Technical Supplement
Drainage Calculations

FOR
The Preserve at Abbyville

LOCATED IN
NORFOLK, MASSACHUSETTS

PREPARED FOR
Abbyville Development, LLC
and
Abbyville Residential, LLC
850 Franklin Street
Wrentham, Massachusetts 02093

PREPARED BY
UNITED CONSULTANTS, INC.
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DATE:
August 30, 2017
Revised: December 2, 2019
April 13, 2020

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APPENDIX A

BACKGROUND

Abbyville Development, LLC is hereby has submitted an application to the Town of Norfolk Zoning Board of Appeals for a Comprehensive Permit.
The site now consists of the property owned by S.M. Lorruso and Sons, Inc. which includes Norfolk Tax Assessor's parcels 9, 10, 12 and as shown on Tax Map 6 Block 2.
The site has a mixture of uses which include two single family residences, a former gravel pit area and wooded areas cover the remainder of the site.
The following analysis will show a reduction of both the rate and volume of stormwater runoff when comparing the pre-development analysis to the post-development analysis.

DRAINAGE CALCULATIONS

United Consultants, Inc. has performed a hydrological analysis for the applicant of the project. This report reviews the hydrological impact of the proposed development. The entire site is now composed of The Preserve at Abbyville. Pre-construction calculations were performed which depict the rate and volume of runoff to the north of the proposed developed portion of the site. Additionally, four pre-development watersheds were evaluated. Pre-development watershed 2S (drains to the west to a depression), 3S (Drains west to a depression), 4S (drains to the west and was evaluated to the post-development project extents) then to the wetland located on the abutting property and S4 (drains to Lawrence Street). It should be noted that based on the site grading pre-development watersheds 2S, 3S, 4S and 5S are now captured in the roadway drainage system and is routed to Pond 1. The pre-development vs post-development analysis (Appendix B) accounts for these four additional pre-development watersheds when comparing post-development Link 74L.
The post-construction characteristics of the property were analyzed to verify compliance with the MA DEP Stormwater Policy, for site development. The proposed drainage system will contain and control all analyzed storms. It should be noted that the site grading increased the post-development area by adding approximately 0.5 acres. The areas are located easterly of the pre-development watershed extents.

To mitigate any potential adverse impacts due to site work, a stormwater management system (SWM has been incorporated into the site design. The system will consist or deep sump hooded catch basins which will capture the stormwater. The stormwater will be directed through a closed system and will discharge to a sediment forebay for additional treatment. The first to components to the treatment train will provide for Total Suspended Solid (TSS) removal. After receiving this TSS removal the stormwater will then be directed to the infiltration basin. The 2, 10, 25 and 100 year storm events were analyzed and the pre-development analysis can be found in appendix C while the post-development analysis can be found in appendix D.

In April 2008, DEP adopted a new Stormwater Management Policy to address the non-point pollution discharges. The policy prescribes specific stormwater management standards for the development of projects, including urban pollutant removal criteria for projects that may impact environmental resource areas. Compliance is achieved through the implementation of "Best Management Practices" (BMP's) in the design.
United Consultants, Inc. has incorporated BMP's in the proposed SWM for the applicant of the project. Components that have been included are:

* Deep Sump Hooded Catch Basins (DSHCB)
* Forebay – sediment capture
* Detention/Infiltration Pond – infiltration basin

System Performance

As demonstrated below, these components, in combination will effectively mitigate post-construction rate of runoff and pollutant loading of stormwater runoff from the site. The system is projected to:
* Exceed the minimum pollutant (TSS) removal rate of 80%.
* Attenuate peak discharges, while maintaining them within the system.
* Prevent downstream flooding.

Two, ten, twenty five, fifty and one hundred year storm events were reviewed. The tables below list the rainfall intensities used for each storm event.

Table 1 – Intensities

Storm Event	24 Hour Rainfall
2 year event	3.20 inches
10 year event	4.80 inches
25 year event	5.50 inches
50 year event	6.20 inches
100 year event	6.80 inches

Table 2 Discharge Analysis

	Sediment Forebay(Pond 12P) Outlet Invert = 170.80	Infiltration Basin (Pond 1P) Outlet Invert =171.0
2 year event	peak elevation = 170.95	peak elevation = 168.02
10 year event	peak elevation = 171.14	peak elevation = 168.54
25 year event	peak elevation = 171.25	peak elevation = 169.21
50 year event	peak elevation = 171.35	peak elevation = 169.99
100 year event	peak elevation = 171.44	peak elevation = 170.73

For all analyzed storm events the Infiltration Pond will discard in excess of the required, therefore storm discharges will be contained in the site.

<u>DEP Stormwater Standards</u>

Standard Number 1 – No untreated stormwater *– No new stormwater conveyances may discharge untreated stormwater directly to or cause erosion in wetlands or water of the Commonwealth* – **Not Applicable** – This project does not have discharges to wetland resource areas.

Standard Number 2 – Post development peak discharge rates *– Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peal discharge rates.* - The stormwater management **design complies with this standard**, as outlined in the drainage calculations.

Standard Number 3 – Recharge to groundwater – Loss to annual recharge to groundwater should be minimized through the use of infiltration measures to maximum extent practicable. – The development portion of the site is designed to infiltrate within the Infiltration Pond.
Proposed site Impervious Area = 5.625 acres
Site Soil HSG – A = Volume to recharge of 0.60
5.687 acres x 0.60 x 0.083 = 0.284 acre feet
Pond 1 volume storage 100 year storm event = 0.918 acres at elevation 170.73 – volume contained
– design complies with standard.

Standard Number 4 – Total Suspended Solids (TSS) Removal – *For new development, stormwater management systems must be designed to remove 80% of the annual load of Total Suspended Solids* – The combination of DSHCB's, Sediment Forebays, and an Infiltration Basin provides adequate removal – **design complies with standard.**

Standard Number 5 – High Potential Pollutant Loads – *Stormwater discharges from Land Uses with Higher Potential Pollutant Loads require the use of specific stormwater management BMP's* – The site does not have any land Uses with Higher Potential Pollutant Loads – **Not Applicable**

Standard Number 6 – Critical Areas – *Stormwater discharges to* ***Critical*** *Areas must utilized certain stormwater management BMP's approved for Critical Area.* – This project does not have discharges to critical areas - **Not Applicable.**

Standard Number 7 – *Redevelopment of previously developed sites must meet Stormwater Management Standards to the maximum extent practicable* – **Not Applicable.**

Standard Number 8 – Erosion and Sedimentation Controls – *Erosion and Sedimentation controls must be implemented to prevent impacts during construction or land disturbance activities* – Erosion controls for the project which proposes disturbance greater that one acre of land and requires filing a Notice of Intent (NOI) with EPA and a Stormwater Pollution Prevention Plan (SWPPP). – A SWPPP will be filed prior to construction – **Complies with Standard.**

Standard Number 9 – Operation and Maintenance Plan – *A long Term Operation and Maintenance Plan shall be developed and implemented to ensure that stormwater management systems function as designed.* – A Long Term Operation and Maintenance Plan is attached - **Complies with Standard.**

Standard Number 10 – Illicit Discharges – *All illicit discharges to the stormwater management* ***systems are prohibited*** – *The property developer is charged with preparing and submitting an Illicit Discharge Compliance Statement, verifying that no illicit discharges exist on the site, prior to the start of construction.* – **Complies with Standard.**

APPENDIX B

Pre-Development vs. Post Development Rate and Volume of Runoff

This analysis was prepared to show the pre-development and post development rate and volume of runoff as required by the Town of Norfolk Storm-water Requirements.

The below is the comparison of the watersheds which flow offsite.

A combination of the hydrographs from pre-development Sub-catchment 1S to post-development Link 74L is as follows:

2 year storm event (CFS)

Pre		Post
1S	vs	Link 74L
0.03		0.02

2 year storm event (A.F.)

Pre		Post
1S	vs	Link 74L
0.014		0.013

10 year storm event (CFS)

Pre		Post
1S	vs	Link 74L
1.07		0.57

10 year storm event (A.F.)

Pre		Post
1S	vs	Link 74L
0.434		0.142

25 year storm event (CFS)

Pre		Post
1S	vs	Link 74L
3.21		1.28

100 year storm event (A.F.)

Pre		Post
1S	vs	Link 74L
0.775		0.236

50 year storm event (CFS)

Pre		Post
1S	vs	Link 74L
6.26		2.40

100 year storm event (A.F.)

Pre		Post
1S	vs	Link 74L
1.195		0.350

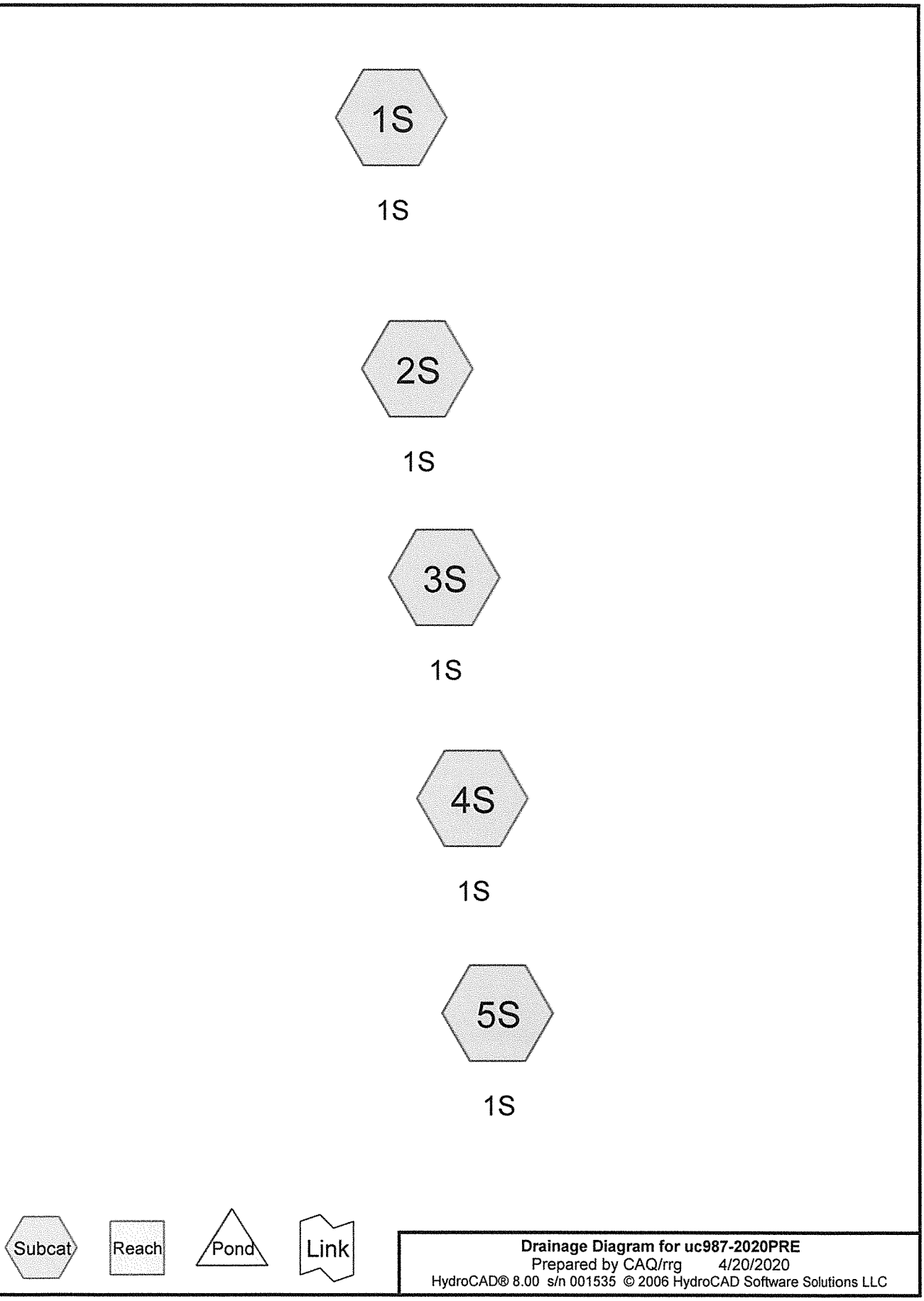
100 year storm event (CFS)

Pre		Post
1S	vs	Link 74L
9.68		3.68

100 year storm event (A.F.)

Pre		Post
1S	vs	Link 74L
1.611		.461

APPENDIX C



Drainage Diagram for uc987-2020PRE
Prepared by CAQ/rrg 4/20/2020
HydroCAD® 8.00 s/n 001535 © 2006 HydroCAD Software Solutions LLC

2 YR PRE-DEVELOPMENT

Subcatchment 1S: 1S

Runoff = 0.03 cfs @ 22.85 hrs, Volume= 0.014 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
9.810	30	Woods, Good, HSG A
13.210	49	Desert shrub range, Good, HSG A
23.020	41	Weighted Average
23.020		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	31	0.0130	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	73	0.1370	1.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	70	0.0286	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	33	0.3030	2.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	147	0.3670	6.06		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
0.3	42	0.0476	2.18		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
3.8	174	0.0057	0.75		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
16.8	570	Total			

Subcatchment 2S: 1S

Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
2.840	30	Woods, Good, HSG A
2.840		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	50	0.0120	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	85	0.1880	2.17		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	61	0.0990	1.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	31	0.0645	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.8	227	Total			

Subcatchment 3S: 1S

Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
2.140	30	Woods, Good, HSG A
2.140		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	99	0.2020	2.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	52	0.0770	1.39		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.6	201	Total			

Subcatchment 4S: 1S

Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.281	30	Woods, Good, HSG A
0.060	39	>75% Grass cover, Good, HSG A
0.341	32	Weighted Average
0.341		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	32	0.0940	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.1	28	0.6430	4.01		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	95	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	16	0.0290	1.19		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	29	0.0290	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.2	200	Total			

Subcatchment 5S: 1S

Runoff = 0.00 cfs @ 14.81 hrs, Volume= 0.002 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.064	30	Woods, Good, HSG A
0.145	39	>75% Grass cover, Good, HSG A
0.046	76	Gravel roads, HSG A
0.020	98	Paved parking & roofs
0.275	47	Weighted Average
0.255		Pervious Area
0.020		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	27	0.0740	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.4	7	0.2850	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.6	16	0.0440	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.3	30	0.0440	1.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	71	0.0610	3.98		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.1	151	Total			

10 YR PRE-DEVELOPMENT

Subcatchment 1S: 1S

Runoff = 1.07 cfs @ 12.61 hrs, Volume= 0.434 af, Depth= 0.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
9.810	30	Woods, Good, HSG A
13.210	49	Desert shrub range, Good, HSG A
23.020	41	Weighted Average
23.020		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	31	0.0130	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	73	0.1370	1.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	70	0.0286	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	33	0.3030	2.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	147	0.3670	6.06		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
0.3	42	0.0476	2.18		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
3.8	174	0.0057	0.75		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
16.8	570	Total			

Subcatchment 2S: 1S

Runoff = 0.00 cfs @ 24.03 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
2.840	30	Woods, Good, HSG A
2.840		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	50	0.0120	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	85	0.1880	2.17		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	61	0.0990	1.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	31	0.0645	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.8	227	Total			

Subcatchment 3S: 1S

Runoff = 0.00 cfs @ 23.99 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
2.140	30	Woods, Good, HSG A
2.140		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	99	0.2020	2.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	52	0.0770	1.39		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.6	201	Total			

Subcatchment 4S: 1S

Runoff = 0.00 cfs @ 22.25 hrs, Volume= 0.000 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.281	30	Woods, Good, HSG A
0.060	39	>75% Grass cover, Good, HSG A
0.341	32	Weighted Average
0.341		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	32	0.0940	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.1	28	0.6430	4.01		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	95	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	16	0.0290	1.19		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	29	0.0290	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.2	200	Total			

Subcatchment 5S: 1S

Runoff = 0.06 cfs @ 12.29 hrs, Volume= 0.011 af, Depth= 0.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.064	30	Woods, Good, HSG A
0.145	39	>75% Grass cover, Good, HSG A
0.046	76	Gravel roads, HSG A
0.020	98	Paved parking & roofs
0.275	47	Weighted Average
0.255		Pervious Area
0.020		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	27	0.0740	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.4	7	0.2850	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.6	16	0.0440	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.3	30	0.0440	1.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	71	0.0610	3.98		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.1	151	Total			

25 YR PRE-DEVELOPMENT

Subcatchment 1S: 1S

Runoff = 3.21 cfs @ 12.51 hrs, Volume= 0.775 af, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
9.810	30	Woods, Good, HSG A
13.210	49	Desert shrub range, Good, HSG A
23.020	41	Weighted Average
23.020		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	31	0.0130	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	73	0.1370	1.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	70	0.0286	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	33	0.3030	2.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	147	0.3670	6.06		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
0.3	42	0.0476	2.18		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
3.8	174	0.0057	0.75		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
16.8	570	Total			

Subcatchment 2S: 1S

Runoff = 0.01 cfs @ 21.22 hrs, Volume= 0.007 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
2.840	30	Woods, Good, HSG A
2.840		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	50	0.0120	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	85	0.1880	2.17		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	61	0.0990	1.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	31	0.0645	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.8	227	Total			

Subcatchment 3S: 1S

Runoff = 0.01 cfs @ 21.12 hrs, Volume= 0.005 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
2.140	30	Woods, Good, HSG A
2.140		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	99	0.2020	2.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	52	0.0770	1.39		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.6	201	Total			

Subcatchment 4S: 1S

Runoff = 0.00 cfs @ 15.46 hrs, Volume= 0.002 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.281	30	Woods, Good, HSG A
0.060	39	>75% Grass cover, Good, HSG A
0.341	32	Weighted Average
0.341		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	32	0.0940	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.1	28	0.6430	4.01		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	95	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	16	0.0290	1.19		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	29	0.0290	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.2	200	Total			

Subcatchment 5S: 1S

Runoff = 0.13 cfs @ 12.16 hrs, Volume= 0.017 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.064	30	Woods, Good, HSG A
0.145	39	>75% Grass cover, Good, HSG A
0.046	76	Gravel roads, HSG A
0.020	98	Paved parking & roofs
0.275	47	Weighted Average
0.255		Pervious Area
0.020		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	27	0.0740	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.4	7	0.2850	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.6	16	0.0440	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.3	30	0.0440	1.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	71	0.0610	3.98		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.1	151	Total			

50 YR PRE-DEVELOPMENT

Subcatchment 1S: 1S

Runoff = 6.26 cfs @ 12.44 hrs, Volume= 1.195 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
9.810	30	Woods, Good, HSG A
13.210	49	Desert shrub range, Good, HSG A
23.020	41	Weighted Average
23.020		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	31	0.0130	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	73	0.1370	1.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	70	0.0286	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	33	0.3030	2.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	147	0.3670	6.06		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
0.3	42	0.0476	2.18		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
3.8	174	0.0057	0.75		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
16.8	570	Total			

Subcatchment 2S: 1S

Runoff = 0.03 cfs @ 15.42 hrs, Volume= 0.022 af, Depth= 0.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
2.840	30	Woods, Good, HSG A
2.840		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	50	0.0120	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	85	0.1880	2.17		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	61	0.0990	1.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	31	0.0645	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.8	227	Total			

Subcatchment 3S: 1S

Runoff = 0.03 cfs @ 15.31 hrs, Volume= 0.017 af, Depth= 0.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
2.140	30	Woods, Good, HSG A
2.140		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	99	0.2020	2.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	52	0.0770	1.39		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.6	201	Total			

Subcatchment 4S: 1S

Runoff = 0.01 cfs @ 14.64 hrs, Volume= 0.005 af, Depth= 0.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.281	30	Woods, Good, HSG A
0.060	39	>75% Grass cover, Good, HSG A
0.341	32	Weighted Average
0.341		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	32	0.0940	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.1	28	0.6430	4.01		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	95	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	16	0.0290	1.19		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	29	0.0290	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.2	200	Total			

Subcatchment 5S: 1S

Runoff = 0.22 cfs @ 12.14 hrs, Volume= 0.023 af, Depth= 1.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.064	30	Woods, Good, HSG A
0.145	39	>75% Grass cover, Good, HSG A
0.046	76	Gravel roads, HSG A
0.020	98	Paved parking & roofs
0.275	47	Weighted Average
0.255		Pervious Area
0.020		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	27	0.0740	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.4	7	0.2850	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.6	16	0.0440	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.3	30	0.0440	1.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	71	0.0610	3.98		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.1	151	Total			

100 YR PRE-DEVELOPMENT

Subcatchment 1S: 1S

Runoff = 9.68 cfs @ 12.38 hrs, Volume= 1.611 af, Depth= 0.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
9.810	30	Woods, Good, HSG A
13.210	49	Desert shrub range, Good, HSG A
23.020	41	Weighted Average
23.020		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	31	0.0130	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	73	0.1370	1.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	70	0.0286	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	33	0.3030	2.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	147	0.3670	6.06		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
0.3	42	0.0476	2.18		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
3.8	174	0.0057	0.75		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
16.8	570	Total			

Subcatchment 2S: 1S

Runoff = 0.07 cfs @ 14.78 hrs, Volume= 0.042 af, Depth= 0.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
2.840	30	Woods, Good, HSG A
2.840		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	50	0.0120	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	85	0.1880	2.17		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	61	0.0990	1.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	31	0.0645	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.8	227	Total			

Subcatchment 3S: 1S

Runoff = 0.05 cfs @ 14.70 hrs, Volume= 0.032 af, Depth= 0.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
2.140	30	Woods, Good, HSG A
2.140		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	99	0.2020	2.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	52	0.0770	1.39		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.6	201	Total			

Subcatchment 4S: 1S

Runoff = 0.02 cfs @ 12.50 hrs, Volume= 0.008 af, Depth= 0.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.281	30	Woods, Good, HSG A
0.060	39	>75% Grass cover, Good, HSG A
0.341	32	Weighted Average
0.341		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	32	0.0940	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.1	28	0.6430	4.01		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	95	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	16	0.0290	1.19		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	29	0.0290	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.2	200	Total			

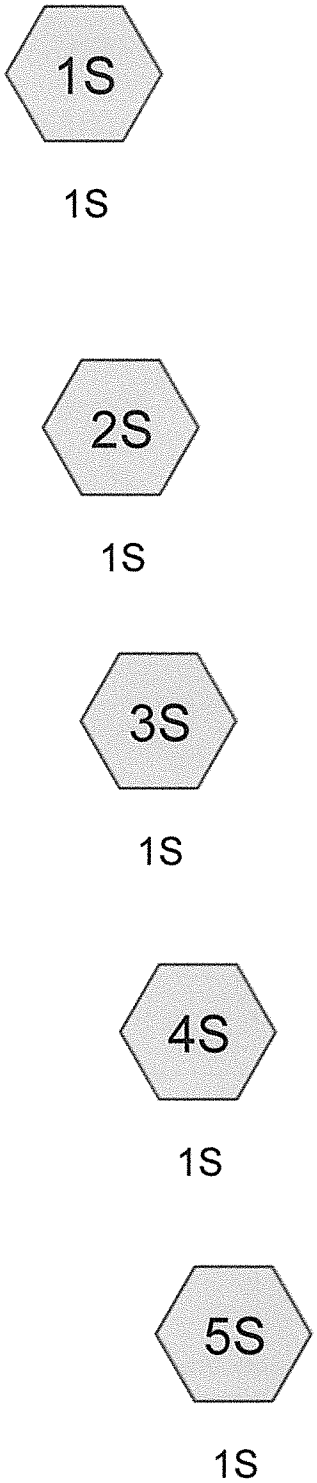
Subcatchment 5S: 1S

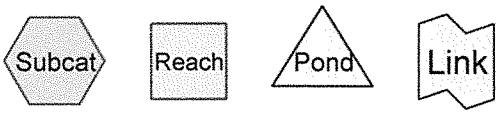
Runoff = 0.31 cfs @ 12.13 hrs, Volume= 0.030 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.064	30	Woods, Good, HSG A
0.145	39	>75% Grass cover, Good, HSG A
0.046	76	Gravel roads, HSG A
0.020	98	Paved parking & roofs
0.275	47	Weighted Average
0.255		Pervious Area
0.020		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	27	0.0740	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.4	7	0.2850	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.6	16	0.0440	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.3	30	0.0440	1.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	71	0.0610	3.98		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.1	151	Total			





