

WILSON DEVELOPMENTS INC.

FUNCTIONAL SERVICING REPORT

**EAST RIDGE STORAGE SITE
MUNICIPALITY OF BROCKTON**

JUNE 2022

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1. INTRODUCTION

Cobide Engineering Inc. was retained by Wilson Developments Inc. to provide engineering services in support of a Site Plan Approval Application. The application will be to develop the site into a storage facility with 50 external self storage units and two (2) buildings that can have a varying amount of units as the internal walls are modular and can be modified based on the requirements of the tenant.

A copy of the proposed Site Plan has been included in Appendix A as Drawing SP1.

1.1 LOCATION

The proposed development is located Part 1 of Plan 3R-10368, Former Town of Walkerton, Municipality of Brockton, County of Bruce (described herein as the "site"). A Site Location Map is included below as Figure 1. The subject property is approximately 0.40 hectares in area.



Figure 1 - Site Location

1.2 DEVELOPMENT PROPOSAL

The development will consist of external exterior storage units that are elevated and sit above the ground as well as two permanent structures as well as the associated parking and driving lanes. Below are pictures of the exterior units. As you can see in the pictures, the units are elevated to allow runoff to pass beneath the structure.

The site will be accessed from Ontario Road.

Functional Servicing Report
East Ridge Storage Site



2. WATER SERVICING

The proposed development will be serviced from the existing 25mm dia. water service that is currently stubbed at property line with a curb stop valve. It is proposed that the 25mm dia. service is extended into the most easterly building first, then a 25mm dia. water service will be connected between the two (2) buildings (as shown in Appendix A as Drawing SS1).

3. SANITARY SEWER SERVICING

The proposed development will incorporate connecting to the existing 150mm dia. sanitary service that is currently stubbed at property line with a cleanout. The proposed development will incorporate a 150mm dia. sanitary sewer main that is located within the travelled lane of the development.

Each of the two (2) main buildings will be serviced with a 125mm dia. service lateral (as shown in Appendix A as Drawing SS1).

4. STORM SEWER SYSTEM

The subject property is currently vacant. The site is generally sloping from south to north, and west to east. There are no existing storm sewers on the property. The site discharges into an existing ditch on the west side of Ontario Road. Ontario Road will be considered Discharge Point #1 for the purposes of this report.

The proposed development will be graded such that runoff is conveyed via swales and sheet flow to a new dry stormwater management pond along the north side of the property. The outlet for the stormwater management pond will consist of a headwall, and a 250mm dia. storm sewer c/w an orifice, that will then discharge into the existing ditch on the west side of Ontario Road.

The hydrologic modelling software PCSWMM Version 5.6.1803 Professional 2D was used to determine the pre and post-development peak flows of the 2 yr., 5 yr., 25 yr., 50 yr., and 100 yr. storm events (6 hour duration, SCS Type II, AMC II storm, Mount Forest IDF Parameters).

The pre-development and post development parameters and model outputs are contained in Appendix B.

4.1 DESIGN REQUIREMENTS

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

Minor and Major flows from the majority of the development will be conveyed to the proposed stormwater management facility via asphalt swale overland flow routes.

Due to the increase in impervious area, stormwater quantity control will be required for the site. The design of the stormwater management facility has assumed a free outlet from the storage facility.

4.2 SWM FACILITY CHARACTERISTICS

The stormwater management facility and outlet structure have been designed to control peak runoff rates as well as conform to MECP best practices.

A 50 mm orifice will be installed on the headwall to control peak runoff rates.

In order to provide the above required volumes and discharges, the following SWM Facility geometry is being proposed:

Table 6.1 – SWM Facility Geometry

SWM FACILITY	DETAILED DESIGN
Side Slope	3:1
SWM Facility Bottom	297.78
Top Elevation	298.84 m
High Water Elevation	298.65 m

The outlet configuration for the SWM Facility will be as follows:

- A 250mm diameter storm sewer with a 50mm orifice and an outlet elevation of 297.78 m;

As seen by the proposed inverts, the proposed stormwater management facility will be constructed as a drypond.

4.2.1 SWM FACILITY PERFORMANCE

Below is a summary of the hydraulic performance of the stormwater SWM Facility during the various storm events.

Table 6.2 – SWM Facility Performance

RETURN PERIOD	ELEVATION (m)	STORAGE (m ³)	DISCHARGE (l/s)
2 Year	298.37	56	4.3
5 Year	298.47	83	4.6
25 Year	298.58	129	5.0
50 Year	298.62	151	5.1
100 Year	298.65	172	5.2

4.3 MODELLING RESULTS

Based upon the above outlet structure, the following summarizes the pre-development and post development peak flows to the discharge point.

Table 6.3 - Peak Flow Summary

RETURN PERIOD	DISCHARGE POINT #1 (L/S)	
	PRE	POST
2 Year	3.0	4.3
5 Year	5.3	4.6
25 Year	10.3	5.0
50 Year	12.9	5.1
100 Year	15.8	5.2

As seen in the above table, the post development peak flows will be less the pre development peak flows for all design storm events at Discharge Point #1 except the 2 year design storm event. The exceedance is very small and not expected to cause any issues downstream. The infrastructure within the development would have been designed to convey the runoff from either the 5 or 25 year storm event which the post development flows are lower than.

5. GRADING & EROSION AND SEDIMENT CONTROL

Erosion and sediment controls shall meet the requirements of the most recent version of the MOE *Stormwater Management Planning and Design Manual* at the time of construction.

5.1 CONSTRUCTION STAGE

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

- Placement of Light Duty Siltation fence will also be installed at any development grading limits where runoff may discharge from the site;
- Mud mat will be placed at construction access to keep public roadways free from debris during the construction period;
- Re-vegetate all disturbed areas after underground and surface works have been constructed.

Prior to removal of sediment control facilities, ensure that sediment that may have accumulated has been removed.

Once the area has been stabilized, the silt fencing can be removed.

6. UTILITIES

6.1 ELECTRICITY

Westario Power Inc. will be responsible for completing the design of the electrical distribution system. Each of the two (2) buildings will be individually serviced from an on site padmount transformer. There is no electricity to the exterior units. Underground distribution lines will be utilized for this development.

6.2 NATURAL GAS

Union Gas will be responsible for completing the design of the natural gas distribution system. Each of the two (2) buildings will be serviced.

6.3 TELEPHONE/ CABLE TV/ INTERNET

Wightman and Eastlink will be given the opportunity to provide telephone, cable TV and internet services to the development. They will complete their own design.

Sincerely,

Cobide Engineering Inc.



Travis Burnside, P. Eng.

