: 100yr 12hr 5min SCS

*
 ** CALIB NASHYD         0102  1  5.0   38.75    1.55  6.67  30.35 0.31   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    1.55  6.67  30.35  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    1.97  6.58  32.23  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 98.03 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\dcc7dc83-bfe
9-4b14-a68b-3370
    remark: 100yr 12hr 5min SCS

*
 ** CALIB NASHYD         0103  1  5.0   26.71    1.15  6.75  35.89 0.37   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    3.10  6.67  33.60  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\f06537
2e-1510-46cd-bf18-18637475293a\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\f06537
2e-1510-46cd-bf18-18637475293a\scena


DATE: 09/05/2025                          TIME: 09:18:05

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : 3.1 - 2yr 24hr 5min SCS       **
  ************************************************

  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= 54.40 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\a669ce3a-458
6-4597-a232-6064
    remark: 2yr 24hr 5min SCS

*
 ** CALIB NASHYD         0101  1  5.0    6.23    0.13 12.42  15.48 0.28   0.000
```

```
    [CN=72.3         ]
    [ N = 3.0:Tp 0.45]
*
    READ STORM                 5.0
    [ Ptot= 54.40 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\a669ce3a-458
6-4597-a232-6064
    remark: 2yr 24hr 5min SCS

*
 ** CALIB NASHYD         0102  1  5.0   38.75    0.37 12.67   9.22 0.17   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    0.37 12.67   9.22  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    0.49 12.67  10.08  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 54.40 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\a669ce3a-458
6-4597-a232-6064
    remark: 2yr 24hr 5min SCS

*
 ** CALIB NASHYD         0103  1  5.0   26.71    0.30 12.75  11.64 0.21   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    0.78 12.67  10.66  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\ae00db
81-55e7-4724-bc73-ad3c1501edaf\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\ae00db
81-55e7-4724-bc73-ad3c1501edaf\scena


DATE: 09/05/2025                          TIME: 09:18:05

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 3.2 - 5yr 24hr 5min SCS       **
  ************************************************

  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= 72.36 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\402c8152-892
7-4e9e-af48-6914
    remark: 5yr 24hr 5min SCS

*
 ** CALIB NASHYD         0101  1  5.0    6.23    0.23 12.42  26.21 0.36   0.000
    [CN=72.3         ]
    [ N = 3.0:Tp 0.45]
*
    READ STORM                  5.0
    [ Ptot= 72.36 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\402c8152-892
7-4e9e-af48-6914
    remark: 5yr 24hr 5min SCS

*
 ** CALIB NASHYD         0102  1  5.0   38.75    0.71 12.67  16.87 0.23   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    0.71 12.67  16.87  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    0.92 12.58  18.16  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 72.36 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\402c8152-892
7-4e9e-af48-6914
    remark: 5yr 24hr 5min SCS

*
 ** CALIB NASHYD         0103  1  5.0   26.71    0.54 12.75  20.57 0.28   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    1.45 12.67  19.06  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\e8382a
f5-8303-48c4-b3c7-d6b3b0cd9d30\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\e8382a
f5-8303-48c4-b3c7-d6b3b0cd9d30\scena


DATE: 09/05/2025                          TIME: 09:18:05

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 3.3 - 10yr 24hr 5min SCS      **
  ************************************************

  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= 84.07 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\76f91fd1-a20
3-4461-8e1b-0147
    remark: 10yr 24hr 5min SCS

*
 ** CALIB NASHYD         0101  1  5.0    6.23    0.31 12.42  34.00 0.40   0.000
    [CN=72.3         ]
    [ N = 3.0:Tp 0.45]
*
    READ STORM                  5.0
    [ Ptot= 84.07 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\76f91fd1-a20
3-4461-8e1b-0147
    remark: 10yr 24hr 5min SCS

*
 ** CALIB NASHYD         0102  1  5.0   38.75    0.96 12.67  22.69 0.27   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    0.97 12.67  22.69  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    1.24 12.58  24.26  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 84.07 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\76f91fd1-a20
3-4461-8e1b-0147
    remark: 10yr 24hr 5min SCS

*
 ** CALIB NASHYD         0103  1  5.0   26.71    0.73 12.75  27.24 0.32   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    1.95 12.67  25.37  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\084106
dc-7547-476a-8757-1d2f52a1b657\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\084106
dc-7547-476a-8757-1d2f52a1b657\scena


DATE: 09/05/2025                          TIME: 09:18:05

USER:
```

```
COMMENTS: ____________________________________________________________


  ************************************************
  ** SIMULATION : 3.4 - 25yr 24hr 5min SCS      **
  ************************************************

  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= 98.91 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\b27c4ba1-060
6-4c75-a267-b88d
    remark: 25yr 24hr 5min SCS

*
 ** CALIB NASHYD        0101  1  5.0    6.23    0.40 12.42  44.58 0.45   0.000
    [CN=72.3         ]
    [ N = 3.0:Tp 0.45]
*
    READ STORM                 5.0
    [ Ptot= 98.91 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\b27c4ba1-060
6-4c75-a267-b88d
    remark: 25yr 24hr 5min SCS

*
 ** CALIB NASHYD        0102  1  5.0   38.75    1.33 12.67  30.86 0.31   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    1.33 12.67  30.86  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    1.70 12.58  32.76  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 98.91 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\b27c4ba1-060
6-4c75-a267-b88d
    remark: 25yr 24hr 5min SCS

*
```

```
  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=109.84 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\fbcd220d-ac8
1-45f2-aeac-38fd
    remark: 50yr 24hr 5min SCS

*
 ** CALIB NASHYD        0101  1  5.0    6.23    0.48 12.42  52.77 0.48   0.000
    [CN=72.3         ]
    [ N = 3.0:Tp 0.45]
*
    READ STORM                 5.0
    [ Ptot=109.84 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\fbcd220d-ac8
1-45f2-aeac-38fd
    remark: 50yr 24hr 5min SCS

*
 ** CALIB NASHYD        0102  1  5.0   38.75    1.62 12.67  37.35 0.34   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    1.62 12.67  37.35  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    2.06 12.58  39.49  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot=109.84 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\fbcd220d-ac8
1-45f2-aeac-38fd
    remark: 50yr 24hr 5min SCS

*
 ** CALIB NASHYD        0103  1  5.0   26.71    1.19 12.75  43.70 0.40   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    3.22 12.67  41.06  n/a   0.000
*
================================================================================
======================
```

```
 ** CALIB NASHYD        0103  1  5.0   26.71    0.99 12.75  36.46 0.37   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    2.66 12.67  34.14  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\ef6ed5
c3-ea82-418f-88be-32ec323c54c0\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\ef6ed5
c3-ea82-418f-88be-32ec323c54c0\scena


DATE: 09/05/2025                          TIME: 09:18:05

USER:


COMMENTS: ____________________________________________________________


  ************************************************
  ** SIMULATION : 3.5 - 50yr 24hr 5min SCS      **
  ************************************************
```

```
       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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\582c40
bf-382e-41cb-bba4-4e9295e5f885\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\582c40
bf-382e-41cb-bba4-4e9295e5f885\scena


DATE: 09/05/2025                          TIME: 09:18:05

USER:


COMMENTS: ____________________________________________________________


  ************************************************
  ** SIMULATION : 3.6 - 100yr 24hr 5min SCS     **
  ************************************************

  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=120.77 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\c224ee9a-48a
```

```
6-4eb1-8466-5fda
    remark: 100yr 24hr 5min SCS

*
 ** CALIB NASHYD         0101  1  5.0    6.23    0.56 12.42  61.25 0.51   0.000
    [CN=72.3         ]
    [ N = 3.0:Tp 0.45]
*
    READ STORM                  5.0
    [ Ptot=120.77 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\c224ee9a-48a
6-4eb1-8466-5fda
    remark: 100yr 24hr 5min SCS

*
 ** CALIB NASHYD         0102  1  5.0   38.75    1.93 12.67  44.20 0.37   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    1.93 12.67  44.20  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    2.44 12.58  46.56  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot=120.77 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\c224ee9a-48a
6-4eb1-8466-5fda
    remark: 100yr 24hr 5min SCS

*
 ** CALIB NASHYD         0103  1  5.0   26.71    1.40 12.75  51.28 0.42   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    3.81 12.67  48.32  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\106946
95-35b6-46bc-9cac-8036864ca30e\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\106946
95-35b6-46bc-9cac-8036864ca30e\scena


DATE: 09/05/2025                          TIME: 09:18:05

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 4.1 - MTO- 2yr 4hr 5min Chica **
  ************************************************

  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                  5.0
    [ Ptot= 30.81 mm ]
*
 ** CALIB NASHYD         0101  1  5.0    6.23    0.04  2.08   4.65 0.15   0.000
    [CN=72.3         ]
    [ N = 3.0:Tp 0.45]
*
    CHIC STORM                  5.0
    [ Ptot= 30.81 mm ]
*
 ** CALIB NASHYD         0102  1  5.0   38.75    0.10  2.58   2.21 0.07   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
```

```
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    0.10  2.58   2.21  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    0.13  2.42   2.55  n/a   0.000
*
    CHIC STORM                  5.0
    [ Ptot= 30.81 mm ]
*
 ** CALIB NASHYD         0103  1  5.0   26.71    0.09  2.67   3.11 0.10   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    0.23  2.50   2.76  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\38ac64
bd-bfcc-4245-9bae-40fdeb4ab6f5\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\38ac64
bd-bfcc-4245-9bae-40fdeb4ab6f5\scena


DATE: 09/05/2025                          TIME: 09:18:06

USER:
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```
COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 4.2 - MTO- 5yr 4hr 5min Chica **
  ************************************************

  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                  5.0
    [ Ptot= 40.98 mm ]
*
 ** CALIB NASHYD         0101  1  5.0    6.23    0.09  2.08   8.76 0.21   0.000
    [CN=72.3         ]
    [ N = 3.0:Tp 0.45]
*
    CHIC STORM                  5.0
    [ Ptot= 40.98 mm ]
*
 ** CALIB NASHYD         0102  1  5.0   38.75    0.22  2.42   4.74 0.12   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    0.22  2.50   4.74  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    0.30  2.33   5.30  n/a   0.000
*
    CHIC STORM                  5.0
    [ Ptot= 40.98 mm ]
*
 ** CALIB NASHYD         0103  1  5.0   26.71    0.19  2.58   6.25 0.15   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    0.49  2.42   5.65  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\36eec0
85-c2fe-4926-8a81-a89d5431177f\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\36eec0
85-c2fe-4926-8a81-a89d5431177f\scena


DATE: 09/05/2025                          TIME: 09:18:06

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 4.3 - MTO- 10yr 4hr 5min Chic **
  ************************************************

  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                 5.0
    [ Ptot= 47.81 mm ]
*
 ** CALIB NASHYD         0101  1  5.0    6.23    0.12  2.08  12.02 0.25   0.000
    [CN=72.3        ]
    [ N = 3.0:Tp 0.45]
*
    CHIC STORM                 5.0
    [ Ptot= 47.81 mm ]
*
 ** CALIB NASHYD         0102  1  5.0   38.75    0.34  2.42   6.87 0.14   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    0.34  2.42   6.87  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    0.44  2.33   7.58  n/a   0.000
*
    CHIC STORM                 5.0
    [ Ptot= 47.81 mm ]
*
 ** CALIB NASHYD         0103  1  5.0   26.71    0.28  2.50   8.84 0.18   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    0.72  2.42   8.05  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\df25dd
d9-05b0-4f2f-af92-f596b24a7a44\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\df25dd
d9-05b0-4f2f-af92-f596b24a7a44\scena


DATE: 09/05/2025                          TIME: 09:18:06

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 4.4 - MTO- 25yr 4hr 5min Chic **
  ************************************************

  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                 5.0
    [ Ptot= 56.31 mm ]
*
 ** CALIB NASHYD         0101  1  5.0    6.23    0.18  2.00  16.54 0.29   0.000
    [CN=72.3        ]
    [ N = 3.0:Tp 0.45]
*
    CHIC STORM                 5.0
    [ Ptot= 56.31 mm ]
*
 ** CALIB NASHYD         0102  1  5.0   38.75    0.50  2.33   9.94 0.18   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    0.50  2.42   9.94  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    0.65  2.25  10.86  n/a   0.000
*
    CHIC STORM                 5.0
    [ Ptot= 56.31 mm ]
*
 ** CALIB NASHYD         0103  1  5.0   26.71    0.41  2.50  12.50 0.22   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    1.05  2.33  11.47  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\e3063d
66-816d-4ef7-8e1e-362dfe97a668\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\e3063d
66-816d-4ef7-8e1e-362dfe97a668\scena


DATE: 09/05/2025                          TIME: 09:18:06

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 4.5 - MTO- 50yr 4hr 5min Chic **
  ************************************************

  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                 5.0
    [ Ptot= 62.68 mm ]
*
 ** CALIB NASHYD         0101  1  5.0    6.23    0.22  2.00  20.22 0.32   0.000
    [CN=72.3        ]
    [ N = 3.0:Tp 0.45]
*
    CHIC STORM                 5.0
    [ Ptot= 62.68 mm ]
```

```
*
 ** CALIB NASHYD         0102  1  5.0   38.75    0.64  2.33  12.53 0.20   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    0.64  2.33  12.53  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    0.83  2.25  13.59  n/a   0.000
*
    CHIC STORM                 5.0
    [ Ptot= 62.68 mm ]
*
 ** CALIB NASHYD         0103  1  5.0   26.71    0.51  2.42  15.54 0.25   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    1.33  2.33  14.32  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\b1a7f5
67-3343-4b6e-966f-cf6e7990f9cd\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\b1a7f5
67-3343-4b6e-966f-cf6e7990f9cd\scena
```

```
DATE: 09/05/2025                          TIME: 09:18:06

USER:


COMMENTS: _____


  ************************************************
  ** SIMULATION : 4.6 - MTO- 100yr 4hr 5min Chi **
  ************************************************

  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                 5.0
    [ Ptot= 68.90 mm ]
*
 ** CALIB NASHYD         0101  1  5.0    6.23    0.26  2.00  24.02 0.35   0.000
    [CN=72.3         ]
    [ N = 3.0:Tp 0.45]
*
    CHIC STORM                 5.0
    [ Ptot= 68.90 mm ]
*
 ** CALIB NASHYD         0102  1  5.0   38.75    0.79  2.33  15.26 0.22   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    0.79  2.33  15.26  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    1.02  2.25  16.48  n/a   0.000
*
    CHIC STORM                 5.0
    [ Ptot= 68.90 mm ]
*
 ** CALIB NASHYD         0103  1  5.0   26.71    0.62  2.42  18.72 0.27   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    1.63  2.33  17.31  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\cf43c0
93-d0d7-428c-9f47-43cd33766243\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\cf43c0
93-d0d7-428c-9f47-43cd33766243\scena


DATE: 09/05/2025                          TIME: 09:18:06

USER:


COMMENTS: _____


  ************************************************
  ** SIMULATION : 5.0 - 25mm - 4hr Chicago      **
  ************************************************

  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                 6.0
    [ Ptot= 24.97 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\0e5d7995-df9
b-4097-a9d5-b75f
    remark: 25mm - 4hr Chicago
```

```
*
 ** CALIB NASHYD         0101  1  5.0    6.23    0.03  2.50   2.78 0.11   0.000
    [CN=72.3         ]
    [ N = 3.0:Tp 0.45]
*
    READ STORM                 6.0
    [ Ptot= 24.97 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\0e5d7995-df9
b-4097-a9d5-b75f
    remark: 25mm - 4hr Chicago

*
 ** CALIB NASHYD         0102  1  5.0   38.75    0.07  2.83   1.16 0.05   0.000
    [CN=60.7         ]
    [ N = 3.0:Tp 0.62]
*
    CHANNEL[ 2:  0102]   0501  1  5.0   38.75    0.07  2.92   1.16  n/a   0.000
*
    ADD [  0101+  0501]  0903  3  5.0   44.98    0.10  2.75   1.38  n/a   0.000
*
    READ STORM                 6.0
    [ Ptot= 24.97 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\0e5d7995-df9
b-4097-a9d5-b75f
    remark: 25mm - 4hr Chicago

*
 ** CALIB NASHYD         0103  1  5.0   26.71    0.06  2.92   1.73 0.07   0.000
    [CN=65.8         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0103+  0903]  0904  3  5.0   71.69    0.16  2.83   1.51  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\71f77404-3543-4159-b75f-26d974c7882e\scena
Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\71f77404-3543-4159-b75f-26d974c7882e\scena

DATE: 09/05/2025 TIME: 09:18:06

USER:

COMMENTS: _____

** SIMULATION : 6.0 - TIMMINS **

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			15.0					
	[Ptot=193.00 mm]								
	fname : C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\a681e067-91ed-46b8-9ca8-f785								
	remark: TIMMINS								
*									
**	CALIB NASHYD	0101	1 5.0	6.23	0.49	7.08	122.03	0.63	0.000
	[CN=72.3]								
	[N = 3.0:Tp 0.45]								
*									
	READ STORM			15.0					
	[Ptot=193.00 mm]								
	fname : C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\a681e067-91ed-46b8-9ca8-f785								
	remark: TIMMINS								
*									
**	CALIB NASHYD	0102	1 5.0	38.75	2.16	7.33	95.92	0.50	0.000
	[CN=60.7]								
	[N = 3.0:Tp 0.62]								
*									
	CHANNEL[2: 0102]	0501	1 5.0	38.75	2.16	7.33	95.92	n/a	0.000
*									
	ADD [0101+ 0501]	0903	3 5.0	44.98	2.63	7.25	99.54	n/a	0.000
*									
	READ STORM			15.0					
	[Ptot=193.00 mm]								
	fname : C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\a681e067-91ed-46b8-9ca8-f785								
	remark: TIMMINS								
*									
**	CALIB NASHYD	0103	1 5.0	26.71	1.58	7.42	107.17	0.56	0.000
	[CN=65.8]								
	[N = 3.0:Tp 0.72]								
*									
	ADD [0103+ 0903]	0904	3 5.0	71.69	4.19	7.33	102.38	n/a	0.000
*									
	FINISH								

***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

Output filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\582c40bf-382e-41cb-bba4-4e9295e5f885\scena
Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\582c40bf-382e-41cb-bba4-4e9295e5f885\scena

DATE: 09/05/2025 TIME: 09:18:05

USER:

COMMENTS: _____

** SIMULATION : 3.6 - 100yr 24hr 5min SCS **

READ STORM	Filename: C:\Users\pwalsh\AppData\Local\Temp\6c466957-0223-4446-8761-a8d42ce60f2c\c224ee9a
Ptotal=120.77 mm	Comments: 100yr 24hr 5min SCS

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	6.08	2.17	12.17	17.39	18.25	2.17
0.08	1.33	6.17	2.17	12.25	17.39	18.33	2.17
0.17	1.33	6.25	2.17	12.33	17.39	18.42	2.17
0.25	1.33	6.33	2.17	12.42	17.39	18.50	2.17
0.33	1.33	6.42	2.17	12.50	17.39	18.58	2.17
0.42	1.33	6.50	2.17	12.58	8.94	18.67	2.17
0.50	1.33	6.58	2.17	12.67	8.94	18.75	2.17
0.58	1.33	6.67	2.17	12.75	8.94	18.83	2.17
0.67	1.33	6.75	2.17	12.83	8.94	18.92	2.17
0.75	1.33	6.83	2.17	12.92	8.94	19.00	2.17
0.83	1.33	6.92	2.17	13.00	8.94	19.08	2.17
0.92	1.33	7.00	2.17	13.08	6.52	19.17	2.17
1.00	1.33	7.08	2.66	13.17	6.52	19.25	2.17
1.08	1.33	7.17	2.66	13.25	6.52	19.33	2.17
1.17	1.33	7.25	2.66	13.33	6.52	19.42	2.17
1.25	1.33	7.33	2.66	13.42	6.52	19.50	2.17
1.33	1.33	7.42	2.66	13.50	6.52	19.58	2.17
1.42	1.33	7.50	2.66	13.58	5.07	19.67	2.17
1.50	1.33	7.58	2.66	13.67	5.07	19.75	2.17
1.58	1.33	7.67	2.66	13.75	5.07	19.83	2.17
1.67	1.33	7.75	2.66	13.83	5.07	19.92	2.17
1.75	1.33	7.83	2.66	13.92	5.07	20.00	2.17
1.83	1.33	7.92	2.66	14.00	5.07	20.08	1.45
1.92	1.33	8.00	2.66	14.08	3.62	20.17	1.45
2.00	1.33	8.08	3.14	14.17	3.62	20.25	1.45
2.08	1.57	8.17	3.14	14.25	3.62	20.33	1.45
2.17	1.57	8.25	3.14	14.33	3.62	20.42	1.45
2.25	1.57	8.33	3.14	14.42	3.62	20.50	1.45
2.33	1.57	8.42	3.14	14.50	3.62	20.58	1.45
2.42	1.57	8.50	3.14	14.58	3.62	20.67	1.45
2.50	1.57	8.58	3.38	14.67	3.62	20.75	1.45
2.58	1.57	8.67	3.38	14.75	3.62	20.83	1.45
2.67	1.57	8.75	3.38	14.83	3.62	20.92	1.45
2.75	1.57	8.83	3.38	14.92	3.62	21.00	1.45
2.83	1.57	8.92	3.38	15.00	3.62	21.08	1.45
2.92	1.57	9.00	3.38	15.08	3.62	21.17	1.45
3.00	1.57	9.08	3.86	15.17	3.62	21.25	1.45
3.08	1.57	9.17	3.86	15.25	3.62	21.33	1.45
3.17	1.57	9.25	3.86	15.33	3.62	21.42	1.45
3.25	1.57	9.33	3.86	15.42	3.62	21.50	1.45
3.33	1.57	9.42	3.86	15.50	3.62	21.58	1.45
3.42	1.57	9.50	3.86	15.58	3.62	21.67	1.45
3.50	1.57	9.58	4.35	15.67	3.62	21.75	1.45
3.58	1.57	9.67	4.35	15.75	3.62	21.83	1.45
3.67	1.57	9.75	4.35	15.83	3.62	21.92	1.45

3.75	1.57	9.83	4.35	15.92	3.62	22.00	1.45
3.83	1.57	9.92	4.35	16.00	3.62	22.08	1.45
3.92	1.57	10.00	4.35	16.08	2.17	22.17	1.45
4.00	1.57	10.08	5.56	16.17	2.17	22.25	1.45
4.08	1.93	10.17	5.56	16.25	2.17	22.33	1.45
4.17	1.93	10.25	5.56	16.33	2.17	22.42	1.45
4.25	1.93	10.33	5.56	16.42	2.17	22.50	1.45
4.33	1.93	10.42	5.56	16.50	2.17	22.58	1.45
4.42	1.93	10.50	5.56	16.58	2.17	22.67	1.45
4.50	1.93	10.58	7.49	16.67	2.17	22.75	1.45
4.58	1.93	10.67	7.49	16.75	2.17	22.83	1.45
4.67	1.93	10.75	7.49	16.83	2.17	22.92	1.45
4.75	1.93	10.83	7.49	16.92	2.17	23.00	1.45
4.83	1.93	10.92	7.49	17.00	2.17	23.08	1.45
4.92	1.93	11.00	7.49	17.08	2.17	23.17	1.45
5.00	1.93	11.08	11.59	17.17	2.17	23.25	1.45
5.08	1.93	11.17	11.59	17.25	2.17	23.33	1.45
5.17	1.93	11.25	11.59	17.33	2.17	23.42	1.45
5.25	1.93	11.33	11.59	17.42	2.17	23.50	1.45
5.33	1.93	11.42	11.59	17.50	2.17	23.58	1.45
5.42	1.93	11.50	11.59	17.58	2.17	23.67	1.45
5.50	1.93	11.58	35.75	17.67	2.17	23.75	1.45
5.58	1.93	11.67	35.75	17.75	2.17	23.83	1.45
5.67	1.93	11.75	35.75	17.83	2.17	23.92	1.45
5.75	1.93	11.83	147.82	17.92	2.17	24.00	1.45
5.83	1.93	11.92	147.82	18.00	2.17		
5.92	1.93	12.00	147.82	18.08	2.17		
6.00	1.93	12.08	17.39	18.17	2.17		

CALIB	
NASHYD (0101)	Area (ha)= 6.23 Curve Number (CN)= 72.3
ID= 1 DT= 5.0 min	Ia (mm)= 7.08 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.45

Unit Hyd Qpeak (cms)= 0.529

PEAK FLOW (cms)= 0.560 (i)
TIME TO PEAK (hrs)= 12.417
RUNOFF VOLUME (mm)= 61.252
TOTAL RAINFALL (mm)= 120.770
RUNOFF COEFFICIENT = 0.507

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
NASHYD (0102)	Area (ha)= 38.75 Curve Number (CN)= 60.7
ID= 1 DT= 5.0 min	Ia (mm)= 10.59 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.62

Unit Hyd Qpeak (cms)= 2.387

PEAK FLOW (cms)= 1.930 (i)
TIME TO PEAK (hrs)= 12.667
RUNOFF VOLUME (mm)= 44.202
TOTAL RAINFALL (mm)= 120.770
RUNOFF COEFFICIENT = 0.366

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ROUTE CHN (0501)	
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	101.50	0.0500	
1.00	100.70	0.0500	
1.50	100.55	0.0500 /0.0300	Main Channel
2.00	99.50	0.0300	Main Channel
3.50	99.60	0.0300	Main Channel
4.50	100.65	0.0300 /0.0500	Main Channel
6.00	101.45	0.0500	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.10	99.60	.917E+01	0.0	0.40	5.36
0.19	99.69	.291E+02	0.2	0.78	2.79
0.29	99.79	.508E+02	0.4	1.04	2.09
0.38	99.88	.741E+02	0.7	1.24	1.74
0.48	99.98	.992E+02	1.1	1.41	1.53
0.57	100.07	.126E+03	1.5	1.56	1.39
0.67	100.17	.154E+03	2.0	1.69	1.28
0.76	100.26	.184E+03	2.6	1.81	1.19
0.86	100.36	.216E+03	3.2	1.93	1.13
0.95	100.45	.250E+03	3.9	2.03	1.07
1.05	100.55	.285E+03	4.7	2.13	1.02
1.16	100.66	.331E+03	5.8	2.27	0.96
1.28	100.78	.384E+03	7.1	2.42	0.90
1.39	100.89	.443E+03	8.7	2.55	0.85
1.50	101.00	.506E+03	10.4	2.66	0.82
1.61	101.11	.575E+03	12.2	2.76	0.79
1.72	101.22	.649E+03	14.2	2.84	0.76
1.84	101.34	.728E+03	16.4	2.92	0.74
1.95	101.45	.813E+03	18.7	3.00	0.72

