

STORMWATER MANAGEMENT, GROUNDWATER RECHARGE AND WATER QUALITY ANALYSIS

For

BPS Development Company, LLC

Proposed Assisted Living & Memory Care Facility

**Hartwick Drive & Village Drive
Block 28003, Lot 211
Township of Montgomery, Somerset County, NJ**

Prepared by:



**1904 Main Street
Lake Como, NJ 07719
(732) 974-0198**

A handwritten signature in blue ink, appearing to read 'J. Haberman', is written over a horizontal line.

**Jeffrey S. Haberman, PE, PP
NJ Professional Engineer License #53560**

**December 2022
DEC# 4496-22-01857**

TABLE OF CONTENTS

Page No.

I.	SITE DESCRIPTION	- 1 -
II.	DESIGN OVERVIEW	- 1 -
III.	EXISTING DRAINAGE CONDITIONS.....	- 2 -
IV.	PROPOSED DRAINAGE CONDITIONS.....	- 3 -
V.	DESIGN METHODOLOGY	- 4 -
VI.	STORMWATER MANAGEMENT SYSTEM DESIGN & GREEN INFRASTRUCTURE COMPLIANCE.....	- 5 -
VII.	RUNOFF RATES.....	- 5 -
VIII.	WATER QUALITY	- 6 -
IX.	GROUNDWATER RECHARGE	- 6 -
X.	STANDARD FOR OFF-SITE STABILITY	- 6 -
XI.	CONCLUSION	- 10 -

APPENDIX

- NRCS Web Soil Survey
- Hydrograph Summary Reports – Existing & Proposed Conditions 2, 10, & 100-year
- Hydrograph Summary Reports – Water Quality Storm
- Stormwater Collection System Calculations (Pipe Sizing)
- Conduit Outlet Protection Calculations
- Overflow Spillway Calculations
- Nonstructural Strategies Point System (NSPS)
- Stormwater Basin Area Investigation Report, prepared by Dynamic Earth, LLC (Attached Separately)
- Drainage Area Maps

I. SITE DESCRIPTION

The subject site is located at the intersection of Hartwick Drive and Village Drive in the Township of Montgomery, Somerset County, New Jersey. The site is identified as Block 28003, Lot 211 on the Township of Montgomery Tax Map Sheet #55.02. The subject site is currently undeveloped, and consists mainly of gravel and open space with a portion of the south eastern side of the property consisting of wooded area. Furthermore, an existing detention basin is located on the northern portion of the site which was previously designed and approved as a stormwater management facility for the larger Tapestry drainage area. The site is bounded by residential/open space to the north, residential to the west, and townhomes in construction to the south and east. The existing conditions of the site have been verified by the ALTA/NSPS Land Title Survey as prepared by Dynamic Survey, dated 11/02/2022.

The scope of the study includes the proposed development of the parcel with one new assisted living and memory care facility with accompanying lighting, landscaping, grading, walkways, driveways, utilities, parking, and associated items.

II. DESIGN OVERVIEW

This report has been prepared to define and analyze the stormwater drainage conditions that would occur as a result of the development of the subject site into an assisted living and memory care facility on Block 28003, Lot 211 in the Township of Montgomery, Somerset County, New Jersey. The scope of the study includes the proposed development of the parcel with one new assisted living and memory care facility totaling 34,444 SF with accompanying lighting, landscaping, grading, walkways, driveways, utilities, parking, and other related site improvements.

Based upon the fact that the proposed development will result in more than one (1) acre of land disturbance and increases motor vehicle surfaces by more than ¼ acre, this project is classified as a “major development”. Therefore, the proposed development has been designed to meet the stormwater runoff quantity, quality, and groundwater recharge requirements set forth by the Township of Montgomery Land Use Ordinance and NJAC 7:8.

Accordingly, the following items are addressed within this report:

- Stormwater runoff quality standards (7:8-5.5)
- Stormwater runoff quantity standards (7:8-5.6)
- Calculation of stormwater runoff (7:8-5.7)
- Green Infrastructure Standards (7:8-5.3)

A hydrological evaluation is provided for the NJDEP Water Quality, 2, 10, and 100-year storm events utilizing the Urban Hydrology for Small Watershed TR55 method.

The Township of Montgomery and NJAC 7:8 flow reduction requirements are as follows:

2-year:	50% reduction
10-year:	25% reduction
100-year:	20% reduction

It is the intention of the design of this facility to comply with the Stormwater Management Best Management Practices Manual.

III. EXISTING DRAINAGE CONDITIONS

The area to be analyzed consists of approximately 4.43 acres and is undeveloped, comprised mostly of gravel and open space areas with a small portion being wooded. Currently, the majority of stormwater runoff generated by the subject site drains to the northeastern portion of the site through overland flow and existing stormwater conveyance infrastructure detained by an existing stormwater detention basin at the rear of the site. Runoff detained by the existing stormwater detention basin is released at a controlled rate and discharged to the northeast where it is ultimately conveyed to the Beden Brook.

The subject site has been evaluated with the following drainage sub-watershed areas as depicted on the Existing Drainage Area Map included within the Appendix of this report. According to the Somerset County Soil Survey, the existing soils are of Hydrologic Soil Group B and C. However, after thorough analysis and geotechnical testing of the underlying soils, the existing soil is anticipated to be reclassified to Hydrologic Soil Group D. The reclassification of soils is consistent with the Montgomery Crossing project to the east due to the lack of permeability and type of existing soils as evidenced in the soil logs in the Appendix of this report.

Study Area - DA Existing Basin: This area consists of a majority of the site which primarily includes gravel and open space areas with a small portion being wooded areas. Under existing conditions, stormwater runoff generated by this area is ultimately tributary to the existing stormwater detention basin at the northeast portion of the site via overland flow.

Study Area - DA Undetained: This area consists of small portions of the site which primarily includes open space, gravel, and wooded area. Under existing conditions, stormwater runoff generated by this area is ultimately tributary to offsite area to the northeast.

Based upon the Somerset County Soil Survey, the soil types native to the site include:

SOIL TYPE	SOIL TYPE NAME	HYDROLOGIC SOIL GROUP
BhnB	Birdsboro silt loam, 2 to 6 percent slopes	B
RoyB	Royce silt loam, 2 to 5 percent slopes	C

*As previously noted, soils within the limit of disturbance are expected be reclassified as Hydrologic Soil Group D.

IV. PROPOSED DRAINAGE CONDITIONS

The proposed development includes the construction of a new assisted living and memory care facility with associated site improvements including driveways, parking areas, stormwater management facilities, landscaping, lighting, utilities and other associated site improvements. The stormwater management system includes one (1) aboveground bioretention basin with underdrains which serves to detain and discharge stormwater runoff generated by the development in order to meet the stormwater management requirements set forth by the Township of Montgomery and NJAC 7:8.

The proposed site conditions have been evaluated using the following drainage sub-watershed areas as depicted on the Proposed Drainage Area Map included within the Appendix of this report.

Study Area - Proposed Basin A: The study area consists of the southern portion of the building via the roof leader conveyance system, open space via overland flow, and the proposed parking lot via the pipe conveyance system. Stormwater runoff is conveyed to the bioretention Basin 'A' where it is detained and is released at a controlled rate through an outlet control structure. Runoff from Basin 'A' is a new outfall in the existing detention basin located at the rear of the property.

Study Area – Ex. Basin: The study area consists largely of disturbed lawn area along the perimeter of the site and a majority of the roof of the proposed building. Runoff generated by this area is directly tributary to the existing detention basin at the rear of the site by way of the pipe conveyance system and the existing swale at the western portion of the site. The existing swale will be regraded to maintain the existing slopes and volume of water. The existing basin has been designed to control the quantity of runoff in existing conditions.

Study Area - Undetained: The study area consists of open space that is disturbed due to regrading in the eastern portion of the development. Stormwater runoff for this area is tributary to the offsite areas to the northeast via overland flow.

V. DESIGN METHODOLOGY

The intention of the design of the proposed stormwater management facilities for this development is to provide measures as required to address the applicable aspects of the Township of Montgomery Land Use Ordinance and NJAC 7:8. In order to prepare the stormwater management design for the subject site, extensive initial investigation of the property and topography was performed. On-site review of the tract was initially performed by Dynamic Engineering Consultants, PC to verify existing site conditions and land cover characteristics. Dynamic Survey, LLC was contracted to prepare the Boundary and Topographic Survey to depict the existing site conditions. Furthermore, Dynamic Earth, LLC performed test pits within the site to establish the seasonal high-water table and soil permeability rates.

Based on our review of the existing site conditions and survey, the Drainage Area Maps for the existing and proposed site conditions as defined within this report were established. A grading plan was developed for the proposed site improvements with consideration to the existing drainage patterns. The plan was designed to ensure runoff from the proposed development could be directed to the proposed stormwater management facilities in order to address the applicable sections of the Township of Montgomery Stormwater Ordinance and NJAC 7:8.

The rainfall data utilized for the analysis of the existing and proposed drainage conditions is based upon the New Jersey 24 Hour Rainfall Frequency Data for Somerset County as published by the USDA NRCS utilizing the NOAA Region C rainfall distribution.

Under proposed conditions, stormwater runoff from the proposed motor vehicle surface areas and other areas in DA-Proposed Basin 'A' is collected and conveyed by the on-site stormwater conveyance system to the proposed aboveground bioretention Basin 'A' at the eastern portion of the site. The proposed basin is designed to detain and infiltrate the entirety of the water quality storm event through a bio-media to an underlying perforated pipe conveyance network. Therefore, the development will provide a total TSS removal rate of 80% for the site, thereby satisfying the water quality aspect of NJAC 7:8. It is important to note that runoff from the roof is considered to be "clean" runoff, and therefore a majority of the roof is discharged directly to the basin at the rear of the site which was previously designed to accommodate runoff from this parcel.

Furthermore, an outlet control structure is proposed within Basin 'A' to detain and release runoff from the 2-, 10-, and 100-year storm events at a controlled rate which is ultimately tributary to the existing detention basin at the rear of the parcel. The peak runoff rates for the 2-, 10-, and 100-year storm events have been reduced by 50%, 25%, and 20%, respectively to satisfy the stormwater runoff quantity requirements set forth by NJAC 7:8.

Lastly, as previously noted, Dynamic Earth, LLC performed numerous test pits within the site to establish seasonal high groundwater table characteristics and percolation tests were conducted for on-site soils to confirm soil classification per the County Soil Survey. The soils encountered during this site investigation consisted of

clayey silt, and groundwater and evidence of seasonal high water table were not encountered in any test pits. The field investigation recharge map, soil profile pit logs and tube permeameter testing in the Appendix of this Report reveal a restriction within the upper 40 inches of the soil profile consisting of low permeability rate of less than 0.2 in/hr which is consistent with hydrologic soil group (HSG) "D" as specified in the NJ BMP Manual. The New Jersey Groundwater Recharge Spreadsheet (NJGRS) in the Appendix of this Report indicates that no recharge occurs in the existing condition. Therefore, the proposed development satisfies the groundwater recharge requirements set forth by NJAC 7:8.

The overall stormwater management design for the subject site has been evaluated by Dynamic Engineering Consultants to ensure that the overall development satisfies the standards set forth in the Township of Montgomery Land Use Ordinance and NJAC 7:8.

VI. STORMWATER MANAGEMENT SYSTEM DESIGN & GREEN INFRASTRUCTURE COMPLIANCE

As detailed above, in order to meet the stormwater runoff quantity and quality requirements for the proposed development, the stormwater management system design include one (1) aboveground bioretention basin. In accordance with the New Jersey Stormwater Best Management Practices Manual, the following design considerations have been satisfied as further identified in the table below:

Aboveground Bioretention Basin (small-scale):

- 2.5-acre maximum contributory drainage area
- 72-hour maximum design storm drain time (utilizing slowest design permeability rate)
- 1-foot minimum separation between basin bottom and seasonal high-water table

VII. RUNOFF RATES

The following is a comparison of the existing and proposed conditions runoff rates:

Existing and Proposed Conditions Peak Runoff Rates Results **Summary (Total)**

	EXISTING DISTURBED RUNOFF RATE	NJAC 7:8 REQUIRED REDUCTION	NJAC 7:8 ALLOWABLE RUNOFF RATE	PROPOSED RUNOFF RATE
2 Year	7.77 CFS	50%	3.89 CFS	3.54 CFS
10 Year	13.32 CFS	25%	9.99 CFS	6.17 CFS
100 Year	24.19 CFS	20%	19.36 CFS	11.16 CFS

VIII. WATER QUALITY

As noted previously in this report, the proposed aboveground bioretention basin has been designed to retain and infiltrate the entire volume of the NJDEP Water Quality Storm event through a bio-media filter to an underlying perforated pipe underdrain system. In addition, the aboveground small-scale bioretention basin has been designed to comply with the standards set forth by the NJ Stormwater Best Management Practices Manual thereby, providing a TSS removal rate of 80%. As such, the proposed stormwater management facilities for the development will provide a total TSS removal rate of 80% for the site thereby satisfying the water quality aspect of NJAC 7:8.

IX. GROUNDWATER RECHARGE

As previously noted, Dynamic Earth, LLC performed numerous test pits within the site to establish seasonal high groundwater table characteristics and percolation tests were conducted for on-site soils to confirm soil classification per the County Soil Survey. The soils encountered during this site investigation consisted of clayey silt, and groundwater and evidence of seasonal high water table were not encountered in any test pits. The field investigation recharge map, soil profile pit logs and tube permeameter testing in the Appendix of this Report reveal a restriction within the upper 40 inches of the soil profile consisting of low permeability rate of less than 0.2 in/hr which is consistent with hydrologic soil group (HSG) "D" as specified in the NJ BMP Manual. The New Jersey Groundwater Recharge Spreadsheet (NJGRS) in the Appendix of this Report indicates that no recharge occurs in the existing condition. Therefore, the proposed development satisfies the groundwater recharge requirements set forth by NJAC 7:8.

X. STANDARD FOR OFF-SITE STABILITY

This project has been designed to satisfy the Off-Site Stability standards set forth in the Standards for Soil Erosion and Sediment Control in New Jersey.

Conditions Where Practices Applies

For purposes of analysis, two areas of concern shall be addressed: (1) at the point of discharge and (2) downstream of the discharge point (which may require a watershed-based analysis). Technical criteria for demonstrating off-site stability include consideration of proximity to a defined waterway, site topography (slope), soil texture, vegetative cover and other factors. Where the potential for erosive forces from stormwater runoff exceeds the threshold of acceptability as defined below, the plan shall provide for the construction of a stabilized channel, installation of a conduit to a stable condition or other types of hydraulic improvements to the channel. Additional design criteria or restrictions from the New Jersey Department of Environmental Protection or the New Jersey Pinelands Commission may also apply.

Compliance with this Standard will be provided for both areas of concern: (1) at the point of discharge and (2) downstream of the discharge point.

Design Criteria

This Standard involves two areas of analysis: (1) at the point(s) of storm sewer discharge and (2) beyond the site boundaries, typically a receiving channel or waterway. Stability documentation for each area is outlined in detail below. Generally, the analyses involve the manipulation of peak rates of discharge for the 2 and 10 year, 24-hour storm events such that peak flow rate values and velocities are below established thresholds. Discharges shall be located in areas with low gradient topography and covered in perennial erosion resistant vegetation as noted in table 21-1 below.

The proposed discharge will be located in the existing basin. The proposed development meets reduction requirements; therefore, the existing discharge will not be impacted.

POINT OF DISCHARGE STABILITY ANALYSIS

When infiltration practices are proposed, an alternate analysis (failure analysis) must be provided which ignores infiltration (no dead storage volume available, no static or dynamic infiltration loss rates in the routing calculations, etc.) and demonstrates that no erosion will occur at the point of discharge if infiltration fails to function. Flow rates based solely upon basin inlet and outlet hydraulics must be used in comparison to Table 21-1 (below) to document a stable outlet.

Groundwater recharge is not required/designed as previously indicated.

Downstream (Off-Site) Stability Analysis

Infiltration may be used to meet peak flow reduction requirements (outlined below) for the purposes of documenting stability of the downstream receiving channel, provided that the complete loss of infiltration function does not result in an increase in peak flow values above the predevelopment levels.

Analysis for the points of discharge to the downstream receiving channel have been provided below.

Point of Discharge - Methods for Achieving Stability

1. *No well-defined waterway below the point of discharge:*

There is no well-defined waterway immediately downstream of the point of discharge; therefore, this method will be used.

Stability can be achieved by one of the following alternatives:

- A. *Retain pre-existing runoff characteristics. Do not increase the amount and rate of runoff for the development and do not concentrate flows.*

- B. *Where there is no well-defined channel, no sandy condition, no trees or brush to substantially concentrate the flows and it can be reasonably assumed that the flow will disperse over a broad area. The combinations of slopes and soils in table 21-1 and the following criteria are considered stable for flows of 10 cfs or less for a 25 year, 24 hr design storm.*

Table 21-1 Non-Erosive Velocities for Point Discharges

Maximum Stable Slope for Point Discharges for Various Soils	
Soil Type	Perennial, Natural Vegetation
	Maximum Slope (%)
Sands	1.8
Sandy loam	2.0
Silt loam, loam	2.5
Sandy clay loam	3.5
Clay loam	5.0
Graded loam to gravel	8.0

The proposed discharge will be located in the existing basin. The proposed development meets reduction requirements; therefore, the existing discharge will not be impacted.

Stability Criteria (in conjunction with table 21-1)

- i. *The maximum discharge rate shall be 10 cfs or less for the twenty-five (25) year storm.*

The proposed discharge will be located in the existing basin. The proposed development meets reduction requirements; therefore, the existing discharge will not be impacted.

- ii. *Multiple outlets may be utilized to reduce individual outlet flow rates to levels below the thresholds noted above. Outlets should be spaced no closer than 50 ft horizontally to avoid re-mixing of flows.*

The project does not involve multiple outlets. The proposed discharge will be located in the existing basin. The proposed development meets reduction requirements; therefore, the existing discharge will not be impacted.

- iii. *Flow over the outlet area shall be less than 0.5 cfs/ft. Designers shall not design excessive widths which will cause flows to concentrate.*

The proposed flows do not exceed 0.5 cfs/ft. The proposed discharge will be located in the existing basin. The proposed development meets reduction requirements; therefore, the existing discharge will not be impacted.

- iv. *Conduit outlet protection shall be provided in accordance with that Standard and may include: flat aprons, preformed scour holes, impact basins, stilling wells, plunge pools, etc. Level spreaders are not an acceptable design.*

A rip rap apron is proposed at the stormwater outfall. The proposed discharge will be located in the existing basin. The proposed development meets reduction requirements; therefore, the existing discharge will not be impacted.

- v. *Topography shows broad uniform outlet area where flows will not concentrate.*

The topography downstream of the point of discharge is broad and generally uniform and flows will not concentrate. The proposed discharge will be located in the existing basin. The proposed development meets reduction requirements; therefore, the existing discharge will not be impacted.

- vi. *Discharge locations shall contain perennial, erosion resistant vegetation.*

The discharge location contains perennial, erosion resistant vegetation. The proposed discharge will be located in the existing basin. The proposed development meets reduction requirements; therefore, the existing discharge will not be impacted.

- vii. *Peak discharge velocities (in the last pipe section) do not exceed 2 fps for the 10-year storm.*

As shown in the enclosed stormwater conveyance calculations for the failure analysis, the velocity in the last pipe section will not exceed 2 fps for the 10-year storm.

- viii. *The maximum length of slope below the outlet(s) is 100 feet.*

The proposed basin discharge is tributary to the existing detention basin and therefore this criterion is satisfied.

Downstream of the Point of Discharge (Off-Site Stability Analysis)

In addition to ensuring erosion does not occur at the point of discharge, areas downstream and beyond the immediate area of site development may be damaged due to erosive forces resulting from extended duration of hydrograph peak flows. An unintended consequence of the practice of detaining and slowly releasing stormwater is the ability for peak flows to be sustained for longer periods of time, offering an opportunity for upstream discharges to coincide with project site discharges. The resulting combined discharge may be equal to or even exceed that of the pre-development condition.

To limit the potential for such an occurrence the designer may choose either of two approaches for downstream stability protection:

- 1. Examine hydraulic characteristics of the receiving stream channel considering upstream discharge in combination with site discharge to assess channel stability. The scope and scale of the analysis shall be appropriate to the scale of the project and the post development peak discharge rate and volume. Of particular concern are hydraulic control points, (culverts, bridges, etc.), bends in streams and sudden changes in channel cross sections downstream of the discharge point. The following may be utilized to assess stability:*

The proposed design utilizes approach 2 as described below.

- 2. In lieu of performing a comprehensive watershed analysis, design a detention facility that reduces peak flows to the following levels. Infiltration may be used to meet these criteria:*

2-year storm – 50% of the predevelopment peak

10-year storm – 75% of the predevelopment peak

Reductions in peak flows are to be compared to pre-developed drainage area points of discharge in the event that drainage is re-directed in the post developed condition. Reductions are only required of the developed or modified portions of the project site.

As documented in the subsections above, the proposed peak flows meet the above reductions, thereby achieving off-site stability.

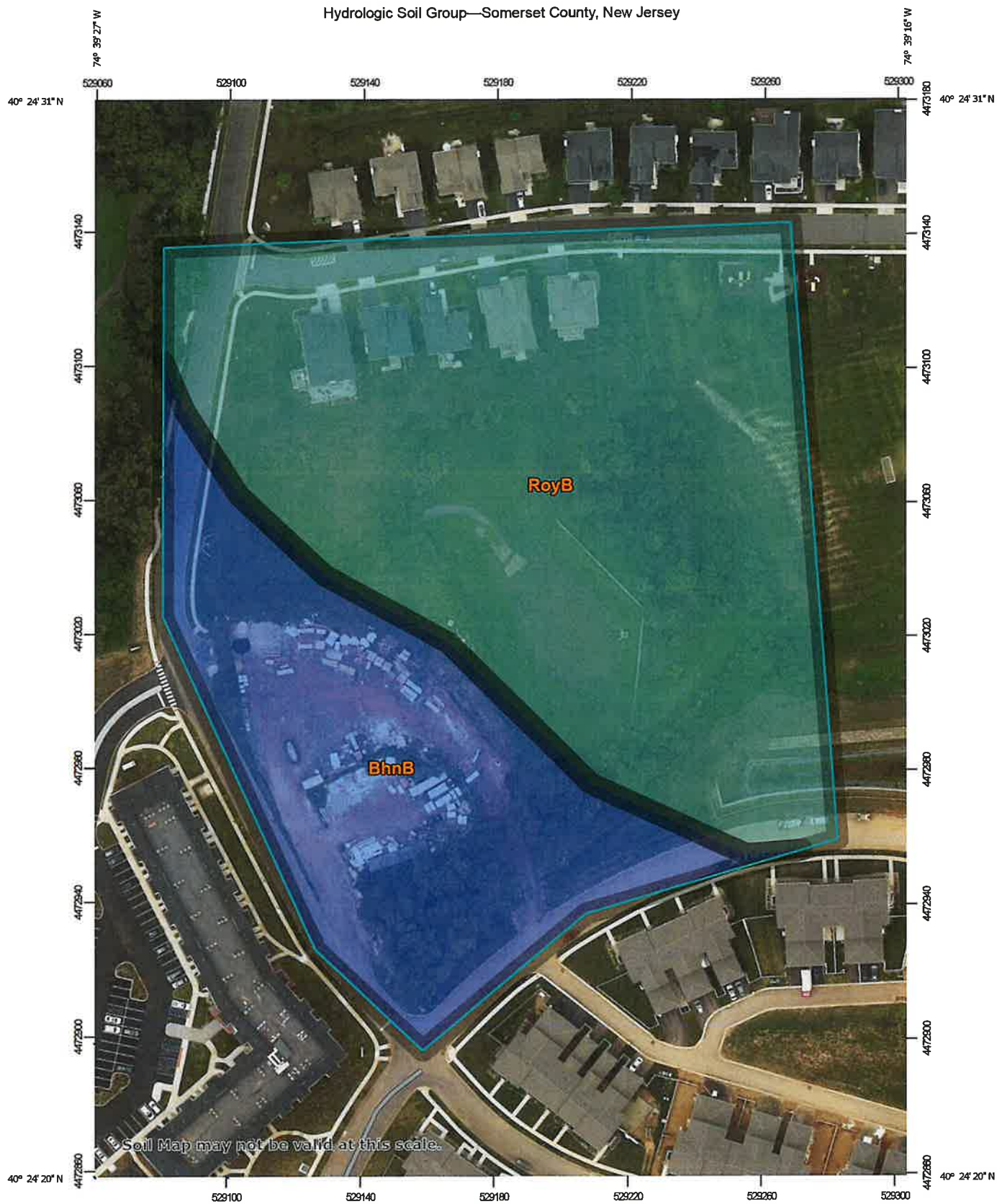
XI. CONCLUSION

The proposed development has been designed with provisions for the safe and efficient control of stormwater runoff in a manner that will not adversely impact the existing drainage patterns, adjacent roadways, or adjacent parcels. In addition, the proposed development satisfies the runoff quantity and quality requirements set forth by the Township of Montgomery Land Use Ordinance and NJAC 7:8 through the use of a proposed aboveground bioretention basin. With this stated, it is evident that the proposed development will not have a negative impact on the existing drainage conditions or water quality on-site or within the vicinity of the subject site.

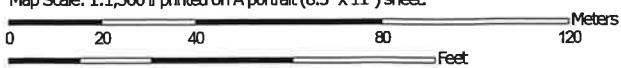
APPENDIX

NRCS WEB SOIL SURVEY

Hydrologic Soil Group—Somerset County, New Jersey



Map Scale: 1:1,560 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

12/5/2022
Page 1 of 4

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BhnB	Birdsboro silt loam, 2 to 6 percent slopes	B	3.3	33.8%
RoyB	Royce silt loam, 2 to 6 percent slopes	C	6.4	66.2%
Totals for Area of Interest			9.6	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

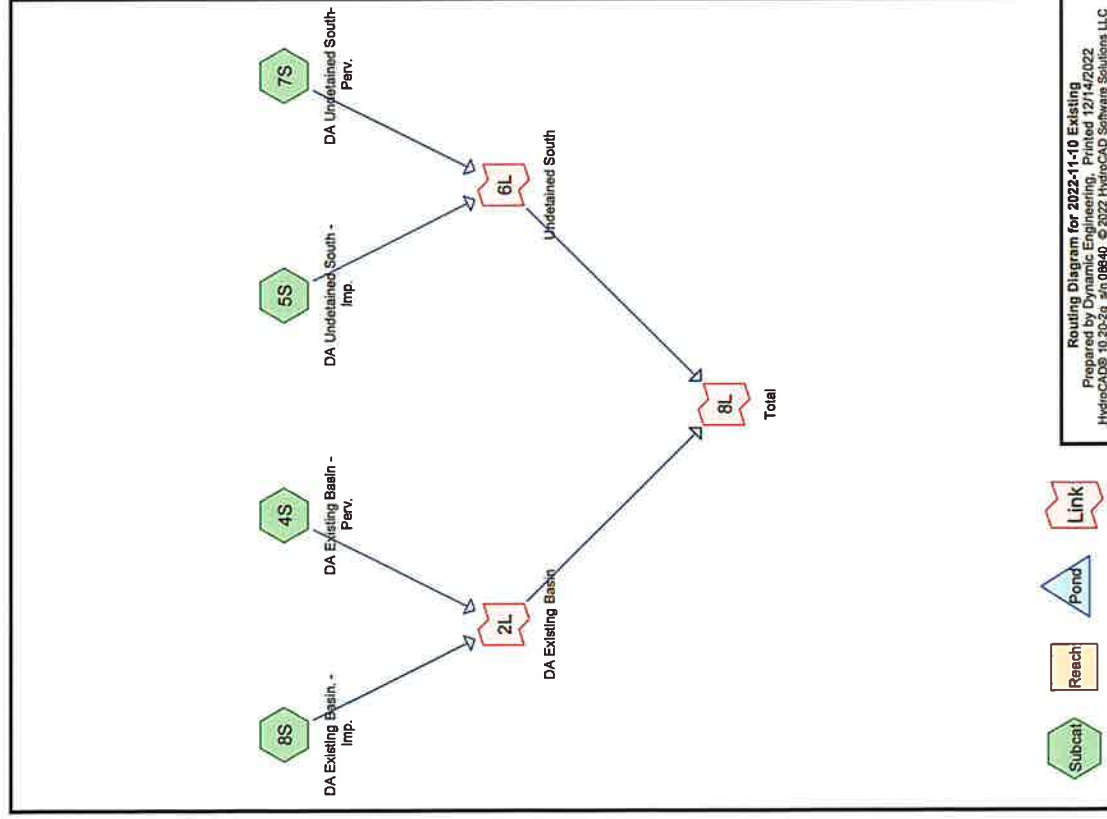
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

**HYDROGRAPH SUMMARY REPORTS – EXISTING &
PROPOSED CONDITIONS 2, 10, 25, & 100-YEAR**

Project Notes

Rainfall events Imported from "NRCS-Rain.txt" for 6617 NJ Somerset-C



2022-11-10 ExistingPrepared by Dynamic Engineering
HydroCAD® 10.20-2g s/n 08640 © 2022 HydroCAD Software Solutions LLCPrinted 12/14/2022
Page 3**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	NOAA 24-hr	C	Default	24.00	1	3.34	2
2	10-Year	NOAA 24-hr	C	Default	24.00	1	5.01	2
3	100-Year	NOAA 24-hr	C	Default	24.00	1	8.21	2

2022-11-10 ExistingPrepared by Dynamic Engineering
HydroCAD® 10.20-2g s/n 08640 © 2022 HydroCAD Software Solutions LLCPrinted 12/14/2022
Page 4**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
0.920	80	>75% Grass cover, Good, HSG D (4S, 7S)
1.220	96	Gravel surface, HSG D (5S, 8S)
0.560	77	Woods, Good, HSG D (4S)
0.600	83	Woods, Poor, HSG D (7S)
3.300	86	TOTAL AREA

2022-11-10 Existing

Prepared by Dynamic Engineering

HydroCAD® 10.20-2g s/n 08840 © 2022 HydroCAD Software Solutions LLC

Printed 12/14/2022

Page 5

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
3.300	HSG D	4S, 5S, 7S, 8S
0.000	Other	
3.300		TOTAL AREA

2022-11-10 Existing

Prepared by Dynamic Engineering

HydroCAD® 10.20-2g s/n 08840 © 2022 HydroCAD Software Solutions LLC

Printed 12/14/2022

Page 6

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.920	0.000	0.920	>75% Grass cover, Good	4S, 7S
0.000	0.000	0.000	1.220	0.000	1.220	Gravel surface	5S, 8S
0.000	0.000	0.000	0.560	0.000	0.560	Woods, Good	4S
0.000	0.000	0.000	0.800	0.000	0.800	Woods, Poor	7S
0.000	0.000	0.000	3.300	0.000	3.300	TOTAL AREA	

Notes Listing (all nodes)

Line#	Node	Notes
1	Project	Rainfall events Imported from "NRCS-Rain.txt" for 6617 NJ Somerset-C

Subcatchment4S: DA Existing Basin - Perv, Runoff Area=1.360 ac 0.00% Impervious Runoff Depth=1.44"
Flow Length=271' Tc=6.6 min CN=79 Runoff=2.48 cfs 0.164 af

Subcatchment5S: DA Undetained South - Runoff Area=0.090 ac 0.00% Impervious Runoff Depth=2.89"
Flow Length=281' Tc=9.8 min CN=96 Runoff=0.27 cfs 0.022 af

Subcatchment7S: DA Undetained South- Runoff Area=0.720 ac 0.00% Impervious Runoff Depth=1.72"
Flow Length=281' Tc=9.8 min CN=83 Runoff=1.39 cfs 0.103 af

Subcatchment8S: DA Existing Basin. - Imp. Runoff Area=1.130 ac 0.00% Impervious Runoff Depth=2.89"
Flow Length=271' Tc=6.6 min CN=96 Runoff=3.72 cfs 0.272 af

Link 2L: DA Existing Basin Inflow=6.19 cfs 0.435 af
Primary=6.19 cfs 0.435 af

Link 6L: Undetained South Inflow=1.65 cfs 0.125 af
Primary=1.65 cfs 0.125 af

Link 8L: Total Inflow=7.77 cfs 0.561 af
Primary=7.77 cfs 0.561 af

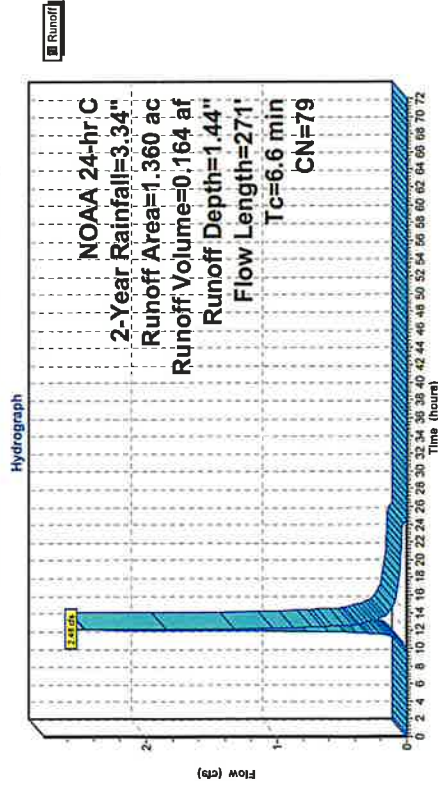
Total Runoff Area = 3.300 ac Runoff Volume = 0.561 af Average Runoff Depth = 2.04"
100.00% Pervious = 3.300 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 4S: DA Existing Basin - Perv.

Runoff = 2.48 cfs @ 12.14 hrs, Volume= 0.164 af, Depth= 1.44"
Routed to Link 2L : DA Existing Basin
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

Area (ac)	CN	Description			
0.560	77	Woods, Good, HSG D			
0.800	80	>75% Grass cover, Good, HSG D			
1.360	79	Weighted Average			
1.360		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	31	0.0600	0.10		Sheet Flow, Sheet Flow - Grass Woods: Light underbrush n= 0.400 P2= 3.44"
1.4	240	0.0300	2.79		Shallow Concentrated Flow, SCF Unpaved Kv= 16.1 fps
6.6	271	Total			

Subcatchment 4S: DA Existing Basin - Perv.



Hydrograph for Subcatchment 4S: DA Existing Basin - Perv.

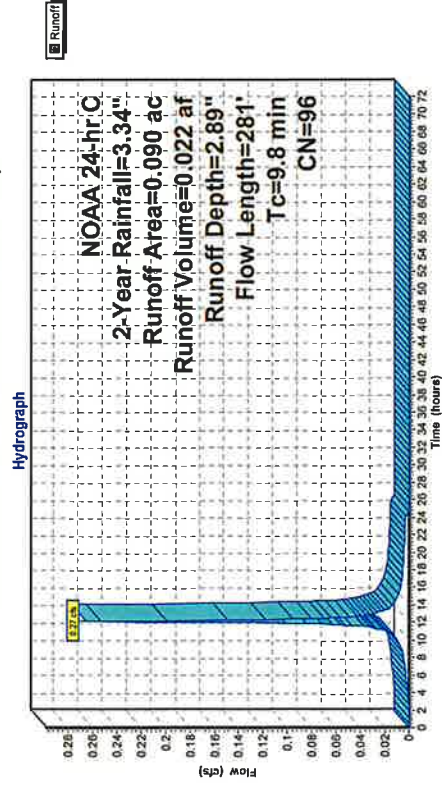
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	1.44	0.00
1.00	0.04	0.00	0.00	53.00	3.34	1.44	0.00
2.00	0.08	0.00	0.00	54.00	3.34	1.44	0.00
3.00	0.12	0.00	0.00	55.00	3.34	1.44	0.00
4.00	0.16	0.00	0.00	56.00	3.34	1.44	0.00
5.00	0.21	0.00	0.00	57.00	3.34	1.44	0.00
6.00	0.26	0.00	0.00	58.00	3.34	1.44	0.00
7.00	0.33	0.00	0.00	59.00	3.34	1.44	0.00
8.00	0.40	0.00	0.00	60.00	3.34	1.44	0.00
9.00	0.49	0.00	0.00	61.00	3.34	1.44	0.00
10.00	0.61	0.00	0.01	62.00	3.34	1.44	0.00
11.00	0.80	0.02	0.06	63.00	3.34	1.44	0.00
12.00	1.59	0.30	1.11	64.00	3.34	1.44	0.00
13.00	2.54	0.86	0.29	65.00	3.34	1.44	0.00
14.00	2.73	1.00	0.14	66.00	3.34	1.44	0.00
15.00	2.85	1.08	0.10	67.00	3.34	1.44	0.00
16.00	2.94	1.14	0.08	68.00	3.34	1.44	0.00
17.00	3.01	1.20	0.07	69.00	3.34	1.44	0.00
18.00	3.08	1.24	0.06	70.00	3.34	1.44	0.00
19.00	3.13	1.28	0.05	71.00	3.34	1.44	0.00
20.00	3.18	1.32	0.05	72.00	3.34	1.44	0.00
21.00	3.22	1.35	0.05				
22.00	3.26	1.39	0.04				
23.00	3.30	1.41	0.04				
24.00	3.34	1.44	0.04				
25.00	3.34	1.44	0.00				
26.00	3.34	1.44	0.00				
27.00	3.34	1.44	0.00				
28.00	3.34	1.44	0.00				
29.00	3.34	1.44	0.00				
30.00	3.34	1.44	0.00				
31.00	3.34	1.44	0.00				
32.00	3.34	1.44	0.00				
33.00	3.34	1.44	0.00				
34.00	3.34	1.44	0.00				
35.00	3.34	1.44	0.00				
36.00	3.34	1.44	0.00				
37.00	3.34	1.44	0.00				
38.00	3.34	1.44	0.00				
39.00	3.34	1.44	0.00				
40.00	3.34	1.44	0.00				
41.00	3.34	1.44	0.00				
42.00	3.34	1.44	0.00				
43.00	3.34	1.44	0.00				
44.00	3.34	1.44	0.00				
45.00	3.34	1.44	0.00				
46.00	3.34	1.44	0.00				
47.00	3.34	1.44	0.00				
48.00	3.34	1.44	0.00				
49.00	3.34	1.44	0.00				
50.00	3.34	1.44	0.00				
51.00	3.34	1.44	0.00				

Summary for Subcatchment 5S: DA Undetained South - Imp.

Runoff = 0.27 cfs @ 12.17 hrs, Volume= 0.022 af, Depth= 2.89"
Routed to Link 6L : Undetained South
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

Area (ac)	CN	Description			
0.090	96	Gravel surface, HSG D			
0.090		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	66	0.0700	0.12		Sheet Flow, Sheet Flow (AB) Woods: Light underbrush n= 0.400 P2= 3.44" Using McCuen-Spless flow length
0.8	215	0.0770	4.47		Shallow Concentrated Flow, SCF Unpaved Kx= 16.1 fps
9.8	281	Total			

Subcatchment 5S: DA Undetained South - Imp.



Hydrograph for Subcatchment 5S: DA Undetained South - Imp.

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	2.89	0.00
1.00	0.04	0.00	0.00	53.00	3.34	2.89	0.00
2.00	0.08	0.00	0.00	54.00	3.34	2.89	0.00
3.00	0.12	0.00	0.00	55.00	3.34	2.89	0.00
4.00	0.16	0.01	0.00	56.00	3.34	2.89	0.00
5.00	0.21	0.03	0.00	57.00	3.34	2.89	0.00
6.00	0.26	0.06	0.00	58.00	3.34	2.89	0.00
7.00	0.33	0.09	0.00	59.00	3.34	2.89	0.00
8.00	0.40	0.14	0.00	60.00	3.34	2.89	0.00
9.00	0.49	0.20	0.01	61.00	3.34	2.89	0.00
10.00	0.61	0.29	0.01	62.00	3.34	2.89	0.00
11.00	0.80	0.45	0.02	63.00	3.34	2.89	0.00
12.00	1.59	1.18	0.13	64.00	3.34	2.89	0.00
13.00	2.54	2.10	0.03	65.00	3.34	2.89	0.00
14.00	2.73	2.29	0.01	66.00	3.34	2.89	0.00
15.00	2.85	2.41	0.01	67.00	3.34	2.89	0.00
16.00	2.94	2.49	0.01	68.00	3.34	2.89	0.00
17.00	3.01	2.57	0.01	69.00	3.34	2.89	0.00
18.00	3.08	2.63	0.01	70.00	3.34	2.89	0.00
19.00	3.13	2.68	0.00	71.00	3.34	2.89	0.00
20.00	3.18	2.73	0.00	72.00	3.34	2.89	0.00
21.00	3.22	2.77	0.00				
22.00	3.26	2.81	0.00				
23.00	3.30	2.85	0.00				
24.00	3.34	2.89	0.00				
25.00	3.34	2.89	0.00				
26.00	3.34	2.89	0.00				
27.00	3.34	2.89	0.00				
28.00	3.34	2.89	0.00				
29.00	3.34	2.89	0.00				
30.00	3.34	2.89	0.00				
31.00	3.34	2.89	0.00				
32.00	3.34	2.89	0.00				
33.00	3.34	2.89	0.00				
34.00	3.34	2.89	0.00				
35.00	3.34	2.89	0.00				
36.00	3.34	2.89	0.00				
37.00	3.34	2.89	0.00				
38.00	3.34	2.89	0.00				
39.00	3.34	2.89	0.00				
40.00	3.34	2.89	0.00				
41.00	3.34	2.89	0.00				
42.00	3.34	2.89	0.00				
43.00	3.34	2.89	0.00				
44.00	3.34	2.89	0.00				
45.00	3.34	2.89	0.00				
46.00	3.34	2.89	0.00				
47.00	3.34	2.89	0.00				
48.00	3.34	2.89	0.00				
49.00	3.34	2.89	0.00				
50.00	3.34	2.89	0.00				
51.00	3.34	2.89	0.00				

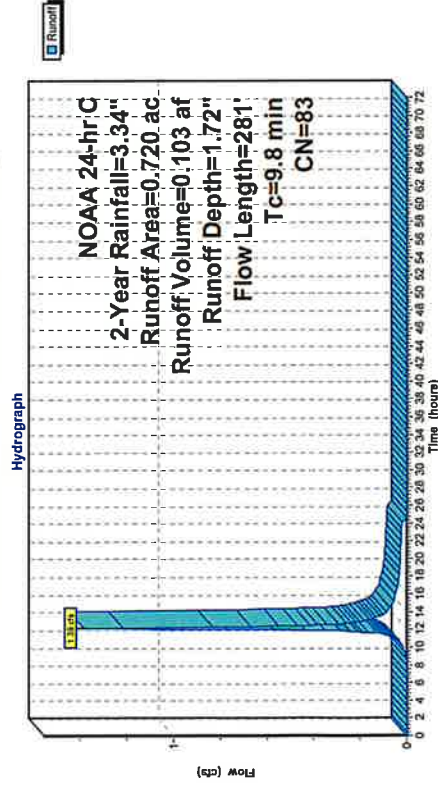
Summary for Subcatchment 7S: DA Undetained South- Perv.

Runoff = 1.39 cfs @ 12.17 hrs, Volume= 0.103 af, Depth= 1.72"
Routed to Link 6L : Undetained South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

Area (ac)	CN	Description			
0.120	80	>75% Grass cover, Good, HSG D			
0.600	83	Woods, Poor, HSG D			
0.720	83	Weighted Average			
0.720		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	66	0.0700	0.12		Sheet Flow, Sheet Flow (AB)
					Woods: Light underbrush n= 0.400 P2= 3.44"
					Using McCuen-Spiess flow length
0.8	215	0.0770	4.47		Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps
9.8	281	Total			

Subcatchment 7S: DA Undetained South- Perv.



Hydrograph for Subcatchment 7S: DA Undetained South- Perv.