Appendix A

DRAWINGS

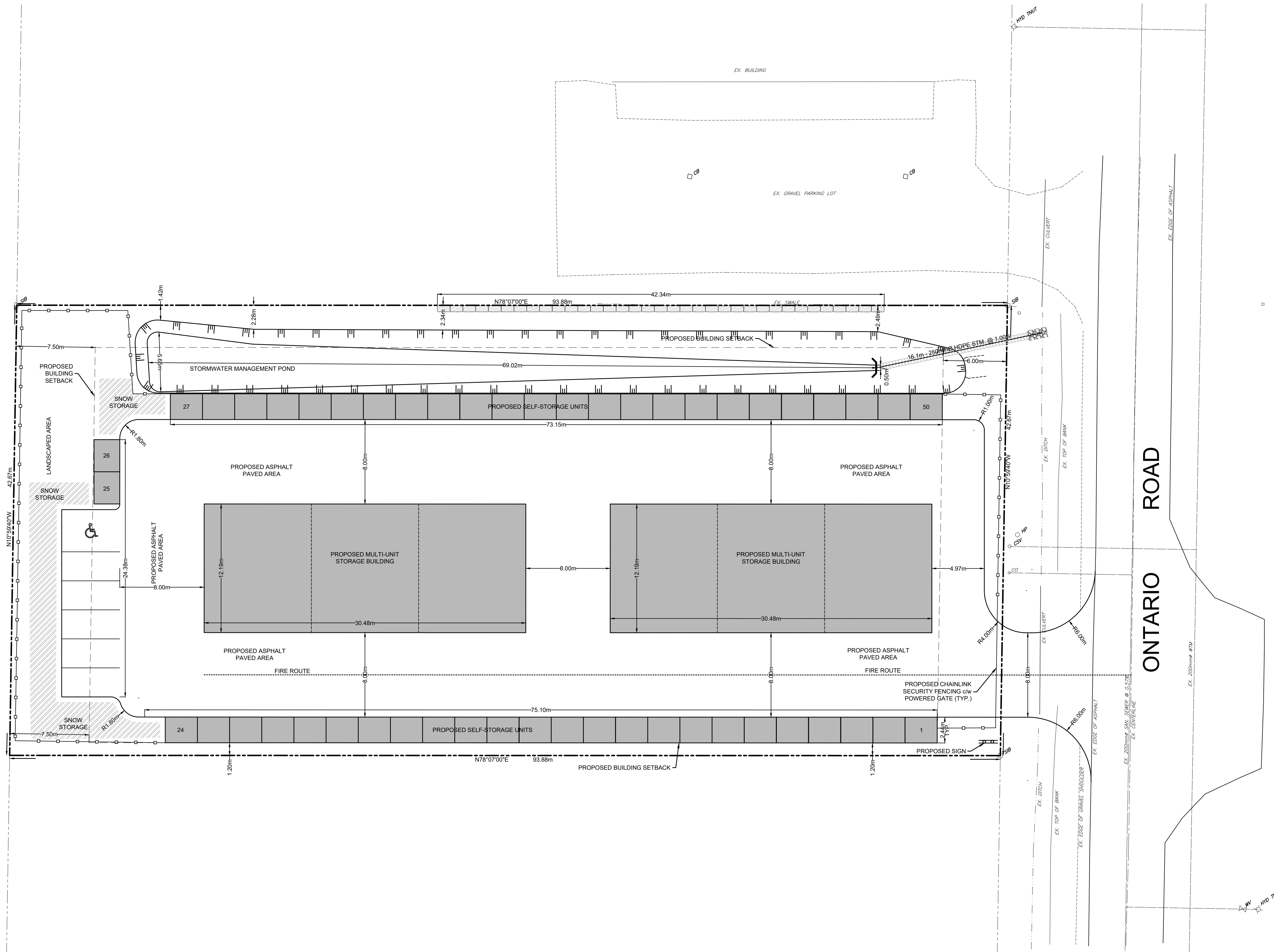
FUNCTIONAL SERVICING REPORT

EAST RIDGE STORAGE SITE

MUNICIPALITY OF BROCKTON

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

- Notes**
1. PROPERTY BOUNDARY DERIVED FROM INFORMATION SHOWN ON PLAN OF SURVEY BY HEWITT AND MILNE LIMITED, DATED JULY 15, 2020.
 2. TOPOGRAPHICAL INFORMATION DERIVED FROM FIELD SURVEY BY COBIDE ENGINEERING INC. COMPLETED ON NOVEMBER 25, 2021.
 3. ALL ORGANIC MATERIAL WITHIN 1.2m OF FINISHED PROFILE GRADE TO BE REMOVED FROM ALL AREAS UNDER THE TRAVELLED PORTION OF THE ROAD.
 4. FIELD LOCATES OF ALL UNDERGROUND UTILITIES INCLUDING BUT NOT LIMITED TO, UNDERGROUND GAS, HYDRO, TELEPHONE, AND CABLE TELEVISION SHALL BE ARRANGED PRIOR TO CONSTRUCTION AND IS THEREFORE RESPONSIBILITY OF THE CONTRACTOR.
 5. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION PURPOSES UNTIL STAMPED ISSUED FOR CONSTRUCTION.
 6. ALL CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH THE MUNICIPALITY OF BROCKTON MUNICIPAL DEVELOPMENT AND SERVICING GUIDELINES.

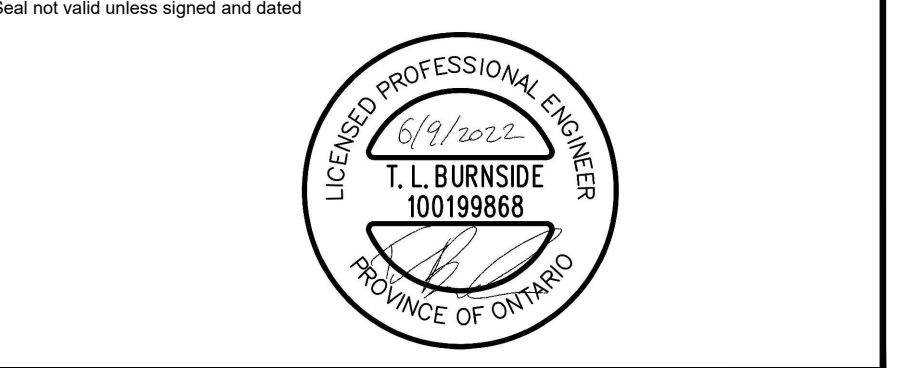


Benchmark Information

BM1	TOP NUT ON FIRE HYDRANT ON EAST SIDE OF ONTARIO ROAD, APPROXIMATELY 14.5m SOUTH OF THE SUBJECT PROPERTY.	ELEVATION	299.32m
BM2	SIB LOCATED ON THE MOST NORTHEASTERN CORNER OF THE SUBJECT PROPERTY (ALONG ONTARIO ROAD).	ELEVATION	297.80m

No.	DATE	DESCRIPTION	BY	APPD
1	JUNE 9/22	SECOND SUBMISSION	KW	TLB
0	FEB 24/22	PRELIMINARY SUBMISSION	KW	TLB

REVISION / ISSUE



East Ridge Storage Site Proposed Development
TOWN OF WALKERTON
MUNICIPALITY OF BROCKTON
DEVELOPMENT SITE PLAN

Client: BRAD WILSON

Design: TLB/KW Scale: 1:200
 Drawn: KW Approved:
 Checked: TLB
 Date: JUNE 2022 Design Engineer