		<---- hydrograph ---->			<-pipe / channel->	
		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2	(0102)	38.75	1.93	12.67	44.20	0.65	1.67
OUTFLOW: ID= 1	(0501)	38.75	1.93	12.67	44.20	0.65	1.67

ADD HYD	(0903)
1 + 2 = 3	

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1	(0101):	6.23	0.560	12.42	61.25
+ ID2= 2	(0501):	38.75	1.933	12.67	44.20
ID = 3	(0903):	44.98	2.442	12.58	46.56

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	
NASHYD (0103)	Area (ha)= 26.71 Curve Number (CN)= 65.8
ID= 1 DT= 5.0 min	Ia (mm)= 8.95 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.72

Unit Hyd Qpeak (cms)= 1.417

PEAK FLOW (cms)= 1.404 (i)
TIME TO PEAK (hrs)= 12.750
RUNOFF VOLUME (mm)= 51.278
TOTAL RAINFALL (mm)= 120.770
RUNOFF COEFFICIENT = 0.425

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD	(0904)
1 + 2 = 3	

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1	(0103):	26.71	1.404	12.75	51.28
+ ID2= 2	(0903):	44.98	2.442	12.58	46.56
ID = 3	(0904):	71.69	3.811	12.67	48.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

Appendix C:
Proposed Hydrology

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

796060 Grey Road 19- SWM	123143

Prepared By

PNW	August 13, 2025

Data Sources

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

Pre-Development Condition

Watershed	NVCA
Catchment ID	201
Catchment Area (ha)	4.84
Impervious %	8%

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

Soil Symbol	**Ksc**			
Soil Series	Kemble			
Hydrologic Soils Group	C			
Soil Texture	Silty Clay			
Runoff Coefficient Type	3			
Area (ha)	4.84			
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	0.41	100	0.95									
Gravel	3	0.24	89	0.60									
Woodland	10	0.52	73	0.35									
Pasture/Lawns	5	1.93	79	0.40									
Meadows	8		76	0.38									
Cultivated	7		82	0.55									
Waterbody	12	1.75	50	0.05									
Average CN		70.14											
Average C		0.32											
Average IA		7.72											

Time to Peak Calculations

Max Catchment Elevation (m)	227.00
Min Catchment Elevation (m)	217.00
Catchment Length (m)	455
Catchment Slope (%)	2.20%
Method Airport Method	
Time of Concentration (mins)	41.60

Summary

Catchment CN	70.1
Catchment C	0.32
Catchment IA (mm)	7.72
Time of Concentration (hrs)	0.69
Catchment Time to Peak (hrs)	0.46
Catchment Time Step (mins)	5.55

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

796060 Grey Road 19- SWM	123143

Prepared By

PNW	August 13, 2025

Data Sources

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

Pre-Development Condition

Watershed	NVCA
Catchment ID	202
Catchment Area (ha)	38.04
Impervious %	2%

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

Soil Symbol	**Ksc**			
Soil Series	Kemble			
Hydrologic Soils Group	C			
Soil Texture	Silty Clay			
Runoff Coefficient Type	3			
Area (ha)	38.04			
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	0.67	100	0.95									
Gravel	3	0.66	89	0.60									
Woodland	10	12.34	73	0.42									
Pasture/Lawns	5	1.75	79	0.45									
Meadows	8		76	0.44									
Cultivated	7		82	0.60									
Waterbody	12	22.63	50	0.05									
Average CN		60.36											
Average C		0.21											
Average IA		10.70											

Time to Peak Calculations

Max Catchment Elevation (m)	308.00
Min Catchment Elevation (m)	219.00
Catchment Length (m)	1319
Catchment Slope (%)	6.75%
Method Airport Method	
Time of Concentration (mins)	55.88

Summary

Catchment CN	60.4
Catchment C	0.21
Catchment IA (mm)	10.70
Time of Concentration (hrs)	0.93
Catchment Time to Peak (hrs)	0.62
Catchment Time Step (mins)	7.45

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

796060 Grey Road 19- SWM	123143

Prepared By

PNW	August 13, 2025

Data Sources

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

Pre-Development Condition

Watershed	NVCA
Catchment ID	203
Catchment Area (ha)	24.81
Impervious %	4%

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

Soil Symbol	**Ksc**			
Soil Series	Kemble			
Hydrologic Soils Group	C			
Soil Texture	Silty Clay			
Runoff Coefficient Type	3			
Area (ha)	24.81			
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	0.88	100	0.95									
Gravel	3		89	0.60									
Woodland	10	4.25	73	0.35									
Pasture/Lawns	5	8.22	79	0.40									
Meadows	8		76	0.38									
Cultivated	7		82	0.55									
Waterbody	12	11.46	50	0.05									
Average CN		65.32											
Average C		0.25											
Average IA		8.98											

Time to Peak Calculations

Max Catchment Elevation (m)	237.00
Min Catchment Elevation (m)	218.00
Catchment Length (m)	900
Catchment Slope (%)	2.11%
Method Airport Method	
Time of Concentration (mins)	65.02

Summary

Catchment CN	65.3
Catchment C	0.25
Catchment IA (mm)	8.98
Time of Concentration (hrs)	1.08
Catchment Time to Peak (hrs)	0.72
Catchment Time Step (mins)	8.67

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (StandHYD)

Project Details

796060 Grey Road 19- SWM	123143

Prepared By

PNW	August 13, 2025

Data Sources

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

Pre-Development Condition

Watershed	NVCA
Catchment ID	204
Catchment Area (ha)	2.08
Impervious %	83%
Pervious Area (ha)	0.35

Average Curve Number (CN) & Initial Abstraction (IA) for Pervious Area

Soil Symbol	**Ksc**			
Soil Series	Kemble SC			
Hydrologic Soils Group	C			
Soil Texture	Silty Clay			
Runoff Coefficient Type	3			
Area (ha)	0.35			
Percentage of Catchment	100%			

Land Cover Category	**IA**	**A (ha)**	**CN**	**A (ha)**	**CN**	**A (ha)**	**CN**	**A (ha)**	**CN**
Impervious	2		100						
Gravel	3		89						
Woodland	10		73						
Pasture/Lawns	5	0.35	79						
Meadows	8		76						
Cultivated	7		82						
Waterbody	12		50						
Average CN		79.00							
Average IA		5.00							

Summary

Catchment CN:	79.0

Catchment IA (mm):	5.00

Notes

CN and IA values have been calculated for the pervious area of the catchment only.

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (StandHYD)

Project Details

796060 Grey Road 19- SWM	123143

Prepared By

PNW	August 13, 2025

Data Sources

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

Pre-Development Condition

Watershed	NVCA
Catchment ID	205
Catchment Area (ha)	1.92
Impervious %	86%
Pervious Area (ha)	0.27

Average Curve Number (CN) & Initial Abstraction (IA) for Pervious Area

Soil Symbol	**Ksc**			
Soil Series	Kemble SC			
Hydrologic Soils Group	C			
Soil Texture	Silty Clay			
Runoff Coefficient Type	3			
Area (ha)	0.27			
Percentage of Catchment	100%			

Land Cover Category	**IA**	**A (ha)**	**CN**	**A (ha)**	**CN**	**A (ha)**	**CN**	**A (ha)**	**CN**
Impervious	2		100						
Gravel	3		89						
Woodland	10		73						
Pasture/Lawns	5	0.27	79						
Meadows	8		76						
Cultivated	7		82						
Waterbody	12		50						
Average CN		79.00							
Average IA		5.00							

Summary

Catchment CN:	79.0

Catchment IA (mm):	5.00

Notes

CN and IA values have been calculated for the pervious area of the catchment only.

TATHAM ENGINEERING

PROJECT	796060 Grey Road 19	FILE	123143
		DATE	11-Sep-25
SUBJECT	Underground Quantity Storage Chamber 401	NAME	PNW
		PAGE	1 OF 4

Stage Storage Table Underground Quantity Storage Volume

Unit:
Module Footprint: 1342 m^2
Height of Module: 1.2 m
Void Ratio per module: 1.00
Void Ratio of stone: 0.40

Note: Incremental volume calculated per incremental depth, footprint area of system and applicable void ratio for StormTank module.

Elevation	Elevation Reference	Incremental % of Volume as Recharger Unit	Incremental % of Volume as Stone	Cumulative Volume - Dead (m^3)	Cumulative Volume - Live (m^3)
0.00	Base of Stone	0%	100%	0	0
0.10		0%	100%	52	0
0.20		0%	100%	104	0
0.23	Bottom of Module	0%	100%	120	0
0.33		77%	23%	120	112
0.43		76%	24%	120	223
0.53		73%	27%	120	332
0.63		72%	28%	120	441
0.73		68%	32%	120	546
0.83		66%	34%	120	649
0.93		63%	37%	120	751
1.03		59%	41%	120	849
1.13		55%	45%	120	944
1.23		46%	54%	120	1032
1.33		36%	64%	120	1111
1.43	Top of Module	15%	85%	120	1175
1.53		0%	100%	120	1227
1.63		0%	100%	120	1279
1.73		0%	100%	120	1331
1.83	Top of Stone	0%	100%	120	1383

TATHAM ENGINEERING

PROJECT	796060 Grey Road 19	FILE	123143
		DATE	11-Sep-25
SUBJECT	Total Quantity Storage Summary - Chamber 401	NAME	PNW
		PAGE	2 OF 4

Quantity Storage Summary Table

Elevation	U/G Storage (m^3)
0.23	119.6
0.33	232.0
0.43	342.9
0.53	452.0
0.63	560.2
0.73	665.3
0.83	768.9
0.93	870.4
1.03	968.3
1.13	1063.2
1.23	1151.2
1.33	1231.1
1.43	1294.7
1.53	1346.7
1.63	1398.7
1.73	1450.7
1.83	1502.7

TATHAM ENGINEERING

PROJECT	796060 Grey Road 19	FILE	123143
		DATE	11-Sep-25
SUBJECT	Partially Full Orifice Control - Chamber 401	NAME	PNW
		PAGE	3 OF 4

Primary Orifice Control - for Pipes Flowing Full or Partially Full

Orifice Equation

$Q = C \times A \times (2gH)^{0.5}$

Q = flow rate (m^3)

C = constant

A = area of opening (m^2)

H = net head on the orifice

g = Acceleration due to gravity

Orifice Constant (C): **0.63**

Depth Increment (m): **0.10**

Minimum Elevation (Invert of Control) (m): **0.23**

Maximum Elevation (Top of Ponding) (m): **1.83**

Water Elevation	Depth from Min. Elevation	Pipe Partially Full Inlet Control Flow
m	m	m^3/s
0.23	0.00	0.000
0.33	0.10	0.005
0.43	0.20	0.015
0.53	0.30	0.023

Control Features

Orifice Diameter (m): **0.150**

Mannings Value: **0.013**

Invert Elevation: **0.23**

Inlet Type: **2**

1 = Projecting

2 = Flush

Inlet Control Equation (Smith) Projecting Inlet

MMF Model y=(a*b+c*x^d)/(b+x^d)

Coefficient Data

a = 0.0168

b = 1.77

c = 3.06

d = 2.27

Inlet Control Equation (Smith) Flush Inlet

MMF Model y=(a*b+c*x^d)/(b+x^d)

Coefficient Data

a = -1.08E-03

b = 2.30E+00

c = 3.95

d = 2.08

TATHAM ENGINEERING

PROJECT	796060 Grey Road 19	FILE	123143
		DATE	11-Sep-25
SUBJECT	Stage Storage Discharge Summary - Chamber 401	NAME	PNW
		PAGE	4 OF 4

Stage Storage Discharge Summary Table

Orifice Control

Orifice Dia. (mm)	150
Orifice Invert (m)	0.23
Orifice Area (m)	0.018
Orifice Coefficient	0.63

Orifice Equation

$Q = C \times A \times (2gH)^{0.5}$

Q = flow rate (m^3)

C = constant

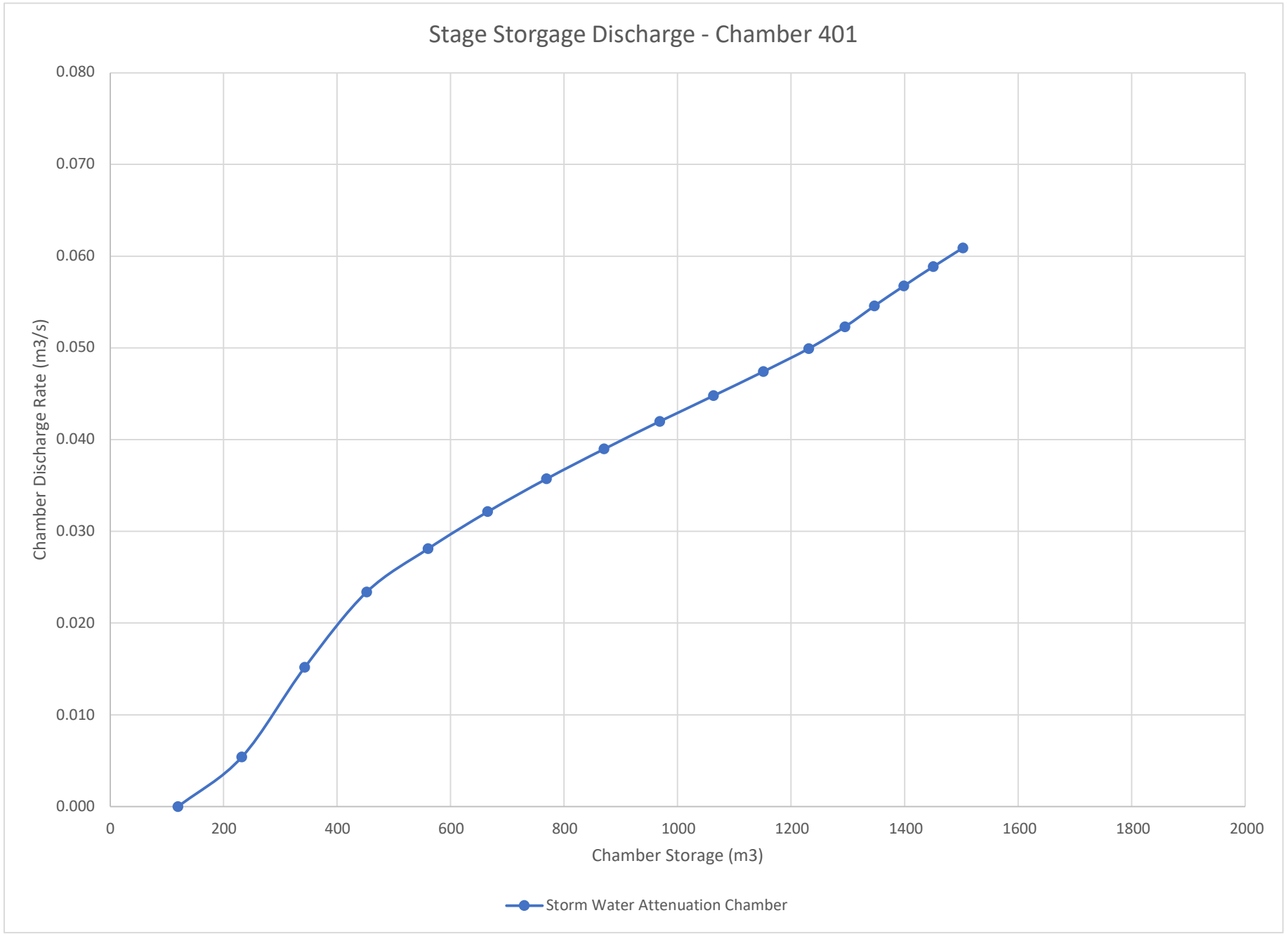
A = area of opening (m^2)

H = net head on the orifice

g = Acceleration due to gravity

Note: Shaded cells have been calculated using partially full orifice equations (Hydraulic Structures, C.D. Smith, University of Saskatchewan)

Elevation	Head (m)	Orifice Discharge (m^3/s)	Total Discharge (m^3/s)	Total Storage ($m^{3)}$)
0.23	0.00	0.000	0.000	120
0.33	0.03	0.005	0.005	232
0.43	0.13	0.015	0.015	343
0.53	0.23	0.023	0.023	452
0.63	0.33	0.028	0.028	560
0.73	0.43	0.032	0.032	665
0.83	0.53	0.036	0.036	769
0.93	0.63	0.039	0.039	870
1.03	0.73	0.042	0.042	968
1.13	0.83	0.045	0.045	1063
1.23	0.93	0.047	0.047	1151
1.33	1.03	0.050	0.050	1231
1.43	1.13	0.052	0.052	1295
1.53	1.23	0.055	0.055	1347
1.63	1.33	0.057	0.057	1399
1.73	1.43	0.059	0.059	1451
1.83	1.53	0.061	0.061	1503


Stage Storgage Discharge - Chamber 401
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
Chamber Discharge Rate (m3/s)
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Chamber Storage (m3)
Storm Water Attenuation Chamber

TATHAM ENGINEERING

PROJECT	796060 Grey Road 19	FILE	123143
		DATE	11-Sep-25
SUBJECT	Underground Quantity Storage Chamber 402	NAME	PNW
		PAGE	1 OF 4

Stage Storage Table Underground Quantity Storage Volume

Unit:
Module Footprint: 1902 m^2
Height of Module: 1.2 m
Void Ratio per module: 1.00
Void Ratio of stone: 0.40

Note: Incremental volume calculated per incremental depth, footprint area of system and applicable void ratio for StormTank module.

Elevation	Elevation Reference	Incremental % of Volume as Recharger Unit	Incremental % of Volume as Stone	Cumulative Volume - Dead (m^3)	Cumulative Volume - Live (m^3)
0.00	Base of Stone	0%	100%	0	0
0.10		0%	100%	74	0
0.20		0%	100%	148	0
0.23	Bottom of Module	0%	100%	170	0
0.33		77%	23%	170	160
0.43		76%	24%	170	318
0.53		73%	27%	170	473
0.63		72%	28%	170	627
0.73		68%	32%	170	777
0.83		66%	34%	170	924
0.93		63%	37%	170	1068
1.03		59%	41%	170	1208
1.13		55%	45%	170	1343
1.23		46%	54%	170	1468
1.33		36%	64%	170	1582
1.43	Top of Module	15%	85%	170	1672
1.53		0%	100%	170	1746
1.63		0%	100%	170	1820
1.73		0%	100%	170	1894
1.83	Top of Stone	0%	100%	170	1968

TATHAM ENGINEERING

PROJECT	796060 Grey Road 19	FILE	123143
		DATE	11-Sep-25
SUBJECT	Total Quantity Storage Summary - Chamber 402	NAME	PNW
		PAGE	2 OF 4

Quantity Storage Summary Table

Elevation	U/G Storage (m^3)
0.23	170.2
0.33	330.1
0.43	488.0
0.53	643.3
0.63	797.2
0.73	946.8
0.83	1094.2
0.93	1238.7
1.03	1378.0
1.13	1513.0
1.23	1638.2
1.33	1751.9
1.43	1842.4
1.53	1916.4
1.63	1990.4
1.73	2064.4
1.83	2138.4

TATHAM ENGINEERING

PROJECT	796060 Grey Road 19	FILE	123143
		DATE	11-Sep-25
SUBJECT	Partially Full Orifice Control - Chamber 402	NAME	PNW
		PAGE	3 OF 4

Primary Orifice Control - for Pipes Flowing Full or Partially Full

Orifice Equation

$Q = C \times A \times (2gH)^{0.5}$

Q = flow rate (m^3)

C = constant

A = area of opening (m^2)

H = net head on the orifice

g = Acceleration due to gravity

Orifice Constant (C): **0.63**

Depth Increment (m): **0.10**

Minimum Elevation (Invert of Control) (m): **0.23**

Maximum Elevation (Top of Ponding) (m): **1.83**

Water Elevation	Depth from Min. Elevation	Pipe Partially Full Inlet Control Flow
m	m	m^3/s
0.23	0.00	0.000
0.33	0.10	0.002
0.43	0.20	0.002
0.53	0.30	0.003

Control Features

Orifice Diameter (m): **0.050**

Mannings Value: **0.013**

Invert Elevation: **0.23**

Inlet Type: **2**

1 = Projecting

2 = Flush

Inlet Control Equation (Smith) Projecting Inlet

MMF Model y=(a*b+c*x^d)/(b+x^d)

Coefficient Data

a = 0.0168

b = 1.77

c = 3.06

d = 2.27

Inlet Control Equation (Smith) Flush Inlet

MMF Model y=(a*b+c*x^d)/(b+x^d)

Coefficient Data

a = -1.08E-03

b = 2.30E+00

c = 3.95

d = 2.08

TATHAM ENGINEERING

PROJECT	796060 Grey Road 19	FILE	421391
		DATE	11-Sep-25
SUBJECT	Stage Storage Discharge - Chamber 402	NAME	PNW
		PAGE	4 OF 4

Stage Storage Discharge Summary Table

Orifice Control

Orifice Dia. (mm)	50
Orifice Invert (m)	0.23
Orifice Area (m)	0.002
Orifice Coefficient	0.63

Orifice Equation

$Q = C \times A \times (2gH)^{0.5}$

Q = flow rate (m^3)

C = constant

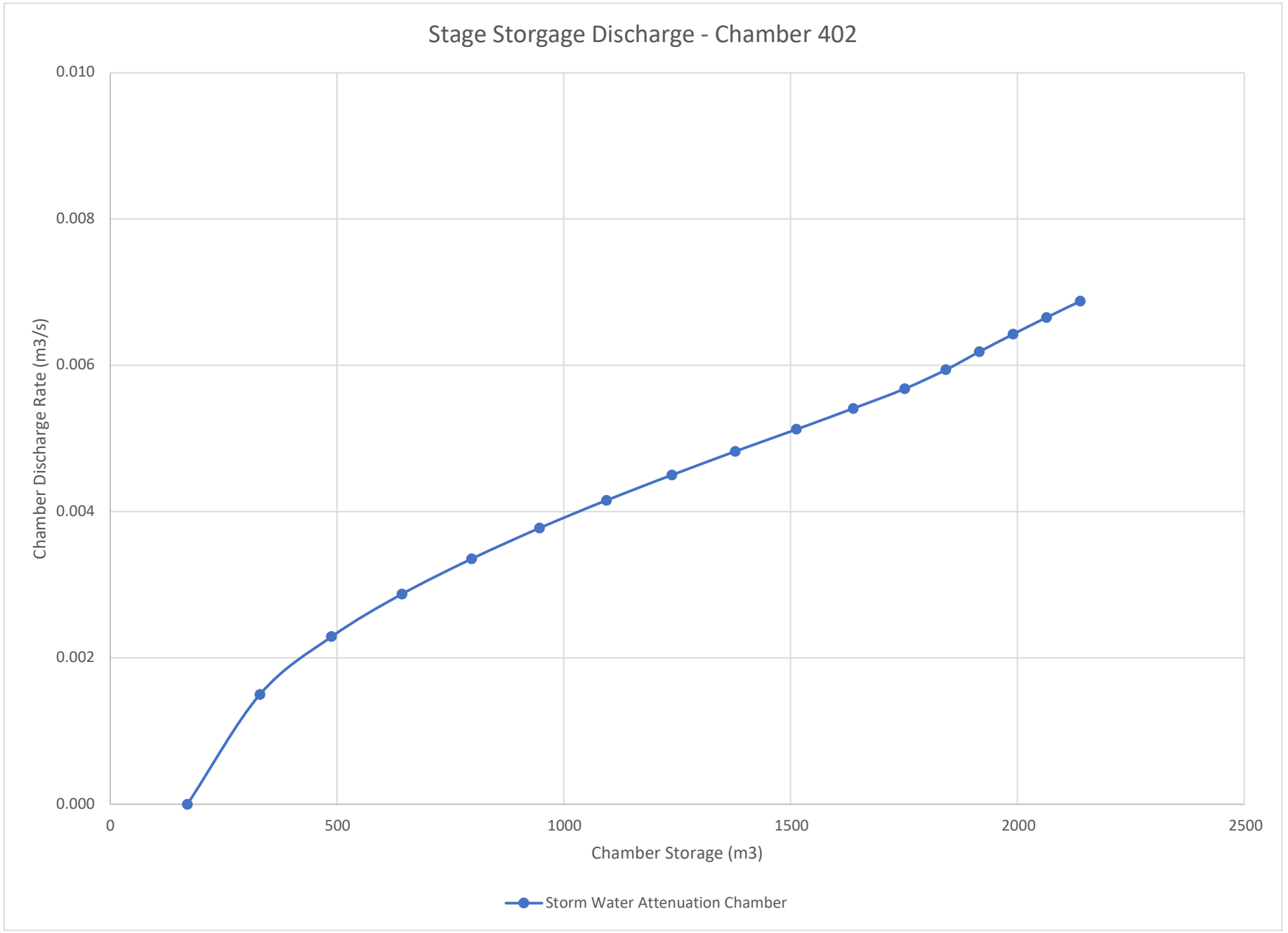
A = area of opening (m^2)

H = net head on the orifice

g = Acceleration due to gravity

Note: Shaded cells have been calculated using partially full orifice equations (Hydraulic Structures, C.D. Smith, University of Saskatchewan)

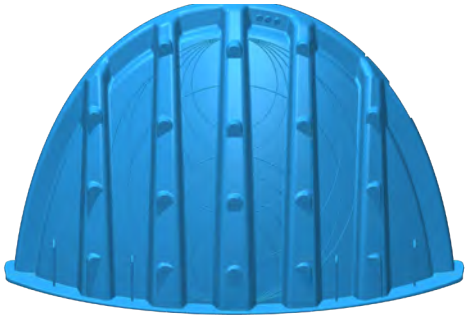
Elevation	Head (m)	Orifice Discharge (m^3/s)	Total Discharge (m^3/s)	Total Storage ($m^{3)}$)
0.23	0.00	0.000	0.000	170
0.33	0.08	0.002	0.002	330
0.43	0.18	0.002	0.002	488
0.53	0.28	0.003	0.003	643
0.63	0.38	0.003	0.003	797
0.73	0.48	0.004	0.004	947
0.83	0.58	0.004	0.004	1094
0.93	0.68	0.005	0.005	1239
1.03	0.78	0.005	0.005	1378
1.13	0.88	0.005	0.005	1513
1.23	0.98	0.005	0.005	1638
1.33	1.08	0.006	0.006	1752
1.43	1.18	0.006	0.006	1842
1.53	1.28	0.006	0.006	1916
1.63	1.38	0.006	0.006	1990
1.73	1.48	0.007	0.007	2064
1.83	1.58	0.007	0.007	2138


Stage Storgage Discharge - Chamber 402
0.010
0.008
0.006
0.004
0.002
0.000
Chamber Discharge Rate (m3/s)
0
500
1000
1500
2000
2500
Chamber Storage (m3)
Storm Water Attenuation Chamber

CULTEC RECHARGER® 902HD STORMWATER CHAMBER

The Recharger® 902HD is a 48" (1219 mm) tall, high capacity chamber. Typically when using this model, fewer chambers are required resulting in less labor and a smaller installation area. The Recharger® 902HD has the side portal internal manifold feature. HVLV® FC-48 Feed Connectors are inserted into the side portals to create the internal manifold.