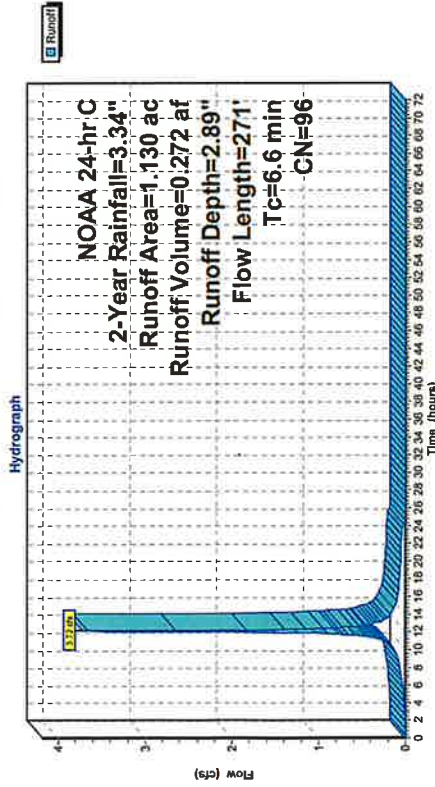
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	1.72	0.00
1.00	0.04	0.00	0.00	53.00	3.34	1.72	0.00
2.00	0.08	0.00	0.00	54.00	3.34	1.72	0.00
3.00	0.12	0.00	0.00	55.00	3.34	1.72	0.00
4.00	0.16	0.00	0.00	56.00	3.34	1.72	0.00
5.00	0.21	0.00	0.00	57.00	3.34	1.72	0.00
6.00	0.26	0.00	0.00	58.00	3.34	1.72	0.00
7.00	0.33	0.00	0.00	59.00	3.34	1.72	0.00
8.00	0.40	0.00	0.00	60.00	3.34	1.72	0.00
9.00	0.49	0.00	0.00	61.00	3.34	1.72	0.00
10.00	0.61	0.02	0.02	62.00	3.34	1.72	0.00
11.00	0.80	0.06	0.05	63.00	3.34	1.72	0.00
12.00	1.59	0.43	0.57	64.00	3.34	1.72	0.00
13.00	2.54	1.08	0.18	65.00	3.34	1.72	0.00
14.00	2.73	1.23	0.09	66.00	3.34	1.72	0.00
15.00	2.85	1.33	0.05	67.00	3.34	1.72	0.00
16.00	2.94	1.40	0.05	68.00	3.34	1.72	0.00
17.00	3.01	1.46	0.04	69.00	3.34	1.72	0.00
18.00	3.08	1.51	0.03	70.00	3.34	1.72	0.00
19.00	3.13	1.55	0.03	71.00	3.34	1.72	0.00
20.00	3.18	1.59	0.03	72.00	3.34	1.72	0.00
21.00	3.22	1.63	0.03				
22.00	3.26	1.66	0.02				
23.00	3.30	1.69	0.02				
24.00	3.34	1.72	0.02				
25.00	3.34	1.72	0.00				
26.00	3.34	1.72	0.00				
27.00	3.34	1.72	0.00				
28.00	3.34	1.72	0.00				
29.00	3.34	1.72	0.00				
30.00	3.34	1.72	0.00				
31.00	3.34	1.72	0.00				
32.00	3.34	1.72	0.00				
33.00	3.34	1.72	0.00				
34.00	3.34	1.72	0.00				
35.00	3.34	1.72	0.00				
36.00	3.34	1.72	0.00				
37.00	3.34	1.72	0.00				
38.00	3.34	1.72	0.00				
39.00	3.34	1.72	0.00				
40.00	3.34	1.72	0.00				
41.00	3.34	1.72	0.00				
42.00	3.34	1.72	0.00				
43.00	3.34	1.72	0.00				
44.00	3.34	1.72	0.00				
45.00	3.34	1.72	0.00				
46.00	3.34	1.72	0.00				
47.00	3.34	1.72	0.00				
48.00	3.34	1.72	0.00				
49.00	3.34	1.72	0.00				
50.00	3.34	1.72	0.00				
51.00	3.34	1.72	0.00				

Summary for Subcatchment 8S: DA Existing Basin. - Imp.

Runoff = 3.72 cfs @ 12.13 hrs, Volume= 0.272 af, Depth= 2.89"
Routed to Link 2L : DA Existing Basin
NOAA 24-hr C 2-Year Rainfall=3.34"
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Area (ac)	CN	Description		
1.130	96	Gravel surface, HSG D		
1.130		100.00% Pervious Area		
Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	31	0.0600	0.10	Sheet Flow, Sheet Flow - Grass
1.4	240	0.0300	2.79	Woods: Light underbrush n= 0.400 Shallow Concentrated Flow, SCF
6.6	271	Total		Unpaved Kv= 16.1 fps

Subcatchment 8S: DA Existing Basin. - Imp.



Hydrograph for Subcatchment 8S: DA Existing Basin. - Imp.

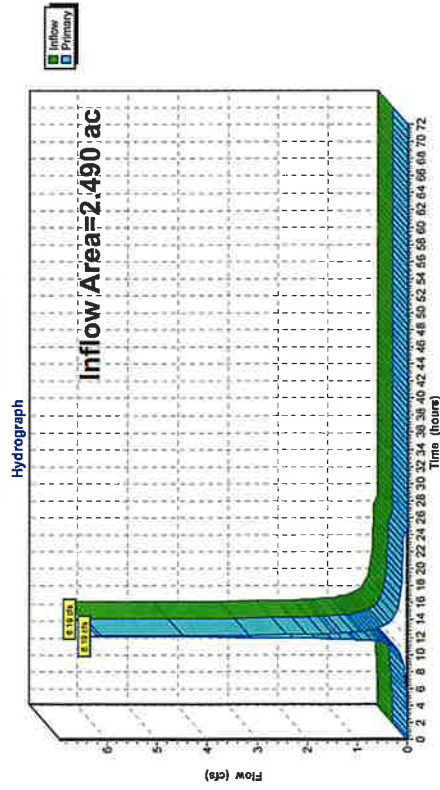
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	2.89	0.00
1.00	0.04	0.00	0.00	53.00	3.34	2.89	0.00
2.00	0.08	0.00	0.00	54.00	3.34	2.89	0.00
3.00	0.12	0.00	0.01	55.00	3.34	2.89	0.00
4.00	0.16	0.01	0.02	56.00	3.34	2.89	0.00
5.00	0.21	0.03	0.02	57.00	3.34	2.89	0.00
6.00	0.26	0.06	0.03	58.00	3.34	2.89	0.00
7.00	0.33	0.09	0.04	59.00	3.34	2.89	0.00
8.00	0.40	0.14	0.06	60.00	3.34	2.89	0.00
9.00	0.49	0.20	0.08	61.00	3.34	2.89	0.00
10.00	0.61	0.29	0.13	62.00	3.34	2.89	0.00
11.00	0.80	0.45	0.25	63.00	3.34	2.89	0.00
12.00	1.59	1.18	2.01	64.00	3.34	2.89	0.00
13.00	2.54	2.10	3.36	65.00	3.34	2.89	0.00
14.00	2.73	2.29	3.17	66.00	3.34	2.89	0.00
15.00	2.85	2.41	3.00	67.00	3.34	2.89	0.00
16.00	2.94	2.49	2.89	68.00	3.34	2.89	0.00
17.00	3.01	2.57	2.89	69.00	3.34	2.89	0.00
18.00	3.08	2.63	2.89	70.00	3.34	2.89	0.00
19.00	3.13	2.68	2.89	71.00	3.34	2.89	0.00
20.00	3.18	2.73	2.89	72.00	3.34	2.89	0.00
21.00	3.22	2.77	2.89				
22.00	3.26	2.81	2.89				
23.00	3.30	2.85	2.89				
24.00	3.34	2.89	2.89				
25.00	3.34	2.89	2.89				
26.00	3.34	2.89	2.89				
27.00	3.34	2.89	2.89				
28.00	3.34	2.89	2.89				
29.00	3.34	2.89	2.89				
30.00	3.34	2.89	2.89				
31.00	3.34	2.89	2.89				
32.00	3.34	2.89	2.89				
33.00	3.34	2.89	2.89				
34.00	3.34	2.89	2.89				
35.00	3.34	2.89	2.89				
36.00	3.34	2.89	2.89				
37.00	3.34	2.89	2.89				
38.00	3.34	2.89	2.89				
39.00	3.34	2.89	2.89				
40.00	3.34	2.89	2.89				
41.00	3.34	2.89	2.89				
42.00	3.34	2.89	2.89				
43.00	3.34	2.89	2.89				
44.00	3.34	2.89	2.89				
45.00	3.34	2.89	2.89				
46.00	3.34	2.89	2.89				
47.00	3.34	2.89	2.89				
48.00	3.34	2.89	2.89				
49.00	3.34	2.89	2.89				
50.00	3.34	2.89	2.89				
51.00	3.34	2.89	2.89				

Summary for Link 2L: DA Existing Basin

Inflow Area = 2.490 ac, 0.00% Impervious, Inflow Depth = 2.10" for 2-Year event
Inflow = 6.19 cfs @ 12.14 hrs, Volume= 0.435 af
Primary = 6.19 cfs @ 12.14 hrs, Volume= 0.435 af, Atten= 0%, Lag= 0.0 min
Routed to Link 8L : Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 2L: DA Existing Basin



Hydrograph for Link 2L: DA Existing Basin

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.01	55.00	0.00	0.00	0.00
4.00	0.02	0.00	0.02	56.00	0.00	0.00	0.00
5.00	0.03	0.00	0.03	57.00	0.00	0.00	0.00
6.00	0.03	0.00	0.03	58.00	0.00	0.00	0.00
7.00	0.04	0.00	0.04	59.00	0.00	0.00	0.00
8.00	0.06	0.00	0.06	60.00	0.00	0.00	0.00
9.00	0.08	0.00	0.08	61.00	0.00	0.00	0.00
10.00	0.14	0.00	0.14	62.00	0.00	0.00	0.00
11.00	0.31	0.00	0.31	63.00	0.00	0.00	0.00
12.00	3.12	0.00	3.12	64.00	0.00	0.00	0.00
13.00	0.85	0.00	0.85	65.00	0.00	0.00	0.00
14.00	0.31	0.00	0.31	66.00	0.00	0.00	0.00
15.00	0.21	0.00	0.21	67.00	0.00	0.00	0.00
16.00	0.17	0.00	0.17	68.00	0.00	0.00	0.00
17.00	0.15	0.00	0.15	69.00	0.00	0.00	0.00
18.00	0.12	0.00	0.12	70.00	0.00	0.00	0.00
19.00	0.11	0.00	0.11	71.00	0.00	0.00	0.00
20.00	0.10	0.00	0.10	72.00	0.00	0.00	0.00
21.00	0.10	0.00	0.10				
22.00	0.09	0.00	0.09				
23.00	0.08	0.00	0.08				
24.00	0.08	0.00	0.08				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

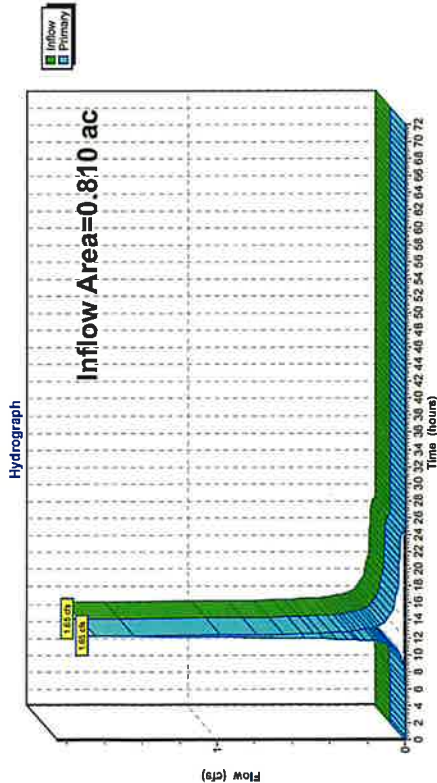
Summary for Link 6L: Undetained South

Inflow Area = 0.810 ac,
Inflow = 1.65 cfs @ 12.17 hrs, Volume= 0.125 af
Primary = 1.65 cfs @ 12.17 hrs, Volume= 0.125 af
Routed to Link 8L : Total

0.00% Impervious, Inflow Depth = 1.85" for 2-Year event
0.125 af
Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 6L: Undetained South



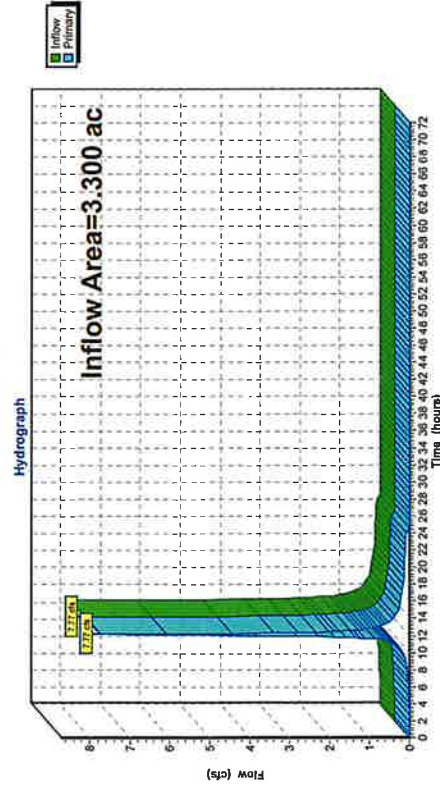
Hydrograph for Link 6L: Undetained South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.01	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.03	0.00	0.03	62.00	0.00	0.00	0.00
11.00	0.07	0.00	0.07	63.00	0.00	0.00	0.00
12.00	0.70	0.00	0.70	64.00	0.00	0.00	0.00
13.00	0.21	0.00	0.21	65.00	0.00	0.00	0.00
14.00	0.10	0.00	0.10	66.00	0.00	0.00	0.00
15.00	0.07	0.00	0.07	67.00	0.00	0.00	0.00
16.00	0.06	0.00	0.06	68.00	0.00	0.00	0.00
17.00	0.05	0.00	0.05	69.00	0.00	0.00	0.00
18.00	0.04	0.00	0.04	70.00	0.00	0.00	0.00
19.00	0.03	0.00	0.03	71.00	0.00	0.00	0.00
20.00	0.03	0.00	0.03	72.00	0.00	0.00	0.00
21.00	0.03	0.00	0.03				
22.00	0.03	0.00	0.03				
23.00	0.03	0.00	0.03				
24.00	0.03	0.00	0.03				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 8L: Total

Inflow Area = 3.300 ac, 0.00% Impervious, Inflow Depth = 2.04" for 2-Year event
Inflow = 7.77 cfs @ 12.14 hrs, Volume= 0.561 af
Primary = 7.77 cfs @ 12.14 hrs, Volume= 0.561 af, Atten= 0%, Lag= 0.0 min
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 8L: Total



Hydrograph for Link 8L: Total

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.01	0.00	0.01	55.00	0.00	0.00	0.00
4.00	0.02	0.00	0.02	56.00	0.00	0.00	0.00
5.00	0.03	0.00	0.03	57.00	0.00	0.00	0.00
6.00	0.03	0.00	0.03	58.00	0.00	0.00	0.00
7.00	0.05	0.00	0.05	59.00	0.00	0.00	0.00
8.00	0.07	0.00	0.07	60.00	0.00	0.00	0.00
9.00	0.09	0.00	0.09	61.00	0.00	0.00	0.00
10.00	0.16	0.00	0.16	62.00	0.00	0.00	0.00
11.00	0.37	0.00	0.37	63.00	0.00	0.00	0.00
12.00	3.82	0.00	3.82	64.00	0.00	0.00	0.00
13.00	0.86	0.00	0.86	65.00	0.00	0.00	0.00
14.00	0.41	0.00	0.41	66.00	0.00	0.00	0.00
15.00	0.28	0.00	0.28	67.00	0.00	0.00	0.00
16.00	0.23	0.00	0.23	68.00	0.00	0.00	0.00
17.00	0.19	0.00	0.19	69.00	0.00	0.00	0.00
18.00	0.16	0.00	0.16	70.00	0.00	0.00	0.00
19.00	0.14	0.00	0.14	71.00	0.00	0.00	0.00
20.00	0.14	0.00	0.14	72.00	0.00	0.00	0.00
21.00	0.13	0.00	0.13				
22.00	0.12	0.00	0.12				
23.00	0.11	0.00	0.11				
24.00	0.11	0.00	0.11				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment4S: DA Existing Basin - Perv. Runoff Area=1.360 ac 0.00% Impervious Runoff Depth=2.81"
Flow Length=271' Tc=6.6 min CN=79 Runoff=4.91 cfs 0.318 af

Subcatchment5S: DA Undetained South - Perv. Runoff Area=0.090 ac 0.00% Impervious Runoff Depth=4.54"
Flow Length=281' Tc=9.8 min CN=96 Runoff=0.41 cfs 0.034 af

Subcatchment7S: DA Undetained South - Perv. Runoff Area=0.720 ac 0.00% Impervious Runoff Depth=3.18"
Flow Length=281' Tc=9.8 min CN=83 Runoff=2.53 cfs 0.191 af

Subcatchment8S: DA Existing Basin. - Imp. Runoff Area=1.130 ac 0.00% Impervious Runoff Depth=4.54"
Flow Length=271' Tc=6.6 min CN=96 Runoff=5.70 cfs 0.428 af

Link 2L: DA Existing Basin
Inflow=10.51 cfs 0.746 af
Primary=10.51 cfs 0.746 af

Link 6L: Undetained South
Inflow=2.94 cfs 0.225 af
Primary=2.94 cfs 0.225 af

Link 8L: Total
Inflow=13.32 cfs 0.971 af
Primary=13.32 cfs 0.971 af

Total Runoff Area = 3.300 ac Runoff Volume = 0.971 af Average Runoff Depth = 3.53"
100.00% Pervious = 3.300 ac 0.00% Impervious = 0.000 ac

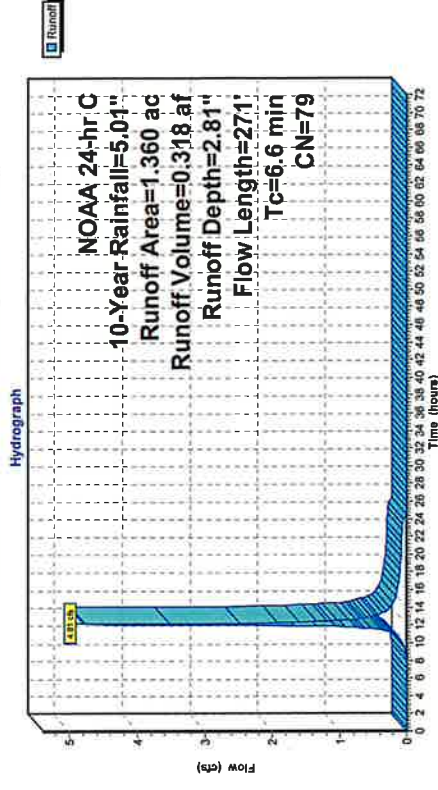
Summary for Subcatchment 4S: DA Existing Basin - Perv.

Runoff = 4.91 cfs @ 12.14 hrs, Volume= 0.318 af, Depth= 2.81"
Routed to Link 2L : DA Existing Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description			
0.560	77	Woods, Good, HSG D			
0.800	80	>75% Grass cover, Good, HSG D			
1.360	79	Weighted Average			
1.360		100.00% Pervious Area			
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
5.2	31	0.0600	0.10		Sheet Flow, Sheet Flow - Grass
					Woods: Light underbrush n= 0.400 P2= 3.44"
1.4	240	0.0300	2.79		Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps
6.6	271	Total			

Subcatchment 4S: DA Existing Basin - Perv.



Hydrograph for Subcatchment 4S: DA Existing Basin - Perv.

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	2.81	0.00
1.00	0.05	0.00	0.00	53.00	5.01	2.81	0.00
2.00	0.11	0.00	0.00	54.00	5.01	2.81	0.00
3.00	0.18	0.00	0.00	55.00	5.01	2.81	0.00
4.00	0.25	0.00	0.00	56.00	5.01	2.81	0.00
5.00	0.32	0.00	0.00	57.00	5.01	2.81	0.00
6.00	0.40	0.00	0.00	58.00	5.01	2.81	0.00
7.00	0.48	0.00	0.00	59.00	5.01	2.81	0.00
8.00	0.60	0.00	0.01	60.00	5.01	2.81	0.00
9.00	0.73	0.01	0.02	61.00	5.01	2.81	0.00
10.00	0.91	0.05	0.07	62.00	5.01	2.81	0.00
11.00	1.20	0.14	0.18	63.00	5.01	2.81	0.00
12.00	2.39	0.76	2.33	64.00	5.01	2.81	0.00
13.00	3.81	1.81	0.52	65.00	5.01	2.81	0.00
14.00	4.10	2.04	0.25	66.00	5.01	2.81	0.00
15.00	4.28	2.19	0.17	67.00	5.01	2.81	0.00
16.00	4.41	2.30	0.14	68.00	5.01	2.81	0.00
17.00	4.52	2.39	0.12	69.00	5.01	2.81	0.00
18.00	4.61	2.47	0.10	70.00	5.01	2.81	0.00
19.00	4.69	2.54	0.09	71.00	5.01	2.81	0.00
20.00	4.76	2.60	0.08	72.00	5.01	2.81	0.00
21.00	4.83	2.66	0.08				
22.00	4.90	2.71	0.07				
23.00	4.96	2.76	0.07				
24.00	5.01	2.81	0.07				
25.00	5.01	2.81	0.00				
26.00	5.01	2.81	0.00				
27.00	5.01	2.81	0.00				
28.00	5.01	2.81	0.00				
29.00	5.01	2.81	0.00				
30.00	5.01	2.81	0.00				
31.00	5.01	2.81	0.00				
32.00	5.01	2.81	0.00				
33.00	5.01	2.81	0.00				
34.00	5.01	2.81	0.00				
35.00	5.01	2.81	0.00				
36.00	5.01	2.81	0.00				
37.00	5.01	2.81	0.00				
38.00	5.01	2.81	0.00				
39.00	5.01	2.81	0.00				
40.00	5.01	2.81	0.00				
41.00	5.01	2.81	0.00				
42.00	5.01	2.81	0.00				
43.00	5.01	2.81	0.00				
44.00	5.01	2.81	0.00				
45.00	5.01	2.81	0.00				
46.00	5.01	2.81	0.00				
47.00	5.01	2.81	0.00				
48.00	5.01	2.81	0.00				
49.00	5.01	2.81	0.00				
50.00	5.01	2.81	0.00				
51.00	5.01	2.81	0.00				

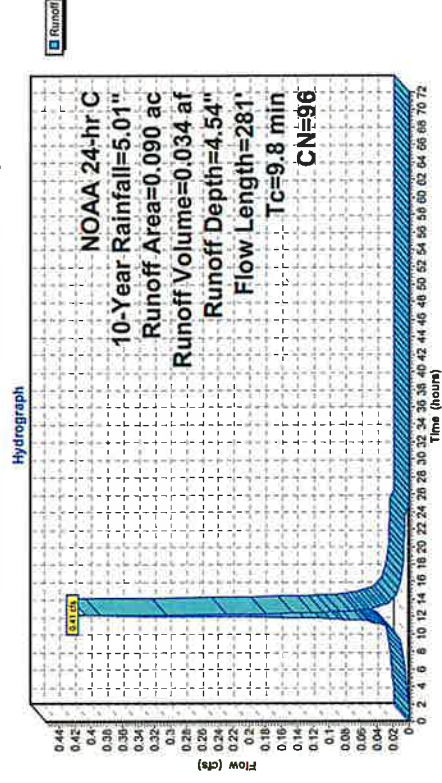
Summary for Subcatchment 5S: DA Undetained South - Imp.

Runoff = 0.41 cfs @ 12.17 hrs, Volume= 0.034 af, Depth= 4.54"
Routed to Link 6L : Undetained South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description			
0.090	96	Gravel surface, HSG D			
0.090		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	66	0.0700	0.12		Sheet Flow, Sheet Flow (AB) Woods: Light underbrush n= 0.400 P2= 3.44" Using McCuen-Spless flow length
0.8	215	0.0770	4.47		Shallow Concentrated Flow, SCF Unpaved Kv= 16.1 fps
9.8	281	Total			

Subcatchment 5S: DA Undetained South - Imp.



Hydrograph for Subcatchment 5S: DA Undetained South - Imp.

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	4.54	0.00
1.00	0.05	0.00	0.00	53.00	5.01	4.54	0.00
2.00	0.11	0.00	0.00	54.00	5.01	4.54	0.00
3.00	0.18	0.02	0.00	55.00	5.01	4.54	0.00
4.00	0.25	0.05	0.00	56.00	5.01	4.54	0.00
5.00	0.32	0.08	0.00	57.00	5.01	4.54	0.00
6.00	0.40	0.13	0.00	58.00	5.01	4.54	0.00
7.00	0.49	0.20	0.01	59.00	5.01	4.54	0.00
8.00	0.60	0.29	0.01	60.00	5.01	4.54	0.00
9.00	0.73	0.39	0.01	61.00	5.01	4.54	0.00
10.00	0.91	0.55	0.02	62.00	5.01	4.54	0.00
11.00	1.20	0.82	0.03	63.00	5.01	4.54	0.00
12.00	2.39	1.95	0.20	64.00	5.01	4.54	0.00
13.00	3.81	3.35	0.05	65.00	5.01	4.54	0.00
14.00	4.10	3.64	0.02	66.00	5.01	4.54	0.00
15.00	4.28	3.82	0.01	67.00	5.01	4.54	0.00
16.00	4.41	3.95	0.01	68.00	5.01	4.54	0.00
17.00	4.52	4.06	0.01	69.00	5.01	4.54	0.00
18.00	4.61	4.15	0.01	70.00	5.01	4.54	0.00
19.00	4.69	4.23	0.01	71.00	5.01	4.54	0.00
20.00	4.76	4.30	0.01	72.00	5.01	4.54	0.00
21.00	4.83	4.37	0.01				
22.00	4.90	4.43	0.01				
23.00	4.95	4.49	0.01				
24.00	5.01	4.54	0.00				
25.00	5.01	4.54	0.00				
26.00	5.01	4.54	0.00				
27.00	5.01	4.54	0.00				
28.00	5.01	4.54	0.00				
29.00	5.01	4.54	0.00				
30.00	5.01	4.54	0.00				
31.00	5.01	4.54	0.00				
32.00	5.01	4.54	0.00				
33.00	5.01	4.54	0.00				
34.00	5.01	4.54	0.00				
35.00	5.01	4.54	0.00				
36.00	5.01	4.54	0.00				
37.00	5.01	4.54	0.00				
38.00	5.01	4.54	0.00				
39.00	5.01	4.54	0.00				
40.00	5.01	4.54	0.00				
41.00	5.01	4.54	0.00				
42.00	5.01	4.54	0.00				
43.00	5.01	4.54	0.00				
44.00	5.01	4.54	0.00				
45.00	5.01	4.54	0.00				
46.00	5.01	4.54	0.00				
47.00	5.01	4.54	0.00				
48.00	5.01	4.54	0.00				
49.00	5.01	4.54	0.00				
50.00	5.01	4.54	0.00				
51.00	5.01	4.54	0.00				

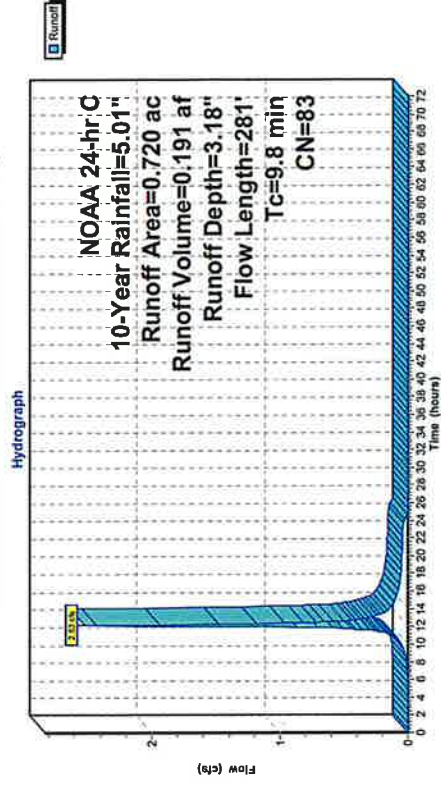
Summary for Subcatchment 7S: DA Undetained South- Perv.

Runoff = 2.53 cfs @ 12.17 hrs, Volume= 0.191 af, Depth= 3.18"
Routed to Link 6L : Undetained South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description
0.120	80	>75% Grass cover, Good, HSG D
0.600	83	Woods, Poor, HSG D
0.720	83	Weighted Average
100.00% Pervious Area		
Tc (min)	Slope (ft/ft)	Capacity (cfs)
9.0	66	0.0700
Sheet Flow, Sheet Flow (AB)		
Woods: Light underbrush n= 0.400 P2= 3.44"		
Using McCuen-Spiess flow length		
Shallow Concentrated Flow, SCF		
Unpaved Kv= 16.1 fps		
0.8	215	0.0770
4.47		
9.8	281	Total

Subcatchment 7S: DA Undetained South- Perv.



Hydrograph for Subcatchment 7S: DA Undetained South- Perv.

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	3.18	0.00
1.00	0.05	0.00	0.00	53.00	5.01	3.18	0.00
2.00	0.11	0.00	0.00	54.00	5.01	3.18	0.00
3.00	0.18	0.00	0.00	55.00	5.01	3.18	0.00
4.00	0.25	0.00	0.00	56.00	5.01	3.18	0.00
5.00	0.32	0.00	0.00	57.00	5.01	3.18	0.00
6.00	0.40	0.00	0.00	58.00	5.01	3.18	0.00
7.00	0.49	0.00	0.00	59.00	5.01	3.18	0.00
8.00	0.60	0.02	0.01	60.00	5.01	3.18	0.00
9.00	0.73	0.04	0.02	61.00	5.01	3.18	0.00
10.00	0.91	0.10	0.05	62.00	5.01	3.18	0.00
11.00	1.20	0.22	0.12	63.00	5.01	3.18	0.00
12.00	2.39	0.97	1.42	64.00	5.01	3.18	0.00
13.00	3.81	2.12	3.31	65.00	5.01	3.18	0.00
14.00	4.10	2.37	0.15	66.00	5.01	3.18	0.00
15.00	4.28	2.53	0.10	67.00	5.01	3.18	0.00
16.00	4.41	2.65	0.08	68.00	5.01	3.18	0.00
17.00	4.52	2.74	0.07	69.00	5.01	3.18	0.00
18.00	4.61	2.83	0.05	70.00	5.01	3.18	0.00
19.00	4.69	2.90	0.05	71.00	5.01	3.18	0.00
20.00	4.76	2.96	0.05	72.00	5.01	3.18	0.00
21.00	4.83	3.02	0.04				
22.00	4.90	3.08	0.04				
23.00	4.96	3.13	0.04				
24.00	5.01	3.18	0.04				
25.00	5.01	3.18	0.00				
26.00	5.01	3.18	0.00				
27.00	5.01	3.18	0.00				
28.00	5.01	3.18	0.00				
29.00	5.01	3.18	0.00				
30.00	5.01	3.18	0.00				
31.00	5.01	3.18	0.00				
32.00	5.01	3.18	0.00				
33.00	5.01	3.18	0.00				
34.00	5.01	3.18	0.00				
35.00	5.01	3.18	0.00				
36.00	5.01	3.18	0.00				
37.00	5.01	3.18	0.00				
38.00	5.01	3.18	0.00				
39.00	5.01	3.18	0.00				
40.00	5.01	3.18	0.00				
41.00	5.01	3.18	0.00				
42.00	5.01	3.18	0.00				
43.00	5.01	3.18	0.00				
44.00	5.01	3.18	0.00				
45.00	5.01	3.18	0.00				
46.00	5.01	3.18	0.00				
47.00	5.01	3.18	0.00				
48.00	5.01	3.18	0.00				
49.00	5.01	3.18	0.00				
50.00	5.01	3.18	0.00				
51.00	5.01	3.18	0.00				

Summary for Subcatchment 8S: DA Existing Basin. - Imp.

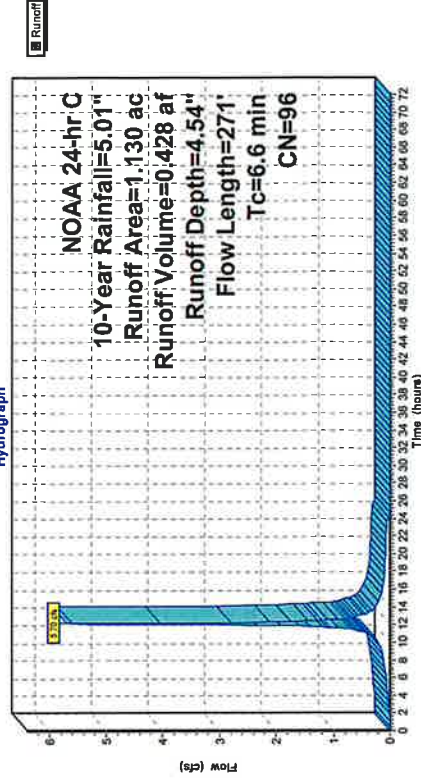
Runoff = 5.70 cfs @ 12.13 hrs, Volume= 0.428 af, Depth= 4.54"
Routed to Link 2L : DA Existing Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description			
1.130	96	Gravel surface, HSG D			
1.130		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	31	0.0600	0.10		Sheet Flow, Sheet Flow - Grass
1.4	240	0.0300	2.79		Woods: Light underbrush n= 0.400 P2= 3.44"
					Shallow Concentrated Flow, SCF
					Unpaved K _v = 16.1 fps
6.6	271	Total			

Subcatchment 8S: DA Existing Basin. - Imp.

Hydrograph



Hydrograph for Subcatchment 8S: DA Existing Basin. - Imp.

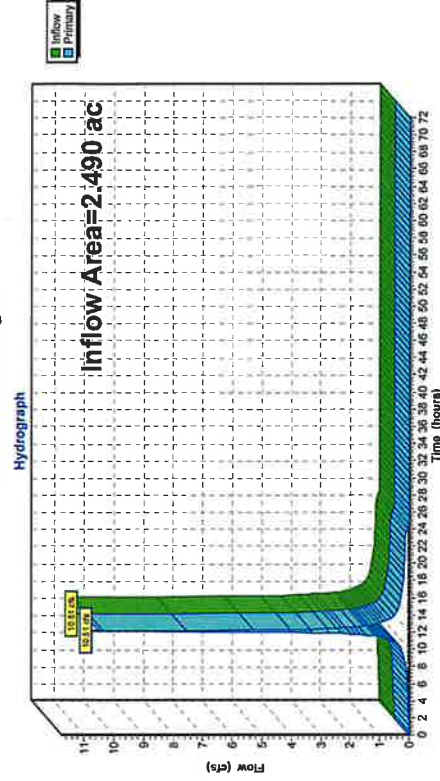
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	4.54	0.00
1.00	0.05	0.00	0.00	53.00	5.01	4.54	0.00
2.00	0.11	0.00	0.01	54.00	5.01	4.54	0.00
3.00	0.18	0.02	0.02	55.00	5.01	4.54	0.00
4.00	0.25	0.05	0.04	56.00	5.01	4.54	0.00
5.00	0.32	0.08	0.05	57.00	5.01	4.54	0.00
6.00	0.40	0.13	0.06	58.00	5.01	4.54	0.00
7.00	0.49	0.20	0.08	59.00	5.01	4.54	0.00
8.00	0.60	0.29	0.11	60.00	5.01	4.54	0.00
9.00	0.73	0.39	0.13	61.00	5.01	4.54	0.00
10.00	0.91	0.55	0.21	62.00	5.01	4.54	0.00
11.00	1.20	0.82	0.40	63.00	5.01	4.54	0.00
12.00	2.39	1.95	3.11	64.00	5.01	4.54	0.00
13.00	3.81	3.35	0.54	65.00	5.01	4.54	0.00
14.00	4.10	3.64	0.26	66.00	5.01	4.54	0.00
15.00	4.28	3.82	0.17	67.00	5.01	4.54	0.00
16.00	4.41	3.95	0.14	68.00	5.01	4.54	0.00
17.00	4.52	4.06	0.12	69.00	5.01	4.54	0.00
18.00	4.61	4.15	0.09	70.00	5.01	4.54	0.00
19.00	4.69	4.23	0.08	71.00	5.01	4.54	0.00
20.00	4.76	4.30	0.08	72.00	5.01	4.54	0.00
21.00	4.83	4.37	0.08				
22.00	4.90	4.43	0.07				
23.00	4.96	4.49	0.06				
24.00	5.01	4.54	0.07				
25.00	5.01	4.54	0.00				
26.00	5.01	4.54	0.00				
27.00	5.01	4.54	0.00				
28.00	5.01	4.54	0.00				
29.00	5.01	4.54	0.00				
30.00	5.01	4.54	0.00				
31.00	5.01	4.54	0.00				
32.00	5.01	4.54	0.00				
33.00	5.01	4.54	0.00				
34.00	5.01	4.54	0.00				
35.00	5.01	4.54	0.00				
36.00	5.01	4.54	0.00				
37.00	5.01	4.54	0.00				
38.00	5.01	4.54	0.00				
39.00	5.01	4.54	0.00				
40.00	5.01	4.54	0.00				
41.00	5.01	4.54	0.00				
42.00	5.01	4.54	0.00				
43.00	5.01	4.54	0.00				
44.00	5.01	4.54	0.00				
45.00	5.01	4.54	0.00				
46.00	5.01	4.54	0.00				
47.00	5.01	4.54	0.00				
48.00	5.01	4.54	0.00				
49.00	5.01	4.54	0.00				
50.00	5.01	4.54	0.00				
51.00	5.01	4.54	0.00				

Summary for Link 2L: DA Existing Basin

Inflow Area = 2.490 ac, 0.00% Impervious, Inflow Depth = 3.60" for 10-Year event
Inflow = 10.51 cfs @ 12.14 hrs, Volume= 0.746 af
Primary = 10.51 cfs @ 12.14 hrs, Volume= 0.746 af, Atten= 0%, Lag= 0.0 min
Routed to Link 8L: Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 2L: DA Existing Basin



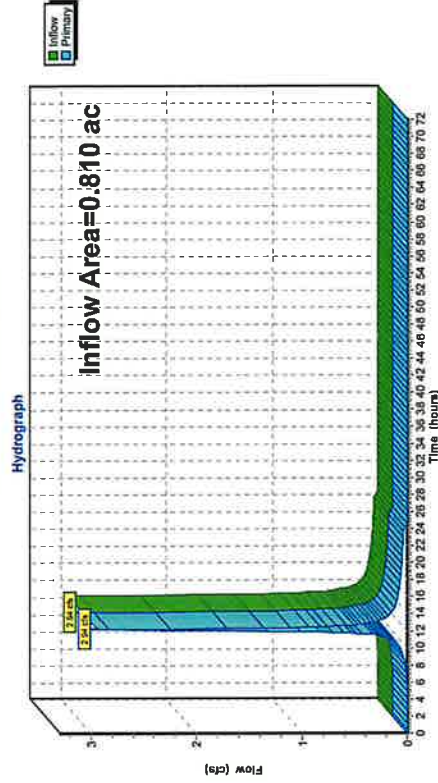
Hydrograph for Link 2L: DA Existing Basin

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	32.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.01	0.00	0.01	54.00	0.00	0.00	0.00
3.00	0.02	0.00	0.02	55.00	0.00	0.00	0.00
4.00	0.04	0.00	0.04	56.00	0.00	0.00	0.00
5.00	0.05	0.00	0.05	57.00	0.00	0.00	0.00
6.00	0.06	0.00	0.06	58.00	0.00	0.00	0.00
7.00	0.08	0.00	0.08	59.00	0.00	0.00	0.00
8.00	0.12	0.00	0.12	60.00	0.00	0.00	0.00
9.00	0.16	0.00	0.16	61.00	0.00	0.00	0.00
10.00	0.28	0.00	0.28	62.00	0.00	0.00	0.00
11.00	0.58	0.00	0.58	63.00	0.00	0.00	0.00
12.00	5.44	0.00	5.44	64.00	0.00	0.00	0.00
13.00	1.06	0.00	1.06	65.00	0.00	0.00	0.00
14.00	0.51	0.00	0.51	66.00	0.00	0.00	0.00
15.00	0.34	0.00	0.34	67.00	0.00	0.00	0.00
16.00	0.28	0.00	0.28	68.00	0.00	0.00	0.00
17.00	0.24	0.00	0.24	69.00	0.00	0.00	0.00
18.00	0.19	0.00	0.19	70.00	0.00	0.00	0.00
19.00	0.18	0.00	0.18	71.00	0.00	0.00	0.00
20.00	0.16	0.00	0.16	72.00	0.00	0.00	0.00
21.00	0.15	0.00	0.15				
22.00	0.14	0.00	0.14				
23.00	0.13	0.00	0.13				
24.00	0.14	0.00	0.14				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 6L: Undetained South

Inflow Area = 0.810 ac, 0.00% Impervious, Inflow Depth = 3.33" for 10-Year event
 Inflow = 2.94 cfs @ 12.17 hrs, Volume = 0.225 af
 Primary = 2.94 cfs @ 12.17 hrs, Volume = 0.225 af, Atten= 0%, Lag= 0.0 min
 Routed to Link 8L: Total
 Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 6L: Undetained South



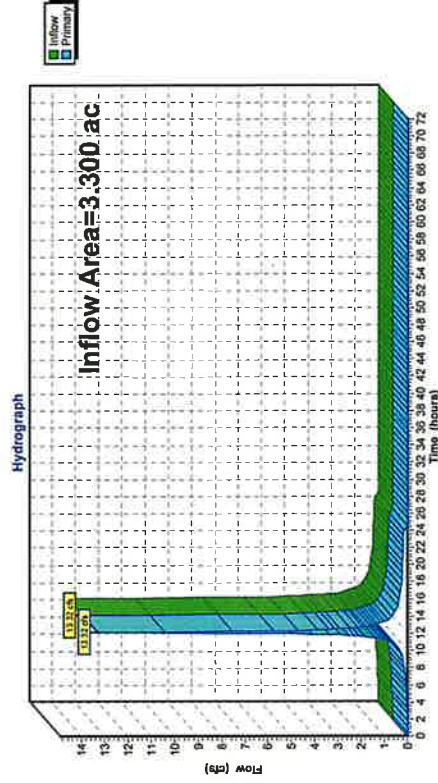
Hydrograph for Link 6L: Undetained South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.01	0.00	0.01	59.00	0.00	0.00	0.00
8.00	0.02	0.00	0.02	60.00	0.00	0.00	0.00
9.00	0.03	0.00	0.03	61.00	0.00	0.00	0.00
10.00	0.07	0.00	0.07	62.00	0.00	0.00	0.00
11.00	0.15	0.00	0.15	63.00	0.00	0.00	0.00
12.00	1.32	0.00	1.32	64.00	0.00	0.00	0.00
13.00	0.36	0.00	0.36	65.00	0.00	0.00	0.00
14.00	0.17	0.00	0.17	66.00	0.00	0.00	0.00
15.00	0.11	0.00	0.11	67.00	0.00	0.00	0.00
16.00	0.09	0.00	0.09	68.00	0.00	0.00	0.00
17.00	0.08	0.00	0.08	69.00	0.00	0.00	0.00
18.00	0.06	0.00	0.06	70.00	0.00	0.00	0.00
19.00	0.05	0.00	0.05	71.00	0.00	0.00	0.00
20.00	0.05	0.00	0.05	72.00	0.00	0.00	0.00
21.00	0.05	0.00	0.05				
22.00	0.05	0.00	0.05				
23.00	0.04	0.00	0.04				
24.00	0.04	0.00	0.04				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 8L: Total

Inflow Area = 3.300 ac, 0.00% Impervious, Inflow Depth = 3.53" for 10-Year event
Inflow = 13.32 cfs @ 12.14 hrs, Volume = 0.971 af
Primary = 13.32 cfs @ 12.14 hrs, Volume = 0.971 af, Atten= 0%, Lag= 0.0 min
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 8L: Total



Hydrograph for Link 8L: Total

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.01	0.00	0.01	54.00	0.00	0.00	0.00
3.00	0.03	0.00	0.03	55.00	0.00	0.00	0.00
4.00	0.04	0.00	0.04	56.00	0.00	0.00	0.00
5.00	0.05	0.00	0.05	57.00	0.00	0.00	0.00
6.00	0.07	0.00	0.07	58.00	0.00	0.00	0.00
7.00	0.09	0.00	0.09	59.00	0.00	0.00	0.00
8.00	0.14	0.00	0.14	60.00	0.00	0.00	0.00
9.00	0.19	0.00	0.19	61.00	0.00	0.00	0.00
10.00	0.35	0.00	0.35	62.00	0.00	0.00	0.00
11.00	0.74	0.00	0.74	63.00	0.00	0.00	0.00
12.00	6.75	0.00	6.75	64.00	0.00	0.00	0.00
13.00	1.42	0.00	1.42	65.00	0.00	0.00	0.00
14.00	0.68	0.00	0.68	66.00	0.00	0.00	0.00
15.00	0.46	0.00	0.46	67.00	0.00	0.00	0.00
16.00	0.37	0.00	0.37	68.00	0.00	0.00	0.00
17.00	0.31	0.00	0.31	69.00	0.00	0.00	0.00
18.00	0.25	0.00	0.25	70.00	0.00	0.00	0.00
19.00	0.23	0.00	0.23	71.00	0.00	0.00	0.00
20.00	0.22	0.00	0.22	72.00	0.00	0.00	0.00
21.00	0.20	0.00	0.20				
22.00	0.19	0.00	0.19				
23.00	0.17	0.00	0.17				
24.00	0.18	0.00	0.18				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment4S: DA Existing Basin - Perv. Runoff Area=1.360 ac 0.00% Impervious Runoff Depth=5.70"
Flow Length=271' Tc=6.6 min CN=79 Runoff=9.50 cfs 0.646 af

Subcatchment5S: DA Undetained South - Runoff Area=0.090 ac 0.00% Impervious Runoff Depth=7.73"
Flow Length=281' Tc=9.8 min CN=96 Runoff=0.68 cfs 0.058 af

Subcatchment7S: DA Undetained South- Runoff Area=0.720 ac 0.00% Impervious Runoff Depth=6.18"
Flow Length=281' Tc=9.8 min CN=83 Runoff=4.77 cfs 0.371 af

Subcatchment8S: DA Existing Basin. - Imp. Runoff Area=1.130 ac 0.00% Impervious Runoff Depth=7.73"
Flow Length=271' Tc=6.6 min CN=86 Runoff=9.46 cfs 0.728 af

Link 2L: DA Existing Basin

Inflow=18.96 cfs 1.374 af
Primary=18.96 cfs 1.374 af

Link 6L: Undetained South

Inflow=5.45 cfs 0.429 af
Primary=5.45 cfs 0.429 af

Link 8L: Total

Inflow=24.19 cfs 1.803 af
Primary=24.19 cfs 1.803 af

Total Runoff Area = 3.300 ac Runoff Volume = 1.803 af Average Runoff Depth = 6.56"
100.00% Pervious = 3.300 ac 0.00% Impervious = 0.000 ac

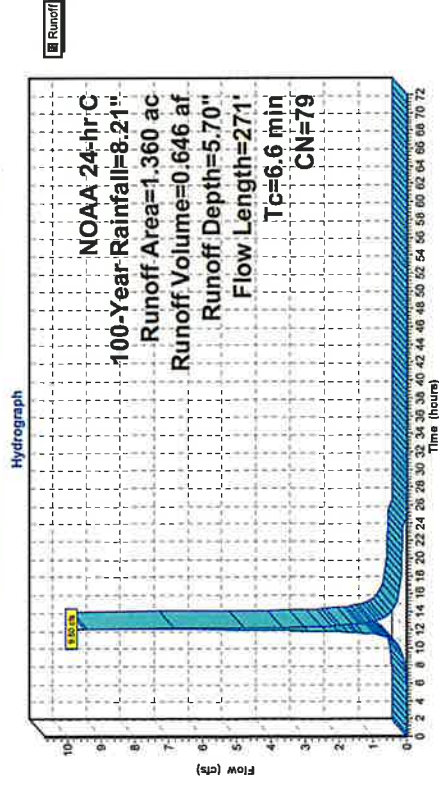
Summary for Subcatchment 4S: DA Existing Basin - Perv.