DRAWING No. 03705-SP1

LEGEND

—	SUBDIVISION BOUNDARY	○ SANMH	EXISTING SANITARY MANHOLE	▽	EXISTING GATE VALVE
---	PROPOSED RIGHT OF WAY	● STMMH	PROPOSED STORM MANHOLE	◆	PROPOSED CAP CW THRUST BLOCK
---	PROPOSED PROPERTY LINES	○ CBMH	EXISTING STORM MANHOLE	—	EXISTING BLOWOFF
---	EDGE OF EXISTING PAVEMENT	○ CB	PROPOSED CATCHBASIN MANHOLE	—	EXISTING HYDRO GUY WIRE
---	PROPOSED SANITARY SEWER	○ TICBMH	PROPOSED TWIN INLET CATCHBASIN MANHOLE	—	EXISTING HYDRO POLE
---	EXISTING SANITARY SEWER	■ TICB	PROPOSED TWIN INLET CATCHBASIN	—	EXISTING CABLE TV PEDESTAL
---	PROPOSED STORM SEWER	■ CB	PROPOSED CATCH BASIN	—	EXISTING TELEPHONE PEDESTAL
---	EXISTING STORM SEWER	□ DICB	EXISTING CATCH BASIN	—	STANDARD IRON BAR
---	PROPOSED SUBDRAIN	○ CO	PROPOSED DITCH INLET CATCHBASIN	—	IRON BAR
---	PROPOSED WATERMAIN	○ CO	PROPOSED SANITARY SERVICE CLEANOUT	—	BENCHMARK
---	EXISTING WATERMAIN	○ CO	EXISTING SANITARY SERVICE CLEANOUT	—	DROP CURB
---	PROPOSED SANITARY SERVICE	○ CSV	PROPOSED CURB STOP VALVE		
---	EXISTING SANITARY SERVICE	○ CSV	EXISTING CURB STOP VALVE		
---	PROPOSED WATER SERVICE	○ HYD	PROPOSED HYDRANT SET		
---	PROPOSED STORM SERVICE	○ HYD	EXISTING FIRE HYDRANT		
---	PROPOSED SANITARY MANHOLE	○ HYD	PROPOSED GATE VALVE		

PROPOSED SELF-STORAGE DEVELOPMENT STATISTICS

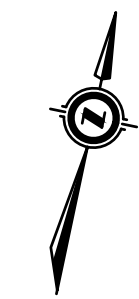
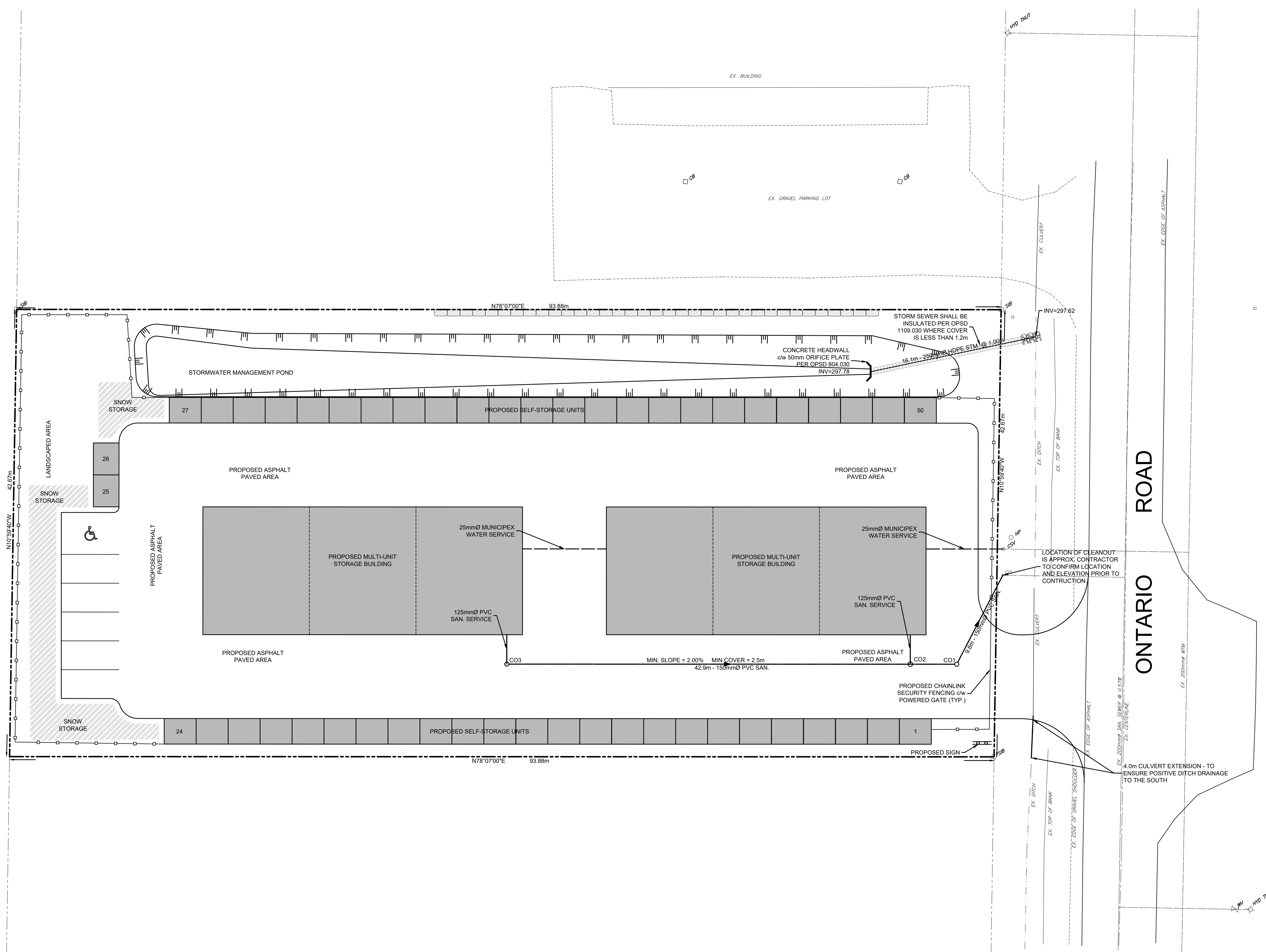
PROPOSED USE: WAREHOUSE, MINI STORAGE (ZONE: BP1-1)

REGULATION	REQUIRED	PROVIDED	RELIEF REQUIRED
MIN. LOT AREA	750m ²	4005.38m ²	NO
MIN. LOT FRONTAGE	30.0m	42.67m	NO
MIN. FRONT YARD	6.0m	6.0m	NO
MIN. EXTERIOR SIDE YARD	6.0m	N/A	NO
MIN. INTERIOR SIDE YARD	1.2m/4.0m	1.2m/8.39m	NO
MIN. REAR YARD	7.5m	7.5m	NO
MAX. LOT COVERAGE	75%	27.84%	NO
MAX. BUILDING HEIGHT	11.0m	<11.0m	NO
PARKING	8 SPACES	8 SPACES	NO

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REVISION / ISSUE



EAST RIDGE STORAGE SITE PROPOSED DEVELOPMENT
TOWN OF WALKERTON
MUNICIPALITY OF BROCKTON
SITE SERVICING PLAN

Client: **BRAD WILSON**

Design:	TLB/KW	Scale:	1:200
Drawn:	KW	Approved:	
Checked:	TLB		
Date:	JUNE 2022		Design Engineer