Recharger 902HD Chamber



Recharger 902HD End Cap

Recharger 902HD Chamber	
Size (L x W x H)	4.25' x 78" x 48"
	1.30 m x 1981 mm x 1219 mm
Installed Length	3.67'
	1.12 m
Length Adjustment per Row - with two end caps installed	1.03'
	0.31 m
Length Adjustment per Row - when not using end caps	0.58'
	0.18 m
Chamber Storage	17.31 ft^3/ft
	1.61 m^3/m
	63.47 ft^3/unit
	1.80 m^3/unit
Min. Installed Storage	27.06 ft^3/ft
	2.53 m^3/m
	99.28 ft^3/unit
	2.81 m^3/unit
Min. Area Required	26.58 ft^2
	2.47 m^2
Chamber Weight	83.0 lbs
	37.65 kg
Shipping	15 chambers/skid
	1,370 lbs/skid
	14 skids/48' flatbed
Min. Center-to-Center Spacing	7.25'
	2.21 m
Max. Allowable Cover	8.3'
	2.53 m
Max. Allowable O.D. in Side Portal	10" HDPE, 12" PVC
	250 mm HDPE, 300 mm PVC
Compatible Feed Connector	HVLV FC-48 Feed Connector

Calculations are based on installed chamber length.
All above values are nominal.
Includes 12" (305 mm) stone above crown of chamber and typical stone surround at 7.25' (2.21 m) center-to-center spacing and stone foundation depth as listed in table.
Stone void calculated at 40%.

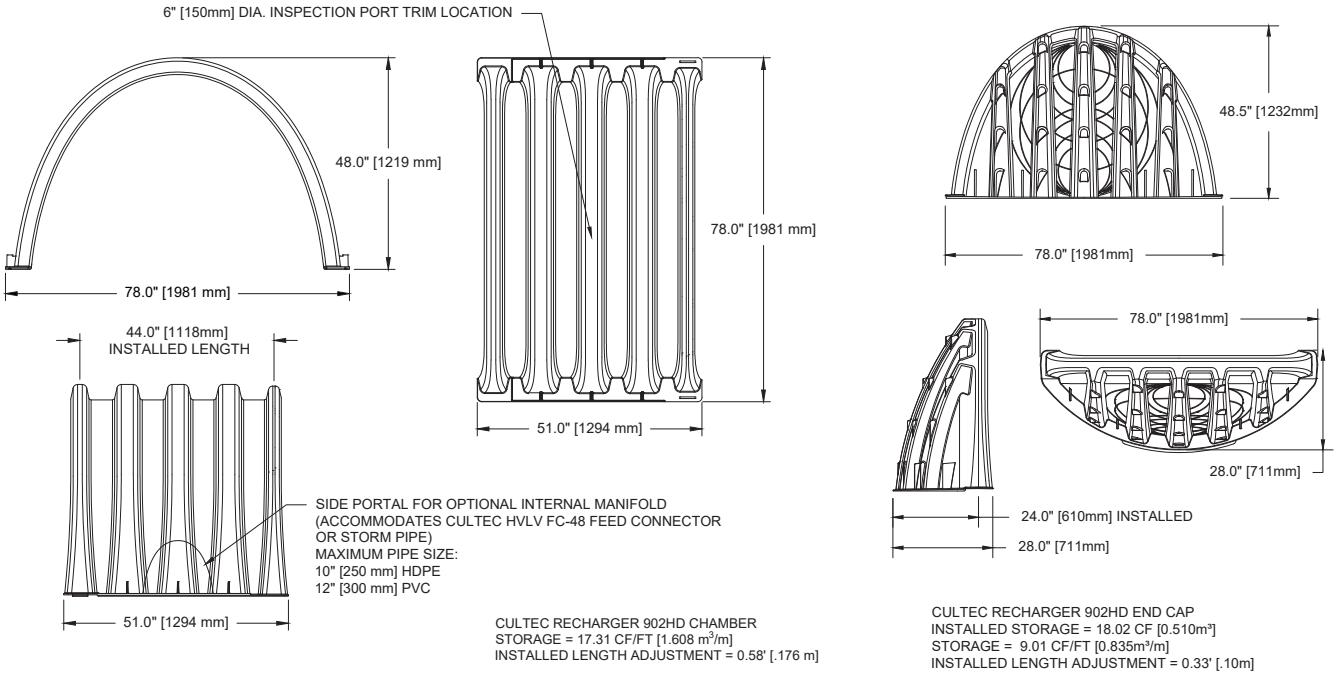
	Stone Foundation Depth		
	9"	12"	18"
	229 mm	305 mm	457 mm
Chamber and Stone Storage Per Chamber	99.28 ft^3	101.94 ft^3	107.26 ft^3
	2.81 m^3	2.89 m^3	3.04 m^3
Min. Effective Depth	5.75'	6.00'	6.5'
	1.75 m	1.83 m	1.98 m
Stone Required Per Chamber	3.32 yd^3	3.56 yd^3	4.05 yd^3
	2.54 m^3	2.72 m^3	3.06 m^3

Recharger 902HD End Cap	
Size (L x W x H)	28.0" x 78.0" x 48.5"
	711 mm x 1982 mm x 1231 mm
Installed Length	24.0"
	610 mm
End Cap Storage	9.01 ft^3/ft
	0.83 m^3/m
	18.02 ft^3/unit
	0.51 m^3/unit
Min. Installed Storage	22.08 ft^3/ft
	2.05 m^3/m
	44.16 ft^3/unit
	1.25 m^3/unit
End Cap Weight	46.0 lbs
	20.86 kg
Shipping	10 end caps/skid
	540 lbs/skid
	14 skids/48' flatbed
Max. Inlet Opening in End Cap	30" HDPE, 36" PVC
	750 mm HDPE, 900 mm PVC

Calculations are based on installed chamber length.
All above values are nominal.
Min. installed storage includes 9" (229 mm) stone base, 12" (305 mm) stone above crown of chamber and typical stone surround at 7.25' (2.21 m) center-to-center spacing.

For more information, contact CULTEC at (203) 775-4416 or visit www.cultec.com.

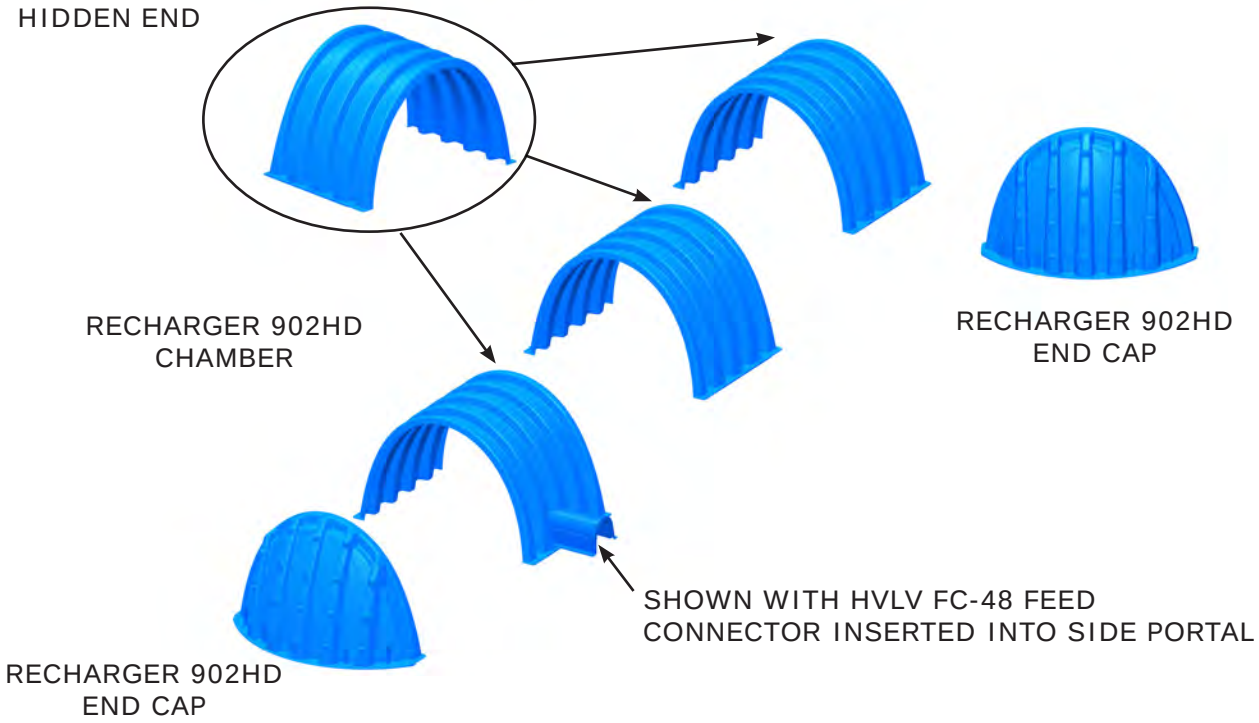
Three View Drawing



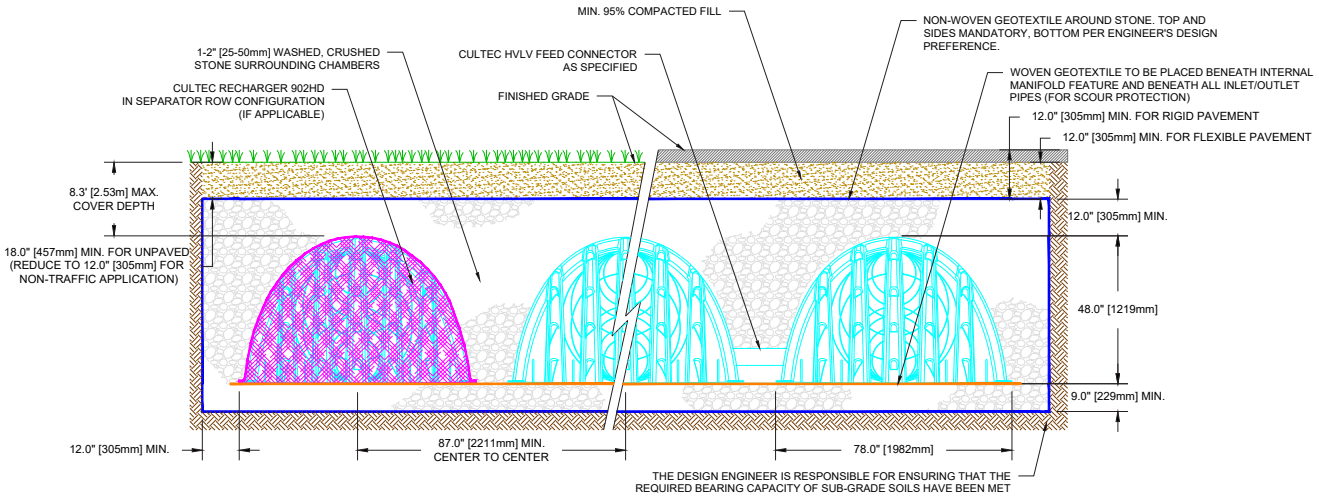
CULTEC RECHARGER 902HD CHAMBER
STORAGE = 17.31 CF/FT [1.608 m^3/m]
INSTALLED LENGTH ADJUSTMENT = 0.58' [.176 m]

CULTEC RECHARGER 902HD END CAP
INSTALLED STORAGE = 18.02 CF [0.510m^3]
STORAGE = 9.01 CF/FT [0.835m^3/m]
INSTALLED LENGTH ADJUSTMENT = 0.33' [.10m]

Typical Interlock Installation

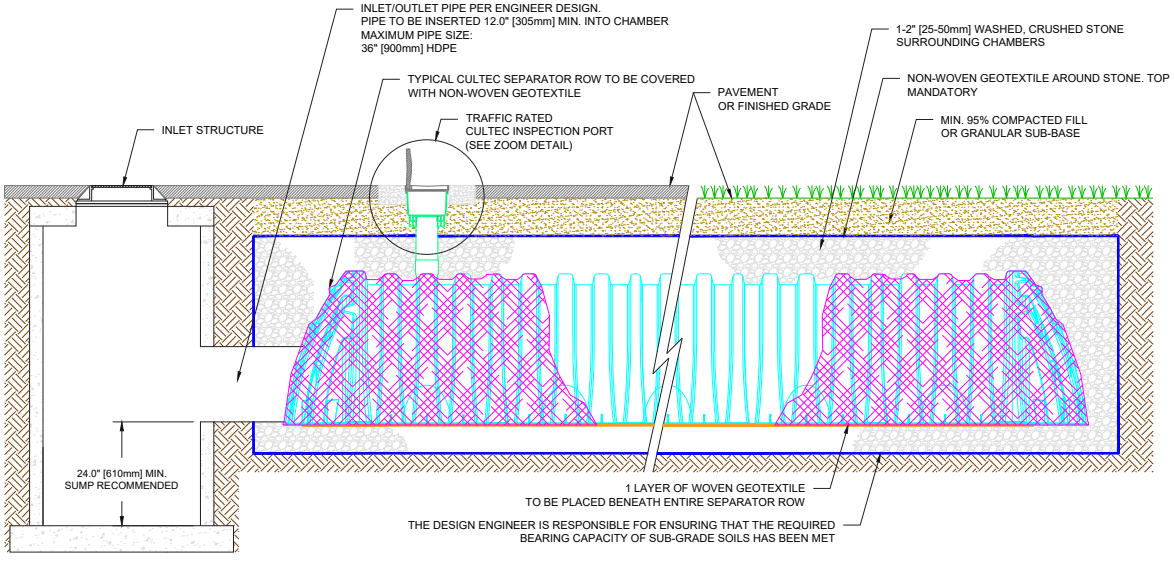


Typical Cross Section for Traffic Application



NOTES:
1. THE CHAMBERS SHALL BE DESIGNED AND TESTED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS." THE LOAD CONFIGURATION SHALL INCLUDE:
   1.a. INSTANTANEOUS AASHTO DESIGN TRUCK LIVE LOAD AT MINIMUM COVER
   1.b. MAXIMUM PERMANENT (50-YEAR) COVER LOAD
   1.c. 1-WEEK PARKED AASHTO DESIGN TRUCK LOAD
2. THE CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F3430-20 "STANDARD SPECIFICATION FOR CELLULAR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS"
3. THE INSTALLED CHAMBER SYSTEM SHALL PROVIDE RESISTANCE TO THE LOADS AND LOAD FACTORS AS DEFINED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.12, WHEN INSTALLED ACCORDING TO CULTEC'S RECOMMENDED INSTALLATION INSTRUCTIONS. THE STRUCTURAL DESIGN OF THE CHAMBERS SHALL INCLUDE THE FOLLOWING:
   3.a. THE CREEP MODULUS SHALL BE 50-YEAR AS SPECIFIED IN ASTM F3430
   3.b. THE MINIMUM SAFETY FACTOR FOR LIVE LOADS SHALL BE 1.75
   3.c. THE MINIMUM SAFETY FACTOR FOR DEAD LOADS SHALL BE 1.95

Typical Profile View for Traffic Application



NOTES:
1. THE CHAMBERS SHALL BE DESIGNED AND TESTED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS." THE LOAD CONFIGURATION SHALL INCLUDE:
   1.a. INSTANTANEOUS AASHTO DESIGN TRUCK LIVE LOAD AT MINIMUM COVER
   1.b. MAXIMUM PERMANENT (50-YEAR) COVER LOAD
   1.c. 1-WEEK PARKED AASHTO DESIGN TRUCK LOAD
2. THE CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F3430-20 "STANDARD SPECIFICATION FOR CELLULAR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS"
3. THE INSTALLED CHAMBER SYSTEM SHALL PROVIDE RESISTANCE TO THE LOADS AND LOAD FACTORS AS DEFINED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.12, WHEN INSTALLED ACCORDING TO CULTEC'S RECOMMENDED INSTALLATION INSTRUCTIONS. THE STRUCTURAL DESIGN OF THE CHAMBERS SHALL INCLUDE THE FOLLOWING:
   3.a. THE CREEP MODULUS SHALL BE 50-YEAR AS SPECIFIED IN ASTM F3430
   3.b. THE MINIMUM SAFETY FACTOR FOR LIVE LOADS SHALL BE 1.75
   3.c. THE MINIMUM SAFETY FACTOR FOR DEAD LOADS SHALL BE 1.95

Recharger® 902HD Bare Chamber Storage Volumes

Elevation		Incremental Storage Volume				Cumulative Storage	
in.	mm	ft³/ft	m³/m	ft³	m³	ft³	m³
48	1219	0.020	0.002	0.073	0.002	63.470	1.797
47	1194	0.050	0.005	0.183	0.005	63.397	1.795
46	1168	0.070	0.007	0.257	0.007	63.213	1.790
45	1143	0.120	0.011	0.440	0.012	62.957	1.783
44	1118	0.160	0.015	0.587	0.017	62.517	1.770
43	1092	0.200	0.019	0.733	0.021	61.930	1.754
42	1067	0.220	0.020	0.807	0.023	61.197	1.733
41	1041	0.240	0.022	0.880	0.025	60.390	1.710
40	1016	0.270	0.025	0.990	0.028	59.510	1.685
39	991	0.270	0.025	0.990	0.028	58.520	1.657
38	965	0.290	0.027	1.063	0.030	57.530	1.629
37	940	0.300	0.028	1.100	0.031	56.467	1.599
36	914	0.310	0.029	1.137	0.032	55.367	1.568
35	889	0.330	0.031	1.210	0.034	54.230	1.536
34	864	0.340	0.032	1.247	0.035	53.020	1.502
33	838	0.350	0.033	1.283	0.036	51.773	1.466
32	813	0.350	0.033	1.283	0.036	50.490	1.430
31	787	0.360	0.033	1.320	0.037	49.207	1.394
30	762	0.370	0.034	1.357	0.038	47.887	1.356
29	737	0.380	0.035	1.393	0.039	46.530	1.318
28	711	0.390	0.036	1.430	0.040	45.137	1.278
27	686	0.390	0.036	1.430	0.040	43.707	1.238
26	660	0.400	0.037	1.467	0.042	42.277	1.197
25	635	0.400	0.037	1.467	0.042	40.810	1.156
24	610	0.410	0.038	1.503	0.043	39.343	1.114
23	584	0.410	0.038	1.503	0.043	37.840	1.072
22	559	0.410	0.038	1.503	0.043	36.337	1.029
21	533	0.420	0.039	1.540	0.044	34.833	0.986
20	508	0.420	0.039	1.540	0.044	33.293	0.943
19	483	0.420	0.039	1.540	0.044	31.753	0.899
18	457	0.430	0.040	1.577	0.045	30.213	0.856
17	432	0.430	0.040	1.577	0.045	28.637	0.811
16	406	0.440	0.041	1.613	0.046	27.060	0.766
15	381	0.440	0.041	1.613	0.046	25.447	0.721
14	356	0.450	0.042	1.650	0.047	23.833	0.675
13	330	0.450	0.042	1.650	0.047	22.183	0.628
12	305	0.450	0.042	1.650	0.047	20.533	0.582
11	279	0.450	0.042	1.650	0.047	18.883	0.535
10	254	0.460	0.043	1.687	0.048	17.233	0.488
9	229	0.460	0.043	1.687	0.048	15.547	0.440
8	203	0.460	0.043	1.687	0.048	13.860	0.393
7	178	0.460	0.043	1.687	0.048	12.173	0.345
6	152	0.470	0.044	1.723	0.049	10.487	0.297
5	127	0.470	0.044	1.723	0.049	8.763	0.248
4	102	0.480	0.045	1.760	0.050	7.040	0.199
3	76	0.480	0.045	1.760	0.050	5.280	0.150
2	51	0.480	0.045	1.760	0.050	3.520	0.100
1	25	0.480	0.045	1.760	0.050	1.760	0.050
Total		17.310	1.608	63.470	1.797	63.470	1.797

Calculations are based on installed chamber length of 3.67' (1.12 m).

Recharger® 902HD Bare End Cap Storage Volumes

Elevation		Incremental Storage Volume				Cumulative Storage	
in.	mm	ft³/ft	m³/m	ft³	m³	ft³	m³
48	1219	0.010	0.001	0.020	0.0006	18.020	0.5103
47	1194	0.015	0.001	0.030	0.0008	18.000	0.5097
46	1168	0.020	0.002	0.040	0.0011	17.970	0.5088
45	1143	0.025	0.002	0.050	0.0014	17.930	0.5077
44	1118	0.030	0.003	0.060	0.0017	17.880	0.5063
43	1092	0.040	0.004	0.080	0.0023	17.820	0.5046
42	1067	0.050	0.005	0.100	0.0028	17.740	0.5023
41	1041	0.055	0.005	0.110	0.0031	17.640	0.4995
40	1016	0.065	0.006	0.130	0.0037	17.530	0.4964
39	991	0.070	0.007	0.140	0.0040	17.400	0.4927
38	965	0.080	0.007	0.160	0.0045	17.260	0.4887
37	940	0.085	0.008	0.170	0.0048	17.100	0.4842
36	914	0.095	0.009	0.190	0.0054	16.930	0.4794
35	889	0.105	0.010	0.210	0.0059	16.740	0.4740
34	864	0.115	0.011	0.230	0.0065	16.530	0.4681
33	838	0.130	0.012	0.260	0.0074	16.300	0.4615
32	813	0.140	0.013	0.280	0.0079	16.040	0.4542
31	787	0.150	0.014	0.300	0.0085	15.760	0.4463
30	762	0.155	0.014	0.310	0.0088	15.460	0.4378
29	737	0.165	0.015	0.330	0.0093	15.150	0.4290
28	711	0.175	0.016	0.350	0.0099	14.820	0.4196
27	686	0.180	0.017	0.360	0.0102	14.470	0.4097
26	660	0.190	0.018	0.380	0.0108	14.110	0.3995
25	635	0.195	0.018	0.390	0.0110	13.730	0.3888
24	610	0.200	0.019	0.400	0.0113	13.340	0.3777
23	584	0.210	0.020	0.420	0.0119	12.940	0.3664
22	559	0.215	0.020	0.430	0.0122	12.520	0.3545
21	533	0.225	0.021	0.450	0.0127	12.090	0.3423
20	508	0.230	0.021	0.460	0.0130	11.640	0.3296
19	483	0.240	0.022	0.480	0.0136	11.180	0.3166
18	457	0.245	0.023	0.490	0.0139	10.700	0.3030
17	432	0.250	0.023	0.500	0.0142	10.210	0.2891
16	406	0.255	0.024	0.510	0.0144	9.710	0.2749
15	381	0.265	0.025	0.530	0.0150	9.200	0.2605
14	356	0.270	0.025	0.540	0.0153	8.670	0.2455
13	330	0.275	0.026	0.550	0.0156	8.130	0.2302
12	305	0.280	0.026	0.560	0.0159	7.580	0.2146
11	279	0.285	0.026	0.570	0.0161	7.020	0.1988
10	254	0.295	0.027	0.590	0.0167	6.450	0.1826
9	229	0.300	0.028	0.600	0.0170	5.860	0.1659
8	203	0.310	0.029	0.620	0.0176	5.260	0.1489
7	178	0.315	0.029	0.630	0.0178	4.640	0.1314
6	152	0.320	0.030	0.640	0.0181	4.010	0.1135
5	127	0.325	0.030	0.650	0.0184	3.370	0.0954
4	102	0.325	0.030	0.650	0.0184	2.720	0.0770
3	76	0.330	0.031	0.660	0.0187	2.070	0.0586
2	51	0.335	0.031	0.670	0.0190	1.410	0.0399
1	25	0.370	0.034	0.740	0.0210	0.740	0.0210
Total		9.010	0.837	18.020	0.510	18.020	0.5103

Calculations are based on installed chamber length of 2' (0.61 m).

CULTEC Recharger® 902HD Specifications

GENERAL

CULTEC Recharger® 902HD chambers are designed for underground stormwater management. The chambers may be used for retention, recharging, detention or controlling the flow of on-site stormwater runoff.

CHAMBER PARAMETERS

1. The chambers shall be manufactured in the U.S.A. by CULTEC of Brookfield, CT (cultec.com, 203-775-4416).
2. The chambers shall be designed and tested in accordance with ASTM F2787 "Standard Practice for Structural Design of Thermoplastic Corrugated Wall Stormwater Collection Chambers". The load configuration shall include:
    a. Instantaneous AASHTO Design Truck live load at minimum cover
    b. Maximum permanent (50-year) cover load
    c. 1-week parked AASHTO design truck load
3. The chambers shall meet the requirements of ASTM F3430-20 "Standard Specification for Cellular Polypropylene (PP) Corrugated Wall Stormwater Collection Chambers".
4. The installed chamber system shall provide resistance to the loads and load factors as defined in the AASHTO LRFD Bridge Design Specifications Section 12.12, when installed according to CULTEC's recommended installation instructions. The structural design of the chambers shall include the following:
    a. The Creep Modulus shall be 50-year as specified in ASTM F3430
    b. The minimum safety factor for live loads shall be 1.75
    c. The minimum safety factor for dead loads shall be 1.95
5. The chamber shall be structural foam injection molded of blue virgin high molecular weight impact-modified polypropylene.
6. The chamber shall be arched in shape.
7. The chamber shall be open-bottomed.
8. The chamber shall be joined using an interlocking overlapping rib method. Connections must be fully shouldered overlapping ribs, having no separate couplings.
9. The nominal chamber dimensions of the CULTEC Recharger® 902HD shall be 48 inches (1219 mm) tall, 78 inches (1981 mm) wide and 4.25 feet (1.30 m) long. The installed length of a joined Recharger 902HD shall be 3.67 feet (1.12 m).
10. Multiple chambers may be connected to form different length rows. Each row shall begin and end with a separately formed CULTEC Recharger® 902HD End Cap. Maximum inlet opening on the end cap is 30 inches (750 mm) HDPE or 36 inches (900 mm) PVC.
11. The chamber shall have two side portals to accept CULTEC HVLV™ FC-48 Feed Connectors to create an internal manifold. Maximum allowable pipe size in the side portal is 10 inches (250 mm) HDPE and 12 inches (300 mm) PVC.
12. The nominal chamber dimensions of the CULTEC HVLV™ FC-48 Feed Connector shall be 12 inches (305 mm) tall, 16 inches (406 mm) wide and 49 inches (1245 mm) long.
13. The nominal storage volume of the Recharger 902HD chamber shall be 17.31 ft^3 / ft (1.61 m^3 / m) - without stone. The nominal storage volume of a joined Recharger 902HD shall be 63.47 ft^3 / unit (1.80 m^3 / unit) - without stone.
14. The nominal storage volume of the HVLV™ FC-48 Feed Connector shall be 0.913 ft^3 / ft (0.085 m^3 / m) - without stone.
15. The Recharger 902HD chamber shall have 5 corrugations.
16. The chamber shall be capable of accepting a 6 inch (150 mm) inspection port opening at the top center of each chamber, centered on the corrugation crest.
17. The chamber shall be manufactured in a facility employing CULTEC's Quality Control and Assurance Procedures.
18. Maximum allowable cover over the top of the chamber shall be 8.3 feet (2.53 m).
19. The installed chamber system shall be structurally designed to provide resistance to live loads as defined by the AASHTO H-20/HL-93 specification when installed according to CULTEC's recommended installation instructions.