Runoff = 9.50 cfs @ 12.14 hrs, Volume= 0.646 af, Depth= 5.70"
Routed to Link 2L : DA Existing Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description		
0.560	77	Woods, Good, HSG D		
0.800	80	>75% Grass cover, Good, HSG D		
1.360	79	Weighted Average		
1.360		100.00% Pervious Area		
Tc (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	31	0.0600	0.10	Sheet Flow, Sheet Flow - Grass
				Woods: Light underbrush n= 0.400 P2= 3.44"
1.4	240	0.0300	2.79	Shallow Concentrated Flow, SCF
				Unpaved Kv= 16.1 fps

Subcatchment 4S: DA Existing Basin - Perv.



Hydrograph for Subcatchment 4S: DA Existing Basin - Perv.

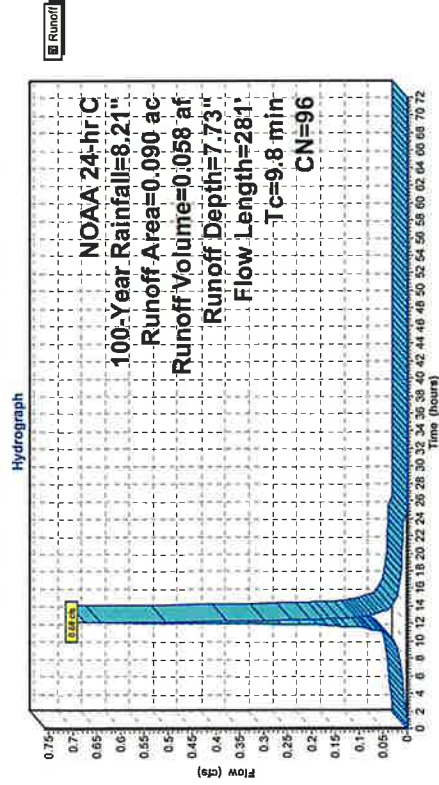
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	5.70	0.00
1.00	0.09	0.00	0.00	53.00	8.21	5.70	0.00
2.00	0.19	0.00	0.00	54.00	8.21	5.70	0.00
3.00	0.29	0.00	0.00	55.00	8.21	5.70	0.00
4.00	0.40	0.00	0.00	56.00	8.21	5.70	0.00
5.00	0.52	0.00	0.00	57.00	8.21	5.70	0.00
6.00	0.65	0.01	0.01	58.00	8.21	5.70	0.00
7.00	0.80	0.02	0.04	59.00	8.21	5.70	0.00
8.00	0.98	0.07	0.07	60.00	8.21	5.70	0.00
9.00	1.20	0.13	0.11	61.00	8.21	5.70	0.00
10.00	1.50	0.26	0.21	62.00	8.21	5.70	0.00
11.00	1.97	0.51	0.49	63.00	8.21	5.70	0.00
12.00	3.91	1.89	4.87	64.00	8.21	5.70	0.00
13.00	6.24	3.89	0.96	65.00	8.21	5.70	0.00
14.00	6.71	4.32	0.46	66.00	8.21	5.70	0.00
15.00	7.01	4.59	0.31	67.00	8.21	5.70	0.00
16.00	7.23	4.79	0.25	68.00	8.21	5.70	0.00
17.00	7.41	4.96	0.21	69.00	8.21	5.70	0.00
18.00	7.56	5.10	0.17	70.00	8.21	5.70	0.00
19.00	7.69	5.22	0.16	71.00	8.21	5.70	0.00
20.00	7.81	5.33	0.15	72.00	8.21	5.70	0.00
21.00	7.92	5.43	0.14				
22.00	8.02	5.53	0.13				
23.00	8.12	5.62	0.12				
24.00	8.21	5.70	0.12				
25.00	8.21	5.70	0.00				
26.00	8.21	5.70	0.00				
27.00	8.21	5.70	0.00				
28.00	8.21	5.70	0.00				
29.00	8.21	5.70	0.00				
30.00	8.21	5.70	0.00				
31.00	8.21	5.70	0.00				
32.00	8.21	5.70	0.00				
33.00	8.21	5.70	0.00				
34.00	8.21	5.70	0.00				
35.00	8.21	5.70	0.00				
36.00	8.21	5.70	0.00				
37.00	8.21	5.70	0.00				
38.00	8.21	5.70	0.00				
39.00	8.21	5.70	0.00				
40.00	8.21	5.70	0.00				
41.00	8.21	5.70	0.00				
42.00	8.21	5.70	0.00				
43.00	8.21	5.70	0.00				
44.00	8.21	5.70	0.00				
45.00	8.21	5.70	0.00				
46.00	8.21	5.70	0.00				
47.00	8.21	5.70	0.00				
48.00	8.21	5.70	0.00				
49.00	8.21	5.70	0.00				
50.00	8.21	5.70	0.00				
51.00	8.21	5.70	0.00				

Summary for Subcatchment 5S: DA Undetained South - Imp.

Runoff = 0.68 cfs @ 12.17 hrs, Volume= 0.058 af, Depth= 7.73"
Routed to Link 6L : Undetained South
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description			
0.090	96	Gravel surface, HSG D			
0.090		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	66	0.0700	0.12		Sheet Flow, Sheet Flow (AB) Woods: Light underbrush n= 0.400 P2= 3.44" Using McGuen-Spless flow length
0.8	215	0.0770	4.47		Shallow Concentrated Flow, SCF Unpaved Kv= 16.1 fps

Subcatchment 5S: DA Undetained South - Imp.



Hydrograph for Subcatchment 5S: DA Undetained South - Imp.

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	7.73	0.00
1.00	0.09	0.00	0.00	53.00	8.21	7.73	0.00
2.00	0.19	0.02	0.00	54.00	8.21	7.73	0.00
3.00	0.29	0.07	0.01	55.00	8.21	7.73	0.00
4.00	0.40	0.14	0.01	56.00	8.21	7.73	0.00
5.00	0.52	0.23	0.01	57.00	8.21	7.73	0.00
6.00	0.65	0.33	0.01	58.00	8.21	7.73	0.00
7.00	0.80	0.45	0.01	59.00	8.21	7.73	0.00
8.00	0.98	0.62	0.02	60.00	8.21	7.73	0.00
9.00	1.20	0.81	0.02	61.00	8.21	7.73	0.00
10.00	1.50	1.09	0.03	62.00	8.21	7.73	0.00
11.00	1.97	1.55	0.05	63.00	8.21	7.73	0.00
12.00	3.91	3.45	0.33	64.00	8.21	7.73	0.00
13.00	6.24	5.77	0.07	65.00	8.21	7.73	0.00
14.00	6.71	6.24	0.03	66.00	8.21	7.73	0.00
15.00	7.01	6.53	0.02	67.00	8.21	7.73	0.00
16.00	7.23	6.83	0.02	68.00	8.21	7.73	0.00
17.00	7.41	7.08	0.01	69.00	8.21	7.73	0.00
18.00	7.56	7.21	0.01	70.00	8.21	7.73	0.00
19.00	7.69	7.33	0.01	71.00	8.21	7.73	0.00
20.00	7.81	7.44	0.01	72.00	8.21	7.73	0.00
21.00	7.92	7.55	0.01				
22.00	8.02	7.64	0.01				
23.00	8.12	7.73	0.01				
24.00	8.21	7.73	0.00				
25.00	8.21	7.73	0.00				
26.00	8.21	7.73	0.00				
27.00	8.21	7.73	0.00				
28.00	8.21	7.73	0.00				
29.00	8.21	7.73	0.00				
30.00	8.21	7.73	0.00				
31.00	8.21	7.73	0.00				
32.00	8.21	7.73	0.00				
33.00	8.21	7.73	0.00				
34.00	8.21	7.73	0.00				
35.00	8.21	7.73	0.00				
36.00	8.21	7.73	0.00				
37.00	8.21	7.73	0.00				
38.00	8.21	7.73	0.00				
39.00	8.21	7.73	0.00				
40.00	8.21	7.73	0.00				
41.00	8.21	7.73	0.00				
42.00	8.21	7.73	0.00				
43.00	8.21	7.73	0.00				
44.00	8.21	7.73	0.00				
45.00	8.21	7.73	0.00				
46.00	8.21	7.73	0.00				
47.00	8.21	7.73	0.00				
48.00	8.21	7.73	0.00				
49.00	8.21	7.73	0.00				
50.00	8.21	7.73	0.00				
51.00	8.21	7.73	0.00				

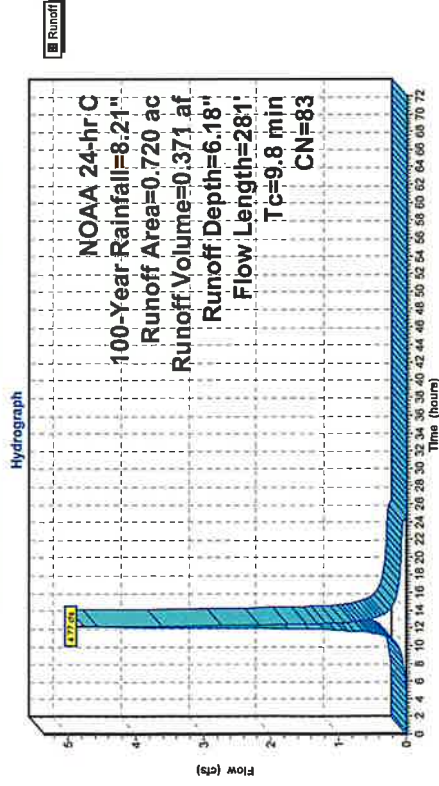
Summary for Subcatchment 7S: DA Undetained South- Perv.

Runoff = 4.77 cfs @ 12.17 hrs, Volume= 0.371 af, Depth= 6.18"
Routed to Link 6L : Undetained South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description		
0.120	80	>75% Grass cover, Good, HSG D		
0.600	83	Woods, Poor, HSG D		
0.720	83	Weighted Average		
0.720		100.00% Pervious Area		
Tc (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	66	0.0700	0.12	Sheet Flow, Sheet Flow (AB) Woods: Light underbrush n= 0.400 P2= 3.44" Using McCuen-Spiess flow length
0.8	215	0.0770	4.47	Shallow Concentrated Flow, SCF Unpaved Kv= 16.1 fps
9.8	281	Total		

Subcatchment 7S: DA Undetained South- Perv.



Hydrograph for Subcatchment 7S: DA Undetained South- Perv.

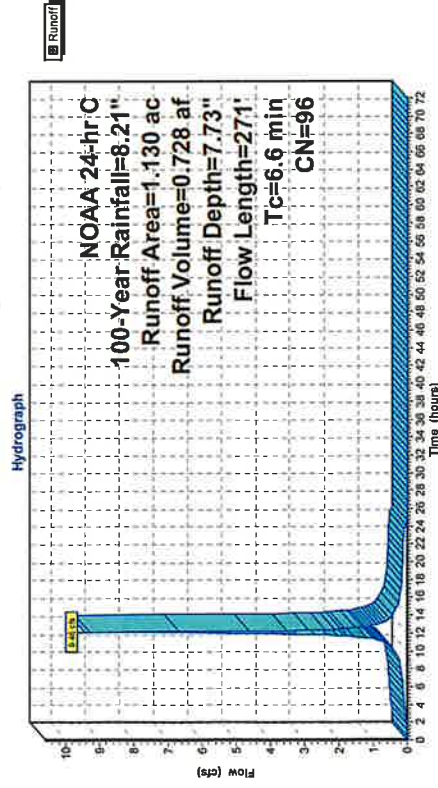
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	6.18	0.00
1.00	0.09	0.00	0.00	53.00	8.21	6.18	0.00
2.00	0.19	0.00	0.00	54.00	8.21	6.18	0.00
3.00	0.29	0.00	0.00	55.00	8.21	6.18	0.00
4.00	0.40	0.00	0.00	56.00	8.21	6.18	0.00
5.00	0.52	0.01	0.01	57.00	8.21	6.18	0.00
6.00	0.65	0.03	0.02	58.00	8.21	6.18	0.00
7.00	0.80	0.06	0.03	59.00	8.21	6.18	0.00
8.00	0.98	0.13	0.05	60.00	8.21	6.18	0.00
9.00	1.20	0.22	0.08	61.00	8.21	6.18	0.00
10.00	1.50	0.38	0.14	62.00	8.21	6.18	0.00
11.00	1.97	0.67	0.29	63.00	8.21	6.18	0.00
12.00	3.91	2.21	2.22	64.00	8.21	6.18	0.00
13.00	6.24	4.31	0.56	65.00	8.21	6.18	0.00
14.00	6.71	4.76	0.26	66.00	8.21	6.18	0.00
15.00	7.01	5.04	0.17	67.00	8.21	6.18	0.00
16.00	7.23	5.24	0.14	68.00	8.21	6.18	0.00
17.00	7.41	5.42	0.12	69.00	8.21	6.18	0.00
18.00	7.56	5.56	0.10	70.00	8.21	6.18	0.00
19.00	7.69	5.68	0.09	71.00	8.21	6.18	0.00
20.00	7.81	5.79	0.08	72.00	8.21	6.18	0.00
21.00	7.92	5.90	0.08				
22.00	8.02	6.00	0.07				
23.00	8.12	6.09	0.06				
24.00	8.21	6.18	0.06				
25.00	8.21	6.18	0.00				
26.00	8.21	6.18	0.00				
27.00	8.21	6.18	0.00				
28.00	8.21	6.18	0.00				
29.00	8.21	6.18	0.00				
30.00	8.21	6.18	0.00				
31.00	8.21	6.18	0.00				
32.00	8.21	6.18	0.00				
33.00	8.21	6.18	0.00				
34.00	8.21	6.18	0.00				
35.00	8.21	6.18	0.00				
36.00	8.21	6.18	0.00				
37.00	8.21	6.18	0.00				
38.00	8.21	6.18	0.00				
39.00	8.21	6.18	0.00				
40.00	8.21	6.18	0.00				
41.00	8.21	6.18	0.00				
42.00	8.21	6.18	0.00				
43.00	8.21	6.18	0.00				
44.00	8.21	6.18	0.00				
45.00	8.21	6.18	0.00				
46.00	8.21	6.18	0.00				
47.00	8.21	6.18	0.00				
48.00	8.21	6.18	0.00				
49.00	8.21	6.18	0.00				
50.00	8.21	6.18	0.00				
51.00	8.21	6.18	0.00				

Summary for Subcatchment 8S: DA Existing Basin. - Imp.

Runoff = 9.46 cfs @ 12.13 hrs, Volume= 0.728 af, Depth= 7.73"
Routed to Link 2L : DA Existing Basin
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description			
1.130	96	Gravel surface, HSG D			
1.130		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	31	0.0600	0.10		Sheet Flow, Sheet Flow - Grass
					Woods: Light underbrush n= 0.400 P2= 3.44"
1.4	240	0.0300	2.79		Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps
6.6	271	Total			

Subcatchment 8S: DA Existing Basin. - Imp.



Hydrograph for Subcatchment 8S: DA Existing Basin. - Imp.

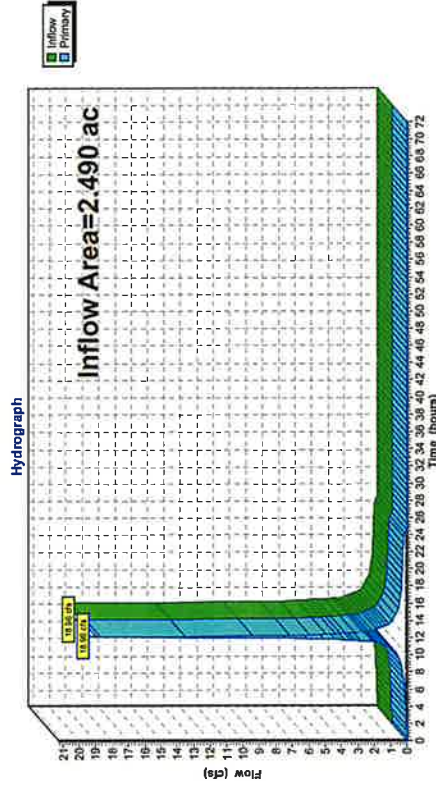
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	7.73	0.00
1.00	0.09	0.00	0.00	53.00	8.21	7.73	0.00
2.00	0.19	0.02	0.04	54.00	8.21	7.73	0.00
3.00	0.29	0.07	0.07	55.00	8.21	7.73	0.00
4.00	0.40	0.14	0.09	56.00	8.21	7.73	0.00
5.00	0.52	0.23	0.11	57.00	8.21	7.73	0.00
6.00	0.65	0.33	0.12	58.00	8.21	7.73	0.00
7.00	0.80	0.45	0.16	59.00	8.21	7.73	0.00
8.00	0.98	0.62	0.20	60.00	8.21	7.73	0.00
9.00	1.20	0.81	0.24	61.00	8.21	7.73	0.00
10.00	1.50	1.09	0.37	62.00	8.21	7.73	0.00
11.00	1.97	1.55	0.69	63.00	8.21	7.73	0.00
12.00	3.91	3.45	5.20	64.00	8.21	7.73	0.00
13.00	6.24	5.77	8.89	65.00	8.21	7.73	0.00
14.00	6.71	6.24	0.42	66.00	8.21	7.73	0.00
15.00	7.01	6.53	0.28	67.00	8.21	7.73	0.00
16.00	7.23	6.75	0.23	68.00	8.21	7.73	0.00
17.00	7.41	6.93	0.19	69.00	8.21	7.73	0.00
18.00	7.56	7.08	0.16	70.00	8.21	7.73	0.00
19.00	7.69	7.21	0.14	71.00	8.21	7.73	0.00
20.00	7.81	7.33	0.13	72.00	8.21	7.73	0.00
21.00	7.92	7.44	0.12				
22.00	8.02	7.55	0.11				
23.00	8.12	7.64	0.11				
24.00	8.21	7.73	0.11				
25.00	8.21	7.73	0.00				
26.00	8.21	7.73	0.00				
27.00	8.21	7.73	0.00				
28.00	8.21	7.73	0.00				
29.00	8.21	7.73	0.00				
30.00	8.21	7.73	0.00				
31.00	8.21	7.73	0.00				
32.00	8.21	7.73	0.00				
33.00	8.21	7.73	0.00				
34.00	8.21	7.73	0.00				
35.00	8.21	7.73	0.00				
36.00	8.21	7.73	0.00				
37.00	8.21	7.73	0.00				
38.00	8.21	7.73	0.00				
39.00	8.21	7.73	0.00				
40.00	8.21	7.73	0.00				
41.00	8.21	7.73	0.00				
42.00	8.21	7.73	0.00				
43.00	8.21	7.73	0.00				
44.00	8.21	7.73	0.00				
45.00	8.21	7.73	0.00				
46.00	8.21	7.73	0.00				
47.00	8.21	7.73	0.00				
48.00	8.21	7.73	0.00				
49.00	8.21	7.73	0.00				
50.00	8.21	7.73	0.00				
51.00	8.21	7.73	0.00				

Summary for Link 2L: DA Existing Basin

Inflow Area = 2.490 ac, 0.00% Impervious, Inflow Depth = 6.62" for 100-Year event
Inflow = 18.96 cfs @ 12.14 hrs, Volume = 1.374 af
Primary = 18.96 cfs @ 12.14 hrs, Volume = 1.374 af
Routed to Link 8L : Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 2L: DA Existing Basin



Hydrograph for Link 2L: DA Existing Basin

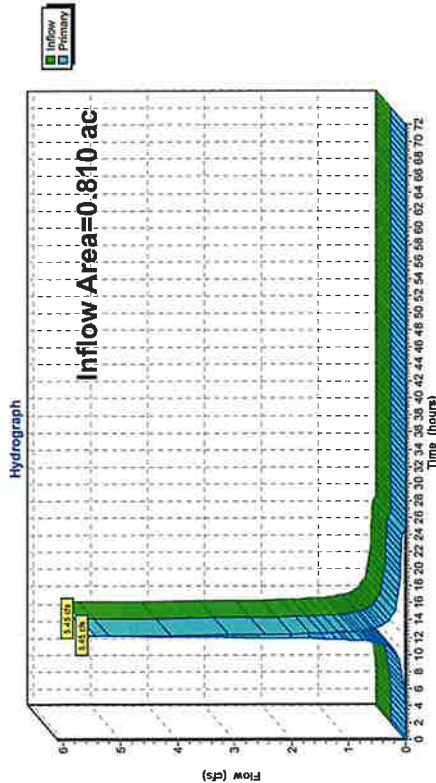
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.04	0.00	0.04	54.00	0.00	0.00	0.00
3.00	0.07	0.00	0.07	55.00	0.00	0.00	0.00
4.00	0.09	0.00	0.09	56.00	0.00	0.00	0.00
5.00	0.11	0.00	0.11	57.00	0.00	0.00	0.00
6.00	0.14	0.00	0.14	58.00	0.00	0.00	0.00
7.00	0.20	0.00	0.20	59.00	0.00	0.00	0.00
8.00	0.27	0.00	0.27	60.00	0.00	0.00	0.00
9.00	0.35	0.00	0.35	61.00	0.00	0.00	0.00
10.00	0.59	0.00	0.59	62.00	0.00	0.00	0.00
11.00	1.18	0.00	1.18	63.00	0.00	0.00	0.00
12.00	10.07	0.00	10.07	64.00	0.00	0.00	0.00
13.00	1.85	0.00	1.85	65.00	0.00	0.00	0.00
14.00	0.89	0.00	0.89	66.00	0.00	0.00	0.00
15.00	0.59	0.00	0.59	67.00	0.00	0.00	0.00
16.00	0.48	0.00	0.48	68.00	0.00	0.00	0.00
17.00	0.41	0.00	0.41	69.00	0.00	0.00	0.00
18.00	0.33	0.00	0.33	70.00	0.00	0.00	0.00
19.00	0.30	0.00	0.30	71.00	0.00	0.00	0.00
20.00	0.28	0.00	0.28	72.00	0.00	0.00	0.00
21.00	0.26	0.00	0.26				
22.00	0.24	0.00	0.24				
23.00	0.22	0.00	0.22				
24.00	0.23	0.00	0.23				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 6L: Undetained South

Inflow Area = 0.810 ac, 0.00% Impervious, Inflow Depth = 6.35" for 100-Year event
Inflow = 5.45 cfs @ 12.17 hrs, Volume= 0.429 af
Primary = 5.45 cfs @ 12.17 hrs, Volume= 0.429 af, Atten= 0%, Lag= 0.0 min
Routed to Link 8L : Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 6L: Undetained South



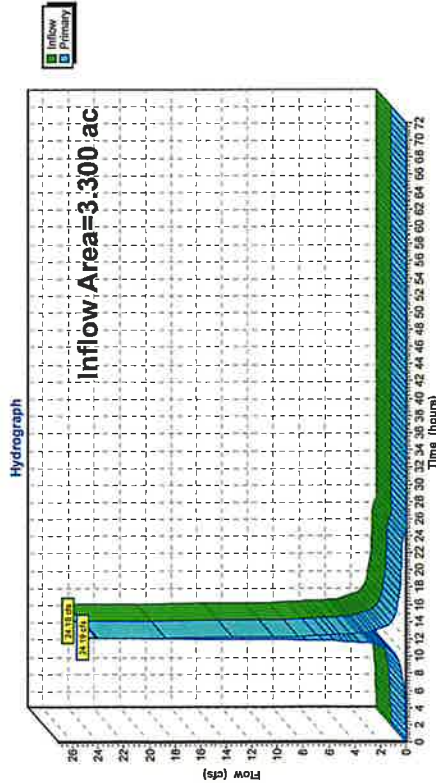
Hydrograph for Link 6L: Undetained South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.01	0.00	0.01	56.00	0.00	0.00	0.00
5.00	0.02	0.00	0.02	57.00	0.00	0.00	0.00
6.00	0.03	0.00	0.03	58.00	0.00	0.00	0.00
7.00	0.05	0.00	0.05	59.00	0.00	0.00	0.00
8.00	0.07	0.00	0.07	60.00	0.00	0.00	0.00
9.00	0.10	0.00	0.10	61.00	0.00	0.00	0.00
10.00	0.17	0.00	0.17	62.00	0.00	0.00	0.00
11.00	0.34	0.00	0.34	63.00	0.00	0.00	0.00
12.00	2.55	0.00	2.55	64.00	0.00	0.00	0.00
13.00	0.63	0.00	0.63	65.00	0.00	0.00	0.00
14.00	0.29	0.00	0.29	66.00	0.00	0.00	0.00
15.00	0.20	0.00	0.20	67.00	0.00	0.00	0.00
16.00	0.16	0.00	0.16	68.00	0.00	0.00	0.00
17.00	0.13	0.00	0.13	69.00	0.00	0.00	0.00
18.00	0.11	0.00	0.11	70.00	0.00	0.00	0.00
19.00	0.10	0.00	0.10	71.00	0.00	0.00	0.00
20.00	0.09	0.00	0.09	72.00	0.00	0.00	0.00
21.00	0.09	0.00	0.09				
22.00	0.08	0.00	0.08				
23.00	0.07	0.00	0.07				
24.00	0.07	0.00	0.07				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 8L: Total

Inflow Area = 3.300 ac, 0.00% Impervious, Inflow Depth = 6.56" for 100-Year event
Inflow = 24.19 cfs @ 12.14 hrs, Volume= 1.803 af
Primary = 24.19 cfs @ 12.14 hrs, Volume= 1.803 af, Atten= 0%, Lag= 0.0 min
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 8L: Total



Hydrograph for Link 8L: Total

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.04	0.00	0.04	54.00	0.00	0.00	0.00
3.00	0.07	0.00	0.07	55.00	0.00	0.00	0.00
4.00	0.09	0.00	0.09	56.00	0.00	0.00	0.00
5.00	0.12	0.00	0.12	57.00	0.00	0.00	0.00
6.00	0.16	0.00	0.16	58.00	0.00	0.00	0.00
7.00	0.24	0.00	0.24	59.00	0.00	0.00	0.00
8.00	0.34	0.00	0.34	60.00	0.00	0.00	0.00
9.00	0.45	0.00	0.45	61.00	0.00	0.00	0.00
10.00	0.76	0.00	0.76	62.00	0.00	0.00	0.00
11.00	1.52	0.00	1.52	63.00	0.00	0.00	0.00
12.00	12.62	0.00	12.62	64.00	0.00	0.00	0.00
13.00	2.49	0.00	2.49	65.00	0.00	0.00	0.00
14.00	1.18	0.00	1.18	66.00	0.00	0.00	0.00
15.00	0.79	0.00	0.79	67.00	0.00	0.00	0.00
16.00	0.64	0.00	0.64	68.00	0.00	0.00	0.00
17.00	0.54	0.00	0.54	69.00	0.00	0.00	0.00
18.00	0.44	0.00	0.44	70.00	0.00	0.00	0.00
19.00	0.40	0.00	0.40	71.00	0.00	0.00	0.00
20.00	0.37	0.00	0.37	72.00	0.00	0.00	0.00
21.00	0.35	0.00	0.35				
22.00	0.32	0.00	0.32				
23.00	0.30	0.00	0.30				
24.00	0.30	0.00	0.30				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

TABLE OF CONTENTS

Project Reports

- 1 Routing Diagram
- 2 Project Notes
- 3 Rainfall Events Listing (selected events)
- 4 Area Listing (all nodes)
- 5 Soil Listing (all nodes)
- 6 Ground Covers (all nodes)
- 7 Notes Listing (all nodes)

2-Year Event

- 8 Node Listing
- 9 Subcat 4S: DA Existing Basin - Perv.
- 11 Subcat 5S: DA Undetained South - Imp.
- 13 Subcat 7S: DA Undetained South- Perv.
- 15 Subcat 8S: DA Existing Basin. - Imp.
- 17 Link 2L: DA Existing Basin
- 19 Link 6L: Undetained South
- 21 Link 8L: Total

10-Year Event

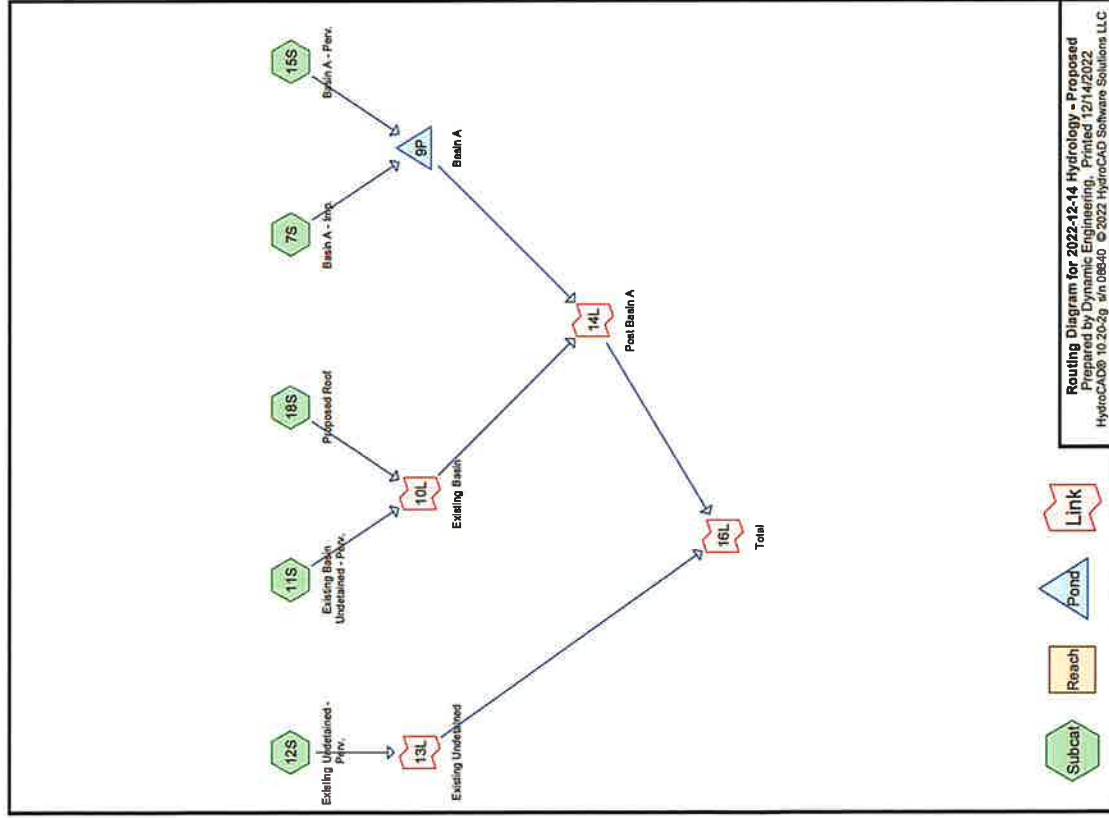
- 23 Node Listing
- 24 Subcat 4S: DA Existing Basin - Perv.
- 26 Subcat 5S: DA Undetained South - Imp.
- 28 Subcat 7S: DA Undetained South- Perv.
- 30 Subcat 8S: DA Existing Basin. - Imp.
- 32 Link 2L: DA Existing Basin
- 34 Link 6L: Undetained South
- 36 Link 8L: Total

100-Year Event

- 38 Node Listing
- 39 Subcat 4S: DA Existing Basin - Perv.
- 41 Subcat 5S: DA Undetained South - Imp.
- 43 Subcat 7S: DA Undetained South- Perv.
- 45 Subcat 8S: DA Existing Basin. - Imp.
- 47 Link 2L: DA Existing Basin
- 49 Link 6L: Undetained South
- 51 Link 8L: Total

Project Notes

Rainfall events Imported from "NRCS-Rain.txt" for 6617 NJ Somerset-C



2022-12-14 Hydrology - Proposed

Prepared by Dynamic Engineering

HydroCAD® 10.20-2q s/n 08640 © 2022 HydroCAD Software Solutions LLC

Printed 12/14/2022

Page 3

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	NOAA 24-hr	C	Default	24.00	1	3.34	2
2	10-Year	NOAA 24-hr	C	Default	24.00	1	5.01	2
3	100-Year	NOAA 24-hr	C	Default	24.00	1	8.21	2

2022-12-14 Hydrology - Proposed

Prepared by Dynamic Engineering

HydroCAD® 10.20-2q s/n 08640 © 2022 HydroCAD Software Solutions LLC

Printed 12/14/2022

Page 4

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.740	80	>75% Grass cover, Good, HSG D (11S, 12S, 15S)
0.860	98	Paved parking, HSG D (7S)
0.800	98	Roofs, HSG D (7S, 18S)
3.300	89	TOTAL AREA

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
3.300	HSG D	7S, 11S, 12S, 15S, 18S
0.000	Other	
3.300		TOTAL AREA

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	1.740	0.000	1.740	>75% Grass cover, Good	11S, 12S, 15S
0.000	0.000	0.000	0.860	0.000	0.860	Paved parking	7S
0.000	0.000	0.000	0.900	0.000	0.900	Roofs	7S, 18S
0.000	0.000	0.000	3.300	0.000	3.300	TOTAL AREA	

2022-12-14 Hydrology - Proposed

Prepared by Dynamic Engineering

HydroCAD® 10.20-2g s/n 08640 © 2022 HydroCAD Software Solutions LLC

Printed 12/14/2022

Page 7

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	7S	0.00	0.00	352.0	0.0050	0.013	0.0	15.0	0.0
2	7S	0.00	0.00	87.0	0.0050	0.013	0.0	18.0	0.0
3	15S	0.00	0.00	352.0	0.0050	0.013	0.0	15.0	0.0
4	15S	0.00	0.00	87.0	0.0050	0.013	0.0	18.0	0.0

2022-12-14 Hydrology - Proposed

Prepared by Dynamic Engineering

HydroCAD® 10.20-2g s/n 08640 © 2022 HydroCAD Software Solutions LLC

Printed 12/14/2022

Page 8

Notes Listing (all nodes)

Line#	Node Number	Notes
1	Project	Rainfall events imported from "NRCS-Rain.txt" for 6617 NJ Somerset-C

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 7S: Basin A - Imp.
Runoff Area=1.110 ac 100.00% Impervious Runoff Depth=3.11"
Flow Length=538' Tc=6.0 min CN=98 Runoff=3.80 cfs 0.287 af

Subcatchment 11S: Existing Basin
Runoff Area=0.800 ac 0.00% Impervious Runoff Depth=1.51"
Flow Length=260' Tc=9.0 min CN=80 Runoff=1.40 cfs 0.101 af

Subcatchment 12S: Existing Undetained -
Flow Length=113' Runoff Area=0.250 ac 0.00% Impervious Runoff Depth=1.51"
Slope=0.1700 1' Tc=6.0 min CN=80 Runoff=0.48 cfs 0.031 af

Subcatchment 15S: Basin A - Perv.
Runoff Area=0.690 ac 0.00% Impervious Runoff Depth=1.51"
Flow Length=538' Tc=6.0 min CN=80 Runoff=1.33 cfs 0.087 af

Subcatchment 18S: Proposed Roof
Runoff Area=0.450 ac 100.00% Impervious Runoff Depth=3.11"
Flow Length=260' Tc=9.0 min CN=98 Runoff=1.42 cfs 0.117 af

Pond 9P: Basin A
Peak Elev=117.60' Storage=0.235 af Inflow=5.13 cfs 0.374 af
Outflow=0.41 cfs 0.262 af

Link 10L: Existing Basin
Inflow=2.81 cfs 0.217 af
Primary=2.81 cfs 0.217 af

Link 13L: Existing Undetained
Inflow=0.48 cfs 0.031 af
Primary=0.48 cfs 0.031 af

Link 14L: Post Basin A
Inflow=3.09 cfs 0.479 af
Primary=3.09 cfs 0.479 af

Link 16L: Total
Inflow=3.54 cfs 0.510 af
Primary=3.54 cfs 0.510 af

Total Runoff Area = 3.300 ac Runoff Volume = 0.623 af Average Runoff Depth = 2.27"
52.73% Pervious = 1.740 ac 47.27% Impervious = 1.560 ac

Summary for Subcatchment 7S: Basin A - Imp.

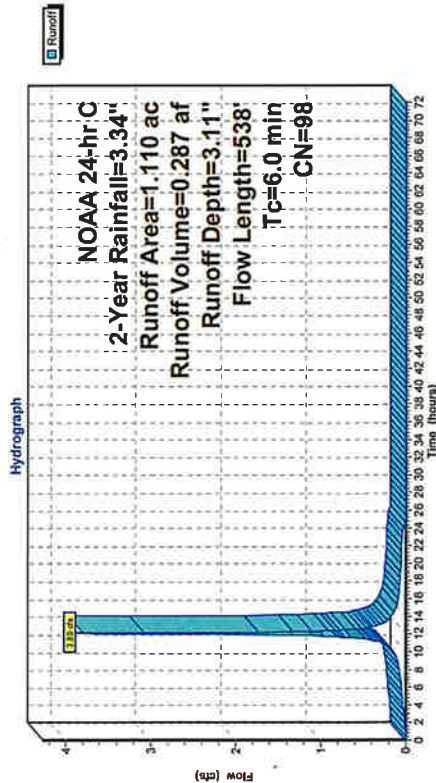
Runoff = 3.80 cfs @ 12.13 hrs, Volume= 0.287 af, Depth= 3.11"
Routed to Pond 9P: Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

Area (ac)	CN	Description
0.660	98	Paved parking, HSG D
0.450	98	Roofs, HSG D
1.110	98	Weighted Average
1.110	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	45	0.0100	0.92		Sheet Flow, Sheet Flow - Paved Smooth surfaces n= 0.011 P2= 3.44"
0.4	54	0.0100	2.03		Shallow Concentrated Flow, SCF - Paved
1.6	352	0.0050	3.72	4.57	Paved Kv= 20.3 fps
					Pipe Channel, Pipe - 15" n= 0.013
0.3	87	0.0050	4.20	7.43	15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31"
					Pipe Channel, Pipe - 18" n= 0.013
					18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38"
3.1	538	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 7S: Basin A - Imp.



Hydrograph for Subcatchment 7S: Basin A - Imp.

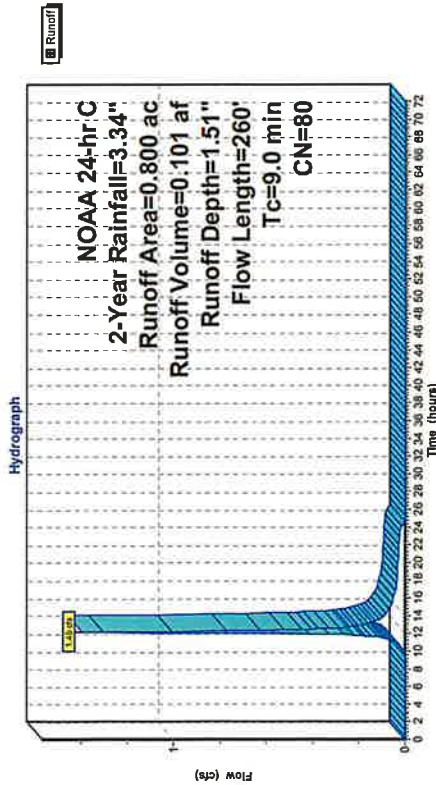
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	3.11	0.00
1.00	0.04	0.00	0.00	53.00	3.34	3.11	0.00
2.00	0.08	0.01	0.01	54.00	3.34	3.11	0.00
3.00	0.12	0.02	0.02	55.00	3.34	3.11	0.00
4.00	0.16	0.05	0.03	56.00	3.34	3.11	0.00
5.00	0.21	0.08	0.05	57.00	3.34	3.11	0.00
6.00	0.26	0.12	0.05	58.00	3.34	3.11	0.00
7.00	0.33	0.17	0.06	59.00	3.34	3.11	0.00
8.00	0.40	0.23	0.08	60.00	3.34	3.11	0.00
9.00	0.49	0.31	0.09	61.00	3.34	3.11	0.00
10.00	0.61	0.42	0.15	62.00	3.34	3.11	0.00
11.00	0.80	0.60	0.27	63.00	3.34	3.11	0.00
12.00	1.59	1.37	2.16	64.00	3.34	3.11	0.00
13.00	2.54	2.31	0.35	65.00	3.34	3.11	0.00
14.00	2.73	2.50	0.17	66.00	3.34	3.11	0.00
15.00	2.85	2.62	0.11	67.00	3.34	3.11	0.00
16.00	2.94	2.71	0.09	68.00	3.34	3.11	0.00
17.00	3.01	2.78	0.08	69.00	3.34	3.11	0.00
18.00	3.08	2.84	0.06	70.00	3.34	3.11	0.00
19.00	3.13	2.90	0.05	71.00	3.34	3.11	0.00
20.00	3.18	2.94	0.05	72.00	3.34	3.11	0.00
21.00	3.22	2.99	0.05				
22.00	3.26	3.03	0.05				
23.00	3.30	3.07	0.04				
24.00	3.34	3.11	0.04				
25.00	3.34	3.11	0.00				
26.00	3.34	3.11	0.00				
27.00	3.34	3.11	0.00				
28.00	3.34	3.11	0.00				
29.00	3.34	3.11	0.00				
30.00	3.34	3.11	0.00				
31.00	3.34	3.11	0.00				
32.00	3.34	3.11	0.00				
33.00	3.34	3.11	0.00				
34.00	3.34	3.11	0.00				
35.00	3.34	3.11	0.00				
36.00	3.34	3.11	0.00				
37.00	3.34	3.11	0.00				
38.00	3.34	3.11	0.00				
39.00	3.34	3.11	0.00				
40.00	3.34	3.11	0.00				
41.00	3.34	3.11	0.00				
42.00	3.34	3.11	0.00				
43.00	3.34	3.11	0.00				
44.00	3.34	3.11	0.00				
45.00	3.34	3.11	0.00				
46.00	3.34	3.11	0.00				
47.00	3.34	3.11	0.00				
48.00	3.34	3.11	0.00				
49.00	3.34	3.11	0.00				
50.00	3.34	3.11	0.00				
51.00	3.34	3.11	0.00				

Summary for Subcatchment 11S: Existing Basin Undetained - Perv.

Runoff = 1.40 cfs @ 12.16 hrs, Volume= 0.101 af, Depth= 1.51"
 Routed to Link 10L : Existing Basin
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 2-Year Rainfall=3.34"

Area (ac)	CN	Description		
0.800	80	>75% Grass cover, Good, HSG D		
0.800		100.00% Pervious Area		
Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	85	0.0700	0.19	Sheet Flow, Sheet Flow
				Grass: Dense n= 0.240 P2= 3.44"
1.7	175	0.0120	1.76	Shallow Concentrated Flow, SCF - Unpaved
				Unpaved Kv= 16.1 fps
9.0	260	Total		

Subcatchment 11S: Existing Basin Undetained - Perv.



Hydrograph for Subcatchment 11S: Existing Basin Undetained - Perv.