DRAWING No. **03705-SS1**

LEGEND

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---	EDGE OF EXISTING PAVEMENT	○ CBMH	PROPOSED CATCHBASIN MANHOLE	—	EXISTING HYDRO POLE WIRE
---	PROPOSED SANITARY SEWER	○ TICBMH	PROPOSED TWIN INLET CATCHBASIN MANHOLE	—	EXISTING HYDRO POLE
---	EXISTING SANITARY SEWER	■ TICB	PROPOSED TWIN INLET CATCHBASIN	—	EXISTING CABLE TV PEDESTAL
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---	PROPOSED SANITARY MANHOLE	◆	PROPOSED GATE VALVE		

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Appendix B

MODEL PARAMETERS AND OUTPUT

STORMWATER MANAGEMENT REPORT

EAST RIDGE STORAGE SITE

MUNICIPALITY OF BROCKTON

Table B.1 Parameter Summary Table

Proposed Conditions										
Outlet Location	Model Catchment ID	Description	Area (ha)	Drainage Channel (m)	Flow Length (m)	Gradient (%)	Total Imperv. (%)	Not Connected Imperv. (%)	Manning's 'n' (Perv.)	CN (Perv.)
	101	Site - Pre Development	0.40	85	47	1.0	0.0	#DIV/0!	0.30	72.0
	201	Site - Post Development	0.40	85	47	1.0	68.4	0.0	0.25	77.0

Table B.2 Site Soils: (as per Ontario Soil Survey Report for Bruce County)

Soil Type
Harriston Loam

Hydrologic Soil Group
BC

TABLE OF CURVE NUMBERS (CN's)								
Land Use	Hydrologic Soil Type							
	A	AB	B	BC	C	CD	D	Manning's 'n'
Meadow	50	54	58	64.5	71	74.5	78	0.4
Woodlot	50	55.3	60.5	67	73.5	76.8	80	0.4
Long Grass	55	60	65	72	79	81.5	84	0.3
Lawns	60	65.5	71	77	83	86	89	0.25
Pasture/Range	58	61.5	65	70.5	76	78.5	81	0.17
Crop	66	70	74	78	82	84	86	0.13
Fallow (bare)	77	82	86	89	91	93	94	0.05
Built-up	60	65.5	71	77	83	89	89	0.25
Streets, paved	98	98	98	98	98	98	98	0.01

continuous grass
forests
natural, not maintained
maintained
farm pasture
farm land
idle farm land (bare)
Lawns Proposed

HYDROLOGIC SOIL TYPE (%) - Proposed Conditions								
Catchment	Hydrologic Soil Type							
	A	AB	B	BC	C	CD	D	TOTAL
201	0	0	0	100	0	0	0	100
202	0	0	0	100	0	0	0	100

LAND USE (%) - Proposed Conditions										
Catchment	Meadow	Woodlot	Long Grass	Lawns	Pasture Range	Crop	Fallow (Bare)	Imperv. Not Connected (Rooftops)	Imperv. Connected	Total
201	0	0	100	0.0	0	0	0	0.0	0.0	100
202	0	0	0	32	0	0	0	0.0	68.4	100

CURVE NUMBER (CN) - Proposed Conditions											
Catchment	Meadow	Woodlot	Long Grass	Lawns	Pasture Range	Crop	Fallow (Bare)	Built-up	Imperv. Not Connected (Rooftops)	Weighted CN - Pervious	Manning's 'n'
201	65	67	72	77	70.5	78	89	77	90	72.0	0.30
202	65	67.0	72	77	70.5	78	89	77.0	90	77.0	0.25

Table A.3: Impervious Area Determination for Subcatchments 201 - 204

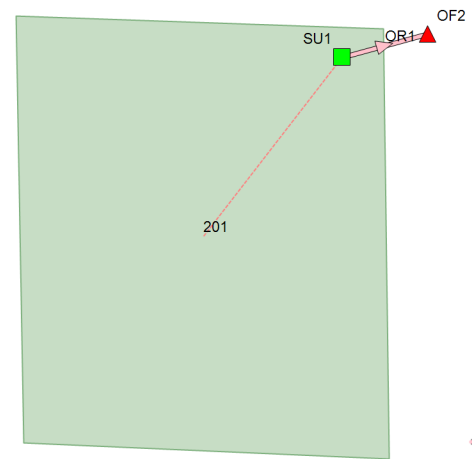
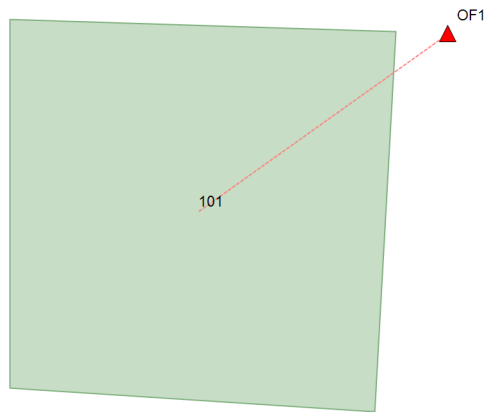
Proposed Conditions

Area of Concern	Total Area (ha)	Impervious Area Connected		Impervious Area Not Connected (Rooftops)		Total (%)
		(ha)	(%)	(ha)	(%)	
201	0.40	0.00	0.0	0.00	0.0	0.0
202	0.40	0.27	68.4	0.00	0.0	68.4

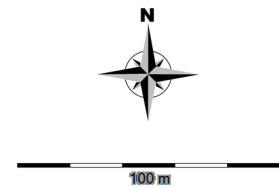
Table B.3 - Impervious Area Determination for Proposed Catchments 201 - 204

Catchment				Imperv. Area	Imperv %	
201		m of	0	m wide ROW @ 57% imperv.	0.00 ha	0.0 %
	1	Impervious Area	0	m ² @ 100% imperv.	0.00 ha	0.0 %
		Roof Area	0	m ² @ 100% imperv.	0.00 ha	0.0 %
		Roof Area	0	m ² @ 100% imperv.	0.00 ha	0.0 %
					0.00 ha	
202		m of	0	m wide ROW @ 57% imperv.	0.00 ha	0.0 %
		Impervious Area	0	m ² @ 100% imperv.	0.00 ha	0.0 %
	1	Roof Area	2741	m ² @ 100% imperv.	0.27 ha	68.4 %
		Roof Area	0	m ² @ 100% imperv.	0.00 ha	0.0 %
				0.00 ha		

WILSON DEVELOPMENTS - EAST RIDGE STORAGE SITE - MODEL SCHEMATIC



- Legend**
- ▲ Outfalls
 - Storages
 - Orifices
 - Subcatchments



WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – MODEL DETAILS

[TITLE]