Drainage Diagram for uc987-2020PRE
Prepared by CAQ/rrg 4/20/2020
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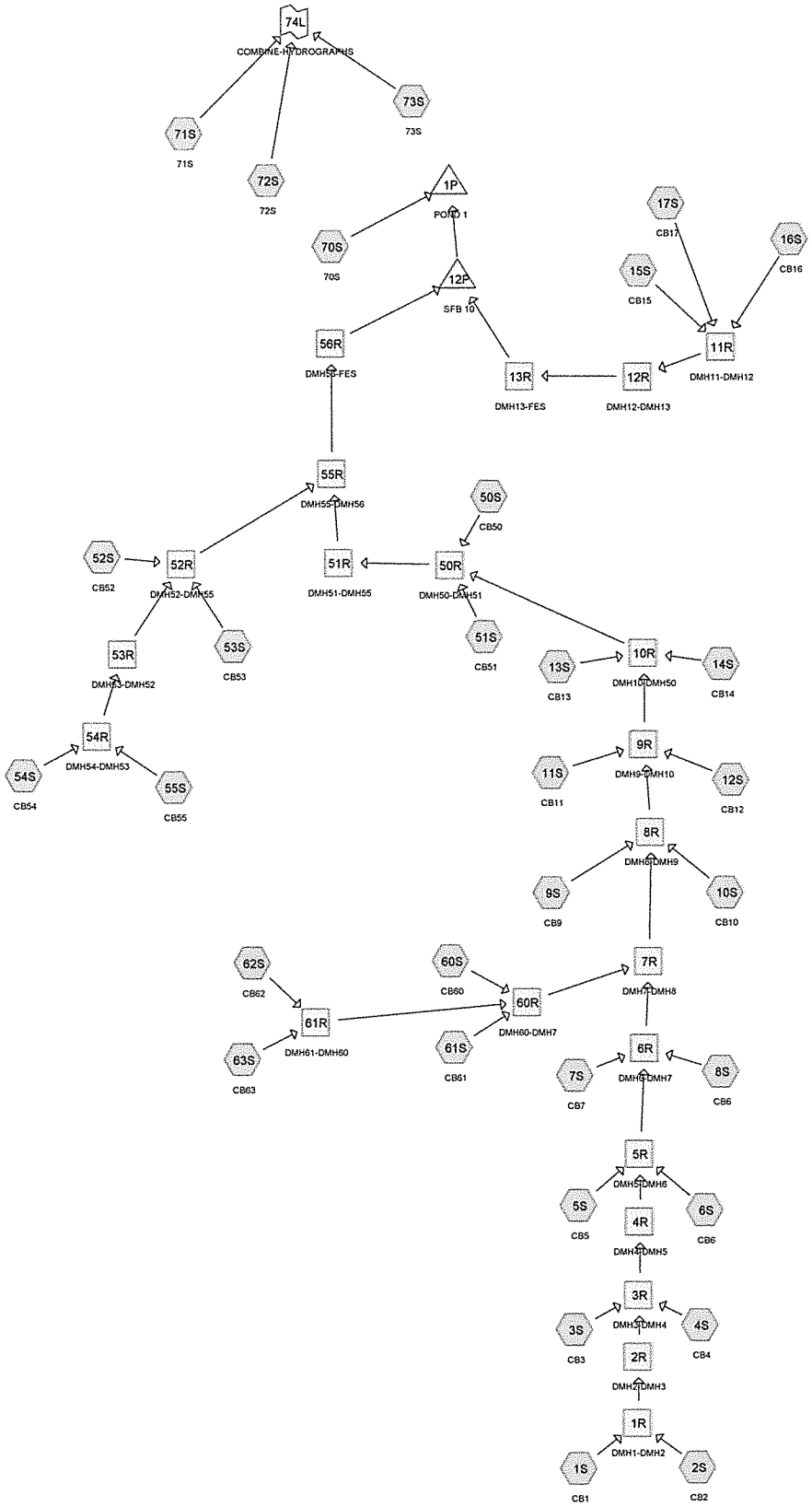
APPENDIX D



Subcat Reach Pond Link

Drainage Diagram for uc987-2020POST
Prepared by CAQ/rrg 4/20/2020
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2 YR POST-DEVELOPMENT

Subcatchment 1S: CB1

Runoff = 0.07 cfs @ 12.12 hrs, Volume= 0.007 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.070	98	Paved parking & roofs
0.110	39	>75% Grass cover, Good, HSG A
0.180	62	Weighted Average
0.110		Pervious Area
0.070		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC.**
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 2S: CB2

Runoff = 0.04 cfs @ 12.43 hrs, Volume= 0.010 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.400	39	>75% Grass cover, Good, HSG A
0.140	30	Woods, Good, HSG A
0.720	52	Weighted Average
0.540		Pervious Area
0.180		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	26	0.0380	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.2	49	0.4760	3.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	48	0.1460	2.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	21	0.0470	1.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	100	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
7.3	273	Total			

Subcatchment 3S: CB3

Runoff = 0.01 cfs @ 12.61 hrs, Volume= 0.007 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.140	98	Paved parking & roofs
0.480	39	>75% Grass cover, Good, HSG A
0.070	30	Woods, Good, HSG A
0.690	50	Weighted Average
0.550		Pervious Area
0.140		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.6	50	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	11	0.0550	4.76		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	236	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
13.8	354	Total			

Subcatchment 4S: CB4

Runoff = 0.00 cfs @ 15.73 hrs, Volume= 0.003 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.170	98	Paved parking & roofs
0.350	39	>75% Grass cover, Good, HSG A
0.520	30	Woods, Good, HSG A
1.040	44	Weighted Average
0.870		Pervious Area
0.170		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	26	0.0560	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.4	67	0.3000	2.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	72	0.1290	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	154	0.0455	1.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	24	0.0833	5.86		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	95	0.0158	2.55		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
8.4	453	Total			

Subcatchment 5S: CB5

Runoff = 0.03 cfs @ 12.41 hrs, Volume= 0.008 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.130	98	Paved parking & roofs
0.450	39	>75% Grass cover, Good, HSG A
0.580	52	Weighted Average
0.450		Pervious Area
0.130		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC.**
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 6S: CB6

Runoff = 0.06 cfs @ 12.43 hrs, Volume= 0.018 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.276	98	Paved parking & roofs
0.940	39	>75% Grass cover, Good, HSG A
1.216	52	Weighted Average
0.940		Pervious Area
0.276		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	14	0.2140	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.7	34	0.0588	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.8	104	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	25	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	19	0.0526	1.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	136	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
7.1	361	Total			

Subcatchment 7S: CB7

Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.800	39	>75% Grass cover, Good, HSG A
1.040	30	Woods, Good, HSG A
2.020	40	Weighted Average
1.840		Pervious Area
0.180		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	33	0.0940	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	83	0.2650	2.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	75	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	50	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	86	0.0930	1.52		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	12	0.3330	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	34	0.0059	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	114	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	120	0.0167	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	61	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
14.5	675	Total			

Subcatchment 8S: CB6

Runoff = 0.02 cfs @ 13.74 hrs, Volume= 0.013 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.230	98	Paved parking & roofs
1.180	39	>75% Grass cover, Good, HSG A
1.410	49	Weighted Average
1.180		Pervious Area
0.230		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	20	0.0250	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
4.0	30	0.0168	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.6	89	0.0168	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	63	0.0317	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	19	0.0667	5.24		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	14	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	171	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
10.8	435	Total			

Subcatchment 9S: CB9

Runoff = 0.09 cfs @ 12.12 hrs, Volume= 0.009 af, Depth= 0.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.080	98	Paved parking & roofs
0.120	39	>75% Grass cover, Good, HSG A
0.200	63	Weighted Average
0.120		Pervious Area
0.080		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC.**
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 10S: CB10

Runoff = 0.02 cfs @ 12.44 hrs, Volume= 0.007 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.110	98	Paved parking & roofs
0.410	39	>75% Grass cover, Good, HSG A
0.520	51	Weighted Average
0.410		Pervious Area
0.110		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	32	0.0310	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0430	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	28	0.0350	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.9					**Direct Entry, MIN. TC**
6.0	211	Total			

Subcatchment 11S: CB11

Runoff = 0.08 cfs @ 12.40 hrs, Volume= 0.017 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.230	98	Paved parking & roofs
0.700	39	>75% Grass cover, Good, HSG A
0.930	54	Weighted Average
0.700		Pervious Area
0.230		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	7	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	45	0.0440	1.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	28	0.0650	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	138	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
8.9	275	Total			

Subcatchment 12S: CB12

Runoff = 0.05 cfs @ 12.41 hrs, Volume= 0.014 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.760	39	>75% Grass cover, Good, HSG A
0.970	52	Weighted Average
0.760		Pervious Area
0.210		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	50	0.0480	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0480	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	27	0.2220	3.30		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	23	0.0870	2.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	80	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	45	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.7					**Direct Entry, MIN. TC**
6.0	264	Total			

Subcatchment 13S: CB13

Runoff = 0.01 cfs @ 15.37 hrs, Volume= 0.004 af, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.110	98	Paved parking & roofs
0.890	39	>75% Grass cover, Good, HSG A
1.000	45	Weighted Average
0.890		Pervious Area
0.110		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	34	0.1230	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.0	6	0.2000	3.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	12	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	94	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	45	0.1330	2.55		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	194	0.0520	1.60		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	110	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.6	502	Total			

Subcatchment 14S: CB14

Runoff = 0.02 cfs @ 13.66 hrs, Volume= 0.010 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.190	98	Paved parking & roofs
0.920	39	>75% Grass cover, Good, HSG A
1.110	49	Weighted Average
0.920		Pervious Area
0.190		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	50	0.5000	0.54		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	17	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	30	0.2000	3.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	36	0.0560	1.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	51	0.0390	1.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	32	0.1030	2.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	16	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	17	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	107	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
1.0					**Direct Entry, MIN. TC.**
5.3	371	Total			

Subcatchment 15S: CB15

Runoff = 0.14 cfs @ 12.11 hrs, Volume= 0.013 af, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.110	98	Paved parking & roofs
0.130	39	>75% Grass cover, Good, HSG A
0.240	66	Weighted Average
0.130		Pervious Area
0.110		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	5	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	5	Total			

Subcatchment 16S: CB16

Runoff = 0.06 cfs @ 12.31 hrs, Volume= 0.012 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.140	98	Paved parking & roofs
0.360	39	>75% Grass cover, Good, HSG A
0.500	56	Weighted Average
0.360		Pervious Area
0.140		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	11	0.0200	6.42	5.04	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	11	Total			

Subcatchment 17S: CB17

Runoff = 0.02 cfs @ 14.92 hrs, Volume= 0.011 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.340	98	Paved parking & roofs
0.900	39	>75% Grass cover, Good, HSG A
0.570	30	Woods, Good, HSG A
1.810	47	Weighted Average
1.470		Pervious Area
0.340		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	31	0.0130	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	73	0.1370	1.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	70	0.0286	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	33	0.3030	2.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	57	0.3030	3.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	10	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	22	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	83	0.0720	5.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	102	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	134	0.0050	3.21	2.52	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
14.7	615	Total			

Subcatchment 50S: CB50

Runoff = 0.39 cfs @ 12.09 hrs, Volume= 0.028 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.140	98	Paved parking & roofs
0.030	39	>75% Grass cover, Good, HSG A
0.170	88	Weighted Average
0.030		Pervious Area
0.140		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	7	0.0200	6.42	5.04	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 51S: CB51

Runoff = 0.02 cfs @ 13.69 hrs, Volume= 0.013 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.256	98	Paved parking & roofs
1.228	39	>75% Grass cover, Good, HSG A
1.484	49	Weighted Average
1.228		Pervious Area
0.256		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	22	0.0230	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	36	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	12	0.3330	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	74	0.0810	1.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	55	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	89	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	55	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	111	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	14	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
7.4	468	Total			

Subcatchment 52S: CB52

Runoff = 0.47 cfs @ 12.10 hrs, Volume= 0.035 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.100	39	>75% Grass cover, Good, HSG A
0.310	79	Weighted Average
0.100		Pervious Area
0.210		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	7	0.0466	9.79	7.69	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 53S: CB53

Runoff = 0.33 cfs @ 12.10 hrs, Volume= 0.026 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.201	98	Paved parking & roofs
0.181	39	>75% Grass cover, Good, HSG A
0.382	70	Weighted Average
0.181		Pervious Area
0.201		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9					**Direct Entry, MIN. TC**
0.1	14	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	14	Total			

Subcatchment 54S: CB54

Runoff = 0.36 cfs @ 12.11 hrs, Volume= 0.032 af, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.274	98	Paved parking & roofs
0.326	39	>75% Grass cover, Good, HSG A
0.600	66	Weighted Average
0.326		Pervious Area
0.274		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	6	0.0233	6.92	5.44	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	6	Total			

Subcatchment 55S: CB55

Runoff = 0.55 cfs @ 12.12 hrs, Volume= 0.055 af, Depth= 0.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.526	98	Paved parking & roofs
0.744	39	>75% Grass cover, Good, HSG A
1.270	63	Weighted Average
0.744		Pervious Area
0.526		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	14	0.0200	6.42	5.04	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0					**Direct Entry, MIN. TC**
6.0	14	Total			

Subcatchment 60S: CB60

Runoff = 0.45 cfs @ 12.10 hrs, Volume= 0.033 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.212	98	Paved parking & roofs
0.118	39	>75% Grass cover, Good, HSG A
0.330	77	Weighted Average
0.118		Pervious Area
0.212		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	13	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	13	Total			

Subcatchment 61S: CB61

Runoff = 0.43 cfs @ 12.10 hrs, Volume= 0.032 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.200	98	Paved parking & roofs
0.102	39	>75% Grass cover, Good, HSG A
0.302	78	Weighted Average
0.102		Pervious Area
0.200		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	24	0.0323	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	13	0.0323	1.26		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	84	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	11	0.0120	4.97	3.90	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
2.8					**Direct Entry, MIN. TC**
6.0	132	Total			

Subcatchment 62S: CB62

Runoff = 0.32 cfs @ 12.10 hrs, Volume= 0.024 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.164	98	Paved parking & roofs
0.116	39	>75% Grass cover, Good, HSG A
0.280	74	Weighted Average
0.116		Pervious Area
0.164		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.1	14	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.1	14	Total			

Subcatchment 63S: CB63

Runoff = 0.00 cfs @ 15.70 hrs, Volume= 0.002 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.109	98	Paved parking & roofs
0.435	39	>75% Grass cover, Good, HSG A
0.278	30	Woods, Good, HSG A
0.822	44	Weighted Average
0.713		Pervious Area
0.109		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	35	0.0100	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.6	53	0.0380	1.36		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	53	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	6	0.0233	6.92	5.44	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.4	147	Total			

Subcatchment 70S: 70S

Runoff = 0.12 cfs @ 12.43 hrs, Volume= 0.035 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.168	98	Paved parking & roofs
1.924	39	>75% Grass cover, Good, HSG A
0.358	98	POND
2.450	52	Weighted Average
1.924		Pervious Area
0.526		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	31	0.0320	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.2	170	0.0350	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	45	0.0910	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	85	0.0235	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.5	371	Total			

Subcatchment 71S: 71S

Runoff = 0.00 cfs @ 23.98 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.160	98	Paved parking & roofs
0.630	39	>75% Grass cover, Good, HSG A
1.120	30	Woods, Good, HSG A
1.910	39	Weighted Average
1.750		Pervious Area
0.160		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	33	0.0910	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.5	221	0.1270	2.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	110	0.0180	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	97	0.0206	1.00		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.7	501	Total			

Subcatchment 72S: 72S

Runoff = 0.01 cfs @ 15.40 hrs, Volume= 0.004 af, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.200	30	Woods, Good, HSG A
0.830	49	Desert shrub range, Good, HSG A
1.030	45	Weighted Average
1.030		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	50	0.0110	0.13		**Sheet Flow,** Range n= 0.130 P2= 3.20"
0.4	50	0.0465	2.16		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
0.1	24	0.0833	2.89		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
2.0	152	0.0164	1.28		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
8.9	276	Total			

Subcatchment 73S: 73S

Runoff = 0.01 cfs @ 15.42 hrs, Volume= 0.010 af, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.20"

Area (ac)	CN	Description
0.171	98	Paved parking & roofs
0.975	39	>75% Grass cover, Good, HSG A
0.528	30	Woods, Good, HSG A
0.960	49	Desert shrub range, Good, HSG A
2.634	45	Weighted Average
2.463		Pervious Area
0.171		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	36	0.0555	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	157	0.3000	2.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	54	0.3890	3.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	37	0.2160	3.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	23	0.1310	3.62		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
2.1	185	0.0210	1.45		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
10.0	492	Total			

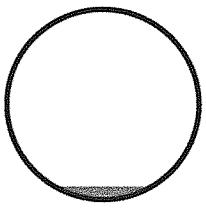
Reach 1R: DMH1-DMH2

Inflow Area = 0.900 ac, Inflow Depth = 0.23" for 2yr event
Inflow = 0.08 cfs @ 12.36 hrs, Volume= 0.018 af
Outflow = 0.08 cfs @ 12.39 hrs, Volume= 0.018 af, Atten= 1%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.21 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.96 fps, Avg. Travel Time= 1.3 min

Peak Storage= 4 cf @ 12.37 hrs, Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.97 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 148.0' Slope= 0.0500 '/'
Inlet Invert= 214.44', Outlet Invert= 207.04'



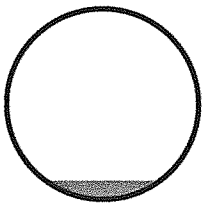
Reach 2R: DMH2-DMH3

Inflow Area = 0.900 ac, Inflow Depth = 0.23" for 2yr event
Inflow = 0.08 cfs @ 12.39 hrs, Volume= 0.018 af
Outflow = 0.08 cfs @ 12.41 hrs, Volume= 0.018 af, Atten= 1%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.95 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.18 fps, Avg. Travel Time= 1.3 min

Peak Storage= 4 cf @ 12.40 hrs, Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 95.0' Slope= 0.0120 '/'
Inlet Invert= 207.04', Outlet Invert= 205.90'



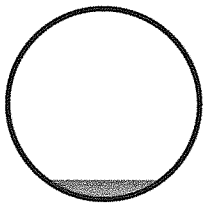
Reach 3R: DMH3-DMH4

Inflow Area = 2.630 ac, Inflow Depth = 0.13" for 2yr event
Inflow = 0.08 cfs @ 12.46 hrs, Volume= 0.028 af
Outflow = 0.08 cfs @ 12.50 hrs, Volume= 0.028 af, Atten= 1%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.00 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 1.36 fps, Avg. Travel Time= 2.5 min

Peak Storage= 8 cf @ 12.48 hrs, Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 205.0' Slope= 0.0120 '/'
Inlet Invert= 205.80', Outlet Invert= 203.34'



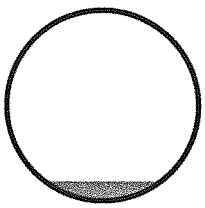
Reach 4R: DMH4-DMH5

Inflow Area = 2.630 ac, Inflow Depth = 0.13" for 2yr event
Inflow = 0.08 cfs @ 12.50 hrs, Volume= 0.028 af
Outflow = 0.08 cfs @ 12.53 hrs, Volume= 0.028 af, Atten= 1%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.00 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 1.1 min

Peak Storage= 4 cf @ 12.51 hrs, Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 90.0' Slope= 0.0120 '/'
Inlet Invert= 203.24', Outlet Invert= 202.16'



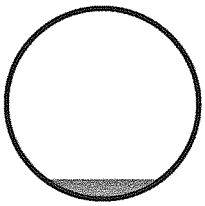
Reach 5R: DMH5-DMH6

Inflow Area = 4.426 ac, Inflow Depth = 0.15" for 2yr event
Inflow = 0.17 cfs @ 12.46 hrs, Volume= 0.054 af
Outflow = 0.17 cfs @ 12.50 hrs, Volume= 0.054 af, Atten= 1%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.47 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 1.63 fps, Avg. Travel Time= 2.2 min

Peak Storage= 15 cf @ 12.47 hrs, Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 7.37 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 215.0' Slope= 0.0130 '/'
Inlet Invert= 201.91', Outlet Invert= 199.11'



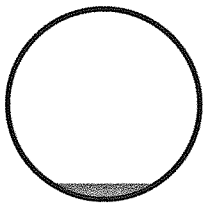
Reach 6R: DMH6-DMH7

Inflow Area = 7.856 ac, Inflow Depth = 0.10" for 2yr event
Inflow = 0.18 cfs @ 12.52 hrs, Volume= 0.067 af
Outflow = 0.18 cfs @ 12.52 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.74 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.59 fps, Avg. Travel Time= 0.3 min

Peak Storage= 2 cf @ 12.52 hrs, Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 12.92 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 51.0' Slope= 0.0400 '/'
Inlet Invert= 199.01', Outlet Invert= 196.97'



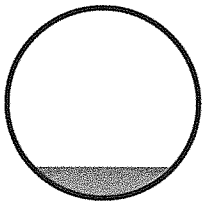
Reach 7R: DMH7-DMH8

Inflow Area = 9.590 ac, Inflow Depth = 0.20" for 2yr event
Inflow = 1.18 cfs @ 12.11 hrs, Volume= 0.159 af
Outflow = 1.16 cfs @ 12.11 hrs, Volume= 0.159 af, Atten= 2%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.11 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.81 fps, Avg. Travel Time= 0.7 min

Peak Storage= 23 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.65 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 120.0' Slope= 0.0350 '/'
Inlet Invert= 196.72', Outlet Invert= 192.52'



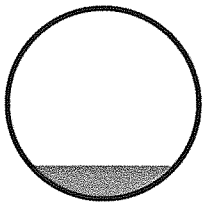
Reach 8R: DMH8-DMH9

Inflow Area = 10.310 ac, Inflow Depth = 0.20" for 2yr event
Inflow = 1.24 cfs @ 12.11 hrs, Volume= 0.174 af
Outflow = 1.20 cfs @ 12.13 hrs, Volume= 0.174 af, Atten= 4%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.03 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.83 fps, Avg. Travel Time= 1.2 min

Peak Storage= 40 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.09 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 196.0' Slope= 0.0330 '/'
Inlet Invert= 190.52', Outlet Invert= 184.05'



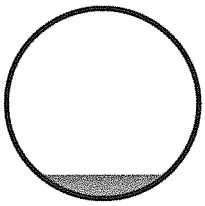
Reach 9R: DMH9-DMH10

Inflow Area = 12.210 ac, Inflow Depth = 0.20" for 2yr event
Inflow = 1.21 cfs @ 12.14 hrs, Volume= 0.205 af
Outflow = 1.20 cfs @ 12.16 hrs, Volume= 0.205 af, Atten= 1%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.30 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.60 fps, Avg. Travel Time= 1.5 min

Peak Storage= 56 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 35.77 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 242.0' Slope= 0.0250 '/'
Inlet Invert= 183.55', Outlet Invert= 177.50'



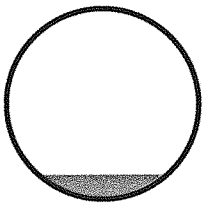
Reach 10R: DMH10-DMH50

Inflow Area = 14.320 ac, Inflow Depth = 0.18" for 2yr event
Inflow = 1.20 cfs @ 12.16 hrs, Volume= 0.219 af
Outflow = 1.19 cfs @ 12.17 hrs, Volume= 0.219 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.02 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.55 fps, Avg. Travel Time= 0.3 min

Peak Storage= 12 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 33.55 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 50.0' Slope= 0.0220 '/'
Inlet Invert= 177.40', Outlet Invert= 176.30'



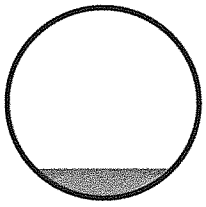
Reach 11R: DMH11-DMH12

Inflow Area = 2.550 ac, Inflow Depth = 0.17" for 2yr event
Inflow = 0.18 cfs @ 12.14 hrs, Volume= 0.036 af
Outflow = 0.18 cfs @ 12.14 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.38 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 12.14 hrs, Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 2.0' Slope= 0.0100 '/'
Inlet Invert= 173.95', Outlet Invert= 173.93'



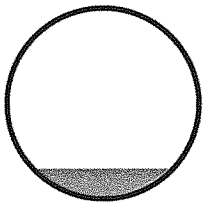
Reach 12R: DMH12-DMH13

Inflow Area = 2.550 ac, Inflow Depth = 0.17" for 2yr event
Inflow = 0.18 cfs @ 12.14 hrs, Volume= 0.036 af
Outflow = 0.18 cfs @ 12.17 hrs, Volume= 0.036 af, Atten= 1%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.39 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.34 fps, Avg. Travel Time= 1.8 min

Peak Storage= 11 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 148.0' Slope= 0.0100 '/'
Inlet Invert= 173.83', Outlet Invert= 172.35'



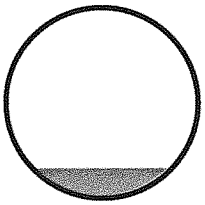
Reach 13R: DMH13-FES

Inflow Area = 2.550 ac, Inflow Depth = 0.17" for 2yr event
Inflow = 0.18 cfs @ 12.17 hrs, Volume= 0.036 af
Outflow = 0.18 cfs @ 12.18 hrs, Volume= 0.036 af, Atten= 2%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.36 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.34 fps, Avg. Travel Time= 0.3 min

Peak Storage= 2 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 25.0' Slope= 0.0100 '/'
Inlet Invert= 172.25', Outlet Invert= 172.00'



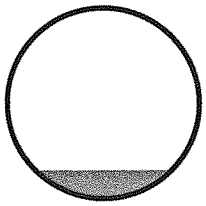
Reach 50R: DMH50-DMH51

Inflow Area = 15.974 ac, Inflow Depth = 0.20" for 2yr event
Inflow = 1.49 cfs @ 12.15 hrs, Volume= 0.261 af
Outflow = 1.47 cfs @ 12.16 hrs, Volume= 0.261 af, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.20 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.33 fps, Avg. Travel Time= 1.0 min

Peak Storage= 41 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 142.0' Slope= 0.0200 '/'
Inlet Invert= 176.30', Outlet Invert= 173.46'



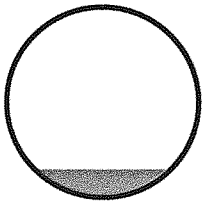
Reach 51R: DMH51-DMH55

Inflow Area = 15.974 ac, Inflow Depth = 0.20" for 2yr event
Inflow = 1.47 cfs @ 12.16 hrs, Volume= 0.261 af
Outflow = 1.47 cfs @ 12.16 hrs, Volume= 0.261 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.17 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.33 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 15.0' Slope= 0.0200 '/'
Inlet Invert= 173.36', Outlet Invert= 173.06'



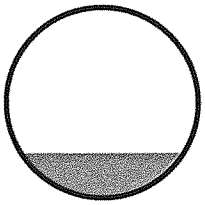
Reach 52R: DMH52-DMH55

Inflow Area = 2.562 ac, Inflow Depth = 0.69" for 2yr event
Inflow = 1.64 cfs @ 12.12 hrs, Volume= 0.148 af
Outflow = 1.63 cfs @ 12.12 hrs, Volume= 0.148 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.48 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.99 fps, Avg. Travel Time= 0.5 min

Peak Storage= 20 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 13.70 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 92.0' Slope= 0.0450 '/'
Inlet Invert= 177.95', Outlet Invert= 173.81'



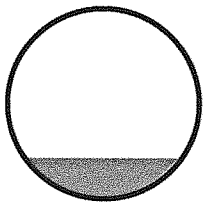
Reach 53R: DMH53-DMH52

Inflow Area = 1.870 ac, Inflow Depth = 0.56" for 2yr event
Inflow = 0.89 cfs @ 12.12 hrs, Volume= 0.087 af
Outflow = 0.86 cfs @ 12.14 hrs, Volume= 0.087 af, Atten= 3%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.07 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.17 fps, Avg. Travel Time= 0.8 min