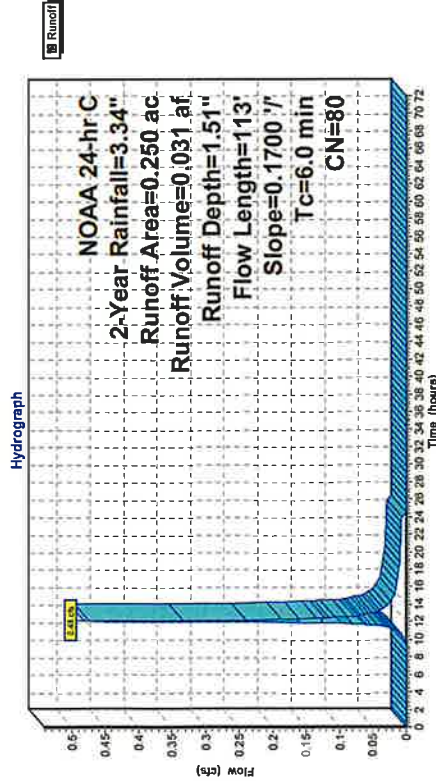
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	1.51	0.00
1.00	0.04	0.00	0.00	53.00	3.34	1.51	0.00
2.00	0.08	0.00	0.00	54.00	3.34	1.51	0.00
3.00	0.12	0.00	0.00	55.00	3.34	1.51	0.00
4.00	0.16	0.00	0.00	56.00	3.34	1.51	0.00
5.00	0.21	0.00	0.00	57.00	3.34	1.51	0.00
6.00	0.26	0.00	0.00	58.00	3.34	1.51	0.00
7.00	0.33	0.00	0.00	59.00	3.34	1.51	0.00
8.00	0.40	0.00	0.00	60.00	3.34	1.51	0.00
9.00	0.49	0.00	0.00	61.00	3.34	1.51	0.00
10.00	0.61	0.00	0.01	62.00	3.34	1.51	0.00
11.00	0.80	0.03	0.04	63.00	3.34	1.51	0.00
12.00	1.59	0.33	0.56	64.00	3.34	1.51	0.00
13.00	2.54	0.92	0.19	65.00	3.34	1.51	0.00
14.00	2.73	1.05	0.09	66.00	3.34	1.51	0.00
15.00	2.85	1.14	0.06	67.00	3.34	1.51	0.00
16.00	2.94	1.21	0.05	68.00	3.34	1.51	0.00
17.00	3.01	1.26	0.04	69.00	3.34	1.51	0.00
18.00	3.08	1.31	0.03	70.00	3.34	1.51	0.00
19.00	3.13	1.35	0.03	71.00	3.34	1.51	0.00
20.00	3.18	1.38	0.03	72.00	3.34	1.51	0.00
21.00	3.22	1.42	0.03				
22.00	3.26	1.45	0.03				
23.00	3.30	1.48	0.02				
24.00	3.34	1.51	0.02				
25.00	3.34	1.51	0.00				
26.00	3.34	1.51	0.00				
27.00	3.34	1.51	0.00				
28.00	3.34	1.51	0.00				
29.00	3.34	1.51	0.00				
30.00	3.34	1.51	0.00				
31.00	3.34	1.51	0.00				
32.00	3.34	1.51	0.00				
33.00	3.34	1.51	0.00				
34.00	3.34	1.51	0.00				
35.00	3.34	1.51	0.00				
36.00	3.34	1.51	0.00				
37.00	3.34	1.51	0.00				
38.00	3.34	1.51	0.00				
39.00	3.34	1.51	0.00				
40.00	3.34	1.51	0.00				
41.00	3.34	1.51	0.00				
42.00	3.34	1.51	0.00				
43.00	3.34	1.51	0.00				
44.00	3.34	1.51	0.00				
45.00	3.34	1.51	0.00				
46.00	3.34	1.51	0.00				
47.00	3.34	1.51	0.00				
48.00	3.34	1.51	0.00				
49.00	3.34	1.51	0.00				
50.00	3.34	1.51	0.00				
51.00	3.34	1.51	0.00				

Summary for Subcatchment 12S: Existing Undetained - Perv.

Runoff = 0.48 cfs @ 12.13 hrs, Volume= 0.031 af, Depth= 1.51"
 Routed to Link 13L : Existing Undetained
 NOAA 24-hr C 2-Year Rainfall=3.34"
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Area (ac)	CN	Description		
0.250	80	>75% Grass cover, Good, HSG D		
0.250		100.00% Pervious Area		
Tc (min)	Length (feet)	Slope Velocity (ft/sec)	Capacity (cfs)	Description
5.8	100	0.1700	0.29	Sheet Flow, Sheet Flow - Grass
				Grass: Dense n= 0.240 P2= 3.44"
0.0	13	0.1700	6.64	Shallow Concentrated Flow, SCF - Unpaved
				Unpaved Kv= 16.1 fps
5.8	113	Total, Increased to minimum Tc = 6.0 min		

Subcatchment 12S: Existing Undetained - Perv.



Hydrograph for Subcatchment 12S: Existing Undetained - Perv.

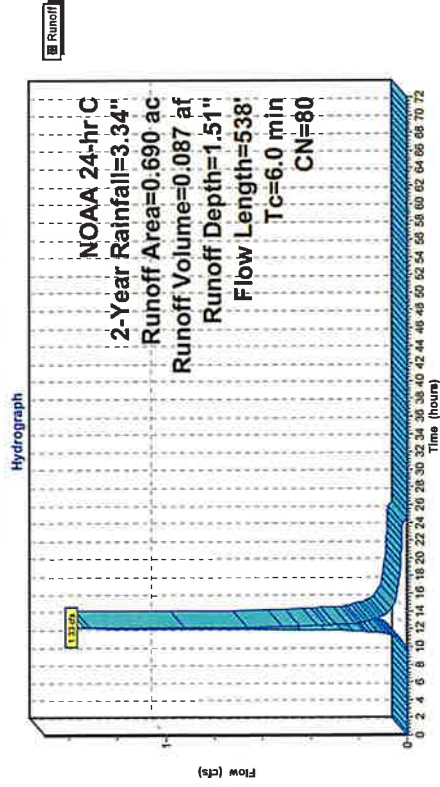
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	1.51	0.00
1.00	0.04	0.00	0.00	53.00	3.34	1.51	0.00
2.00	0.08	0.00	0.00	54.00	3.34	1.51	0.00
3.00	0.12	0.00	0.00	55.00	3.34	1.51	0.00
4.00	0.16	0.00	0.00	56.00	3.34	1.51	0.00
5.00	0.21	0.00	0.00	57.00	3.34	1.51	0.00
6.00	0.26	0.00	0.00	58.00	3.34	1.51	0.00
7.00	0.33	0.00	0.00	59.00	3.34	1.51	0.00
8.00	0.40	0.00	0.00	60.00	3.34	1.51	0.00
9.00	0.49	0.00	0.00	61.00	3.34	1.51	0.00
10.00	0.61	0.00	0.00	62.00	3.34	1.51	0.00
11.00	0.80	0.03	0.01	63.00	3.34	1.51	0.00
12.00	1.59	0.33	0.23	64.00	3.34	1.51	0.00
13.00	2.54	0.92	0.05	65.00	3.34	1.51	0.00
14.00	2.73	1.05	0.03	66.00	3.34	1.51	0.00
15.00	2.85	1.14	0.02	67.00	3.34	1.51	0.00
16.00	2.94	1.21	0.02	68.00	3.34	1.51	0.00
17.00	3.01	1.26	0.01	69.00	3.34	1.51	0.00
18.00	3.08	1.31	0.01	70.00	3.34	1.51	0.00
19.00	3.13	1.35	0.01	71.00	3.34	1.51	0.00
20.00	3.18	1.38	0.01	72.00	3.34	1.51	0.00
21.00	3.22	1.42	0.01				
22.00	3.26	1.45	0.01				
23.00	3.30	1.48	0.01				
24.00	3.34	1.51	0.01				
25.00	3.34	1.51	0.00				
26.00	3.34	1.51	0.00				
27.00	3.34	1.51	0.00				
28.00	3.34	1.51	0.00				
29.00	3.34	1.51	0.00				
30.00	3.34	1.51	0.00				
31.00	3.34	1.51	0.00				
32.00	3.34	1.51	0.00				
33.00	3.34	1.51	0.00				
34.00	3.34	1.51	0.00				
35.00	3.34	1.51	0.00				
36.00	3.34	1.51	0.00				
37.00	3.34	1.51	0.00				
38.00	3.34	1.51	0.00				
39.00	3.34	1.51	0.00				
40.00	3.34	1.51	0.00				
41.00	3.34	1.51	0.00				
42.00	3.34	1.51	0.00				
43.00	3.34	1.51	0.00				
44.00	3.34	1.51	0.00				
45.00	3.34	1.51	0.00				
46.00	3.34	1.51	0.00				
47.00	3.34	1.51	0.00				
48.00	3.34	1.51	0.00				
49.00	3.34	1.51	0.00				
50.00	3.34	1.51	0.00				
51.00	3.34	1.51	0.00				

Summary for Subcatchment 15S: Basin A - Perv.

Runoff = 1.33 cfs @ 12.13 hrs, Volume= 0.087 af, Depth= 1.51"
Routed to Pond 9P: Basin A
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

Area (ac)	CN	Description		
0.690	80	>75% Grass cover, Good, HSG D		
0.690		100.00% Pervious Area		
Tc (min)	Length (feet)	Slope Velocity (ft/sec)	Capacity (cfs)	Description
0.8	45	0.0100	0.92	Sheet Flow, Sheet Flow - Paved Smooth surfaces n= 0.011 P2= 3.44"
0.4	54	0.0100	2.03	Shallow Concentrated Flow, SCF - Paved Paved Kf= 20.3 f/s
1.6	352	0.0050	3.72	Pipe Channel, Pipe - 15" 15.0" Round Area= 1.2 sf Perim= 3.9' I= 0.31' n= 0.013
0.3	87	0.0050	4.20	Pipe Channel, Pipe - 18" 18.0" Round Area= 1.8 sf Perim= 4.7' I= 0.38' n= 0.013
3.1	538	Total, Increased to minimum Tc = 6.0 min		

Subcatchment 15S: Basin A - Perv.



Hydrograph for Subcatchment 15S: Basin A - Perv.

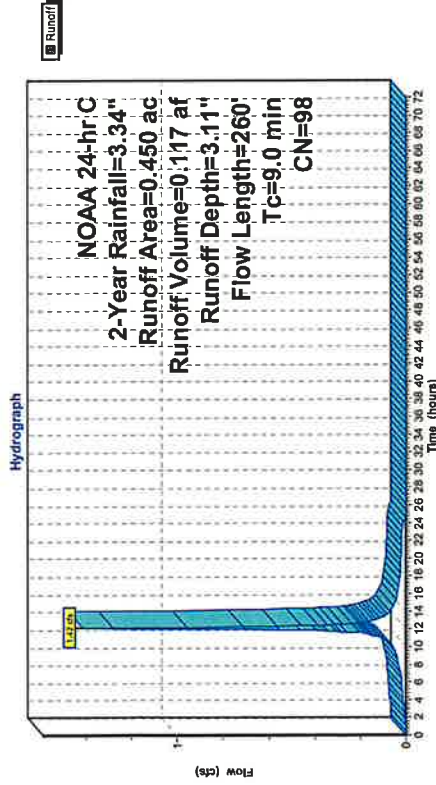
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	1.51	0.00
1.00	0.04	0.00	0.00	53.00	3.34	1.51	0.00
2.00	0.08	0.00	0.00	54.00	3.34	1.51	0.00
3.00	0.12	0.00	0.00	55.00	3.34	1.51	0.00
4.00	0.16	0.00	0.00	56.00	3.34	1.51	0.00
5.00	0.21	0.00	0.00	57.00	3.34	1.51	0.00
6.00	0.26	0.00	0.00	58.00	3.34	1.51	0.00
7.00	0.33	0.00	0.00	59.00	3.34	1.51	0.00
8.00	0.40	0.00	0.00	60.00	3.34	1.51	0.00
9.00	0.49	0.00	0.00	61.00	3.34	1.51	0.00
10.00	0.61	0.00	0.01	62.00	3.34	1.51	0.00
11.00	0.80	0.03	0.03	63.00	3.34	1.51	0.00
12.00	1.59	0.33	0.63	64.00	3.34	1.51	0.00
13.00	2.54	0.92	0.15	65.00	3.34	1.51	0.00
14.00	2.73	1.05	0.08	66.00	3.34	1.51	0.00
15.00	2.85	1.14	0.05	67.00	3.34	1.51	0.00
16.00	2.94	1.21	0.04	68.00	3.34	1.51	0.00
17.00	3.01	1.26	0.04	69.00	3.34	1.51	0.00
18.00	3.08	1.31	0.03	70.00	3.34	1.51	0.00
19.00	3.13	1.35	0.03	71.00	3.34	1.51	0.00
20.00	3.18	1.38	0.03	72.00	3.34	1.51	0.00
21.00	3.22	1.42	0.02				
22.00	3.26	1.45	0.02				
23.00	3.30	1.48	0.02				
24.00	3.34	1.51	0.02				
25.00	3.34	1.51	0.00				
26.00	3.34	1.51	0.00				
27.00	3.34	1.51	0.00				
28.00	3.34	1.51	0.00				
29.00	3.34	1.51	0.00				
30.00	3.34	1.51	0.00				
31.00	3.34	1.51	0.00				
32.00	3.34	1.51	0.00				
33.00	3.34	1.51	0.00				
34.00	3.34	1.51	0.00				
35.00	3.34	1.51	0.00				
36.00	3.34	1.51	0.00				
37.00	3.34	1.51	0.00				
38.00	3.34	1.51	0.00				
39.00	3.34	1.51	0.00				
40.00	3.34	1.51	0.00				
41.00	3.34	1.51	0.00				
42.00	3.34	1.51	0.00				
43.00	3.34	1.51	0.00				
44.00	3.34	1.51	0.00				
45.00	3.34	1.51	0.00				
46.00	3.34	1.51	0.00				
47.00	3.34	1.51	0.00				
48.00	3.34	1.51	0.00				
49.00	3.34	1.51	0.00				
50.00	3.34	1.51	0.00				
51.00	3.34	1.51	0.00				

Summary for Subcatchment 18S: Proposed Roof

Runoff = 1.42 cfs @ 12.16 hrs, Volume= 0.117 af, Depth= 3.11"
Routed to Link 10L : Existing Basin
NOAA 24-hr C 2-Year Rainfall=3.34"
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dl= 0.05 hrs

Area (ac)	CN	Description			
0.450	98	Roofs, HSG D			
0.450		100.00% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	85	0.0700	0.19		Sheet Flow, Sheet Flow
					Grass: Dense n= 0.240 P2= 3.44"
1.7	175	0.0120	1.76		Shallow Concentrated Flow, SCF - Unpaved
					Unpaved Kv= 16.1 fps

Subcatchment 18S: Proposed Roof



Hydrograph for Subcatchment 18S: Proposed Roof

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	3.11	0.00
1.00	0.04	0.00	0.00	53.00	3.34	3.11	0.00
2.00	0.08	0.01	0.00	54.00	3.34	3.11	0.00
3.00	0.12	0.02	0.01	55.00	3.34	3.11	0.00
4.00	0.16	0.05	0.01	56.00	3.34	3.11	0.00
5.00	0.21	0.08	0.02	57.00	3.34	3.11	0.00
6.00	0.26	0.12	0.02	58.00	3.34	3.11	0.00
7.00	0.33	0.17	0.02	59.00	3.34	3.11	0.00
8.00	0.40	0.23	0.03	60.00	3.34	3.11	0.00
9.00	0.49	0.31	0.04	61.00	3.34	3.11	0.00
10.00	0.61	0.42	0.06	62.00	3.34	3.11	0.00
11.00	0.80	0.60	0.11	63.00	3.34	3.11	0.00
12.00	1.59	1.37	0.71	64.00	3.34	3.11	0.00
13.00	2.54	2.31	0.15	65.00	3.34	3.11	0.00
14.00	2.73	2.50	0.07	66.00	3.34	3.11	0.00
15.00	2.85	2.62	0.05	67.00	3.34	3.11	0.00
16.00	2.94	2.71	0.04	68.00	3.34	3.11	0.00
17.00	3.01	2.78	0.03	69.00	3.34	3.11	0.00
18.00	3.08	2.84	0.03	70.00	3.34	3.11	0.00
19.00	3.13	2.90	0.02	71.00	3.34	3.11	0.00
20.00	3.18	2.94	0.02	72.00	3.34	3.11	0.00
21.00	3.22	2.99	0.02				
22.00	3.26	3.03	0.02				
23.00	3.30	3.07	0.02				
24.00	3.34	3.11	0.02				
25.00	3.34	3.11	0.00				
26.00	3.34	3.11	0.00				
27.00	3.34	3.11	0.00				
28.00	3.34	3.11	0.00				
29.00	3.34	3.11	0.00				
30.00	3.34	3.11	0.00				
31.00	3.34	3.11	0.00				
32.00	3.34	3.11	0.00				
33.00	3.34	3.11	0.00				
34.00	3.34	3.11	0.00				
35.00	3.34	3.11	0.00				
36.00	3.34	3.11	0.00				
37.00	3.34	3.11	0.00				
38.00	3.34	3.11	0.00				
39.00	3.34	3.11	0.00				
40.00	3.34	3.11	0.00				
41.00	3.34	3.11	0.00				
42.00	3.34	3.11	0.00				
43.00	3.34	3.11	0.00				
44.00	3.34	3.11	0.00				
45.00	3.34	3.11	0.00				
46.00	3.34	3.11	0.00				
47.00	3.34	3.11	0.00				
48.00	3.34	3.11	0.00				
49.00	3.34	3.11	0.00				
50.00	3.34	3.11	0.00				
51.00	3.34	3.11	0.00				

Summary for Pond 9P: Basin A

Inflow Area = 1,800 ac, 61.87% Impervious, Inflow Depth = 2.49" for 2-Year event
Inflow = 5.13 cfs @ 12.13 hrs, Volume= 0.374 af
Outflow = 0.41 cfs @ 13.20 hrs, Volume= 0.262 af
Primary = 0.41 cfs @ 13.20 hrs, Volume= 0.262 af
Routed to Link 14L : Post Basin A

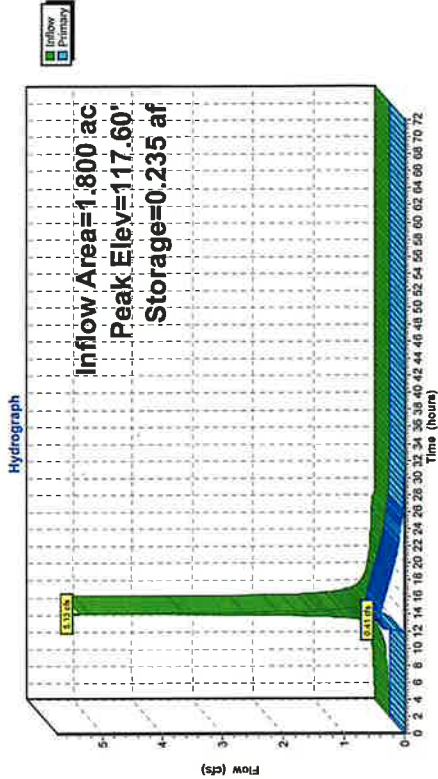
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 117.60' @ 13.20 hrs Surf.Area= 0.122 ac Storage= 0.235 af
Plug-Flow detention time= 372.3 min calculated for 0.262 af (70% of inflow)
Center-of-Mass del. time= 272.9 min (1,049.8 - 776.9)

Volume					Storage Description		
#1	Invert	Surf.Area	Inc.Store	Cum.Store	Custom Stage Data (Prismatic) Listed below (Recalc)		
					(feet)	(acres)	(acre-feet)
	115.00'	0.040	0.000	0.000			
	116.00	0.090	0.065	0.065			
	117.00	0.110	0.100	0.165			
	118.00	0.130	0.120	0.285			
	119.00	0.160	0.145	0.430			
	120.00	0.180	0.170	0.600			
	121.00	0.200	0.190	0.790			
	122.00	0.220	0.210	1.000			

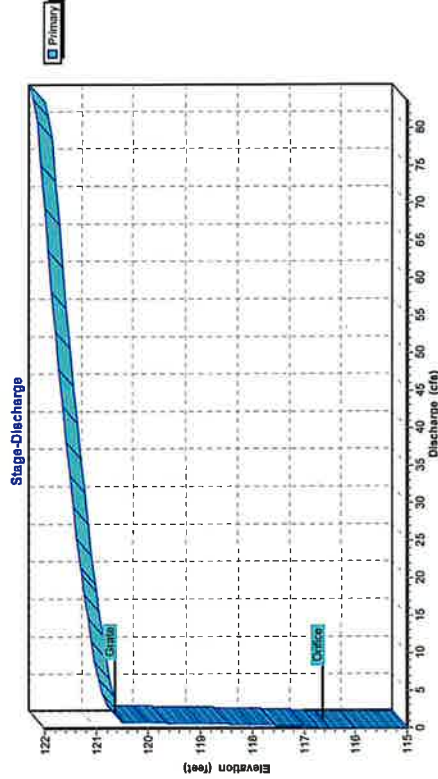
Device Routing		Invert	Outlet Devices	
#1	Primary	120.50'	42.0" x 48.0" Horiz. Grate	C= 0.600
Limited to weir flow at low heads				
#2	Primary	116.50'	4.0" Vert. Orifice	C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.41 cfs @ 13.20 hrs HW=117.60' (Free Discharge)
1=Grate (Controls 0.00 cfs)
2=Orifice (Orifice Controls 0.41 cfs @ 4.66 fps)

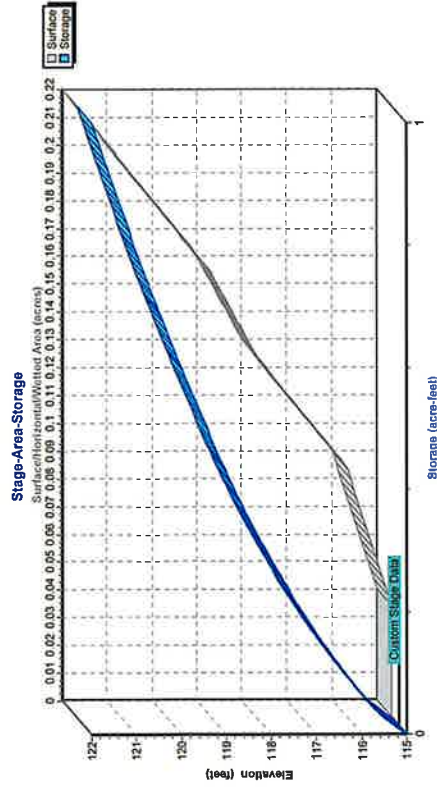
Pond 9P: Basin A



Pond 9P: Basin A



Pond 9P: Basin A



Hydrograph for Pond 9P: Basin A

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	115.00	0.00
2.50	0.02	0.001	115.02	0.00
5.00	0.04	0.007	115.16	0.00
7.50	0.07	0.018	115.36	0.00
10.00	0.15	0.038	115.67	0.00
12.50	1.09	0.222	117.49	0.38
15.00	0.16	0.214	117.43	0.37
17.50	0.10	0.174	117.08	0.27
20.00	0.08	0.147	116.83	0.17
22.50	0.06	0.135	116.72	0.10
25.00	0.00	0.127	116.64	0.05
27.50	0.00	0.121	116.58	0.02
30.00	0.00	0.118	116.56	0.01
32.50	0.00	0.117	116.54	0.00
35.00	0.00	0.116	116.53	0.00
37.50	0.00	0.115	116.53	0.00
40.00	0.00	0.115	116.52	0.00
42.50	0.00	0.114	116.52	0.00
45.00	0.00	0.114	116.51	0.00
47.50	0.00	0.114	116.51	0.00
50.00	0.00	0.113	116.51	0.00
52.50	0.00	0.113	116.51	0.00
55.00	0.00	0.113	116.51	0.00
57.50	0.00	0.113	116.51	0.00
60.00	0.00	0.113	116.50	0.00
62.50	0.00	0.113	116.50	0.00
65.00	0.00	0.113	116.50	0.00
67.50	0.00	0.113	116.50	0.00
70.00	0.00	0.113	116.50	0.00

Stage-Discharge for Pond 9P: Basin A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
115.00	0.00	117.60	0.41
115.05	0.00	117.65	0.42
115.10	0.00	117.70	0.43
115.15	0.00	117.75	0.44
115.20	0.00	117.80	0.45
115.25	0.00	117.85	0.46
115.30	0.00	117.90	0.47
115.35	0.00	117.95	0.48
115.40	0.00	118.00	0.49
115.45	0.00	118.05	0.49
115.50	0.00	118.10	0.50
115.55	0.00	118.15	0.51
115.60	0.00	118.20	0.52
115.65	0.00	118.25	0.53
115.70	0.00	118.30	0.54
115.75	0.00	118.35	0.55
115.80	0.00	118.40	0.55
115.85	0.00	118.45	0.56
115.90	0.00	118.50	0.57
115.95	0.00	118.55	0.58
116.00	0.00	118.60	0.58
116.05	0.00	118.65	0.59
116.10	0.00	118.70	0.60
116.15	0.00	118.75	0.61
116.20	0.00	118.80	0.61
116.25	0.00	118.85	0.62
116.30	0.00	118.90	0.63
116.35	0.00	118.95	0.63
116.40	0.00	119.00	0.64
116.45	0.00	119.05	0.65
116.50	0.00	119.10	0.66
116.55	0.01	119.15	0.66
116.60	0.02	119.20	0.67
116.65	0.05	119.25	0.68
116.70	0.08	119.30	0.68
116.75	0.12	119.35	0.69
116.80	0.15	119.40	0.69
116.85	0.18	119.45	0.70
116.90	0.20	119.50	0.71
116.95	0.22	119.55	0.71
117.00	0.24	119.60	0.72
117.05	0.26	119.65	0.73
117.10	0.28	119.70	0.73
117.15	0.29	119.75	0.74
117.20	0.31	119.80	0.74
117.25	0.32	119.85	0.75
117.30	0.33	119.90	0.76
117.35	0.35	119.95	0.76
117.40	0.36	120.00	0.77
117.45	0.37	120.05	0.77
117.50	0.38	120.10	0.78
117.55	0.39	120.15	0.78

Stage-Area-Storage for Pond 9P: Basin A

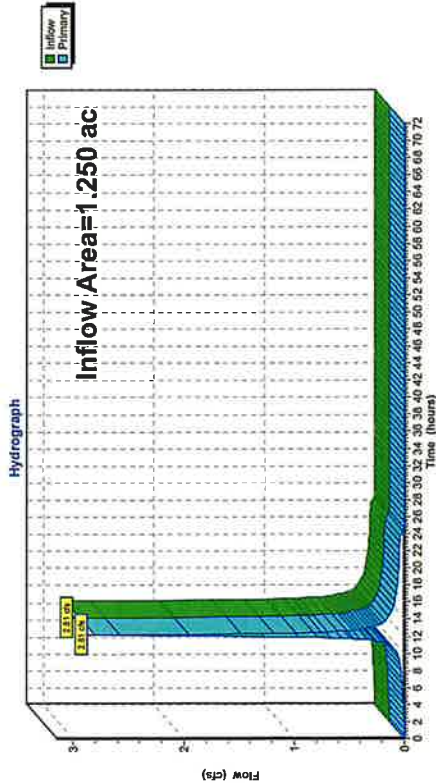
Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
115.00	0.040	0.000	120.20	0.184	0.636
115.10	0.045	0.004	120.30	0.186	0.655
115.20	0.050	0.009	120.40	0.188	0.674
115.30	0.055	0.014	120.50	0.190	0.693
115.40	0.060	0.020	120.60	0.192	0.712
115.50	0.065	0.026	120.70	0.194	0.731
115.60	0.070	0.033	120.80	0.196	0.750
115.70	0.075	0.040	120.90	0.198	0.770
115.80	0.080	0.048	121.00	0.200	0.790
115.90	0.085	0.056	121.10	0.202	0.810
116.00	0.090	0.065	121.20	0.204	0.830
116.10	0.092	0.074	121.30	0.206	0.851
116.20	0.094	0.083	121.40	0.208	0.872
116.30	0.096	0.093	121.50	0.210	0.893
116.40	0.098	0.103	121.60	0.212	0.914
116.50	0.100	0.112	121.70	0.214	0.935
116.60	0.104	0.123	121.80	0.216	0.956
116.70	0.108	0.133	121.90	0.218	0.978
116.80	0.108	0.143	122.00	0.220	1.000
116.90	0.110	0.154			
117.00	0.112	0.165			
117.10	0.114	0.176			
117.20	0.116	0.187			
117.30	0.118	0.199			
117.40	0.118	0.211			
117.50	0.120	0.222			
117.60	0.122	0.235			
117.70	0.124	0.247			
117.80	0.126	0.259			
117.90	0.128	0.272			
118.00	0.130	0.285			
118.10	0.133	0.298			
118.20	0.136	0.312			
118.30	0.139	0.325			
118.40	0.142	0.339			
118.50	0.145	0.354			
118.60	0.148	0.368			
118.70	0.151	0.383			
118.80	0.154	0.399			
118.90	0.157	0.414			
119.00	0.160	0.430			
119.10	0.162	0.446			
119.20	0.164	0.462			
119.30	0.166	0.478			
119.40	0.168	0.495			
119.50	0.170	0.513			
119.60	0.172	0.530			
119.70	0.174	0.547			
119.80	0.176	0.564			
119.90	0.178	0.582			
120.00	0.180	0.600			
120.10	0.182	0.618			

Summary for Link 10L: Existing Basin

Inflow Area = 1.250 ac, 36.00% Impervious, Inflow Depth = 2.09" for 2-Year event
Inflow = 2.81 cfs @ 12.16 hrs, Volume= 0.217 af
Primary = 2.81 cfs @ 12.16 hrs, Volume= 0.217 af
Routed to Link 14L : Post Basin A

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 10L: Existing Basin



Hydrograph for Link 10L: Existing Basin

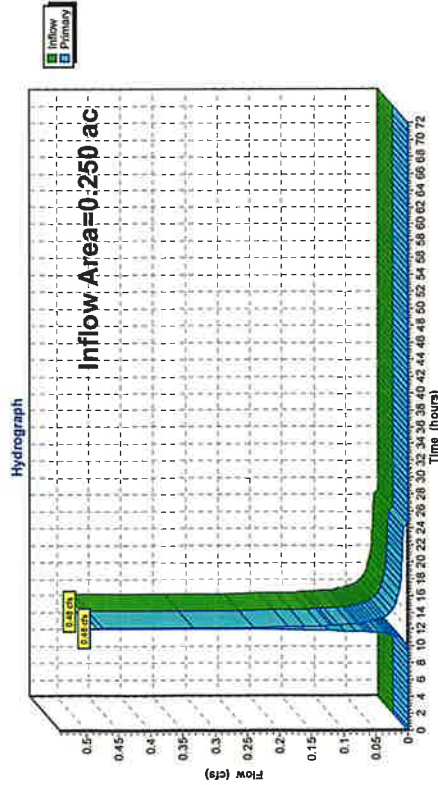
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.01	0.00	0.01	55.00	0.00	0.00	0.00
4.00	0.01	0.00	0.01	56.00	0.00	0.00	0.00
5.00	0.02	0.00	0.02	57.00	0.00	0.00	0.00
6.00	0.02	0.00	0.02	58.00	0.00	0.00	0.00
7.00	0.02	0.00	0.02	59.00	0.00	0.00	0.00
8.00	0.03	0.00	0.03	60.00	0.00	0.00	0.00
9.00	0.04	0.00	0.04	61.00	0.00	0.00	0.00
10.00	0.07	0.00	0.07	62.00	0.00	0.00	0.00
11.00	0.14	0.00	0.14	63.00	0.00	0.00	0.00
12.00	1.27	0.00	1.27	64.00	0.00	0.00	0.00
13.00	0.34	0.00	0.34	65.00	0.00	0.00	0.00
14.00	0.16	0.00	0.16	66.00	0.00	0.00	0.00
15.00	0.11	0.00	0.11	67.00	0.00	0.00	0.00
16.00	0.09	0.00	0.09	68.00	0.00	0.00	0.00
17.00	0.07	0.00	0.07	69.00	0.00	0.00	0.00
18.00	0.06	0.00	0.06	70.00	0.00	0.00	0.00
19.00	0.05	0.00	0.05	71.00	0.00	0.00	0.00
20.00	0.05	0.00	0.05	72.00	0.00	0.00	0.00
21.00	0.05	0.00	0.05				
22.00	0.04	0.00	0.04				
23.00	0.04	0.00	0.04				
24.00	0.04	0.00	0.04				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 13L: Existing Undetained

Inflow Area = 0.250 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year event
Inflow = 0.48 cfs @ 12.13 hrs, Volume= 0.031 af
Primary = 0.48 cfs @ 12.13 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min
Routed to Link 16L : Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 13L: Existing Undetained



Hydrograph for Link 13L: Existing Undetained

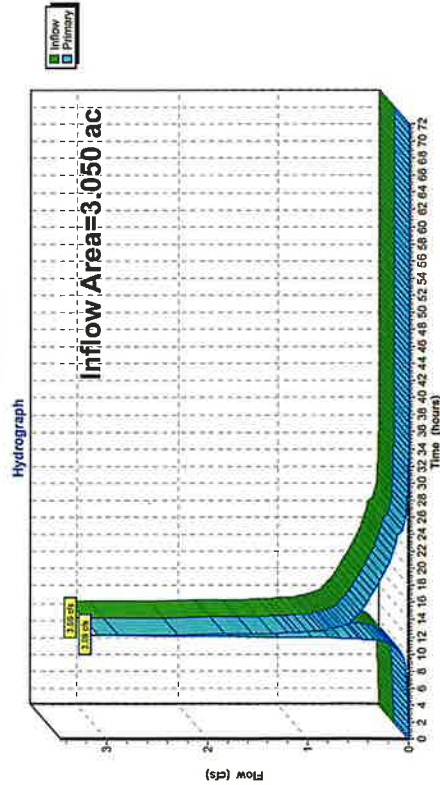
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.01	0.00	0.01	63.00	0.00	0.00	0.00
12.00	0.23	0.00	0.23	64.00	0.00	0.00	0.00
13.00	0.05	0.00	0.05	65.00	0.00	0.00	0.00
14.00	0.03	0.00	0.03	66.00	0.00	0.00	0.00
15.00	0.02	0.00	0.02	67.00	0.00	0.00	0.00
16.00	0.02	0.00	0.02	68.00	0.00	0.00	0.00
17.00	0.01	0.00	0.01	69.00	0.00	0.00	0.00
18.00	0.01	0.00	0.01	70.00	0.00	0.00	0.00
19.00	0.01	0.00	0.01	71.00	0.00	0.00	0.00
20.00	0.01	0.00	0.01	72.00	0.00	0.00	0.00
21.00	0.01	0.00	0.01				
22.00	0.01	0.00	0.01				
23.00	0.01	0.00	0.01				
24.00	0.01	0.00	0.01				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 14L: Post Basin A

Inflow Area = 3.050 ac, 51.15% Impervious, Inflow Depth = 1.98" for 2-Year event
Inflow = 3.09 cfs @ 12.16 hrs, Volume = 0.479 af
Primary = 3.09 cfs @ 12.16 hrs, Volume = 0.479 af, Atten= 0%, Lag= 0.0 min
Routed to Link 16L: Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 14L: Post Basin A



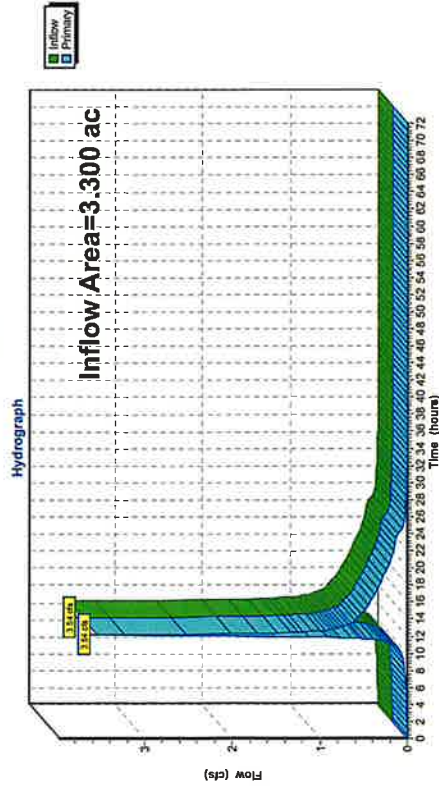
Hydrograph for Link 14L: Post Basin A

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.01	0.00	0.01	55.00	0.00	0.00	0.00
4.00	0.01	0.00	0.01	56.00	0.00	0.00	0.00
5.00	0.02	0.00	0.02	57.00	0.00	0.00	0.00
6.00	0.02	0.00	0.02	58.00	0.00	0.00	0.00
7.00	0.02	0.00	0.02	59.00	0.00	0.00	0.00
8.00	0.03	0.00	0.03	60.00	0.00	0.00	0.00
9.00	0.04	0.00	0.04	61.00	0.00	0.00	0.00
10.00	0.07	0.00	0.07	62.00	0.00	0.00	0.00
11.00	0.14	0.00	0.14	63.00	0.00	0.00	0.00
12.00	1.29	0.00	1.29	64.00	0.00	0.00	0.00
13.00	0.74	0.00	0.74	65.00	0.00	0.00	0.00
14.00	0.55	0.00	0.55	66.00	0.00	0.00	0.00
15.00	0.47	0.00	0.47	67.00	0.00	0.00	0.00
16.00	0.42	0.00	0.42	68.00	0.00	0.00	0.00
17.00	0.36	0.00	0.36	69.00	0.00	0.00	0.00
18.00	0.31	0.00	0.31	70.00	0.00	0.00	0.00
19.00	0.26	0.00	0.26	71.00	0.00	0.00	0.00
20.00	0.22	0.00	0.22	72.00	0.00	0.00	0.00
21.00	0.18	0.00	0.18				
22.00	0.15	0.00	0.15				
23.00	0.13	0.00	0.13				
24.00	0.12	0.00	0.12				
25.00	0.05	0.00	0.05				
26.00	0.03	0.00	0.03				
27.00	0.02	0.00	0.02				
28.00	0.02	0.00	0.02				
29.00	0.01	0.00	0.01				
30.00	0.01	0.00	0.01				
31.00	0.01	0.00	0.01				
32.00	0.01	0.00	0.01				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 16L: Total

Inflow Area = 3.300 ac, 47.27% Impervious, Inflow Depth = 1.86" for 2-Year event
Inflow = 3.54 cfs @ 12.16 hrs, Volume= 0.510 af
Primary = 3.54 cfs @ 12.16 hrs, Volume= 0.510 af, Atten= 0%, Lag= 0.0 min
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 16L: Total



Hydrograph for Link 16L: Total

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.01	0.00	0.01	55.00	0.00	0.00	0.00
4.00	0.01	0.00	0.01	56.00	0.00	0.00	0.00
5.00	0.02	0.00	0.02	57.00	0.00	0.00	0.00
6.00	0.02	0.00	0.02	58.00	0.00	0.00	0.00
7.00	0.02	0.00	0.02	59.00	0.00	0.00	0.00
8.00	0.03	0.00	0.03	60.00	0.00	0.00	0.00
9.00	0.04	0.00	0.04	61.00	0.00	0.00	0.00
10.00	0.07	0.00	0.07	62.00	0.00	0.00	0.00
11.00	0.16	0.00	0.16	63.00	0.00	0.00	0.00
12.00	1.52	0.00	1.52	64.00	0.00	0.00	0.00
13.00	0.80	0.00	0.80	65.00	0.00	0.00	0.00
14.00	0.58	0.00	0.58	66.00	0.00	0.00	0.00
15.00	0.49	0.00	0.49	67.00	0.00	0.00	0.00
16.00	0.43	0.00	0.43	68.00	0.00	0.00	0.00
17.00	0.38	0.00	0.38	69.00	0.00	0.00	0.00
18.00	0.32	0.00	0.32	70.00	0.00	0.00	0.00
19.00	0.27	0.00	0.27	71.00	0.00	0.00	0.00
20.00	0.23	0.00	0.23	72.00	0.00	0.00	0.00
21.00	0.19	0.00	0.19				
22.00	0.16	0.00	0.16				
23.00	0.14	0.00	0.14				
24.00	0.12	0.00	0.12				
25.00	0.05	0.00	0.05				
26.00	0.03	0.00	0.03				
27.00	0.02	0.00	0.02				
28.00	0.02	0.00	0.02				
29.00	0.01	0.00	0.01				
30.00	0.01	0.00	0.01				
31.00	0.01	0.00	0.01				
32.00	0.01	0.00	0.01				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment7S: Basin A - Imp.

Runoff Area=1.110 ac 100.00% Impervious Runoff Depth=4.77"
Flow Length=538' Tc=6.0 min CN=98 Runoff=5.74 cfs 0.442 af

Subcatchment11S: Existing Basin

Runoff Area=0.800 ac 0.00% Impervious Runoff Depth=2.90"
Flow Length=260' Tc=9.0 min CN=80 Runoff=2.68 cfs 0.193 af

Subcatchment12S: Existing Undetained-

Flow Length=113' Slope=0.1700 1/1 Slope=0.00% Impervious Runoff Depth=2.90"
Runoff Area=0.250 ac 0.00% Impervious Runoff=0.92 cfs 0.060 af

Subcatchment15S: Basin A - Perv.

Runoff Area=0.690 ac 0.00% Impervious Runoff Depth=2.90"
Flow Length=538' Tc=6.0 min CN=80 Runoff=2.54 cfs 0.167 af

Subcatchment18S: Proposed Roof

Runoff Area=0.450 ac 100.00% Impervious Runoff Depth=4.77"
Flow Length=260' Tc=9.0 min CN=98 Runoff=2.14 cfs 0.179 af

Pond 9P: Basin A

Peak Elev=118.69' Storage=0.382 af Inflow=8.28 cfs 0.608 af
Outflow=0.80 cfs 0.496 af

Link 10L: Existing Basin

Inflow=4.82 cfs 0.372 af
Primary=4.82 cfs 0.372 af

Link 13L: Existing Undetained

Inflow=0.92 cfs 0.060 af
Primary=0.92 cfs 0.060 af

Link 14L: Post Basin A

Inflow=5.30 cfs 0.868 af
Primary=5.30 cfs 0.868 af

Link 16L: Total

Inflow=6.17 cfs 0.929 af
Primary=6.17 cfs 0.929 af

Total Runoff Area = 3.300 ac Runoff Volume = 1.041 af Average Runoff Depth = 3.79"
52.73% Pervious = 1.740 ac 47.27% Impervious = 1.560 ac

Summary for Subcatchment 7S: Basin A - Imp.

[47] Hint: Peak is 126% of capacity of segment #3

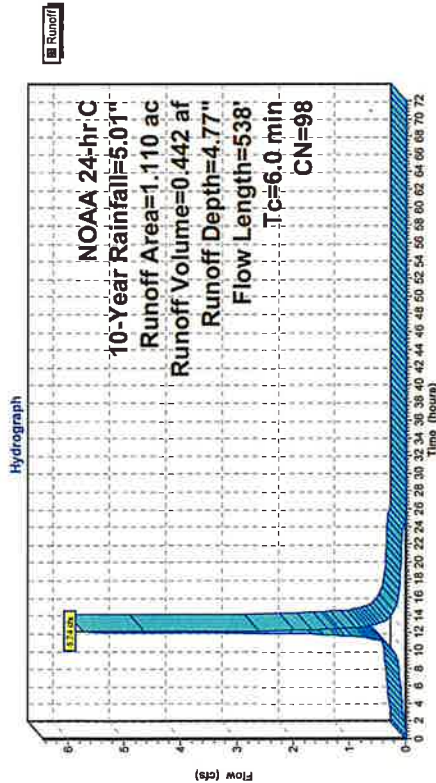
Runoff = 5.74 cfs @ 12.13 hrs, Volume= 0.442 af, Depth= 4.77"
Routed to Pond 9P : Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description
0.660	98	Paved parking, HSG D
0.450	98	Roofs, HSG D
1.110	98	Weighted Average
1.110		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	45	0.0100	0.92		Sheet Flow, Sheet Flow - Paved
					Smooth surfaces n= 0.011 P2= 3.44"
0.4	54	0.0100	2.03		Shallow Concentrated Flow, SCF - Paved
					Paved Kv= 20.3 fps
1.6	352	0.0050	3.72	4.57	Pipe Channel, Pipe - 15"
					15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31'
					n= 0.013
0.3	87	0.0050	4.20	7.43	Pipe Channel, Pipe - 18"
					18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38'
					n= 0.013
3.1	538	Total	Increased to minimum	Tc = 6.0 min	

Subcatchment 7S: Basin A - Imp.



Hydrograph for Subcatchment 7S: Basin A - Imp.

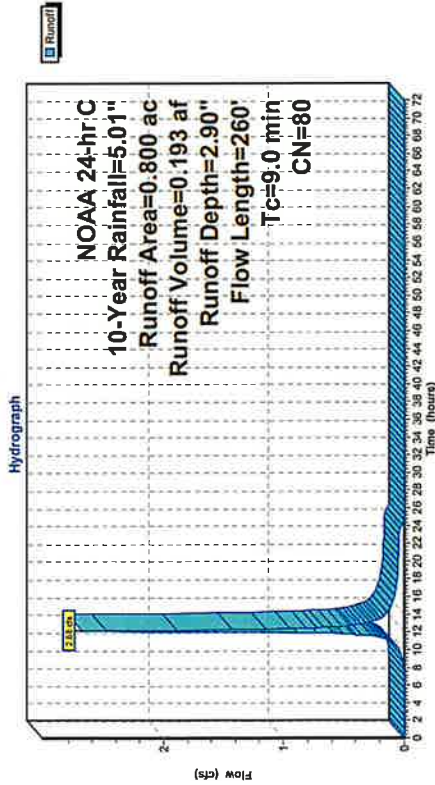
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	4.77	0.00
1.00	0.05	0.00	0.01	53.00	5.01	4.77	0.00
2.00	0.11	0.02	0.03	54.00	5.01	4.77	0.00
3.00	0.18	0.05	0.05	55.00	5.01	4.77	0.00
4.00	0.25	0.10	0.06	56.00	5.01	4.77	0.00
5.00	0.32	0.16	0.07	57.00	5.01	4.77	0.00
6.00	0.40	0.23	0.08	58.00	5.01	4.77	0.00
7.00	0.48	0.31	0.10	59.00	5.01	4.77	0.00
8.00	0.60	0.41	0.12	60.00	5.01	4.77	0.00
9.00	0.73	0.53	0.15	61.00	5.01	4.77	0.00
10.00	0.91	0.71	0.23	62.00	5.01	4.77	0.00
11.00	1.20	0.99	0.42	63.00	5.01	4.77	0.00
12.00	2.39	2.16	3.27	64.00	5.01	4.77	0.00
13.00	3.81	3.57	0.53	65.00	5.01	4.77	0.00
14.00	4.10	3.86	0.25	66.00	5.01	4.77	0.00
15.00	4.28	4.04	0.17	67.00	5.01	4.77	0.00
16.00	4.41	4.17	0.14	68.00	5.01	4.77	0.00
17.00	4.52	4.29	0.12	69.00	5.01	4.77	0.00
18.00	4.61	4.38	0.09	70.00	5.01	4.77	0.00
19.00	4.69	4.46	0.08	71.00	5.01	4.77	0.00
20.00	4.76	4.53	0.08	72.00	5.01	4.77	0.00
21.00	4.83	4.60	0.07				
22.00	4.90	4.66	0.06				
23.00	4.96	4.72	0.06				
24.00	5.01	4.77	0.07				
25.00	5.01	4.77	0.00				
26.00	5.01	4.77	0.00				
27.00	5.01	4.77	0.00				
28.00	5.01	4.77	0.00				
29.00	5.01	4.77	0.00				
30.00	5.01	4.77	0.00				
31.00	5.01	4.77	0.00				
32.00	5.01	4.77	0.00				
33.00	5.01	4.77	0.00				
34.00	5.01	4.77	0.00				
35.00	5.01	4.77	0.00				
36.00	5.01	4.77	0.00				
37.00	5.01	4.77	0.00				
38.00	5.01	4.77	0.00				
39.00	5.01	4.77	0.00				
40.00	5.01	4.77	0.00				
41.00	5.01	4.77	0.00				
42.00	5.01	4.77	0.00				
43.00	5.01	4.77	0.00				
44.00	5.01	4.77	0.00				
45.00	5.01	4.77	0.00				
46.00	5.01	4.77	0.00				
47.00	5.01	4.77	0.00				
48.00	5.01	4.77	0.00				
49.00	5.01	4.77	0.00				
50.00	5.01	4.77	0.00				
51.00	5.01	4.77	0.00				

Summary for Subcatchment 11S: Existing Basin Undetained - Perv.