[OPTIONS]

```

;;Options          Value
;;-----
FLOW_UNITS         LPS
INFILTRATION       CURVE_NUMBER
FLOW_ROUTING       DYNWAVE
START_DATE         12/24/2021
START_TIME         00:00
REPORT_START_DATE  12/24/2021
REPORT_START_TIME  00:00
END_DATE           12/25/2021
END_TIME           00:00
SWEEP_START        1/1
SWEEP_END          12/31
DRY_DAYS           0
REPORT_STEP        00:01:00
WET_STEP           00:05:00
DRY_STEP           00:05:00
ROUTING_STEP       5
ALLOW_PONDING     NO
INERTIAL_DAMPING   PARTIAL
VARIABLE_STEP      0.75
LENGTHENING_STEP  0
MIN_SURFAREA      0
NORMAL_FLOW_LIMITED BOTH
SKIP_STEADY_STATE NO
FORCE_MAIN_EQUATION H-W
LINK_OFFSETS      ELEVATION
MIN_SLOPE          0
MAX_TRIALS         8
HEAD_TOLERANCE     0
SYS_FLOW_TOL       5
LAT_FLOW_TOL       5
MINIMUM_STEP       0.5
THREADS            2

```

[EVAPORATION]

```

;;Type            Parameters
;;-----
CONSTANT          0.0
DRY_ONLY          NO

```

[RAINGAGES]

```

;;              Rain      Time      Snow      Data
;;Name          Type      Intrvl  Catch    Source
;;-----
SCS_6h_38.8mm_2yr INTENSITY 0:05    1.0    TIMESERIES SCS_6h_38.8mm_2yr
SCS_6h_49.4mm_5yr INTENSITY 0:05    1.0    TIMESERIES SCS_6h_49.4mm_5yr
SCS_6h_65.3mm_25yr INTENSITY 0:05    1.0    TIMESERIES SCS_6h_65.3mm_25yr
SCS_6h_71.9mm_50yr INTENSITY 0:05    1.0    TIMESERIES SCS_6h_71.9mm_50yr
SCS_6h_78.4mm_100yr INTENSITY 0:05    1.0    TIMESERIES SCS_6h_78.4mm_100yr

```

[SUBCATCHMENTS]

```

;;              Total      Pcnt.      Pcnt.      Curb      Snow
;;Name          Raingage      Outlet      Area      Imperv    Width    Slope    Length    Pack
;;-----
101             SCS_6h_78.4mm_100yr OF1      0.4      0         85       1         0
201             SCS_6h_78.4mm_100yr SU1      0.4      68.4      85       1         0

```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv    S-Imperv  S-Perv    PctZero  RouteTo  PctRouted
;;-----
101             0.01     0.3       0.05     0.05     25       OUTLET
201             0.01     0.25     0.05     0.05     25       OUTLET

```

[INFILTRATION]

```

;;Subcatchment  CurveNum  HydCon    DryTime
;;-----
101             72       0.5       7
201             77       0.5       7

```

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – MODEL DETAILS

[OUTFALLS]

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

[STORAGE]

;;	Invert	Max.	Init.	Storage	Curve	Ponded	Evap.
;;Name	Elev.	Depth	Depth	Curve	Params	Area	Frac.
Infiltration parameters							
SU1	297.78	1.06	0	TABULAR	Pond	0	0

[ORIFICES]

;;	Inlet	Outlet	Orifice	Crest	Disch.	Flap	Open/Close
;;Name	Node	Node	Type	Height	Coeff.	Gate	Time
OR1	SU1	OF2	SIDE	297.78	0.65	NO	0

[XSECTIONS]

;;Link	Shape	Geom1	Geom2	Geom3	Geom4	Barrels
OR1	CIRCULAR	0.05	0	0	0	

[CURVES]

;;Name	Type	X-Value	Y-Value
Pond	Storage	0	0
Pond		.22	40
Pond		.47	165
Pond		.72	355
Pond		.97	900

[TIMESERIES]

;;Name	Date	Time	Value
;SCS_6h_38.8mm design storm, total rainfall = 38.8 mm, rain units = mm/hr.			
SCS_6h_38.8mm_2yr			
;SCS_6h_49.4mm design storm, total rainfall = 49.4 mm, rain units = mm/hr.			
SCS_6h_49.4mm_5yr			
;SCS_6h_65.3mm design storm, total rainfall = 65.3 mm, rain units = mm/hr.			
SCS_6h_65.3mm_25yr			
;SCS_6h_71.9mm design storm, total rainfall = 71.9 mm, rain units = mm/hr.			
SCS_6h_71.9mm_50yr			
;SCS_6h_78.4mm design storm, total rainfall = 78.4 mm, rain units = mm/hr.			
SCS_6h_78.4mm_100yr			

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 2 YR DESIGN STORM EVENT

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.011)

 Element Count

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

 Raingage Summary

Name	Data Source	Data Type	Recording Interval
SCS_6h_38.8mm_2yr	SCS_6h_38.8mm_2yr	INTENSITY	5 min.
SCS_6h_49.4mm_5yr	SCS_6h_49.4mm_5yr	INTENSITY	5 min.
SCS_6h_65.3mm_25yr	SCS_6h_65.3mm_25yr	INTENSITY	5 min.
SCS_6h_71.9mm_50yr	SCS_6h_71.9mm_50yr	INTENSITY	5 min.
SCS_6h_78.4mm_100yr	SCS_6h_78.4mm_100yr	INTENSITY	5 min.

 Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
101	0.40	85.00	0.00	1.0000	SCS_6h_38.8mm_2yr	OF1
201	0.40	85.00	68.40	1.0000	SCS_6h_38.8mm_2yr	SU1

 Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
OF1	OUTFALL	0.00	0.00	0.0	
OF2	OUTFALL	0.00	0.00	0.0	
SU1	STORAGE	297.78	1.06	0.0	

 Link Summary

Name	From Node	To Node	Type	Length	%Slope	Roughness
OR1	SU1	OF2	ORIFICE			

 Cross Section Summary

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow

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

 Analysis Options

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 2 YR DESIGN STORM EVENT

```

*****
Flow Units ..... LPS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Starting Date ..... 12/24/2021 00:00:00
Ending Date ..... 12/25/2021 00:00:00
Antecedent Dry Days ..... 0.0
Report Time Step ..... 00:01:00
Wet Time Step ..... 00:05:00
Dry Time Step ..... 00:05:00
Routing Time Step ..... 5.00 sec
Variable Time Step ..... YES
Maximum Trials ..... 8
Number of Threads ..... 1
Head Tolerance ..... 0.001524 m
  
```

	Volume hectare-m	Depth mm
*****	-----	-----
Runoff Quantity Continuity		

Total Precipitation	0.031	38.807
Evaporation Loss	0.000	0.000
Infiltration Loss	0.015	18.401
Surface Runoff	0.016	20.310
Final Storage	0.000	0.117
Continuity Error (%)	-0.054	

	Volume hectare-m	Volume 10^6 ltr
*****	-----	-----
Flow Routing Continuity		

Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.016	0.162
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.016	0.162
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

```

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

```

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

```

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

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 2 YR DESIGN STORM EVENT

 Subcatchment Runoff Summary

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
101	38.81	0.00	0.00	28.69	9.94	0.04	2.96	0.256
201	38.81	0.00	0.00	8.11	30.68	0.12	24.72	0.791

 Node Depth Summary

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
OF1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
OF2	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
SU1	STORAGE	0.17	0.59	298.37	0 04:00	0.59

 Node Inflow Summary

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
OF1	OUTFALL	2.96	2.96	0 02:45	0.0397	0.0397	0.000
OF2	OUTFALL	0.00	4.26	0 04:00	0	0.123	0.000
SU1	STORAGE	24.72	24.72	0 02:25	0.123	0.123	0.000

 Node Surcharge Summary

No nodes were surcharged.