Peak Storage= 18 cf @ 12.13 hrs, Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 143.0' Slope= 0.0600 '/'
Inlet Invert= 186.78', Outlet Invert= 178.20'



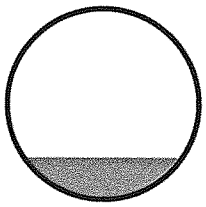
Reach 54R: DMH54-DMH53

Inflow Area = 1.870 ac, Inflow Depth = 0.56" for 2yr event
Inflow = 0.91 cfs @ 12.12 hrs, Volume= 0.087 af
Outflow = 0.89 cfs @ 12.12 hrs, Volume= 0.087 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.14 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.18 fps, Avg. Travel Time= 0.5 min

Peak Storage= 13 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 100.0' Slope= 0.0600 '/'
Inlet Invert= 192.88', Outlet Invert= 186.88'



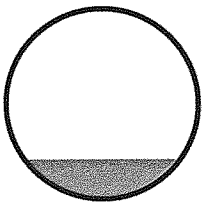
Reach 55R: DMH55-DMH56

Inflow Area = 18.536 ac, Inflow Depth = 0.26" for 2yr event
Inflow = 3.02 cfs @ 12.14 hrs, Volume= 0.409 af
Outflow = 3.01 cfs @ 12.15 hrs, Volume= 0.409 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.41 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.59 fps, Avg. Travel Time= 0.5 min

Peak Storage= 36 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 76.0' Slope= 0.0200 '/'
Inlet Invert= 172.96', Outlet Invert= 171.44'



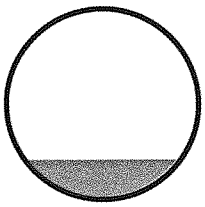
Reach 56R: DMH56-FES

Inflow Area = 18.536 ac, Inflow Depth = 0.26" for 2yr event
Inflow = 3.01 cfs @ 12.15 hrs, Volume= 0.409 af
Outflow = 3.00 cfs @ 12.15 hrs, Volume= 0.409 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.40 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.59 fps, Avg. Travel Time= 0.2 min

Peak Storage= 15 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 32.0' Slope= 0.0200 '/'
Inlet Invert= 171.34', Outlet Invert= 170.70'



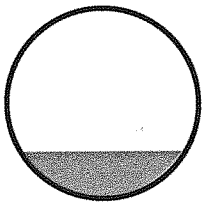
Reach 60R: DMH60-DMH7

Inflow Area = 1.734 ac, Inflow Depth = 0.64" for 2yr event
Inflow = 1.18 cfs @ 12.10 hrs, Volume= 0.092 af
Outflow = 1.17 cfs @ 12.11 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.75 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.96 fps, Avg. Travel Time= 0.2 min

Peak Storage= 5 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 33.0' Slope= 0.0600 '/'
Inlet Invert= 199.20', Outlet Invert= 197.22'



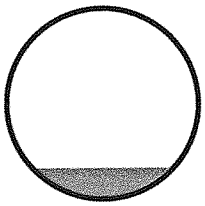
Reach 61R: DMH61-DMH60

Inflow Area = 1.102 ac, Inflow Depth = 0.29" for 2yr event
Inflow = 0.32 cfs @ 12.10 hrs, Volume= 0.026 af
Outflow = 0.30 cfs @ 12.12 hrs, Volume= 0.026 af, Atten= 4%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.86 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.58 fps, Avg. Travel Time= 1.9 min

Peak Storage= 15 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.63 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 180.0' Slope= 0.0250 '/'
Inlet Invert= 203.80', Outlet Invert= 199.30'



Pond 1P: POND 1

Inflow Area = 23.536 ac, Inflow Depth = 0.21" for 2yr event
Inflow = 3.35 cfs @ 12.26 hrs, Volume= 0.418 af
Outflow = 2.82 cfs @ 12.31 hrs, Volume= 0.418 af, Atten= 16%, Lag= 2.7 min
Discarded = 2.82 cfs @ 12.31 hrs, Volume= 0.418 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 168.02' @ 12.31 hrs Surf.Area= 0.291 ac Storage= 0.006 af

Plug-Flow detention time= 1.4 min calculated for 0.418 af (100% of inflow)
Center-of-Mass det. time= 1.4 min (960.1 - 958.7)

Volume	Invert	Avail.Storage	Storage Description
#1	168.00'	1.427 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
168.00	0.290	0.000	0.000
170.00	0.357	0.647	0.647
172.00	0.423	0.780	1.427

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**20.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=5.86 cfs @ 12.31 hrs HW=168.02' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 5.86 cfs)

Pond 12P: SFB 10

Inflow Area = 21.086 ac, Inflow Depth = 0.25" for 2yr event
Inflow = 3.18 cfs @ 12.15 hrs, Volume= 0.444 af
Outflow = 3.29 cfs @ 12.26 hrs, Volume= 0.383 af, Atten= 0%, Lag= 6.6 min
Primary = 3.29 cfs @ 12.26 hrs, Volume= 0.383 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 170.95' @ 12.27 hrs Surf.Area= 0.036 ac Storage= 0.067 af

Plug-Flow detention time= 98.8 min calculated for 0.383 af (86% of inflow)
Center-of-Mass det. time= 34.9 min (956.2 - 921.3)

Volume	Invert	Avail.Storage	Storage Description
#1	168.00'	0.110 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
168.00	0.011	0.000	0.000
170.00	0.026	0.037	0.037
172.00	0.047	0.073	0.110

Device	Routing	Invert	Outlet Devices
#1	Primary	170.80'	**20.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=2.89 cfs @ 12.26 hrs HW=170.94' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 2.89 cfs @ 1.04 fps)

Link 74L: COMBINE-HYDROGRAPHS

Inflow Area = 5.574 ac, Inflow Depth = 0.03" for 2yr event
Inflow = 0.02 cfs @ 15.41 hrs, Volume= 0.013 af
Primary = 0.02 cfs @ 15.41 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

10 YR POST-DEVELOPMENT

Subcatchment 1S: CB1

Runoff = 0.25 cfs @ 12.10 hrs, Volume= 0.020 af, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.070	98	Paved parking & roofs
0.110	39	>75% Grass cover, Good, HSG A
0.180	62	Weighted Average
0.110		Pervious Area
0.070		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC.**
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 2S: CB2

Runoff = 0.38 cfs @ 12.15 hrs, Volume= 0.043 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.400	39	>75% Grass cover, Good, HSG A
0.140	30	Woods, Good, HSG A
0.720	52	Weighted Average
0.540		Pervious Area
0.180		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	26	0.0380	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.2	49	0.4760	3.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	48	0.1460	2.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	21	0.0470	1.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	100	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
7.3	273	Total			

Subcatchment 3S: CB3

Runoff = 0.23 cfs @ 12.31 hrs, Volume= 0.035 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.140	98	Paved parking & roofs
0.480	39	>75% Grass cover, Good, HSG A
0.070	30	Woods, Good, HSG A
0.690	50	Weighted Average
0.550		Pervious Area
0.140		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.6	50	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	11	0.0550	4.76		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	236	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
13.8	354	Total			

Subcatchment 4S: CB4

Runoff = 0.13 cfs @ 12.39 hrs, Volume= 0.029 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.170	98	Paved parking & roofs
0.350	39	>75% Grass cover, Good, HSG A
0.520	30	Woods, Good, HSG A
1.040	44	Weighted Average
0.870		Pervious Area
0.170		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	26	0.0560	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.4	67	0.3000	2.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	72	0.1290	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	154	0.0455	1.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	24	0.0833	5.86		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	95	0.0158	2.55		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
8.4	453	Total			

Subcatchment 5S: CB5

Runoff = 0.32 cfs @ 12.12 hrs, Volume= 0.035 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.130	98	Paved parking & roofs
0.450	39	>75% Grass cover, Good, HSG A
0.580	52	Weighted Average
0.450		Pervious Area
0.130		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC.**
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 6S: CB6

Runoff = 0.64 cfs @ 12.15 hrs, Volume= 0.073 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.276	98	Paved parking & roofs
0.940	39	>75% Grass cover, Good, HSG A
1.216	52	Weighted Average
0.940		Pervious Area
0.276		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	14	0.2140	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.7	34	0.0588	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.8	104	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	25	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	19	0.0526	1.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	136	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
7.1	361	Total			

Subcatchment 7S: CB7

Runoff = 0.06 cfs @ 12.62 hrs, Volume= 0.032 af, Depth= 0.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.800	39	>75% Grass cover, Good, HSG A
1.040	30	Woods, Good, HSG A
2.020	40	Weighted Average
1.840		Pervious Area
0.180		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	33	0.0940	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	83	0.2650	2.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	75	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	50	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	86	0.0930	1.52		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	12	0.3330	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	34	0.0059	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	114	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	120	0.0167	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	61	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
14.5	675	Total			

Subcatchment 8S: CB6

Runoff = 0.42 cfs @ 12.26 hrs, Volume= 0.066 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.230	98	Paved parking & roofs
1.180	39	>75% Grass cover, Good, HSG A
1.410	49	Weighted Average
1.180		Pervious Area
0.230		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	20	0.0250	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
4.0	30	0.0168	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.6	89	0.0168	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	63	0.0317	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	19	0.0667	5.24		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	14	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	171	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
10.8	435	Total			

Subcatchment 9S: CB9

Runoff = 0.29 cfs @ 12.10 hrs, Volume= 0.023 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.080	98	Paved parking & roofs
0.120	39	>75% Grass cover, Good, HSG A
0.200	63	Weighted Average
0.120		Pervious Area
0.080		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC.**
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 10S: CB10

Runoff = 0.24 cfs @ 12.13 hrs, Volume= 0.029 af, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.110	98	Paved parking & roofs
0.410	39	>75% Grass cover, Good, HSG A
0.520	51	Weighted Average
0.410		Pervious Area
0.110		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	32	0.0310	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0430	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	28	0.0350	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.9					**Direct Entry, MIN. TC**
6.0	211	Total			

Subcatchment 11S: CB11

Runoff = 0.59 cfs @ 12.16 hrs, Volume= 0.064 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.230	98	Paved parking & roofs
0.700	39	>75% Grass cover, Good, HSG A
0.930	54	Weighted Average
0.700		Pervious Area
0.230		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	7	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	45	0.0440	1.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	28	0.0650	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	138	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
8.9	275	Total			

Subcatchment 12S: CB12

Runoff = 0.54 cfs @ 12.12 hrs, Volume= 0.058 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.760	39	>75% Grass cover, Good, HSG A
0.970	52	Weighted Average
0.760		Pervious Area
0.210		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	50	0.0480	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0480	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	27	0.2220	3.30		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	23	0.0870	2.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	80	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	45	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.7					**Direct Entry, MIN. TC**
6.0	264	Total			

Subcatchment 13S: CB13

Runoff = 0.16 cfs @ 12.34 hrs, Volume= 0.032 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.110	98	Paved parking & roofs
0.890	39	>75% Grass cover, Good, HSG A
1.000	45	Weighted Average
0.890		Pervious Area
0.110		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	34	0.1230	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.0	6	0.2000	3.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	12	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	94	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	45	0.1330	2.55		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	194	0.0520	1.60		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	110	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.6	502	Total			

Subcatchment 14S: CB14

Runoff = 0.38 cfs @ 12.14 hrs, Volume= 0.052 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.190	98	Paved parking & roofs
0.920	39	>75% Grass cover, Good, HSG A
1.110	49	Weighted Average
0.920		Pervious Area
0.190		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	50	0.5000	0.54		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	17	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	30	0.2000	3.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	36	0.0560	1.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	51	0.0390	1.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	32	0.1030	2.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	16	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	17	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	107	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
1.0					**Direct Entry, MIN. TC.**
5.3	371	Total			

Subcatchment 15S: CB15

Runoff = 0.42 cfs @ 12.10 hrs, Volume= 0.032 af, Depth= 1.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.110	98	Paved parking & roofs
0.130	39	>75% Grass cover, Good, HSG A
0.240	66	Weighted Average
0.130		Pervious Area
0.110		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	5	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	5	Total			

Subcatchment 16S: CB16

Runoff = 0.44 cfs @ 12.11 hrs, Volume= 0.039 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.140	98	Paved parking & roofs
0.360	39	>75% Grass cover, Good, HSG A
0.500	56	Weighted Average
0.360		Pervious Area
0.140		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	11	0.0200	6.42	5.04	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	11	Total			

Subcatchment 17S: CB17

Runoff = 0.37 cfs @ 12.42 hrs, Volume= 0.071 af, Depth= 0.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.340	98	Paved parking & roofs
0.900	39	>75% Grass cover, Good, HSG A
0.570	30	Woods, Good, HSG A
1.810	47	Weighted Average
1.470		Pervious Area
0.340		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	31	0.0130	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	73	0.1370	1.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	70	0.0286	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	33	0.3030	2.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	57	0.3030	3.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	10	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	22	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	83	0.0720	5.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	102	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	134	0.0050	3.21	2.52	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
14.7	615	Total			

Subcatchment 50S: CB50

Runoff = 0.66 cfs @ 12.09 hrs, Volume= 0.049 af, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.140	98	Paved parking & roofs
0.030	39	>75% Grass cover, Good, HSG A
0.170	88	Weighted Average
0.030		Pervious Area
0.140		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	7	0.0200	6.42	5.04	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 51S: CB51

Runoff = 0.48 cfs @ 12.17 hrs, Volume= 0.070 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.256	98	Paved parking & roofs
1.228	39	>75% Grass cover, Good, HSG A
1.484	49	Weighted Average
1.228		Pervious Area
0.256		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	22	0.0230	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	36	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	12	0.3330	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	74	0.0810	1.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	55	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	89	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	55	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	111	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	14	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
7.4	468	Total			

Subcatchment 52S: CB52

Runoff = 0.94 cfs @ 12.09 hrs, Volume= 0.068 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.100	39	>75% Grass cover, Good, HSG A
0.310	79	Weighted Average
0.100		Pervious Area
0.210		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	7	0.0466	9.79	7.69	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 53S: CB53

Runoff = 0.81 cfs @ 12.10 hrs, Volume= 0.060 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.201	98	Paved parking & roofs
0.181	39	>75% Grass cover, Good, HSG A
0.382	70	Weighted Average
0.181		Pervious Area
0.201		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9					**Direct Entry, MIN. TC**
0.1	14	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	14	Total			

Subcatchment 54S: CB54

Runoff = 1.05 cfs @ 12.10 hrs, Volume= 0.080 af, Depth= 1.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.274	98	Paved parking & roofs
0.326	39	>75% Grass cover, Good, HSG A
0.600	66	Weighted Average
0.326		Pervious Area
0.274		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	6	0.0233	6.92	5.44	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	6	Total			

Subcatchment 55S: CB55

Runoff = 1.87 cfs @ 12.10 hrs, Volume= 0.146 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.526	98	Paved parking & roofs
0.744	39	>75% Grass cover, Good, HSG A
1.270	63	Weighted Average
0.744		Pervious Area
0.526		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	14	0.0200	6.42	5.04	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0					**Direct Entry, MIN. TC**
6.0	14	Total			

Subcatchment 60S: CB60

Runoff = 0.93 cfs @ 12.09 hrs, Volume= 0.068 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.212	98	Paved parking & roofs
0.118	39	>75% Grass cover, Good, HSG A
0.330	77	Weighted Average
0.118		Pervious Area
0.212		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	13	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	13	Total			

Subcatchment 61S: CB61

Runoff = 0.88 cfs @ 12.09 hrs, Volume= 0.064 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.200	98	Paved parking & roofs
0.102	39	>75% Grass cover, Good, HSG A
0.302	78	Weighted Average
0.102		Pervious Area
0.200		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	24	0.0323	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	13	0.0323	1.26		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	84	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	11	0.0120	4.97	3.90	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
2.8					**Direct Entry, MIN. TC**
6.0	132	Total			

Subcatchment 62S: CB62

Runoff = 0.70 cfs @ 12.10 hrs, Volume= 0.051 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.164	98	Paved parking & roofs
0.116	39	>75% Grass cover, Good, HSG A
0.280	74	Weighted Average
0.116		Pervious Area
0.164		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.1	14	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.1	14	Total			

Subcatchment 63S: CB63

Runoff = 0.11 cfs @ 12.36 hrs, Volume= 0.023 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.109	98	Paved parking & roofs
0.435	39	>75% Grass cover, Good, HSG A
0.278	30	Woods, Good, HSG A
0.822	44	Weighted Average
0.713		Pervious Area
0.109		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	35	0.0100	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.6	53	0.0380	1.36		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	53	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	6	0.0233	6.92	5.44	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.4	147	Total			

Subcatchment 70S: 70S

Runoff = 1.27 cfs @ 12.15 hrs, Volume= 0.146 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.168	98	Paved parking & roofs
1.924	39	>75% Grass cover, Good, HSG A
0.358	98	POND
2.450	52	Weighted Average
1.924		Pervious Area
0.526		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	31	0.0320	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.2	170	0.0350	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	45	0.0910	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	85	0.0235	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.5	371	Total			

Subcatchment 71S: 71S

Runoff = 0.04 cfs @ 13.70 hrs, Volume= 0.026 af, Depth= 0.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.160	98	Paved parking & roofs
0.630	39	>75% Grass cover, Good, HSG A
1.120	30	Woods, Good, HSG A
1.910	39	Weighted Average
1.750		Pervious Area
0.160		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	33	0.0910	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.5	221	0.1270	2.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	110	0.0180	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	97	0.0206	1.00		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.7	501	Total			

Subcatchment 72S: 72S

Runoff = 0.16 cfs @ 12.38 hrs, Volume= 0.033 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.200	30	Woods, Good, HSG A
0.830	49	Desert shrub range, Good, HSG A
1.030	45	Weighted Average
1.030		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	50	0.0110	0.13		**Sheet Flow,** Range n= 0.130 P2= 3.20"
0.4	50	0.0465	2.16		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
0.1	24	0.0833	2.89		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
2.0	152	0.0164	1.28		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
8.9	276	Total			

Subcatchment 73S: 73S

Runoff = 0.40 cfs @ 12.39 hrs, Volume= 0.084 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=4.80"

Area (ac)	CN	Description
0.171	98	Paved parking & roofs
0.975	39	>75% Grass cover, Good, HSG A
0.528	30	Woods, Good, HSG A
0.960	49	Desert shrub range, Good, HSG A
2.634	45	Weighted Average
2.463		Pervious Area
0.171		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	36	0.0555	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	157	0.3000	2.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	54	0.3890	3.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	37	0.2160	3.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	23	0.1310	3.62		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
2.1	185	0.0210	1.45		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
10.0	492	Total			

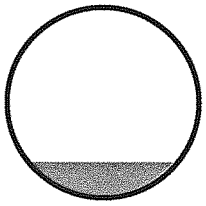
Reach 1R: DMH1-DMH2

Inflow Area = 0.900 ac, Inflow Depth = 0.84" for 10yr event
Inflow = 0.60 cfs @ 12.13 hrs, Volume= 0.063 af
Outflow = 0.60 cfs @ 12.15 hrs, Volume= 0.063 af, Atten= 1%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.97 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.65 fps, Avg. Travel Time= 0.9 min

Peak Storage= 15 cf @ 12.14 hrs, Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.97 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 148.0' Slope= 0.0500 '/'
Inlet Invert= 214.44', Outlet Invert= 207.04'



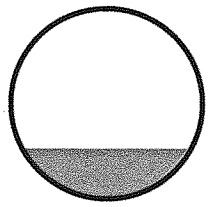
Reach 2R: DMH2-DMH3

Inflow Area = 0.900 ac, Inflow Depth = 0.84" for 10yr event
Inflow = 0.60 cfs @ 12.15 hrs, Volume= 0.063 af
Outflow = 0.59 cfs @ 12.16 hrs, Volume= 0.063 af, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.60 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.60 fps, Avg. Travel Time= 1.0 min

Peak Storage= 16 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 95.0' Slope= 0.0120 '/'
Inlet Invert= 207.04', Outlet Invert= 205.90'



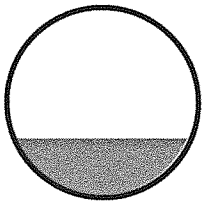
Reach 3R: DMH3-DMH4

Inflow Area = 2.630 ac, Inflow Depth = 0.58" for 10yr event
Inflow = 0.82 cfs @ 12.21 hrs, Volume= 0.127 af
Outflow = 0.81 cfs @ 12.25 hrs, Volume= 0.127 af, Atten= 1%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.93 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.97 fps, Avg. Travel Time= 1.7 min

Peak Storage= 43 cf @ 12.22 hrs, Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 205.0' Slope= 0.0120 '/'
Inlet Invert= 205.80', Outlet Invert= 203.34'



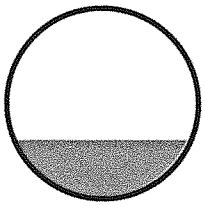
Reach 4R: DMH4-DMH5

Inflow Area = 2.630 ac, Inflow Depth = 0.58" for 10yr event
Inflow = 0.81 cfs @ 12.25 hrs, Volume= 0.127 af
Outflow = 0.81 cfs @ 12.26 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.92 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.97 fps, Avg. Travel Time= 0.8 min

Peak Storage= 19 cf @ 12.25 hrs, Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 90.0' Slope= 0.0120 '/'
Inlet Invert= 203.24', Outlet Invert= 202.16'



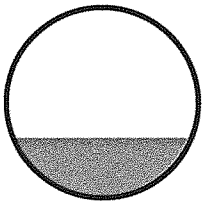
Reach 5R: DMH5-DMH6

Inflow Area = 4.426 ac, Inflow Depth = 0.64" for 10yr event
Inflow = 1.60 cfs @ 12.20 hrs, Volume= 0.235 af
Outflow = 1.60 cfs @ 12.22 hrs, Volume= 0.235 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.80 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.33 fps, Avg. Travel Time= 1.5 min

Peak Storage= 72 cf @ 12.21 hrs, Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 7.37 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 215.0' Slope= 0.0130 '/'
Inlet Invert= 201.91', Outlet Invert= 199.11'



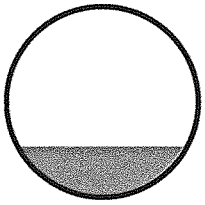
Reach 6R: DMH6-DMH7

Inflow Area = 7.856 ac, Inflow Depth = 0.51" for 10yr event
Inflow = 2.00 cfs @ 12.23 hrs, Volume= 0.333 af
Outflow = 2.00 cfs @ 12.24 hrs, Volume= 0.333 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.64 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.90 fps, Avg. Travel Time= 0.2 min

Peak Storage= 13 cf @ 12.23 hrs, Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 12.92 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 51.0' Slope= 0.0400 '/'
Inlet Invert= 199.01', Outlet Invert= 196.97'



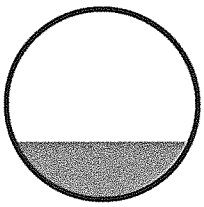
Reach 7R: DMH7-DMH8

Inflow Area = 9.590 ac, Inflow Depth = 0.67" for 10yr event
Inflow = 3.90 cfs @ 12.15 hrs, Volume= 0.539 af
Outflow = 3.89 cfs @ 12.16 hrs, Volume= 0.539 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.67 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.75 fps, Avg. Travel Time= 0.5 min

Peak Storage= 54 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.65 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 120.0' Slope= 0.0350 '/'
Inlet Invert= 196.72', Outlet Invert= 192.52'



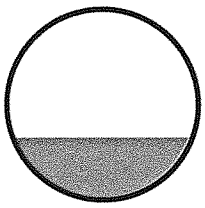
Reach 8R: DMH8-DMH9

Inflow Area = 10.310 ac, Inflow Depth = 0.69" for 10yr event
Inflow = 4.38 cfs @ 12.15 hrs, Volume= 0.591 af
Outflow = 4.36 cfs @ 12.16 hrs, Volume= 0.591 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.77 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 3.75 fps, Avg. Travel Time= 0.9 min

Peak Storage= 98 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.09 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 196.0' Slope= 0.0330 '/'
Inlet Invert= 190.52', Outlet Invert= 184.05'



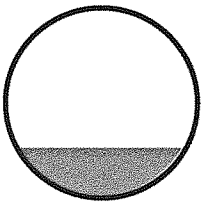
Reach 9R: DMH9-DMH10

Inflow Area = 12.210 ac, Inflow Depth = 0.70" for 10yr event
Inflow = 5.45 cfs @ 12.16 hrs, Volume= 0.713 af
Outflow = 5.40 cfs @ 12.17 hrs, Volume= 0.713 af, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.22 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 3.46 fps, Avg. Travel Time= 1.2 min

Peak Storage= 161 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 35.77 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 242.0' Slope= 0.0250 '/'
Inlet Invert= 183.55', Outlet Invert= 177.50'



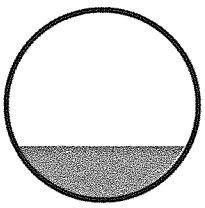
Reach 10R: DMH10-DMH50

Inflow Area = 14.320 ac, Inflow Depth = 0.67" for 10yr event
Inflow = 5.88 cfs @ 12.17 hrs, Volume= 0.797 af
Outflow = 5.87 cfs @ 12.17 hrs, Volume= 0.797 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.99 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.40 fps, Avg. Travel Time= 0.2 min

Peak Storage= 37 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.57'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 33.55 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 50.0' Slope= 0.0220 '/'
Inlet Invert= 177.40', Outlet Invert= 176.30'



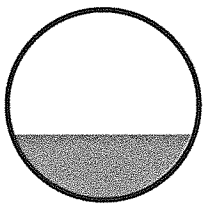
Reach 11R: DMH11-DMH12

Inflow Area = 2.550 ac, Inflow Depth = 0.67" for 10yr event
Inflow = 0.91 cfs @ 12.12 hrs, Volume= 0.142 af
Outflow = 0.91 cfs @ 12.12 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.77 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.87 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 2.0' Slope= 0.0100 '/'
Inlet Invert= 173.95', Outlet Invert= 173.93'