Runoff = 2.68 cfs @ 12.16 hrs, Volume= 0.193 af, Depth= 2.90"
 Routed to Link 10L : Existing Basin
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description			
0.800	80	>75% Grass cover, Good, HSG D			
0.800		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	85	0.0700	0.19		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 3.44"
1.7	175	0.0120	1.76		Shallow Concentrated Flow, SCF - Unpaved
9.0	260	Total			Unpaved Kv= 16.1 fps

Subcatchment 11S: Existing Basin Undetained - Perv.



Hydrograph for Subcatchment 11S: Existing Basin Undetained - Perv.

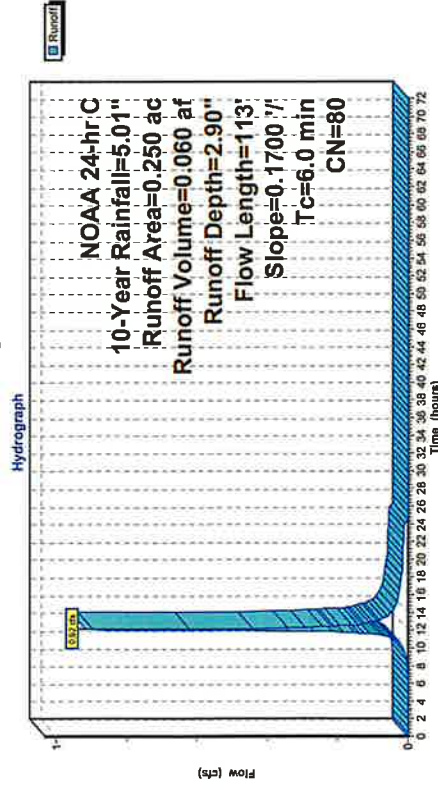
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	2.90	0.00
1.00	0.05	0.00	0.00	53.00	5.01	2.90	0.00
2.00	0.11	0.00	0.00	54.00	5.01	2.90	0.00
3.00	0.18	0.00	0.00	55.00	5.01	2.90	0.00
4.00	0.25	0.00	0.00	56.00	5.01	2.90	0.00
5.00	0.32	0.00	0.00	57.00	5.01	2.90	0.00
6.00	0.40	0.00	0.00	58.00	5.01	2.90	0.00
7.00	0.49	0.00	0.00	59.00	5.01	2.90	0.00
8.00	0.60	0.00	0.01	60.00	5.01	2.90	0.00
9.00	0.73	0.02	0.02	61.00	5.01	2.90	0.00
10.00	0.91	0.06	0.04	62.00	5.01	2.90	0.00
11.00	1.20	0.15	0.11	63.00	5.01	2.90	0.00
12.00	2.39	0.81	1.17	64.00	5.01	2.90	0.00
13.00	3.81	1.88	0.33	65.00	5.01	2.90	0.00
14.00	4.10	2.12	0.15	66.00	5.01	2.90	0.00
15.00	4.28	2.27	0.10	67.00	5.01	2.90	0.00
16.00	4.41	2.38	0.08	68.00	5.01	2.90	0.00
17.00	4.52	2.48	0.07	69.00	5.01	2.90	0.00
18.00	4.61	2.56	0.06	70.00	5.01	2.90	0.00
19.00	4.69	2.63	0.05	71.00	5.01	2.90	0.00
20.00	4.76	2.69	0.05	72.00	5.01	2.90	0.00
21.00	4.83	2.75	0.05				
22.00	4.90	2.80	0.04				
23.00	4.96	2.85	0.04				
24.00	5.01	2.90	0.04				
25.00	5.01	2.90	0.00				
26.00	5.01	2.90	0.00				
27.00	5.01	2.90	0.00				
28.00	5.01	2.90	0.00				
29.00	5.01	2.90	0.00				
30.00	5.01	2.90	0.00				
31.00	5.01	2.90	0.00				
32.00	5.01	2.90	0.00				
33.00	5.01	2.90	0.00				
34.00	5.01	2.90	0.00				
35.00	5.01	2.90	0.00				
36.00	5.01	2.90	0.00				
37.00	5.01	2.90	0.00				
38.00	5.01	2.90	0.00				
39.00	5.01	2.90	0.00				
40.00	5.01	2.90	0.00				
41.00	5.01	2.90	0.00				
42.00	5.01	2.90	0.00				
43.00	5.01	2.90	0.00				
44.00	5.01	2.90	0.00				
45.00	5.01	2.90	0.00				
46.00	5.01	2.90	0.00				
47.00	5.01	2.90	0.00				
48.00	5.01	2.90	0.00				
49.00	5.01	2.90	0.00				
50.00	5.01	2.90	0.00				
51.00	5.01	2.90	0.00				

Summary for Subcatchment 12S: Existing Undetained - Perv.

Runoff = 0.92 cfs @ 12.13 hrs, Volume= 0.060 af, Depth= 2.90"
Routed to Link 13L : Existing Undetained
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description			
0.250	80	>75% Grass cover, Good, HSG D			
0.250		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	100	0.1700	0.29		Sheet Flow, Sheet Flow - Grass
					Grass: Dense n= 0.240 P2= 3.44"
0.0	13	0.1700	6.64		Shallow Concentrated Flow, SCF - Unpaved
					Unpaved Kv= 16.1 fps
5.8	113	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 12S: Existing Undetained - Perv.



Hydrograph for Subcatchment 12S: Existing Undetained - Perv.

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	2.90	0.00
1.00	0.05	0.00	0.00	53.00	5.01	2.90	0.00
2.00	0.11	0.00	0.00	54.00	5.01	2.90	0.00
3.00	0.18	0.00	0.00	55.00	5.01	2.90	0.00
4.00	0.25	0.00	0.00	56.00	5.01	2.90	0.00
5.00	0.32	0.00	0.00	57.00	5.01	2.90	0.00
6.00	0.40	0.00	0.00	58.00	5.01	2.90	0.00
7.00	0.49	0.00	0.00	59.00	5.01	2.90	0.00
8.00	0.60	0.00	0.00	60.00	5.01	2.90	0.00
9.00	0.73	0.02	0.01	61.00	5.01	2.90	0.00
10.00	0.91	0.06	0.04	62.00	5.01	2.90	0.00
11.00	1.20	0.15	0.04	63.00	5.01	2.90	0.00
12.00	2.39	0.81	0.47	64.00	5.01	2.90	0.00
13.00	3.81	1.88	0.10	65.00	5.01	2.90	0.00
14.00	4.10	2.12	0.05	66.00	5.01	2.90	0.00
15.00	4.28	2.27	0.03	67.00	5.01	2.90	0.00
16.00	4.41	2.38	0.03	68.00	5.01	2.90	0.00
17.00	4.52	2.48	0.02	69.00	5.01	2.90	0.00
18.00	4.61	2.56	0.02	70.00	5.01	2.90	0.00
19.00	4.69	2.63	0.02	71.00	5.01	2.90	0.00
20.00	4.76	2.69	0.02	72.00	5.01	2.90	0.00
21.00	4.83	2.75	0.01				
22.00	4.90	2.80	0.01				
23.00	4.96	2.85	0.01				
24.00	5.01	2.90	0.01				
25.00	5.01	2.90	0.00				
26.00	5.01	2.90	0.00				
27.00	5.01	2.90	0.00				
28.00	5.01	2.90	0.00				
29.00	5.01	2.90	0.00				
30.00	5.01	2.90	0.00				
31.00	5.01	2.90	0.00				
32.00	5.01	2.90	0.00				
33.00	5.01	2.90	0.00				
34.00	5.01	2.90	0.00				
35.00	5.01	2.90	0.00				
36.00	5.01	2.90	0.00				
37.00	5.01	2.90	0.00				
38.00	5.01	2.90	0.00				
39.00	5.01	2.90	0.00				
40.00	5.01	2.90	0.00				
41.00	5.01	2.90	0.00				
42.00	5.01	2.90	0.00				
43.00	5.01	2.90	0.00				
44.00	5.01	2.90	0.00				
45.00	5.01	2.90	0.00				
46.00	5.01	2.90	0.00				
47.00	5.01	2.90	0.00				
48.00	5.01	2.90	0.00				
49.00	5.01	2.90	0.00				
50.00	5.01	2.90	0.00				
51.00	5.01	2.90	0.00				

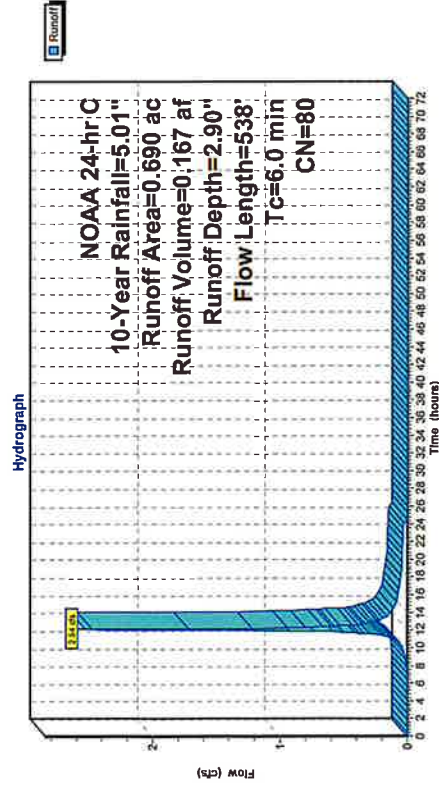
Summary for Subcatchment 15S: Basin A - Perv.

Runoff = 2.54 cfs @ 12.13 hrs, Volume= 0.167 af, Depth= 2.90"
 Routed to Pond 9P : Basin A
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dl= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description			
0.690	80	>75% Grass cover, Good, HSG D			
0.690		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	45	0.0100	0.92		Sheet Flow, Sheet Flow - Paved
					Smooth surfaces n= 0.011 P2= 3.44"
0.4	54	0.0100	2.03		Shallow Concentrated Flow, SCF - Paved
					Paved Kv= 20.3 fps
1.6	352	0.0050	3.72	4.57	Pipe Channel, Pipe - 15"
					15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31'
					n= 0.013
0.3	87	0.0050	4.20	7.43	Pipe Channel, Pipe - 18"
					18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38'
					n= 0.013

3.1 538 Total, Increased to minimum Tc = 6.0 min

Subcatchment 15S: Basin A - Perv.



Hydrograph for Subcatchment 15S: Basin A - Perv.

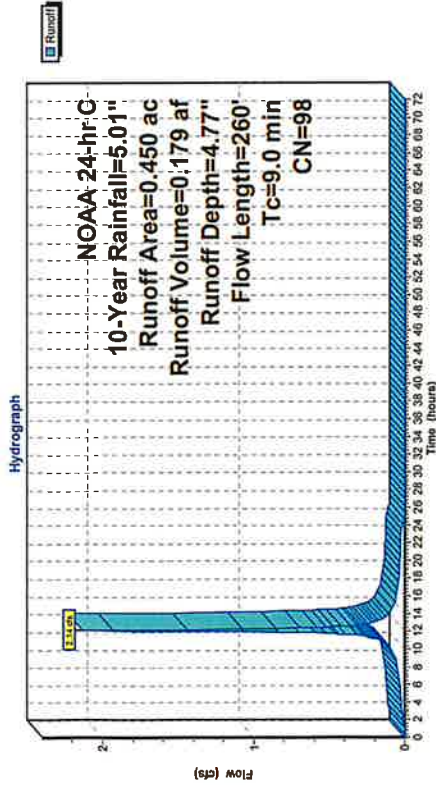
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	2.90	0.00
1.00	0.05	0.00	0.00	53.00	5.01	2.90	0.00
2.00	0.11	0.00	0.00	54.00	5.01	2.90	0.00
3.00	0.18	0.00	0.00	55.00	5.01	2.90	0.00
4.00	0.25	0.00	0.00	56.00	5.01	2.90	0.00
5.00	0.32	0.00	0.00	57.00	5.01	2.90	0.00
6.00	0.40	0.00	0.00	58.00	5.01	2.90	0.00
7.00	0.49	0.00	0.00	59.00	5.01	2.90	0.00
8.00	0.60	0.00	0.01	60.00	5.01	2.90	0.00
9.00	0.73	0.02	0.02	61.00	5.01	2.90	0.00
10.00	0.91	0.06	0.04	62.00	5.01	2.90	0.00
11.00	1.20	0.15	0.10	63.00	5.01	2.90	0.00
12.00	2.39	0.81	1.29	64.00	5.01	2.90	0.00
13.00	3.81	1.88	0.27	65.00	5.01	2.90	0.00
14.00	4.10	2.12	0.13	66.00	5.01	2.90	0.00
15.00	4.28	2.27	0.09	67.00	5.01	2.90	0.00
16.00	4.41	2.38	0.07	68.00	5.01	2.90	0.00
17.00	4.52	2.48	0.06	69.00	5.01	2.90	0.00
18.00	4.61	2.56	0.05	70.00	5.01	2.90	0.00
19.00	4.69	2.63	0.05	71.00	5.01	2.90	0.00
20.00	4.76	2.69	0.04	72.00	5.01	2.90	0.00
21.00	4.83	2.75	0.04				
22.00	4.90	2.80	0.04				
23.00	4.96	2.85	0.03				
24.00	5.01	2.90	0.04				
25.00	5.01	2.90	0.00				
26.00	5.01	2.90	0.00				
27.00	5.01	2.90	0.00				
28.00	5.01	2.90	0.00				
29.00	5.01	2.90	0.00				
30.00	5.01	2.90	0.00				
31.00	5.01	2.90	0.00				
32.00	5.01	2.90	0.00				
33.00	5.01	2.90	0.00				
34.00	5.01	2.90	0.00				
35.00	5.01	2.90	0.00				
36.00	5.01	2.90	0.00				
37.00	5.01	2.90	0.00				
38.00	5.01	2.90	0.00				
39.00	5.01	2.90	0.00				
40.00	5.01	2.90	0.00				
41.00	5.01	2.90	0.00				
42.00	5.01	2.90	0.00				
43.00	5.01	2.90	0.00				
44.00	5.01	2.90	0.00				
45.00	5.01	2.90	0.00				
46.00	5.01	2.90	0.00				
47.00	5.01	2.90	0.00				
48.00	5.01	2.90	0.00				
49.00	5.01	2.90	0.00				
50.00	5.01	2.90	0.00				
51.00	5.01	2.90	0.00				

Summary for Subcatchment 18S: Proposed Roof

Runoff = 2.14 cfs @ 12.16 hrs, Volume= 0.179 af, Depth= 4.77"
Routed to Link 10L : Existing Basin
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description			
0.450	98	Roofs, HSG D			
0.450		100.00% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	85	0.0700	0.19		Sheet Flow, Sheet Flow
1.7	175	0.0120	1.76		Grass: Dense n= 0.240 P2= 3.44" Shallow Concentrated Flow, SCF - Unpaved
9.0	260	Total			Unpaved Kv= 16.1 fps

Subcatchment 18S: Proposed Roof



Hydrograph for Subcatchment 18S: Proposed Roof

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	4.77	0.00
1.00	0.05	0.00	0.00	53.00	5.01	4.77	0.00
2.00	0.11	0.02	0.01	54.00	5.01	4.77	0.00
3.00	0.18	0.05	0.02	55.00	5.01	4.77	0.00
4.00	0.25	0.10	0.02	56.00	5.01	4.77	0.00
5.00	0.32	0.16	0.03	57.00	5.01	4.77	0.00
6.00	0.40	0.23	0.03	58.00	5.01	4.77	0.00
7.00	0.49	0.31	0.04	59.00	5.01	4.77	0.00
8.00	0.60	0.41	0.05	60.00	5.01	4.77	0.00
9.00	0.73	0.53	0.06	61.00	5.01	4.77	0.00
10.00	0.91	0.71	0.09	62.00	5.01	4.77	0.00
11.00	1.20	0.99	0.16	63.00	5.01	4.77	0.00
12.00	2.39	2.16	1.07	64.00	5.01	4.77	0.00
13.00	3.81	3.57	0.23	65.00	5.01	4.77	0.00
14.00	4.10	3.86	0.10	66.00	5.01	4.77	0.00
15.00	4.28	4.04	0.07	67.00	5.01	4.77	0.00
16.00	4.41	4.17	0.06	68.00	5.01	4.77	0.00
17.00	4.52	4.29	0.05	69.00	5.01	4.77	0.00
18.00	4.61	4.38	0.04	70.00	5.01	4.77	0.00
19.00	4.69	4.46	0.03	71.00	5.01	4.77	0.00
20.00	4.76	4.53	0.03	72.00	5.01	4.77	0.00
21.00	4.83	4.60	0.03				
22.00	4.90	4.66	0.03				
23.00	4.96	4.72	0.03				
24.00	5.01	4.77	0.00				
25.00	5.01	4.77	0.00				
26.00	5.01	4.77	0.00				
27.00	5.01	4.77	0.00				
28.00	5.01	4.77	0.00				
29.00	5.01	4.77	0.00				
30.00	5.01	4.77	0.00				
31.00	5.01	4.77	0.00				
32.00	5.01	4.77	0.00				
33.00	5.01	4.77	0.00				
34.00	5.01	4.77	0.00				
35.00	5.01	4.77	0.00				
36.00	5.01	4.77	0.00				
37.00	5.01	4.77	0.00				
38.00	5.01	4.77	0.00				
39.00	5.01	4.77	0.00				
40.00	5.01	4.77	0.00				
41.00	5.01	4.77	0.00				
42.00	5.01	4.77	0.00				
43.00	5.01	4.77	0.00				
44.00	5.01	4.77	0.00				
45.00	5.01	4.77	0.00				
46.00	5.01	4.77	0.00				
47.00	5.01	4.77	0.00				
48.00	5.01	4.77	0.00				
49.00	5.01	4.77	0.00				
50.00	5.01	4.77	0.00				
51.00	5.01	4.77	0.00				

Summary for Pond 9P: Basin A

Inflow Area = 1,800 ac, 61.67% Impervious, Inflow Depth = 4.06" for 10-Year event
Inflow = 8.28 cfs @ 12.13 hrs, Volume= 0.608 af
Outflow = 0.60 cfs @ 13.29 hrs, Volume= 0.496 af, Atten= 93%, Lag= 69.8 min
Primary = 0.60 cfs @ 13.29 hrs, Volume= 0.496 af
Routed to Link 14L : Post Basin A

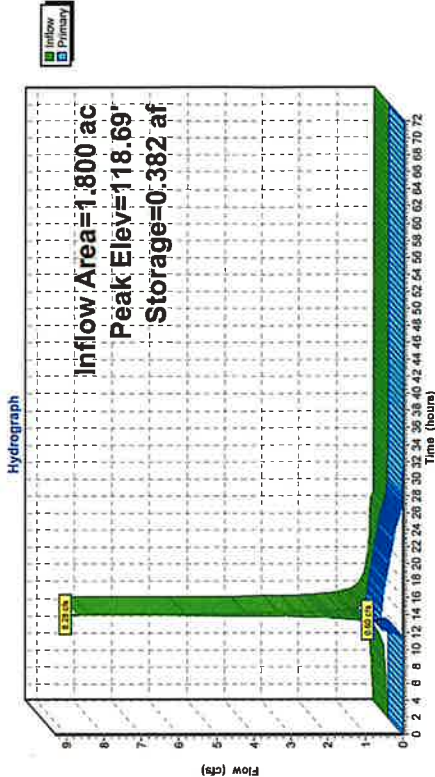
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 118.69' @ 13.29 hrs Surf.Area= 0.151 ac Storage= 0.382 af
Plug-Flow detention time= 389.7 min calculated for 0.495 af (81% of inflow)
Center-of-Mass det. time= 313.7 min (1,083.3 - 769.7)

Volume					Invert			Avail.Storage			Storage Description		
#1					115.00'			1,000 af			Custom Stage Data (Prismatic) Listed below (Recalc)		
Elevation	Surf.Area	Inc.Store	Cum.Store		(feet)	(acres)	(acre-feet)	(acre-feet)					
115.00	0.040	0.000	0.000				0.000						
116.00	0.090	0.065	0.065				0.065						
117.00	0.110	0.100	0.165				0.165						
118.00	0.130	0.120	0.285				0.285						
119.00	0.160	0.145	0.430				0.430						
120.00	0.180	0.170	0.600				0.600						
121.00	0.200	0.190	0.790				0.790						
122.00	0.220	0.210	1.000				1.000						

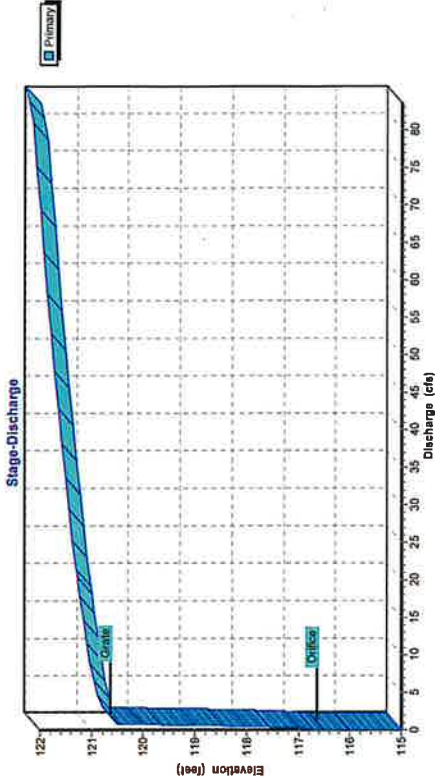
Device		Routing		Invert		Outlet Devices	
#1	Primary	120.50'	42.0" x 48.0" Horiz. Grate	C= 0.600		Limited to weir flow at low heads	
#2	Primary	116.50'	4.0" Vert. Orifice	C= 0.600		Limited to weir flow at low heads	

Primary OutFlow Max=0.60 cfs @ 13.29 hrs HW=118.69' (Free Discharge)
1=Grate (Controls 0.00 cfs)
2=Orifice (Orifice Controls 0.60 cfs @ 6.85 fps)

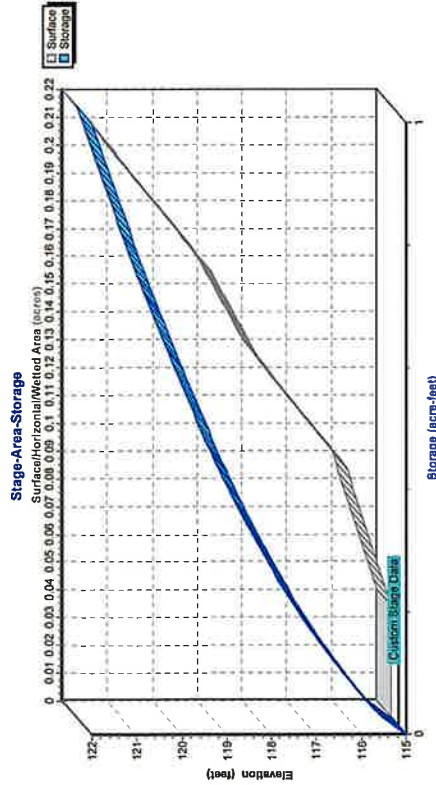
Pond 9P: Basin A



Pond 9P: Basin A



Pond 9P: Basin A



Hydrograph for Pond 9P: Basin A

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	115.00	0.00
2.50	0.04	0.003	115.07	0.00
5.00	0.07	0.014	115.30	0.00
7.50	0.11	0.032	115.59	0.00
10.00	0.27	0.067	116.02	0.00
12.50	1.74	0.359	118.53	0.57
15.00	0.26	0.353	118.49	0.57
17.50	0.16	0.285	118.00	0.49
20.00	0.12	0.223	117.51	0.39
22.50	0.10	0.178	117.11	0.28
25.00	0.00	0.144	116.80	0.15
27.50	0.00	0.126	116.63	0.04
30.00	0.00	0.121	116.59	0.02
32.50	0.00	0.118	116.55	0.01
35.00	0.00	0.117	116.54	0.00
37.50	0.00	0.116	116.53	0.00
40.00	0.00	0.115	116.53	0.00
42.50	0.00	0.115	116.52	0.00
45.00	0.00	0.114	116.52	0.00
47.50	0.00	0.114	116.51	0.00
50.00	0.00	0.113	116.51	0.00
52.50	0.00	0.113	116.51	0.00
55.00	0.00	0.113	116.51	0.00
57.50	0.00	0.113	116.51	0.00
60.00	0.00	0.113	116.51	0.00
62.50	0.00	0.113	116.50	0.00
65.00	0.00	0.113	116.50	0.00
67.50	0.00	0.113	116.50	0.00
70.00	0.00	0.113	116.50	0.00

Stage-Discharge for Pond 9P: Basin A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
115.00	0.00	117.80	0.41	120.20	0.79
115.05	0.00	117.65	0.42	120.25	0.80
115.10	0.00	117.70	0.43	120.30	0.80
115.15	0.00	117.75	0.44	120.35	0.81
115.20	0.00	117.80	0.45	120.40	0.81
115.25	0.00	117.85	0.46	120.45	0.82
115.30	0.00	117.90	0.47	120.50	0.82
115.35	0.00	117.95	0.48	120.55	1.38
115.40	0.00	118.00	0.49	120.60	2.38
115.45	0.00	118.05	0.49	120.65	3.69
115.50	0.00	118.10	0.50	120.70	5.23
115.55	0.00	118.15	0.51	120.75	6.98
115.60	0.00	118.20	0.52	120.80	8.91
115.65	0.00	118.25	0.53	120.85	11.02
115.70	0.00	118.30	0.54	120.90	13.27
115.75	0.00	118.35	0.55	120.95	15.68
115.80	0.00	118.40	0.55	121.00	18.22
115.85	0.00	118.45	0.56	121.05	20.89
115.90	0.00	118.50	0.57	121.10	23.68
115.95	0.00	118.55	0.58	121.15	26.59
116.00	0.00	118.60	0.58	121.20	29.62
116.05	0.00	118.65	0.59	121.25	32.76
116.10	0.00	118.70	0.60	121.30	36.00
116.15	0.00	118.75	0.61	121.35	39.35
116.20	0.00	118.80	0.61	121.40	42.79
116.25	0.00	118.85	0.62	121.45	46.34
116.30	0.00	118.90	0.63	121.50	49.97
116.35	0.00	118.95	0.63	121.55	53.70
116.40	0.00	119.00	0.64	121.60	57.52
116.45	0.00	119.05	0.65	121.65	61.43
116.50	0.00	119.10	0.66	121.70	65.42
116.55	0.01	119.15	0.66	121.75	69.50
116.60	0.02	119.20	0.67	121.80	73.66
116.65	0.05	119.25	0.68	121.85	77.89
116.70	0.08	119.30	0.68	121.90	80.72
116.75	0.12	119.35	0.69	121.95	82.14
116.80	0.15	119.40	0.69	122.00	83.53
116.85	0.18	119.45	0.70		
116.90	0.20	119.50	0.71		
116.95	0.22	119.55	0.71		
117.00	0.24	119.60	0.72		
117.05	0.26	119.65	0.73		
117.10	0.28	119.70	0.73		
117.15	0.29	119.75	0.74		
117.20	0.31	119.80	0.74		
117.25	0.32	119.85	0.75		
117.30	0.33	119.90	0.76		
117.35	0.35	119.95	0.76		
117.40	0.36	120.00	0.77		
117.45	0.37	120.05	0.77		
117.50	0.38	120.10	0.78		
117.55	0.39	120.15	0.78		

Stage-Area-Storage for Pond 9P: Basin A

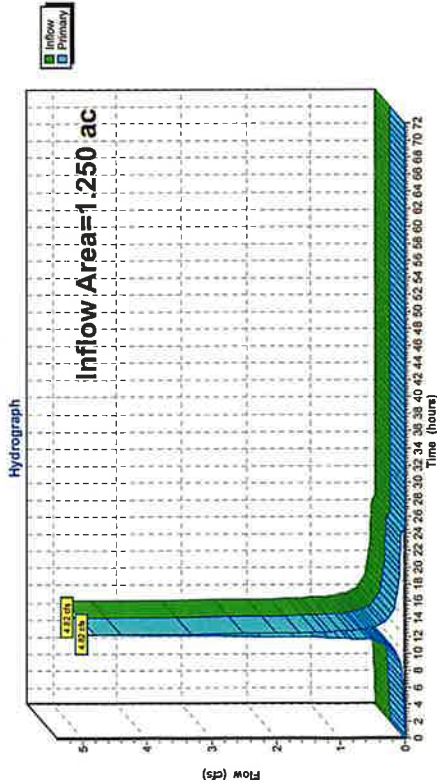
Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
115.00	0.040	0.000	120.20	0.184	0.636
115.10	0.045	0.004	120.30	0.186	0.655
115.15	0.050	0.009	120.40	0.188	0.674
115.20	0.055	0.014	120.50	0.190	0.693
115.25	0.060	0.020	120.60	0.192	0.712
115.30	0.065	0.026	120.70	0.194	0.731
115.35	0.070	0.033	120.80	0.196	0.750
115.40	0.075	0.040	120.90	0.198	0.770
115.45	0.080	0.048	121.00	0.200	0.790
115.50	0.085	0.056	121.10	0.202	0.810
115.55	0.090	0.065	121.20	0.204	0.830
115.60	0.092	0.074	121.30	0.206	0.851
115.65	0.094	0.083	121.40	0.208	0.872
115.70	0.096	0.093	121.50	0.210	0.893
115.75	0.098	0.103	121.60	0.212	0.914
115.80	0.100	0.112	121.70	0.214	0.935
115.85	0.102	0.123	121.80	0.216	0.956
115.90	0.104	0.133	121.90	0.218	0.978
115.95	0.108	0.143	122.00	0.220	1.000
116.00	0.108	0.154			
116.05	0.110	0.165			
116.10	0.112	0.176			
116.15	0.114	0.187			
116.20	0.116	0.199			
116.25	0.118	0.211			
116.30	0.120	0.222			
116.35	0.122	0.235			
116.40	0.124	0.247			
116.45	0.126	0.259			
116.50	0.128	0.272			
116.55	0.130	0.285			
116.60	0.133	0.298			
116.65	0.136	0.312			
116.70	0.139	0.325			
116.75	0.142	0.339			
116.80	0.145	0.354			
116.85	0.148	0.368			
116.90	0.151	0.383			
116.95	0.154	0.399			
117.00	0.157	0.414			
117.05	0.160	0.430			
117.10	0.162	0.446			
117.15	0.164	0.462			
117.20	0.166	0.479			
117.25	0.168	0.496			
117.30	0.170	0.513			
117.35	0.172	0.530			
117.40	0.174	0.547			
117.45	0.176	0.564			
117.50	0.178	0.582			
117.55	0.180	0.600			
117.60	0.182	0.618			

Summary for Link 10L: Existing Basin

Inflow Area = 1.250 ac, 36.00% Impervious, Inflow Depth = 3.58" for 10-Year event
Inflow = 4.82 cfs @ 12.16 hrs, Volume = 0.372 af
Primary = 4.82 cfs @ 12.16 hrs, Volume = 0.372 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Post Basin A

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 10L: Existing Basin



Hydrograph for Link 10L: Existing Basin

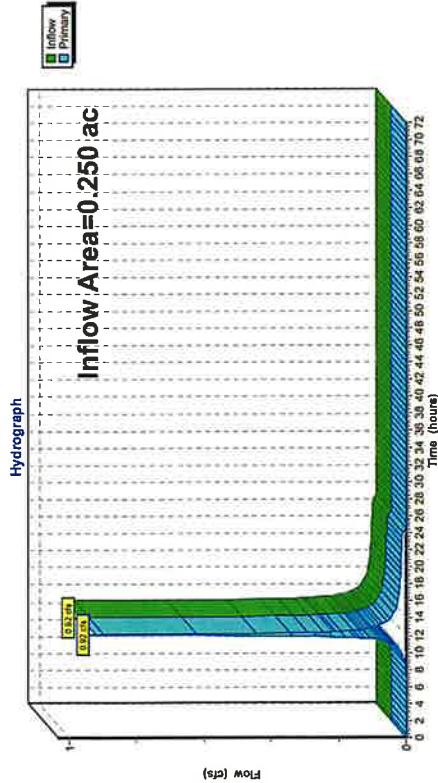
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.01	0.00	0.01	54.00	0.00	0.00	0.00
3.00	0.02	0.00	0.02	55.00	0.00	0.00	0.00
4.00	0.02	0.00	0.02	56.00	0.00	0.00	0.00
5.00	0.03	0.00	0.03	57.00	0.00	0.00	0.00
6.00	0.03	0.00	0.03	58.00	0.00	0.00	0.00
7.00	0.04	0.00	0.04	59.00	0.00	0.00	0.00
8.00	0.06	0.00	0.06	60.00	0.00	0.00	0.00
9.00	0.06	0.00	0.06	61.00	0.00	0.00	0.00
10.00	0.13	0.00	0.13	62.00	0.00	0.00	0.00
11.00	0.28	0.00	0.28	63.00	0.00	0.00	0.00
12.00	2.24	0.00	2.24	64.00	0.00	0.00	0.00
13.00	0.55	0.00	0.55	65.00	0.00	0.00	0.00
14.00	0.26	0.00	0.26	66.00	0.00	0.00	0.00
15.00	0.17	0.00	0.17	67.00	0.00	0.00	0.00
16.00	0.14	0.00	0.14	68.00	0.00	0.00	0.00
17.00	0.12	0.00	0.12	69.00	0.00	0.00	0.00
18.00	0.10	0.00	0.10	70.00	0.00	0.00	0.00
19.00	0.09	0.00	0.09	71.00	0.00	0.00	0.00
20.00	0.08	0.00	0.08	72.00	0.00	0.00	0.00
21.00	0.08	0.00	0.08				
22.00	0.07	0.00	0.07				
23.00	0.07	0.00	0.07				
24.00	0.06	0.00	0.06				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 13L: Existing Undetained

Inflow Area = 0.250 ac, 0.00% Impervious, Inflow Depth = 2.90" for 10-Year event
Inflow = 0.92 cfs @ 12.13 hrs, Volume = 0.060 af
Primary = 0.92 cfs @ 12.13 hrs, Volume = 0.060 af, Atten= 0%, Lag= 0.0 min
Routed to Link 16L: Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 13L: Existing Undetained



Hydrograph for Link 13L: Existing Undetained

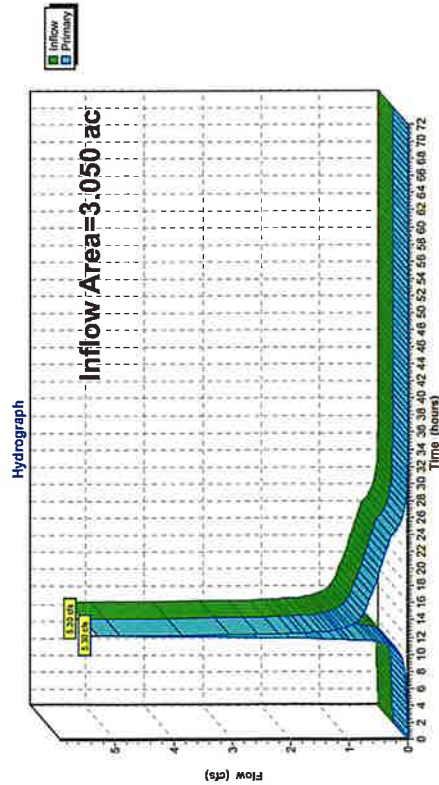
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.01	0.00	0.01	61.00	0.00	0.00	0.00
10.00	0.01	0.00	0.01	62.00	0.00	0.00	0.00
11.00	0.04	0.00	0.04	63.00	0.00	0.00	0.00
12.00	0.47	0.00	0.47	64.00	0.00	0.00	0.00
13.00	0.10	0.00	0.10	65.00	0.00	0.00	0.00
14.00	0.05	0.00	0.05	66.00	0.00	0.00	0.00
15.00	0.03	0.00	0.03	67.00	0.00	0.00	0.00
16.00	0.03	0.00	0.03	68.00	0.00	0.00	0.00
17.00	0.02	0.00	0.02	69.00	0.00	0.00	0.00
18.00	0.02	0.00	0.02	70.00	0.00	0.00	0.00
19.00	0.02	0.00	0.02	71.00	0.00	0.00	0.00
20.00	0.02	0.00	0.02	72.00	0.00	0.00	0.00
21.00	0.01	0.00	0.01				
22.00	0.01	0.00	0.01				
23.00	0.01	0.00	0.01				
24.00	0.01	0.00	0.01				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 14L: Post Basin A

Inflow Area = 3.050 ac, 51.15% Impervious, Inflow Depth = 3.42" for 10-Year event
Inflow = 5.30 cfs @ 12.16 hrs, Volume= 0.868 af
Primary = 5.30 cfs @ 12.16 hrs, Volume= 0.868 af, Atten= 0%, Lag= 0.0 min
Routed to Link 16L: Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 14L: Post Basin A



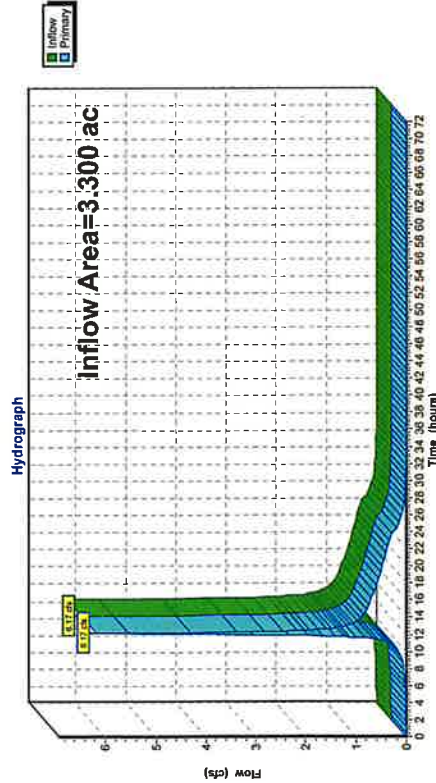
Hydrograph for Link 14L: Post Basin A

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.01	0.00	0.01	54.00	0.00	0.00	0.00
3.00	0.02	0.00	0.02	55.00	0.00	0.00	0.00
4.00	0.02	0.00	0.02	56.00	0.00	0.00	0.00
5.00	0.03	0.00	0.03	57.00	0.00	0.00	0.00
6.00	0.03	0.00	0.03	58.00	0.00	0.00	0.00
7.00	0.04	0.00	0.04	59.00	0.00	0.00	0.00
8.00	0.06	0.00	0.06	60.00	0.00	0.00	0.00
9.00	0.08	0.00	0.08	61.00	0.00	0.00	0.00
10.00	0.13	0.00	0.13	62.00	0.00	0.00	0.00
11.00	0.28	0.00	0.28	63.00	0.00	0.00	0.00
12.00	2.58	0.00	2.58	64.00	0.00	0.00	0.00
13.00	1.15	0.00	1.15	65.00	0.00	0.00	0.00
14.00	0.85	0.00	0.85	66.00	0.00	0.00	0.00
15.00	0.74	0.00	0.74	67.00	0.00	0.00	0.00
16.00	0.68	0.00	0.68	68.00	0.00	0.00	0.00
17.00	0.62	0.00	0.62	69.00	0.00	0.00	0.00
18.00	0.56	0.00	0.56	70.00	0.00	0.00	0.00
19.00	0.51	0.00	0.51	71.00	0.00	0.00	0.00
20.00	0.47	0.00	0.47	72.00	0.00	0.00	0.00
21.00	0.42	0.00	0.42				
22.00	0.37	0.00	0.37				
23.00	0.33	0.00	0.33				
24.00	0.28	0.00	0.28				
25.00	0.15	0.00	0.15				
26.00	0.09	0.00	0.09				
27.00	0.05	0.00	0.05				
28.00	0.03	0.00	0.03				
29.00	0.02	0.00	0.02				
30.00	0.02	0.00	0.02				
31.00	0.01	0.00	0.01				
32.00	0.01	0.00	0.01				
33.00	0.01	0.00	0.01				
34.00	0.01	0.00	0.01				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 16L: Total

Inflow Area = 3.300 ac, 47.27% Impervious, Inflow Depth = 3.38" for 10-Year event
Inflow = 6.17 cfs @ 12.16 hrs, Volume = 0.929 af
Primary = 6.17 cfs @ 12.16 hrs, Volume = 0.929 af, Atten= 0%, Lag= 0.0 min
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 16L: Total



Hydrograph for Link 16L: Total

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.01	0.00	0.01	54.00	0.00	0.00	0.00
3.00	0.02	0.00	0.02	55.00	0.00	0.00	0.00
4.00	0.02	0.00	0.02	56.00	0.00	0.00	0.00
5.00	0.03	0.00	0.03	57.00	0.00	0.00	0.00
6.00	0.03	0.00	0.03	58.00	0.00	0.00	0.00
7.00	0.04	0.00	0.04	59.00	0.00	0.00	0.00
8.00	0.06	0.00	0.06	60.00	0.00	0.00	0.00
9.00	0.08	0.00	0.08	61.00	0.00	0.00	0.00
10.00	0.15	0.00	0.15	62.00	0.00	0.00	0.00
11.00	0.31	0.00	0.31	63.00	0.00	0.00	0.00
12.00	3.04	0.00	3.04	64.00	0.00	0.00	0.00
13.00	1.24	0.00	1.24	65.00	0.00	0.00	0.00
14.00	0.90	0.00	0.90	66.00	0.00	0.00	0.00
15.00	0.77	0.00	0.77	67.00	0.00	0.00	0.00
16.00	0.71	0.00	0.71	68.00	0.00	0.00	0.00
17.00	0.65	0.00	0.65	69.00	0.00	0.00	0.00
18.00	0.58	0.00	0.58	70.00	0.00	0.00	0.00
19.00	0.53	0.00	0.53	71.00	0.00	0.00	0.00
20.00	0.48	0.00	0.48	72.00	0.00	0.00	0.00
21.00	0.43	0.00	0.43				
22.00	0.39	0.00	0.39				
23.00	0.34	0.00	0.34				
24.00	0.30	0.00	0.30				
25.00	0.15	0.00	0.15				
26.00	0.09	0.00	0.09				
27.00	0.05	0.00	0.05				
28.00	0.03	0.00	0.03				
29.00	0.02	0.00	0.02				
30.00	0.02	0.00	0.02				
31.00	0.01	0.00	0.01				
32.00	0.01	0.00	0.01				
33.00	0.01	0.00	0.01				
34.00	0.01	0.00	0.01				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment7S: Basin A - Imp.
Runoff Area=1.110 ac 100.00% Impervious Runoff Depth=7.97"
Flow Length=538' Tc=6.0 min CN=98 Runoff=9.44 cfs 0.737 af

Subcatchment11S: Existing Basin
Runoff Area=0.800 ac 0.00% Impervious Runoff Depth=5.82"
Flow Length=260' Tc=9.0 min CN=80 Runoff=5.25 cfs 0.388 af

Subcatchment12S: Existing Undetained -
Flow Length=113' Slope=0.1700 1' Tc=6.0 min CN=80 Runoff=1.79 cfs 0.121 af

Subcatchment15S: Basin A - Perv.
Runoff Area=0.690 ac 0.00% Impervious Runoff Depth=5.82"
Flow Length=538' Tc=6.0 min CN=80 Runoff=4.95 cfs 0.335 af

Subcatchment18S: Proposed Roof
Runoff Area=0.450 ac 100.00% Impervious Runoff Depth=7.97"
Flow Length=260' Tc=9.0 min CN=98 Runoff=3.52 cfs 0.299 af

Pond 9P: Basin A
Peak Elev=120.42' Storage=0.677 af Inflow=14.39 cfs 1.072 af
Outflow=0.81 cfs 0.959 af

Link 10L: Existing Basin
Inflow=8.76 cfs 0.687 af
Primary=8.76 cfs 0.687 af

Link 13L: Existing Undetained
Inflow=1.79 cfs 0.121 af
Primary=1.79 cfs 0.121 af

Link 14L: Post Basin A
Inflow=9.45 cfs 1.646 af
Primary=9.45 cfs 1.646 af

Link 16L: Total
Inflow=11.16 cfs 1.768 af
Primary=11.16 cfs 1.768 af

Total Runoff Area = 3.300 ac Runoff Volume = 1.880 af Average Runoff Depth = 6.84"
52.73% Pervious = 1.740 ac 47.27% Impervious = 1.560 ac

Summary for Subcatchment 7S: Basin A - Imp.