 Node Flooding Summary

No nodes were flooded.

 Storage Volume Summary

Storage Unit	Average Volume 1000 m3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
SU1	0.012	4	0	0	0.056	16	0 04:00	4.26

 Outfall Loading Summary

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 2 YR DESIGN STORM EVENT

```

-----
                Flow      Avg      Max      Total
                Freq      Flow      Flow      Volume
Outfall Node    Pcnt      LPS      LPS      10^6 ltr
-----
OF1              62.49      0.73      2.96      0.040
OF2              43.04      3.30      4.26      0.123
-----
System          52.76      4.02      7.14      0.162
    
```

 Link Flow Summary

```

-----
                Maximum      Time of Max      Maximum      Max/      Max/
Link            Type      |Flow|      Occurrence      |Veloc|      Full      Full
                LPS      days hr:min      m/sec      Flow      Depth
-----
OR1              ORIFICE      4.26      0 04:00                        1.00
    
```

 Flow Classification Summary

```

-----
                Adjusted      -----      Fraction of Time in Flow Class -----
                /Actual      Up      Down Sub      Sup      Up      Down      Norm      Inlet
Conduit          Length      Dry Dry      Dry Crit      Crit      Crit      Crit      Ltd      Ctrl
-----
    
```

 Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Fri Mar 04 16:24:18 2022
 Analysis ended on: Fri Mar 04 16:24:19 2022
 Total elapsed time: 00:00:01

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 5 YR DESIGN STORM EVENT

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.011)

 Element Count

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

 Raingage Summary

Name	Data Source	Data Type	Recording Interval
SCS_6h_38.8mm_2yr	SCS_6h_38.8mm_2yr	INTENSITY	5 min.
SCS_6h_49.4mm_5yr	SCS_6h_49.4mm_5yr	INTENSITY	5 min.
SCS_6h_65.3mm_25yr	SCS_6h_65.3mm_25yr	INTENSITY	5 min.
SCS_6h_71.9mm_50yr	SCS_6h_71.9mm_50yr	INTENSITY	5 min.
SCS_6h_78.4mm_100yr	SCS_6h_78.4mm_100yr	INTENSITY	5 min.

 Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
101	0.40	85.00	0.00	1.0000	SCS_6h_49.4mm_5yr	OF1
201	0.40	85.00	68.40	1.0000	SCS_6h_49.4mm_5yr	SU1

 Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
OF1	OUTFALL	0.00	0.00	0.0	
OF2	OUTFALL	0.00	0.00	0.0	
SU1	STORAGE	297.78	1.06	0.0	

 Link Summary

Name	From Node	To Node	Type	Length	%Slope	Roughness
OR1	SU1	OF2	ORIFICE			

 Cross Section Summary

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow

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

 Analysis Options

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 5 YR DESIGN STORM EVENT

```

*****
Flow Units ..... LPS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Starting Date ..... 12/24/2021 00:00:00
Ending Date ..... 12/25/2021 00:00:00
Antecedent Dry Days ..... 0.0
Report Time Step ..... 00:01:00
Wet Time Step ..... 00:05:00
Dry Time Step ..... 00:05:00
Routing Time Step ..... 5.00 sec
Variable Time Step ..... YES
Maximum Trials ..... 8
Number of Threads ..... 1
Head Tolerance ..... 0.001524 m
  
```

	Volume hectare-m	Depth mm
Runoff Quantity Continuity		
*****	-----	-----
Total Precipitation	0.040	49.408
Evaporation Loss	0.000	0.000
Infiltration Loss	0.017	21.784
Surface Runoff	0.022	27.534
Final Storage	0.000	0.117
Continuity Error (%)	-0.055	

	Volume hectare-m	Volume 10^6 ltr
Flow Routing Continuity		
*****	-----	-----
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.022	0.220
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.022	0.220
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

```

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

```

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

```

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

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 5 YR DESIGN STORM EVENT

 Subcatchment Runoff Summary

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
101	49.41	0.00	0.00	34.09	15.14	0.06	5.33	0.306
201	49.41	0.00	0.00	9.48	39.93	0.16	32.48	0.808

 Node Depth Summary

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
OF1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
OF2	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
SU1	STORAGE	0.24	0.69	298.47	0 04:32	0.69

 Node Inflow Summary

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
OF1	OUTFALL	5.33	5.33	0 02:45	0.0605	0.0605	0.000
OF2	OUTFALL	0.00	4.60	0 04:32	0	0.16	0.000
SU1	STORAGE	32.48	32.48	0 02:25	0.16	0.16	0.000

 Node Surcharge Summary

No nodes were surcharged.

 Node Flooding Summary

No nodes were flooded.

 Storage Volume Summary

Storage Unit	Average Volume 1000 m3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
SU1	0.021	6	0	0	0.083	24	0 04:32	4.60

 Outfall Loading Summary

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 5 YR DESIGN STORM EVENT

```

-----
                Flow      Avg      Max      Total
                Freq      Flow      Flow      Volume
Outfall Node    Pcnt      LPS      LPS      10^6 ltr
-----
OF1              63.49      1.09      5.33      0.061
OF2              51.06      3.62      4.60      0.160
-----
System          57.28      4.71      9.75      0.220
    
```

 Link Flow Summary

```

-----
                Maximum      Time of Max      Maximum      Max/      Max/
Link            Type      |Flow|      Occurrence      |Veloc|      Full      Full
                LPS      days hr:min      m/sec      Flow      Depth
-----
OR1              ORIFICE      4.60      0 04:32                        1.00
    
```

 Flow Classification Summary

```

-----
                Adjusted      -----      Fraction of Time in Flow Class -----
                /Actual      Up      Down Sub      Sup      Up      Down      Norm      Inlet
Conduit          Length      Dry Dry      Dry Crit      Crit      Crit      Crit      Ltd      Ctrl
-----
    
```

 Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Fri Mar 04 16:24:54 2022
 Analysis ended on: Fri Mar 04 16:24:54 2022
 Total elapsed time: < 1 sec

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 25 YR DESIGN STORM EVENT

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.011)

 Element Count

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

 Raingage Summary

Name	Data Source	Data Type	Recording Interval
SCS_6h_38.8mm_2yr	SCS_6h_38.8mm_2yr	INTENSITY	5 min.
SCS_6h_49.4mm_5yr	SCS_6h_49.4mm_5yr	INTENSITY	5 min.
SCS_6h_65.3mm_25yr	SCS_6h_65.3mm_25yr	INTENSITY	5 min.
SCS_6h_71.9mm_50yr	SCS_6h_71.9mm_50yr	INTENSITY	5 min.
SCS_6h_78.4mm_100yr	SCS_6h_78.4mm_100yr	INTENSITY	5 min.

 Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
101	0.40	85.00	0.00	1.0000	SCS_6h_65.3mm_25yr	OF1
201	0.40	85.00	68.40	1.0000	SCS_6h_65.3mm_25yr	SU1

 Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
OF1	OUTFALL	0.00	0.00	0.0	
OF2	OUTFALL	0.00	0.00	0.0	
SU1	STORAGE	297.78	1.06	0.0	

 Link Summary

Name	From Node	To Node	Type	Length	%Slope	Roughness
OR1	SU1	OF2	ORIFICE			

 Cross Section Summary

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow

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

 Analysis Options

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 25 YR DESIGN STORM EVENT