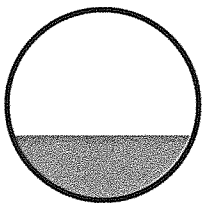
Reach 12R: DMH12-DMH13

Inflow Area = 2.550 ac, Inflow Depth = 0.67" for 10yr event
Inflow = 0.91 cfs @ 12.12 hrs, Volume= 0.142 af
Outflow = 0.88 cfs @ 12.15 hrs, Volume= 0.142 af, Atten= 3%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.76 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.86 fps, Avg. Travel Time= 1.3 min

Peak Storage= 35 cf @ 12.13 hrs, Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 148.0' Slope= 0.0100 '/'
Inlet Invert= 173.83', Outlet Invert= 172.35'



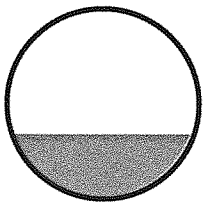
Reach 13R: DMH13-FES

Inflow Area = 2.550 ac, Inflow Depth = 0.67" for 10yr event
Inflow = 0.88 cfs @ 12.15 hrs, Volume= 0.142 af
Outflow = 0.88 cfs @ 12.16 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.76 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.86 fps, Avg. Travel Time= 0.2 min

Peak Storage= 6 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 25.0' Slope= 0.0100 '/'
Inlet Invert= 172.25', Outlet Invert= 172.00'



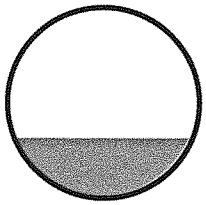
Reach 50R: DMH50-DMH51

Inflow Area = 15.974 ac, Inflow Depth = 0.69" for 10yr event
Inflow = 6.82 cfs @ 12.17 hrs, Volume= 0.916 af
Outflow = 6.67 cfs @ 12.18 hrs, Volume= 0.916 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.06 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.06 fps, Avg. Travel Time= 0.8 min

Peak Storage= 120 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.63'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 142.0' Slope= 0.0200 '/'
Inlet Invert= 176.30', Outlet Invert= 173.46'



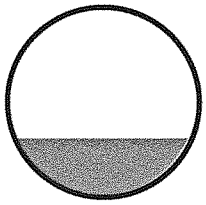
Reach 51R: DMH51-DMH55

Inflow Area = 15.974 ac, Inflow Depth = 0.69" for 10yr event
Inflow = 6.67 cfs @ 12.18 hrs, Volume= 0.916 af
Outflow = 6.67 cfs @ 12.18 hrs, Volume= 0.916 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.03 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.06 fps, Avg. Travel Time= 0.1 min

Peak Storage= 12 cf @ 12.18 hrs, Average Depth at Peak Storage= 0.62'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 15.0' Slope= 0.0200 '/'
Inlet Invert= 173.36', Outlet Invert= 173.06'



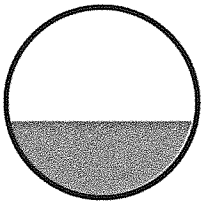
Reach 52R: DMH52-DMH55

Inflow Area = 2.562 ac, Inflow Depth = 1.66" for 10yr event
Inflow = 4.60 cfs @ 12.11 hrs, Volume= 0.354 af
Outflow = 4.56 cfs @ 12.11 hrs, Volume= 0.354 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.06 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.60 fps, Avg. Travel Time= 0.4 min

Peak Storage= 42 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 13.70 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 92.0' Slope= 0.0450 '/'
Inlet Invert= 177.95', Outlet Invert= 173.81'



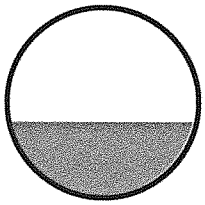
Reach 53R: DMH53-DMH52

Inflow Area = 1.870 ac, Inflow Depth = 1.45" for 10yr event
Inflow = 2.90 cfs @ 12.11 hrs, Volume= 0.226 af
Outflow = 2.87 cfs @ 12.11 hrs, Volume= 0.226 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.98 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.95 fps, Avg. Travel Time= 0.6 min

Peak Storage= 42 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 143.0' Slope= 0.0600 '/'
Inlet Invert= 186.78', Outlet Invert= 178.20'



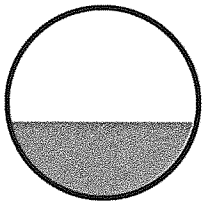
Reach 54R: DMH54-DMH53

Inflow Area = 1.870 ac, Inflow Depth = 1.45" for 10yr event
Inflow = 2.92 cfs @ 12.10 hrs, Volume= 0.226 af
Outflow = 2.90 cfs @ 12.11 hrs, Volume= 0.226 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.01 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.95 fps, Avg. Travel Time= 0.4 min

Peak Storage= 29 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 100.0' Slope= 0.0600 '/'
Inlet Invert= 192.88', Outlet Invert= 186.88'



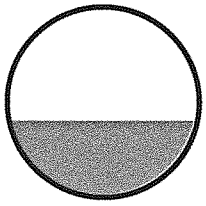
Reach 55R: DMH55-DMH56

Inflow Area = 18.536 ac, Inflow Depth = 0.82" for 10yr event
Inflow = 10.71 cfs @ 12.15 hrs, Volume= 1.270 af
Outflow = 10.69 cfs @ 12.15 hrs, Volume= 1.270 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.17 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.32 fps, Avg. Travel Time= 0.4 min

Peak Storage= 89 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.80'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 76.0' Slope= 0.0200 '/'
Inlet Invert= 172.96', Outlet Invert= 171.44'



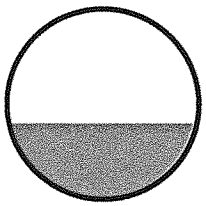
Reach 56R: DMH56-FES

Inflow Area = 18.536 ac, Inflow Depth = 0.82" for 10yr event
Inflow = 10.69 cfs @ 12.15 hrs, Volume= 1.270 af
Outflow = 10.68 cfs @ 12.16 hrs, Volume= 1.270 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.17 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.33 fps, Avg. Travel Time= 0.2 min

Peak Storage= 37 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.80'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 32.0' Slope= 0.0200 '/'
Inlet Invert= 171.34', Outlet Invert= 170.70'



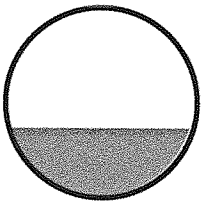
Reach 60R: DMH60-DMH7

Inflow Area = 1.734 ac, Inflow Depth = 1.43" for 10yr event
Inflow = 2.50 cfs @ 12.10 hrs, Volume= 0.206 af
Outflow = 2.49 cfs @ 12.10 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.59 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.61 fps, Avg. Travel Time= 0.2 min

Peak Storage= 9 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 33.0' Slope= 0.0600 '/'
Inlet Invert= 199.20', Outlet Invert= 197.22'



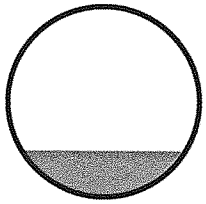
Reach 61R: DMH61-DMH60

Inflow Area = 1.102 ac, Inflow Depth = 0.81" for 10yr event
Inflow = 0.72 cfs @ 12.10 hrs, Volume= 0.075 af
Outflow = 0.70 cfs @ 12.12 hrs, Volume= 0.075 af, Atten= 3%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.92 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.06 fps, Avg. Travel Time= 1.5 min

Peak Storage= 26 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.63 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 180.0' Slope= 0.0250 '/'
Inlet Invert= 203.80', Outlet Invert= 199.30'



Pond 1P: POND 1

Inflow Area = 23.536 ac, Inflow Depth = 0.76" for 10yr event
Inflow = 12.87 cfs @ 12.16 hrs, Volume= 1.497 af
Outflow = 6.21 cfs @ 12.55 hrs, Volume= 1.497 af, Atten= 52%, Lag= 23.1 min
Discarded = 6.21 cfs @ 12.55 hrs, Volume= 1.497 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 168.54' @ 12.55 hrs Surf.Area= 0.308 ac Storage= 0.162 af

Plug-Flow detention time= 5.7 min calculated for 1.495 af (100% of inflow)
Center-of-Mass det. time= 5.7 min (911.4 - 905.7)

Volume	Invert	Avail.Storage	Storage Description
#1	168.00'	1.427 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
168.00	0.290	0.000	0.000
170.00	0.357	0.647	0.647
172.00	0.423	0.780	1.427

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**20.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=6.21 cfs @ 12.55 hrs HW=168.54' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 6.21 cfs)

Pond 12P: SFB 10

Inflow Area = 21.086 ac, Inflow Depth = 0.80" for 10yr event
Inflow = 11.56 cfs @ 12.16 hrs, Volume= 1.412 af
Outflow = 11.60 cfs @ 12.16 hrs, Volume= 1.350 af, Atten= 0%, Lag= 0.5 min
Primary = 11.60 cfs @ 12.16 hrs, Volume= 1.350 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 171.14' @ 12.16 hrs Surf.Area= 0.038 ac Storage= 0.074 af

Plug-Flow detention time= 33.7 min calculated for 1.349 af (96% of inflow)
Center-of-Mass det. time= 11.2 min (905.1 - 893.9)

Volume	Invert	Avail.Storage	Storage Description
#1	168.00'	0.110 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
168.00	0.011	0.000	0.000
170.00	0.026	0.037	0.037
172.00	0.047	0.073	0.110

Device	Routing	Invert	Outlet Devices
#1	Primary	170.80'	**20.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=11.35 cfs @ 12.16 hrs HW=171.14' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 11.35 cfs @ 1.68 fps)

Link 74L: COMBINE-HYDROGRAPHS

Inflow Area = 5.574 ac, Inflow Depth = 0.31" for 10yr event
Inflow = 0.57 cfs @ 12.41 hrs, Volume= 0.142 af
Primary = 0.57 cfs @ 12.41 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

25 YR POST-DEVELOPMENT

Subcatchment 1S: CB1

Runoff = 0.34 cfs @ 12.10 hrs, Volume= 0.026 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.070	98	Paved parking & roofs
0.110	39	>75% Grass cover, Good, HSG A
0.180	62	Weighted Average
0.110		Pervious Area
0.070		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC.**
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 2S: CB2

Runoff = 0.63 cfs @ 12.13 hrs, Volume= 0.062 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.400	39	>75% Grass cover, Good, HSG A
0.140	30	Woods, Good, HSG A
0.720	52	Weighted Average
0.540		Pervious Area
0.180		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	26	0.0380	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.2	49	0.4760	3.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	48	0.1460	2.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	21	0.0470	1.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	100	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
7.3	273	Total			

Subcatchment 3S: CB3

Runoff = 0.41 cfs @ 12.25 hrs, Volume= 0.052 af, Depth= 0.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.140	98	Paved parking & roofs
0.480	39	>75% Grass cover, Good, HSG A
0.070	30	Woods, Good, HSG A
0.690	50	Weighted Average
0.550		Pervious Area
0.140		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.6	50	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	11	0.0550	4.76		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	236	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
13.8	354	Total			

Subcatchment 4S: CB4

Runoff = 0.28 cfs @ 12.30 hrs, Volume= 0.048 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.170	98	Paved parking & roofs
0.350	39	>75% Grass cover, Good, HSG A
0.520	30	Woods, Good, HSG A
1.040	44	Weighted Average
0.870		Pervious Area
0.170		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	26	0.0560	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.4	67	0.3000	2.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	72	0.1290	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	154	0.0455	1.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	24	0.0833	5.86		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	95	0.0158	2.55		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
8.4	453	Total			

Subcatchment 5S: CB5

Runoff = 0.55 cfs @ 12.11 hrs, Volume= 0.050 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.130	98	Paved parking & roofs
0.450	39	>75% Grass cover, Good, HSG A
0.580	52	Weighted Average
0.450		Pervious Area
0.130		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC.**
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 6S: CB6

Runoff = 1.07 cfs @ 12.13 hrs, Volume= 0.105 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.276	98	Paved parking & roofs
0.940	39	>75% Grass cover, Good, HSG A
1.216	52	Weighted Average
0.940		Pervious Area
0.276		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	14	0.2140	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.7	34	0.0588	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.8	104	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	25	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	19	0.0526	1.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	136	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
7.1	361	Total			

Subcatchment 7S: CB7

Runoff = 0.23 cfs @ 12.50 hrs, Volume= 0.060 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.800	39	>75% Grass cover, Good, HSG A
1.040	30	Woods, Good, HSG A
2.020	40	Weighted Average
1.840		Pervious Area
0.180		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	33	0.0940	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	83	0.2650	2.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	75	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	50	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	86	0.0930	1.52		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	12	0.3330	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	34	0.0059	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	114	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	120	0.0167	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	61	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
14.5	675	Total			

Subcatchment 8S: CB6

Runoff = 0.80 cfs @ 12.21 hrs, Volume= 0.099 af, Depth= 0.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.230	98	Paved parking & roofs
1.180	39	>75% Grass cover, Good, HSG A
1.410	49	Weighted Average
1.180		Pervious Area
0.230		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	20	0.0250	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
4.0	30	0.0168	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.6	89	0.0168	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	63	0.0317	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	19	0.0667	5.24		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	14	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	171	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
10.8	435	Total			

Subcatchment 9S: CB9

Runoff = 0.40 cfs @ 12.10 hrs, Volume= 0.031 af, Depth= 1.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.080	98	Paved parking & roofs
0.120	39	>75% Grass cover, Good, HSG A
0.200	63	Weighted Average
0.120		Pervious Area
0.080		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC.**
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 10S: CB10

Runoff = 0.44 cfs @ 12.11 hrs, Volume= 0.042 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.110	98	Paved parking & roofs
0.410	39	>75% Grass cover, Good, HSG A
0.520	51	Weighted Average
0.410		Pervious Area
0.110		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	32	0.0310	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0430	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	28	0.0350	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.9					**Direct Entry, MIN. TC**
6.0	211	Total			

Subcatchment 11S: CB11

Runoff = 0.94 cfs @ 12.15 hrs, Volume= 0.091 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.230	98	Paved parking & roofs
0.700	39	>75% Grass cover, Good, HSG A
0.930	54	Weighted Average
0.700		Pervious Area
0.230		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	7	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	45	0.0440	1.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	28	0.0650	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	138	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
8.9	275	Total			

Subcatchment 12S: CB12

Runoff = 0.91 cfs @ 12.11 hrs, Volume= 0.084 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.760	39	>75% Grass cover, Good, HSG A
0.970	52	Weighted Average
0.760		Pervious Area
0.210		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	50	0.0480	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0480	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	27	0.2220	3.30		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	23	0.0870	2.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	80	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	45	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.7					**Direct Entry, MIN. TC**
6.0	264	Total			

Subcatchment 13S: CB13

Runoff = 0.34 cfs @ 12.17 hrs, Volume= 0.051 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.110	98	Paved parking & roofs
0.890	39	>75% Grass cover, Good, HSG A
1.000	45	Weighted Average
0.890		Pervious Area
0.110		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	34	0.1230	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.0	6	0.2000	3.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	12	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	94	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	45	0.1330	2.55		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	194	0.0520	1.60		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	110	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.6	502	Total			

Subcatchment 14S: CB14

Runoff = 0.77 cfs @ 12.11 hrs, Volume= 0.078 af, Depth= 0.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.190	98	Paved parking & roofs
0.920	39	>75% Grass cover, Good, HSG A
1.110	49	Weighted Average
0.920		Pervious Area
0.190		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	50	0.5000	0.54		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	17	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	30	0.2000	3.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	36	0.0560	1.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	51	0.0390	1.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	32	0.1030	2.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	16	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	17	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	107	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
1.0					**Direct Entry, MIN. TC.**
5.3	371	Total			

Subcatchment 15S: CB15

Runoff = 0.56 cfs @ 12.10 hrs, Volume= 0.042 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.110	98	Paved parking & roofs
0.130	39	>75% Grass cover, Good, HSG A
0.240	66	Weighted Average
0.130		Pervious Area
0.110		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	5	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	5	Total			

Subcatchment 16S: CB16

Runoff = 0.66 cfs @ 12.11 hrs, Volume= 0.055 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.140	98	Paved parking & roofs
0.360	39	>75% Grass cover, Good, HSG A
0.500	56	Weighted Average
0.360		Pervious Area
0.140		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	11	0.0200	6.42	5.04	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	11	Total			

Subcatchment 17S: CB17

Runoff = 0.71 cfs @ 12.31 hrs, Volume= 0.109 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.340	98	Paved parking & roofs
0.900	39	>75% Grass cover, Good, HSG A
0.570	30	Woods, Good, HSG A
1.810	47	Weighted Average
1.470		Pervious Area
0.340		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	31	0.0130	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	73	0.1370	1.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	70	0.0286	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	33	0.3030	2.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	57	0.3030	3.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	10	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	22	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	83	0.0720	5.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	102	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	134	0.0050	3.21	2.52	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
14.7	615	Total			

Subcatchment 50S: CB50

Runoff = 0.78 cfs @ 12.09 hrs, Volume= 0.059 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.140	98	Paved parking & roofs
0.030	39	>75% Grass cover, Good, HSG A
0.170	88	Weighted Average
0.030		Pervious Area
0.140		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	7	0.0200	6.42	5.04	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 51S: CB51

Runoff = 0.93 cfs @ 12.15 hrs, Volume= 0.105 af, Depth= 0.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.256	98	Paved parking & roofs
1.228	39	>75% Grass cover, Good, HSG A
1.484	49	Weighted Average
1.228		Pervious Area
0.256		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	22	0.0230	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	36	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	12	0.3330	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	74	0.0810	1.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	55	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	89	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	55	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	111	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	14	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
7.4	468	Total			

Subcatchment 52S: CB52

Runoff = 1.15 cfs @ 12.09 hrs, Volume= 0.084 af, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.100	39	>75% Grass cover, Good, HSG A
0.310	79	Weighted Average
0.100		Pervious Area
0.210		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	7	0.0466	9.79	7.69	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 53S: CB53

Runoff = 1.05 cfs @ 12.10 hrs, Volume= 0.077 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.201	98	Paved parking & roofs
0.181	39	>75% Grass cover, Good, HSG A
0.382	70	Weighted Average
0.181		Pervious Area
0.201		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9					**Direct Entry, MIN. TC**
0.1	14	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	14	Total			

Subcatchment 54S: CB54

Runoff = 1.40 cfs @ 12.10 hrs, Volume= 0.104 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.274	98	Paved parking & roofs
0.326	39	>75% Grass cover, Good, HSG A
0.600	66	Weighted Average
0.326		Pervious Area
0.274		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	6	0.0233	6.92	5.44	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	6	Total			

Subcatchment 55S: CB55

Runoff = 2.56 cfs @ 12.10 hrs, Volume= 0.194 af, Depth= 1.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.526	98	Paved parking & roofs
0.744	39	>75% Grass cover, Good, HSG A
1.270	63	Weighted Average
0.744		Pervious Area
0.526		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	14	0.0200	6.42	5.04	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0					**Direct Entry, MIN. TC**
6.0	14	Total			

Subcatchment 60S: CB60

Runoff = 1.16 cfs @ 12.09 hrs, Volume= 0.084 af, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.212	98	Paved parking & roofs
0.118	39	>75% Grass cover, Good, HSG A
0.330	77	Weighted Average
0.118		Pervious Area
0.212		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	13	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	13	Total			

Subcatchment 61S: CB61

Runoff = 1.09 cfs @ 12.09 hrs, Volume= 0.079 af, Depth= 3.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.200	98	Paved parking & roofs
0.102	39	>75% Grass cover, Good, HSG A
0.302	78	Weighted Average
0.102		Pervious Area
0.200		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	24	0.0323	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	13	0.0323	1.26		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	84	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	11	0.0120	4.97	3.90	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
2.8					**Direct Entry, MIN. TC**
6.0	132	Total			

Subcatchment 62S: CB62

Runoff = 0.89 cfs @ 12.10 hrs, Volume= 0.065 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.164	98	Paved parking & roofs
0.116	39	>75% Grass cover, Good, HSG A
0.280	74	Weighted Average
0.116		Pervious Area
0.164		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.1	14	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.1	14	Total			

Subcatchment 63S: CB63

Runoff = 0.22 cfs @ 12.23 hrs, Volume= 0.038 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.109	98	Paved parking & roofs
0.435	39	>75% Grass cover, Good, HSG A
0.278	30	Woods, Good, HSG A
0.822	44	Weighted Average
0.713		Pervious Area
0.109		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	35	0.0100	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.6	53	0.0380	1.36		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	53	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	6	0.0233	6.92	5.44	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.4	147	Total			

Subcatchment 70S: 70S

Runoff = 2.14 cfs @ 12.14 hrs, Volume= 0.212 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.168	98	Paved parking & roofs
1.924	39	>75% Grass cover, Good, HSG A
0.358	98	POND
2.450	52	Weighted Average
1.924		Pervious Area
0.526		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	31	0.0320	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.2	170	0.0350	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	45	0.0910	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	85	0.0235	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.5	371	Total			

Subcatchment 71S: 71S

Runoff = 0.18 cfs @ 12.43 hrs, Volume= 0.050 af, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.160	98	Paved parking & roofs
0.630	39	>75% Grass cover, Good, HSG A
1.120	30	Woods, Good, HSG A
1.910	39	Weighted Average
1.750		Pervious Area
0.160		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	33	0.0910	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.5	221	0.1270	2.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	110	0.0180	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	97	0.0206	1.00		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.7	501	Total			

Subcatchment 72S: 72S

Runoff = 0.32 cfs @ 12.20 hrs, Volume= 0.052 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.200	30	Woods, Good, HSG A
0.830	49	Desert shrub range, Good, HSG A
1.030	45	Weighted Average
1.030		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	50	0.0110	0.13		**Sheet Flow,** Range n= 0.130 P2= 3.20"
0.4	50	0.0465	2.16		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
0.1	24	0.0833	2.89		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
2.0	152	0.0164	1.28		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
8.9	276	Total			

Subcatchment 73S: 73S

Runoff = 0.82 cfs @ 12.27 hrs, Volume= 0.134 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=5.50"

Area (ac)	CN	Description
0.171	98	Paved parking & roofs
0.975	39	>75% Grass cover, Good, HSG A
0.528	30	Woods, Good, HSG A
0.960	49	Desert shrub range, Good, HSG A
2.634	45	Weighted Average
2.463		Pervious Area
0.171		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	36	0.0555	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	157	0.3000	2.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	54	0.3890	3.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	37	0.2160	3.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	23	0.1310	3.62		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
2.1	185	0.0210	1.45		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
10.0	492	Total			

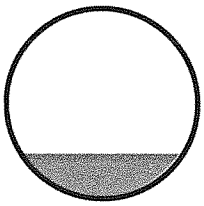
Reach 1R: DMH1-DMH2

Inflow Area = 0.900 ac, Inflow Depth = 1.18" for 25yr event
Inflow = 0.98 cfs @ 12.12 hrs, Volume= 0.089 af
Outflow = 0.94 cfs @ 12.13 hrs, Volume= 0.089 af, Atten= 3%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.81 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.86 fps, Avg. Travel Time= 0.9 min

Peak Storage= 21 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.97 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 148.0' Slope= 0.0500 '/'
Inlet Invert= 214.44', Outlet Invert= 207.04'



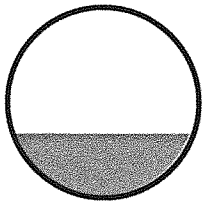
Reach 2R: DMH2-DMH3

Inflow Area = 0.900 ac, Inflow Depth = 1.18" for 25yr event
Inflow = 0.94 cfs @ 12.13 hrs, Volume= 0.089 af
Outflow = 0.94 cfs @ 12.15 hrs, Volume= 0.089 af, Atten= 1%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.09 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.72 fps, Avg. Travel Time= 0.9 min

Peak Storage= 22 cf @ 12.14 hrs, Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 95.0' Slope= 0.0120 '/'
Inlet Invert= 207.04', Outlet Invert= 205.90'



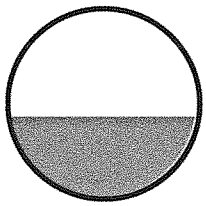
Reach 3R: DMH3-DMH4

Inflow Area = 2.630 ac, Inflow Depth = 0.86" for 25yr event
Inflow = 1.50 cfs @ 12.18 hrs, Volume= 0.189 af
Outflow = 1.49 cfs @ 12.21 hrs, Volume= 0.189 af, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.65 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.14 fps, Avg. Travel Time= 1.6 min

Peak Storage= 66 cf @ 12.19 hrs, Average Depth at Peak Storage= 0.43'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 205.0' Slope= 0.0120 '/'
Inlet Invert= 205.80', Outlet Invert= 203.34'



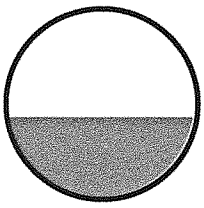
Reach 4R: DMH4-DMH5

Inflow Area = 2.630 ac, Inflow Depth = 0.86" for 25yr event
Inflow = 1.49 cfs @ 12.21 hrs, Volume= 0.189 af
Outflow = 1.49 cfs @ 12.22 hrs, Volume= 0.189 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.64 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.13 fps, Avg. Travel Time= 0.7 min

Peak Storage= 29 cf @ 12.21 hrs, Average Depth at Peak Storage= 0.43'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 90.0' Slope= 0.0120 '/'
Inlet Invert= 203.24', Outlet Invert= 202.16'



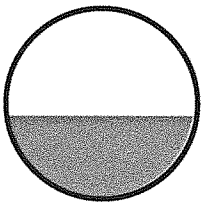
Reach 5R: DMH5-DMH6

Inflow Area = 4.426 ac, Inflow Depth = 0.93" for 25yr event
Inflow = 2.87 cfs @ 12.17 hrs, Volume= 0.344 af
Outflow = 2.81 cfs @ 12.20 hrs, Volume= 0.344 af, Atten= 2%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.61 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.52 fps, Avg. Travel Time= 1.4 min

Peak Storage= 110 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 7.37 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 215.0' Slope= 0.0130 '/'
Inlet Invert= 201.91', Outlet Invert= 199.11'