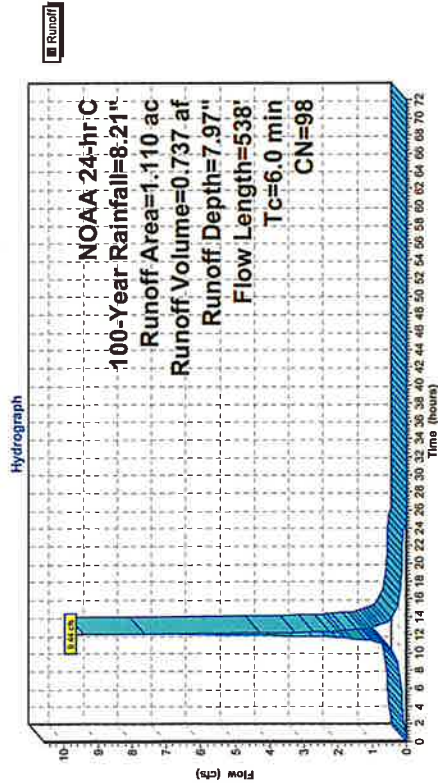
[47] Hint: Peak is 207% of capacity of segment #3
[47] Hint: Peak is 127% of capacity of segment #4

Runoff = 9.44 cfs @ 12.13 hrs, Volume= 0.737 af, Depth= 7.97"
Routed to Pond 9P: Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description			
0.660	98	Paved parking, HSG D			
0.450	98	Roofs, HSG D			
1.110	98	Weighted Average			
1.110	98	100.00% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	45	0.0100	0.92		Sheet Flow, Sheet Flow - Paved Smooth surfaces n= 0.011 P2= 3.44"
0.4	54	0.0100	2.03		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
1.6	352	0.0050	3.72	4.57	Pipe Channel, Pipe - 15" 15.0' Round Area= 1.2 sf Perim= 3.9' I= 0.31' n= 0.013
0.3	87	0.0050	4.20	7.43	Pipe Channel, Pipe - 18" 18.0' Round Area= 1.8 sf Perim= 4.7' I= 0.38' n= 0.013
3.1	538	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 7S: Basin A - Imp.



Hydrograph for Subcatchment 7S: Basin A - Imp.

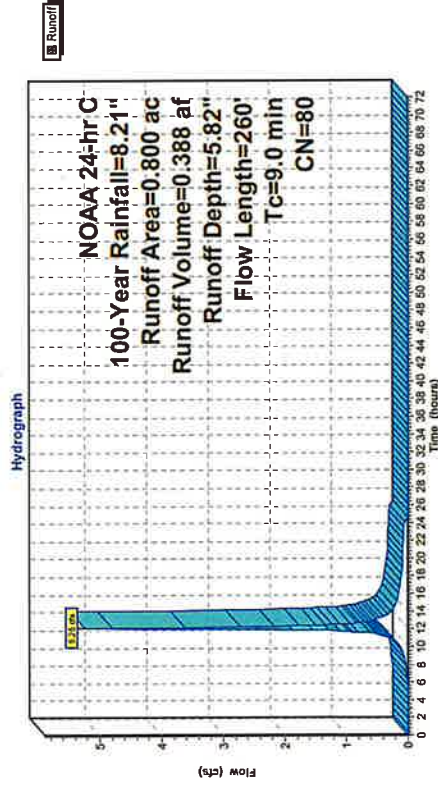
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	7.97	0.00
1.00	0.09	0.01	0.03	53.00	8.21	7.97	0.00
2.00	0.19	0.06	0.07	54.00	8.21	7.97	0.00
3.00	0.29	0.14	0.09	55.00	8.21	7.97	0.00
4.00	0.40	0.23	0.11	56.00	8.21	7.97	0.00
5.00	0.52	0.34	0.13	57.00	8.21	7.97	0.00
6.00	0.65	0.46	0.14	58.00	8.21	7.97	0.00
7.00	0.80	0.60	0.17	59.00	8.21	7.97	0.00
8.00	0.98	0.78	0.21	60.00	8.21	7.97	0.00
9.00	1.20	0.96	0.25	61.00	8.21	7.97	0.00
10.00	1.50	1.28	0.38	62.00	8.21	7.97	0.00
11.00	1.97	1.74	0.70	63.00	8.21	7.97	0.00
12.00	3.91	3.68	5.38	64.00	8.21	7.97	0.00
13.00	6.24	6.00	8.87	65.00	8.21	7.97	0.00
14.00	6.71	6.47	9.41	66.00	8.21	7.97	0.00
15.00	7.01	6.77	9.28	67.00	8.21	7.97	0.00
16.00	7.23	6.99	9.23	68.00	8.21	7.97	0.00
17.00	7.41	7.17	9.19	69.00	8.21	7.97	0.00
18.00	7.56	7.32	9.15	70.00	8.21	7.97	0.00
19.00	7.69	7.45	9.14	71.00	8.21	7.97	0.00
20.00	7.81	7.57	9.13	72.00	8.21	7.97	0.00
21.00	7.92	7.68	9.12				
22.00	8.02	7.78	9.11				
23.00	8.12	7.88	9.10				
24.00	8.21	7.97	9.11				
25.00	8.21	7.97	9.11				
26.00	8.21	7.97	9.11				
27.00	8.21	7.97	9.11				
28.00	8.21	7.97	9.11				
29.00	8.21	7.97	9.11				
30.00	8.21	7.97	9.11				
31.00	8.21	7.97	9.11				
32.00	8.21	7.97	9.11				
33.00	8.21	7.97	9.11				
34.00	8.21	7.97	9.11				
35.00	8.21	7.97	9.11				
36.00	8.21	7.97	9.11				
37.00	8.21	7.97	9.11				
38.00	8.21	7.97	9.11				
39.00	8.21	7.97	9.11				
40.00	8.21	7.97	9.11				
41.00	8.21	7.97	9.11				
42.00	8.21	7.97	9.11				
43.00	8.21	7.97	9.11				
44.00	8.21	7.97	9.11				
45.00	8.21	7.97	9.11				
46.00	8.21	7.97	9.11				
47.00	8.21	7.97	9.11				
48.00	8.21	7.97	9.11				
49.00	8.21	7.97	9.11				
50.00	8.21	7.97	9.11				
51.00	8.21	7.97	9.11				

Summary for Subcatchment 11S: Existing Basin Undetained - Perv.

Runoff = 5.25 cfs @ 12.16 hrs, Volume= 0.388 af, Depth= 5.82"
Routed to Link 10L : Existing Basin
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description			
0.800	80	>75% Grass cover, Good, HSG D			
0.800		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	85	0.0700	0.19		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 3.44"
1.7	175	0.0120	1.76		Shallow Concentrated Flow, SCF - Unpaved
9.0	260	Total			Unpaved Kv= 16.1 fps

Subcatchment 11S: Existing Basin Undetained - Perv.



Hydrograph for Subcatchment 11S: Existing Basin Undetained - Perv.

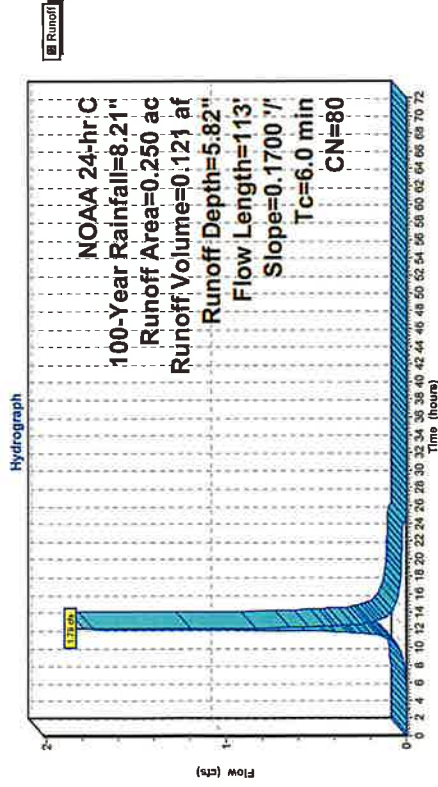
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	5.82	0.00
1.00	0.09	0.00	0.00	53.00	8.21	5.82	0.00
2.00	0.19	0.00	0.00	54.00	8.21	5.82	0.00
3.00	0.29	0.00	0.00	55.00	8.21	5.82	0.00
4.00	0.40	0.00	0.00	56.00	8.21	5.82	0.00
5.00	0.52	0.00	0.00	57.00	8.21	5.82	0.00
6.00	0.65	0.01	0.01	58.00	8.21	5.82	0.00
7.00	0.80	0.03	0.02	59.00	8.21	5.82	0.00
8.00	0.98	0.08	0.04	60.00	8.21	5.82	0.00
9.00	1.20	0.15	0.07	61.00	8.21	5.82	0.00
10.00	1.50	0.28	0.13	62.00	8.21	5.82	0.00
11.00	1.97	0.54	0.29	63.00	8.21	5.82	0.00
12.00	3.91	1.97	2.44	64.00	8.21	5.82	0.00
13.00	6.24	4.00	0.60	65.00	8.21	5.82	0.00
14.00	6.71	4.43	0.28	66.00	8.21	5.82	0.00
15.00	7.01	4.70	0.19	67.00	8.21	5.82	0.00
16.00	7.23	4.90	0.15	68.00	8.21	5.82	0.00
17.00	7.41	5.07	0.13	69.00	8.21	5.82	0.00
18.00	7.56	5.21	0.10	70.00	8.21	5.82	0.00
19.00	7.69	5.33	0.09	71.00	8.21	5.82	0.00
20.00	7.81	5.45	0.09	72.00	8.21	5.82	0.00
21.00	7.92	5.55	0.08				
22.00	8.02	5.65	0.08				
23.00	8.12	5.74	0.07				
24.00	8.21	5.82	0.07				
25.00	8.21	5.82	0.00				
26.00	8.21	5.82	0.00				
27.00	8.21	5.82	0.00				
28.00	8.21	5.82	0.00				
29.00	8.21	5.82	0.00				
30.00	8.21	5.82	0.00				
31.00	8.21	5.82	0.00				
32.00	8.21	5.82	0.00				
33.00	8.21	5.82	0.00				
34.00	8.21	5.82	0.00				
35.00	8.21	5.82	0.00				
36.00	8.21	5.82	0.00				
37.00	8.21	5.82	0.00				
38.00	8.21	5.82	0.00				
39.00	8.21	5.82	0.00				
40.00	8.21	5.82	0.00				
41.00	8.21	5.82	0.00				
42.00	8.21	5.82	0.00				
43.00	8.21	5.82	0.00				
44.00	8.21	5.82	0.00				
45.00	8.21	5.82	0.00				
46.00	8.21	5.82	0.00				
47.00	8.21	5.82	0.00				
48.00	8.21	5.82	0.00				
49.00	8.21	5.82	0.00				
50.00	8.21	5.82	0.00				
51.00	8.21	5.82	0.00				

Summary for Subcatchment 12S: Existing Undetained - Perv.

Runoff = 1.79 cfs @ 12.13 hrs, Volume= 0.121 af, Depth= 5.82"
 Routed to Link 13L : Existing Undetained
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description			
0.250	80	>75% Grass cover, Good, HSG D			
0.250		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	100	0.1700	0.29		Sheet Flow, Sheet Flow - Grass
					Grass: Dense n= 0.240 P2= 3.44"
0.0	13	0.1700	6.64		Shallow Concentrated Flow, SCF - Unpaved
					Unpaved Kv= 16.1 fps
5.8	113	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 12S: Existing Undetained - Perv.



Hydrograph for Subcatchment 12S: Existing Undetained - Perv.

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	5.82	0.00
1.00	0.09	0.00	0.00	53.00	8.21	5.82	0.00
2.00	0.19	0.00	0.00	54.00	8.21	5.82	0.00
3.00	0.29	0.00	0.00	55.00	8.21	5.82	0.00
4.00	0.40	0.00	0.00	56.00	8.21	5.82	0.00
5.00	0.52	0.00	0.00	57.00	8.21	5.82	0.00
6.00	0.65	0.01	0.00	58.00	8.21	5.82	0.00
7.00	0.80	0.03	0.01	59.00	8.21	5.82	0.00
8.00	0.98	0.08	0.01	60.00	8.21	5.82	0.00
9.00	1.20	0.15	0.02	61.00	8.21	5.82	0.00
10.00	1.50	0.28	0.04	62.00	8.21	5.82	0.00
11.00	1.97	0.54	0.09	63.00	8.21	5.82	0.00
12.00	3.91	1.97	0.98	64.00	8.21	5.82	0.00
13.00	6.24	4.00	0.18	65.00	8.21	5.82	0.00
14.00	6.71	4.43	0.09	66.00	8.21	5.82	0.00
15.00	7.01	4.70	0.06	67.00	8.21	5.82	0.00
16.00	7.23	4.90	0.05	68.00	8.21	5.82	0.00
17.00	7.41	5.07	0.04	69.00	8.21	5.82	0.00
18.00	7.56	5.21	0.03	70.00	8.21	5.82	0.00
19.00	7.69	5.33	0.03	71.00	8.21	5.82	0.00
20.00	7.81	5.45	0.03	72.00	8.21	5.82	0.00
21.00	7.92	5.55	0.03				
22.00	8.02	5.65	0.02				
23.00	8.12	5.74	0.02				
24.00	8.21	5.82	0.02				
25.00	8.21	5.82	0.00				
26.00	8.21	5.82	0.00				
27.00	8.21	5.82	0.00				
28.00	8.21	5.82	0.00				
29.00	8.21	5.82	0.00				
30.00	8.21	5.82	0.00				
31.00	8.21	5.82	0.00				
32.00	8.21	5.82	0.00				
33.00	8.21	5.82	0.00				
34.00	8.21	5.82	0.00				
35.00	8.21	5.82	0.00				
36.00	8.21	5.82	0.00				
37.00	8.21	5.82	0.00				
38.00	8.21	5.82	0.00				
39.00	8.21	5.82	0.00				
40.00	8.21	5.82	0.00				
41.00	8.21	5.82	0.00				
42.00	8.21	5.82	0.00				
43.00	8.21	5.82	0.00				
44.00	8.21	5.82	0.00				
45.00	8.21	5.82	0.00				
46.00	8.21	5.82	0.00				
47.00	8.21	5.82	0.00				
48.00	8.21	5.82	0.00				
49.00	8.21	5.82	0.00				
50.00	8.21	5.82	0.00				
51.00	8.21	5.82	0.00				

Summary for Subcatchment 15S: Basin A - Perv.

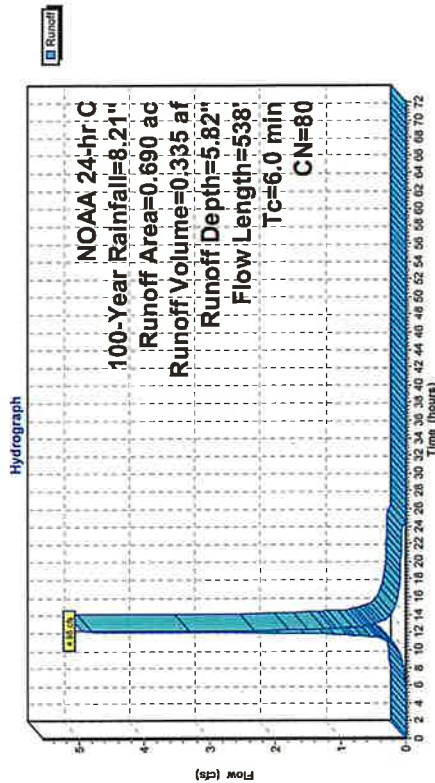
[47] Hint: Peak is 108% of capacity of segment #3

Runoff = 4.95 cfs @ 12.13 hrs, Volume= 0.335 af, Depth= 5.82"
 Routed to Pond 9P : Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description		
0.690	80	>75% Grass cover, Good, HSG D		
0.690		100.00% Pervious Area		
Tc (min)	Length (feet)	Slope (ft/ft) Velocity (ft/sec) Capacity (cfs) Description		
0.8	45	0.0100 0.92	Sheet Flow, Sheet Flow - Paved Smooth surfaces n= 0.011 P2= 3.44"	
0.4	54	0.0100 2.03	Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps	
1.6	352	0.0050 3.72	4.57	Pipe Channel, Pipe - 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
0.3	87	0.0050 4.20	7.43	Pipe Channel, Pipe - 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
3.1	538	Total, Increased to minimum Tc = 6.0 min		

Subcatchment 15S: Basin A - Perv.



Hydrograph for Subcatchment 15S: Basin A - Perv.

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	5.82	0.00
1.00	0.09	0.00	0.00	53.00	8.21	5.82	0.00
2.00	0.19	0.00	0.00	54.00	8.21	5.82	0.00
3.00	0.29	0.00	0.00	55.00	8.21	5.82	0.00
4.00	0.40	0.00	0.00	56.00	8.21	5.82	0.00
5.00	0.52	0.00	0.00	57.00	8.21	5.82	0.00
6.00	0.65	0.01	0.01	58.00	8.21	5.82	0.00
7.00	0.80	0.03	0.02	59.00	8.21	5.82	0.00
8.00	0.98	0.08	0.04	60.00	8.21	5.82	0.00
9.00	1.20	0.15	0.06	61.00	8.21	5.82	0.00
10.00	1.50	0.26	0.12	62.00	8.21	5.82	0.00
11.00	1.97	0.54	0.26	63.00	8.21	5.82	0.00
12.00	3.91	1.97	2.65	64.00	8.21	5.82	0.00
13.00	6.24	4.00	0.49	65.00	8.21	5.82	0.00
14.00	6.71	4.43	0.24	66.00	8.21	5.82	0.00
15.00	7.01	4.70	0.16	67.00	8.21	5.82	0.00
16.00	7.23	4.90	0.13	68.00	8.21	5.82	0.00
17.00	7.41	5.07	0.11	69.00	8.21	5.82	0.00
18.00	7.56	5.21	0.09	70.00	8.21	5.82	0.00
19.00	7.69	5.33	0.08	71.00	8.21	5.82	0.00
20.00	7.81	5.45	0.08	72.00	8.21	5.82	0.00
21.00	7.92	5.55	0.07				
22.00	8.02	5.65	0.07				
23.00	8.12	5.74	0.06				
24.00	8.21	5.82	0.05				
25.00	8.21	5.82	0.00				
26.00	8.21	5.82	0.00				
27.00	8.21	5.82	0.00				
28.00	8.21	5.82	0.00				
29.00	8.21	5.82	0.00				
30.00	8.21	5.82	0.00				
31.00	8.21	5.82	0.00				
32.00	8.21	5.82	0.00				
33.00	8.21	5.82	0.00				
34.00	8.21	5.82	0.00				
35.00	8.21	5.82	0.00				
36.00	8.21	5.82	0.00				
37.00	8.21	5.82	0.00				
38.00	8.21	5.82	0.00				
39.00	8.21	5.82	0.00				
40.00	8.21	5.82	0.00				
41.00	8.21	5.82	0.00				
42.00	8.21	5.82	0.00				
43.00	8.21	5.82	0.00				
44.00	8.21	5.82	0.00				
45.00	8.21	5.82	0.00				
46.00	8.21	5.82	0.00				
47.00	8.21	5.82	0.00				
48.00	8.21	5.82	0.00				
49.00	8.21	5.82	0.00				
50.00	8.21	5.82	0.00				
51.00	8.21	5.82	0.00				

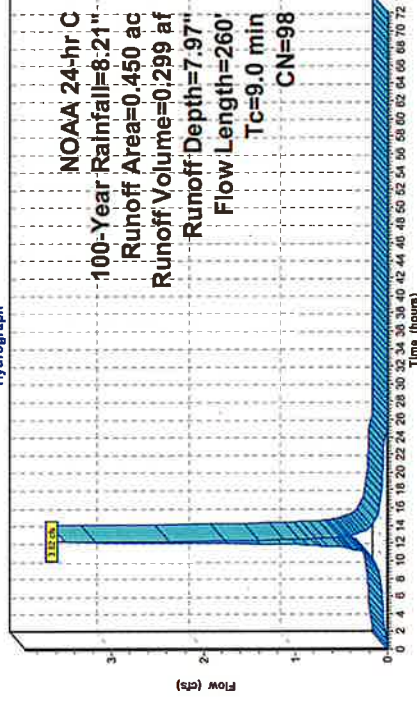
Summary for Subcatchment 18S: Proposed Roof

Runoff = 3.52 cfs @ 12.16 hrs, Volume= 0.299 af, Depth= 7.97"
Routed to Link 10L: Existing Basin
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description			
0.450	98	Roofs, HSG D			
0.450		100.00% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	85	0.0700	0.19		Sheet Flow, Sheet Flow
					Grass: Dense n= 0.240 P2= 3.44"
1.7	175	0.0120	1.76		Shallow Concentrated Flow, SCF - Unpaved
					Unpaved Kv= 16.1 fps
9.0	260	Total			

Subcatchment 18S: Proposed Roof

Hydrograph



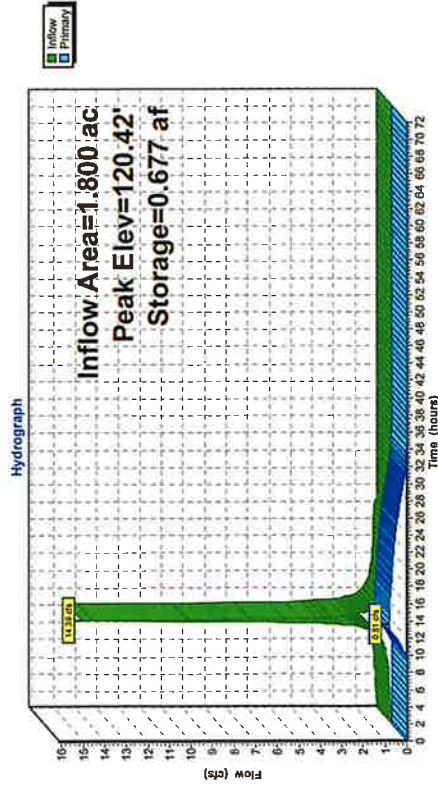
Hydrograph for Subcatchment 18S: Proposed Roof

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	7.97	0.00
1.00	0.09	0.01	0.01	53.00	8.21	7.97	0.00
2.00	0.19	0.06	0.03	54.00	8.21	7.97	0.00
3.00	0.29	0.14	0.04	55.00	8.21	7.97	0.00
4.00	0.40	0.23	0.04	56.00	8.21	7.97	0.00
5.00	0.52	0.34	0.05	57.00	8.21	7.97	0.00
6.00	0.65	0.46	0.06	58.00	8.21	7.97	0.00
7.00	0.80	0.60	0.07	59.00	8.21	7.97	0.00
8.00	0.98	0.78	0.09	60.00	8.21	7.97	0.00
9.00	1.20	0.98	0.10	61.00	8.21	7.97	0.00
10.00	1.50	1.28	0.15	62.00	8.21	7.97	0.00
11.00	1.97	1.74	0.27	63.00	8.21	7.97	0.00
12.00	3.91	3.68	1.76	64.00	8.21	7.97	0.00
13.00	6.24	6.00	3.37	65.00	8.21	7.97	0.00
14.00	6.71	6.47	0.11	66.00	8.21	7.97	0.00
15.00	7.01	6.77	0.11	67.00	8.21	7.97	0.00
16.00	7.23	6.99	0.09	68.00	8.21	7.97	0.00
17.00	7.41	7.17	0.08	69.00	8.21	7.97	0.00
18.00	7.56	7.32	0.06	70.00	8.21	7.97	0.00
19.00	7.69	7.45	0.06	71.00	8.21	7.97	0.00
20.00	7.81	7.57	0.05	72.00	8.21	7.97	0.00
21.00	7.92	7.68	0.05				
22.00	8.02	7.78	0.05				
23.00	8.12	7.88	0.04				
24.00	8.21	7.97	0.04				
25.00	8.21	7.97	0.00				
26.00	8.21	7.97	0.00				
27.00	8.21	7.97	0.00				
28.00	8.21	7.97	0.00				
29.00	8.21	7.97	0.00				
30.00	8.21	7.97	0.00				
31.00	8.21	7.97	0.00				
32.00	8.21	7.97	0.00				
33.00	8.21	7.97	0.00				
34.00	8.21	7.97	0.00				
35.00	8.21	7.97	0.00				
36.00	8.21	7.97	0.00				
37.00	8.21	7.97	0.00				
38.00	8.21	7.97	0.00				
39.00	8.21	7.97	0.00				
40.00	8.21	7.97	0.00				
41.00	8.21	7.97	0.00				
42.00	8.21	7.97	0.00				
43.00	8.21	7.97	0.00				
44.00	8.21	7.97	0.00				
45.00	8.21	7.97	0.00				
46.00	8.21	7.97	0.00				
47.00	8.21	7.97	0.00				
48.00	8.21	7.97	0.00				
49.00	8.21	7.97	0.00				
50.00	8.21	7.97	0.00				
51.00	8.21	7.97	0.00				

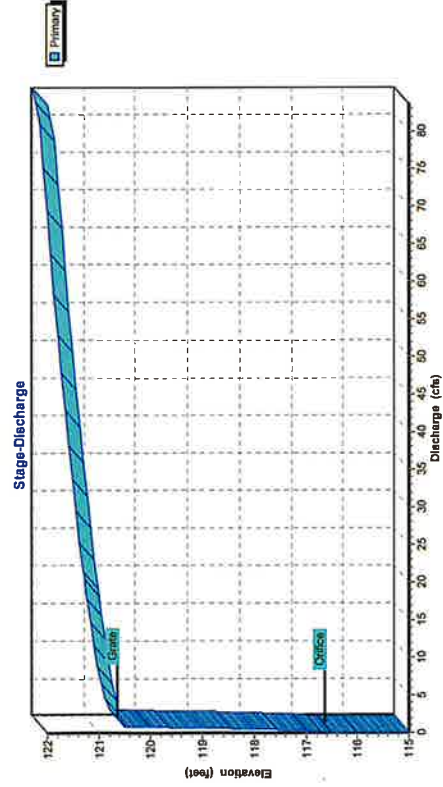
Summary for Pond 9P: Basin A

Inflow Area =	1.800 ac, 61.67% Impervious, Inflow Depth = 7.15" for 100-Year event
Inflow =	14.39 cfs @ 12.13 hrs, Volume= 1.072 af
Outflow =	0.81 cfs @ 13.54 hrs, Volume= 0.959 af, Atten= 94%, Lag= 84.7 min
Primary =	0.81 cfs @ 13.54 hrs, Volume= 0.959 af
Routed to Link 14L: Post-Basin A	
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs	
Peak Elev= 120.42' @ 13.54 hrs Surf.Area= 0.188 ac Storage= 0.677 af	
Plug-Flow detention time= 464.0 min calculated for 0.959 af (89% of inflow)	
Center-of-Mass det. time= 411.5 min (1,172.7 - 761.2)	
Volume Invert Avail.Storage Storage Description	
#1	115.00' 1.000 af Custom Stage Data (Prismatic) listed below (Recalc)
Elevation (feet)	Surf.Area (acres) Inc.Stor (acre-feet) Cum.Stor (acre-feet)
115.00	0.040 0.000 0.000
116.00	0.090 0.065 0.065
117.00	0.110 0.100 0.165
118.00	0.130 0.120 0.285
119.00	0.160 0.145 0.430
120.00	0.180 0.170 0.600
121.00	0.200 0.190 0.790
122.00	0.220 0.210 1.000
Device Routing Invert Outlet Devices	
#1	Primary 120.50' 42.0" x 48.0" Horiz. Grate C= 0.600
Limited to weir flow at low heads	
#2	Primary 116.50' 4.0" Vert. Orifice C= 0.600 Limited to weir flow at low heads
Primary Outflow Max=0.81 cfs @ 13.54 hrs HW=120.42' (Free Discharge)	
1=Grate (Controls 0.00 cfs)	
2=Orifice (Orifice Controls 0.81 cfs @ 9.33 fps)	

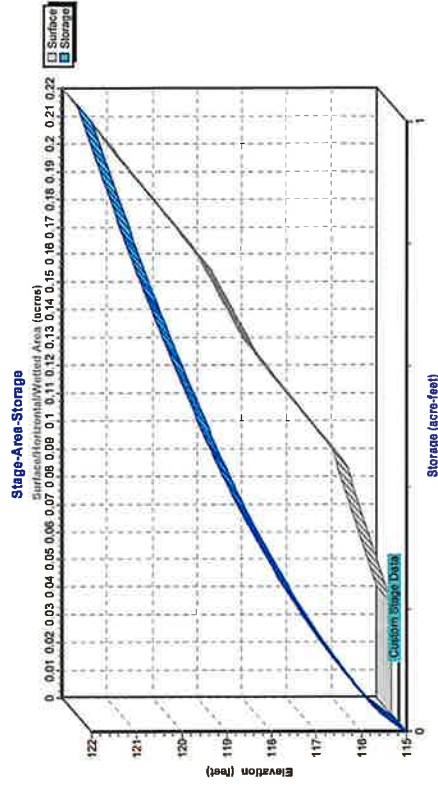
Pond 9P: Basin A



Pond 9P: Basin A



Pond 9P: Basin A



Hydrograph for Pond 9P: Basin A

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	115.00	0.00
2.50	0.08	0.008	115.18	0.00
5.00	0.13	0.030	115.56	0.00
7.50	0.22	0.064	115.99	0.00
10.00	0.50	0.130	116.67	0.06
12.50	2.98	0.622	120.12	0.78
15.00	0.44	0.652	120.28	0.80
17.50	0.27	0.563	119.79	0.74
20.00	0.21	0.464	119.21	0.67
22.50	0.17	0.373	118.63	0.59
25.00	0.00	0.282	117.98	0.48
27.50	0.00	0.198	117.29	0.33
30.00	0.00	0.146	116.83	0.17
32.50	0.00	0.127	116.64	0.05
35.00	0.00	0.121	116.58	0.02
37.50	0.00	0.118	116.55	0.01
40.00	0.00	0.117	116.54	0.00
42.50	0.00	0.116	116.53	0.00
45.00	0.00	0.115	116.53	0.00
47.50	0.00	0.115	116.52	0.00
50.00	0.00	0.114	116.52	0.00
52.50	0.00	0.114	116.51	0.00
55.00	0.00	0.114	116.51	0.00
57.50	0.00	0.113	116.51	0.00
60.00	0.00	0.113	116.51	0.00
62.50	0.00	0.113	116.51	0.00
65.00	0.00	0.113	116.51	0.00
67.50	0.00	0.113	116.50	0.00
70.00	0.00	0.113	116.50	0.00

Stage-Discharge for Pond 9P: Basin A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
115.00	0.00	117.80	0.41	120.20	0.78
115.05	0.00	117.85	0.42	120.25	0.80
115.10	0.00	117.90	0.43	120.30	0.80
115.15	0.00	117.95	0.44	120.35	0.81
115.20	0.00	118.00	0.45	120.40	0.81
115.25	0.00	118.05	0.46	120.45	0.82
115.30	0.00	118.10	0.47	120.50	0.82
115.35	0.00	118.15	0.48	120.55	1.38
115.40	0.00	118.20	0.49	120.60	2.38
115.45	0.00	118.25	0.49	120.65	3.69
115.50	0.00	118.30	0.50	120.70	5.23
115.55	0.00	118.35	0.51	120.75	6.98
115.60	0.00	118.40	0.52	120.80	8.91
115.65	0.00	118.45	0.53	120.85	11.02
115.70	0.00	118.50	0.54	120.90	13.27
115.75	0.00	118.55	0.55	120.95	15.68
115.80	0.00	118.60	0.55	121.00	18.22
115.85	0.00	118.65	0.56	121.05	20.89
115.90	0.00	118.70	0.57	121.10	23.68
115.95	0.00	118.75	0.58	121.15	26.59
116.00	0.00	118.80	0.58	121.20	29.62
116.05	0.00	118.85	0.59	121.25	32.76
116.10	0.00	118.90	0.60	121.30	36.00
116.15	0.00	118.95	0.61	121.35	39.35
116.20	0.00	119.00	0.61	121.40	42.79
116.25	0.00	119.05	0.62	121.45	46.34
116.30	0.00	119.10	0.63	121.50	49.97
116.35	0.00	119.15	0.63	121.55	53.70
116.40	0.00	119.20	0.64	121.60	57.52
116.45	0.00	119.25	0.65	121.65	61.43
116.50	0.00	119.30	0.66	121.70	65.42
116.55	0.01	119.35	0.66	121.75	69.50
116.60	0.02	119.40	0.67	121.80	73.66
116.65	0.05	119.45	0.68	121.85	77.98
116.70	0.08	119.50	0.68	121.90	82.72
116.75	0.12	119.55	0.69	121.95	82.14
116.80	0.15	119.60	0.71	122.00	83.53
116.85	0.18	119.65	0.71		
116.90	0.20	119.70	0.72		
116.95	0.22	119.75	0.73		
117.00	0.24	119.80	0.73		
117.05	0.26	119.85	0.73		
117.10	0.28	119.90	0.74		
117.15	0.29	119.95	0.74		
117.20	0.31	120.00	0.75		
117.25	0.32	120.05	0.76		
117.30	0.33	120.10	0.77		
117.35	0.35	120.15	0.78		
117.40	0.36	120.20	0.78		
117.45	0.37	120.25	0.78		
117.50	0.38	120.30	0.78		
117.55	0.39	120.35	0.78		

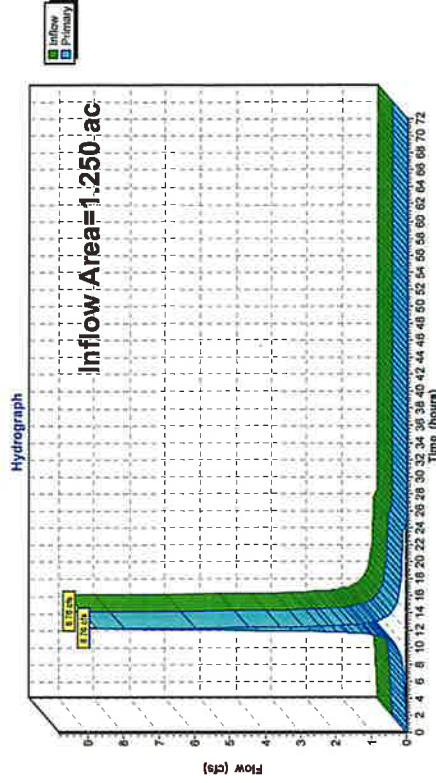
Stage-Area-Storage for Pond 9P: Basin A

Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
115.00	0.040	0.000	120.20	0.184	0.636
115.10	0.045	0.004	120.30	0.186	0.655
115.20	0.050	0.009	120.40	0.188	0.674
115.30	0.055	0.014	120.50	0.190	0.693
115.40	0.060	0.020	120.60	0.192	0.712
115.50	0.065	0.026	120.70	0.194	0.731
115.60	0.070	0.033	120.80	0.196	0.750
115.70	0.075	0.040	120.90	0.198	0.770
115.80	0.080	0.048	121.00	0.200	0.790
115.90	0.085	0.056	121.10	0.202	0.810
116.00	0.090	0.065	121.20	0.204	0.830
116.10	0.092	0.074	121.30	0.206	0.851
116.20	0.094	0.083	121.40	0.208	0.872
116.30	0.096	0.093	121.50	0.210	0.893
116.40	0.098	0.103	121.60	0.212	0.914
116.50	0.100	0.112	121.70	0.214	0.935
116.60	0.102	0.123	121.80	0.216	0.956
116.70	0.104	0.133	121.90	0.218	0.978
116.80	0.106	0.143	122.00	0.220	1.000
116.90	0.108	0.154			
117.00	0.110	0.165			
117.10	0.112	0.176			
117.20	0.114	0.187			
117.30	0.116	0.199			
117.40	0.118	0.211			
117.50	0.120	0.222			
117.60	0.122	0.235			
117.70	0.124	0.247			
117.80	0.126	0.259			
117.90	0.128	0.272			
118.00	0.130	0.285			
118.10	0.133	0.298			
118.20	0.136	0.312			
118.30	0.139	0.325			
118.40	0.142	0.339			
118.50	0.145	0.354			
118.60	0.148	0.368			
118.70	0.151	0.383			
118.80	0.154	0.399			
118.90	0.157	0.414			
119.00	0.160	0.430			
119.10	0.162	0.446			
119.20	0.164	0.462			
119.30	0.166	0.479			
119.40	0.168	0.496			
119.50	0.170	0.513			
119.60	0.172	0.530			
119.70	0.174	0.547			
119.80	0.176	0.564			
119.90	0.178	0.582			
120.00	0.180	0.600			
120.10	0.182	0.618			

Summary for Link 10L: Existing Basin

Inflow Area = 1.250 ac, 36.00% Impervious, Inflow Depth = 6.60" for 100-Year event
 Inflow = 8.76 cfs @ 12.16 hrs, Volume= 0.687 af
 Primary = 8.76 cfs @ 12.16 hrs, Volume= 0.687 af, Atten= 0%, Lag= 0.0 min
 Routed to Link 14L: Post-Basin A
 Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 10L: Existing Basin



Hydrograph for Link 10L: Existing Basin

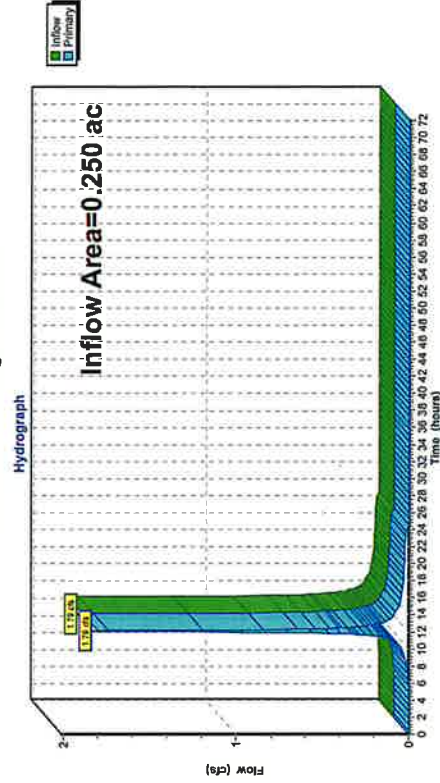
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.01	0.00	0.01	53.00	0.00	0.00	0.00
2.00	0.03	0.00	0.03	54.00	0.00	0.00	0.00
3.00	0.04	0.00	0.04	55.00	0.00	0.00	0.00
4.00	0.04	0.00	0.04	56.00	0.00	0.00	0.00
5.00	0.05	0.00	0.05	57.00	0.00	0.00	0.00
6.00	0.07	0.00	0.07	58.00	0.00	0.00	0.00
7.00	0.09	0.00	0.09	59.00	0.00	0.00	0.00
8.00	0.13	0.00	0.13	60.00	0.00	0.00	0.00
9.00	0.17	0.00	0.17	61.00	0.00	0.00	0.00
10.00	0.28	0.00	0.28	62.00	0.00	0.00	0.00
11.00	0.56	0.00	0.56	63.00	0.00	0.00	0.00
12.00	4.20	0.00	4.20	64.00	0.00	0.00	0.00
13.00	0.97	0.00	0.97	65.00	0.00	0.00	0.00
14.00	0.45	0.00	0.45	66.00	0.00	0.00	0.00
15.00	0.30	0.00	0.30	67.00	0.00	0.00	0.00
16.00	0.24	0.00	0.24	68.00	0.00	0.00	0.00
17.00	0.21	0.00	0.21	69.00	0.00	0.00	0.00
18.00	0.17	0.00	0.17	70.00	0.00	0.00	0.00
19.00	0.15	0.00	0.15	71.00	0.00	0.00	0.00
20.00	0.14	0.00	0.14	72.00	0.00	0.00	0.00
21.00	0.13	0.00	0.13				
22.00	0.12	0.00	0.12				
23.00	0.11	0.00	0.11				
24.00	0.11	0.00	0.11				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 13L: Existing Undetained

Inflow Area = 0.250 ac, 0.00% Impervious, Inflow Depth = 5.82" for 100-Year event
Inflow = 1.79 cfs @ 12.13 hrs, Volume= 0.121 af
Primary = 1.79 cfs @ 12.13 hrs, Volume= 0.121 af, Atten= 0%, Lag= 0.0 min
Routed to Link 16L: Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 13L: Existing Undetained



Hydrograph for Link 13L: Existing Undetained

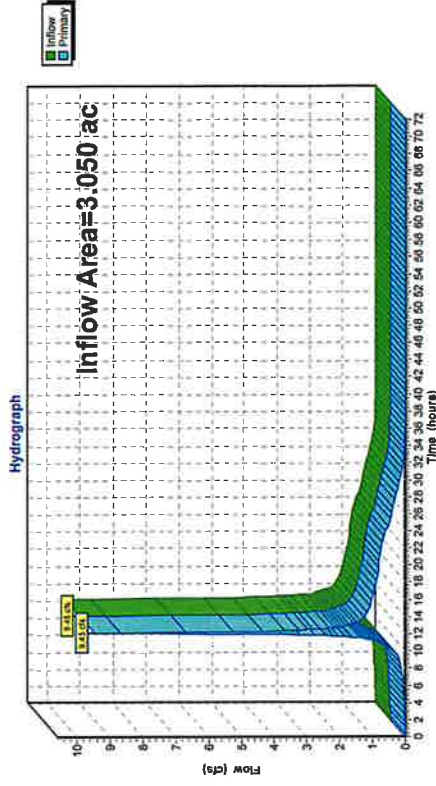
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.01	0.00	0.01	59.00	0.00	0.00	0.00
8.00	0.01	0.00	0.01	60.00	0.00	0.00	0.00
9.00	0.02	0.00	0.02	61.00	0.00	0.00	0.00
10.00	0.04	0.00	0.04	62.00	0.00	0.00	0.00
11.00	0.09	0.00	0.09	63.00	0.00	0.00	0.00
12.00	0.96	0.00	0.96	64.00	0.00	0.00	0.00
13.00	0.18	0.00	0.18	65.00	0.00	0.00	0.00
14.00	0.09	0.00	0.09	66.00	0.00	0.00	0.00
15.00	0.06	0.00	0.06	67.00	0.00	0.00	0.00
16.00	0.05	0.00	0.05	68.00	0.00	0.00	0.00
17.00	0.04	0.00	0.04	69.00	0.00	0.00	0.00
18.00	0.03	0.00	0.03	70.00	0.00	0.00	0.00
19.00	0.03	0.00	0.03	71.00	0.00	0.00	0.00
20.00	0.03	0.00	0.03	72.00	0.00	0.00	0.00
21.00	0.03	0.00	0.03				
22.00	0.02	0.00	0.02				
23.00	0.02	0.00	0.02				
24.00	0.02	0.00	0.02				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 14L: Post Basin A

Inflow Area = 3.050 ac, 51.15% Impervious, Inflow Depth = 6.48" for 100-Year event
Inflow = 9.45 cfs @ 12.16 hrs, Volume= 1.846 af
Primary = 9.45 cfs @ 12.16 hrs, Volume= 1.846 af, Atten= 0%, Lag= 0.0 min
Routed to Link 16L: Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 14L: Post Basin A



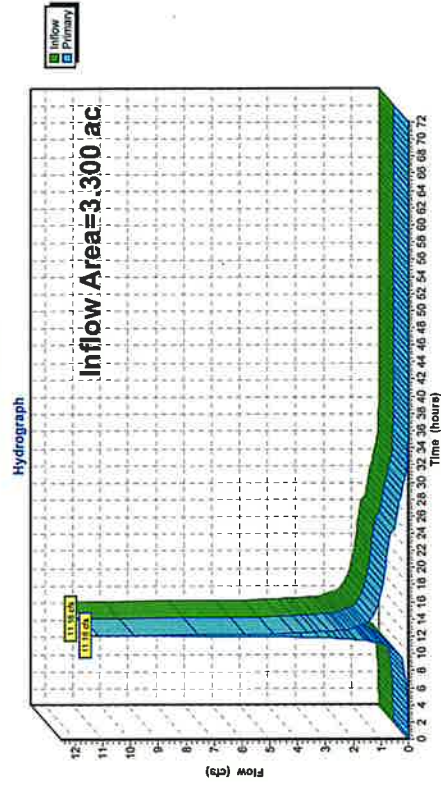
Hydrograph for Link 14L: Post Basin A

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.01	0.00	0.01	53.00	0.00	0.00	0.00
2.00	0.03	0.00	0.03	54.00	0.00	0.00	0.00
3.00	0.04	0.00	0.04	55.00	0.00	0.00	0.00
4.00	0.04	0.00	0.04	56.00	0.00	0.00	0.00
5.00	0.05	0.00	0.05	57.00	0.00	0.00	0.00
6.00	0.07	0.00	0.07	58.00	0.00	0.00	0.00
7.00	0.09	0.00	0.09	59.00	0.00	0.00	0.00
8.00	0.13	0.00	0.13	60.00	0.00	0.00	0.00
9.00	0.17	0.00	0.17	61.00	0.00	0.00	0.00
10.00	0.35	0.00	0.35	62.00	0.00	0.00	0.00
11.00	0.82	0.00	0.82	63.00	0.00	0.00	0.00
12.00	4.75	0.00	4.75	64.00	0.00	0.00	0.00
13.00	1.78	0.00	1.78	65.00	0.00	0.00	0.00
14.00	1.26	0.00	1.26	66.00	0.00	0.00	0.00
15.00	1.10	0.00	1.10	67.00	0.00	0.00	0.00
16.00	1.02	0.00	1.02	68.00	0.00	0.00	0.00
17.00	0.96	0.00	0.96	69.00	0.00	0.00	0.00
18.00	0.90	0.00	0.90	70.00	0.00	0.00	0.00
19.00	0.85	0.00	0.85	71.00	0.00	0.00	0.00
20.00	0.81	0.00	0.81	72.00	0.00	0.00	0.00
21.00	0.77	0.00	0.77				
22.00	0.73	0.00	0.73				
23.00	0.68	0.00	0.68				
24.00	0.64	0.00	0.64				
25.00	0.48	0.00	0.48				
26.00	0.42	0.00	0.42				
27.00	0.36	0.00	0.36				
28.00	0.30	0.00	0.30				
29.00	0.24	0.00	0.24				
30.00	0.17	0.00	0.17				
31.00	0.10	0.00	0.10				
32.00	0.06	0.00	0.06				
33.00	0.04	0.00	0.04				
34.00	0.02	0.00	0.02				
35.00	0.02	0.00	0.02				
36.00	0.01	0.00	0.01				
37.00	0.01	0.00	0.01				
38.00	0.01	0.00	0.01				
39.00	0.01	0.00	0.01				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 16L: Total