END CAP PARAMETERS

1. The CULTEC Recharger® 902HD End Cap (referred to as 'end cap') shall be manufactured in the U.S.A. by CULTEC of Brookfield, CT (cultec.com, 203-775-4416).
2. The end cap shall be structural foam injection molded of blue virgin high molecular weight impact-modified polypropylene.
3. The end cap shall be arched in shape.
4. The end cap shall be joined at the beginning and end of each row of chambers using an interlocking overlapping rib method. Connections must be fully shouldered overlapping ribs, having no separate couplings.
5. The end cap shall have 5 corrugations.
6. The nominal dimensions of the end cap shall be 48.5 inches (1231 mm) tall, 78 inches (1982 mm) wide and 28.0 inches (711 mm) long. When joined with a Recharger 902HD Chamber, the installed length of the end cap shall be 24.0 inches (610 mm).
7. The nominal storage volume of the end cap shall be 9.01 ft^3 / ft (0.83 m^3 / m) - without stone. The nominal storage volume of an interlocked end cap shall be 18.02 ft^3 / unit (0.51 m^3 / unit) - without stone.
8. Maximum inlet opening on the end cap is 30 inches (750 mm) HDPE or 36 inches (900 mm) PVC.
9. The end cap shall provide resistance to the loads and load factors as defined in the AASHTO LRFD Bridge Design Specifications Section 12.12.

CULTEC
StormGenie

USER INPUTS

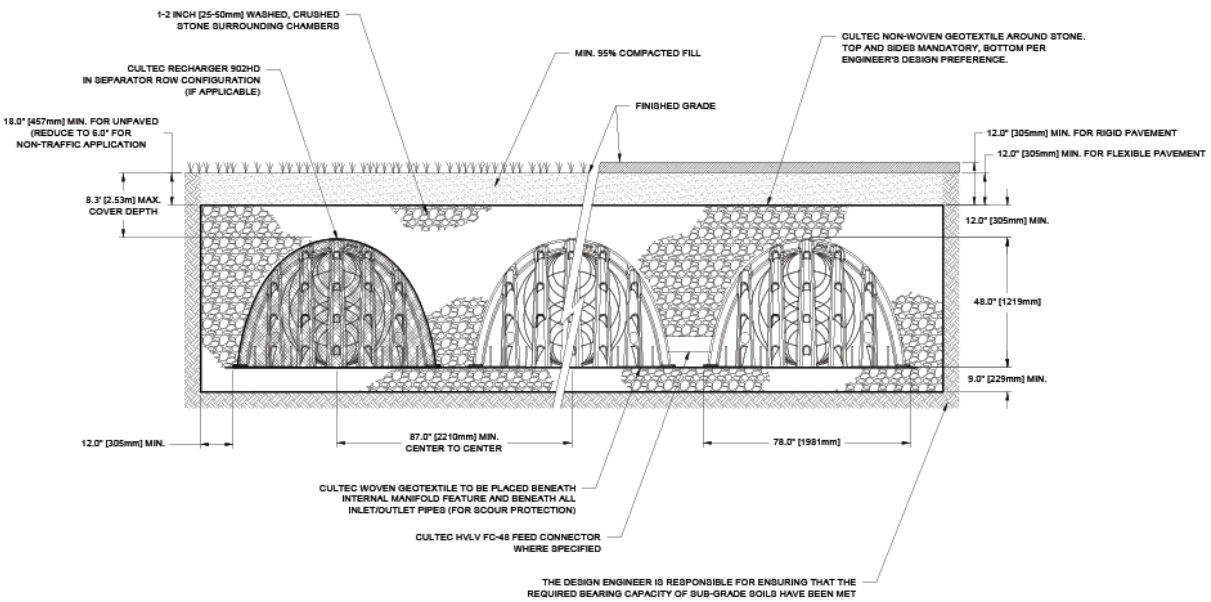
Project Name:	796060 Grey Rd 19 (401)
Engineer:	Patrick Walsh
Project Location:	Michigan
Measurement Type:	Metric
Chamber Model:	Recharger 902HD
Required Storage Volume:	1503.01 m³
Available Length:	80.01 m
Available Width:	20.01 m
Stone Above Chambers:	305 mm
Stone Below Chambers:	229 mm
Base Stone Elevation:	0.00 m
Stone Porosity:	40%
Maximum Allowable Finished Grade	3.98 m
Minimum Allowable Finished Grade	2.06 m
Outlet Control Structure:	Yes

RESULTS

Installed Storage Volume:	1505.68 m³
Storage Volume Per Chamber:	1.80 m³
Chamber Rows:	8
Maximum Length:	74.48 m
Maximum Width:	18.06 m
Approx. Bed Area Required:	1342.46 m²

SYSTEM COMPONENTS - NOT FOR CONSTRUCTION

Number of Chambers Required:	519
Number of End Caps Required:	16
Number of Feed Connectors Required:	12
Amount of Stone Required:	1412 m³
Volume of Excavation (Not Including Fill):	2353 m³
Non-woven Geotextile Required:	4418 m²
Woven Geotextile Required (Beneath Internal Manifold):	40 m
Woven Geotextile Required (Separator Row):	82 m
Total Woven Geotextile Required:	122 m



CULTEC
StormGenie

USER INPUTS

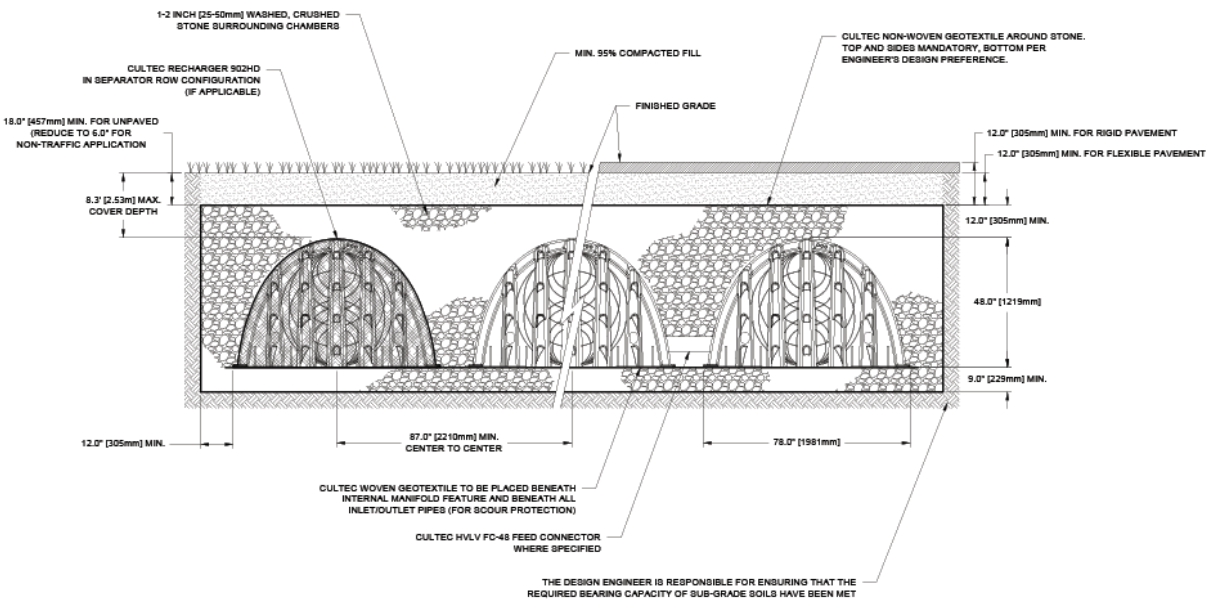
Project Name:	796060 Grey Rd 19 (402)
Engineer:	Patrick Walsh
Project Location:	Michigan
Measurement Type:	Metric
Chamber Model:	Recharger 902HD
Required Storage Volume:	2138.00 m³
Available Length:	100.00 m
Available Width:	25.00 m
Stone Above Chambers:	305 mm
Stone Below Chambers:	229 mm
Base Stone Elevation:	0.00 m
Stone Porosity:	40%
Maximum Allowable Finished Grade	3.98 m
Minimum Allowable Finished Grade	2.06 m
Outlet Control Structure:	Yes

RESULTS

Installed Storage Volume:	2138.25 m³
Storage Volume Per Chamber:	1.80 m³
Chamber Rows:	9
Maximum Length:	94.59 m
Maximum Width:	20.27 m
Approx. Bed Area Required:	1902.43 m²

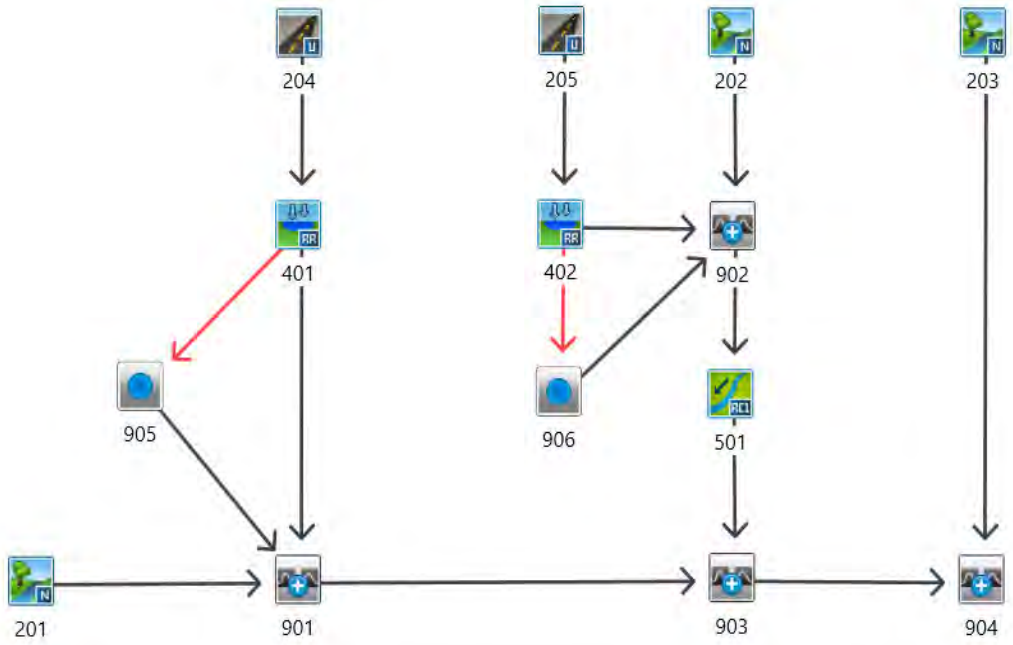
SYSTEM COMPONENTS - NOT FOR CONSTRUCTION

Number of Chambers Required:	741
Number of End Caps Required:	18
Number of Feed Connectors Required:	14
Amount of Stone Required:	1994 m³
Volume of Excavation (Not Including Fill):	3335 m³
Non-woven Geotextile Required:	6152 m²
Woven Geotextile Required (Beneath Internal Manifold):	45 m
Woven Geotextile Required (Separator Row):	105 m
Total Woven Geotextile Required:	149 m



TATHAM ENGINEERING

PROJECT	796060 Grey Road 19	FILE	123143
		DATE	9/5/2025
SUBJECT	Proposed Conditions VO Schematic	NAME	PNW
		PAGE	1 OF 1



NASHYD

ROUTE PIPE

DUHYD

STANDHYD

ROUTE CHANNEL

DIVERT HYD

ADDHYD

ROUTE RESERVOIR

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================================================================================
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        V  V    I     SS    U   U  AAAAA  L
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         VV     I    SSSSS  UUUUU  A   A  LLLLL

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DATE: 09/11/2025                          TIME: 03:54:06

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : 1.1 - 2yr 6hr 5min SCS        **
  ************************************************

  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
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    [ Ptot= 35.84 mm ]
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5-490c-8163-6655
    remark: 2yr 6hr 5min SCS

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    remark: 2yr 6hr 5min SCS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.27  3.08  30.55 0.85   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.02  3.75  24.55  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.07  3.58  11.43  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.07  3.58  11.43  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 35.84 mm ]
    fname :
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    remark: 2yr 6hr 5min SCS

*
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    [CN=60.4         ]
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*
    READ STORM                 5.0
    [ Ptot= 35.84 mm ]
    fname :
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    remark: 2yr 6hr 5min SCS

*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.26  3.08  32.04 0.89   0.000
```

```
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00  6.17  21.77  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    0.17  3.83   4.18  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    0.17  3.83   4.18  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.17  3.75   4.18  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    0.24  3.75   5.25  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 35.84 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\12105d10-ca0
5-490c-8163-6655
    remark: 2yr 6hr 5min SCS

*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.14  3.92   4.46 0.12   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    0.38  3.75   4.98  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\cee818
d8-8eaa-4fa1-937c-2fc77ff1f34e\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\cee818
d8-8eaa-4fa1-937c-2fc77ff1f34e\scena


DATE: 09/11/2025                          TIME: 03:54:12

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : 1.2 - 5yr 6hr 5min SCS        **
  ************************************************

  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= 47.67 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\7eab21cc-f96
4-4634-8e42-fa30
    remark: 5yr 6hr 5min SCS

*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.10  3.50  10.76 0.23   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                 5.0
    [ Ptot= 47.67 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\7eab21cc-f96
4-4634-8e42-fa30
    remark: 5yr 6hr 5min SCS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.36  3.08  41.54 0.87   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
```

```
    OUTFLOW:             0401  1  5.0    2.08    0.03  4.00  35.54  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.12  3.50  18.21  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.12  3.50  18.21  n/a   0.000
*
    READ STORM                   5.0
    [ Ptot= 47.67 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\7eab21cc-f96
4-4634-8e42-fa30
    remark: 5yr 6hr 5min SCS

*
 *  CALIB NASHYD         0202  1  5.0   38.04    0.36  3.75   6.72 0.14   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                   5.0
    [ Ptot= 47.67 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\7eab21cc-f96
4-4634-8e42-fa30
    remark: 5yr 6hr 5min SCS

*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.35  3.08  43.41 0.91   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00  6.17  33.13  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    0.37  3.75   7.99  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    0.37  3.75   7.99  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.37  3.75   7.99  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    0.48  3.75   9.49  n/a   0.000
*
    READ STORM                   5.0
    [ Ptot= 47.67 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\7eab21cc-f96
4-4634-8e42-fa30
    remark: 5yr 6hr 5min SCS

*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.28  3.83   8.62 0.18   0.000
    [CN=65.3         ]
```

```
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    0.76  3.75   9.19  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\099c7e
3c-9497-4770-8da2-a8d0a39864fc\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\099c7e
3c-9497-4770-8da2-a8d0a39864fc\scena


DATE: 09/11/2025                          TIME: 03:54:05

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 1.3 - 10yr 6hr 5min SCS       **
  ************************************************

  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= 55.39 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\9204459f-079
1-4fcd-aff0-343d
    remark: 10yr 6hr 5min SCS

*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.13  3.50  14.56 0.26   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                   5.0
    [ Ptot= 55.39 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\9204459f-079
1-4fcd-aff0-343d
    remark: 10yr 6hr 5min SCS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.42  3.08  48.80 0.88   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.03  4.08  42.80  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.16  3.50  23.05  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.16  3.50  23.05  n/a   0.000
*
    READ STORM                   5.0
    [ Ptot= 55.39 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\9204459f-079
1-4fcd-aff0-343d
    remark: 10yr 6hr 5min SCS

*
 *  CALIB NASHYD         0202  1  5.0   38.04    0.52  3.75   9.46 0.17   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                   5.0
    [ Ptot= 55.39 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\9204459f-079
1-4fcd-aff0-343d
```

```
    remark: 10yr 6hr 5min SCS

*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.41  3.08  50.89 0.92   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00  6.17  40.61  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    0.53  3.75  10.95  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    0.53  3.75  10.95  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.53  3.75  10.95  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    0.68  3.67  12.74  n/a   0.000
*
    READ STORM                   5.0
    [ Ptot= 55.39 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\9204459f-079
1-4fcd-aff0-343d
    remark: 10yr 6hr 5min SCS

*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.39  3.83  11.87 0.21   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    1.06  3.75  12.44  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\b9a7f1
dc-32b3-477c-9b3b-6e47d097f6b2\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\b9a7f1
dc-32b3-477c-9b3b-6e47d097f6b2\scena


DATE: 09/11/2025                          TIME: 03:54:11

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : 1.4 - 25yr 6hr 5min SCS       **
  ************************************************

  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= 65.16 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\52749b54-a62
9-4054-bbe5-535d
    remark: 25yr 6hr 5min SCS

*
 ** CALIB NASHYD        0201  1  5.0    4.84    0.18  3.50  19.90 0.31   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                  5.0
    [ Ptot= 65.16 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\52749b54-a62
9-4054-bbe5-535d
    remark: 25yr 6hr 5min SCS

*
```

```
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.49  3.08  58.06 0.89   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.04  4.08  52.06  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.22  3.50  29.57  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.22  3.50  29.57  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 65.16 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\52749b54-a62
9-4054-bbe5-535d
    remark: 25yr 6hr 5min SCS

*
 *  CALIB NASHYD         0202  1  5.0   38.04    0.75  3.75  13.42 0.21   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                  5.0
    [ Ptot= 65.16 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\52749b54-a62
9-4054-bbe5-535d
    remark: 25yr 6hr 5min SCS

*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.49  3.08  60.40 0.93   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00  6.17  50.13  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    0.76  3.75  15.18  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    0.76  3.75  15.18  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.76  3.75  15.18  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    0.96  3.67  17.31  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 65.16 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\52749b54-a62
9-4054-bbe5-535d
    remark: 25yr 6hr 5min SCS
```

```
*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.55  3.83  16.51 0.25   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    1.50  3.75  17.03  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\f9e27e
f6-45af-4728-8f7c-866685619d1d\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\f9e27e
f6-45af-4728-8f7c-866685619d1d\scena


DATE: 09/11/2025                          TIME: 03:54:13

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : 1.5 - 50yr 6hr 5min SCS       **
```

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

  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= 72.37 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\24847a70-578
0-48fe-ab65-7ab5
    remark: 50yr 6hr 5min SCS

*
 ** CALIB NASHYD        0201  1  5.0    4.84    0.22  3.50  24.16 0.33   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                  5.0
    [ Ptot= 72.37 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\24847a70-578
0-48fe-ab65-7ab5
    remark: 50yr 6hr 5min SCS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.55  3.08  64.95 0.90   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.04  4.08  58.95  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.26  3.50  34.62  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.26  3.50  34.62  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 72.37 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\24847a70-578
0-48fe-ab65-7ab5
    remark: 50yr 6hr 5min SCS

*
 *  CALIB NASHYD         0202  1  5.0   38.04    0.94  3.67  16.67 0.23   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                  5.0
```

```
    [ Ptot= 72.37 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\24847a70-578
0-48fe-ab65-7ab5
    remark: 50yr 6hr 5min SCS

*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.54  3.08  67.45 0.93   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00  6.17  57.18  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    0.95  3.67  18.61  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    0.95  3.67  18.61  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.95  3.75  18.61  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    1.19  3.67  20.97  n/a   0.000
*
    READ STORM                5.0
    [ Ptot= 72.37 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\24847a70-578
0-48fe-ab65-7ab5
    remark: 50yr 6hr 5min SCS

*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.68  3.83  20.26 0.28   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    1.86  3.75  20.73  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 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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\1904e3
bb-0276-43f3-b227-31924bbb73c1\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\1904e3
bb-0276-43f3-b227-31924bbb73c1\scena


DATE: 09/11/2025                          TIME: 03:54:06

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 1.6 - 100yr 6hr 5min SCS      **
  ************************************************

  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= 79.57 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\a94c2015-a56
7-4802-9496-597f
    remark: 100yr 6hr 5min SCS

*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.26  3.50  28.65 0.36   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
```

```
*
    READ STORM                5.0
    [ Ptot= 79.57 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\a94c2015-a56
7-4802-9496-597f
    remark: 100yr 6hr 5min SCS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.61  3.08  71.86 0.90   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.05  4.17  65.86  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.31  3.50  39.83  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.31  3.50  39.83  n/a   0.000
*
    READ STORM                5.0
    [ Ptot= 79.57 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\a94c2015-a56
7-4802-9496-597f
    remark: 100yr 6hr 5min SCS

*
 *  CALIB NASHYD         0202  1  5.0   38.04    1.15  3.67  20.15 0.25   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                5.0
    [ Ptot= 79.57 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\a94c2015-a56
7-4802-9496-597f
    remark: 100yr 6hr 5min SCS

*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.60  3.08  74.51 0.94   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00  6.17  64.23  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    1.16  3.67  22.27  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    1.16  3.67  22.27  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    1.16  3.75  22.27  n/a   0.000
```

```
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    1.44  3.67  24.86  n/a   0.000
*
    READ STORM                5.0
    [ Ptot= 79.57 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\a94c2015-a56
7-4802-9496-597f
    remark: 100yr 6hr 5min SCS

*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.82  3.83  24.24 0.30   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    2.25  3.75  24.65  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 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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\174f5a
c3-15f0-4f1e-bbc0-75f4d037e0bd\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\174f5a
c3-15f0-4f1e-bbc0-75f4d037e0bd\scena


DATE: 09/11/2025                          TIME: 03:54:06
```

```
USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 2.1 - 2yr 12hr 5min SCS       **
  ************************************************

  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= 44.15 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\d222cee8-6f6
e-4d1b-a7f3-688b
    remark: 2yr 12hr 5min SCS

*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.07  6.50   9.17 0.21   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                  5.0
    [ Ptot= 44.15 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\d222cee8-6f6
e-4d1b-a7f3-688b
    remark: 2yr 12hr 5min SCS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.28  6.08  38.25 0.87   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.03  6.75  32.25  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.10  6.50  16.10  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.10  6.50  16.10  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 44.15 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\d222cee8-6f6
```

```
e-4d1b-a7f3-688b
    remark: 2yr 12hr 5min SCS

*
 *  CALIB NASHYD         0202  1  5.0   38.04    0.25  6.75   5.59 0.13   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                  5.0
    [ Ptot= 44.15 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\d222cee8-6f6
e-4d1b-a7f3-688b
    remark: 2yr 12hr 5min SCS

*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.27  6.08  40.01 0.91   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00 12.08  29.74  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    0.26  6.75   6.75  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    0.26  6.75   6.75  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.26  6.75   6.75  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    0.34  6.67   8.13  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 44.15 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\d222cee8-6f6
e-4d1b-a7f3-688b
    remark: 2yr 12hr 5min SCS

*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.20  6.83   7.27 0.16   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    0.54  6.75   7.84  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\75c7a3
cf-bf2e-4ebb-91d8-98dd6a14bad2\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\75c7a3
cf-bf2e-4ebb-91d8-98dd6a14bad2\scena


DATE: 09/11/2025                          TIME: 03:54:08

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 2.2 - 5yr 12hr 5min SCS       **
  ************************************************

  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= 58.73 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\9fc37b81-f5f
a-4b03-975c-73ec
    remark: 5yr 12hr 5min SCS
```

```
*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.13  6.42  16.33 0.28   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                  5.0
    [ Ptot= 58.73 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\9fc37b81-f5f
a-4b03-975c-73ec
    remark: 5yr 12hr 5min SCS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.37  6.08  51.96 0.88   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.03  6.83  45.95  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.16  6.50  25.23  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.16  6.50  25.23  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 58.73 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\9fc37b81-f5f
a-4b03-975c-73ec
    remark: 5yr 12hr 5min SCS

*
 *  CALIB NASHYD         0202  1  5.0   38.04    0.51  6.67  10.75 0.18   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                  5.0
    [ Ptot= 58.73 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\9fc37b81-f5f
a-4b03-975c-73ec
    remark: 5yr 12hr 5min SCS

*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.37  6.08  54.13 0.92   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00 12.17  43.86  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    0.51  6.67  12.34  n/a   0.000
```

```
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    0.51  6.67  12.34  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.51  6.75  12.34  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    0.66  6.67  14.24  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 58.73 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\9fc37b81-f5f
a-4b03-975c-73ec
    remark: 5yr 12hr 5min SCS

*
 *  CALIB NASHYD        0203  1  5.0   24.81    0.38  6.83  13.40 0.23   0.000
    [CN=65.3        ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    1.04  6.75  13.95  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\90637c
b9-ae8b-4ff4-bcc8-1ad66d69343d\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\90637c
```

```
b9-ae8b-4ff4-bcc8-1ad66d69343d\scena

DATE: 09/11/2025                          TIME: 03:54:09

USER:

COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 2.3 - 10yr 12hr 5min SCS      **
  ************************************************

  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= 68.24 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\9a067529-fce
0-452f-a8b2-1ad4
    remark: 10yr 12hr 5min SCS

*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.17  6.42  21.69 0.32   0.000
    [CN=70.1        ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                 5.0
    [ Ptot= 68.24 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\9a067529-fce
0-452f-a8b2-1ad4
    remark: 10yr 12hr 5min SCS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.44  6.08  61.00 0.89   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.04  6.92  55.00  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.21  6.42  31.70  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.21  6.42  31.70  n/a   0.000
*
```

```
    READ STORM                 5.0
    [ Ptot= 68.24 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\9a067529-fce
0-452f-a8b2-1ad4
    remark: 10yr 12hr 5min SCS

*
 *  CALIB NASHYD         0202  1  5.0   38.04    0.72  6.67  14.78 0.22   0.000
    [CN=60.4        ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                 5.0
    [ Ptot= 68.24 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\9a067529-fce
0-452f-a8b2-1ad4
    remark: 10yr 12hr 5min SCS

*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.43  6.08  63.41 0.93   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00 12.17  53.14  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    0.72  6.67  16.62  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    0.72  6.67  16.62  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.72  6.67  16.62  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    0.91  6.67  18.85  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 68.24 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\9a067529-fce
0-452f-a8b2-1ad4
    remark: 10yr 12hr 5min SCS

*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.52  6.75  18.08 0.26   0.000
    [CN=65.3        ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    1.43  6.67  18.58  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\9a835c
67-b721-4967-9ebe-d09f5dce7e8d\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\9a835c
67-b721-4967-9ebe-d09f5dce7e8d\scena

DATE: 09/11/2025                          TIME: 03:54:10

USER:

COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 2.4 - 25yr 12hr 5min SCS      **
  ************************************************

  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= 80.28 mm ]
    fname :
```

```
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\d998724f-9fe
e-4b97-86af-becb
    remark: 25yr 12hr 5min SCS

*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.23  6.42  29.10 0.36   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                  5.0
    [ Ptot= 80.28 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\d998724f-9fe
e-4b97-86af-becb
    remark: 25yr 12hr 5min SCS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.52  6.08  72.54 0.90   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.04  7.00  66.54  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.27  6.42  40.36  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.27  6.42  40.36  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 80.28 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\d998724f-9fe
e-4b97-86af-becb
    remark: 25yr 12hr 5min SCS

*
 *  CALIB NASHYD         0202  1  5.0   38.04    1.01  6.67  20.50 0.26   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                  5.0
    [ Ptot= 80.28 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\d998724f-9fe
e-4b97-86af-becb
    remark: 25yr 12hr 5min SCS

*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.51  6.08  75.21 0.94   0.000
    [I%=86.0:S%= 0.30]
*
```

```
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00 12.17  64.93  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    1.02  6.67  22.64  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    1.02  6.67  22.64  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    1.02  6.67  22.64  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    1.27  6.67  25.25  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 80.28 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\d998724f-9fe
e-4b97-86af-becb
    remark: 25yr 12hr 5min SCS

*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.72  6.75  24.64 0.31   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    1.98  6.67  25.04  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\32cffb
6f-bdbd-43b9-a54c-42f0f137c66b\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\32cffb
6f-bdbd-43b9-a54c-42f0f137c66b\scena


DATE: 09/11/2025                          TIME: 03:54:06

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 2.5 - 50yr 12hr 5min SCS      **
  ************************************************

  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= 89.16 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\699f770a-f1c
4-49ff-8116-3581
    remark: 50yr 12hr 5min SCS

*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.28  6.42  34.95 0.39   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                  5.0
    [ Ptot= 89.16 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\699f770a-f1c
4-49ff-8116-3581
    remark: 50yr 12hr 5min SCS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.58  6.08  81.10 0.91   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.05  7.00  75.10  n/a   0.000
*
```

```
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.33  6.42  47.02  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.33  6.42  47.02  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 89.16 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\699f770a-f1c
4-49ff-8116-3581
    remark: 50yr 12hr 5min SCS

*
 *  CALIB NASHYD         0202  1  5.0   38.04    1.25  6.67  25.13 0.28   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                  5.0
    [ Ptot= 89.16 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\699f770a-f1c
4-49ff-8116-3581
    remark: 50yr 12hr 5min SCS

*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.57  6.08  83.93 0.94   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.01 12.17  73.66  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    1.26  6.67  27.46  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    1.26  6.67  27.46  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    1.26  6.67  27.46  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    1.55  6.67  30.35  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 89.16 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\699f770a-f1c
4-49ff-8116-3581
    remark: 50yr 12hr 5min SCS

*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.88  6.75  29.88 0.34   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
```

```
    ADD [  0203+  0903]  0904  3  5.0   71.69    2.43  6.67  30.18  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\8ec7f0
99-0373-4472-9421-532cce55689a\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\8ec7f0
99-0373-4472-9421-532cce55689a\scena


DATE: 09/11/2025                          TIME: 03:54:09

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 2.6 - 100yr 12hr 5min SCS     **
  ************************************************

  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= 98.03 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\dcc7dc83-bfe
9-4b14-a68b-3370
    remark: 100yr 12hr 5min SCS

*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.33  6.42  41.05 0.42   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                  5.0
    [ Ptot= 98.03 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\dcc7dc83-bfe
9-4b14-a68b-3370
    remark: 100yr 12hr 5min SCS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.65  6.08  89.69 0.91   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.05  7.00  83.69  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.38  6.42  53.87  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.38  6.42  53.87  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 98.03 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\dcc7dc83-bfe
9-4b14-a68b-3370
    remark: 100yr 12hr 5min SCS

*
 *  CALIB NASHYD         0202  1  5.0   38.04    1.51  6.67  30.04 0.31   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                  5.0
    [ Ptot= 98.03 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\dcc7dc83-bfe
9-4b14-a68b-3370
    remark: 100yr 12hr 5min SCS
```

```
*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.63  6.08  92.67 0.95   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.01 12.17  82.03  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    1.51  6.67  32.54  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    1.51  6.67  32.54  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    1.51  6.67  32.54  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    1.86  6.58  35.69  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 98.03 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\dcc7dc83-bfe
9-4b14-a68b-3370
    remark: 100yr 12hr 5min SCS

*
 *  CALIB NASHYD         0203  1  5.0   24.81    1.05  6.75  35.40 0.36   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    2.90  6.67  35.59  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\820078
5d-d927-4cff-ae3e-ed129a55c7d0\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\820078
5d-d927-4cff-ae3e-ed129a55c7d0\scena


DATE: 09/11/2025                          TIME: 03:54:08

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 3.1 - 2yr 24hr 5min SCS       **
  ************************************************

  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= 54.40 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\a669ce3a-458
6-4597-a232-6064
    remark: 2yr 24hr 5min SCS

*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.09 12.42  14.06 0.26   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                  5.0
    [ Ptot= 54.40 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\a669ce3a-458
6-4597-a232-6064
    remark: 2yr 24hr 5min SCS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.32 12.08  47.86 0.88   0.000
    [I%=83.0:S%= 1.30]
```

```
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.03 12.75  41.86  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.12 12.42  22.41  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.12 12.42  22.41  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 54.40 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\a669ce3a-458
6-4597-a232-6064
    remark: 2yr 24hr 5min SCS

*
 *  CALIB NASHYD        0202  1  5.0   38.04    0.36 12.67   9.08 0.17   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                  5.0
    [ Ptot= 54.40 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\a669ce3a-458
6-4597-a232-6064
    remark: 2yr 24hr 5min SCS

*
 *  CALIB STANDHYD      0205  1  5.0    1.92    0.31 12.08  49.93 0.92   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00 21.08  39.65  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    0.36 12.67  10.55  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    0.36 12.67  10.55  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.36 12.67  10.55  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    0.47 12.67  12.30  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 54.40 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\a669ce3a-458
6-4597-a232-6064
    remark: 2yr 24hr 5min SCS