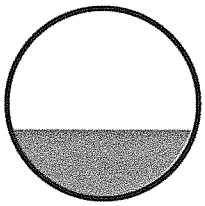
Reach 6R: DMH6-DMH7

Inflow Area = 7.856 ac, Inflow Depth = 0.77" for 25yr event
Inflow = 3.64 cfs @ 12.20 hrs, Volume= 0.503 af
Outflow = 3.64 cfs @ 12.21 hrs, Volume= 0.503 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.05 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.24 fps, Avg. Travel Time= 0.2 min

Peak Storage= 21 cf @ 12.20 hrs, Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 12.92 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 51.0' Slope= 0.0400 '/'
Inlet Invert= 199.01', Outlet Invert= 196.97'



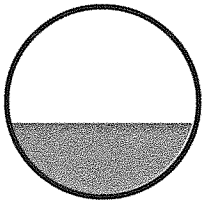
Reach 7R: DMH7-DMH8

Inflow Area = 9.590 ac, Inflow Depth = 0.96" for 25yr event
Inflow = 6.25 cfs @ 12.15 hrs, Volume= 0.769 af
Outflow = 6.23 cfs @ 12.16 hrs, Volume= 0.769 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.88 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.04 fps, Avg. Travel Time= 0.5 min

Peak Storage= 76 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.65 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 120.0' Slope= 0.0350 '/'
Inlet Invert= 196.72', Outlet Invert= 192.52'



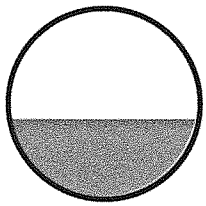
Reach 8R: DMH8-DMH9

Inflow Area = 10.310 ac, Inflow Depth = 0.98" for 25yr event
Inflow = 6.97 cfs @ 12.15 hrs, Volume= 0.842 af
Outflow = 6.94 cfs @ 12.16 hrs, Volume= 0.842 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.96 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.04 fps, Avg. Travel Time= 0.8 min

Peak Storage= 137 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.63'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.09 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 196.0' Slope= 0.0330 '/'
Inlet Invert= 190.52', Outlet Invert= 184.05'



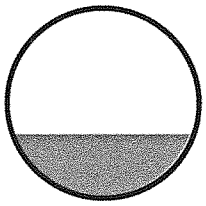
Reach 9R: DMH9-DMH10

Inflow Area = 12.210 ac, Inflow Depth = 1.00" for 25yr event
Inflow = 8.69 cfs @ 12.16 hrs, Volume= 1.016 af
Outflow = 8.63 cfs @ 12.17 hrs, Volume= 1.016 af, Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.39 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 3.72 fps, Avg. Travel Time= 1.1 min

Peak Storage= 225 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.67'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 35.77 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 242.0' Slope= 0.0250 '/'
Inlet Invert= 183.55', Outlet Invert= 177.50'



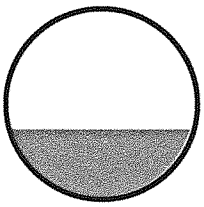
Reach 10R: DMH10-DMH50

Inflow Area = 14.320 ac, Inflow Depth = 0.96" for 25yr event
Inflow = 9.62 cfs @ 12.16 hrs, Volume= 1.145 af
Outflow = 9.61 cfs @ 12.17 hrs, Volume= 1.145 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.20 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.67 fps, Avg. Travel Time= 0.2 min

Peak Storage= 52 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 33.55 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 50.0' Slope= 0.0220 '/'
Inlet Invert= 177.40', Outlet Invert= 176.30'



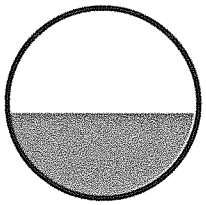
Reach 11R: DMH11-DMH12

Inflow Area = 2.550 ac, Inflow Depth = 0.97" for 25yr event
Inflow = 1.46 cfs @ 12.15 hrs, Volume= 0.205 af
Outflow = 1.46 cfs @ 12.15 hrs, Volume= 0.205 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.31 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.03 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 2.0' Slope= 0.0100 '/'
Inlet Invert= 173.95', Outlet Invert= 173.93'



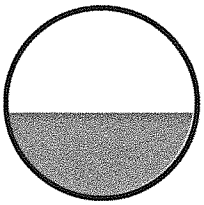
Reach 12R: DMH12-DMH13

Inflow Area = 2.550 ac, Inflow Depth = 0.97" for 25yr event
Inflow = 1.46 cfs @ 12.15 hrs, Volume= 0.205 af
Outflow = 1.47 cfs @ 12.17 hrs, Volume= 0.205 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.32 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.01 fps, Avg. Travel Time= 1.2 min

Peak Storage= 50 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 148.0' Slope= 0.0100 '/'
Inlet Invert= 173.83', Outlet Invert= 172.35'



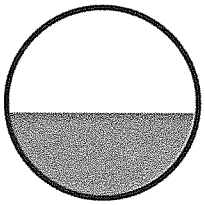
Reach 13R: DMH13-FES

Inflow Area = 2.550 ac, Inflow Depth = 0.97" for 25yr event
Inflow = 1.47 cfs @ 12.17 hrs, Volume= 0.205 af
Outflow = 1.46 cfs @ 12.17 hrs, Volume= 0.205 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.31 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.00 fps, Avg. Travel Time= 0.2 min

Peak Storage= 8 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 25.0' Slope= 0.0100 '/'
Inlet Invert= 172.25', Outlet Invert= 172.00'



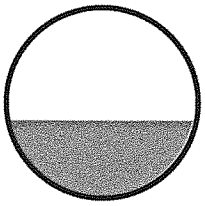
Reach 50R: DMH50-DMH51

Inflow Area = 15.974 ac, Inflow Depth = 0.98" for 25yr event
Inflow = 11.11 cfs @ 12.16 hrs, Volume= 1.308 af
Outflow = 11.06 cfs @ 12.17 hrs, Volume= 1.308 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.25 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.30 fps, Avg. Travel Time= 0.7 min

Peak Storage= 171 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.81'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 142.0' Slope= 0.0200 '/'
Inlet Invert= 176.30', Outlet Invert= 173.46'



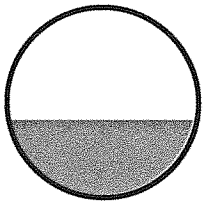
Reach 51R: DMH51-DMH55

Inflow Area = 15.974 ac, Inflow Depth = 0.98" for 25yr event
Inflow = 11.06 cfs @ 12.17 hrs, Volume= 1.308 af
Outflow = 11.05 cfs @ 12.17 hrs, Volume= 1.308 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.22 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.30 fps, Avg. Travel Time= 0.1 min

Peak Storage= 18 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.81'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 15.0' Slope= 0.0200 '/'
Inlet Invert= 173.36', Outlet Invert= 173.06'



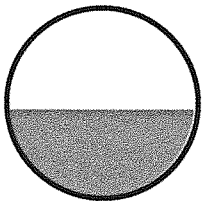
Reach 52R: DMH52-DMH55

Inflow Area = 2.562 ac, Inflow Depth = 2.15" for 25yr event
Inflow = 6.07 cfs @ 12.10 hrs, Volume= 0.458 af
Outflow = 6.03 cfs @ 12.11 hrs, Volume= 0.458 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.83 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.80 fps, Avg. Travel Time= 0.4 min

Peak Storage= 52 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 13.70 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 92.0' Slope= 0.0450 '/'
Inlet Invert= 177.95', Outlet Invert= 173.81'



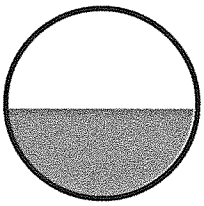
Reach 53R: DMH53-DMH52

Inflow Area = 1.870 ac, Inflow Depth = 1.91" for 25yr event
Inflow = 3.93 cfs @ 12.10 hrs, Volume= 0.298 af
Outflow = 3.89 cfs @ 12.11 hrs, Volume= 0.298 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.82 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.20 fps, Avg. Travel Time= 0.6 min

Peak Storage= 52 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 143.0' Slope= 0.0600 '/'
Inlet Invert= 186.78', Outlet Invert= 178.20'



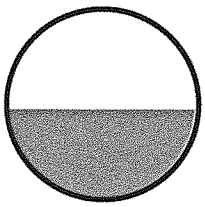
Reach 54R: DMH54-DMH53

Inflow Area = 1.870 ac, Inflow Depth = 1.91" for 25yr event
Inflow = 3.96 cfs @ 12.10 hrs, Volume= 0.298 af
Outflow = 3.93 cfs @ 12.10 hrs, Volume= 0.298 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.84 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.21 fps, Avg. Travel Time= 0.4 min

Peak Storage= 37 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 100.0' Slope= 0.0600 '/'
Inlet Invert= 192.88', Outlet Invert= 186.88'



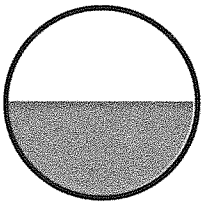
Reach 55R: DMH55-DMH56

Inflow Area = 18.536 ac, Inflow Depth = 1.14" for 25yr event
Inflow = 16.31 cfs @ 12.15 hrs, Volume= 1.767 af
Outflow = 16.29 cfs @ 12.15 hrs, Volume= 1.767 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.24 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.57 fps, Avg. Travel Time= 0.4 min

Peak Storage= 121 cf @ 12.15 hrs, Average Depth at Peak Storage= 1.01'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 76.0' Slope= 0.0200 '/'
Inlet Invert= 172.96', Outlet Invert= 171.44'



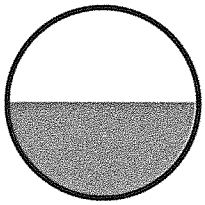
Reach 56R: DMH56-FES

Inflow Area = 18.536 ac, Inflow Depth = 1.14" for 25yr event
Inflow = 16.29 cfs @ 12.15 hrs, Volume= 1.767 af
Outflow = 16.28 cfs @ 12.15 hrs, Volume= 1.767 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.23 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.57 fps, Avg. Travel Time= 0.1 min

Peak Storage= 51 cf @ 12.15 hrs, Average Depth at Peak Storage= 1.01'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 32.0' Slope= 0.0200 '/'
Inlet Invert= 171.34', Outlet Invert= 170.70'



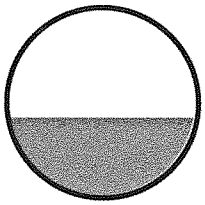
Reach 60R: DMH60-DMH7

Inflow Area = 1.734 ac, Inflow Depth = 1.84" for 25yr event
Inflow = 3.23 cfs @ 12.10 hrs, Volume= 0.266 af
Outflow = 3.22 cfs @ 12.10 hrs, Volume= 0.266 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.28 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.82 fps, Avg. Travel Time= 0.1 min

Peak Storage= 10 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 33.0' Slope= 0.0600 '/'
Inlet Invert= 199.20', Outlet Invert= 197.22'



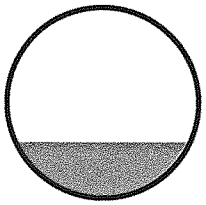
Reach 61R: DMH61-DMH60

Inflow Area = 1.102 ac, Inflow Depth = 1.12" for 25yr event
Inflow = 1.06 cfs @ 12.11 hrs, Volume= 0.103 af
Outflow = 1.01 cfs @ 12.13 hrs, Volume= 0.103 af, Atten= 4%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.47 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.22 fps, Avg. Travel Time= 1.4 min

Peak Storage= 34 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.63 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 180.0' Slope= 0.0250 '/'
Inlet Invert= 203.80', Outlet Invert= 199.30'



Pond 1P: POND 1

Inflow Area = 23.536 ac, Inflow Depth = 1.08" for 25yr event
Inflow = 19.92 cfs @ 12.16 hrs, Volume= 2.123 af
Outflow = 6.66 cfs @ 12.64 hrs, Volume= 2.123 af, Atten= 67%, Lag= 28.8 min
Discarded = 6.66 cfs @ 12.64 hrs, Volume= 2.123 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 169.21' @ 12.64 hrs Surf.Area= 0.330 ac Storage= 0.375 af

Plug-Flow detention time= 14.5 min calculated for 2.120 af (100% of inflow)
Center-of-Mass det. time= 14.4 min (907.6 - 893.2)

Volume	Invert	Avail.Storage	Storage Description
#1	168.00'	1.427 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
168.00	0.290	0.000	0.000
170.00	0.357	0.647	0.647
172.00	0.423	0.780	1.427

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**20.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=6.66 cfs @ 12.64 hrs HW=169.21' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 6.66 cfs)

Pond 12P: SFB 10

Inflow Area = 21.086 ac, Inflow Depth = 1.12" for 25yr event
Inflow = 17.73 cfs @ 12.15 hrs, Volume= 1.972 af
Outflow = 17.82 cfs @ 12.16 hrs, Volume= 1.911 af, Atten= 0%, Lag= 0.4 min
Primary = 17.82 cfs @ 12.16 hrs, Volume= 1.911 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 171.25' @ 12.16 hrs Surf.Area= 0.039 ac Storage= 0.078 af

Plug-Flow detention time= 25.3 min calculated for 1.911 af (97% of inflow)
Center-of-Mass det. time= 8.6 min (892.8 - 884.2)

Volume	Invert	Avail.Storage	Storage Description
#1	168.00'	0.110 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
168.00	0.011	0.000	0.000
170.00	0.026	0.037	0.037
172.00	0.047	0.073	0.110

Device	Routing	Invert	Outlet Devices
#1	Primary	170.80'	**20.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=17.54 cfs @ 12.16 hrs HW=171.24' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 17.54 cfs @ 1.97 fps)

Link 74L: COMBINE-HYDROGRAPHS

Inflow Area = 5.574 ac, Inflow Depth = 0.51" for 25yr event
Inflow = 1.28 cfs @ 12.33 hrs, Volume= 0.236 af
Primary = 1.28 cfs @ 12.33 hrs, Volume= 0.236 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

50 YR POST-DEVELOPMENT

Subcatchment 1S: CB1

Runoff = 0.45 cfs @ 12.10 hrs, Volume= 0.033 af, Depth= 2.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.070	98	Paved parking & roofs
0.110	39	>75% Grass cover, Good, HSG A
0.180	62	Weighted Average
0.110		Pervious Area
0.070		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC.**
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 2S: CB2

Runoff = 0.94 cfs @ 12.12 hrs, Volume= 0.084 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.400	39	>75% Grass cover, Good, HSG A
0.140	30	Woods, Good, HSG A
0.720	52	Weighted Average
0.540		Pervious Area
0.180		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	26	0.0380	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.2	49	0.4760	3.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	48	0.1460	2.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	21	0.0470	1.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	100	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
7.3	273	Total			

Subcatchment 3S: CB3

Runoff = 0.62 cfs @ 12.23 hrs, Volume= 0.071 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.140	98	Paved parking & roofs
0.480	39	>75% Grass cover, Good, HSG A
0.070	30	Woods, Good, HSG A
0.690	50	Weighted Average
0.550		Pervious Area
0.140		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.6	50	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	11	0.0550	4.76		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	236	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
13.8	354	Total			

Subcatchment 4S: CB4

Runoff = 0.54 cfs @ 12.17 hrs, Volume= 0.071 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.170	98	Paved parking & roofs
0.350	39	>75% Grass cover, Good, HSG A
0.520	30	Woods, Good, HSG A
1.040	44	Weighted Average
0.870		Pervious Area
0.170		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	26	0.0560	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.4	67	0.3000	2.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	72	0.1290	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	154	0.0455	1.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	24	0.0833	5.86		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	95	0.0158	2.55		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
8.4	453	Total			

Subcatchment 5S: CB5

Runoff = 0.80 cfs @ 12.11 hrs, Volume= 0.067 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.130	98	Paved parking & roofs
0.450	39	>75% Grass cover, Good, HSG A
0.580	52	Weighted Average
0.450		Pervious Area
0.130		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC.**
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 6S: CB6

Runoff = 1.60 cfs @ 12.12 hrs, Volume= 0.141 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.276	98	Paved parking & roofs
0.940	39	>75% Grass cover, Good, HSG A
1.216	52	Weighted Average
0.940		Pervious Area
0.276		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	14	0.2140	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.7	34	0.0588	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.8	104	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	25	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	19	0.0526	1.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	136	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
7.1	361	Total			

Subcatchment 7S: CB7

Runoff = 0.48 cfs @ 12.43 hrs, Volume= 0.095 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.800	39	>75% Grass cover, Good, HSG A
1.040	30	Woods, Good, HSG A
2.020	40	Weighted Average
1.840		Pervious Area
0.180		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	33	0.0940	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	83	0.2650	2.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	75	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	50	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	86	0.0930	1.52		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	12	0.3330	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	34	0.0059	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	114	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	120	0.0167	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	61	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
14.5	675	Total			

Subcatchment 8S: CB6

Runoff = 1.25 cfs @ 12.19 hrs, Volume= 0.137 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.230	98	Paved parking & roofs
1.180	39	>75% Grass cover, Good, HSG A
1.410	49	Weighted Average
1.180		Pervious Area
0.230		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	20	0.0250	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
4.0	30	0.0168	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.6	89	0.0168	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	63	0.0317	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	19	0.0667	5.24		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	14	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	171	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
10.8	435	Total			

Subcatchment 9S: CB9

Runoff = 0.52 cfs @ 12.10 hrs, Volume= 0.039 af, Depth= 2.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.080	98	Paved parking & roofs
0.120	39	>75% Grass cover, Good, HSG A
0.200	63	Weighted Average
0.120		Pervious Area
0.080		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC.**
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 10S: CB10

Runoff = 0.66 cfs @ 12.11 hrs, Volume= 0.057 af, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.110	98	Paved parking & roofs
0.410	39	>75% Grass cover, Good, HSG A
0.520	51	Weighted Average
0.410		Pervious Area
0.110		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	32	0.0310	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0430	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	28	0.0350	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.9					**Direct Entry, MIN. TC**
6.0	211	Total			

Subcatchment 11S: CB11

Runoff = 1.33 cfs @ 12.15 hrs, Volume= 0.120 af, Depth= 1.55"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.230	98	Paved parking & roofs
0.700	39	>75% Grass cover, Good, HSG A
0.930	54	Weighted Average
0.700		Pervious Area
0.230		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	7	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	45	0.0440	1.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	28	0.0650	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	138	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
8.9	275	Total			

Subcatchment 12S: CB12

Runoff = 1.33 cfs @ 12.11 hrs, Volume= 0.113 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.760	39	>75% Grass cover, Good, HSG A
0.970	52	Weighted Average
0.760		Pervious Area
0.210		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	50	0.0480	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0480	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	27	0.2220	3.30		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	23	0.0870	2.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	80	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	45	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.7					**Direct Entry, MIN. TC**
6.0	264	Total			

Subcatchment 13S: CB13

Runoff = 0.63 cfs @ 12.14 hrs, Volume= 0.074 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.110	98	Paved parking & roofs
0.890	39	>75% Grass cover, Good, HSG A
1.000	45	Weighted Average
0.890		Pervious Area
0.110		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	34	0.1230	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.0	6	0.2000	3.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	12	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	94	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	45	0.1330	2.55		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	194	0.0520	1.60		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	110	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.6	502	Total			

Subcatchment 14S: CB14

Runoff = 1.20 cfs @ 12.10 hrs, Volume= 0.108 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.190	98	Paved parking & roofs
0.920	39	>75% Grass cover, Good, HSG A
1.110	49	Weighted Average
0.920		Pervious Area
0.190		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	50	0.5000	0.54		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	17	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	30	0.2000	3.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	36	0.0560	1.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	51	0.0390	1.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	32	0.1030	2.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	16	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	17	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	107	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
1.0					**Direct Entry, MIN. TC.**
5.3	371	Total			

Subcatchment 15S: CB15

Runoff = 0.70 cfs @ 12.10 hrs, Volume= 0.052 af, Depth= 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.110	98	Paved parking & roofs
0.130	39	>75% Grass cover, Good, HSG A
0.240	66	Weighted Average
0.130		Pervious Area
0.110		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	5	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	5	Total			

Subcatchment 16S: CB16

Runoff = 0.90 cfs @ 12.10 hrs, Volume= 0.071 af, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.140	98	Paved parking & roofs
0.360	39	>75% Grass cover, Good, HSG A
0.500	56	Weighted Average
0.360		Pervious Area
0.140		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	11	0.0200	6.42	5.04	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	11	Total			

Subcatchment 17S: CB17

Runoff = 1.18 cfs @ 12.27 hrs, Volume= 0.154 af, Depth= 1.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.340	98	Paved parking & roofs
0.900	39	>75% Grass cover, Good, HSG A
0.570	30	Woods, Good, HSG A
1.810	47	Weighted Average
1.470		Pervious Area
0.340		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	31	0.0130	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	73	0.1370	1.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	70	0.0286	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	33	0.3030	2.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	57	0.3030	3.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	10	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	22	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	83	0.0720	5.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	102	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	134	0.0050	3.21	2.52	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
14.7	615	Total			

Subcatchment 50S: CB50

Runoff = 0.91 cfs @ 12.09 hrs, Volume= 0.068 af, Depth= 4.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.140	98	Paved parking & roofs
0.030	39	>75% Grass cover, Good, HSG A
0.170	88	Weighted Average
0.030		Pervious Area
0.140		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	7	0.0200	6.42	5.04	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 51S: CB51

Runoff = 1.47 cfs @ 12.14 hrs, Volume= 0.144 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.256	98	Paved parking & roofs
1.228	39	>75% Grass cover, Good, HSG A
1.484	49	Weighted Average
1.228		Pervious Area
0.256		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	22	0.0230	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	36	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	12	0.3330	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	74	0.0810	1.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	55	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	89	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	55	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	111	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	14	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
7.4	468	Total			

Subcatchment 52S: CB52

Runoff = 1.37 cfs @ 12.09 hrs, Volume= 0.100 af, Depth= 3.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.100	39	>75% Grass cover, Good, HSG A
0.310	79	Weighted Average
0.100		Pervious Area
0.210		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	7	0.0466	9.79	7.69	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 53S: CB53

Runoff = 1.30 cfs @ 12.09 hrs, Volume= 0.094 af, Depth= 2.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.201	98	Paved parking & roofs
0.181	39	>75% Grass cover, Good, HSG A
0.382	70	Weighted Average
0.181		Pervious Area
0.201		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9					**Direct Entry, MIN. TC**
0.1	14	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	14	Total			

Subcatchment 54S: CB54

Runoff = 1.76 cfs @ 12.10 hrs, Volume= 0.129 af, Depth= 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.274	98	Paved parking & roofs
0.326	39	>75% Grass cover, Good, HSG A
0.600	66	Weighted Average
0.326		Pervious Area
0.274		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	6	0.0233	6.92	5.44	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	6	Total			

Subcatchment 55S: CB55

Runoff = 3.29 cfs @ 12.10 hrs, Volume= 0.245 af, Depth= 2.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.526	98	Paved parking & roofs
0.744	39	>75% Grass cover, Good, HSG A
1.270	63	Weighted Average
0.744		Pervious Area
0.526		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	14	0.0200	6.42	5.04	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0					**Direct Entry, MIN. TC**
6.0	14	Total			

Subcatchment 60S: CB60

Runoff = 1.38 cfs @ 12.09 hrs, Volume= 0.100 af, Depth= 3.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.212	98	Paved parking & roofs
0.118	39	>75% Grass cover, Good, HSG A
0.330	77	Weighted Average
0.118		Pervious Area
0.212		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	13	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	13	Total			

Subcatchment 61S: CB61

Runoff = 1.30 cfs @ 12.09 hrs, Volume= 0.095 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.200	98	Paved parking & roofs
0.102	39	>75% Grass cover, Good, HSG A
0.302	78	Weighted Average
0.102		Pervious Area
0.200		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	24	0.0323	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	13	0.0323	1.26		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	84	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	11	0.0120	4.97	3.90	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
2.8					**Direct Entry, MIN. TC**
6.0	132	Total			

Subcatchment 62S: CB62

Runoff = 1.08 cfs @ 12.09 hrs, Volume= 0.078 af, Depth= 3.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.164	98	Paved parking & roofs
0.116	39	>75% Grass cover, Good, HSG A
0.280	74	Weighted Average
0.116		Pervious Area
0.164		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.1	14	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.1	14	Total			

Subcatchment 63S: CB63

Runoff = 0.45 cfs @ 12.15 hrs, Volume= 0.056 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.109	98	Paved parking & roofs
0.435	39	>75% Grass cover, Good, HSG A
0.278	30	Woods, Good, HSG A
0.822	44	Weighted Average
0.713		Pervious Area
0.109		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	35	0.0100	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.6	53	0.0380	1.36		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	53	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	6	0.0233	6.92	5.44	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.4	147	Total			

Subcatchment 70S: 70S

Runoff = 3.14 cfs @ 12.13 hrs, Volume= 0.285 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.168	98	Paved parking & roofs
1.924	39	>75% Grass cover, Good, HSG A
0.358	98	POND
2.450	52	Weighted Average
1.924		Pervious Area
0.526		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	31	0.0320	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.2	170	0.0350	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	45	0.0910	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	85	0.0235	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.5	371	Total			

Subcatchment 71S: 71S

Runoff = 0.40 cfs @ 12.35 hrs, Volume= 0.080 af, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.160	98	Paved parking & roofs
0.630	39	>75% Grass cover, Good, HSG A
1.120	30	Woods, Good, HSG A
1.910	39	Weighted Average
1.750		Pervious Area
0.160		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	33	0.0910	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.5	221	0.1270	2.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	110	0.0180	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	97	0.0206	1.00		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.7	501	Total			

Subcatchment 72S: 72S

Runoff = 0.61 cfs @ 12.17 hrs, Volume= 0.076 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.200	30	Woods, Good, HSG A
0.830	49	Desert shrub range, Good, HSG A
1.030	45	Weighted Average
1.030		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	50	0.0110	0.13		**Sheet Flow,** Range n= 0.130 P2= 3.20"
0.4	50	0.0465	2.16		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
0.1	24	0.0833	2.89		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
2.0	152	0.0164	1.28		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
8.9	276	Total			