```

*****
Flow Units ..... LPS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Starting Date ..... 12/24/2021 00:00:00
Ending Date ..... 12/25/2021 00:00:00
Antecedent Dry Days ..... 0.0
Report Time Step ..... 00:01:00
Wet Time Step ..... 00:05:00
Dry Time Step ..... 00:05:00
Routing Time Step ..... 5.00 sec
Variable Time Step ..... YES
Maximum Trials ..... 8
Number of Threads ..... 1
Head Tolerance ..... 0.001524 m
  
```

```

*****
Runoff Quantity Continuity
*****
Volume          Depth
hectare-m      mm
-----
Total Precipitation ..... 0.052    65.310
Evaporation Loss ..... 0.000    0.000
Infiltration Loss ..... 0.021    25.950
Surface Runoff ..... 0.031    39.279
Final Storage ..... 0.000    0.119
Continuity Error (%) ..... -0.057
  
```

```

*****
Flow Routing Continuity
*****
Volume          Volume
hectare-m      10^6 ltr
-----
Dry Weather Inflow ..... 0.000    0.000
Wet Weather Inflow ..... 0.031    0.314
Groundwater Inflow ..... 0.000    0.000
RDII Inflow ..... 0.000    0.000
External Inflow ..... 0.000    0.000
External Outflow ..... 0.031    0.314
Flooding Loss ..... 0.000    0.000
Evaporation Loss ..... 0.000    0.000
Exfiltration Loss ..... 0.000    0.000
Initial Stored Volume .... 0.000    0.000
Final Stored Volume ..... 0.000    0.000
Continuity Error (%) ..... 0.000
  
```

```

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

```

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

```

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

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 25 YR DESIGN STORM EVENT

 Subcatchment Runoff Summary

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
101	65.31	0.00	0.00	40.74	24.39	0.10	10.28	0.373
201	65.31	0.00	0.00	11.16	54.17	0.22	44.69	0.829

 Node Depth Summary

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
OF1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
OF2	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
SU1	STORAGE	0.35	0.80	298.58	0 05:26	0.80

 Node Inflow Summary

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
OF1	OUTFALL	10.28	10.28	0 02:30	0.0976	0.0976	0.000
OF2	OUTFALL	0.00	4.97	0 05:26	0	0.217	0.000
SU1	STORAGE	44.69	44.69	0 02:25	0.217	0.217	0.000

 Node Surcharge Summary

No nodes were surcharged.

 Node Flooding Summary

No nodes were flooded.

 Storage Volume Summary

Storage Unit	Average Volume 1000 m3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
SU1	0.041	12	0	0	0.129	38	0 05:26	4.97

 Outfall Loading Summary

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 25 YR DESIGN STORM EVENT

```

-----
                Flow      Avg      Max      Total
                Freq      Flow      Flow      Volume
Outfall Node    Pcnt      LPS      LPS      10^6 ltr
-----
OF1              65.71     1.71     10.28     0.098
OF2              63.08     3.98     4.97      0.217
-----
System          64.39     5.69     14.88     0.314
    
```

 Link Flow Summary

```

-----
                Maximum   Time of Max   Maximum   Max/   Max/
Link           Type      |Flow|       Occurrence   |Veloc|   Full   Full
                LPS      days hr:min   m/sec     Flow   Depth
-----
OR1             ORIFICE      4.97        0 05:26           1.00
    
```

 Flow Classification Summary

```

-----
                Adjusted   -----   Fraction of Time in Flow Class -----
                /Actual   Up      Down Sub  Sup  Up  Down  Norm  Inlet
Conduit        Length   Dry Dry  Dry  Crit Crit Crit Crit Ltd  Ctrl
-----
    
```

 Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Fri Mar 04 16:25:38 2022
 Analysis ended on: Fri Mar 04 16:25:38 2022
 Total elapsed time: < 1 sec

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 50 YR DESIGN STORM EVENT

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.011)

 Element Count

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

 Raingage Summary

Name	Data Source	Data Type	Recording Interval
SCS_6h_38.8mm_2yr	SCS_6h_38.8mm_2yr	INTENSITY	5 min.
SCS_6h_49.4mm_5yr	SCS_6h_49.4mm_5yr	INTENSITY	5 min.
SCS_6h_65.3mm_25yr	SCS_6h_65.3mm_25yr	INTENSITY	5 min.
SCS_6h_71.9mm_50yr	SCS_6h_71.9mm_50yr	INTENSITY	5 min.
SCS_6h_78.4mm_100yr	SCS_6h_78.4mm_100yr	INTENSITY	5 min.

 Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
101	0.40	85.00	0.00	1.0000	SCS_6h_71.9mm_50yr	OF1
201	0.40	85.00	68.40	1.0000	SCS_6h_71.9mm_50yr	SU1

 Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
OF1	OUTFALL	0.00	0.00	0.0	
OF2	OUTFALL	0.00	0.00	0.0	
SU1	STORAGE	297.78	1.06	0.0	

 Link Summary

Name	From Node	To Node	Type	Length	%Slope	Roughness
OR1	SU1	OF2	ORIFICE			

 Cross Section Summary

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow

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

 Analysis Options

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 50 YR DESIGN STORM EVENT

```

*****
Flow Units ..... LPS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Starting Date ..... 12/24/2021 00:00:00
Ending Date ..... 12/25/2021 00:00:00
Antecedent Dry Days ..... 0.0
Report Time Step ..... 00:01:00
Wet Time Step ..... 00:05:00
Dry Time Step ..... 00:05:00
Routing Time Step ..... 5.00 sec
Variable Time Step ..... YES
Maximum Trials ..... 8
Number of Threads ..... 1
Head Tolerance ..... 0.001524 m
  
```

```

*****
Runoff Quantity Continuity
*****
Volume          Depth
hectare-m      mm
-----
Total Precipitation ..... 0.058 71.911
Evaporation Loss ..... 0.000 0.000
Infiltration Loss ..... 0.022 27.445
Surface Runoff ..... 0.036 44.389
Final Storage ..... 0.000 0.119
Continuity Error (%) ..... -0.058
  
```

```

*****
Flow Routing Continuity
*****
Volume          Volume
hectare-m      10^6 ltr
-----
Dry Weather Inflow ..... 0.000 0.000
Wet Weather Inflow ..... 0.036 0.355
Groundwater Inflow ..... 0.000 0.000
RDII Inflow ..... 0.000 0.000
External Inflow ..... 0.000 0.000
External Outflow ..... 0.036 0.355
Flooding Loss ..... 0.000 0.000
Evaporation Loss ..... 0.000 0.000
Exfiltration Loss ..... 0.000 0.000
Initial Stored Volume .... 0.000 0.000
Final Stored Volume ..... 0.000 0.000
Continuity Error (%) ..... 0.000
  