Inflow Area = 3.300 ac, 47.27% Impervious, Inflow Depth = 6.43" for 100-Year event
Inflow = 11.16 cfs @ 12.15 hrs, Volume= 1.768 af
Primary = 11.16 cfs @ 12.15 hrs, Volume= 1.768 af, Atten= 0%, Lag= 0.0 min
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 16L: Total



Hydrograph for Link 16L: Total

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.01	0.00	0.01	53.00	0.00	0.00	0.00
2.00	0.03	0.00	0.03	54.00	0.00	0.00	0.00
3.00	0.04	0.00	0.04	55.00	0.00	0.00	0.00
4.00	0.04	0.00	0.04	56.00	0.00	0.00	0.00
5.00	0.05	0.00	0.05	57.00	0.00	0.00	0.00
6.00	0.07	0.00	0.07	58.00	0.00	0.00	0.00
7.00	0.10	0.00	0.10	59.00	0.00	0.00	0.00
8.00	0.14	0.00	0.14	60.00	0.00	0.00	0.00
9.00	0.19	0.00	0.19	61.00	0.00	0.00	0.00
10.00	0.39	0.00	0.39	62.00	0.00	0.00	0.00
11.00	0.91	0.00	0.91	63.00	0.00	0.00	0.00
12.00	5.71	0.00	5.71	64.00	0.00	0.00	0.00
13.00	1.95	0.00	1.95	65.00	0.00	0.00	0.00
14.00	1.35	0.00	1.35	66.00	0.00	0.00	0.00
15.00	1.16	0.00	1.16	67.00	0.00	0.00	0.00
16.00	1.07	0.00	1.07	68.00	0.00	0.00	0.00
17.00	1.00	0.00	1.00	69.00	0.00	0.00	0.00
18.00	0.93	0.00	0.93	70.00	0.00	0.00	0.00
19.00	0.88	0.00	0.88	71.00	0.00	0.00	0.00
20.00	0.84	0.00	0.84	72.00	0.00	0.00	0.00
21.00	0.80	0.00	0.80				
22.00	0.75	0.00	0.75				
23.00	0.71	0.00	0.71				
24.00	0.67	0.00	0.67				
25.00	0.48	0.00	0.48				
26.00	0.42	0.00	0.42				
27.00	0.36	0.00	0.36				
28.00	0.30	0.00	0.30				
29.00	0.24	0.00	0.24				
30.00	0.17	0.00	0.17				
31.00	0.10	0.00	0.10				
32.00	0.06	0.00	0.06				
33.00	0.04	0.00	0.04				
34.00	0.02	0.00	0.02				
35.00	0.02	0.00	0.02				
36.00	0.01	0.00	0.01				
37.00	0.01	0.00	0.01				
38.00	0.01	0.00	0.01				
39.00	0.01	0.00	0.01				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Project Reports

- 1 Routing Diagram
- 2 Project Notes
- 3 Rainfall Events Listing (selected events)
- 4 Area Listing (all nodes)
- 5 Soil Listing (all nodes)
- 6 Ground Covers (all nodes)
- 7 Pipe Listing (all nodes)
- 8 Notes Listing (all nodes)

2-Year Event

- 9 Node Listing
- 10 Subcat 7S: Basin A - Imp.
- 13 Subcat 11S: Existing Basin Undetained - Perv.
- 15 Subcat 12S: Existing Undetained - Perv.
- 17 Subcat 15S: Basin A - Perv.
- 19 Subcat 18S: Proposed Roof
- 21 Pond 9P: Basin A
- 27 Link 10L: Existing Basin
- 29 Link 13L: Existing Undetained
- 31 Link 14L: Post Basin A
- 33 Link 16L: Total

10-Year Event

- 35 Node Listing
- 36 Subcat 7S: Basin A - Imp.
- 39 Subcat 11S: Existing Basin Undetained - Perv.
- 41 Subcat 12S: Existing Undetained - Perv.
- 43 Subcat 15S: Basin A - Perv.
- 45 Subcat 18S: Proposed Roof
- 47 Pond 9P: Basin A
- 53 Link 10L: Existing Basin
- 55 Link 13L: Existing Undetained
- 57 Link 14L: Post Basin A
- 59 Link 16L: Total

100-Year Event

- 61 Node Listing
- 62 Subcat 7S: Basin A - Imp.
- 65 Subcat 11S: Existing Basin Undetained - Perv.
- 67 Subcat 12S: Existing Undetained - Perv.
- 69 Subcat 15S: Basin A - Perv.
- 72 Subcat 18S: Proposed Roof
- 74 Pond 9P: Basin A
- 80 Link 10L: Existing Basin
- 82 Link 13L: Existing Undetained

TABLE OF CONTENTS

2022-12-14 Hydrology - Proposed

Prepared by Dynamic Engineering

HydroCAD® 10.20-2g s/n 08640 © 2022 HydroCAD Software Solutions LLC

Table of Contents
Printed 12/14/2022

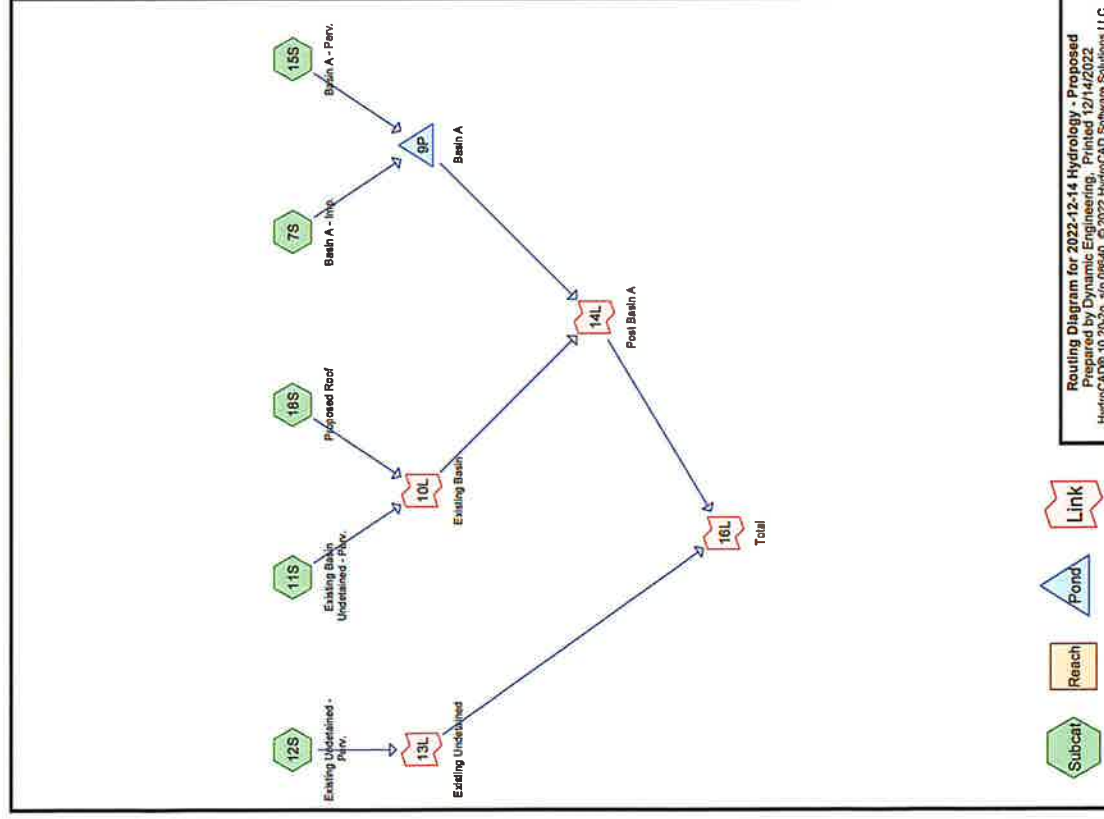
84 Link 14L: Post Basin A

86 Link 16L: Total

HYDROGRAPH SUMMARY REPORTS – WATER QUALITY STORM

Project Notes

Rainfall events Imported from "NRCS-Rain.txt" for 6617 NJ Somerset-C



Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.740	80	>75% Grass cover, Good, HSG D (11S, 12S, 15S)
0.660	98	Paved parking, HSG D (7S)
0.600	98	Roofs, HSG D (7S, 18S)
3.000	89	TOTAL AREA

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (Inches)	AMC
1	WQ	NJ/DEP 2-hr		Default	2.00	1	1.25	2

2022-12-14 Hydrology - Proposed

Prepared by Dynamic Engineering

HydroCAD® 10.20-2q s/n 08640 © 2022 HydroCAD Software Solutions LLC

Printed 12/14/2022

Page 5

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
3.300	HSG D	7S, 11S, 12S, 15S, 18S
0.000	Other	
3.300		TOTAL AREA

2022-12-14 Hydrology - Proposed

Prepared by Dynamic Engineering

HydroCAD® 10.20-2q s/n 08640 © 2022 HydroCAD Software Solutions LLC

Printed 12/14/2022

Page 6

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	1.740	0.000	1.740	>75% Grass cover, Good	11S, 12S, 15S
0.000	0.000	0.000	0.860	0.000	0.860	Paved parking	7S
0.000	0.000	0.000	0.900	0.000	0.900	Roofs	7S, 18S
0.000	0.000	0.000	3.300	0.000	3.300	TOTAL AREA	

2022-12-14 Hydrology - ProposedPrepared by Dynamic Engineering
HydroCAD® 10.20-2q s/n 08640 © 2022 HydroCAD Software Solutions LLCPrinted 12/14/2022
Page 7**Pipe Listing (all nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (Inches)	Diam/Height (Inches)	Inside-Fill (Inches)
1	7S	0.00	0.00	352.0	0.0050	0.013	0.0	15.0	0.0
2	7S	0.00	0.00	87.0	0.0050	0.013	0.0	18.0	0.0
3	15S	0.00	0.00	352.0	0.0050	0.013	0.0	15.0	0.0
4	15S	0.00	0.00	87.0	0.0050	0.013	0.0	18.0	0.0

2022-12-14 Hydrology - ProposedPrepared by Dynamic Engineering
HydroCAD® 10.20-2q s/n 08640 © 2022 HydroCAD Software Solutions LLCPrinted 12/14/2022
Page 8**Notes Listing (all nodes)**

Line#	Node Number	Notes
1	Project	Rainfall events imported from "NRCS-Rain.txt" for 6617 NJ Somerset-C

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment7S: Basin A - Imp.
Runoff Area=1.110 ac 100.00% Impervious Runoff Depth=1.03"
Flow Length=538' Tc=6.0 min CN=98 Runoff=3.21 cfs 0.096 af

Subcatchment11S: Existing Basin
Runoff Area=0.800 ac 0.00% Impervious Runoff Depth=0.17"
Flow Length=260' Tc=9.0 min CN=80 Runoff=0.33 cfs 0.012 af

Subcatchment12S: Existing Undetained-
Flow Length=113' Slope=0.1700 1/1 Tc=6.0 min CN=80 Runoff=0.12 cfs 0.004 af

Subcatchment15S: Basin A - Perv.
Runoff Area=0.690 ac 0.00% Impervious Runoff Depth=0.17"
Flow Length=538' Tc=6.0 min CN=80 Runoff=0.33 cfs 0.010 af

Subcatchment18S: Proposed Roof
Runoff Area=0.450 ac 100.00% Impervious Runoff Depth=1.03"
Flow Length=260' Tc=8.0 min CN=98 Runoff=1.20 cfs 0.039 af

Pond 9P: Basin A
Peak Elev=116.43' Storage=0.106 af Inflow=3.46 cfs 0.106 af
Outflow=0.00 cfs 0.000 af

Link 10L: Existing Basin
Inflow=1.47 cfs 0.050 af
Primary=1.47 cfs 0.050 af

Link 13L: Existing Undetained
Inflow=0.12 cfs 0.004 af
Primary=0.12 cfs 0.004 af

Link 14L: Post Basin A
Inflow=1.47 cfs 0.050 af
Primary=1.47 cfs 0.050 af

Link 16L: Total
Inflow=1.59 cfs 0.054 af
Primary=1.59 cfs 0.054 af

Total Runoff Area = 3.300 ac Runoff Volume = 0.160 af Average Runoff Depth = 0.58"
52.73% Pervious = 1.740 ac 47.27% Impervious = 1.560 ac

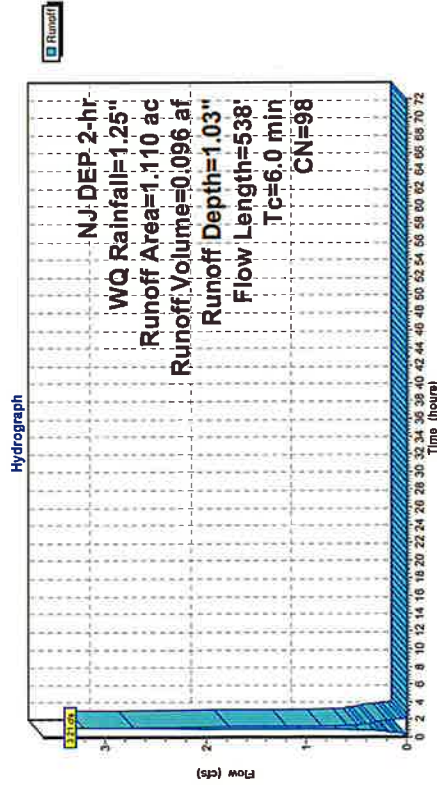
Summary for Subcatchment 7S: Basin A - Imp.

Runoff = 3.21 cfs @ 1.09 hrs, Volume= 0.096 af, Depth= 1.03"
Routed to Pond 9P: Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description			
0.660	98	Paved parking, HSG D			
0.450	98	Roofs, HSG D			
1.110	98	Weighted Average			
1.110		100.00% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	45	0.0100	0.92		Sheet Flow, Sheet Flow - Paved Smooth surfaces n= 0.011 P2= 3.44"
0.4	54	0.0100	2.03		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
1.6	362	0.0050	3.72	4.57	Pipe Channel, Pipe - 15" 15.0" Round Area= 1.2 sf Perim= 3.9' n= 0.31'
0.3	87	0.0050	4.20	7.43	Pipe Channel, Pipe - 18" 18.0" Round Area= 1.8 sf Perim= 4.7' n= 0.38'
3.1	538	Total	Increased to minimum	Tc = 6.0 min	n= 0.013

Subcatchment 7S: Basin A - Imp.



Hydrograph for Subcatchment 7S: Basin A - Imp.

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	1.25	1.03	0.00
1.00	0.63	0.43	2.05	53.00	1.25	1.03	0.00
2.00	1.25	1.03	0.11	54.00	1.25	1.03	0.00
3.00	1.25	1.03	0.00	55.00	1.25	1.03	0.00
4.00	1.25	1.03	0.00	56.00	1.25	1.03	0.00
5.00	1.25	1.03	0.00	57.00	1.25	1.03	0.00
6.00	1.25	1.03	0.00	58.00	1.25	1.03	0.00
7.00	1.25	1.03	0.00	59.00	1.25	1.03	0.00
8.00	1.25	1.03	0.00	60.00	1.25	1.03	0.00
9.00	1.25	1.03	0.00	61.00	1.25	1.03	0.00
10.00	1.25	1.03	0.00	62.00	1.25	1.03	0.00
11.00	1.25	1.03	0.00	63.00	1.25	1.03	0.00
12.00	1.25	1.03	0.00	64.00	1.25	1.03	0.00
13.00	1.25	1.03	0.00	65.00	1.25	1.03	0.00
14.00	1.25	1.03	0.00	66.00	1.25	1.03	0.00
15.00	1.25	1.03	0.00	67.00	1.25	1.03	0.00
16.00	1.25	1.03	0.00	68.00	1.25	1.03	0.00
17.00	1.25	1.03	0.00	69.00	1.25	1.03	0.00
18.00	1.25	1.03	0.00	70.00	1.25	1.03	0.00
19.00	1.25	1.03	0.00	71.00	1.25	1.03	0.00
20.00	1.25	1.03	0.00	72.00	1.25	1.03	0.00
21.00	1.25	1.03	0.00				
22.00	1.25	1.03	0.00				
23.00	1.25	1.03	0.00				
24.00	1.25	1.03	0.00				
25.00	1.25	1.03	0.00				
26.00	1.25	1.03	0.00				
27.00	1.25	1.03	0.00				
28.00	1.25	1.03	0.00				
29.00	1.25	1.03	0.00				
30.00	1.25	1.03	0.00				
31.00	1.25	1.03	0.00				
32.00	1.25	1.03	0.00				
33.00	1.25	1.03	0.00				
34.00	1.25	1.03	0.00				
35.00	1.25	1.03	0.00				
36.00	1.25	1.03	0.00				
37.00	1.25	1.03	0.00				
38.00	1.25	1.03	0.00				
39.00	1.25	1.03	0.00				
40.00	1.25	1.03	0.00				
41.00	1.25	1.03	0.00				
42.00	1.25	1.03	0.00				
43.00	1.25	1.03	0.00				
44.00	1.25	1.03	0.00				
45.00	1.25	1.03	0.00				
46.00	1.25	1.03	0.00				
47.00	1.25	1.03	0.00				
48.00	1.25	1.03	0.00				
49.00	1.25	1.03	0.00				
50.00	1.25	1.03	0.00				
51.00	1.25	1.03	0.00				

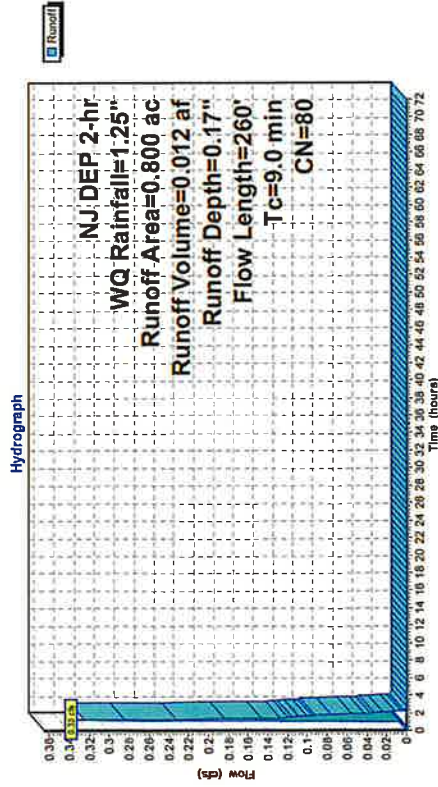
Summary for Subcatchment 11S: Existing Basin Undetained - Perv.

Runoff = 0.33 cfs @ 1.20 hrs, Volume= 0.012 af, Depth= 0.17"
Routed to Link 10L : Existing Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description			
0.800	80	>75% Grass cover, Good, HSG D			
0.800		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	85	0.0700	0.19		Sheet Flow, Sheet Flow
1.7	175	0.0120	1.76		Grass: Dense n= 0.240 P2= 3.44" Shallow Concentrated Flow, SCF - Unpaved Unpaved Kv= 16.1 fps

Subcatchment 11S: Existing Basin Undetained - Perv.



Hydrograph for Subcatchment 11S: Existing Basin Undetained - Perv.

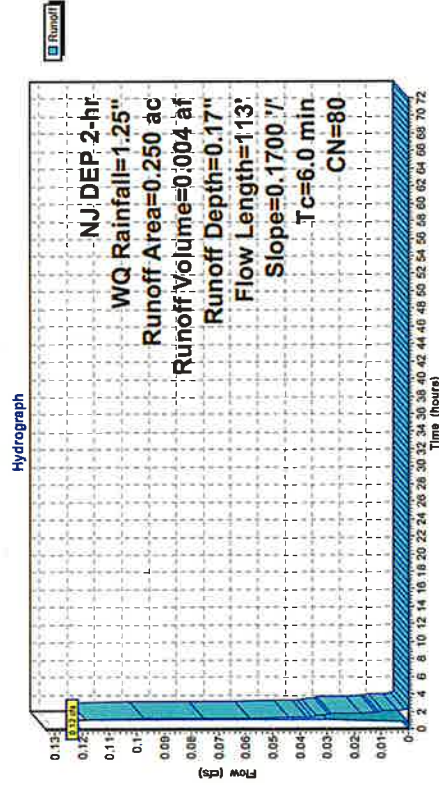
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	1.25	0.17	0.00
1.00	0.63	0.01	0.00	53.00	1.25	0.17	0.00
2.00	1.25	0.17	0.04	54.00	1.25	0.17	0.00
3.00	1.25	0.17	0.00	55.00	1.25	0.17	0.00
4.00	1.25	0.17	0.00	56.00	1.25	0.17	0.00
5.00	1.25	0.17	0.00	57.00	1.25	0.17	0.00
6.00	1.25	0.17	0.00	58.00	1.25	0.17	0.00
7.00	1.25	0.17	0.00	59.00	1.25	0.17	0.00
8.00	1.25	0.17	0.00	60.00	1.25	0.17	0.00
9.00	1.25	0.17	0.00	61.00	1.25	0.17	0.00
10.00	1.25	0.17	0.00	62.00	1.25	0.17	0.00
11.00	1.25	0.17	0.00	63.00	1.25	0.17	0.00
12.00	1.25	0.17	0.00	64.00	1.25	0.17	0.00
13.00	1.25	0.17	0.00	65.00	1.25	0.17	0.00
14.00	1.25	0.17	0.00	66.00	1.25	0.17	0.00
15.00	1.25	0.17	0.00	67.00	1.25	0.17	0.00
16.00	1.25	0.17	0.00	68.00	1.25	0.17	0.00
17.00	1.25	0.17	0.00	69.00	1.25	0.17	0.00
18.00	1.25	0.17	0.00	70.00	1.25	0.17	0.00
19.00	1.25	0.17	0.00	71.00	1.25	0.17	0.00
20.00	1.25	0.17	0.00	72.00	1.25	0.17	0.00
21.00	1.25	0.17	0.00				
22.00	1.25	0.17	0.00				
23.00	1.25	0.17	0.00				
24.00	1.25	0.17	0.00				
25.00	1.25	0.17	0.00				
26.00	1.25	0.17	0.00				
27.00	1.25	0.17	0.00				
28.00	1.25	0.17	0.00				
29.00	1.25	0.17	0.00				
30.00	1.25	0.17	0.00				
31.00	1.25	0.17	0.00				
32.00	1.25	0.17	0.00				
33.00	1.25	0.17	0.00				
34.00	1.25	0.17	0.00				
35.00	1.25	0.17	0.00				
36.00	1.25	0.17	0.00				
37.00	1.25	0.17	0.00				
38.00	1.25	0.17	0.00				
39.00	1.25	0.17	0.00				
40.00	1.25	0.17	0.00				
41.00	1.25	0.17	0.00				
42.00	1.25	0.17	0.00				
43.00	1.25	0.17	0.00				
44.00	1.25	0.17	0.00				
45.00	1.25	0.17	0.00				
46.00	1.25	0.17	0.00				
47.00	1.25	0.17	0.00				
48.00	1.25	0.17	0.00				
49.00	1.25	0.17	0.00				
50.00	1.25	0.17	0.00				
51.00	1.25	0.17	0.00				

Summary for Subcatchment 12S: Existing Undetained - Perv.

Runoff = 0.12 cfs @ 1.15 hrs, Volume= 0.004 af, Depth= 0.17"
Routed to Link 13L : Existing Undetained
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description		
0.250	80	>75% Grass cover, Good, HSG D		
0.250		100.00% Pervious Area		
Tc (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	100	0.1700	0.29	Sheet Flow, Sheet Flow - Grass
				Grass: Dense n= 0.240 P2= 3.44"
0.0	13	0.1700	6.64	Shallow Concentrated Flow, SCF - Unpaved
				Unpaved Kv= 16.1 fps
5.8	113	Total, Increased to minimum Tc = 6.0 min		

Subcatchment 12S: Existing Undetained - Perv.



Hydrograph for Subcatchment 12S: Existing Undetained - Perv.

Time (hours)	Precip. (inches)	Runoff (cfs)	Excess (inches)	Time (hours)	Precip. (inches)	Runoff (cfs)	Excess (inches)
0.00	0.00	0.00	0.00	52.00	1.25	0.17	0.00
1.00	0.63	0.01	0.01	53.00	1.25	0.17	0.00
2.00	1.25	0.01	0.01	54.00	1.25	0.17	0.00
3.00	1.25	0.00	0.00	55.00	1.25	0.17	0.00
4.00	1.25	0.00	0.00	56.00	1.25	0.17	0.00
5.00	1.25	0.00	0.00	57.00	1.25	0.17	0.00
6.00	1.25	0.00	0.00	58.00	1.25	0.17	0.00
7.00	1.25	0.00	0.00	59.00	1.25	0.17	0.00
8.00	1.25	0.00	0.00	60.00	1.25	0.17	0.00
9.00	1.25	0.00	0.00	61.00	1.25	0.17	0.00
10.00	1.25	0.00	0.00	62.00	1.25	0.17	0.00
11.00	1.25	0.00	0.00	63.00	1.25	0.17	0.00
12.00	1.25	0.00	0.00	64.00	1.25	0.17	0.00
13.00	1.25	0.00	0.00	65.00	1.25	0.17	0.00
14.00	1.25	0.00	0.00	66.00	1.25	0.17	0.00
15.00	1.25	0.00	0.00	67.00	1.25	0.17	0.00
16.00	1.25	0.00	0.00	68.00	1.25	0.17	0.00
17.00	1.25	0.00	0.00	69.00	1.25	0.17	0.00
18.00	1.25	0.00	0.00	70.00	1.25	0.17	0.00
19.00	1.25	0.00	0.00	71.00	1.25	0.17	0.00
20.00	1.25	0.00	0.00	72.00	1.25	0.17	0.00
21.00	1.25	0.00	0.00				
22.00	1.25	0.00	0.00				
23.00	1.25	0.00	0.00				
24.00	1.25	0.00	0.00				
25.00	1.25	0.00	0.00				
26.00	1.25	0.00	0.00				
27.00	1.25	0.00	0.00				
28.00	1.25	0.00	0.00				
29.00	1.25	0.00	0.00				
30.00	1.25	0.00	0.00				
31.00	1.25	0.00	0.00				
32.00	1.25	0.00	0.00				
33.00	1.25	0.00	0.00				
34.00	1.25	0.00	0.00				
35.00	1.25	0.00	0.00				
36.00	1.25	0.00	0.00				
37.00	1.25	0.00	0.00				
38.00	1.25	0.00	0.00				
39.00	1.25	0.00	0.00				
40.00	1.25	0.00	0.00				
41.00	1.25	0.00	0.00				
42.00	1.25	0.00	0.00				
43.00	1.25	0.00	0.00				
44.00	1.25	0.00	0.00				
45.00	1.25	0.00	0.00				
46.00	1.25	0.00	0.00				
47.00	1.25	0.00	0.00				
48.00	1.25	0.00	0.00				
49.00	1.25	0.00	0.00				
50.00	1.25	0.00	0.00				
51.00	1.25	0.00	0.00				

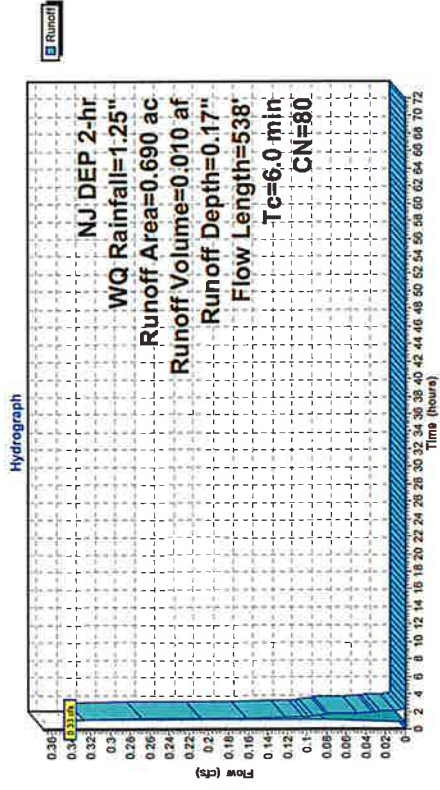
Summary for Subcatchment 15S: Basin A - Perv.

Runoff = 0.33 cfs @ 1.15 hrs, Volume= 0.010 af, Depth= 0.17"
Routed to Pond gp : Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description			
0.690	80	>75% Grass cover, Good, HSG D			
0.690		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	45	0.0100	0.92		Sheet Flow, Sheet Flow - Paved
					Smooth surfaces n= 0.011 P2= 3.44"
0.4	54	0.0100	2.03		Shallow Concentrated Flow, SCF - Paved
					Paved Kv= 20.3 fps
1.6	352	0.0050	3.72	4.57	Pipe Channel, Pipe - 15"
					15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31'
					n= 0.013
0.3	87	0.0050	4.20	7.43	Pipe Channel, Pipe - 18"
					18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38'
					n= 0.013
3.1	538	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 15S: Basin A - Perv.



Hydrograph for Subcatchment 15S: Basin A - Perv.

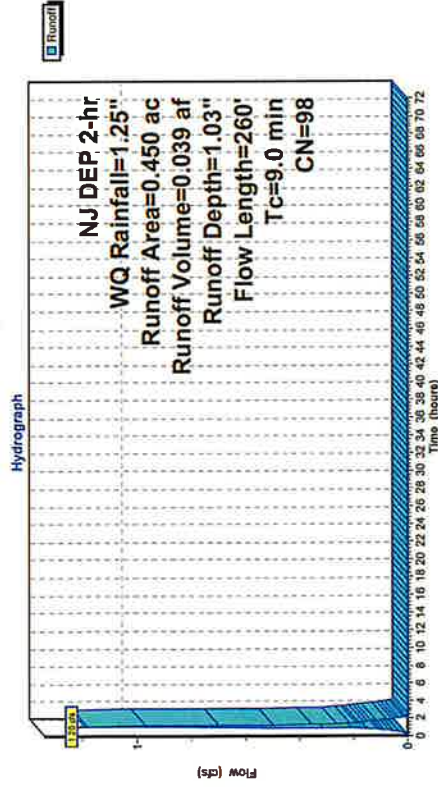
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	1.25	0.17	0.00
1.00	0.63	0.01	0.01	53.00	1.25	0.17	0.00
2.00	1.25	0.17	0.03	54.00	1.25	0.17	0.00
3.00	1.25	0.17	0.00	55.00	1.25	0.17	0.00
4.00	1.25	0.17	0.00	56.00	1.25	0.17	0.00
5.00	1.25	0.17	0.00	57.00	1.25	0.17	0.00
6.00	1.25	0.17	0.00	58.00	1.25	0.17	0.00
7.00	1.25	0.17	0.00	59.00	1.25	0.17	0.00
8.00	1.25	0.17	0.00	60.00	1.25	0.17	0.00
9.00	1.25	0.17	0.00	61.00	1.25	0.17	0.00
10.00	1.25	0.17	0.00	62.00	1.25	0.17	0.00
11.00	1.25	0.17	0.00	63.00	1.25	0.17	0.00
12.00	1.25	0.17	0.00	64.00	1.25	0.17	0.00
13.00	1.25	0.17	0.00	65.00	1.25	0.17	0.00
14.00	1.25	0.17	0.00	66.00	1.25	0.17	0.00
15.00	1.25	0.17	0.00	67.00	1.25	0.17	0.00
16.00	1.25	0.17	0.00	68.00	1.25	0.17	0.00
17.00	1.25	0.17	0.00	69.00	1.25	0.17	0.00
18.00	1.25	0.17	0.00	70.00	1.25	0.17	0.00
19.00	1.25	0.17	0.00	71.00	1.25	0.17	0.00
20.00	1.25	0.17	0.00	72.00	1.25	0.17	0.00
21.00	1.25	0.17	0.00				
22.00	1.25	0.17	0.00				
23.00	1.25	0.17	0.00				
24.00	1.25	0.17	0.00				
25.00	1.25	0.17	0.00				
26.00	1.25	0.17	0.00				
27.00	1.25	0.17	0.00				
28.00	1.25	0.17	0.00				
29.00	1.25	0.17	0.00				
30.00	1.25	0.17	0.00				
31.00	1.25	0.17	0.00				
32.00	1.25	0.17	0.00				
33.00	1.25	0.17	0.00				
34.00	1.25	0.17	0.00				
35.00	1.25	0.17	0.00				
36.00	1.25	0.17	0.00				
37.00	1.25	0.17	0.00				
38.00	1.25	0.17	0.00				
39.00	1.25	0.17	0.00				
40.00	1.25	0.17	0.00				
41.00	1.25	0.17	0.00				
42.00	1.25	0.17	0.00				
43.00	1.25	0.17	0.00				
44.00	1.25	0.17	0.00				
45.00	1.25	0.17	0.00				
46.00	1.25	0.17	0.00				
47.00	1.25	0.17	0.00				
48.00	1.25	0.17	0.00				
49.00	1.25	0.17	0.00				
50.00	1.25	0.17	0.00				
51.00	1.25	0.17	0.00				

Summary for Subcatchment 18S: Proposed Roof

Runoff = 1.20 cfs @ 1.13 hrs, Volume= 0.039 af, Depth= 1.03"
Routed to Link 10L : Existing Basin
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description			
0.450	98	Roofs, HSG D			
0.450		100.00% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	85	0.0700	0.19		Sheet Flow, Sheet Flow
					Grass: Dense n= 0.240 P2= 3.44"
1.7	175	0.0120	1.76		Shallow Concentrated Flow, SCF - Unpaved
					Unpaved Kv= 16.1 fps
9.0	260	Total			

Subcatchment 18S: Proposed Roof



Hydrograph for Subcatchment 18S: Proposed Roof

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	1.25	1.03	0.00
1.00	0.63	0.43	0.54	53.00	1.25	1.03	0.00
2.00	1.25	1.03	0.05	54.00	1.25	1.03	0.00
3.00	1.25	1.03	0.00	55.00	1.25	1.03	0.00
4.00	1.25	1.03	0.00	56.00	1.25	1.03	0.00
5.00	1.25	1.03	0.00	57.00	1.25	1.03	0.00
6.00	1.25	1.03	0.00	58.00	1.25	1.03	0.00
7.00	1.25	1.03	0.00	59.00	1.25	1.03	0.00
8.00	1.25	1.03	0.00	60.00	1.25	1.03	0.00
9.00	1.25	1.03	0.00	61.00	1.25	1.03	0.00
10.00	1.25	1.03	0.00	62.00	1.25	1.03	0.00
11.00	1.25	1.03	0.00	63.00	1.25	1.03	0.00
12.00	1.25	1.03	0.00	64.00	1.25	1.03	0.00
13.00	1.25	1.03	0.00	65.00	1.25	1.03	0.00
14.00	1.25	1.03	0.00	66.00	1.25	1.03	0.00
15.00	1.25	1.03	0.00	67.00	1.25	1.03	0.00
16.00	1.25	1.03	0.00	68.00	1.25	1.03	0.00
17.00	1.25	1.03	0.00	69.00	1.25	1.03	0.00
18.00	1.25	1.03	0.00	70.00	1.25	1.03	0.00
19.00	1.25	1.03	0.00	71.00	1.25	1.03	0.00
20.00	1.25	1.03	0.00	72.00	1.25	1.03	0.00
21.00	1.25	1.03	0.00				
22.00	1.25	1.03	0.00				
23.00	1.25	1.03	0.00				
24.00	1.25	1.03	0.00				
25.00	1.25	1.03	0.00				
26.00	1.25	1.03	0.00				
27.00	1.25	1.03	0.00				
28.00	1.25	1.03	0.00				
29.00	1.25	1.03	0.00				
30.00	1.25	1.03	0.00				
31.00	1.25	1.03	0.00				
32.00	1.25	1.03	0.00				
33.00	1.25	1.03	0.00				
34.00	1.25	1.03	0.00				
35.00	1.25	1.03	0.00				
36.00	1.25	1.03	0.00				
37.00	1.25	1.03	0.00				
38.00	1.25	1.03	0.00				
39.00	1.25	1.03	0.00				
40.00	1.25	1.03	0.00				
41.00	1.25	1.03	0.00				
42.00	1.25	1.03	0.00				
43.00	1.25	1.03	0.00				
44.00	1.25	1.03	0.00				
45.00	1.25	1.03	0.00				
46.00	1.25	1.03	0.00				
47.00	1.25	1.03	0.00				
48.00	1.25	1.03	0.00				
49.00	1.25	1.03	0.00				
50.00	1.25	1.03	0.00				
51.00	1.25	1.03	0.00				

Summary for Pond 9P: Basin A

Inflow Area = 1.800 ac, 61.67% Impervious, Inflow Depth = 0.70" for WQ event
Inflow = 3.46 cfs @ 1.10 hrs, Volume= 0.106 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 14L : Post-Basin A

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 116.43' @ 2.40 hrs Surf.Area= 0.099 ac Storage= 0.106 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume Invert Avail.Storage Storage Description
#1 115.00' 1.000 af Custom Stage Data (Prismatic) listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
115.00	0.040	0.000	0.000
116.00	0.090	0.065	0.065
117.00	0.110	0.100	0.165
118.00	0.130	0.120	0.285
119.00	0.160	0.145	0.430
120.00	0.180	0.170	0.600
121.00	0.200	0.190	0.790
122.00	0.220	0.210	1.000

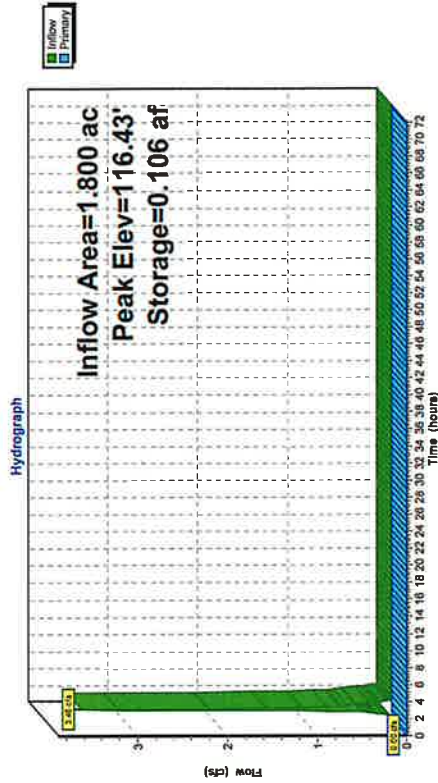
Device Routing Invert Outlet Devices

#1	Primary	120.50'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	116.50'	4.0" Vert. Orifice C= 0.600 Limited to weir flow at low heads

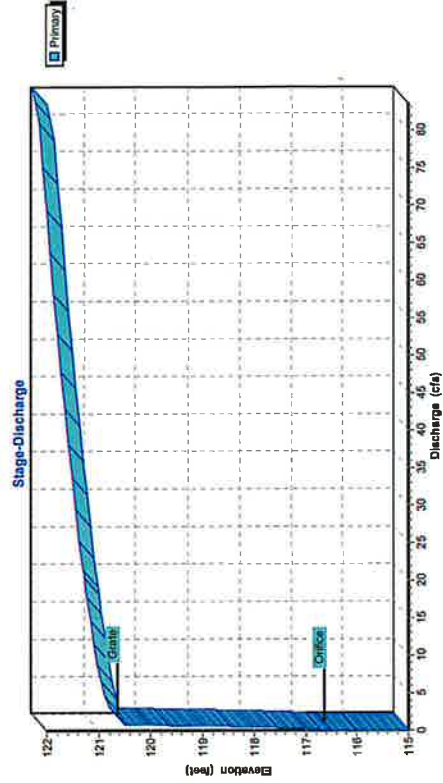
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=115.00' (Free Discharge)

1=Grate (Controls 0.00 cfs)
2=Orifice (Controls 0.00 cfs)

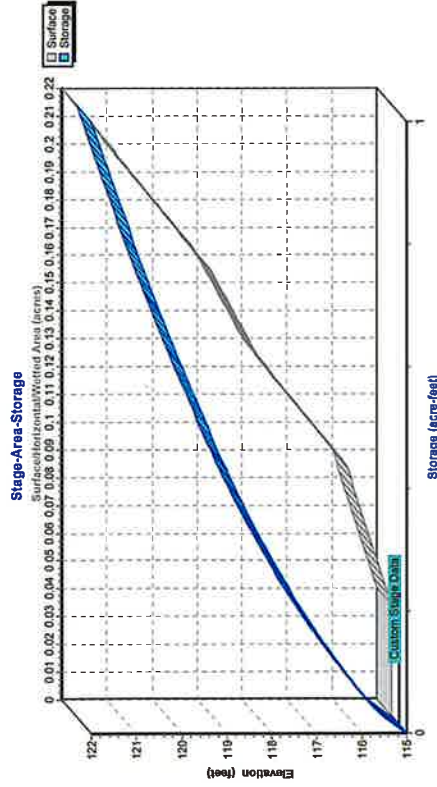
Pond 9P: Basin A



Pond 9P: Basin A



Pond 9P: Basin A



Pond 9P: Basin A

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	115.00	0.00
2.50	0.00	0.106	116.43	0.00
5.00	0.00	0.106	116.43	0.00
7.50	0.00	0.106	116.43	0.00
10.00	0.00	0.106	116.43	0.00
12.50	0.00	0.106	116.43	0.00
15.00	0.00	0.106	116.43	0.00
17.50	0.00	0.106	116.43	0.00
20.00	0.00	0.106	116.43	0.00
22.50	0.00	0.106	116.43	0.00
25.00	0.00	0.106	116.43	0.00
27.50	0.00	0.106	116.43	0.00
30.00	0.00	0.106	116.43	0.00
32.50	0.00	0.106	116.43	0.00
35.00	0.00	0.106	116.43	0.00
37.50	0.00	0.106	116.43	0.00
40.00	0.00	0.106	116.43	0.00
42.50	0.00	0.106	116.43	0.00
45.00	0.00	0.106	116.43	0.00
47.50	0.00	0.106	116.43	0.00
50.00	0.00	0.106	116.43	0.00
52.50	0.00	0.106	116.43	0.00
55.00	0.00	0.106	116.43	0.00
57.50	0.00	0.106	116.43	0.00
60.00	0.00	0.106	116.43	0.00
62.50	0.00	0.106	116.43	0.00
65.00	0.00	0.106	116.43	0.00
67.50	0.00	0.106	116.43	0.00
70.00	0.00	0.106	116.43	0.00

Stage-Discharge for Pond 9P: Basin A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
115.00	0.00	117.60	0.41
115.05	0.00	117.65	0.42
115.10	0.00	117.70	0.43
115.15	0.00	117.75	0.44
115.20	0.00	117.80	0.45
115.25	0.00	117.85	0.46
115.30	0.00	117.90	0.47
115.35	0.00	117.95	0.48
115.40	0.00	118.00	0.49
115.45	0.00	118.05	0.49
115.50	0.00	118.10	0.50
115.55	0.00	118.15	0.51
115.60	0.00	118.20	0.52
115.65	0.00	118.25	0.53
115.70	0.00	118.30	0.54
115.75	0.00	118.35	0.55
115.80	0.00	118.40	0.55
115.85	0.00	118.45	0.56
115.90	0.00	118.50	0.57
115.95	0.00	118.55	0.58
116.00	0.00	118.60	0.58
116.05	0.00	118.65	0.59
116.10	0.00	118.70	0.60
116.15	0.00	118.75	0.61
116.20	0.00	118.80	0.61
116.25	0.00	118.85	0.62
116.30	0.00	118.90	0.63
116.35	0.00	118.95	0.63
116.40	0.00	119.00	0.64
116.45	0.00	119.05	0.65
116.50	0.00	119.10	0.66
116.55	0.01	119.15	0.66
116.60	0.02	119.20	0.67
116.65	0.05	119.25	0.68
116.70	0.08	119.30	0.68
116.75	0.12	119.35	0.69
116.80	0.15	119.40	0.69
116.85	0.18	119.45	0.70
116.90	0.20	119.50	0.71
117.00	0.24	119.55	0.71
117.05	0.26	119.60	0.72
117.10	0.28	119.65	0.73
117.15	0.29	119.70	0.73
117.20	0.31	119.75	0.74
117.25	0.32	119.80	0.74
117.30	0.33	119.85	0.75
117.35	0.35	119.90	0.76
117.40	0.36	119.95	0.76
117.45	0.37	120.00	0.77
117.50	0.38	120.05	0.77
117.55	0.39	120.10	0.78
		120.15	0.78