*
```

```
 *  CALIB NASHYD        0203  1  5.0   24.81    0.27 12.75  11.44 0.21   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    0.74 12.67  12.00  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
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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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\c91051
86-802b-46a7-8ed6-21b4f1a328e6\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\c91051
86-802b-46a7-8ed6-21b4f1a328e6\scena


DATE: 09/11/2025                          TIME: 03:54:11

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 3.2 - 5yr 24hr 5min SCS       **
  ************************************************
```

```
  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= 72.36 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\402c8152-892
7-4e9e-af48-6914
    remark: 5yr 24hr 5min SCS

*
 ** CALIB NASHYD        0201  1  5.0    4.84    0.16 12.42  24.15 0.33   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                  5.0
    [ Ptot= 72.36 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\402c8152-892
7-4e9e-af48-6914
    remark: 5yr 24hr 5min SCS

*
 *  CALIB STANDHYD      0204  1  5.0    2.08    0.43 12.08  64.94 0.90   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.04 12.92  58.94  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.20 12.42  34.61  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.20 12.42  34.61  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 72.36 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\402c8152-892
7-4e9e-af48-6914
    remark: 5yr 24hr 5min SCS

*
 *  CALIB NASHYD        0202  1  5.0   38.04    0.68 12.67  16.66 0.23   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                  5.0
    [ Ptot= 72.36 mm ]
    fname :
```

```
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\402c8152-892
7-4e9e-af48-6914
    remark: 5yr 24hr 5min SCS

*
 *  CALIB STANDHYD      0205  1  5.0    1.92    0.42 12.08  67.44 0.93   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00 24.08  57.17  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    0.69 12.67  18.61  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    0.69 12.67  18.61  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.69 12.67  18.61  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    0.87 12.67  20.97  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 72.36 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\402c8152-892
7-4e9e-af48-6914
    remark: 5yr 24hr 5min SCS

*
 *  CALIB NASHYD        0203  1  5.0   24.81    0.50 12.75  20.25 0.28   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    1.36 12.67  20.72  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\4731a8
36-78af-4158-9e9a-0f903595a0dc\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\4731a8
36-78af-4158-9e9a-0f903595a0dc\scena


DATE: 09/11/2025                          TIME: 03:54:07

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : 3.3 - 10yr 24hr 5min SCS      **
  ************************************************

  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= 84.07 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\76f91fd1-a20
3-4461-8e1b-0147
    remark: 10yr 24hr 5min SCS

*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.21 12.42  31.56 0.38   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                 5.0
    [ Ptot= 84.07 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\76f91fd1-a20
3-4461-8e1b-0147
    remark: 10yr 24hr 5min SCS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.50 12.08  76.19 0.91   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.04 13.00  70.19  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.25 12.42  43.17  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.25 12.42  43.17  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 84.07 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\76f91fd1-a20
3-4461-8e1b-0147
    remark: 10yr 24hr 5min SCS

*
 *  CALIB NASHYD         0202  1  5.0   38.04    0.93 12.67  22.44 0.27   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                 5.0
    [ Ptot= 84.07 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\76f91fd1-a20
3-4461-8e1b-0147
    remark: 10yr 24hr 5min SCS

*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.49 12.08  78.93 0.94   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00 24.08  68.65  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    0.94 12.67  24.66  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    0.94 12.67  24.66  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.94 12.67  24.66  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    1.17 12.58  27.39  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 84.07 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\76f91fd1-a20
3-4461-8e1b-0147
    remark: 10yr 24hr 5min SCS

*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.67 12.75  26.84 0.32   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    1.83 12.67  27.20  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\ea4b26
98-fc2a-4efd-a6f4-20102f8b2d20\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\ea4b26
98-fc2a-4efd-a6f4-20102f8b2d20\scena


DATE: 09/11/2025                          TIME: 03:54:12

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : 3.4 - 25yr 24hr 5min SCS      **
  ************************************************

  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= 98.91 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\b27c4ba1-060
6-4c75-a267-b88d
    remark: 25yr 24hr 5min SCS

*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.29 12.42  41.67 0.42   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                 5.0
    [ Ptot= 98.91 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\b27c4ba1-060
6-4c75-a267-b88d
    remark: 25yr 24hr 5min SCS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.60 12.08  90.55 0.92   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.05 13.08  84.54  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.33 12.42  54.56  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.33 12.42  54.56  n/a   0.000
*
    READ STORM                 5.0
    [ Ptot= 98.91 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\b27c4ba1-060
6-4c75-a267-b88d
    remark: 25yr 24hr 5min SCS

*
 *  CALIB NASHYD         0202  1  5.0   38.04    1.29 12.67  30.54 0.31   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
```

```
*
    READ STORM                  5.0
    [ Ptot= 98.91 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\b27c4ba1-060
6-4c75-a267-b88d
    remark: 25yr 24hr 5min SCS

*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.58 12.08  93.54 0.95   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.01 24.08  82.43  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    1.30 12.67  33.04  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    1.30 12.67  33.04  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    1.30 12.67  33.04  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    1.60 12.58  36.21  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot= 98.91 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\b27c4ba1-060
6-4c75-a267-b88d
    remark: 25yr 24hr 5min SCS

*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.90 12.75  35.96 0.36   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    2.49 12.67  36.13  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\9ae180
1c-4daa-46c5-9b85-f3422a4e4d18\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\9ae180
1c-4daa-46c5-9b85-f3422a4e4d18\scena


DATE: 09/11/2025                          TIME: 03:54:10

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 3.5 - 50yr 24hr 5min SCS      **
  ************************************************

  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=109.84 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\fbcd220d-ac8
1-45f2-aeac-38fd
    remark: 50yr 24hr 5min SCS

*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.34 12.42  49.55 0.45   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                  5.0
    [ Ptot=109.84 mm ]
```

```
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\fbcd220d-ac8
1-45f2-aeac-38fd
    remark: 50yr 24hr 5min SCS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.67 12.08 101.17 0.92   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.05 13.08  95.17  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.39 12.42  63.26  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.39 12.42  63.26  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot=109.84 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\fbcd220d-ac8
1-45f2-aeac-38fd
    remark: 50yr 24hr 5min SCS

*
 *  CALIB NASHYD         0202  1  5.0   38.04    1.58 12.67  37.00 0.34   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                  5.0
    [ Ptot=109.84 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\fbcd220d-ac8
1-45f2-aeac-38fd
    remark: 50yr 24hr 5min SCS

*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.66 12.08 104.33 0.95   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.01 24.08  92.38  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    1.58 12.67  39.66  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    1.58 12.67  39.66  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    1.58 12.67  39.66  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    1.94 12.58  43.14  n/a   0.000
*
```

```
    READ STORM                  5.0
    [ Ptot=109.84 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\fbcd220d-ac8
1-45f2-aeac-38fd
    remark: 50yr 24hr 5min SCS

*
 *  CALIB NASHYD         0203  1  5.0   24.81    1.09 12.75  43.13 0.39   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    3.02 12.67  43.14  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\995b39
40-f9eb-45d8-82c7-d8a4aeedb09a\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\995b39
40-f9eb-45d8-82c7-d8a4aeedb09a\scena


DATE: 09/11/2025                          TIME: 03:54:10

USER:
```

```
COMMENTS: _____________________________________________________


  ***********************************************
  ** SIMULATION : 3.6 - 100yr 24hr 5min SCS     **
  ***********************************************

  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=120.77 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\c224ee9a-48a
6-4eb1-8466-5fda
    remark: 100yr 24hr 5min SCS

*
 ** CALIB NASHYD        0201  1  5.0    4.84    0.40 12.42  57.72 0.48   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                  5.0
    [ Ptot=120.77 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\c224ee9a-48a
6-4eb1-8466-5fda
    remark: 100yr 24hr 5min SCS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.74 12.08 111.83 0.93   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.05 13.08 105.83  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.45 12.42  72.18  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.45 12.42  72.18  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot=120.77 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\c224ee9a-48a
6-4eb1-8466-5fda
    remark: 100yr 24hr 5min SCS
```

```
*
 *  CALIB NASHYD         0202  1  5.0   38.04    1.88 12.67  43.80 0.36   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                  5.0
    [ Ptot=120.77 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\c224ee9a-48a
6-4eb1-8466-5fda
    remark: 100yr 24hr 5min SCS

*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.73 12.08 115.13 0.95   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.01 24.08 102.15  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    1.88 12.67  46.60  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    1.88 12.67  46.60  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    1.88 12.67  46.60  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    2.30 12.58  50.38  n/a   0.000
*
    READ STORM                  5.0
    [ Ptot=120.77 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\c224ee9a-48a
6-4eb1-8466-5fda
    remark: 100yr 24hr 5min SCS

*
 *  CALIB NASHYD         0203  1  5.0   24.81    1.29 12.75  50.64 0.42   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    3.57 12.67  50.47  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\74d6ed
f1-ee7d-4e6e-8877-469c295a59f3\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\74d6ed
f1-ee7d-4e6e-8877-469c295a59f3\scena


DATE: 09/11/2025                          TIME: 03:54:08

USER:


COMMENTS: _____________________________________________________


  ***********************************************
  ** SIMULATION : 4.1 - MTO- 2yr 4hr 5min Chica **
  ***********************************************

  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                  5.0
    [ Ptot= 30.81 mm ]
*
 ** CALIB NASHYD        0201  1  5.0    4.84    0.03  2.17   4.06 0.13   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    CHIC STORM                  5.0
    [ Ptot= 30.81 mm ]
*
```

```
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.47  1.50  25.94 0.84   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.02  3.00  19.94  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.05  2.17   8.83  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.05  2.17   8.83  n/a   0.000
*
    CHIC STORM                  5.0
    [ Ptot= 30.81 mm ]
*
 *  CALIB NASHYD         0202  1  5.0   38.04    0.09  2.58   2.17 0.07   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    CHIC STORM                  5.0
    [ Ptot= 30.81 mm ]
*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.48  1.50  27.25 0.88   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00  4.08  16.97  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    0.10  2.58   2.88  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    0.10  2.58   2.88  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.10  2.58   2.88  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    0.14  2.50   3.76  n/a   0.000
*
    CHIC STORM                  5.0
    [ Ptot= 30.81 mm ]
*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.08  2.67   3.04 0.10   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    0.22  2.58   3.51  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\c2b45b
13-56a1-46ef-9841-0a8f903f5fed\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\c2b45b
13-56a1-46ef-9841-0a8f903f5fed\scena


DATE: 09/11/2025                          TIME: 03:54:11

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : 4.2 - MTO- 5yr 4hr 5min Chica **
  ************************************************

  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                 5.0
   [ Ptot= 40.98 mm ]
*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.06  2.08   7.81 0.19   0.000
   [CN=70.1         ]
   [ N = 3.0:Tp 0.46]
*
   CHIC STORM                 5.0
   [ Ptot= 40.98 mm ]
*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.64  1.50  35.30 0.86   0.000
   [I%=83.0:S%= 1.30]
*
 ** Reservoir
   OUTFLOW:             0401  1  5.0    2.08    0.03  2.92  29.30  n/a   0.000
*
   ADD [  0201+  0401]  0901  3  5.0    6.92    0.08  2.08  14.27  n/a   0.000
*
   ADD [  0901+  0905]  0901  1  5.0    6.92    0.08  2.08  14.27  n/a   0.000
*
   CHIC STORM                 5.0
   [ Ptot= 40.98 mm ]
*
 *  CALIB NASHYD         0202  1  5.0   38.04    0.22  2.42   4.66 0.11   0.000
   [CN=60.4         ]
   [ N = 3.0:Tp 0.62]
*
   CHIC STORM                 5.0
   [ Ptot= 40.98 mm ]
*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.65  1.50  36.96 0.90   0.000
   [I%=86.0:S%= 0.30]
*
 ** Reservoir
   OUTFLOW:             0402  1  5.0    1.92    0.00  4.08  26.69  n/a   0.000
*
   ADD [  0202+  0402]  0902  3  5.0   39.96    0.22  2.42   5.72  n/a   0.000
*
   ADD [  0902+  0906]  0902  1  5.0   39.96    0.22  2.42   5.72  n/a   0.000
*
   CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.22  2.50   5.72  n/a   0.000
*
   ADD [  0501+  0901]  0903  3  5.0   46.88    0.30  2.42   6.98  n/a   0.000
*
   CHIC STORM                 5.0
   [ Ptot= 40.98 mm ]
*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.18  2.58   6.13 0.15   0.000
   [CN=65.3         ]
   [ N = 3.0:Tp 0.72]
*
   ADD [  0203+  0903]  0904  3  5.0   71.69    0.47  2.42   6.69  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\8c4a31
ae-0d3e-4378-b6ec-2701502ad8ad\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\8c4a31
ae-0d3e-4378-b6ec-2701502ad8ad\scena


DATE: 09/11/2025                          TIME: 03:54:09

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : 4.3 - MTO- 10yr 4hr 5min Chic **
  ************************************************

  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                 5.0
   [ Ptot= 47.81 mm ]
*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.08  2.08  10.83 0.23   0.000
   [CN=70.1         ]
   [ N = 3.0:Tp 0.46]
```

```
*
   CHIC STORM                 5.0
   [ Ptot= 47.81 mm ]
*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.76  1.50  41.66 0.87   0.000
   [I%=83.0:S%= 1.30]
*
 ** Reservoir
   OUTFLOW:             0401  1  5.0    2.08    0.03  3.00  35.66  n/a   0.000
*
   ADD [  0201+  0401]  0901  3  5.0    6.92    0.11  2.08  18.29  n/a   0.000
*
   ADD [  0901+  0905]  0901  1  5.0    6.92    0.11  2.08  18.29  n/a   0.000
*
   CHIC STORM                 5.0
   [ Ptot= 47.81 mm ]
*
 *  CALIB NASHYD         0202  1  5.0   38.04    0.32  2.42   6.76 0.14   0.000
   [CN=60.4         ]
   [ N = 3.0:Tp 0.62]
*
   CHIC STORM                 5.0
   [ Ptot= 47.81 mm ]
*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.78  1.50  43.55 0.91   0.000
   [I%=86.0:S%= 0.30]
*
 ** Reservoir
   OUTFLOW:             0402  1  5.0    1.92    0.00  4.08  33.27  n/a   0.000
*
   ADD [  0202+  0402]  0902  3  5.0   39.96    0.33  2.42   8.04  n/a   0.000
*
   ADD [  0902+  0906]  0902  1  5.0   39.96    0.33  2.42   8.04  n/a   0.000
*
   CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.33  2.42   8.04  n/a   0.000
*
   ADD [  0501+  0901]  0903  3  5.0   46.88    0.43  2.33   9.55  n/a   0.000
*
   CHIC STORM                 5.0
   [ Ptot= 47.81 mm ]
*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.26  2.50   8.67 0.18   0.000
   [CN=65.3         ]
   [ N = 3.0:Tp 0.72]
*
   ADD [  0203+  0903]  0904  3  5.0   71.69    0.68  2.42   9.25  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\e0ac20
5f-eee6-4b2d-b056-e36cd036dd8c\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\e0ac20
5f-eee6-4b2d-b056-e36cd036dd8c\scena


DATE: 09/11/2025                          TIME: 03:54:12

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : 4.4 - MTO- 25yr 4hr 5min Chic **
  ************************************************

  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                 5.0
    [ Ptot= 56.31 mm ]
*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.12  2.08  15.04 0.27   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    CHIC STORM                 5.0
    [ Ptot= 56.31 mm ]
*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.91  1.50  49.66 0.88   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.03  3.00  43.66  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.15  2.08  23.64  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.15  2.08  23.64  n/a   0.000
*
    CHIC STORM                 5.0
    [ Ptot= 56.31 mm ]
*
 *  CALIB NASHYD         0202  1  5.0   38.04    0.48  2.33   9.80 0.17   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    CHIC STORM                 5.0
    [ Ptot= 56.31 mm ]
*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.94  1.50  51.78 0.92   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00  4.08  41.51  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    0.49  2.33  11.33  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    0.49  2.33  11.33  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.49  2.42  11.33  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    0.63  2.33  13.15  n/a   0.000
*
    CHIC STORM                 5.0
    [ Ptot= 56.31 mm ]
*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.37  2.50  12.29 0.22   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    0.99  2.33  12.85  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\b45596
16-00d7-40cc-8fd9-1130153da722\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\b45596
16-00d7-40cc-8fd9-1130153da722\scena


DATE: 09/11/2025                          TIME: 03:54:11

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : 4.5 - MTO- 50yr 4hr 5min Chic **
  ************************************************

  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                 5.0
    [ Ptot= 62.68 mm ]
*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.15  2.08  18.50 0.30   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    CHIC STORM                 5.0
    [ Ptot= 62.68 mm ]
*
 *  CALIB STANDHYD       0204  1  5.0    2.08    1.03  1.50  55.71 0.89   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.04  3.08  49.70  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.19  2.08  27.88  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.19  2.08  27.88  n/a   0.000
*
    CHIC STORM                 5.0
    [ Ptot= 62.68 mm ]
*
 *  CALIB NASHYD         0202  1  5.0   38.04    0.62  2.33  12.37 0.20   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    CHIC STORM                 5.0
    [ Ptot= 62.68 mm ]
*
 *  CALIB STANDHYD       0205  1  5.0    1.92    1.05  1.50  57.99 0.93   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00  4.08  47.71  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    0.62  2.33  14.06  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    0.62  2.33  14.06  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.62  2.33  14.06  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    0.79  2.25  16.10  n/a   0.000
*
    CHIC STORM                 5.0
    [ Ptot= 62.68 mm ]
*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.46  2.42  15.28 0.24   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    1.25  2.33  15.82  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\4c4d3d
e1-4636-4980-ba3b-e2d4feaa4c87\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\4c4d3d
e1-4636-4980-ba3b-e2d4feaa4c87\scena


DATE: 09/11/2025                          TIME: 03:54:07

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 4.6 - MTO- 100yr 4hr 5min Chi **
  ************************************************

  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                 5.0
    [ Ptot= 68.90 mm ]
*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.18  2.08  22.08 0.32   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    CHIC STORM                 5.0
    [ Ptot= 68.90 mm ]
*
 *  CALIB STANDHYD       0204  1  5.0    2.08    1.14  1.50  61.64 0.89   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.04  3.17  55.63  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.22  2.08  32.17  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.22  2.08  32.17  n/a   0.000
*
    CHIC STORM                 5.0
    [ Ptot= 68.90 mm ]
*
 *  CALIB NASHYD         0202  1  5.0   38.04    0.77  2.33  15.07 0.22   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    CHIC STORM                 5.0
    [ Ptot= 68.90 mm ]
*
 *  CALIB STANDHYD       0205  1  5.0    1.92    1.17  1.50  64.06 0.93   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00  4.08  53.79  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    0.77  2.33  16.93  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    0.77  2.33  16.93  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.77  2.33  16.93  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    0.97  2.25  19.18  n/a   0.000
*
    CHIC STORM                 5.0
    [ Ptot= 68.90 mm ]
*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.57  2.42  18.42 0.27   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
```

```
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    1.53  2.33  18.92  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\5bf34d
10-2d5e-4c6f-8886-16138b4d46b8\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\5bf34d
10-2d5e-4c6f-8886-16138b4d46b8\scena


DATE: 09/11/2025                          TIME: 03:54:08

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 5.0 - 25mm - 4hr Chicago      **
  ************************************************

  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                 6.0
    [ Ptot= 24.97 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\0e5d7995-df9
b-4097-a9d5-b75f
    remark: 25mm - 4hr Chicago

*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.02  2.50   2.37 0.09   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                 6.0
    [ Ptot= 24.97 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\0e5d7995-df9
b-4097-a9d5-b75f
    remark: 25mm - 4hr Chicago

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.27  1.92  20.65 0.83   0.000
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    2.08    0.01  2.83  14.65  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.92    0.04  2.50   6.06  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.04  2.50   6.06  n/a   0.000
*
    READ STORM                 6.0
    [ Ptot= 24.97 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\0e5d7995-df9
b-4097-a9d5-b75f
    remark: 25mm - 4hr Chicago

*
 *  CALIB NASHYD         0202  1  5.0   38.04    0.06  2.83   1.13 0.05   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                 6.0
    [ Ptot= 24.97 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\0e5d7995-df9
b-4097-a9d5-b75f
    remark: 25mm - 4hr Chicago
```

```
*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.27  1.92  21.73 0.87   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.92    0.00  4.08  11.46  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.96    0.07  2.83   1.62  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    0.07  2.83   1.62  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    0.07  2.92   1.62  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    0.10  2.75   2.28  n/a   0.000
*
    READ STORM                 6.0
    [ Ptot= 24.97 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\0e5d7995-df9
b-4097-a9d5-b75f
    remark: 25mm - 4hr Chicago

*
 *  CALIB NASHYD         0203  1  5.0   24.81    0.06  2.92   1.69 0.07   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    0.16  2.83   2.08  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\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\43c460
0d-9952-435e-ad1f-09e41215476d\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\43c460
0d-9952-435e-ad1f-09e41215476d\scena


DATE: 09/11/2025                          TIME: 03:54:07

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : 6.0 - 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                 15.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\a681e067-91e
d-46b8-9ca8-f785
    remark: TIMMINS

*
 ** CALIB NASHYD         0201  1  5.0    4.84    0.37  7.17 116.91 0.61   0.000
    [CN=70.1         ]
    [ N = 3.0:Tp 0.46]
*
    READ STORM                 15.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\a681e067-91e
d-46b8-9ca8-f785
    remark: TIMMINS

*
 *  CALIB STANDHYD       0204  1  5.0    2.08    0.24  7.00 182.87 0.95   0.000
```

```
    [I%=83.0:S%= 1.30]
*
 ** Reservoir
    OUTFLOW:             0401  1  5.0    1.75    0.06  7.25 179.07  n/a   0.000
*
    ADD [  0201+  0401]  0901  3  5.0    6.59    0.43  7.17 133.38  n/a   0.000
*
    ADD [  0901+  0905]  0901  1  5.0    6.92    0.52  7.08 135.59  n/a   0.000
*
    READ STORM                 15.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\a681e067-91e
d-46b8-9ca8-f785
    remark: TIMMINS

*
 *  CALIB NASHYD         0202  1  5.0   38.04    2.10  7.33  95.27 0.49   0.000
    [CN=60.4         ]
    [ N = 3.0:Tp 0.62]
*
    READ STORM                 15.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\a681e067-91e
d-46b8-9ca8-f785
    remark: TIMMINS

*
 *  CALIB STANDHYD       0205  1  5.0    1.92    0.22  7.00 186.84 0.97   0.000
    [I%=86.0:S%= 0.30]
*
 ** Reservoir
    OUTFLOW:             0402  1  5.0    1.21    0.01  7.50 174.24  n/a   0.000
*
    ADD [  0202+  0402]  0902  3  5.0   39.25    2.11  7.33  97.70  n/a   0.000
*
    ADD [  0902+  0906]  0902  1  5.0   39.96    2.16  7.50  99.06  n/a   0.000
*
    CHANNEL[ 2:  0902]   0501  1  5.0   39.96    2.15  7.50  99.06  n/a   0.000
*
    ADD [  0501+  0901]  0903  3  5.0   46.88    2.59  7.50 104.45  n/a   0.000
*
    READ STORM                 15.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\pwalsh\AppData\Local\Temp\f993c9ee-097e-4ccb-82cd-e9e076cab277\a681e067-91e
d-46b8-9ca8-f785
    remark: TIMMINS
```

```
*
 *  CALIB NASHYD         0203  1  5.0   24.81    1.45  7.42 106.16 0.55   0.000
    [CN=65.3         ]
    [ N = 3.0:Tp 0.72]
*
    ADD [  0203+  0903]  0904  3  5.0   71.69    4.03  7.50 105.04  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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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\995b39
40-f9eb-45d8-82c7-d8a4aeedb09a\scena
  Summary filename:
C:\Users\pwalsh\AppData\Local\Civica\VH5\71c7b77f-7fa7-421a-afc0-4019de79e9df\995b39
40-f9eb-45d8-82c7-d8a4aeedb09a\scena


DATE: 09/11/2025                          TIME: 03:54:10

USER:



COMMENTS: _____________________________________________________


--------------------------------------------------------------------------------
----------------------
  ************************************************
  ** SIMULATION : 3.6 - 100yr 24hr 5min SCS     **
  ************************************************


--------------------
|    READ STORM    |    Filename: C:\Users\pwalsh\AppD
|                  |              ata\Local\Temp\
```

```
|                  |              f993c9ee-097e-4ccb-82cd-e9e076cab277\c224ee9a
| Ptotal=120.77 mm |    Comments: 100yr 24hr 5min SCS
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    0.00 |  6.08    2.17 | 12.17   17.39 | 18.25    2.17
                0.08    1.33 |  6.17    2.17 | 12.25   17.39 | 18.33    2.17
                0.17    1.33 |  6.25    2.17 | 12.33   17.39 | 18.42    2.17
                0.25    1.33 |  6.33    2.17 | 12.42   17.39 | 18.50    2.17
                0.33    1.33 |  6.42    2.17 | 12.50   17.39 | 18.58    2.17
                0.42    1.33 |  6.50    2.17 | 12.58    8.94 | 18.67    2.17
                0.50    1.33 |  6.58    2.17 | 12.67    8.94 | 18.75    2.17
                0.58    1.33 |  6.67    2.17 | 12.75    8.94 | 18.83    2.17
                0.67    1.33 |  6.75    2.17 | 12.83    8.94 | 18.92    2.17
                0.75    1.33 |  6.83    2.17 | 12.92    8.94 | 19.00    2.17
                0.83    1.33 |  6.92    2.17 | 13.00    8.94 | 19.08    2.17
                0.92    1.33 |  7.00    2.17 | 13.08    6.52 | 19.17    2.17
                1.00    1.33 |  7.08    2.66 | 13.17    6.52 | 19.25    2.17
                1.08    1.33 |  7.17    2.66 | 13.25    6.52 | 19.33    2.17
                1.17    1.33 |  7.25    2.66 | 13.33    6.52 | 19.42    2.17
                1.25    1.33 |  7.33    2.66 | 13.42    6.52 | 19.50    2.17
                1.33    1.33 |  7.42    2.66 | 13.50    6.52 | 19.58    2.17
                1.42    1.33 |  7.50    2.66 | 13.58    5.07 | 19.67    2.17
                1.50    1.33 |  7.58    2.66 | 13.67    5.07 | 19.75    2.17
                1.58    1.33 |  7.67    2.66 | 13.75    5.07 | 19.83    2.17
                1.67    1.33 |  7.75    2.66 | 13.83    5.07 | 19.92    2.17
                1.75    1.33 |  7.83    2.66 | 13.92    5.07 | 20.00    2.17
                1.83    1.33 |  7.92    2.66 | 14.00    5.07 | 20.08    1.45
                1.92    1.33 |  8.00    2.66 | 14.08    3.62 | 20.17    1.45
                2.00    1.33 |  8.08    3.14 | 14.17    3.62 | 20.25    1.45
                2.08    1.57 |  8.17    3.14 | 14.25    3.62 | 20.33    1.45
                2.17    1.57 |  8.25    3.14 | 14.33    3.62 | 20.42    1.45
                2.25    1.57 |  8.33    3.14 | 14.42    3.62 | 20.50    1.45
                2.33    1.57 |  8.42    3.14 | 14.50    3.62 | 20.58    1.45
                2.42    1.57 |  8.50    3.14 | 14.58    3.62 | 20.67    1.45
                2.50    1.57 |  8.58    3.38 | 14.67    3.62 | 20.75    1.45
                2.58    1.57 |  8.67    3.38 | 14.75    3.62 | 20.83    1.45
                2.67    1.57 |  8.75    3.38 | 14.83    3.62 | 20.92    1.45
                2.75    1.57 |  8.83    3.38 | 14.92    3.62 | 21.00    1.45
                2.83    1.57 |  8.92    3.38 | 15.00    3.62 | 21.08    1.45
                2.92    1.57 |  9.00    3.38 | 15.08    3.62 | 21.17    1.45
                3.00    1.57 |  9.08    3.86 | 15.17    3.62 | 21.25    1.45
                3.08    1.57 |  9.17    3.86 | 15.25    3.62 | 21.33    1.45
                3.17    1.57 |  9.25    3.86 | 15.33    3.62 | 21.42    1.45
                3.25    1.57 |  9.33    3.86 | 15.42    3.62 | 21.50    1.45
                3.33    1.57 |  9.42    3.86 | 15.50    3.62 | 21.58    1.45
                3.42    1.57 |  9.50    3.86 | 15.58    3.62 | 21.67    1.45
                3.50    1.57 |  9.58    4.35 | 15.67    3.62 | 21.75    1.45
                3.58    1.57 |  9.67    4.35 | 15.75    3.62 | 21.83    1.45
                3.67    1.57 |  9.75    4.35 | 15.83    3.62 | 21.92    1.45
```

```
                3.75    1.57 |  9.83    4.35 | 15.92    3.62 | 22.00    1.45
                3.83    1.57 |  9.92    4.35 | 16.00    3.62 | 22.08    1.45
                3.92    1.57 | 10.00    4.35 | 16.08    2.17 | 22.17    1.45
                4.00    1.57 | 10.08    5.56 | 16.17    2.17 | 22.25    1.45
                4.08    1.93 | 10.17    5.56 | 16.25    2.17 | 22.33    1.45
                4.17    1.93 | 10.25    5.56 | 16.33    2.17 | 22.42    1.45
                4.25    1.93 | 10.33    5.56 | 16.42    2.17 | 22.50    1.45
                4.33    1.93 | 10.42    5.56 | 16.50    2.17 | 22.58    1.45
                4.42    1.93 | 10.50    5.56 | 16.58    2.17 | 22.67    1.45
                4.50    1.93 | 10.58    7.49 | 16.67    2.17 | 22.75    1.45
                4.58    1.93 | 10.67    7.49 | 16.75    2.17 | 22.83    1.45
                4.67    1.93 | 10.75    7.49 | 16.83    2.17 | 22.92    1.45
                4.75    1.93 | 10.83    7.49 | 16.92    2.17 | 23.00    1.45
                4.83    1.93 | 10.92    7.49 | 17.00    2.17 | 23.08    1.45
                4.92    1.93 | 11.00    7.49 | 17.08    2.17 | 23.17    1.45
                5.00    1.93 | 11.08   11.59 | 17.17    2.17 | 23.25    1.45
                5.08    1.93 | 11.17   11.59 | 17.25    2.17 | 23.33    1.45
                5.17    1.93 | 11.25   11.59 | 17.33    2.17 | 23.42    1.45
                5.25    1.93 | 11.33   11.59 | 17.42    2.17 | 23.50    1.45
                5.33    1.93 | 11.42   11.59 | 17.50    2.17 | 23.58    1.45
                5.42    1.93 | 11.50   11.59 | 17.58    2.17 | 23.67    1.45
                5.50    1.93 | 11.58   35.75 | 17.67    2.17 | 23.75    1.45
                5.58    1.93 | 11.67   35.75 | 17.75    2.17 | 23.83    1.45
                5.67    1.93 | 11.75   35.75 | 17.83    2.17 | 23.92    1.45
                5.75    1.93 | 11.83  147.82 | 17.92    2.17 | 24.00    1.45
                5.83    1.93 | 11.92  147.82 | 18.00    2.17 |
                5.92    1.93 | 12.00  147.82 | 18.08    2.17 |
                6.00    1.93 | 12.08   17.39 | 18.17    2.17 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0201)|   Area    (ha)=   4.84   Curve Number   (CN)= 70.1
|ID= 1 DT= 5.0 min |   Ia      (mm)=   7.72   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.46

     Unit Hyd Qpeak  (cms)=   0.402

     PEAK FLOW       (cms)=   0.401 (i)
     TIME TO PEAK    (hrs)=  12.417
     RUNOFF VOLUME    (mm)=  57.723
     TOTAL RAINFALL   (mm)= 120.770
     RUNOFF COEFFICIENT   =   0.478

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
```

```
| STANDHYD (  0204)|   Area    (ha)=   2.08
|ID= 1 DT= 5.0 min |   Total Imp(%)=  83.00   Dir. Conn.(%)=  83.00
--------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.73         0.35
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.50         1.30
     Length            (m)=     176.00       110.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     147.82       103.08
               over (min)          5.00        20.00
     Storage Coeff.  (min)=       2.72 (ii)   17.27 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.29         0.06
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.71         0.05          0.744 (iii)
     TIME TO PEAK    (hrs)=      12.08        12.25          12.08
     RUNOFF VOLUME    (mm)=     119.77        73.12         111.83
     TOTAL RAINFALL   (mm)=     120.77       120.77         120.77
     RUNOFF COEFFICIENT   =       0.99         0.61           0.93

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  79.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0401)|     OVERFLOW IS ON
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0120   |   0.0448     0.1063
                          0.0054     0.0232   |   0.0474     0.1151
                          0.0152     0.0343   |   0.0499     0.1231
                          0.0234     0.0452   |   0.0523     0.1295
                          0.0281     0.0560   |   0.0546     0.1347
                          0.0321     0.0665   |   0.0568     0.1399
                          0.0357     0.0769   |   0.0589     0.1451
                          0.0390     0.0870   |   0.0609     0.1503
                          0.0420     0.0968   |   0.0000     0.0000

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0204)     2.080     0.744     12.08     111.83
   OUTFLOW: ID= 1 (  0401)     2.080     0.055     13.08     105.83
```

```
   OVERFLOW:ID= 3 (  0003)      0.000      0.000      0.00       0.00

                  TOTAL NUMBER OF SIMULATION OVERFLOW  =     0
                  CUMULATIVE TIME OF OVERFLOW  (HOURS) =  0.00
                  PERCENTAGE OF TIME OVERFLOWING   (%) =  0.00

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  7.33
                  TIME SHIFT OF PEAK FLOW         (min)= 60.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.1346

--------------------------------------------------------------------------------

  --------------------------
  | Junction Command(0905) |
  --------------------------

                         AREA     QPEAK   TPEAK     R.V.
                         (ha)     (cms)    (hrs)    (mm)
  INFLOW : ID= 3(  0401)    0.00     0.00    0.00     0.00
  OUTFLOW: ID= 2(  0905)    0.00     0.00    0.00     0.00

  --------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0901)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0201):     4.84   0.401    12.42    57.72
     + ID2= 2 (  0401):     2.08   0.055    13.08   105.83
       ================================================
       ID = 3 (  0901):     6.92   0.453    12.42    72.18

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0901)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
*** W A R N I N G :  HYDROGRAPH   0905 <ID= 2> IS DRY.
*** W A R N I N G :  HYDROGRAPH   0001 = HYDROGRAPH 0003
       ID1= 3 (  0901):     6.92   0.453    12.42    72.18
     + ID2= 2 (  0905):     0.00   0.000     0.00     0.00
       ================================================
       ID = 1 (  0901):     6.92   0.453    12.42    72.18

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
```

```
| NASHYD   (  0202)|   Area    (ha)=  38.04   Curve Number   (CN)= 60.4
|ID= 1 DT= 5.0 min |   Ia      (mm)=  10.70   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.62

     Unit Hyd Qpeak  (cms)=   2.343

     PEAK FLOW       (cms)=   1.876 (i)
     TIME TO PEAK    (hrs)=  12.667
     RUNOFF VOLUME    (mm)=  43.800
     TOTAL RAINFALL   (mm)= 120.770
     RUNOFF COEFFICIENT   =   0.363

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0205)|   Area    (ha)=   1.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  86.00   Dir. Conn.(%)=  86.00
-------------------

                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.65         0.27
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.40         0.30
     Length            (m)=     113.14        40.00
     Mannings n          =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     147.82       119.98
               over (min)         5.00        15.00
     Storage Coeff.  (min)=       2.13 (ii)   13.72 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.31         0.08
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.68         0.06          0.726 (iii)
     TIME TO PEAK    (hrs)=      12.08        12.17          12.08
     RUNOFF VOLUME    (mm)=     119.77        86.69         115.13
     TOTAL RAINFALL   (mm)=     120.77       120.77         120.77
     RUNOFF COEFFICIENT   =       0.99         0.72          0.95

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  85.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0402)|     OVERFLOW IS ON
```

```
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
-------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0170   |   0.0051      0.1513
                         0.0015     0.0330   |   0.0054      0.1638
                         0.0023     0.0488   |   0.0057      0.1752
                         0.0029     0.0643   |   0.0059      0.1842
                         0.0034     0.0797   |   0.0062      0.1916
                         0.0038     0.0947   |   0.0064      0.1990
                         0.0042     0.1094   |   0.0067      0.2064
                         0.0045     0.1239   |   0.0069      0.2138
                         0.0048     0.1378   |   0.0000      0.0000

                              AREA     QPEAK     TPEAK       R.V.
                              (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0205)     1.920      0.726     12.08     115.13
   OUTFLOW: ID= 1 (  0402)     1.920      0.006     24.08     102.15
   OVERFLOW:ID= 3 (  0003)     0.000      0.000      0.00       0.00

                  TOTAL NUMBER OF SIMULATION OVERFLOW  =     0
                  CUMULATIVE TIME OF OVERFLOW  (HOURS) =  0.00
                  PERCENTAGE OF TIME OVERFLOWING   (%) =  0.00

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  0.86
                  TIME SHIFT OF PEAK FLOW         (min)=720.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.1928

--------------------------------------------------------------------------------

  --------------------------
  | Junction Command(0906) |
  --------------------------

                         AREA     QPEAK   TPEAK     R.V.
                         (ha)     (cms)    (hrs)    (mm)
  INFLOW : ID= 3(  0402)    0.00     0.00    0.00     0.00
  OUTFLOW: ID= 2(  0906)    0.00     0.00    0.00     0.00

  --------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0902)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0202):    38.04   1.876    12.67    43.80
     + ID2= 2 (  0402):     1.92   0.006    24.08   102.15
       ================================================
       ID = 3 (  0902):    39.96   1.881    12.67    46.60

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

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

--------------------
| ADD HYD  (  0902)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
*** W A R N I N G :  HYDROGRAPH   0906 <ID= 2> IS DRY.
*** W A R N I N G :  HYDROGRAPH   0001 = HYDROGRAPH 0003
       ID1= 3 (  0902):    39.96   1.881    12.67    46.60
     + ID2= 2 (  0906):     0.00   0.000     0.00     0.00
       ================================================
       ID = 1 (  0902):    39.96   1.881    12.67    46.60

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  0501)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  5.00
-------------------

             <------ DATA FOR SECTION (   1.1) ------>
             Distance      Elevation        Manning
                 0.00         101.50         0.0500
                 1.00         100.70         0.0500
                 1.50         100.55    0.0500 /0.0300  Main Channel
                 2.00          99.50         0.0300      Main Channel
                 3.50          99.60         0.0300      Main Channel
                 4.50         100.65    0.0300 /0.0500  Main Channel
                 6.00         101.45         0.0500

      <--------------------- TRAVEL TIME TABLE ---------------------->
       DEPTH     ELEV      VOLUME     FLOW RATE     VELOCITY   TRAV.TIME
        (m)       (m)     (cu.m.)       (cms)        (m/s)      (min)
       0.10     99.60    .917E+01        0.0          0.40       5.36
       0.19     99.69    .291E+02        0.2          0.78       2.79
       0.29     99.79    .508E+02        0.4          1.04       2.09
       0.38     99.88    .741E+02        0.7          1.24       1.74
       0.48     99.98    .992E+02        1.1          1.41       1.53
       0.57    100.07    .126E+03        1.5          1.56       1.39
       0.67    100.17    .154E+03        2.0          1.69       1.28
       0.76    100.26    .184E+03        2.6          1.81       1.19
       0.86    100.36    .216E+03        3.2          1.93       1.13
       0.95    100.45    .250E+03        3.9          2.03       1.07
       1.05    100.55    .285E+03        4.7          2.13       1.02
       1.16    100.66    .331E+03        5.8          2.27       0.96
       1.28    100.78    .384E+03        7.1          2.42       0.90
       1.39    100.89    .443E+03        8.7          2.55       0.85
       1.50    101.00    .506E+03       10.4          2.66       0.82
       1.61    101.11    .575E+03       12.2          2.76       0.79
       1.72    101.22    .649E+03       14.2          2.84       0.76
       1.84    101.34    .728E+03       16.4          2.92       0.74
```