Subcatchment 73S: 73S

Runoff = 1.49 cfs @ 12.20 hrs, Volume= 0.194 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50yr Rainfall=6.20"

Area (ac)	CN	Description
0.171	98	Paved parking & roofs
0.975	39	>75% Grass cover, Good, HSG A
0.528	30	Woods, Good, HSG A
0.960	49	Desert shrub range, Good, HSG A
2.634	45	Weighted Average
2.463		Pervious Area
0.171		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	36	0.0555	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	157	0.3000	2.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	54	0.3890	3.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	37	0.2160	3.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	23	0.1310	3.62		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
2.1	185	0.0210	1.45		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
10.0	492	Total			

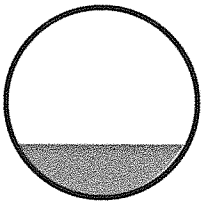
Reach 1R: DMH1-DMH2

Inflow Area = 0.900 ac, Inflow Depth = 1.56" for 50yr event
Inflow = 1.38 cfs @ 12.12 hrs, Volume= 0.117 af
Outflow = 1.35 cfs @ 12.12 hrs, Volume= 0.117 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.55 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.02 fps, Avg. Travel Time= 0.8 min

Peak Storage= 27 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.97 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 148.0' Slope= 0.0500 '/'
Inlet Invert= 214.44', Outlet Invert= 207.04'



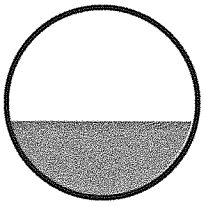
Reach 2R: DMH2-DMH3

Inflow Area = 0.900 ac, Inflow Depth = 1.56" for 50yr event
Inflow = 1.35 cfs @ 12.12 hrs, Volume= 0.117 af
Outflow = 1.32 cfs @ 12.14 hrs, Volume= 0.117 af, Atten= 2%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.49 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.82 fps, Avg. Travel Time= 0.9 min

Peak Storage= 28 cf @ 12.13 hrs, Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 95.0' Slope= 0.0120 '/'
Inlet Invert= 207.04', Outlet Invert= 205.90'



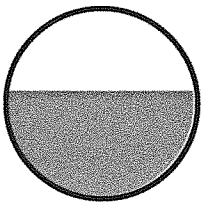
Reach 3R: DMH3-DMH4

Inflow Area = 2.630 ac, Inflow Depth = 1.18" for 50yr event
Inflow = 2.38 cfs @ 12.16 hrs, Volume= 0.259 af
Outflow = 2.32 cfs @ 12.19 hrs, Volume= 0.259 af, Atten= 3%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.19 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.29 fps, Avg. Travel Time= 1.5 min

Peak Storage= 94 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.56'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 205.0' Slope= 0.0120 '/'
Inlet Invert= 205.80', Outlet Invert= 203.34'



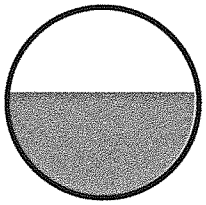
Reach 4R: DMH4-DMH5

Inflow Area = 2.630 ac, Inflow Depth = 1.18" for 50yr event
Inflow = 2.32 cfs @ 12.19 hrs, Volume= 0.259 af
Outflow = 2.31 cfs @ 12.20 hrs, Volume= 0.259 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.18 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.28 fps, Avg. Travel Time= 0.7 min

Peak Storage= 40 cf @ 12.20 hrs, Average Depth at Peak Storage= 0.56'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 90.0' Slope= 0.0120 '/'
Inlet Invert= 203.24', Outlet Invert= 202.16'



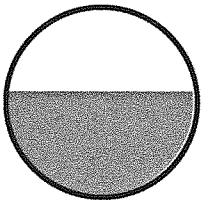
Reach 5R: DMH5-DMH6

Inflow Area = 4.426 ac, Inflow Depth = 1.27" for 50yr event
Inflow = 4.39 cfs @ 12.16 hrs, Volume= 0.468 af
Outflow = 4.35 cfs @ 12.17 hrs, Volume= 0.468 af, Atten= 1%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.26 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.68 fps, Avg. Travel Time= 1.3 min

Peak Storage= 151 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.70'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 7.37 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 215.0' Slope= 0.0130 '/'
Inlet Invert= 201.91', Outlet Invert= 199.11'



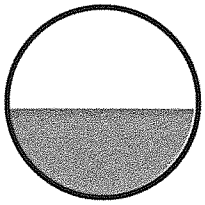
Reach 6R: DMH6-DMH7

Inflow Area = 7.856 ac, Inflow Depth = 1.07" for 50yr event
Inflow = 5.73 cfs @ 12.19 hrs, Volume= 0.700 af
Outflow = 5.73 cfs @ 12.19 hrs, Volume= 0.700 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.21 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.54 fps, Avg. Travel Time= 0.2 min

Peak Storage= 29 cf @ 12.19 hrs, Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 12.92 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 51.0' Slope= 0.0400 '/'
Inlet Invert= 199.01', Outlet Invert= 196.97'



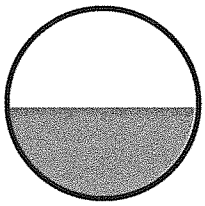
Reach 7R: DMH7-DMH8

Inflow Area = 9.590 ac, Inflow Depth = 1.29" for 50yr event
Inflow = 9.12 cfs @ 12.15 hrs, Volume= 1.029 af
Outflow = 9.10 cfs @ 12.16 hrs, Volume= 1.029 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.92 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.28 fps, Avg. Travel Time= 0.5 min

Peak Storage= 100 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.72'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.65 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 120.0' Slope= 0.0350 '/'
Inlet Invert= 196.72', Outlet Invert= 192.52'



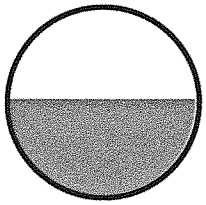
Reach 8R: DMH8-DMH9

Inflow Area = 10.310 ac, Inflow Depth = 1.31" for 50yr event
Inflow = 10.11 cfs @ 12.15 hrs, Volume= 1.125 af
Outflow = 10.07 cfs @ 12.16 hrs, Volume= 1.125 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.96 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.29 fps, Avg. Travel Time= 0.8 min

Peak Storage= 181 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.78'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.09 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 196.0' Slope= 0.0330 '/'
Inlet Invert= 190.52', Outlet Invert= 184.05'



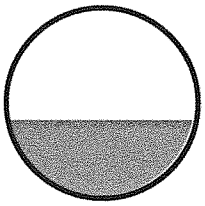
Reach 9R: DMH9-DMH10

Inflow Area = 12.210 ac, Inflow Depth = 1.33" for 50yr event
Inflow = 12.56 cfs @ 12.15 hrs, Volume= 1.358 af
Outflow = 12.48 cfs @ 12.16 hrs, Volume= 1.358 af, Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.39 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 3.94 fps, Avg. Travel Time= 1.0 min

Peak Storage= 293 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.82'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 35.77 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 242.0' Slope= 0.0250 '/'
Inlet Invert= 183.55', Outlet Invert= 177.50'



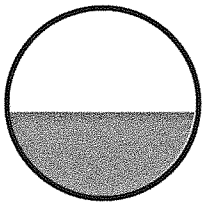
Reach 10R: DMH10-DMH50

Inflow Area = 14.320 ac, Inflow Depth = 1.29" for 50yr event
Inflow = 14.10 cfs @ 12.16 hrs, Volume= 1.540 af
Outflow = 14.08 cfs @ 12.16 hrs, Volume= 1.540 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.21 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.89 fps, Avg. Travel Time= 0.2 min

Peak Storage= 69 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.90'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 33.55 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 50.0' Slope= 0.0220 '/'
Inlet Invert= 177.40', Outlet Invert= 176.30'



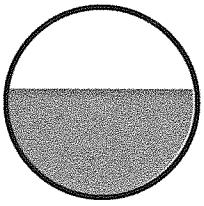
Reach 11R: DMH11-DMH12

Inflow Area = 2.550 ac, Inflow Depth = 1.31" for 50yr event
Inflow = 2.21 cfs @ 12.15 hrs, Volume= 0.277 af
Outflow = 2.21 cfs @ 12.15 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.78 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.16 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.57'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 2.0' Slope= 0.0100 '/'
Inlet Invert= 173.95', Outlet Invert= 173.93'



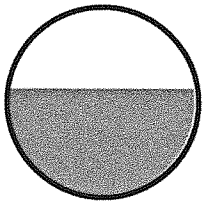
Reach 12R: DMH12-DMH13

Inflow Area = 2.550 ac, Inflow Depth = 1.31" for 50yr event
Inflow = 2.21 cfs @ 12.15 hrs, Volume= 0.277 af
Outflow = 2.22 cfs @ 12.17 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.78 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.14 fps, Avg. Travel Time= 1.2 min

Peak Storage= 69 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.57'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 148.0' Slope= 0.0100 '/'
Inlet Invert= 173.83', Outlet Invert= 172.35'



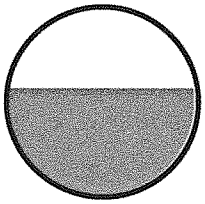
Reach 13R: DMH13-FES

Inflow Area = 2.550 ac, Inflow Depth = 1.31" for 50yr event
Inflow = 2.22 cfs @ 12.17 hrs, Volume= 0.277 af
Outflow = 2.21 cfs @ 12.17 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.77 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.13 fps, Avg. Travel Time= 0.2 min

Peak Storage= 12 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.57'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 25.0' Slope= 0.0100 '/'
Inlet Invert= 172.25', Outlet Invert= 172.00'



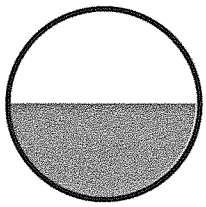
Reach 50R: DMH50-DMH51

Inflow Area = 15.974 ac, Inflow Depth = 1.32" for 50yr event
Inflow = 16.21 cfs @ 12.15 hrs, Volume= 1.752 af
Outflow = 16.15 cfs @ 12.16 hrs, Volume= 1.752 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.22 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.51 fps, Avg. Travel Time= 0.7 min

Peak Storage= 226 cf @ 12.16 hrs, Average Depth at Peak Storage= 1.01'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 142.0' Slope= 0.0200 '/'
Inlet Invert= 176.30', Outlet Invert= 173.46'



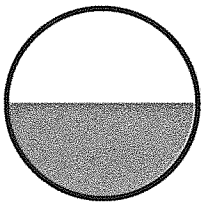
Reach 51R: DMH51-DMH55

Inflow Area = 15.974 ac, Inflow Depth = 1.32" for 50yr event
Inflow = 16.15 cfs @ 12.16 hrs, Volume= 1.752 af
Outflow = 16.14 cfs @ 12.16 hrs, Volume= 1.752 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.20 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.51 fps, Avg. Travel Time= 0.1 min

Peak Storage= 24 cf @ 12.16 hrs, Average Depth at Peak Storage= 1.01'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 15.0' Slope= 0.0200 '/'
Inlet Invert= 173.36', Outlet Invert= 173.06'



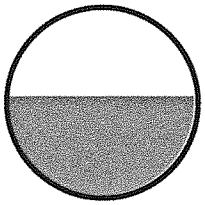
Reach 52R: DMH52-DMH55

Inflow Area = 2.562 ac, Inflow Depth = 2.66" for 50yr event
Inflow = 7.63 cfs @ 12.10 hrs, Volume= 0.569 af
Outflow = 7.58 cfs @ 12.11 hrs, Volume= 0.569 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.46 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.98 fps, Avg. Travel Time= 0.4 min

Peak Storage= 61 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.67'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 13.70 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 92.0' Slope= 0.0450 '/'
Inlet Invert= 177.95', Outlet Invert= 173.81'



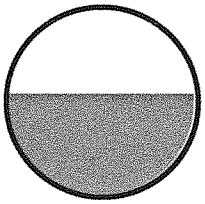
Reach 53R: DMH53-DMH52

Inflow Area = 1.870 ac, Inflow Depth = 2.40" for 50yr event
Inflow = 5.03 cfs @ 12.10 hrs, Volume= 0.375 af
Outflow = 4.98 cfs @ 12.11 hrs, Volume= 0.375 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.50 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.42 fps, Avg. Travel Time= 0.5 min

Peak Storage= 63 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 143.0' Slope= 0.0600 '/'
Inlet Invert= 186.78', Outlet Invert= 178.20'



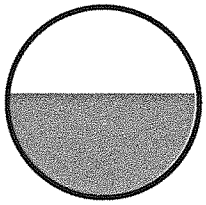
Reach 54R: DMH54-DMH53

Inflow Area = 1.870 ac, Inflow Depth = 2.40" for 50yr event
Inflow = 5.06 cfs @ 12.10 hrs, Volume= 0.375 af
Outflow = 5.03 cfs @ 12.10 hrs, Volume= 0.375 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.52 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.43 fps, Avg. Travel Time= 0.4 min

Peak Storage= 44 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 100.0' Slope= 0.0600 '/'
Inlet Invert= 192.88', Outlet Invert= 186.88'



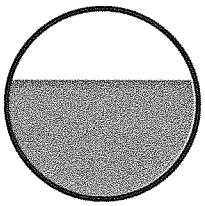
Reach 55R: DMH55-DMH56

Inflow Area = 18.536 ac, Inflow Depth = 1.50" for 50yr event
Inflow = 22.81 cfs @ 12.14 hrs, Volume= 2.321 af
Outflow = 22.78 cfs @ 12.15 hrs, Volume= 2.321 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.06 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.79 fps, Avg. Travel Time= 0.3 min

Peak Storage= 157 cf @ 12.14 hrs, Average Depth at Peak Storage= 1.25'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 76.0' Slope= 0.0200 '/'
Inlet Invert= 172.96', Outlet Invert= 171.44'



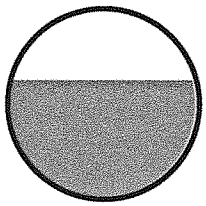
Reach 56R: DMH56-FES

Inflow Area = 18.536 ac, Inflow Depth = 1.50" for 50yr event
Inflow = 22.78 cfs @ 12.15 hrs, Volume= 2.321 af
Outflow = 22.76 cfs @ 12.15 hrs, Volume= 2.321 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.06 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.79 fps, Avg. Travel Time= 0.1 min

Peak Storage= 66 cf @ 12.15 hrs, Average Depth at Peak Storage= 1.25'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 32.0' Slope= 0.0200 '/'
Inlet Invert= 171.34', Outlet Invert= 170.70'



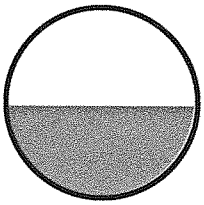
Reach 60R: DMH60-DMH7

Inflow Area = 1.734 ac, Inflow Depth = 2.28" for 50yr event
Inflow = 4.09 cfs @ 12.10 hrs, Volume= 0.329 af
Outflow = 4.08 cfs @ 12.10 hrs, Volume= 0.329 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.93 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.00 fps, Avg. Travel Time= 0.1 min

Peak Storage= 12 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 33.0' Slope= 0.0600 '/'
Inlet Invert= 199.20', Outlet Invert= 197.22'



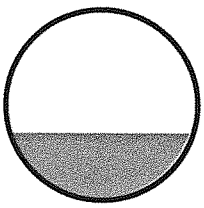
Reach 61R: DMH61-DMH60

Inflow Area = 1.102 ac, Inflow Depth = 1.46" for 50yr event
Inflow = 1.49 cfs @ 12.11 hrs, Volume= 0.134 af
Outflow = 1.45 cfs @ 12.12 hrs, Volume= 0.134 af, Atten= 3%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.04 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.35 fps, Avg. Travel Time= 1.3 min

Peak Storage= 44 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.63 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 180.0' Slope= 0.0250 '/'
Inlet Invert= 203.80', Outlet Invert= 199.30'



Pond 1P: POND 1

Inflow Area = 23.536 ac, Inflow Depth = 1.44" for 50yr event
Inflow = 28.11 cfs @ 12.15 hrs, Volume= 2.822 af
Outflow = 7.20 cfs @ 12.72 hrs, Volume= 2.822 af, Atten= 74%, Lag= 34.0 min
Discarded = 7.20 cfs @ 12.72 hrs, Volume= 2.822 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 169.99' @ 12.72 hrs Surf.Area= 0.357 ac Storage= 0.645 af

Plug-Flow detention time= 27.4 min calculated for 2.818 af (100% of inflow)
Center-of-Mass det. time= 27.4 min (911.0 - 883.5)

Volume	Invert	Avail.Storage	Storage Description
#1	168.00'	1.427 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
168.00	0.290	0.000	0.000
170.00	0.357	0.647	0.647
172.00	0.423	0.780	1.427

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**20.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=7.19 cfs @ 12.72 hrs HW=169.99' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 7.19 cfs)

Pond 12P: SFB 10

Inflow Area = 21.086 ac, Inflow Depth = 1.48" for 50yr event
Inflow = 24.95 cfs @ 12.15 hrs, Volume= 2.599 af
Outflow = 25.05 cfs @ 12.16 hrs, Volume= 2.537 af, Atten= 0%, Lag= 0.4 min
Primary = 25.05 cfs @ 12.16 hrs, Volume= 2.537 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 171.35' @ 12.16 hrs Surf.Area= 0.040 ac Storage= 0.082 af

Plug-Flow detention time= 19.8 min calculated for 2.534 af (98% of inflow)
Center-of-Mass det. time= 7.0 min (883.3 - 876.3)

Volume	Invert	Avail.Storage	Storage Description
#1	168.00'	0.110 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
168.00	0.011	0.000	0.000
170.00	0.026	0.037	0.037
172.00	0.047	0.073	0.110

Device	Routing	Invert	Outlet Devices
#1	Primary	170.80'	**20.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=24.81 cfs @ 12.16 hrs HW=171.35' (Free Discharge)
└—**1=Broad-Crested Rectangular Weir** (Weir Controls 24.81 cfs @ 2.25 fps)

Link 74L: COMBINE-HYDROGRAPHS

Inflow Area = 5.574 ac, Inflow Depth = 0.75" for 50yr event
Inflow = 2.40 cfs @ 12.21 hrs, Volume= 0.350 af
Primary = 2.40 cfs @ 12.21 hrs, Volume= 0.350 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

100 YR POST-DEVELOPMENT

Subcatchment 1S: CB1

Runoff = 0.54 cfs @ 12.10 hrs, Volume= 0.040 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.070	98	Paved parking & roofs
0.110	39	>75% Grass cover, Good, HSG A
0.180	62	Weighted Average
0.110		Pervious Area
0.070		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC.**
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 2S: CB2

Runoff = 1.22 cfs @ 12.12 hrs, Volume= 0.104 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.400	39	>75% Grass cover, Good, HSG A
0.140	30	Woods, Good, HSG A
0.720	52	Weighted Average
0.540		Pervious Area
0.180		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	26	0.0380	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.2	49	0.4760	3.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	48	0.1460	2.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	21	0.0470	1.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	100	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
7.3	273	Total			

Subcatchment 3S: CB3

Runoff = 0.83 cfs @ 12.22 hrs, Volume= 0.090 af, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.140	98	Paved parking & roofs
0.480	39	>75% Grass cover, Good, HSG A
0.070	30	Woods, Good, HSG A
0.690	50	Weighted Average
0.550		Pervious Area
0.140		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.6	50	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	11	0.0550	4.76		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	236	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
13.8	354	Total			

Subcatchment 4S: CB4

Runoff = 0.82 cfs @ 12.16 hrs, Volume= 0.092 af, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.170	98	Paved parking & roofs
0.350	39	>75% Grass cover, Good, HSG A
0.520	30	Woods, Good, HSG A
1.040	44	Weighted Average
0.870		Pervious Area
0.170		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	26	0.0560	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.4	67	0.3000	2.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	72	0.1290	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	154	0.0455	1.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	24	0.0833	5.86		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	95	0.0158	2.55		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
8.4	453	Total			

Subcatchment 5S: CB5

Runoff = 1.03 cfs @ 12.10 hrs, Volume= 0.084 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.130	98	Paved parking & roofs
0.450	39	>75% Grass cover, Good, HSG A
0.580	52	Weighted Average
0.450		Pervious Area
0.130		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC.**
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 6S: CB6

Runoff = 2.08 cfs @ 12.12 hrs, Volume= 0.175 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.276	98	Paved parking & roofs
0.940	39	>75% Grass cover, Good, HSG A
1.216	52	Weighted Average
0.940		Pervious Area
0.276		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	14	0.2140	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.7	34	0.0588	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.8	104	0.0192	0.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	25	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	19	0.0526	1.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	136	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
7.1	361	Total			

Subcatchment 7S: CB7

Runoff = 0.75 cfs @ 12.37 hrs, Volume= 0.129 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.800	39	>75% Grass cover, Good, HSG A
1.040	30	Woods, Good, HSG A
2.020	40	Weighted Average
1.840		Pervious Area
0.180		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	33	0.0940	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	83	0.2650	2.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	75	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	50	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	86	0.0930	1.52		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	12	0.3330	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	34	0.0059	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	114	0.0351	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	120	0.0167	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	61	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
14.5	675	Total			

Subcatchment 8S: CB6

Runoff = 1.69 cfs @ 12.18 hrs, Volume= 0.173 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.230	98	Paved parking & roofs
1.180	39	>75% Grass cover, Good, HSG A
1.410	49	Weighted Average
1.180		Pervious Area
0.230		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	20	0.0250	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
4.0	30	0.0168	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.6	89	0.0168	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	63	0.0317	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	19	0.0667	5.24		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	14	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	171	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
10.8	435	Total			

Subcatchment 9S: CB9

Runoff = 0.62 cfs @ 12.10 hrs, Volume= 0.046 af, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.080	98	Paved parking & roofs
0.120	39	>75% Grass cover, Good, HSG A
0.200	63	Weighted Average
0.120		Pervious Area
0.080		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC.**
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 10S: CB10

Runoff = 0.86 cfs @ 12.11 hrs, Volume= 0.071 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.110	98	Paved parking & roofs
0.410	39	>75% Grass cover, Good, HSG A
0.520	51	Weighted Average
0.410		Pervious Area
0.110		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	32	0.0310	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	47	0.0430	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	28	0.0350	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.9					**Direct Entry, MIN. TC**
6.0	211	Total			

Subcatchment 11S: CB11

Runoff = 1.69 cfs @ 12.14 hrs, Volume= 0.148 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.230	98	Paved parking & roofs
0.700	39	>75% Grass cover, Good, HSG A
0.930	54	Weighted Average
0.700		Pervious Area
0.230		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	7	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	45	0.0440	1.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	28	0.0650	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	138	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
8.9	275	Total			

Subcatchment 12S: CB12

Runoff = 1.73 cfs @ 12.10 hrs, Volume= 0.140 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.760	39	>75% Grass cover, Good, HSG A
0.970	52	Weighted Average
0.760		Pervious Area
0.210		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	50	0.0480	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0480	1.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	27	0.2220	3.30		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	23	0.0870	2.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	80	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	9	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	45	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.7					**Direct Entry, MIN. TC**
6.0	264	Total			

Subcatchment 13S: CB13

Runoff = 0.95 cfs @ 12.12 hrs, Volume= 0.095 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.110	98	Paved parking & roofs
0.890	39	>75% Grass cover, Good, HSG A
1.000	45	Weighted Average
0.890		Pervious Area
0.110		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	34	0.1230	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.0	6	0.2000	3.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	12	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	94	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	45	0.1330	2.55		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	194	0.0520	1.60		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	110	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	7	0.0210	6.57	5.16	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.6	502	Total			

Subcatchment 14S: CB14

Runoff = 1.62 cfs @ 12.10 hrs, Volume= 0.136 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.190	98	Paved parking & roofs
0.920	39	>75% Grass cover, Good, HSG A
1.110	49	Weighted Average
0.920		Pervious Area
0.190		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	50	0.5000	0.54		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	17	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	30	0.2000	3.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	36	0.0560	1.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	51	0.0390	1.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	32	0.1030	2.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	16	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	17	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	107	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	15	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
1.0					**Direct Entry, MIN. TC.**
5.3	371	Total			

Subcatchment 15S: CB15

Runoff = 0.83 cfs @ 12.10 hrs, Volume= 0.061 af, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.110	98	Paved parking & roofs
0.130	39	>75% Grass cover, Good, HSG A
0.240	66	Weighted Average
0.130		Pervious Area
0.110		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	5	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	5	Total			

Subcatchment 16S: CB16

Runoff = 1.13 cfs @ 12.10 hrs, Volume= 0.087 af, Depth= 2.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.140	98	Paved parking & roofs
0.360	39	>75% Grass cover, Good, HSG A
0.500	56	Weighted Average
0.360		Pervious Area
0.140		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	11	0.0200	6.42	5.04	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	11	Total			

Subcatchment 17S: CB17

Runoff = 1.64 cfs @ 12.25 hrs, Volume= 0.197 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.340	98	Paved parking & roofs
0.900	39	>75% Grass cover, Good, HSG A
0.570	30	Woods, Good, HSG A
1.810	47	Weighted Average
1.470		Pervious Area
0.340		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	31	0.0130	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.7	73	0.1370	1.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	70	0.0286	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	33	0.3030	2.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	57	0.3030	3.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	10	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	22	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	83	0.0720	5.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	102	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	134	0.0050	3.21	2.52	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
14.7	615	Total			

Subcatchment 50S: CB50

Runoff = 1.01 cfs @ 12.09 hrs, Volume= 0.076 af, Depth= 5.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.140	98	Paved parking & roofs
0.030	39	>75% Grass cover, Good, HSG A
0.170	88	Weighted Average
0.030		Pervious Area
0.140		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	7	0.0200	6.42	5.04	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 51S: CB51

Runoff = 1.98 cfs @ 12.13 hrs, Volume= 0.182 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.256	98	Paved parking & roofs
1.228	39	>75% Grass cover, Good, HSG A
1.484	49	Weighted Average
1.228		Pervious Area
0.256		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	22	0.0230	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	36	0.1670	2.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	12	0.3330	4.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	74	0.0810	1.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	55	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	89	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	55	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	111	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	14	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
7.4	468	Total			