```

```

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

```

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

```

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

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 50 YR DESIGN STORM EVENT

 Subcatchment Runoff Summary

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
101	71.91	0.00	0.00	43.16	28.58	0.11	12.94	0.397
201	71.91	0.00	0.00	11.73	60.20	0.24	49.90	0.837

 Node Depth Summary

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
OF1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
OF2	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
SU1	STORAGE	0.40	0.84	298.62	0 05:27	0.84

 Node Inflow Summary

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
OF1	OUTFALL	12.94	12.94	0 02:30	0.114	0.114	0.000
OF2	OUTFALL	0.00	5.09	0 05:27	0	0.241	0.000
SU1	STORAGE	49.90	49.90	0 02:25	0.241	0.241	0.000

 Node Surcharge Summary

No nodes were surcharged.

 Node Flooding Summary

No nodes were flooded.

 Storage Volume Summary

Storage Unit	Average Volume 1000 m3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
SU1	0.051	15	0	0	0.151	44	0 05:27	5.09

 Outfall Loading Summary

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 50 YR DESIGN STORM EVENT

```

-----
                Flow      Avg      Max      Total
                Freq      Flow      Flow      Volume
Outfall Node    Pcnt      LPS      LPS      10^6 ltr
-----
OF1              66.08      1.99     12.94     0.114
OF2              68.09      4.09     5.09      0.241
-----
System          67.09      6.09     17.65     0.355
    
```

 Link Flow Summary

```

-----
                Maximum      Time of Max      Maximum      Max/      Max/
Link            Type      |Flow|      Occurrence      |Veloc|      Full      Full
                LPS      days hr:min      m/sec      Flow      Depth
-----
OR1              ORIFICE      5.09      0 05:27                        1.00
    
```

 Flow Classification Summary

```

-----
                Adjusted      -----      Fraction of Time in Flow Class -----
                /Actual      Up      Down Sub      Sup      Up      Down      Norm      Inlet
Conduit          Length      Dry Dry      Dry      Crit      Crit      Crit      Crit      Ltd      Ctrl
-----
    
```

 Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Fri Mar 04 16:26:13 2022
 Analysis ended on: Fri Mar 04 16:26:13 2022
 Total elapsed time: < 1 sec

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 100 YR DESIGN STORM EVENT

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.011)

Element Count

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

Raingage Summary

Name	Data Source	Data Type	Recording Interval
SCS_6h_38.8mm_2yr	SCS_6h_38.8mm_2yr	INTENSITY	5 min.
SCS_6h_49.4mm_5yr	SCS_6h_49.4mm_5yr	INTENSITY	5 min.
SCS_6h_65.3mm_25yr	SCS_6h_65.3mm_25yr	INTENSITY	5 min.
SCS_6h_71.9mm_50yr	SCS_6h_71.9mm_50yr	INTENSITY	5 min.
SCS_6h_78.4mm_100yr	SCS_6h_78.4mm_100yr	INTENSITY	5 min.

Subcatchment Summary

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
101	0.40	85.00	0.00	1.0000	SCS_6h_78.4mm_100yr	OF1
201	0.40	85.00	68.40	1.0000	SCS_6h_78.4mm_100yr	SU1

Node Summary

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
OF1	OUTFALL	0.00	0.00	0.0	
OF2	OUTFALL	0.00	0.00	0.0	
SU1	STORAGE	297.78	1.06	0.0	

Link Summary

Name	From Node	To Node	Type	Length	%Slope	Roughness
OR1	SU1	OF2	ORIFICE			

Cross Section Summary

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow

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

Analysis Options

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 100 YR DESIGN STORM EVENT

```

*****
Flow Units ..... LPS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Starting Date ..... 12/24/2021 00:00:00
Ending Date ..... 12/25/2021 00:00:00
Antecedent Dry Days ..... 0.0
Report Time Step ..... 00:01:00
Wet Time Step ..... 00:05:00
Dry Time Step ..... 00:05:00
Routing Time Step ..... 5.00 sec
Variable Time Step ..... YES
Maximum Trials ..... 8
Number of Threads ..... 1
Head Tolerance ..... 0.001524 m
  
```

```

*****
Runoff Quantity Continuity
*****
Volume          Depth
hectare-m      mm
-----
Total Precipitation ..... 0.063 78.413
Evaporation Loss ..... 0.000 0.000
Infiltration Loss ..... 0.023 28.820
Surface Runoff ..... 0.040 49.521
Final Storage ..... 0.000 0.119
Continuity Error (%) ..... -0.059
  
```

```

*****
Flow Routing Continuity
*****
Volume          Volume
hectare-m      10^6 ltr
-----
Dry Weather Inflow ..... 0.000 0.000
Wet Weather Inflow ..... 0.040 0.396
Groundwater Inflow ..... 0.000 0.000
RDII Inflow ..... 0.000 0.000
External Inflow ..... 0.000 0.000
External Outflow ..... 0.040 0.396
Flooding Loss ..... 0.000 0.000
Evaporation Loss ..... 0.000 0.000
Exfiltration Loss ..... 0.000 0.000
Initial Stored Volume .... 0.000 0.000
Final Stored Volume ..... 0.000 0.000
Continuity Error (%) ..... 0.000
  
```

```

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

```

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

```

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

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 100 YR DESIGN STORM EVENT

 Subcatchment Runoff Summary

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
101	78.41	0.00	0.00	45.36	32.88	0.13	15.81	0.419
201	78.41	0.00	0.00	12.28	66.16	0.26	55.11	0.844

 Node Depth Summary

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
OF1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
OF2	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
SU1	STORAGE	0.45	0.87	298.65	0 05:28	0.87

 Node Inflow Summary

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
OF1	OUTFALL	15.81	15.81	0 02:30	0.132	0.132	0.000
OF2	OUTFALL	0.00	5.19	0 05:28	0	0.265	0.000
SU1	STORAGE	55.11	55.11	0 02:25	0.265	0.265	0.000

 Node Surcharge Summary

No nodes were surcharged.

 Node Flooding Summary

No nodes were flooded.

 Storage Volume Summary

Storage Unit	Average Volume 1000 m3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
SU1	0.062	18	0	0	0.172	50	0 05:28	5.19

 Outfall Loading Summary

WILSON DEVELOPMENT – EAST RIDGE STORAGE SITE – 100 YR DESIGN STORM EVENT

```

-----
                Flow      Avg      Max      Total
                Freq      Flow      Flow      Volume
Outfall Node   Pcnt      LPS      LPS      10^6 ltr
-----
OF1            66.25      2.29      15.81      0.132
OF2            73.01      4.20      5.19       0.265
-----
System         69.63      6.49      20.63      0.396
    
```

 Link Flow Summary

```

-----
                Maximum   Time of Max   Maximum   Max/   Max/
Link           Type      |Flow|       Occurrence   |Veloc|   Full   Full
                LPS      days hr:min   m/sec     Flow   Depth
-----
OR1            ORIFICE      5.19        0 05:28                1.00
    
```

 Flow Classification Summary

```

-----
                Adjusted   ----- Fraction of Time in Flow Class -----
                /Actual   Up      Down Sub  Sup  Up  Down Norm  Inlet
Conduit        Length   Dry Dry  Dry Crit Crit Crit Crit Ltd  Ctrl
-----
    
```

 Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Fri Mar 04 16:26:52 2022
 Analysis ended on: Fri Mar 04 16:26:53 2022
 Total elapsed time: 00:00:01