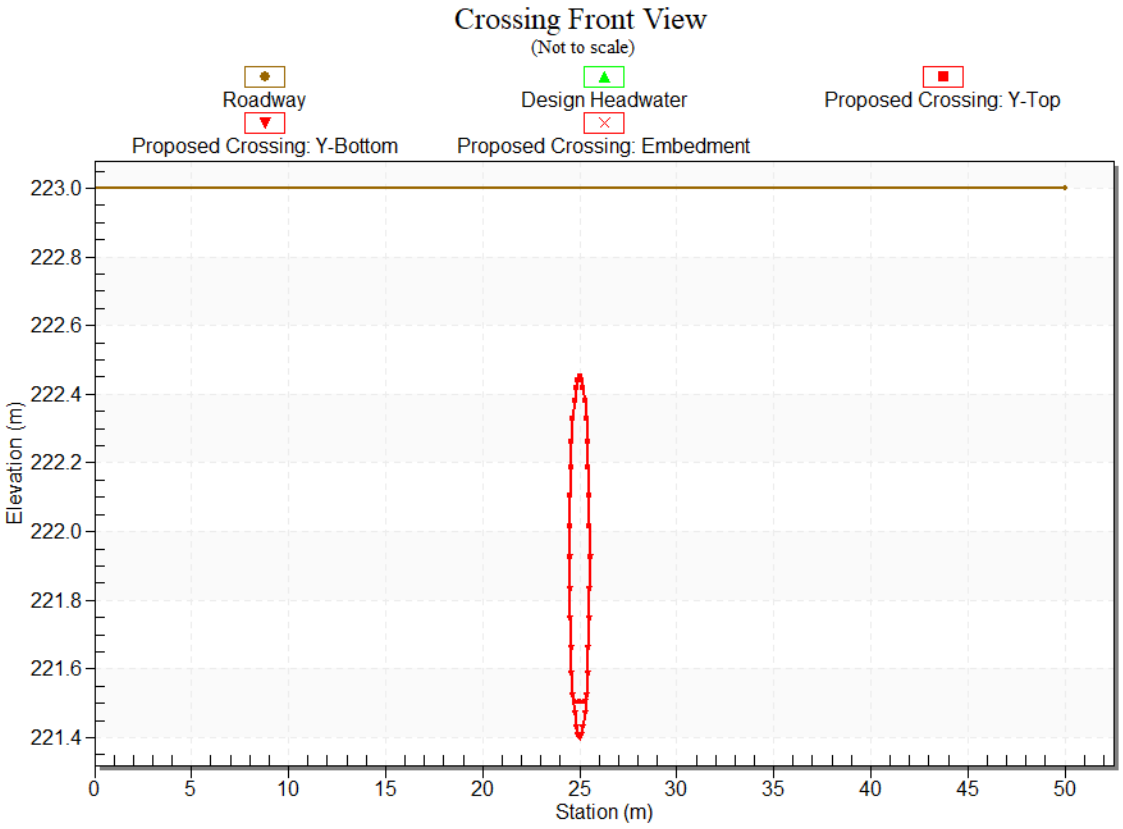
```
      1.95   101.45    .813E+03      18.7          3.00       0.72

                                  <---- hydrograph ---->   <-pipe / channel->
                               AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                               (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  0902)   39.96     1.88   12.67  46.60      0.64      1.66
   OUTFLOW: ID= 1 (  0501)   39.96     1.88   12.67  46.60      0.64      1.66



--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0903)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0501):    39.96   1.884    12.67    46.60
      + ID2= 2 (  0901):     6.92   0.453    12.42    72.18
        ====================================================
        ID = 3 (  0903):    46.88   2.305    12.58    50.38

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0203)|   Area    (ha)=  24.81   Curve Number   (CN)= 65.3
|ID= 1 DT= 5.0 min |   Ia      (mm)=   8.98   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.72

     Unit Hyd Qpeak  (cms)=   1.316

     PEAK FLOW       (cms)=   1.286 (i)
     TIME TO PEAK    (hrs)=  12.750
     RUNOFF VOLUME    (mm)=  50.643
     TOTAL RAINFALL   (mm)= 120.770
     RUNOFF COEFFICIENT   =   0.419

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0904)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0203):    24.81   1.286    12.75    50.64
      + ID2= 2 (  0903):    46.88   2.305    12.58    50.38
        ====================================================
        ID = 3 (  0904):    71.69   3.570    12.67    50.47
```

```
     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
```

Appendix D:
Hydraulic Analysis

HY-8 Culvert Analysis Report

Crossing Front View (Roadway Profile): Proposed Crossing



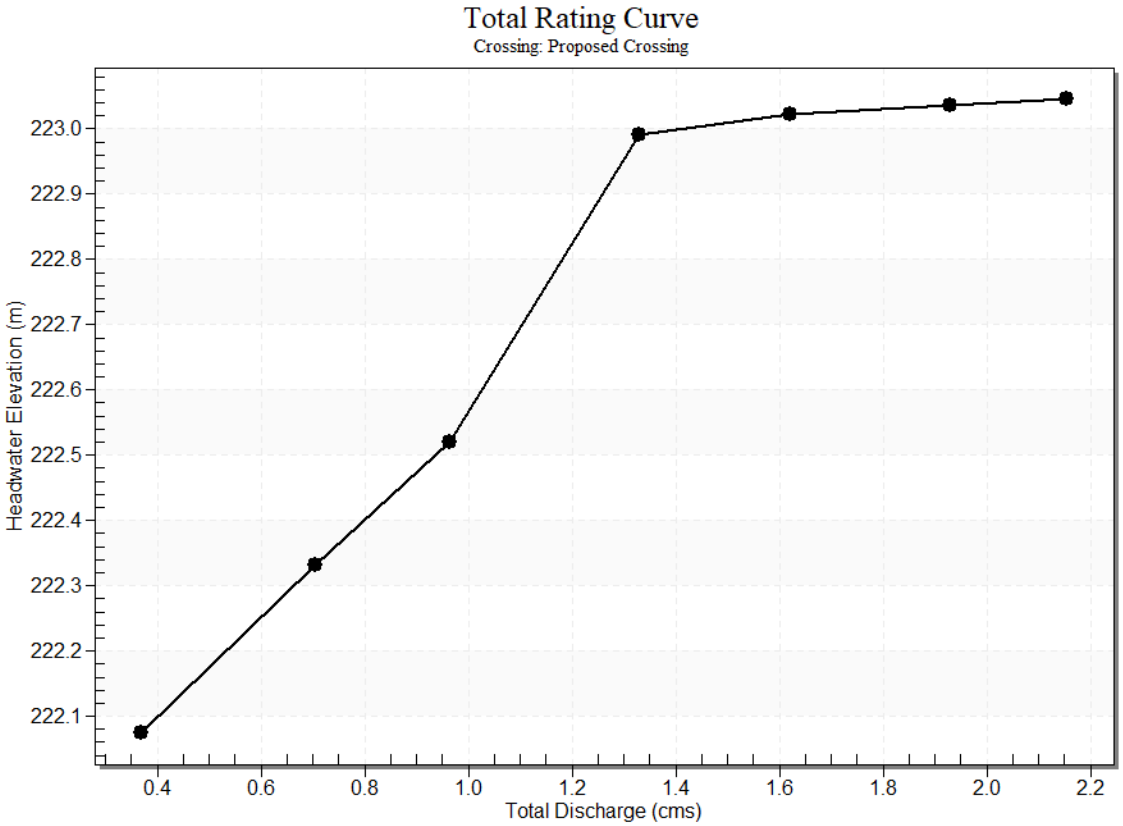
Crossing Discharge Data

Discharge Selection Method: User Defined

Table 1 - Summary of Culvert Flows at Crossing: Proposed Crossing

Headwater Elevation (m)	Discharge Names	Total Discharge (cms)	Proposed Crossing Discharge (cms)	Roadway Discharge (cms)	Iterations
222.08	2 yr	0.37	0.37	0.00	1
222.33	5 yr	0.70	0.70	0.00	1
222.52	10 yr	0.96	0.96	0.00	1
222.99	25 yr	1.33	1.33	0.00	1
223.02	50 yr	1.62	1.35	0.27	7
223.04	100 yr	1.93	1.36	0.57	5
223.05	Regional	2.16	1.36	0.79	4
223.00	Overtopping	1.34	1.34	0.00	Overtopping