Subcatchment 52S: CB52

Runoff = 1.56 cfs @ 12.09 hrs, Volume= 0.114 af, Depth= 4.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.100	39	>75% Grass cover, Good, HSG A
0.310	79	Weighted Average
0.100		Pervious Area
0.210		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	7	0.0466	9.79	7.69	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	7	Total			

Subcatchment 53S: CB53

Runoff = 1.51 cfs @ 12.09 hrs, Volume= 0.110 af, Depth= 3.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.201	98	Paved parking & roofs
0.181	39	>75% Grass cover, Good, HSG A
0.382	70	Weighted Average
0.181		Pervious Area
0.201		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9					**Direct Entry, MIN. TC**
0.1	14	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	14	Total			

Subcatchment 54S: CB54

Runoff = 2.09 cfs @ 12.10 hrs, Volume= 0.152 af, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.274	98	Paved parking & roofs
0.326	39	>75% Grass cover, Good, HSG A
0.600	66	Weighted Average
0.326		Pervious Area
0.274		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	6	0.0233	6.92	5.44	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	6	Total			

Subcatchment 55S: CB55

Runoff = 3.95 cfs @ 12.10 hrs, Volume= 0.291 af, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.526	98	Paved parking & roofs
0.744	39	>75% Grass cover, Good, HSG A
1.270	63	Weighted Average
0.744		Pervious Area
0.526		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	14	0.0200	6.42	5.04	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0					**Direct Entry, MIN. TC**
6.0	14	Total			

Subcatchment 60S: CB60

Runoff = 1.58 cfs @ 12.09 hrs, Volume= 0.115 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.212	98	Paved parking & roofs
0.118	39	>75% Grass cover, Good, HSG A
0.330	77	Weighted Average
0.118		Pervious Area
0.212		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.0	13	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.0	13	Total			

Subcatchment 61S: CB61

Runoff = 1.48 cfs @ 12.09 hrs, Volume= 0.108 af, Depth= 4.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.200	98	Paved parking & roofs
0.102	39	>75% Grass cover, Good, HSG A
0.302	78	Weighted Average
0.102		Pervious Area
0.200		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	24	0.0323	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	13	0.0323	1.26		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	84	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	11	0.0120	4.97	3.90	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
2.8					**Direct Entry, MIN. TC**
6.0	132	Total			

Subcatchment 62S: CB62

Runoff = 1.24 cfs @ 12.09 hrs, Volume= 0.090 af, Depth= 3.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.164	98	Paved parking & roofs
0.116	39	>75% Grass cover, Good, HSG A
0.280	74	Weighted Average
0.116		Pervious Area
0.164		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, MIN. TC**
0.1	14	0.0100	4.54	3.56	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.1	14	Total			

Subcatchment 63S: CB63

Runoff = 0.69 cfs @ 12.12 hrs, Volume= 0.073 af, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.109	98	Paved parking & roofs
0.435	39	>75% Grass cover, Good, HSG A
0.278	30	Woods, Good, HSG A
0.822	44	Weighted Average
0.713		Pervious Area
0.109		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	35	0.0100	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.6	53	0.0380	1.36		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	53	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	6	0.0233	6.92	5.44	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
6.4	147	Total			

Subcatchment 70S: 70S

Runoff = 4.13 cfs @ 12.12 hrs, Volume= 0.353 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.168	98	Paved parking & roofs
1.924	39	>75% Grass cover, Good, HSG A
0.358	98	POND
2.450	52	Weighted Average
1.924		Pervious Area
0.526		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	31	0.0320	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.2	170	0.0350	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	45	0.0910	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	85	0.0235	1.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.5	371	Total			

Subcatchment 71S: 71S

Runoff = 0.65 cfs @ 12.28 hrs, Volume= 0.111 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.160	98	Paved parking & roofs
0.630	39	>75% Grass cover, Good, HSG A
1.120	30	Woods, Good, HSG A
1.910	39	Weighted Average
1.750		Pervious Area
0.160		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	33	0.0910	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.5	221	0.1270	2.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	110	0.0180	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	97	0.0206	1.00		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.7	501	Total			

Subcatchment 72S: 72S

Runoff = 0.90 cfs @ 12.16 hrs, Volume= 0.098 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.200	30	Woods, Good, HSG A
0.830	49	Desert shrub range, Good, HSG A
1.030	45	Weighted Average
1.030		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	50	0.0110	0.13		**Sheet Flow,** Range n= 0.130 P2= 3.20"
0.4	50	0.0465	2.16		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
0.1	24	0.0833	2.89		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
2.0	152	0.0164	1.28		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
8.9	276	Total			

Subcatchment 73S: 73S

Runoff = 2.18 cfs @ 12.18 hrs, Volume= 0.251 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=6.80"

Area (ac)	CN	Description
0.171	98	Paved parking & roofs
0.975	39	>75% Grass cover, Good, HSG A
0.528	30	Woods, Good, HSG A
0.960	49	Desert shrub range, Good, HSG A
2.634	45	Weighted Average
2.463		Pervious Area
0.171		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	36	0.0555	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	157	0.3000	2.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	54	0.3890	3.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	37	0.2160	3.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	23	0.1310	3.62		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
2.1	185	0.0210	1.45		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
10.0	492	Total			

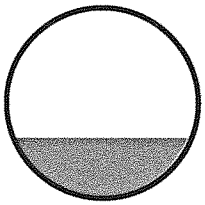
Reach 1R: DMH1-DMH2

Inflow Area = 0.900 ac, Inflow Depth = 1.92" for 100yr event
Inflow = 1.75 cfs @ 12.11 hrs, Volume= 0.144 af
Outflow = 1.72 cfs @ 12.12 hrs, Volume= 0.144 af, Atten= 2%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.09 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.16 fps, Avg. Travel Time= 0.8 min

Peak Storage= 32 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.97 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 148.0' Slope= 0.0500 '/'
Inlet Invert= 214.44', Outlet Invert= 207.04'



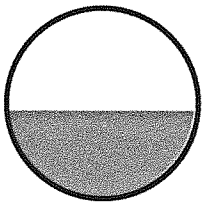
Reach 2R: DMH2-DMH3

Inflow Area = 0.900 ac, Inflow Depth = 1.92" for 100yr event
Inflow = 1.72 cfs @ 12.12 hrs, Volume= 0.144 af
Outflow = 1.68 cfs @ 12.14 hrs, Volume= 0.144 af, Atten= 2%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.77 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.90 fps, Avg. Travel Time= 0.8 min

Peak Storage= 34 cf @ 12.13 hrs, Average Depth at Peak Storage= 0.46'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 95.0' Slope= 0.0120 '/'
Inlet Invert= 207.04', Outlet Invert= 205.90'



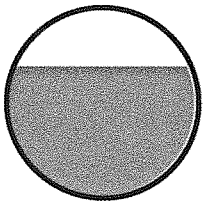
Reach 3R: DMH3-DMH4

Inflow Area = 2.630 ac, Inflow Depth = 1.49" for 100yr event
Inflow = 3.20 cfs @ 12.16 hrs, Volume= 0.326 af
Outflow = 3.11 cfs @ 12.18 hrs, Volume= 0.326 af, Atten= 3%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.54 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.39 fps, Avg. Travel Time= 1.4 min

Peak Storage= 119 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.69'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 205.0' Slope= 0.0120 '/'
Inlet Invert= 205.80', Outlet Invert= 203.34'



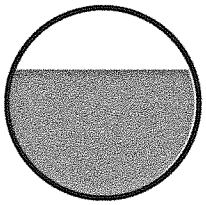
Reach 4R: DMH4-DMH5

Inflow Area = 2.630 ac, Inflow Depth = 1.49" for 100yr event
Inflow = 3.11 cfs @ 12.18 hrs, Volume= 0.326 af
Outflow = 3.10 cfs @ 12.19 hrs, Volume= 0.326 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.51 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.39 fps, Avg. Travel Time= 0.6 min

Peak Storage= 51 cf @ 12.18 hrs, Average Depth at Peak Storage= 0.68'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 90.0' Slope= 0.0120 '/'
Inlet Invert= 203.24', Outlet Invert= 202.16'



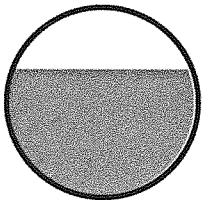
Reach 5R: DMH5-DMH6

Inflow Area = 4.426 ac, Inflow Depth = 1.58" for 100yr event
Inflow = 5.84 cfs @ 12.15 hrs, Volume= 0.584 af
Outflow = 5.78 cfs @ 12.17 hrs, Volume= 0.584 af, Atten= 1%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.66 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.80 fps, Avg. Travel Time= 1.3 min

Peak Storage= 189 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.84'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 7.37 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 215.0' Slope= 0.0130 '/'
Inlet Invert= 201.91', Outlet Invert= 199.11'



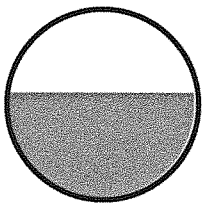
Reach 6R: DMH6-DMH7

Inflow Area = 7.856 ac, Inflow Depth = 1.35" for 100yr event
Inflow = 7.84 cfs @ 12.18 hrs, Volume= 0.887 af
Outflow = 7.83 cfs @ 12.18 hrs, Volume= 0.887 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.02 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.76 fps, Avg. Travel Time= 0.2 min

Peak Storage= 36 cf @ 12.18 hrs, Average Depth at Peak Storage= 0.70'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 12.92 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 51.0' Slope= 0.0400 '/'
Inlet Invert= 199.01', Outlet Invert= 196.97'



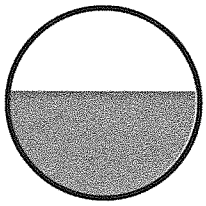
Reach 7R: DMH7-DMH8

Inflow Area = 9.590 ac, Inflow Depth = 1.59" for 100yr event
Inflow = 11.92 cfs @ 12.15 hrs, Volume= 1.273 af
Outflow = 11.89 cfs @ 12.16 hrs, Volume= 1.273 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.66 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.47 fps, Avg. Travel Time= 0.4 min

Peak Storage= 123 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.84'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.65 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 120.0' Slope= 0.0350 '/'
Inlet Invert= 196.72', Outlet Invert= 192.52'



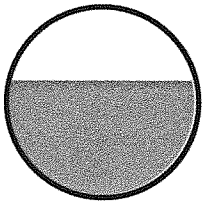
Reach 8R: DMH8-DMH9

Inflow Area = 10.310 ac, Inflow Depth = 1.62" for 100yr event
Inflow = 13.16 cfs @ 12.15 hrs, Volume= 1.390 af
Outflow = 13.11 cfs @ 12.16 hrs, Volume= 1.390 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.65 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.48 fps, Avg. Travel Time= 0.7 min

Peak Storage= 222 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.92'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.09 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 196.0' Slope= 0.0330 '/'
Inlet Invert= 190.52', Outlet Invert= 184.05'



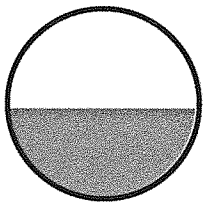
Reach 9R: DMH9-DMH10

Inflow Area = 12.210 ac, Inflow Depth = 1.65" for 100yr event
Inflow = 16.28 cfs @ 12.15 hrs, Volume= 1.678 af
Outflow = 16.19 cfs @ 12.16 hrs, Volume= 1.678 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.13 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 4.11 fps, Avg. Travel Time= 1.0 min

Peak Storage= 355 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.95'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 35.77 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 242.0' Slope= 0.0250 '/'
Inlet Invert= 183.55', Outlet Invert= 177.50'



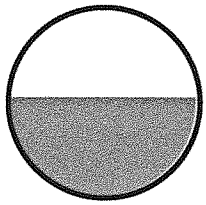
Reach 10R: DMH10-DMH50

Inflow Area = 14.320 ac, Inflow Depth = 1.60" for 100yr event
Inflow = 18.41 cfs @ 12.15 hrs, Volume= 1.909 af
Outflow = 18.39 cfs @ 12.16 hrs, Volume= 1.909 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.93 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.07 fps, Avg. Travel Time= 0.2 min

Peak Storage= 84 cf @ 12.16 hrs, Average Depth at Peak Storage= 1.06'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 33.55 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 50.0' Slope= 0.0220 '/'
Inlet Invert= 177.40', Outlet Invert= 176.30'



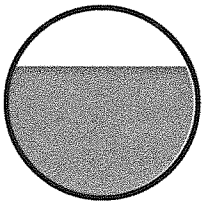
Reach 11R: DMH11-DMH12

Inflow Area = 2.550 ac, Inflow Depth = 1.62" for 100yr event
Inflow = 2.93 cfs @ 12.15 hrs, Volume= 0.345 af
Outflow = 2.93 cfs @ 12.15 hrs, Volume= 0.345 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.07 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.25 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.69'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 2.0' Slope= 0.0100 '/'
Inlet Invert= 173.95', Outlet Invert= 173.93'



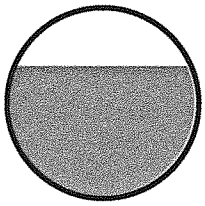
Reach 12R: DMH12-DMH13

Inflow Area = 2.550 ac, Inflow Depth = 1.62" for 100yr event
Inflow = 2.93 cfs @ 12.15 hrs, Volume= 0.345 af
Outflow = 2.94 cfs @ 12.17 hrs, Volume= 0.345 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.07 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.23 fps, Avg. Travel Time= 1.1 min

Peak Storage= 86 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.69'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 148.0' Slope= 0.0100 '/'
Inlet Invert= 173.83', Outlet Invert= 172.35'



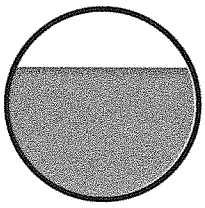
Reach 13R: DMH13-FES

Inflow Area = 2.550 ac, Inflow Depth = 1.62" for 100yr event
Inflow = 2.94 cfs @ 12.17 hrs, Volume= 0.345 af
Outflow = 2.93 cfs @ 12.17 hrs, Volume= 0.345 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.06 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.23 fps, Avg. Travel Time= 0.2 min

Peak Storage= 14 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.69'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 25.0' Slope= 0.0100 '/'
Inlet Invert= 172.25', Outlet Invert= 172.00'



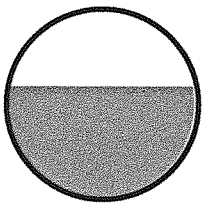
Reach 50R: DMH50-DMH51

Inflow Area = 15.974 ac, Inflow Depth = 1.63" for 100yr event
Inflow = 21.10 cfs @ 12.15 hrs, Volume= 2.168 af
Outflow = 21.03 cfs @ 12.16 hrs, Volume= 2.168 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.88 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.67 fps, Avg. Travel Time= 0.6 min

Peak Storage= 276 cf @ 12.15 hrs, Average Depth at Peak Storage= 1.19'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 142.0' Slope= 0.0200 '/'
Inlet Invert= 176.30', Outlet Invert= 173.46'



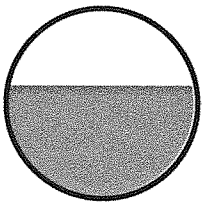
Reach 51R: DMH51-DMH55

Inflow Area = 15.974 ac, Inflow Depth = 1.63" for 100yr event
Inflow = 21.03 cfs @ 12.16 hrs, Volume= 2.168 af
Outflow = 21.02 cfs @ 12.16 hrs, Volume= 2.168 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.87 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.68 fps, Avg. Travel Time= 0.1 min

Peak Storage= 29 cf @ 12.16 hrs, Average Depth at Peak Storage= 1.18'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 15.0' Slope= 0.0200 '/'
Inlet Invert= 173.36', Outlet Invert= 173.06'



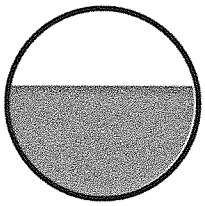
Reach 52R: DMH52-DMH55

Inflow Area = 2.562 ac, Inflow Depth = 3.13" for 100yr event
Inflow = 9.00 cfs @ 12.10 hrs, Volume= 0.667 af
Outflow = 8.95 cfs @ 12.10 hrs, Volume= 0.667 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.92 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.11 fps, Avg. Travel Time= 0.4 min

Peak Storage= 70 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.74'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 13.70 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 92.0' Slope= 0.0450 '/'
Inlet Invert= 177.95', Outlet Invert= 173.81'



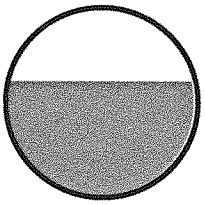
Reach 53R: DMH53-DMH52

Inflow Area = 1.870 ac, Inflow Depth = 2.85" for 100yr event
Inflow = 6.01 cfs @ 12.10 hrs, Volume= 0.444 af
Outflow = 5.95 cfs @ 12.11 hrs, Volume= 0.444 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.98 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.59 fps, Avg. Travel Time= 0.5 min

Peak Storage= 72 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.61'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 143.0' Slope= 0.0600 '/'
Inlet Invert= 186.78', Outlet Invert= 178.20'



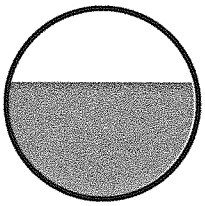
Reach 54R: DMH54-DMH53

Inflow Area = 1.870 ac, Inflow Depth = 2.85" for 100yr event
Inflow = 6.04 cfs @ 12.10 hrs, Volume= 0.444 af
Outflow = 6.01 cfs @ 12.10 hrs, Volume= 0.444 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.00 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.60 fps, Avg. Travel Time= 0.4 min

Peak Storage= 50 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.61'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 100.0' Slope= 0.0600 '/'
Inlet Invert= 192.88', Outlet Invert= 186.88'



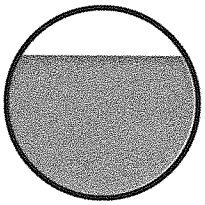
Reach 55R: DMH55-DMH56

Inflow Area = 18.536 ac, Inflow Depth = 1.84" for 100yr event
Inflow = 28.94 cfs @ 12.14 hrs, Volume= 2.835 af
Outflow = 28.90 cfs @ 12.14 hrs, Volume= 2.835 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.53 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.97 fps, Avg. Travel Time= 0.3 min

Peak Storage= 191 cf @ 12.14 hrs, Average Depth at Peak Storage= 1.49'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 76.0' Slope= 0.0200 '/'
Inlet Invert= 172.96', Outlet Invert= 171.44'



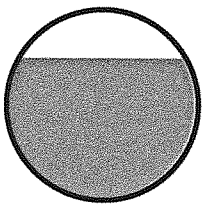
Reach 56R: DMH56-FES

Inflow Area = 18.536 ac, Inflow Depth = 1.84" for 100yr event
Inflow = 28.90 cfs @ 12.14 hrs, Volume= 2.835 af
Outflow = 28.88 cfs @ 12.15 hrs, Volume= 2.835 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.53 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.96 fps, Avg. Travel Time= 0.1 min

Peak Storage= 80 cf @ 12.14 hrs, Average Depth at Peak Storage= 1.49'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 32.0' Slope= 0.0200 '/'
Inlet Invert= 171.34', Outlet Invert= 170.70'



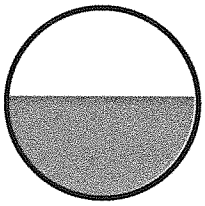
Reach 60R: DMH60-DMH7

Inflow Area = 1.734 ac, Inflow Depth = 2.67" for 100yr event
Inflow = 4.88 cfs @ 12.10 hrs, Volume= 0.386 af
Outflow = 4.87 cfs @ 12.10 hrs, Volume= 0.386 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.42 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.15 fps, Avg. Travel Time= 0.1 min

Peak Storage= 14 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 33.0' Slope= 0.0600 '/'
Inlet Invert= 199.20', Outlet Invert= 197.22'



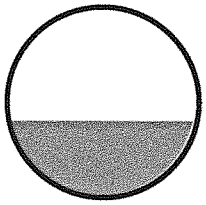
Reach 61R: DMH61-DMH60

Inflow Area = 1.102 ac, Inflow Depth = 1.78" for 100yr event
Inflow = 1.91 cfs @ 12.11 hrs, Volume= 0.163 af
Outflow = 1.86 cfs @ 12.12 hrs, Volume= 0.163 af, Atten= 3%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.46 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.45 fps, Avg. Travel Time= 1.2 min

Peak Storage= 53 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.63 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections
Length= 180.0' Slope= 0.0250 '/'
Inlet Invert= 203.80', Outlet Invert= 199.30'



Pond 1P: POND 1

Inflow Area = 23.536 ac, Inflow Depth = 1.77" for 100yr event
Inflow = 35.87 cfs @ 12.15 hrs, Volume= 3.472 af
Outflow = 7.69 cfs @ 12.81 hrs, Volume= 3.472 af, Atten= 79%, Lag= 39.5 min
Discarded = 7.69 cfs @ 12.81 hrs, Volume= 3.472 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 170.73' @ 12.81 hrs Surf.Area= 0.381 ac Storage= 0.918 af

Plug-Flow detention time= 41.0 min calculated for 3.467 af (100% of inflow)
Center-of-Mass det. time= 41.0 min (917.8 - 876.9)

Volume	Invert	Avail.Storage	Storage Description
#1	168.00'	1.427 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
168.00	0.290	0.000	0.000
170.00	0.357	0.647	0.647
172.00	0.423	0.780	1.427

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**20.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=7.69 cfs @ 12.81 hrs HW=170.73' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 7.69 cfs)

Pond 12P: SFB 10

Inflow Area = 21.086 ac, Inflow Depth = 1.81" for 100yr event
Inflow = 31.78 cfs @ 12.15 hrs, Volume= 3.180 af
Outflow = 31.92 cfs @ 12.15 hrs, Volume= 3.119 af, Atten= 0%, Lag= 0.4 min
Primary = 31.92 cfs @ 12.15 hrs, Volume= 3.119 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 171.44' @ 12.15 hrs Surf.Area= 0.041 ac Storage= 0.085 af

Plug-Flow detention time= 16.9 min calculated for 3.119 af (98% of inflow)
Center-of-Mass det. time= 6.1 min (876.7 - 870.6)

Volume	Invert	Avail.Storage	Storage Description
#1	168.00'	0.110 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
168.00	0.011	0.000	0.000
170.00	0.026	0.037	0.037
172.00	0.047	0.073	0.110

Device	Routing	Invert	Outlet Devices
#1	Primary	170.80'	**20.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=31.75 cfs @ 12.15 hrs HW=171.44' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 31.75 cfs @ 2.49 fps)

Link 74L: COMBINE-HYDROGRAPHS

Inflow Area = 5.574 ac, Inflow Depth = 0.99" for 100yr event
Inflow = 3.68 cfs @ 12.18 hrs, Volume= 0.461 af
Primary = 3.68 cfs @ 12.18 hrs, Volume= 0.461 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

APPENDIX E

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: Lawrence St. North

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Deep Sump Hooded Cbs	25%	1.00	25%	75%
Sediment Forebay	25%	75%	19%	56%
Infiltration Basin	80% w/pre treatment	100%	80%	20%

Total TSS Removal = 80%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: Abbotsville
Prepared By: RRB
Date: 9/13/20

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed
1. From MassDEP Stormwater Handbook Vol. 1

Mass. Dept. of Environmental Protection

APPENDIX F

Sediment Forebay Sizing:

0.1-inch/impervious acre

Impervious Area = 5.687 acres

5.687 x 0.083 x 0.1 = 0.0474 acre feet required

0.061 acre feet of storage provided

APPENDIX G

Hydrograph for Pond 1P: POND 1

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Discarded (cfs)
1.00	0.00	0.000	168.00	0.00
2.00	0.00	0.000	168.00	0.00
3.00	0.00	0.000	168.00	0.00
4.00	0.00	0.000	168.00	0.00
5.00	0.00	0.000	168.00	0.00
6.00	0.00	0.000	168.00	0.00
7.00	0.00	0.000	168.00	0.00
8.00	0.00	0.000	168.00	0.00
9.00	0.00	0.000	168.00	0.00
10.00	0.00	0.000	168.00	0.00
11.00	0.00	0.000	168.00	0.00
12.00	**14.24**	**0.053**	**168.18**	**5.97**
13.00	**6.35**	**0.906**	**170.70**	**7.67**
14.00	4.12	0.696	170.14	7.29
15.00	3.21	0.414	169.33	6.74
16.00	2.35	0.113	168.38	6.11
17.00	1.88	0.004	168.01	1.89
18.00	1.47	0.003	168.01	1.48
19.00	1.30	0.003	168.01	1.31
20.00	1.18	0.002	168.01	1.19
21.00	1.09	0.002	168.01	1.09
22.00	0.99	0.002	168.01	1.00
23.00	0.90	0.002	168.01	0.90
24.00	0.80	0.002	168.01	0.80
25.00	0.00	0.000	168.00	0.00
26.00	0.00	0.000	168.00	0.00
27.00	0.00	0.000	168.00	0.00
28.00	0.00	0.000	168.00	0.00
29.00	0.00	0.000	168.00	0.00
30.00	0.00	0.000	168.00	0.00
31.00	0.00	0.000	168.00	0.00
32.00	0.00	0.000	168.00	0.00
33.00	0.00	0.000	168.00	0.00
34.00	0.00	0.000	168.00	0.00
35.00	0.00	0.000	168.00	0.00
36.00	0.00	0.000	168.00	0.00

APPENDIX H

Long Term Operation & Maintenance Plan
Stormwater Management Systems
The Preserve at Abbyville – Lawrence St., Norfolk, MA

The Stormwater Management System (SWMS) for parcels 9, 10, 12 and 14, Map 6 Block 2, Lawrence Street in Norfolk, MA has been designed to mitigate impacts to the quality and quantity of Stormwater flowing from the site. In order to ensure that the Stormwater management facility performs adequately, a regular schedule of maintenance is required.

General Information

Project Name:	The Preserve at Abbyville
Project Type:	Housing
Address:	Lawrence Street
SWMS:	Lawrence Street – Map 6 Block 2 Parcels 9, 10, 12 and 14 Off Lawrence Street, Norfolk, MA
Responsible Party:	Abbyville Development, LLC 850 Franklin Street – Wrentham, MA
Contact:	Thomas DiPlacido, Jr.