Stage-Area-Storage for Pond 9P: Basin A

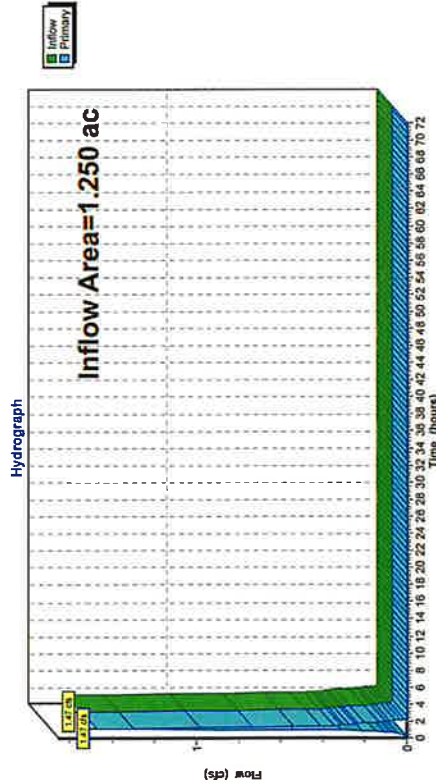
Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
115.00	0.040	0.000	120.20	0.184	0.636
115.10	0.045	0.004	120.30	0.186	0.655
115.20	0.050	0.009	120.40	0.188	0.674
115.30	0.055	0.014	120.50	0.190	0.693
115.40	0.060	0.020	120.60	0.192	0.712
115.50	0.065	0.028	120.70	0.194	0.731
115.60	0.070	0.033	120.80	0.196	0.750
115.70	0.075	0.040	120.90	0.198	0.770
115.80	0.080	0.048	121.00	0.200	0.790
115.90	0.085	0.056	121.10	0.202	0.810
116.00	0.090	0.065	121.20	0.204	0.830
116.10	0.092	0.074	121.30	0.206	0.851
116.20	0.094	0.083	121.40	0.208	0.872
116.30	0.096	0.093	121.50	0.210	0.893
116.40	0.098	0.103	121.60	0.212	0.914
116.50	0.100	0.112	121.70	0.214	0.935
116.60	0.102	0.123	121.80	0.216	0.956
116.70	0.104	0.133	121.90	0.218	0.978
116.80	0.106	0.143	122.00	0.220	1.000
116.90	0.108	0.154			
117.00	0.110	0.165			
117.10	0.112	0.176			
117.20	0.114	0.187			
117.30	0.116	0.199			
117.40	0.118	0.211			
117.50	0.120	0.222			
117.60	0.122	0.235			
117.70	0.124	0.247			
117.80	0.126	0.259			
117.90	0.128	0.272			
118.00	0.130	0.285			
118.10	0.133	0.298			
118.20	0.136	0.312			
118.30	0.138	0.325			
118.40	0.142	0.339			
118.50	0.145	0.354			
118.60	0.148	0.368			
118.70	0.151	0.383			
118.80	0.154	0.399			
118.90	0.157	0.414			
119.00	0.160	0.430			
119.10	0.162	0.446			
119.20	0.164	0.462			
119.30	0.166	0.478			
119.40	0.168	0.496			
119.50	0.170	0.513			
119.60	0.172	0.530			
119.70	0.174	0.547			
119.80	0.176	0.564			
119.90	0.178	0.582			
120.00	0.180	0.600			
120.10	0.182	0.618			

Summary for Link 10L: Existing Basin

Inflow Area = 1.250 ac, 36.00% Impervious, Inflow Depth = 0.48" for WQ event
Inflow = 1.47 cfs @ 1.15 hrs, Volume = 0.050 af
Primary = 1.47 cfs @ 1.15 hrs, Volume = 0.050 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L: Post Basin A

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 10L: Existing Basin



Hydrograph for Link 10L: Existing Basin

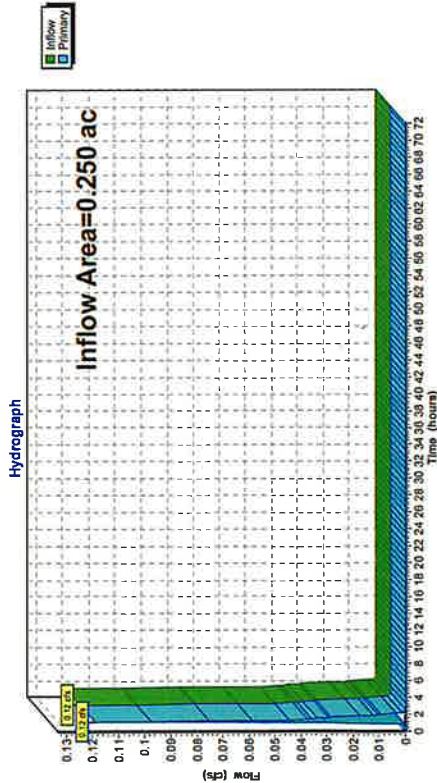
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.54	0.00	0.54	53.00	0.00	0.00	0.00
2.00	0.09	0.00	0.09	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	64.00	0.00	0.00	0.00
13.00	0.00	0.00	0.00	65.00	0.00	0.00	0.00
14.00	0.00	0.00	0.00	66.00	0.00	0.00	0.00
15.00	0.00	0.00	0.00	67.00	0.00	0.00	0.00
16.00	0.00	0.00	0.00	68.00	0.00	0.00	0.00
17.00	0.00	0.00	0.00	69.00	0.00	0.00	0.00
18.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00
19.00	0.00	0.00	0.00	71.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	72.00	0.00	0.00	0.00
21.00	0.00	0.00	0.00				
22.00	0.00	0.00	0.00				
23.00	0.00	0.00	0.00				
24.00	0.00	0.00	0.00				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 13L: Existing Undetained

Inflow Area = 0.250 ac, 0.00% Impervious, Inflow Depth = 0.17" for WQ event
Inflow = 0.12 cfs @ 1.15 hrs, Volume= 0.004 af
Primary = 0.12 cfs @ 1.15 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min
Routed to Link 16L: Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 13L: Existing Undetained



Hydrograph for Link 13L: Existing Undetained

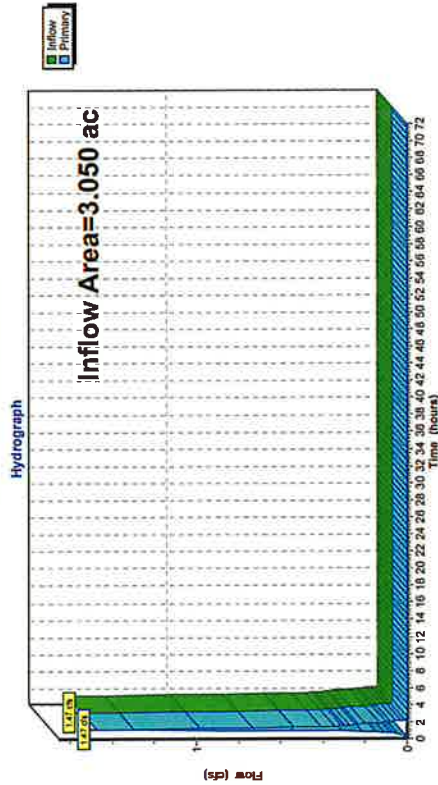
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.01	0.00	0.01	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	64.00	0.00	0.00	0.00
13.00	0.00	0.00	0.00	65.00	0.00	0.00	0.00
14.00	0.00	0.00	0.00	66.00	0.00	0.00	0.00
15.00	0.00	0.00	0.00	67.00	0.00	0.00	0.00
16.00	0.00	0.00	0.00	68.00	0.00	0.00	0.00
17.00	0.00	0.00	0.00	69.00	0.00	0.00	0.00
18.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00
19.00	0.00	0.00	0.00	71.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	72.00	0.00	0.00	0.00
21.00	0.00	0.00	0.00				
22.00	0.00	0.00	0.00				
23.00	0.00	0.00	0.00				
24.00	0.00	0.00	0.00				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 14L: Post Basin A

Inflow Area = 3.050 ac, 51.15% impervious, Inflow Depth = 0.20" for WQ event
Inflow = 1.47 cfs @ 1.15 hrs, Volume= 0.050 af
Primary = 1.47 cfs @ 1.15 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Routed to Link 16L: Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 14L: Post Basin A



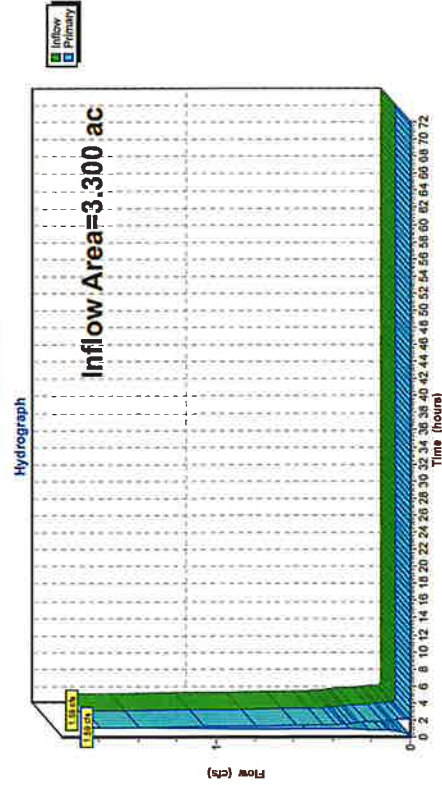
Hydrograph for Link 14L: Post Basin A

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.54	0.00	0.54	53.00	0.00	0.00	0.00
2.00	0.09	0.00	0.09	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	64.00	0.00	0.00	0.00
13.00	0.00	0.00	0.00	65.00	0.00	0.00	0.00
14.00	0.00	0.00	0.00	66.00	0.00	0.00	0.00
15.00	0.00	0.00	0.00	67.00	0.00	0.00	0.00
16.00	0.00	0.00	0.00	68.00	0.00	0.00	0.00
17.00	0.00	0.00	0.00	69.00	0.00	0.00	0.00
18.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00
19.00	0.00	0.00	0.00	71.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	72.00	0.00	0.00	0.00
21.00	0.00	0.00	0.00				
22.00	0.00	0.00	0.00				
23.00	0.00	0.00	0.00				
24.00	0.00	0.00	0.00				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Link 16L: Total

Inflow Area = 3.300 ac, 47.27% Impervious, Inflow Depth = 0.20" for WQ event
Inflow = 1.59 cfs @ 1.15 hrs, Volume = 0.054 af
Primary = 1.59 cfs @ 1.15 hrs, Volume = 0.054 af, Atten= 0%, Lag= 0.0 min
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 16L: Total



Hydrograph for Link 16L: Total

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.54	0.00	0.54	53.00	0.00	0.00	0.00
2.00	0.10	0.00	0.10	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	64.00	0.00	0.00	0.00
13.00	0.00	0.00	0.00	65.00	0.00	0.00	0.00
14.00	0.00	0.00	0.00	66.00	0.00	0.00	0.00
15.00	0.00	0.00	0.00	67.00	0.00	0.00	0.00
16.00	0.00	0.00	0.00	68.00	0.00	0.00	0.00
17.00	0.00	0.00	0.00	69.00	0.00	0.00	0.00
18.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00
19.00	0.00	0.00	0.00	71.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	72.00	0.00	0.00	0.00
21.00	0.00	0.00	0.00				
22.00	0.00	0.00	0.00				
23.00	0.00	0.00	0.00				
24.00	0.00	0.00	0.00				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

TABLE OF CONTENTS

Project Reports

- 1 Routing Diagram
- 2 Project Notes
- 3 Rainfall Events Listing (selected events)
- 4 Area Listing (all nodes)
- 5 Soil Listing (all nodes)
- 6 Ground Covers (all nodes)
- 7 Pipe Listing (all nodes)
- 8 Notes Listing (all nodes)

WQ Event

- 9 Node Listing
- 10 Subcat 7S: Basin A - Imp.
- 13 Subcat 11S: Existing Basin Undetained - Perv.
- 15 Subcat 12S: Existing Undetained - Perv.
- 17 Subcat 15S: Basin A - Perv.
- 19 Subcat 16S: Proposed Roof
- 21 Pond 9P: Basin A
- 27 Link 10L: Existing Basin
- 29 Link 13L: Existing Undetained
- 31 Link 14L: Post Bash A
- 33 Link 16L: Total

STORMWATER COLLECTION SYSTEM CALCULATIONS (PIPE SIZING)



DYNAMIC ENGINEERING

Stormwater Collection System Calculations

Project: BPS - Assisted Living Facility
Job #: 4496 22-01857
Location: Montgomery
Design Storm: 25 YR
Computed By: SS
Checked By: JH
Date: 12/14/2022
Revised:

*Basin outfall is based on 100 YR

NOTES:
1) Design method used is Rational Method.
2) Refer to Weighted Runoff Coefficient table for calculation of incremental areas and C values.
3) 100YR storm outfall flows used for OCS structures.

PIPE SECTION		SUBCATCHMENT AREA		INCREMENTAL		CUMULATIVE		TIME OF CONCENTRATION			I		PEAK RUNOFF		PIPING INPUT			PIPING DATA			
FROM	TO	Area (Acres)	"C"	A x C	Ac	A x C	Acres	Tc to Inlet (min)	Tc in Pipe (min)	Final Tc (min)	(In/1hr)	(In/1hr)	Q to Inlet (CFS)	Q cum. for Pipe (CFS)	Dia. (In)	Length (Ft)	Man. "n"	Slope (ft/ft)	Pipe Capacity (cfs)	Full Pipe Velocity (fps)	Actual Pipe Velocity (fps)
Inlet 16	Inlet 1	0.08	0.95	0.08		0.08		10.00	0.30	10.00	6.80	6.80	0.54	0.54	15	68.0	0.013	0.0050	4.57	3.73	1.68
Inlet 1	Inlet 2	0.08	0.95	0.08		0.16		10.00	0.35	10.30	6.80	6.80	0.54	0.54	15	79.0	0.013	0.0050	4.57	3.73	2.55
Inlet 2	Inlet 3	0.13	0.95	0.12		0.28		10.00	0.52	10.65	6.68	6.68	0.80	1.87	15	117.0	0.013	0.0050	4.57	3.73	3.41
Inlet 3	Inlet 4	0.22	0.95	0.21		0.49		10.00	0.40	11.17	6.56	6.56	1.38	3.21	15	89.0	0.013	0.0050	4.57	3.73	4.18
MH A-122	MH A-121	0.04	0.95	0.04		0.04		10.00	0.44	10.00	6.80	6.80	0.27	0.27	6	54.0	0.013	0.0050	0.40	2.04	2.25
MH A-121	Inlet 4	0.04	0.95	0.04		0.08		10.00	0.33	10.44	6.80	6.80	0.27	0.27	8	48.0	0.013	0.0050	0.85	2.44	2.68
Inlet 4	Inlet 5	0.14	0.95	0.13		0.70		10.00	0.29	11.57	6.44	6.44	0.84	4.51	15	64.0	0.013	0.0050	4.57	3.73	3.89
MH A-112	MH A-111	0.02	0.95	0.02		0.02		10.00	0.38	10.00	6.80	6.80	0.14	0.14	6	47.0	0.013	0.0050	0.40	2.04	1.71
MH A-111	MH A-110	0.05	0.95	0.05		0.07		10.00	0.06	10.38	6.80	6.80	0.34	0.34	8	10.0	0.012	0.0050	0.93	2.67	2.70
Inlet 5	FES A	0.17	0.95	0.16		0.86		10.00	0.34	11.86	6.44	6.44	1.03	5.54	18	87.0	0.013	0.0050	7.43	4.21	4.78
Inlet 8	Inlet 9	0.25	0.95	0.24		0.24		10.00	0.33	10.00	6.80	6.80	1.63	1.63	15	74.0	0.013	0.0050	4.57	3.73	3.19
Inlet 9	MH 10	0.17	0.95	0.16		0.40		10.00	0.36	10.33	6.80	6.80	1.09	2.72	15	80.0	0.013	0.0050	4.57	3.73	4.00
MH 10	MH 11	0.00	0.95	0.00		0.40		10.00	0.29	10.69	6.68	6.68	0.00	2.67	15	64.0	0.013	0.0050	4.57	3.73	3.96
MH 11	FES B	0.00	0.95	0.00		0.40		10.00	0.24	10.98	6.68	6.68	0.00	2.67	15	54.0	0.013	0.0050	4.57	3.73	3.96
MH A-360	MH A-350	0.04	0.95	0.04		0.04		10.00	0.23	10.00	6.80	6.80	0.27	0.27	6	36.0	0.012	0.0050	0.43	2.19	2.39
MH A-350	MH A-340	0.07	0.95	0.07		0.11		10.00	0.69	10.23	6.80	6.80	0.48	0.75	8	111.0	0.012	0.0050	0.93	2.67	3.03
MH A-340	MH A-330	0.00	0.95	0.00		0.11		10.00	0.18	10.92	6.68	6.68	0.00	0.73	8	29.0	0.012	0.0050	0.93	2.67	3.03
MH A-330	MH A-320	0.00	0.95	0.00		0.11		10.00	0.16	11.10	6.56	6.56	0.00	0.72	8	26.0	0.012	0.0050	0.93	2.67	3.02
MH A-327	MH A-326	0.03	0.95	0.03		0.03		10.00	0.11	10.00	6.80	6.80	0.20	0.20	6	14.0	0.012	0.0050	0.43	2.19	2.14
MH A-326	MH A-325	0.00	0.95	0.00		0.03		10.00	0.47	10.11	6.80	6.80	0.00	0.20	6	62.0	0.012	0.0050	0.43	2.19	2.14
MH A-325	MH A-324	0.00	0.95	0.00		0.03		10.00	0.09	10.58	6.68	6.68	0.00	0.20	6	12.0	0.012	0.0050	0.43	2.19	2.14
MH A-324	MH A-323	0.03	0.95	0.03		0.06		10.00	0.30	10.67	6.68	6.68	0.20	0.40	6	39.0	0.012	0.0050	0.43	2.19	2.44
MH A-323	MH A-322	0.03	0.95	0.03		0.09		10.00	0.19	10.97	6.68	6.68	0.20	0.60	8	31.0	0.012	0.0050	0.93	2.67	2.92
MH A-322	MH A-321	0.00	0.95	0.00		0.09		10.00	0.53	11.16	6.56	6.56	0.00	0.59	8	85.0	0.012	0.0050	0.93	2.67	2.89
MH A-321	MH A-320	0.26	0.95	0.25		0.34		10.00	1.12	11.69	6.44	6.44	1.61	2.79	12	233.0	0.012	0.0050	2.73	3.48	3.97
MH A-320	Inlet A-310	0.00	0.95	0.00		0.45		10.00	0.14	12.81	6.20	6.20	0.00	0.82	15	94.0	0.012	0.0050	4.95	4.04	4.23
OCS A-300	Inlet A-310																				
Inlet A-310	FES A-320													4.03	15	39.0	0.013	0.0050	4.57	3.73	4.22

CONDUIT OUTLET PROTECTION CALCULATIONS

Conduit Outlet Protection Calculations

Rip Rap Pad # ES A

Design Parameters:

Design Storm Flow for 25 Year, Q
Vertical Dimension of Outlet Pipe, D_o
Horizontal Dimension of Outlet Pipe, W_o
Tailwater Depth, TW^1

5.54 cfs
18 in
18 in
2.60 ft

Apron Dimension Calculations:

Unit Discharge, $q = Q/D_o = 3.69$ cfs per foot

• Case I: $TW < 1/2 D_o$

Apron Length, $L_a = \frac{1.8q}{D_o^{1/2}} + 7D_o =$

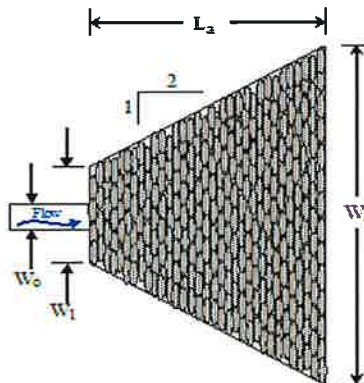
Width, $W_1 = 3W_o =$

Width, $W_2 = 3W_o + L_a =$

$L_a =$

$W_1 =$

$W_2 =$



• Case II: $TW \geq 1/2 D_o$

Apron Length, $L_a = \frac{3q}{D_o^{1/2}} = 9.05$ ft

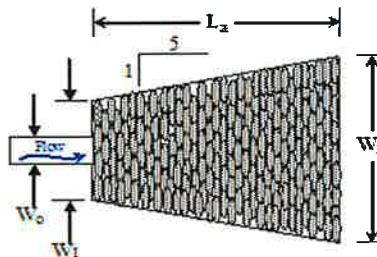
Width, $W_1 = 3W_o = 4.5$ ft

Width, $W_2 = 3W_o + 0.4L_a = 8.12$ ft

or $L_a = 10$ ft

or $W_1 = 5$ ft

or $W_2 = 9$ ft



Rip Rap Stone Size Calculations:

Median Stone, $d_{50} = \frac{0.02q^{1.33}}{TW} = 0.52$ in

$d_{50} = 6$ in

Notes:

- Where there is a well-defined channel downstream of the apron, the bottom width of the apron shall be at least equal to the bottom width of the channel and the structural lining shall extend at least one foot above the tailwater elevation, but no lower than two-thirds of the vertical conduit dimension above the conduit invert.
- The side slopes shall be 2:1 or flatter.
- The bottom grade shall be 0.0% (level).
- There shall be no overfall at the end of the apron or at the end of the culvert.
- Fifty (50) percent by weight of the rip-rap mixture shall be smaller than the median size stone designated as d_{50} . The largest stone size in the mixture shall be 1.5 times the d_{50} size. The rip-rap shall be reasonably well graded.
- The thickness of the rip-rap apron may be two (2) times the median stone diameter provided that the apron is constructed on a bedding of four (4) inches of 3/4 inch clean stone on approved filter fabric material.
- Rip-rap and filter fabric shall meet the standards of the governing Soil Conservation District as well as the requirements of the local municipality.
- No bends or curves at the intersection of the conduit and apron will be permitted.

Footnote:

- Tailwater depth shall be the 2-year storm if discharging into a detention basin. For areas where tailwater cannot be computed, use $TW = 0.2D_o$.
- For multiple pipes, increase rip-rap sizes by 25% when pipe spacing is greater than or equal to $1/4W_o$.

Conduit Outlet Protection Calculations

Rip Rap Pad # ES B

Design Parameters:

Design Storm Flow for 25 Year, Q
Vertical Dimension of Outlet Pipe, D_o
Horizontal Dimension of Outlet Pipe, W_o
Tailwater Depth, TW^1

2.67 cfs
15 in
15 in
2.61 ft

Apron Dimension Calculations:

Unit Discharge, $q = Q/D_o = 2.14$ cfs per foot

• Case I: $TW < 1/2 D_o$

$$\text{Apron Length, } L_a = \frac{1.8q}{D_o^{1/2}} + 7D_o =$$

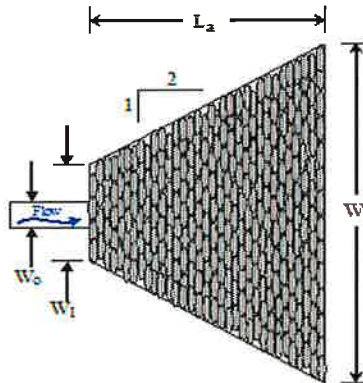
$$\text{Width, } W_1 = 3W_o =$$

$$\text{Width, } W_2 = 3W_o + L_a =$$

$$L_a =$$

$$W_1 =$$

$$W_2 =$$



• Case II: $TW \geq 1/2 D_o$

$$\text{Apron Length, } L_a = \frac{3q}{D_o^{1/2}} = 5.73 \text{ ft}$$

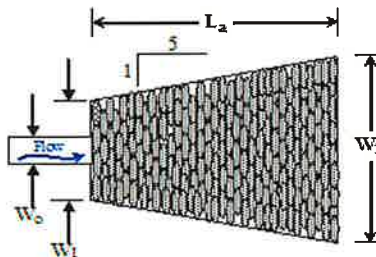
$$\text{Width, } W_1 = 3W_o = 3.75 \text{ ft}$$

$$\text{Width, } W_2 = 3W_o + 0.4L_a = 6.04 \text{ ft}$$

or $L_a = 6 \text{ ft}$

or $W_1 = 4 \text{ ft}$

or $W_2 = 7 \text{ ft}$



Rip Rap Stone Size Calculations:

$$\text{Median Stone, } d_{50} = \frac{0.02q^{1.33}}{TW} = 0.25 \text{ in}$$

$$d_{50} = 6 \text{ in}$$

Notes:

- Where there is a well-defined channel downstream of the apron, the bottom width of the apron shall be at least equal to the bottom width of the channel and the structural lining shall extend at least one foot above the tailwater elevation, but no lower than two-thirds of the vertical conduit dimension above the conduit invert.
- The side slopes shall be 2:1 or flatter.
- The bottom grade shall be 0.0% (level).
- There shall be no overfall at the end of the apron or at the end of the culvert.
- Fifty (50) percent by weight of the rip-rap mixture shall be smaller than the median size stone designated as d_{50} . The largest stone size in the mixture shall be 1.5 times the d_{50} size. The rip-rap shall be reasonably well graded.
- The thickness of the rip-rap apron may be two (2) times the median stone diameter provided that the apron is constructed on a bedding of four (4) inches of 3/4 inch clean stone on approved filter fabric material.
- Rip-rap and filter fabric shall meet the standards of the governing Soil Conservation District as well as the requirements of the local municipality.
- No bends or curves at the intersection of the conduit and apron will be permitted.

Footnote:

- Tailwater depth shall be the 2-year storm if discharging into a detention basin. For areas where tailwater cannot be computed, use $TW = 0.2D_o$.
- For multiple pipes, increase rip-rap sizes by 25% when pipe spacing is greater than or equal to $1/4W_o$.

Conduit Outlet Protection Calculations

Rip Rap Pad # 1

Design Parameters:

Design Storm Flow for 25 Year, Q
Vertical Dimension of Outlet Pipe, D_o
Horizontal Dimension of Outlet Pipe, W_o
Tailwater Depth, TW^1

4.03 cfs
15 in
15 in
5.97 ft

Apron Dimension Calculations:

Unit Discharge, $q = Q/D_o = 3.22$ cfs per foot

• **Case I: $TW < 1/2 D_o$**

Apron Length, $L_a = \frac{1.8q}{D_o^{1/2}} + 7D_o =$

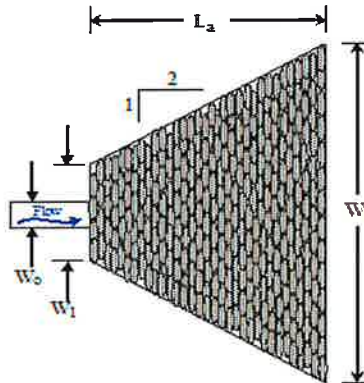
Width, $W_1 = 3W_o =$

Width, $W_2 = 3W_o + L_a =$

$L_a =$

$W_1 =$

$W_2 =$



• **Case II: $TW \geq 1/2 D_o$**

Apron Length, $L_a = \frac{3q}{D_o^{1/2}} = 8.65$ ft

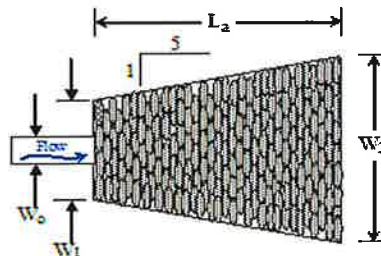
Width, $W_1 = 3W_o = 3.75$ ft

Width, $W_2 = 3W_o + 0.4L_a = 7.21$ ft

or $L_a = 9$ ft

or $W_1 = 4$ ft

or $W_2 = 8$ ft



Rip Rap Stone Size Calculations:

Median Stone, $d_{50} = \frac{0.02q^{1.33}}{TW} = 0.19$ in

$d_{50} = 6$ in

Notes:

- Where there is a well-defined channel downstream of the apron, the bottom width of the apron shall be at least equal to the bottom width of the channel and the structural lining shall extend at least one foot above the tailwater elevation, but no lower than two-thirds of the vertical conduit dimension above the conduit invert.
- The side slopes shall be 2:1 or flatter.
- The bottom grade shall be 0.0% (level).
- There shall be no overfall at the end of the apron or at the end of the culvert.
- Fifty (50) percent by weight of the rip-rap mixture shall be smaller than the median size stone designated as d_{50} . The largest stone size in the mixture shall be 1.5 times the d_{50} size. The rip-rap shall be reasonably well graded.
- The thickness of the rip-rap apron may be two (2) times the median stone diameter provided that the apron is constructed on a bedding of four (4) inches of 3/4 inch clean stone on approved filter fabric material.
- Rip-rap and filter fabric shall meet the standards of the governing Soil Conservation District as well as the requirements of the local municipality.
- No bends or curves at the intersection of the conduit and apron will be permitted.

Footnote:

- Tailwater depth shall be the 2-year storm if discharging into a detention basin. For areas where tailwater cannot be computed, use $TW = 0.2D_o$.
- For multiple pipes, increase rip-rap sizes by 25% when pipe spacing is greater than or equal to $1/4W_o$.

OVERFLOW SPILLWAY CALCULATIONS



Overflow Spillway Calculations

Project: BPS - Proposed Assisted Living Facility

Job #: 4496 22-01857

Location: Montgomery

Computed By: SS

Checked By: JH

Date: 12/12/2022

BASIN NAME

To Size Spillway:

- Assume complete blockage of the outlet control structure and no infiltration
- Route 2 & 10 year storm through basin assuming that the basin is filled with water up to the Emergency Spillway Elevation

	2 Year	10 Year
Spillway Width (ft.)	20.00	20.00
Spillway Elevation (ft.)	122.00	122.00
Flow through Spillway (Q) (cfs)	4.710	7.620
Water Surface Elevation (ft)	122.18	122.25
Depth of Flow (ft)	0.18	0.25
Area of Flow (A) (sf)*	3.63	5.06

Velocity (V) = Q / A (ft/sec) 1.30 1.51

* V = < 2.0 FPS * Stability Achieved

NONSTRUCTURAL STRATEGIES POINTS SYSTEM (NSPS)

NJDEP Nonstructural Strategies Points System (NSPS)

Version: January 31, 2006

Note: Input Values in Yellow Cells Only

Project: 4496-22-01857

Date: December 12, 2022

User: Dynamic Engineering Consultants LC

Notes:

Step 1 - Provide Basic Major Development Site Information

A. Specify Total Area in Acres of Development Site Described in Steps 2 and 3 = 4.4 Acres

B. Specify by Percent the Various Planning Areas Located within the Development Site:

State Plan Planning Area:	PA-1	PA-2	PA-3	PA-4	PA-4B	PA-5	Total % Area
Percent of Each Planning Area within Site:	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%

Note: See User's Guide for Equivalent Zones within Designated Centers and the NJ Meadowlands, Pinelands, and Highlands Districts

Step 2 - Describe Existing or Pre-Developed Site Conditions

A. Specify Existing Land Use/Land Cover Descriptions and Areas:

Site		Specify Land Use/Land Cover in Acres for Each HSG				Use/Cover	Points
Segment	Land Use/Land Cover Description	HSG A	HSG B	HSG C	HSG D	Subtotals	
1	Wetlands and Undisturbed Stream Buffers					0.0	0
2	Lawn and Open Space				2.1	2.1	84
3	Brush and Shrub					0.0	0
4	Meadow, Pasture, Grassland, or Range					0.0	0
5	Row Crop					0.0	0
6	Small Grain and Legumes					0.0	0
7	Woods - Indigenous				1.2	1.2	66
8	Woods - Planted					0.0	0
9	Woods and Grass Combination					0.0	0
10	Ponds, Lakes, and Other Open Water					0.0	0
11	Gravel and Dirt				1.2	1.2	30
12	Porous and Permeable Paving					0.0	0
13	Directly Connected Impervious					0.0	0
14	Unconnected Impervious with Small D/S Pervious					0.0	0
15	Unconnected Impervious with Large D/S Pervious					0.0	0
HSG Subtotals (Acres):		0.0	0.0	0.0	4.4		Total Area: 4.4
HSG Subtotals (%):		0.0%	0.0%	0.0%	100.0%		Total % Area: 100.0%

Points Subtotal: 180

Total Existing Site Points: 180

Step 3 - Describe Proposed or Post-Developed Site Conditions

A. Specify Proposed Land Use/Land Cover Descriptions and Areas:

Site		Specify Land Use/Land Cover in Acres for Each HSG				Use/Cover	Points
Segment	Land Use/Land Cover Description	HSG A	HSG B	HSG C	HSG D	Subtotals	
1	Wetlands and Undisturbed Stream Buffers					0.0	0
2	Lawn and Open Space				2.7	2.7	112
3	Brush and Shrub					0.0	0
4	Meadow, Pasture, Grassland, or Range					0.0	0
5	Row Crop					0.0	0
6	Small Grain and Legumes					0.0	0
7	Woods - Indigenous				0.3	0.3	16

8	Woods - Planted				0.0	0
9	Woods and Grass Combination				0.0	0
10	Ponds, Lakes, and Other Open Water				0.0	0
11	Gravel and Dirt				0.0	0
12	Porous and Permeable Paving				0.0	0
13	Directly Connected Impervious			1.4	1.4	0
14	Unconnected Impervious with Small D/S Pervious				0.0	0
15	Unconnected Impervious with Large D/S Pervious				0.0	0

HSG Subtotals (Acres):	0.0	0.0	0.0	4.4
HSG Subtotals (%):	0.0%	0.0%	0.0%	100.0%

Total Area:	4.4
Total % Area:	100.0%

Points Subtotal: 128

B. Compare Proposed Impervious Coverage with Maximum Allowable Impervious Coverage:

Total Directly Connected Impervious Coverage =	32%	% of Site
Total Unconnected Impervious Coverage with Small D/S Pervious =	0%	% of Site
Total Unconnected Impervious Coverage with Large D/S Pervious =	0%	% of Site
Total Site Impervious Coverage =	32%	% of Site
Effective Site Impervious Coverage =	32%	% of Site
Specify Source of Maximum Allowable Impervious Coverage:	Table	(None or Table)
Allowable Site Impervious Cover from Maximum Impervious Cover Table:	12%	
Note: See Maximum Impervious Cover Table Worksheet for Details		

Points Subtotal: 0

C. Compare Proposed Site Disturbance with Maximum Allowable Site Disturbance:

Total Proposed Site Disturbance =	74%	% of Site
Maximum Allowable Site Disturbance by Municipal Ordinance =	100%	% of Site

Points Subtotal: 9

D. Describe Proposed Runoff Conveyance System:

Total Length of Runoff Conveyance System =	1211	Feet
Length of Vegetated Runoff Conveyance System =	232	Feet
% of Total Runoff Conveyance System That is Vegetated =	19%	

Points Subtotal: 14

E. Residential Lot Clustering:

Percent of Total Site Area that will be Clustered =	0%	% of Site
Minimum Standard Lot Size as Per Zoning (Note: 1/2 Acre or Greater) =	0.000	Acres
Maximum Proposed Cluster Lot Size (Note: 1/4 Acre or Less) =	0.000	Acres
Percent of Clustered Portion of Site to be Preserved as Vegetated Open Space =	0%	% of Clustered Site Portion

Points Subtotal: 0

F. Will the Following be Utilized to Minimize Soil Compaction?

Proposed Lawn Areas will be Graded with Lightweight Construction Equipment:	Yes	(Yes or No)
Percent of Proposed Lawn Areas to be Graded with Such Equipment:	100%	% of Lawn Areas

Points Subtotal: 18

G. Are Any of the Following Stormwater Management Standards Met Using Only Nonstructural Strategies and Measures?

Groundwater Recharge Standards (NJAC 7:8-5.4-a-2):	No	(Yes or No)
Stormwater Runoff Quality Standards (NJAC 7:8-5.5):	No	(Yes or No)
Stormwater Runoff Quantity Standards (NJAC 7:8-5.4-a-3):	No	(Yes or No)

Points Subtotal: 0

Note: If the Answers to All Three Questions at G Above are "Yes", Adequate Nonstructural Measures have been Utilized.

Total Proposed Site Points: 169

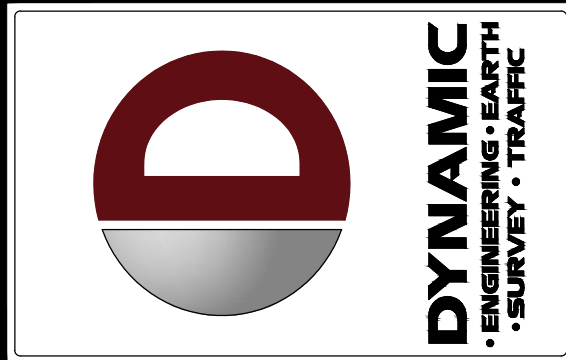
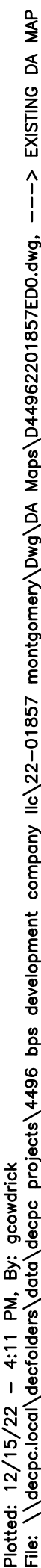
Ratio of Proposed to Existing Site Points: 94%

Required Site Points Ratio: 92%

Nonstructural Point System Results: Proposed Nonstructural Measures are Adequate

**STORMWATER BASIN AREA INVESTIGATION
REPORT, PREPARED BY DYNAMIC EARTH, LLC
(ATTACHED SEPARATELY)**

DRAINAGE AREA MAPS

[illegible]

THIS PLAN SET IS FOR PERMITTING PURPOSES
ONLY AND MAY NOT BE USED FOR CONSTRUCTION

NAME #1	_____	MFD	_____	SECOND PR	_____	JOH	_____	THIRD PR	_____	FOURTH PR	_____
---------	-------	-----	-------	-----------	-------	-----	-------	----------	-------	-----------	-------

PROJECT: **BPS DEVELOPMENT COMPANY, LLC**
PROPOSED ASSISTED LIVING & MEMORY CARE FACILITY
22000 22ND AVENUE
BARTWICK, CO. VILLAGE DRIVE
MONTGOMERY TOWNSHIP, SOMERSET COUNTY, NEW JERSEY

PROTECT YOURSELF

ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISRUPT THE EARTH'S SURFACE ANYWHERE IN ANY STATE

811



**Know what's below
Call before you dig.**

FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT:
WWW.CALL811.COM

**DYNAMIC
ENGINEERING**
LAND DEVELOPMENT CONSULTING • PERMITTING
GEOTECHNICAL • ENVIRONMENTAL
TRAFFIC • SURVEY • PLANNING & ZONING

**1904 Main Street
Lake Como, NJ 07719**
T: 732.974.0198 | F: 732.974.3521

Offices conveniently located at:

LAKE COWD, NEW JERSEY • T: 732.974.0198
CHESTER, NEW JERSEY • T: 908.875.9222
NEWARK, NEW JERSEY • T: 973.755.7300
TOWNSHIP RIVER, NEW JERSEY • T: 732.678.0000
NEWPORT, PENNSYLVANIA • T: 267.685.0276
PHILADELPHIA, PENNSYLVANIA • T: 215.233.4888
BETHLEHEM, PENNSYLVANIA • T: 610.988.4400
ALLEN, TEXAS • T: 972.534.1100
HOUSTON, TEXAS • T: 281.789.4400
AUSTIN, TEXAS • T: 512.646.2644
DELRAY BEACH, FLORIDA • T: 561.921.8570

www.dynacore.com

JEFFREY D. SPALT

PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 40766

JEFFREY HABERMAN

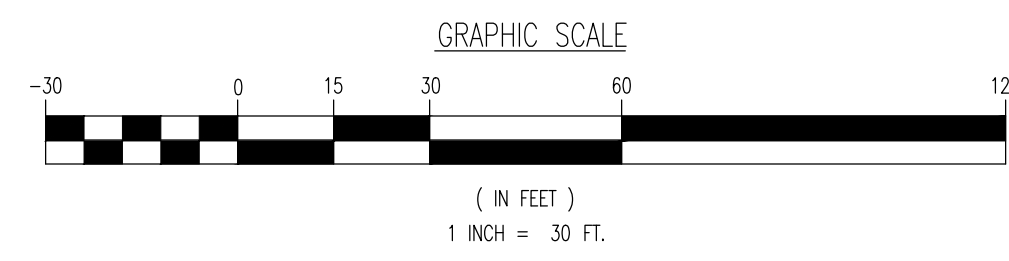
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 53560

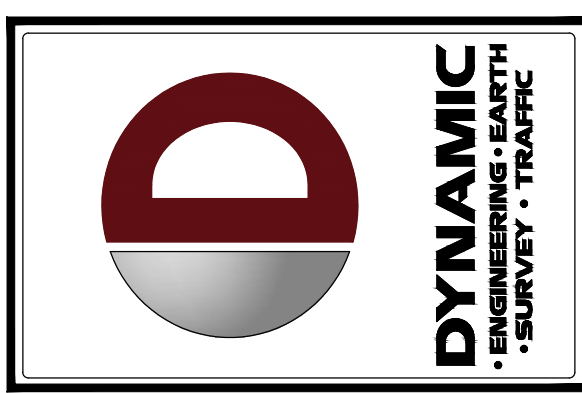
TITLE:

EXISTING
DRAINAGE AREA
MAP

SCALE: (H) 1" = 30'	DATE: 12/15/2022
PROJECT No: 4496-22-01857	

SHEET No: **1** OF 3





THIS PLAN SET IS FOR PERMITTING PURPOSES ONLY AND MAY NOT BE USED FOR CONSTRUCTION			
DRAWN BY: _____ MFD _____	DESIGNED BY: _____ JH _____	CHECKED BY: _____ JDS _____	DATE: _____ -- _____

PROJECT: **BPS DEVELOPMENT COMPANY, LLC**
PROPOSED ASSISTED HOUSING & MEMORY CARE FACILITY

BLOCK 26003, LOT 2.11
 HARTWICK DRIVE & VILLAGE DRIVE
 MONTGOMERY TOWNSHIP, SOMERSET COUNTY, NEW JERSEY

**DYNAMIC
ENGINEERING**
LAND DEVELOPMENT CONSULTING • PERMITTING
GEOTECHNICAL • ENVIRONMENTAL
TRAFFIC • SURVEY • PLANNING & ZONING

Offices conveniently located at:

LAKE CONRO, NEW JERSEY • T: 732.874.0198
CHESTER, NEW JERSEY • T: 908.873.9229
NEWARK, NEW JERSEY • T: 973.735.7200
TOWNSHIP OF NEW JERSEY • T: 732.678.0000
NEWPORT, PENNSYLVANIA • T: 267.685.0276
PHILADELPHIA, PENNSYLVANIA • T: 215.233.6888
BETHLEHEM, PENNSYLVANIA • T: 610.558.4400
AULIN, TEXAS • T: 972.534.2100
HOUSTON, TEXAS • T: 281.789.6400
AUSTIN, TEXAS • T: 512.546.2646
DELRAY BEACH, FLORIDA • T: 561.921.8570

JEFFREY D. SPALT

PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 40766

JEFFREY HABERMAN

PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 53560

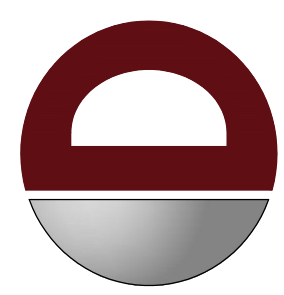
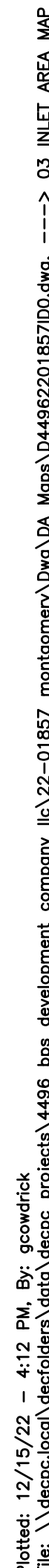
TITLE:

PROPOSED
DRAINAGE AREA
MAP

SCALE: (H) 1" = 30' (V)	DATE: 12/15/2022
PROJECT No: 4496-22-01857	

SHEET No:	2	Rev. #:	0
-----------	---	---------	---





• SURVEY • TRAFFIC

REV.	DATE	COMMENTS
------	------	----------

© 2006 The Authors
Journal compilation © 2006 Blackwell Publishing Ltd

JH	JDS	

BLOCK 28003, LOT 211
HARTWICK DRIVE & VILLAGE DRIVE

ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON
PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE



LAND DEVELOPMENT CONSULTING • PERMITTING
GEOTECHNICAL • ENVIRONMENTAL
TRAFFIC • SURVEY • PLANNING & ZONING

T: 732.974.0198 | F: 732.974.3521

LAKE COMO, NEW JERSEY • T: 732.674.0198
CHESTER, NEW JERSEY • T: 908.671.9229
NEWARK, NEW JERSEY • T: 973.755.7200
TOWNSHIP, NEW JERSEY • T: 732.678.0000
NEWPORT, PENNSYLVANIA • T: 267.455.2076
PHILADELPHIA, PENNSYLVANIA • T: 215.253.4888
BETHLEHEM, PENNSYLVANIA • T: 610.598.4400
AULIN, TEXAS • T: 972.534.2101
HOUSTON, TEXAS • T: 281.769.4400
AUSTIN, TEXAS • T: 512.646.2444
DELRAY BEACH, FLORIDA • T: 561.921.8570

PROFESSIONAL ENGINEER

JETT REY HADENMAN

TITLE:

INLET AREA

(V)	12/15/2022
PROJECT No:	

SHEET No: _____ Rev. #: _____

3



(IN FEET)
1 INCH = 30