Rating Curve Plot for Crossing: Proposed Crossing



Culvert Data: Proposed Crossing

Table 1 - Culvert Summary Table: Proposed Crossing

Discharge Names	Total Discharge (cms)	Culvert Discharge (cms)	Headwater Elevation (m)	Inlet Control Depth (m)	Outlet Control Depth (m)	Flow Type	Normal Depth (m)	Critical Depth (m)	Outlet Depth (m)	Tailwater Depth (m)	Outlet Velocity (m/s)	Tailwater Velocity (m/s)
2 yr	0.37 cms	0.37 cms	222.08	0.46	0.570	2-M2c	0.57	0.28	0.28	0.35	1.53	0.66
5 yr	0.70 cms	0.70 cms	222.33	0.70	0.828	2-M2c	0.95	0.41	0.41	0.46	1.88	0.79
10 yr	0.96 cms	0.96 cms	222.52	0.87	1.015	7-M2c	0.95	0.49	0.49	0.52	2.09	0.52
25 yr	1.33 cms	1.33 cms	222.99	1.14	1.487	7-M2c	0.95	0.59	0.59	0.56	2.36	0.39

50 yr	1.62 cms	1.35 cms	223.02	1.15	1.517	7-M 2c	0.95	0.60	0.60	0.58	2.38	0.36
100 yr	1.93 cms	1.36 cms	223.04	1.16	1.532	7-M 2c	0.95	0.60	0.60	0.60	2.38	0.34
Regional	2.16 cms	1.36 cms	223.05	1.17	1.541	7-M 2c	0.95	0.60	0.60	0.61	2.39	0.34

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

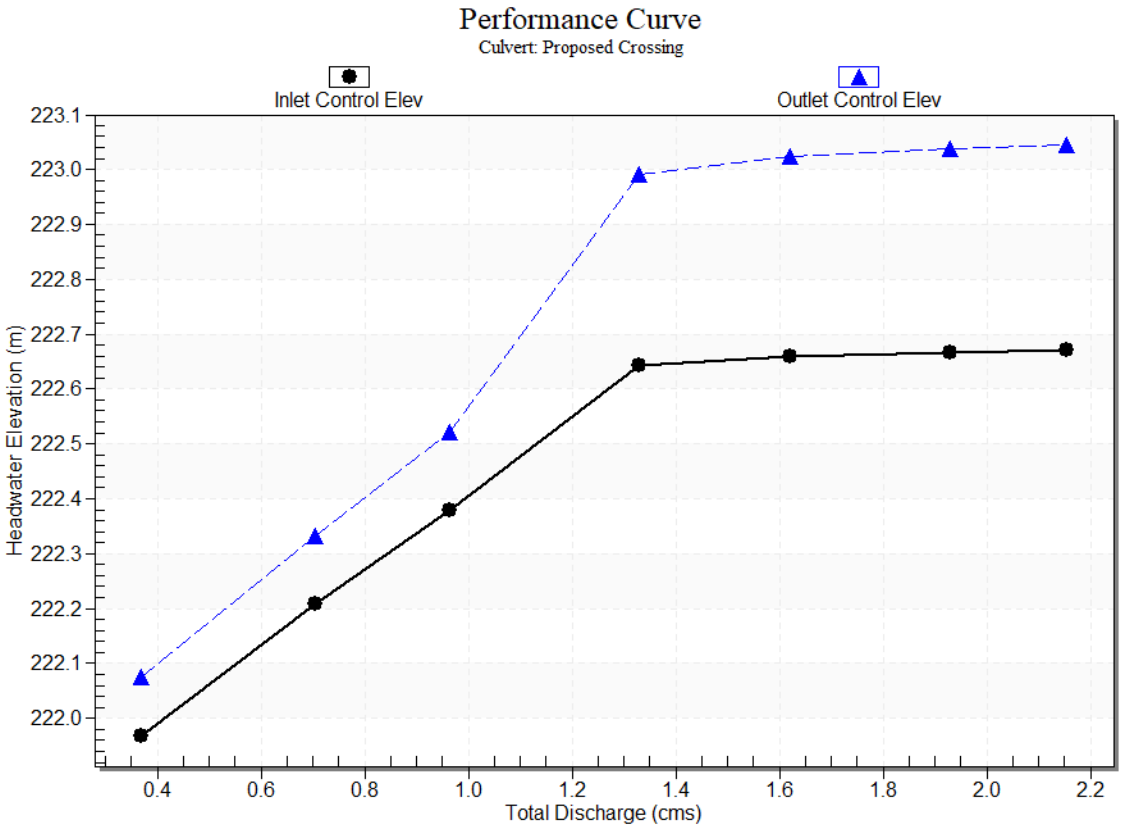
Inlet Elevation (invert): 221.51 m,

Outlet Elevation (invert): 221.41 m

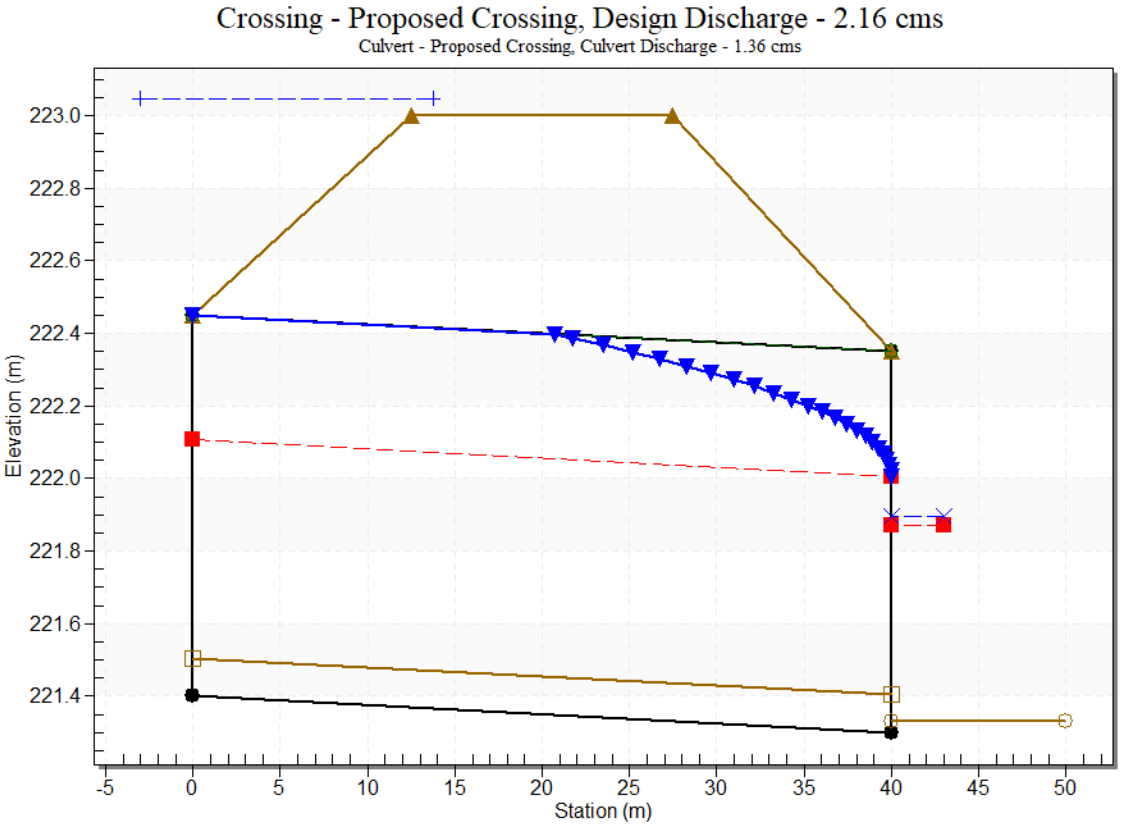
Culvert Length: 40.00 m,

Culvert Slope: 0.0025

Culvert Performance Curve Plot: Proposed Crossing



Water Surface Profile Plot for Culvert: Proposed Crossing



Site Data - Proposed Crossing

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 m

Inlet Elevation: 221.40 m

Outlet Station: 40.00 m

Outlet Elevation: 221.30 m

Number of Barrels: 1

Culvert Data Summary - Proposed Crossing

Barrel Shape: Circular

Barrel Diameter: 1050.00 mm

Barrel Material: Smooth HDPE

Embedment: 105.00 mm

Barrel Manning's n: 0.0120 (top and sides)

Manning's n: 0.0350 (bottom)

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting (Ke=0.9)

Inlet Depression: None

Tailwater Data for Crossing: Proposed Crossing

Table 2 - Downstream Channel Rating Curve (Crossing: Proposed Crossing)

Flow (cms)	Water Surface Elev (m)	Velocity (m/s)	Depth (m)	Shear (Pa)	Froude Number
0.37	221.62	0.29	0.89	28.74	0.67
0.70	221.72	0.39	1.05	38.39	0.70
0.96	221.78	0.45	1.15	43.93	0.71
1.33	221.84	0.51	0.86	49.61	1.12
1.62	221.86	0.53	0.67	52.29	0.86
1.93	221.88	0.55	0.58	54.35	0.70
2.16	221.90	0.57	0.55	55.53	0.63

Tailwater Channel Data - Proposed Crossing

Tailwater Channel Option: Irregular Channel

Channel Slope: Irregular Channel

User Defined Channel Cross-Section

Coord No.	Station (m)	Elevation (m)	Manning's n
1	0.00	224.00	0.0800
2	15.00	223.40	0.0800
3	42.40	223.05	0.0800
4	66.93	222.77	0.0800
5	79.05	222.65	0.0800
6	87.82	222.52	0.0800
7	105.40	222.43	0.0800
8	124.14	222.52	0.0800
9	131.88	222.48	0.0800
10	136.68	222.37	0.0800
11	144.12	222.22	0.0800
12	152.20	222.03	0.0800
13	163.12	222.01	0.0800
14	172.40	221.95	0.0800
15	181.31	222.05	0.0800
16	186.68	222.05	0.0800
17	191.96	222.03	0.0800
18	199.57	221.99	0.0800
19	207.36	221.95	0.0800
20	225.59	221.96	0.0800

21	234.53	221.94	0.0800
22	243.52	221.97	0.0800
23	248.00	222.04	0.0350
24	249.46	221.96	0.0350
25	250.16	221.66	0.0350
26	250.40	221.57	0.0350
27	250.57	221.49	0.0350
28	250.95	221.36	0.0350
29	251.24	221.33	0.0350
30	251.97	221.42	0.0350
31	252.44	221.59	0.0350
32	252.83	221.70	0.0350
33	253.37	221.90	0.0350
34	253.73	222.01	0.0350
35	254.30	222.04	0.0350
36	269.64	222.02	0.0800
37	286.43	222.14	0.0800
38	303.07	221.98	0.0800
39	314.60	221.79	0.0800
40	327.47	221.88	0.0800
41	338.27	221.79	0.0800
42	523.27	223.00	0.0800
43	738.27	224.00	0.0000

Roadway Data for Crossing: Proposed Crossing

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 50.00 m

Crest Elevation: 223.00 m

Roadway Surface: Paved

Roadway Top Width: 15.00 m

Appendix E:
Water Quality Treatment

Stormceptor®

Stormceptor® EF Sizing Report

Rinker MATERIALS™

Imbrium® Systems
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

09/11/2025

Province:	Ontario
City:	Collingwood
Nearest Rainfall Station:	OWEN SOUND MOE
Climate Station Id:	6116132
Years of Rainfall Data:	40

Site Name:	204

Drainage Area (ha):	2.08
% Imperviousness:	83.00

Runoff Coefficient 'c': 0.79

Particle Size Distribution:	CA ETV
Target TSS Removal (%):	60.0

Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	62.69
Oil / Fuel Spill Risk Site?	Yes
Upstream Flow Control?	No
Peak Conveyance (maximum) Flow Rate (L/s):	271.00
Influent TSS Concentration (mg/L):	200
Estimated Average Annual Sediment Load (kg/yr):	1462
Estimated Average Annual Sediment Volume (L/yr):	1188

Project Name:	796060 GR19
Project Number:	123143
Designer Name:	Patrick Walsh
Designer Company:	Tatham Engineering
Designer Email:	pwalsh@tathameng.com
Designer Phone:	705-444-2565
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EFO4	40
EFO5	45
EFO6	50
EFO8	56
EFO10	60
EFO12	62

Recommended Stormceptor EFO Model: EFO10

Estimated Net Annual Sediment (TSS) Load Reduction (%): 60

Water Quality Runoff Volume Capture (%): > 90

imbrium

THIRD-PARTY TESTING AND VERIFICATION

►**Stormceptor® EF and Stormceptor® EFO** are the latest evolutions in the Stormceptor® oil-grit separator (OGS) technology series, and are designed to remove a wide variety of pollutants from stormwater and snowmelt runoff. These technologies have been third-party tested in accordance with the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** and performance has been third-party verified in accordance with the **ISO 14034 Environmental Technology Verification (ETV)** protocol.

PERFORMANCE

►**Stormceptor® EF and EFO** remove stormwater pollutants through gravity separation and floatation, and feature a patent-pending design that generates positive removal of total suspended solids (TSS) throughout each storm event, including high-intensity storms. Captured pollutants include sediment, free oils, and sediment-bound pollutants such as nutrients, heavy metals, and petroleum hydrocarbons. Stormceptor is sized to remove a high level of TSS from the frequent rainfall events that contribute the vast majority of annual runoff volume and pollutant load. The technology incorporates an internal bypass to convey excessive stormwater flows from high-intensity storms through the device without resuspension and washout (scour) of previously captured pollutants. Proper routine maintenance ensures high pollutant removal performance and protection of downstream waterwavs.

PARTICLE SIZE DISTRIBUTION (PSD)

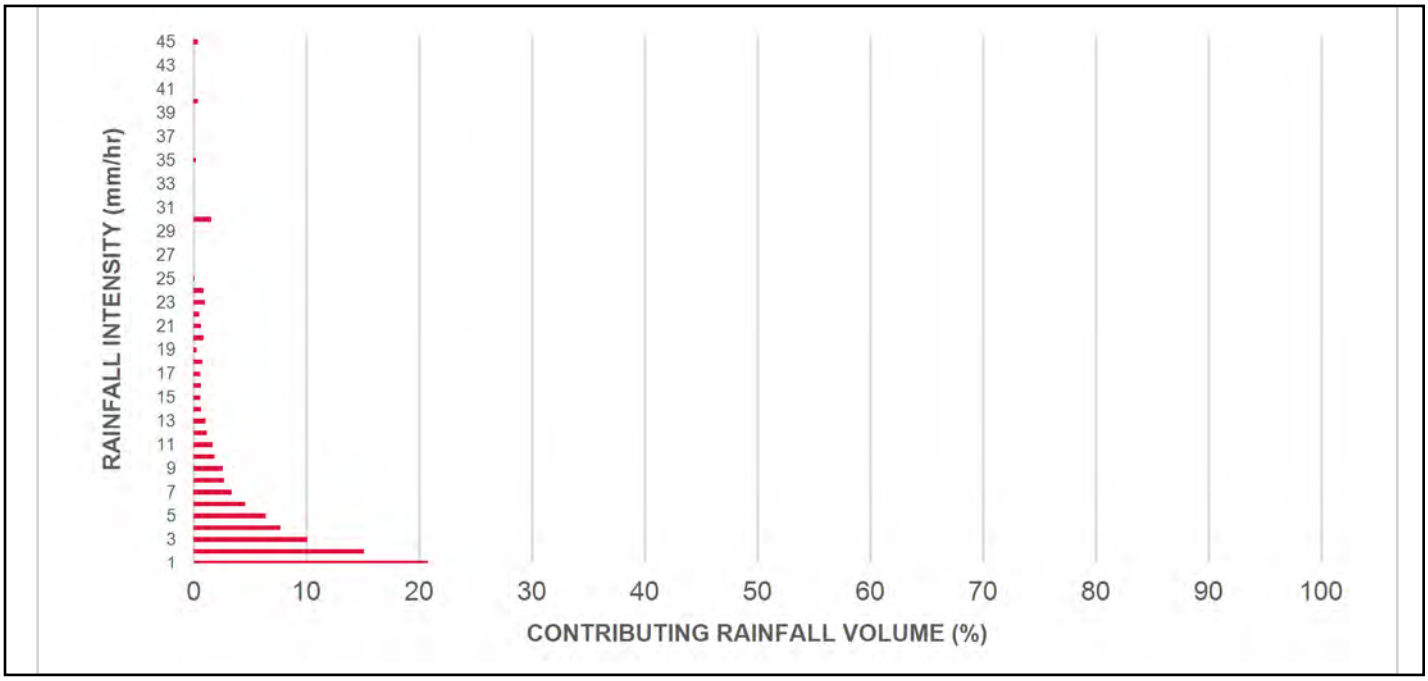
►The **Canadian ETV PSD** shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV ***Procedure for Laboratory Testing of Oil-Grit Separators*** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a wide range of particle sizes in the sand and silt fractions, and is considered reasonably representative of the particle size fractions found in typical urban stormwater runoff.

Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

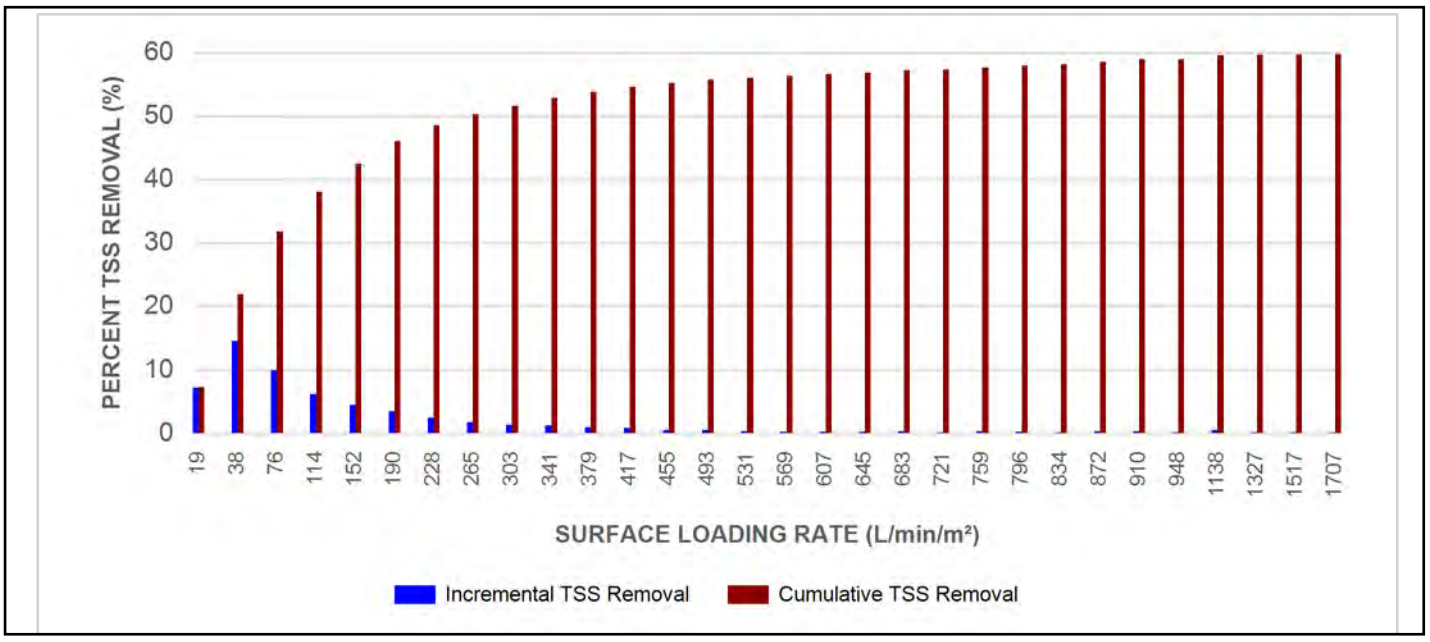
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.50	10.3	10.3	2.31	138.0	19.0	70	7.3	7.3
1.00	20.8	31.1	4.61	277.0	38.0	70	14.6	21.9
2.00	15.1	46.2	9.23	554.0	76.0	66	9.9	31.8
3.00	10.1	56.3	13.84	831.0	114.0	62	6.2	38.0
4.00	7.7	64.0	18.46	1107.0	152.0	58	4.5	42.5
5.00	6.4	70.4	23.07	1384.0	190.0	55	3.5	46.0
6.00	4.6	75.1	27.69	1661.0	228.0	53	2.5	48.5
7.00	3.4	78.4	32.30	1938.0	265.0	52	1.8	50.3
8.00	2.7	81.1	36.91	2215.0	303.0	51	1.4	51.6
9.00	2.6	83.7	41.53	2492.0	341.0	50	1.3	52.9
10.00	1.9	85.6	46.14	2769.0	379.0	49	0.9	53.8
11.00	1.7	87.3	50.76	3045.0	417.0	48	0.8	54.6
12.00	1.2	88.5	55.37	3322.0	455.0	47	0.5	55.2
13.00	1.1	89.6	59.99	3599.0	493.0	45	0.5	55.7
14.00	0.7	90.3	64.60	3876.0	531.0	44	0.3	56.0
15.00	0.6	90.9	69.22	4153.0	569.0	43	0.3	56.3
16.00	0.7	91.6	73.83	4430.0	607.0	42	0.3	56.6
17.00	0.6	92.3	78.44	4707.0	645.0	42	0.3	56.8
18.00	0.8	93.0	83.06	4984.0	683.0	42	0.3	57.2
19.00	0.3	93.3	87.67	5260.0	721.0	41	0.1	57.3
20.00	0.9	94.2	92.29	5537.0	759.0	41	0.4	57.6
21.00	0.7	94.9	96.90	5814.0	796.0	41	0.3	57.9
22.00	0.5	95.3	101.52	6091.0	834.0	41	0.2	58.1
23.00	1.0	96.3	106.13	6368.0	872.0	41	0.4	58.5
24.00	0.9	97.2	110.74	6645.0	910.0	40	0.4	58.9
25.00	0.1	97.3	115.36	6922.0	948.0	40	0.1	58.9
30.00	1.6	98.9	138.43	8306.0	1138.0	38	0.6	59.5
35.00	0.2	99.1	161.50	9690.0	1327.0	35	0.1	59.6
40.00	0.4	99.5	184.57	11074.0	1517.0	32	0.1	59.7
45.00	0.4	99.9	207.65	12459.0	1707.0	28	0.1	59.8
Estimated Net Annual Sediment (TSS) Load Reduction =								**60 %**

Climate Station ID: 6116132 *Years of Rainfall Data*: 40

RAINFALL DATA FROM OWEN SOUND MOE RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL
FOR THE RECOMMENDED STORMCEPTOR® MODEL



Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF5 / EFO5	1.5	5	90	762	30	762	30	710	25
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

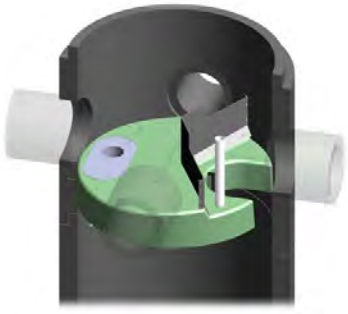
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

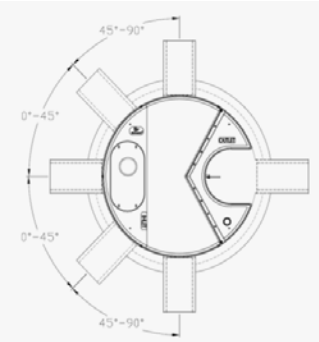
DESIGN FLEXIBILITY

►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

OIL CAPTURE AND RETENTION

►While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, **Stormceptor® EFO** has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.