It shall be the responsibility of the Owner to provide a revised plan to the Board of Appeal, indicating any changes of ownership or responsibly party.

BMP Inspection and Maintenance Procedures

Effectiveness of Best Management Practices (BMP's) are maximized when properly maintained. The following inspections schedule and maintenance required of BMP's for this project shall be outlined and documents below.

1.**Pavement Sweeping:** Paved areas shall be swept annually, on or prior to April 1, to remove excess sediments. This will result in a reduced sediment load that the drainage system will have to remove from the runoff. Use salt for roadway deicing purposes, shall be kept to a minimum, to reduce the need for removal and treatment.
2. **Deed Sump Hooded Catch Basins:** Shall be checked periodically and cleaned as necessary to maintain clear operations of the hoods.
3. Detention Forebays: Shall be checked periodically and following heavy rainfalls to verify that the inverts and outlet openings are not clogged with debris. Debris shall be removed. Forebays shall be inspected on an annual basis and if necessary, bottom area, should be noted during inspections. Repair and replace damaged materials.
4. Detention / Infiltration Pond: The pond bottom shall be inspected annually. Debris and sediment accumulated shall be removed. Disposal shall be in accordance with applicable Local, State and Federal guidelines and regulations.
5. Maintenance Responsibilities: All post-construction maintenance activities shall be documented, on the following form, kept on file and made available to the Board of Appeals, upon request. All post-construction maintenance activities shall run with the title of the property.

Public Safety Features:

1.Provde Police detail for extended occupation of roadway, if traffic dictates.

2. All excavations and entry into closed structures will be completed in accordance with OSHA requirements.

Approximate Maintenance Budget:

Inspection and maintenance for this site is estimated as follows:

Inspections:	$400.00
Street Sweeping	$2,500.00
DSHCB's	$2,500.00
Forebays	$200.00
Infiltration Pond	$400.00
Annual Cost	$6,000.00

Long Term Operation & Maintenance Plan
Stormwater Management System
The Preserve at Abbyville – Lawrence St., Norfolk, MA

BMP Inspection and Maintenance Documentation Form

Inspection Number:_____ Date:_____ Weather:_____
Date & Amount of Last Precipitation Event:_____
Inspector's Name:_____ Inspector's Signature:_____

BMP	Condition/Stability	Comments & Recommendations	Date Corrected
Street Sweeping			
Forebays			
Detention/Infiltration Ponds			
Catch Basin Sumps			
Other			
Additional Comments			

APPENDIX I

SOIL LOGS AND PERMABILITY TEST RESULTS

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

DiPlacido Development Corp
Owner Name

Lawrence St
Street Address

Map 6 Bl 2 Lots 3-1,3-2,3-3,9,10,12 & 14

Norfolk
City

MA
State

02056
Zip Code

B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade ☐ Repair

2. Published Soil Survey Available? ☐ Yes ☐ No If yes: Year Published ____ Publication Scale ____ Soil Map Unit ____

   Hinckley fine sandy loam
   Soil Name

   Soil Limitations ____

3. Surficial Geological Report Available? ☐ Yes ☐ No If yes: Year Published ____ Publication Scale ____ Map Unit ____

   Glaciofluvial deposits
   Geologic Material

   Kames
   Landform

4. Flood Rate Insurance Map

   Above the 500-year flood boundary? ☐ Yes ☐ No Within the 100-year flood boundary? ☐ Yes ☐ No

   Within the 500-year flood boundary? ☐ Yes ☐ No Within a velocity zone? ☐ Yes ☐ No

5. Wetland Area: National Wetland Inventory Map — Map Unit ____ Name ____

   Wetlands Conservancy Program Map — Map Unit ____ Name ____

6. Current Water Resource Conditions (USGS): ____ Month/Year Range: ☐ Above Normal ☐ Normal ☐ Below Normal

7. Other references reviewed: ____

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserved disposal area*)

Deep Observation Hole Number: Perm 1 | 4/17/15 (Date) | 9:00 (Time) | Sunny 55 (Weather)

1. Location

Ground Elevation at Surface of Hole: 171.5 Location (identify on plan): Perm 1

2. Land Use: woods (e.g., woodland, agricultural field, vacant lot, etc.) | Surface Stones: | Slope (%):

Vegetation: trees | Landform: kame | Position on Landscape (attach sheet):

3. Distances from:

Open Water Body	>100' feet	Drainage Way	>100' feet	Possible Wet Area	>100' feet
Property Line	>700' feet	Drinking Water Well	>100 feet	Other	feet

4. Parent Material: Hinckley loamy sand Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 5' Depth Weeping from Pit | Depth Standing Water in Hole:

Estimated Depth to High Groundwater: 60 inches | 166.5 elevation

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: Perm 1

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-9"	A+B								6.8' PVC 2' slot	20 sec	1.8
9-36"	C1	2.5Y5/4				Med sand			on C1	40	2.75
36-96"	C2	2.5Y4/3				Coarse sand				60	3.43
water @ 5'										80	4.08
										100	4.55
										120	4.92
										140	5.20

Additional Notes:

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserved disposal area)*

Deep Observation Hole Number: TP-2 | 4/17/15 (Date) | 9:00 (Time) | Sunny 55 (Weather)

1. Location

Ground Elevation at Surface of Hole: 173.5 Location (identify on plan): TP-2

2. Land Use: woods (e.g., woodland, agricultural field, vacant lot, etc.) | Surface Stones: | Slope (%):

Vegetation: trees | Landform: kame | Position on Landscape (attach sheet):

3. Distances from:

Open Water Body	>100' feet	Drainage Way	>100' feet	Possible Wet Area	>100' feet
Property Line	>100' feet	Drinking Water Well	>100' feet	Other	feet

4. Parent Material: Hinckley loamy sand Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: Depth Weeping from Pit | Depth Standing Water in Hole

Estimated Depth to High Groundwater: 120 inches | 163.5 elevation

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: TP-2

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-9"	A+B					sandy laom					
9-36"	C1	2.5Y5/4				Med sand					
36-144"	C2	2.5Y4/3				Coarse sand					
water @ 10'											

Additional Notes:

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: Perm 3 | 4/17/15 (Date) | 9:30 (Time) | Sunny 55 (Weather)

1. Location

Ground Elevation at Surface of Hole: 172.3 Location (identify on plan): Perm 3

2. Land Use: woods (e.g., woodland, agricultural field, vacant lot, etc.) | Surface Stones: | Slope (%):

Vegetation: trees | Landform: Kame | Position on Landscape (attach sheet):

3. Distances from:

Open Water Body	>100' feet	Drainage Way	>100' feet	Possible Wet Area	>100' feet
Property Line	>700' feet	Drinking Water Well	>100' feet	Other	feet

4. Parent Material: Hinckley Loamy sand Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: Depth Weeping from Pit | Depth Standing Water in Hole

Estimated Depth to High Groundwater: 96 inches | 164.3 elevation

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: Perm 3

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-24"	A+B						6.8' PVC 2' slot	10 sec	1.0	70 sec	4.00
24-72"	C1	10YR5/3				Gravel		20	1.72	80	4.25
72-108"	C2	2.5Y4/3				M. Sand		30	2.35	90	4.48
water @ 8'								40	2.88	100	4.65
								50	3.33	110	4.80
								60	3.70	120	5.01

Additional Notes:

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserved disposal area)*

Deep Observation Hole Number: Perm 4 | 4/17/15 (Date) | 11:00 (Time) | Sunny 55 (Weather)

1. Location

Ground Elevation at Surface of Hole: 174.3 Location (identify on plan): Perm4

2. Land Use: woods (e.g., woodland, agricultural field, vacant lot, etc.) | Surface Stones: | Slope (%):

Vegetation: trees | Landform: kame | Position on Landscape (attach sheet):

3. Distances from:

Open Water Body	>100' feet	Drainage Way	>100' feet	Possible Wet Area	>100' feet
Property Line	>100' feet	Drinking Water Well	>100' feet	Other	feet

4. Parent Material: Hinckley loamy sand Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: Depth Weeping from Pit | Depth Standing Water in Hole

Estimated Depth to High Groundwater: 10.3' inches | 164.3 elevation

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: Perm 4

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-1.8'	A+B						6.8' PVC 2' slot	10 sec	0.8	70 sec	3.81
1.8-10.3'	C1	2.5Y6/3				Fine sand	on C1	20	1.52	80	4.10
10.3-11.5'	C2	2.5Y5/2				Fine sand		30	2.2	90	4.40
water @ 10.3'								40	2.68	100	4.60
								50	3.10	110	4.85
								60	3.55		

Additional Notes:

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: TP 5 | 4/17/15 (Date) | 2:30 (Time) | Sunny 55 (Weather)

1. Location

Ground Elevation at Surface of Hole: 196.7 Location (identify on plan): TP-5

2. Land Use: woods (e.g., woodland, agricultural field, vacant lot, etc.) | Surface Stones: | Slope (%):

Vegetation: trees | Landform: Kame | Position on Landscape (attach sheet):

3. Distances from:

Open Water Body	>100' feet	Drainage Way	>100' feet	Possible Wet Area	>100' feet
Property Line	>100' feet	Drinking Water Well	>100' feet	Other	feet

4. Parent Material: Hinckley Loamy sand Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: Depth Weeping from Pit | Depth Standing Water in Hole

Estimated Depth to High Groundwater: >204 inches | >179.7 elevation

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: TP-5

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-48"	A+B										
4-7'	C1	10YR5/3				Sand					
7-10.67'	C2	2.5Y4/3				Sand & Gravel					
10.67-17'	C3	2.5Y4/2				F. Sand					
damp @ 196"											

Additional Notes:

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserved disposal area)*

Deep Observation Hole Number: Perm 6 | 4/17/15 (Date) | 1:00 (Time) | Sunny 55 (Weather)

1. Location

Ground Elevation at Surface of Hole: 194.3 Location (identify on plan): Perm 6

2. Land Use: woods (e.g., woodland, agricultural field, vacant lot, etc.) | Surface Stones | Slope (%)

trees (Vegetation) | kame (Landform) | Position on Landscape (attach sheet)

3. Distances from:

Open Water Body	>100' feet	Drainage Way	>100' feet	Possible Wet Area	>100' feet
Property Line	420' feet	Drinking Water Well	>100' feet	Other	feet

4. Parent Material: Hinckley loamy sand Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: Depth Weeping from Pit | Depth Standing Water in Hole

Estimated Depth to High Groundwater: >187 inches | 178.72 elevation

Groundwater Based on Reading in Monitor Wells
Elev. = 164.84

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: Perm 6

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-32"	A+B						6.8' PVC 2' slot	10 sec	0.78	80 sec	3.65
32-9'	C1	2.5Y5/2				M. sand	on C1	20	1.37	90	3.95
9-13.75	C2	2.5Y5/3				Sand & Gravel		30	1.90	100	4.20
13.75-15.58'	C3					Fine sand		40	2.32	110	4.36
								50	2.71	120	4.55
								60	3.13	130	4.70
								70	3.43		

Additional Notes:

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: Perm 7 | 4/17/15 (Date) | 11:30 (Time) | Sunny 55 (Weather)

1. Location

Ground Elevation at Surface of Hole: 169.0 Location (identify on plan): Perm 7

2. Land Use: woods (e.g., woodland, agricultural field, vacant lot, etc.) | Surface Stones: | Slope (%):

Vegetation: trees | Landform: Kame | Position on Landscape (attach sheet):

3. Distances from:

Open Water Body	>100' feet	Drainage Way	>100' feet	Possible Wet Area	>100' feet
Property Line	>100' feet	Drinking Water Well	>100' feet	Other	feet

4. Parent Material: Hinckley Loamy sand Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: Depth Weeping from Pit | Depth Standing Water in Hole

Estimated Depth to High Groundwater: 101 inches | 160.58 elevation

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: Perm 7

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-22"	A+B										
22-60"	C1	10YR5/3				Gravel			6.8' PVC 2' slot	10 sec.	1.5
60-62"	C2	2.5Y4/3				C. Sand			on C1	20	2.5
62-81"	C3					Gravel				30	3.35
81-126"	C4					Sand				40	4.05
water @ 101"										50	4.50
										60	4.90

Additional Notes:

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserved disposal area)*

Deep Observation Hole Number: TP-8 | 4/17/15 (Date) | 1:00 (Time) | Sunny 55 (Weather)

1. Location

Ground Elevation at Surface of Hole: 168.4 Location (identify on plan): TP-8

2. Land Use: woods (e.g., woodland, agricultural field, vacant lot, etc.) | Surface Stones: | Slope (%):

Vegetation: trees | Landform: kame | Position on Landscape (attach sheet):

3. Distances from:

Open Water Body	>100' feet	Drainage Way	>100' feet	Possible Wet Area	>100' feet
Property Line	>100' feet	Drinking Water Well	>100' feet	Other	feet

4. Parent Material: Hinckley loamy sand Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: Depth Weeping from Pit | Depth Standing Water in Hole

Estimated Depth to High Groundwater: 96 inches | 160.4 elevation

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: TP-8

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-7"	A+B					sandy laom			single grain	loose	
7-69"	C1	2.5Y6/3				Fine sand			single grain	loose	
69-137"	C2	2.5Y5/2				Med. sand			single grain	loose	
water @ 96"											

Additional Notes:

D. Determination of High Groundwater Elevation

1. Method Used:

☐ Depth observed standing water in observation hole	A. _____ inches	B. _____ inches
☐ Depth weeping from side of observation hole	A. _____ inches	B. _____ inches
☐ Depth to soil redoximorphic features (mottles)	A. _____ inches	B. _____ inches
☐ Groundwater adjustment (USGS methodology)	A. _____ inches	B. _____ inches

2. _____ Index Well Number _____ Reading Date _____ Index Well Level

_____ Adjustment Factor _____ Adjusted Groundwater Level

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material
   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

      ☒ Yes ☐ No

   b. If yes, at what depth was it observed? Upper boundary: 36 inches Lower boundary: 96 inches

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator	4/17/15 Date
Carlos A. Quintal Typed or Printed Name of Soil Evaluator / License #	April, 1995 Date of Soil Evaluator Exam
Wade Saucier Name of Board of Health Witness	Norfolk BOH Board of Health

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Commonwealth of Massachusetts
City/Town of Norfolk

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Field Diagrams

Use this sheet for field diagrams:

See Watershed Maps
for testing locations.

PERMEABILITY TEST RESULTS:

Test were conducted at the following locations:

PT 1 - 21.65 in / hr

PT 3 – 24.77 in / hr

PT 4 – 20.56 in / hr

PT 6 – 19.58 in / hr

PT 7 - 45.70 in / hr

The above rates are based on 50% of the observed field rates.

PT	1										
PIPE HT	7										
			TP 1								
TIME	% DEPTH		DEPTH	% DEPTH							
(sec)	FROM		FROM	FROM							
	BOTTOM		TOP	TOP							
0	100%		0	0%							
20	74%		1.80	26%							
40	61%		2.75	39%							
60	51%		3.43	49%							
80	42%		4.08	58%							
100	35%		4.55	65%							
120	30%		4.92	70%							
140	26%		5.20	74%							
			Km = Pi (D) / 11 (T)								
			D = 0.333'								
Use37%			T = Time in seconds								
		Km	0.09520	(T) / 2 for Safety Factor							
	RUN 1	Km	0.09520	95.00		0.0010021	0.0005011	ft/sec		21.65	in/hr

PT 3
PIPE HT 6.8

TIME (sec)	% DEPTH FROM BOTTOM	TP 1 DEPTH FROM TOP	% DEPTH FROM TOP
0	100%	0	0%
10	85%	1.00	15%
20	75%	1.72	25%
30	65%	2.35	35%
40	58%	2.88	42%
50	51%	3.33	49%
60	46%	3.70	54%
70	41%	4.00	59%
80	38%	4.25	63%
90	34%	4.48	66%
100	32%	4.65	68%
110	29%	4.80	71%
120	26%	5.01	74%

Km = Pi (D) / 11 (T)
D = 0.333'
T = Time in seconds

Use 37%

Km= 0.09520 (T) / 2 for Safety Factor

RUN 1	Km=	0.09520	83.00	0.001147	0.0005735 ft/sec	24.77 in/hr

PT 4
PIPE HT 6.85

TIME (sec)	% DEPTH FROM BOTTOM	DEPTH FROM TOP	% DEPTH FROM TOP
0	100%	0	0%
10	88%	0.80	12%
20	78%	1.52	22%
30	68%	2.20	32%
40	61%	2.68	39%
50	55%	3.10	45%
60	48%	3.55	52%
70	44%	3.81	56%
80	40%	4.10	60%
90	36%	4.40	64%
100	33%	4.60	67%
110	29%	4.85	71%

Km = Pi (D) / 11 (T)
D = 0.333'
T = Time in seconds

Use 37%

Km 0.09520 (T) / 2 for Safety Factor

RUN 1	Km	0.09520	100.00	0.000952	0.0004760 ft/sec	20.56 in/hr

PT	6
PIPE HT	6.8

TIME (sec)	% DEPTH FROM BOTTOM	TP 1 DEPTH FROM TOP	% DEPTH FROM TOP
0	100%	0	0%
10	89%	0.78	11%
20	80%	1.37	20%
30	72%	1.90	28%
40	66%	2.32	34%
50	60%	2.71	40%
60	54%	3.13	46%
70	50%	3.43	50%
80	46%	3.65	54%
90	42%	3.95	58%
100	38%	4.20	62%
110	36%	4.36	64%
120	33%	4.55	67%
130	31%	4.70	69%

Km = Pi (D) / 11 (T)
D = 0.333'
T = Time in seconds

Use 37%

Km 0.09520 (T) / 2 for Safety Factor

RUN 1	Km	0.09520	105.00	0.000907	0.0004533 ft/sec	19.58 in/hr

PT 7
PIPE HT 6.8

TP 1

TIME (sec)	% DEPTH FROM BOTTOM	DEPTH FROM TOP	% DEPTH FROM TOP
0	100%	0	0%
10	78%	1.50	22%
20	63%	2.50	37%
30	51%	3.35	49%
40	40%	4.05	60%
50	34%	4.50	66%
60	28%	4.90	72%

Km = Pi (D) / 11 (T)
D = 0.333'
T = Time in seconds

Use 37%

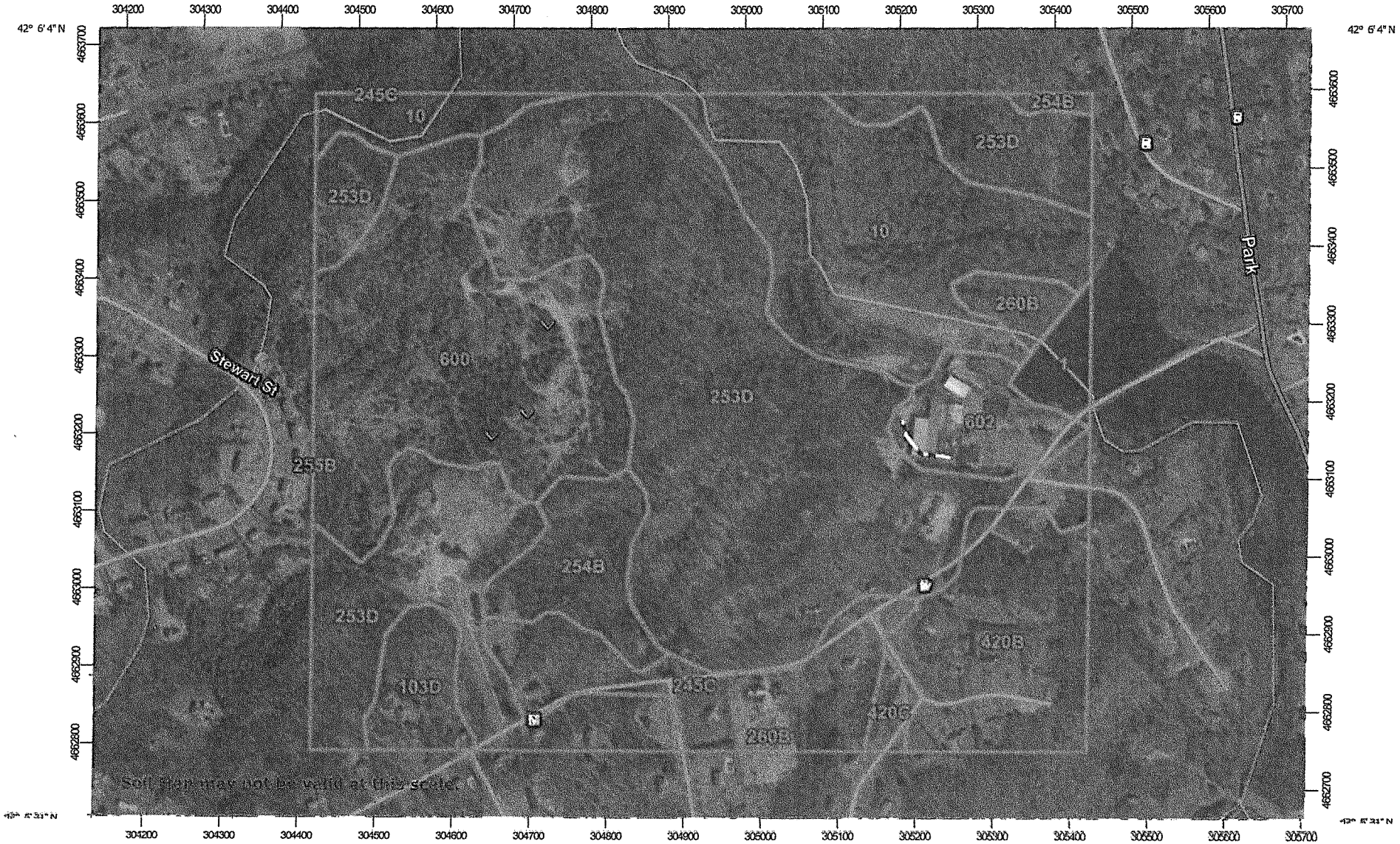
Km= 0.09520 (T) / 2 for Safety Factor

RUN 1	Km=	0.09520	45.00	0.0021	0.0010578 ft/sec	45.70 in/hr

APPENDIX J

USDA SOILS INFORMATION

Soil Map—Norfolk and Suffolk Counties, Massachusetts
(Abbyville-Commons & Preserve)



Map Scale: 1:7,180 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 12, Sep 15, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 8, 2011—Apr 9, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Norfolk and Suffolk Counties, Massachusetts (MA616)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
1	Water	2.7	1.3%
10	Scarboro and Birdsall soils, 0 to 3 percent slopes	31.9	15.1%
103D	Charlton-Hollis-Rock outcrop complex, 15 to 25 percent slopes	4.8	2.3%
245C	Hinckley loamy sand, 8 to 15 percent slopes	12.9	6.1%
253D	Hinckley loamy sand, 15 to 35 percent slopes	90.3	42.8%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	8.4	4.0%
255B	Windsor loamy sand, 3 to 8 percent slopes	0.0	0.0%
260B	Sudbury fine sandy loam, 2 to 8 percent slopes	2.9	1.4%
420B	Canton fine sandy loam, 3 to 8 percent slopes	16.3	7.7%
420C	Canton fine sandy loam, 8 to 15 percent slopes	1.2	0.6%
600	Pits, sand and gravel	33.1	15.7%
602	Urban land, 0 to 15 percent slopes	6.7	3.2%
Totals for Area of Interest		**211.3**	**100.0%**

Norfolk and Suffolk Counties, Massachusetts

253D—Hinckley loamy sand, 15 to 35 percent slopes

Map Unit Setting

National map unit symbol: 2svmd
Elevation: 0 to 860 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Hinckley and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Eskers, kames, kame terraces, outwash plains, outwash terraces, moraines, outwash deltas
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Crest, nose slope, side slope, head slope, riser
Down-slope shape: Linear, convex, concave
Across-slope shape: Linear, concave, convex
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 15 to 35 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 10 percent
Landform: Eskers, kames, kame terraces, outwash plains, outwash terraces, moraines, outwash deltas
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Crest, nose slope, side slope, head slope, riser
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear, concave, convex
Hydric soil rating: No

Merrimac

Percent of map unit: 3 percent
Landform: Eskers, kames, kame terraces, outwash plains, outwash terraces, moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope, nose slope, crest, riser
Down-slope shape: Convex, linear, concave
Across-slope shape: Linear, convex, concave
Hydric soil rating: No

Sudbury

Percent of map unit: 2 percent
Landform: Kame terraces, outwash plains, outwash terraces, moraines, outwash deltas
Landform position (two-dimensional): Backslope, footslope, toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Hydric soil rating: No

Data Source Information

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 12, Sep 15, 2016

Norfolk and Suffolk Counties, Massachusetts

254B—Merrimac fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tyqs
Elevation: 0 to 1,290 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Merrimac and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Eskers, kames, outwash plains, outwash terraces, moraines
Landform position (two-dimensional): Backslope, footslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 2 percent
Salinity, maximum in profile: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 1.0

Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Hinckley

Percent of map unit: 5 percent
Landform: Deltas, eskers, kames, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Windsor

Percent of map unit: 3 percent
Landform: Deltas, dunes, outwash plains, outwash terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Riser, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Agawam

Percent of map unit: 2 percent
Landform: Eskers, kames, outwash plains, outwash terraces, moraines, stream terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 12, Sep 15, 2016

Norfolk and Suffolk Counties, Massachusetts

600—Pits, sand and gravel

Map Unit Setting

National map unit symbol: vkxc
Mean annual precipitation: 32 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Pits: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pits

Setting

Parent material: Loose, excavated sandy and gravelly glaciofluvial deposits

Data Source Information

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 12, Sep 15, 2016

Norfolk and Suffolk Counties, Massachusetts

602—Urban land, 0 to 15 percent slopes

Map Unit Setting

National map unit symbol: vkyj
Mean annual precipitation: 32 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 99 percent
Minor components: 1 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Excavated and filled land

Minor Components

Rock outcrops

Percent of map unit: 1 percent
Hydric soil rating: Unranked

Data Source Information

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 12, Sep 15, 2016

APPENDIX K