INLET-TO-OUTLET DROP

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.
0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.
45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1. For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft^3)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF5 / EFO5	1.5	5	1.62	5.3	420	111	305	10	2124	75	2612	5758
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity
** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft^3)

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

STANDARD STORMCEPTOR EF/EFO DRAWINGS

For standard details, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

For specifications, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

Table of TSS Removal vs Surface Loading Rate Based on Third-Party Test Results
Stormceptor® EFO

SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL
1	70	660	42	1320	35	1980	24
30	70	690	42	1350	35	2010	24
60	67	720	41	1380	34	2040	23
90	63	750	41	1410	34	2070	23
120	61	780	41	1440	33	2100	23
150	58	810	41	1470	32	2130	22
180	56	840	41	1500	32	2160	22
210	54	870	41	1530	31	2190	22
240	53	900	41	1560	31	2220	21
270	52	930	40	1590	30	2250	21
300	51	960	40	1620	29	2280	21
330	50	990	40	1650	29	2310	21
360	49	1020	40	1680	28	2340	20
390	48	1050	39	1710	28	2370	20
420	47	1080	39	1740	27	2400	20
450	47	1110	38	1770	27	2430	20
480	46	1140	38	1800	26	2460	19
510	45	1170	37	1830	26	2490	19
540	44	1200	37	1860	26	2520	19
570	43	1230	37	1890	25	2550	19
600	42	1260	36	1920	25	2580	18
630	42	1290	36	1950	24	2600	26

STANDARD PERFORMANCE SPECIFICATION FOR "OIL GRIT SEPARATOR" (OGS) STORMWATER QUALITY TREAMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit Separators**

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The minimum sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m^3 sediment / 265 L oil
	5 ft (1524 mm) Diameter OGS Units:	1.95 m^3 sediment / 420 L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m^3 sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m^3 sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m^3 sediment / 1,673 L oil
	12 ft (3657 mm) Diameter OGS Units:	31.23 m^3 sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing of the OGS shall be determined by use of a minimum ten (10) years of local historical rainfall data provided by Environment Canada. Sizing shall also be determined by use of the sediment removal performance data derived from the ISO 14034 ETV third-party verified laboratory testing data from testing conducted in accordance with the Canadian ETV protocol Procedure for Laboratory Testing of Oil-Grit Separators, as follows:

3.2.1 Sediment removal efficiency for a given surface loading rate and its associated flow rate shall be based on sediment removal efficiency demonstrated at the seven (7) tested surface loading rates specified in the protocol, ranging 40 L/min/m^2 to 1400 L/min/m^2, and as stated in the ISO 14034 ETV Verification Statement for the OGS device.

3.2.2 Sediment removal efficiency for surface loading rates between 40 L/min/m^2 and 1400 L/min/m^2 shall be based on linear interpolation of data between consecutive tested surface loading rates.

3.2.3 Sediment removal efficiency for surface loading rates less than the lowest tested surface loading rate of 40 L/min/m^2 shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m^2. No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m^2.

3.2.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m^2 shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m^2, and shall be calculated using a simple proportioning formula, with 1400 L/min/m^2 in the numerator and the higher surface loading rate in the denominator, and multiplying the resulting fraction times the sediment removal efficiency at 1400 L/min/m^2.

The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m^2.

3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators,** with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-

entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m^2 to 2600 L/min/m^2) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.** However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

Stormceptor®

Stormceptor® EF Sizing Report

Rinker MATERIALS™

Imbrium® Systems
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

09/11/2025

Province:	Ontario
City:	Collingwood
Nearest Rainfall Station:	OWEN SOUND MOE
Climate Station Id:	6116132
Years of Rainfall Data:	40

Site Name:	205

Drainage Area (ha):	1.92
% Imperviousness:	86.00

Runoff Coefficient 'c': 0.81

Particle Size Distribution:	CA ETV
Target TSS Removal (%):	60.0

Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	59.17
Oil / Fuel Spill Risk Site?	Yes
Upstream Flow Control?	No
Peak Conveyance (maximum) Flow Rate (L/s):	271.00
Influent TSS Concentration (mg/L):	100
Estimated Average Annual Sediment Load (kg/yr):	699
Estimated Average Annual Sediment Volume (L/yr):	568

Project Name:	796060 GR19
Project Number:	123143
Designer Name:	Patrick Walsh
Designer Company:	Tatham Engineering
Designer Email:	pwalsh@tathameng.com
Designer Phone:	705-444-2565
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

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Stormceptor Model	TSS Removal Provided (%)
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EFO6	50
EFO8	57
EFO10	60
EFO12	63

Recommended Stormceptor EFO Model: EFO10

Estimated Net Annual Sediment (TSS) Load Reduction (%): 60

Water Quality Runoff Volume Capture (%): > 90

imbrium

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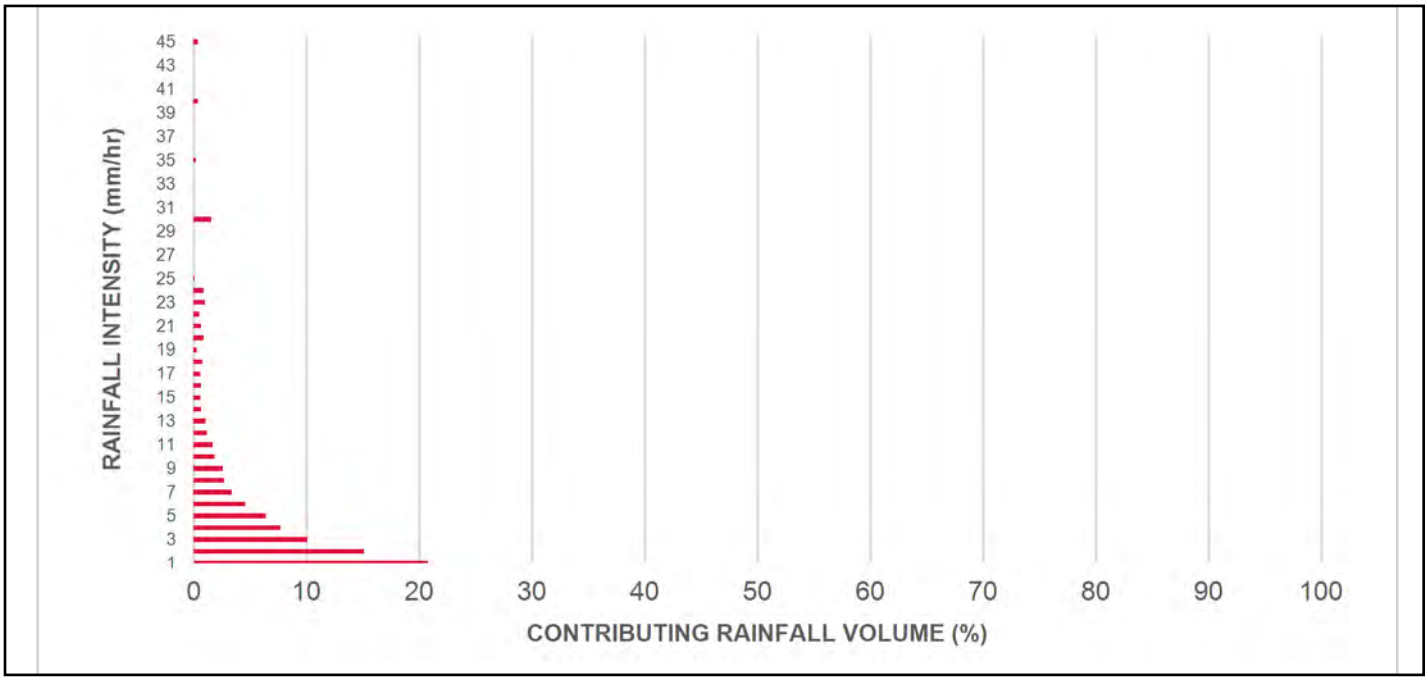
Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

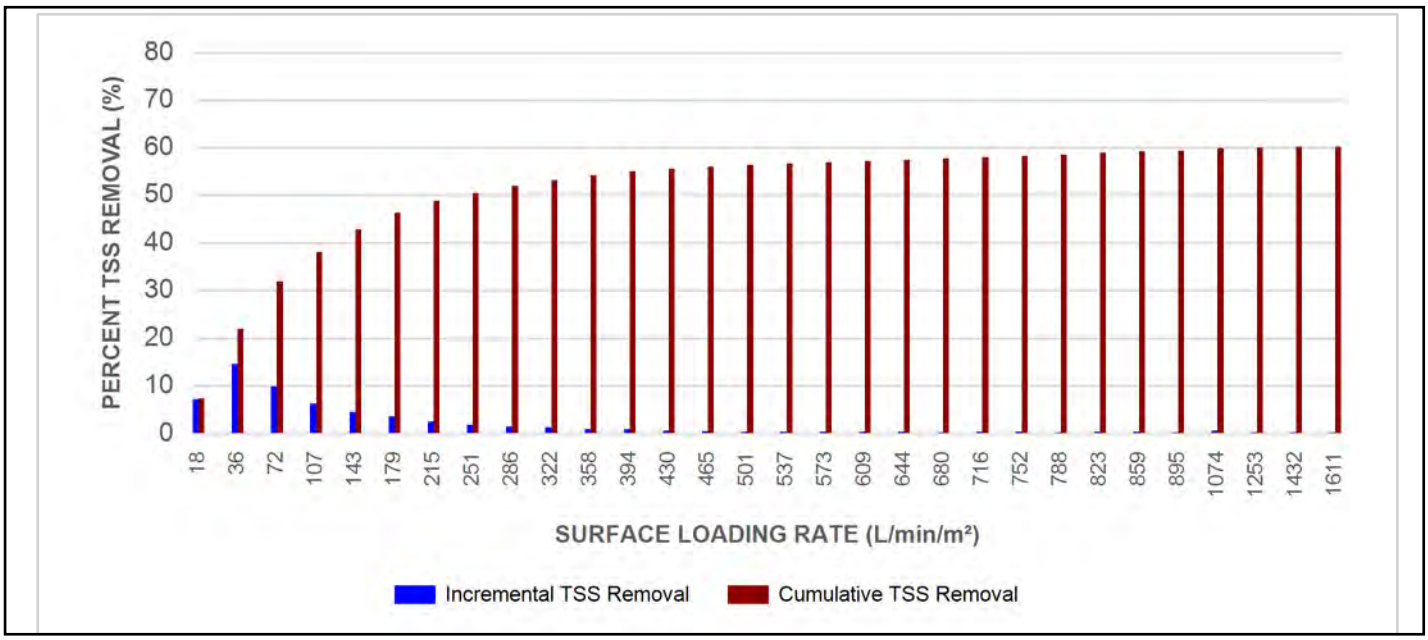
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.50	10.3	10.3	2.18	131.0	18.0	70	7.3	7.3
1.00	20.8	31.1	4.36	261.0	36.0	70	14.6	21.9
2.00	15.1	46.2	8.71	523.0	72.0	66	9.9	31.8
3.00	10.1	56.3	13.07	784.0	107.0	62	6.3	38.1
4.00	7.7	64.0	17.42	1045.0	143.0	59	4.6	42.7
5.00	6.4	70.4	21.78	1307.0	179.0	57	3.6	46.3
6.00	4.6	75.1	26.13	1568.0	215.0	54	2.5	48.8
7.00	3.4	78.4	30.49	1829.0	251.0	53	1.8	50.5
8.00	2.7	81.1	34.84	2091.0	286.0	52	1.4	51.9
9.00	2.6	83.7	39.20	2352.0	322.0	50	1.3	53.2
10.00	1.9	85.6	43.55	2613.0	358.0	50	0.9	54.2
11.00	1.7	87.3	47.91	2875.0	394.0	48	0.8	55.0
12.00	1.2	88.5	52.27	3136.0	430.0	47	0.5	55.5
13.00	1.1	89.6	56.62	3397.0	465.0	46	0.5	56.0
14.00	0.7	90.3	60.98	3659.0	501.0	45	0.3	56.4
15.00	0.6	90.9	65.33	3920.0	537.0	44	0.3	56.7
16.00	0.7	91.6	69.69	4181.0	573.0	43	0.3	56.9
17.00	0.6	92.3	74.04	4443.0	609.0	42	0.3	57.2
18.00	0.8	93.0	78.40	4704.0	644.0	42	0.3	57.5
19.00	0.3	93.3	82.75	4965.0	680.0	42	0.1	57.7
20.00	0.9	94.2	87.11	5227.0	716.0	41	0.4	58.0
21.00	0.7	94.9	91.47	5488.0	752.0	41	0.3	58.3
22.00	0.5	95.3	95.82	5749.0	788.0	41	0.2	58.5
23.00	1.0	96.3	100.18	6011.0	823.0	41	0.4	58.9
24.00	0.9	97.2	104.53	6272.0	859.0	41	0.4	59.2
25.00	0.1	97.3	108.89	6533.0	895.0	41	0.1	59.3
30.00	1.6	98.9	130.66	7840.0	1074.0	39	0.6	59.9
35.00	0.2	99.1	152.44	9147.0	1253.0	36	0.1	60.0
40.00	0.4	99.5	174.22	10453.0	1432.0	33	0.1	60.1
45.00	0.4	99.9	196.00	11760.0	1611.0	30	0.1	60.2
Estimated Net Annual Sediment (TSS) Load Reduction =								**60 %**

Climate Station ID: 6116132 *Years of Rainfall Data*: 40

RAINFALL DATA FROM OWEN SOUND MOE RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL
FOR THE RECOMMENDED STORMCEPTOR® MODEL



Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF5 / EFO5	1.5	5	90	762	30	762	30	710	25
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

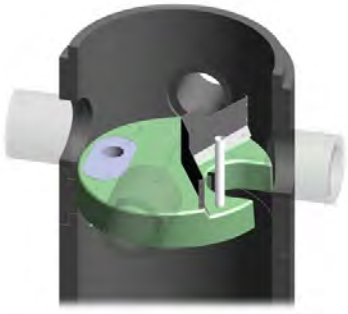
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

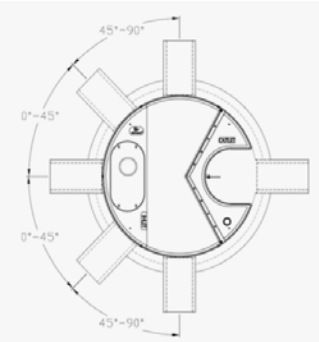
DESIGN FLEXIBILITY

►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

OIL CAPTURE AND RETENTION

►While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, **Stormceptor® EFO** has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.





INLET-TO-OUTLET DROP

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.
0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.
45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1. For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft^3)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF5 / EFO5	1.5	5	1.62	5.3	420	111	305	10	2124	75	2612	5758
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity
** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft^3)

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

STANDARD STORMCEPTOR EF/EFO DRAWINGS

For standard details, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

For specifications, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

Table of TSS Removal vs Surface Loading Rate Based on Third-Party Test Results
Stormceptor® EFO

SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL
1	70	660	42	1320	35	1980	24
30	70	690	42	1350	35	2010	24
60	67	720	41	1380	34	2040	23
90	63	750	41	1410	34	2070	23
120	61	780	41	1440	33	2100	23
150	58	810	41	1470	32	2130	22
180	56	840	41	1500	32	2160	22
210	54	870	41	1530	31	2190	22
240	53	900	41	1560	31	2220	21
270	52	930	40	1590	30	2250	21
300	51	960	40	1620	29	2280	21
330	50	990	40	1650	29	2310	21
360	49	1020	40	1680	28	2340	20
390	48	1050	39	1710	28	2370	20
420	47	1080	39	1740	27	2400	20
450	47	1110	38	1770	27	2430	20
480	46	1140	38	1800	26	2460	19
510	45	1170	37	1830	26	2490	19
540	44	1200	37	1860	26	2520	19
570	43	1230	37	1890	25	2550	19
600	42	1260	36	1920	25	2580	18
630	42	1290	36	1950	24	2600	26

STANDARD PERFORMANCE SPECIFICATION FOR "OIL GRIT SEPARATOR" (OGS) STORMWATER QUALITY TREAMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit Separators**

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The minimum sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m^3 sediment / 265 L oil
	5 ft (1524 mm) Diameter OGS Units:	1.95 m^3 sediment / 420 L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m^3 sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m^3 sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m^3 sediment / 1,673 L oil
	12 ft (3657 mm) Diameter OGS Units:	31.23 m^3 sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing of the OGS shall be determined by use of a minimum ten (10) years of local historical rainfall data provided by Environment Canada. Sizing shall also be determined by use of the sediment removal performance data derived from the ISO 14034 ETV third-party verified laboratory testing data from testing conducted in accordance with the Canadian ETV protocol Procedure for Laboratory Testing of Oil-Grit Separators, as follows:

3.2.1 Sediment removal efficiency for a given surface loading rate and its associated flow rate shall be based on sediment removal efficiency demonstrated at the seven (7) tested surface loading rates specified in the protocol, ranging 40 L/min/m^2 to 1400 L/min/m^2, and as stated in the ISO 14034 ETV Verification Statement for the OGS device.

3.2.2 Sediment removal efficiency for surface loading rates between 40 L/min/m^2 and 1400 L/min/m^2 shall be based on linear interpolation of data between consecutive tested surface loading rates.

3.2.3 Sediment removal efficiency for surface loading rates less than the lowest tested surface loading rate of 40 L/min/m^2 shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m^2. No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m^2.

3.2.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m^2 shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m^2, and shall be calculated using a simple proportioning formula, with 1400 L/min/m^2 in the numerator and the higher surface loading rate in the denominator, and multiplying the resulting fraction times the sediment removal efficiency at 1400 L/min/m^2.

The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m^2.

3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators,** with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-

entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m^2 to 2600 L/min/m^2) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.** However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

PROJECT	796060 Grey Road 19 - Town of The Blue Mountains	FILE	123143
		DATE	9/11/2025
SUBJECT	Water Quality - Treatment Train Calculation - Catchment 204	NAME	PNW
		PAGE	1 OF 1

Water Quality Treatment Train Calculation

Catchment 204

Drainage Area to Controls = 2.08 ha

Device	Target Total Suspended Solids (TSS) Removal %
Stormceptor EFO10	60
Vegetative Strip	50.0

$$\boldsymbol{TSS\ Removal} = (\boldsymbol{R_P}+\boldsymbol{R_S}) - [(\boldsymbol{R_P} \times \boldsymbol{R_S})/\mathbf{100}]$$

where:

R_P = % TSS Removal provided by Primary Treatment Strategy

R_S = % TSS Removal provided by Secondary Treatment Strategy

TSS Removal Provided By Controls =	**80**	**%**

PROJECT	796060 Grey Road 19 - Town of The Blue Mountains	FILE	123143
		DATE	9/11/2025
SUBJECT	Water Quality - Treatment Train Calculation - Catchment 205	NAME	PNW
		PAGE	1 OF 1

Water Quality Treatment Train Calculation

Catchment 205

Drainage Area to Controls = 1.92 ha

Device	Target Total Suspended Solids (TSS) Removal %
Stormceptor EFO10	60
Vegetative Strip	50.0

$$\boldsymbol{TSS\ Removal} = (\boldsymbol{R_P}+\boldsymbol{R_S}) - [(\boldsymbol{R_P} \times \boldsymbol{R_S})/\mathbf{100}]$$

where:

R_P = % TSS Removal provided by Primary Treatment Strategy

R_S = % TSS Removal provided by Secondary Treatment Strategy

TSS Removal Provided By Controls =	**80**	**%**

Appendix F:
Phosphorus Budget

TATHAM ENGINEERING

Phosphorus Budget Assessment

Project Details

796060 Grey Road 19	123143

Prepared By

PNW	September 2 2025

Watershed

NVCA

Treatment Method

Treatment Train

LAND USE CATEGORY	Phosphorus Loading Rate (kg/ha/yr)	Pre-Development		Post-Development		Post-Development	
		Total Area		Treated Area		Untreated Area	
		Area (ha)	Loading (kg/yr)	Area (ha)	Loading (kg/year)	Area (ha)	Loading (kg/year)
Cropland	0.25	0.00	0.00	0.00	0.00	0.00	0.00
Hay-Pasture	0.08	0.00	0.00	0.00	0.00	0.00	0.00
Turf -Sod	0.11	0.65	0.07	0.00	0.00	0.00	0.00
High Intensity Development - C/I	1.82	0.00	0.00	0.00	0.00	0.00	0.00
High Intensity Development - R	1.32	0.00	0.00	4.00	5.28	0.00	0.00
Low Intensity Development	0.13	0.07	0.01	0.00	0.00	0.00	0.00
Quarry	0.08	0.00	0.00	0.00	0.00	0.00	0.00
Unpaved Road	0.83	0.00	0.00	0.00	0.00	0.00	0.00
Paved Road	1.82	0.00	0.00	0.00	0.00	0.00	0.00
Forest	0.06	4.57	0.27	0.00	0.00	3.53	0.21
Transition	0.07	3.38	0.24	0.00	0.00	1.34	0.09
Wetland	0.05	1.23	0.06	0.00	0.00	1.03	0.05
Open Water	0.26	0.00	0.00	0.00	0.00	0.00	0.00
Total		**9.90**	**0.65**	**4.00**	**5.28**	**5.90**	**0.36**

CONTROLS

Proposed Treatment Method	Removal Efficiency (%)	Area (ha)	Loading (kg/year)
Stormceptor EF08 OGS Unit	20.00	4.00	4.22
Underground Storage	25.00	4.00	2.53
Effective Removal Efficiency	**40.00**	**4.00**	**2.53**

SUMMARY

Existing Phosphorous Load	0.65 kg/year
Post Development Phosphorous Load (no controls)	5.64 kg/year
Post Development Phosphorous Load (with controls)	2.89 kg/year
Overall Increase in Phosphorus Load	2.24 kg/year

Appendix G:
Water Budget

TATHAM ENGINEERING

Water Budget
Climate Normal Data

Project Details

796060 Grey Road 19	123143

Prepared By

Noah Trembley	April 15, 2024

Water Budget Details

Methodology	Thornthwaite Method
Climate Data & Source	Thornbury SLAMA
	Climate Normal Data for 1984 to 2003 (Environment Canada)
Thornthwaite Coefficient	1.056

Month	Temp (°C)	Precip (mm)	Heat Index	PET (mm)	Daylight Factor	Adjusted PET (mm)	AET (mm)	Surplus (mm)	Deficit (mm)
Jan.	-6.3	100	0.0	0.0	0.77	0.0	0.0	100.0	0.0
Feb.	-5.4	68.4	0.0	0.0	0.87	0.0	0.0	68.4	0.0
Mar.	-1.5	64	0.0	0.0	1.00	0.0	0.0	64.0	0.0
Apr.	5.5	65.3	1.2	28.9	1.12	32.5	32.5	32.8	0.0
May	11.5	82.7	3.5	71.4	1.23	88.0	82.7	0.0	5.3
Jun.	16.7	79.1	6.2	107.1	1.29	138.1	79.1	0.0	59.0
Jul.	19.8	72.1	8.0	129.6	1.26	163.5	72.1	0.0	91.4
Aug.	19.2	78.2	7.7	115.9	1.17	135.1	78.2	0.0	56.9
Sep.	15.5	95.9	5.5	80.0	1.04	83.4	83.4	12.5	0.0
Oct.	9.1	87.3	2.5	41.4	0.92	37.9	37.9	49.4	0.0
Nov.	3.1	99.6	0.5	11.3	0.80	9.0	9.0	90.6	0.0
Dec.	-2.7	99.4	0.0	0.0	0.74	0.0	0.0	99.4	0.0
Total	**-**	**992**	**35.1**	**585.4**	**-**	**687.5**	**474.9**	**517.1**	**212.6**

Additional Notes

PET = Potential Evapotranspiration; AET = Actual Evapotranspiration

Equations

$PET = 16\left(\frac{L}{12}\right)\left(\frac{N}{30}\right)\left(\frac{10T_d}{I}\right)^{\alpha}$ Where

PET is the estimated potential evapotranspiration (mm/month)

T_d is the average daily temperature (degrees Celsius; if this is negative, use 0) of the month being calculated

N is the number of days in the month being calculated

L is the average day length (hours) of the month being calculated

$\alpha = (6.75 \times 10^{-7})I^3 - (7.71 \times 10^{-5})I^2 + (1.792 \times 10^{-2})I + 0.49239$

$I = \sum_{i=1}^{12}\left(\frac{T_{m_i}}{5}\right)^{1.514}$ is a heat index which depends on the 12 monthly mean temperatures T_{m_i}.[1]

TATHAM ENGINEERING

Water Budget

Pre and Post Development Comparison

Project Details

796060 Grey Road 19	123143

Prepared By

Patrick Walsh	Sep-25

Pre-Development Catchment Details

Area (ha)	9.9
Pervious Area (ha)	9.865
Impervious Area (ha)	0.035

Post Development Catchment Details

Area (ha)	9.9
Pervious Area (ha)	6.53
Impervious Area (ha)	3.37

Infiltration Factor

Infiltration Factor	Pre-Development		Post Development	
	Pervious	Impervious	Pervious	Impervious
Topography	0.300	0.0	0.300	0.0
Soil	0.200	0.0	0.200	0.0
Land Cover	0.200	0.0	0.200	0.0
Infiltration Factor	0.700	0.0	0.700	0.0

Water Budget

Water Budget	Pervious	Impervious	Total	Pervious	Impervious	Total
Water Surplus (m^3)	30,038	107	30,145	19,884	10,262	30,145
Infiltration (m^3)	21,027	0	21,027	13,918	0	13,918
Runoff (m^3)	9,012	107	9,118	5,965	10,262	16,227
Reduction in Infiltration Volume (m^3)						**7,108**

Additional Notes

Infiltration Factors

Topography	Flat Land, average slope < 0.6 m/km	0.3
	Rolling Land, average slope 2.8 m to 3.8 m/km	0.2
	Hilly Land, average slope 28 m to 47 m/km	0.1
Soils	Tight impervious clay	0.1
	Medium combinations of clay and loam	0.2
	Open Sandy loam	0.4
Cover	Cultivated Land	0.1
	Woodland	0.2

(Stormwater Planning and Design Manual. MOE, 2003.)

TATHAM ENGINEERING

Water Budget

Mitigation Measures
LID Design

Project Details

796060 Grey Road 19	123143

Prepared By

Patrick Walsh	Sep-25

LID Design Details

LID Measure	Underground Storage
LID Impervious Drainage Area (ha)	3.38
Number of LIDs	1
Void Ratio	0.4
Footprint of LID (m^2)	3244.00
Depth of LID (m)	0.23
Storage Volume Required (m^3)	61.8
Volume Required / LID (m^3)	61.84
Volume Provided / LID (m^3)	297.15
Volume Provided (m^3)	297.15
Design Precipitation Depth (mm)	8.8
Annual Volume Captured (mm)	709.3
Annual Volume Captured excluding Evapotransiration (m^3)	23,973
Annual Volume Captured after Evapotranspiration (m^3)	23,973

Additional Notes

TATHAM ENGINEERING

Water Budget
Summary

Project Details

796060 Grey Road 19	123143

Prepared By

Patrick Walsh	Sep-25

Summary

Existing Infiltration (m^3)	21,027
Proposed Infiltration (m^3) - No Mitigtation	13,918
Infiltration Deficit Prior to Mitigation (m^3)	-7,108
Proposed Infiltration Measures	
[ ] Increase Topsoil Depth	
[x] Infiltration LID	
[ ] Impervious Area Routed Over Pervious Area	
Mitigation - Increase Topsoil Reduction in Pervious Runoff (m^3)	0
Mitigation Measure - Implementing LID (m^3)	23,973
Mitigation Measure - Impervious Area Routed over Pervious Area (m^3)	0
Proposed Infiltration (m^3)	37,892
Infiltration Surplus after Mitigation (m^3)	16,865

Additional Notes