To: Mike Klein – Mt. San Antonio College
Cc: Sidney Lindmark, AICP – Mt SAC Environmental Consultant

From: Alysen Weiland, PE - Psomas

Date: May 6, 2016

Subject: Mt. San Antonio College- Measure RR Updated Hydrology Study

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As part of the campuswide stormwater analysis, Psomas has prepared a concept level hydrology study to reflect the Mount San Antonio College (Mt. SAC) Measure RR built-out condition.

Mt. SAC's diverse uses include general college buildings, agricultural facilities and athletic facilities. Psomas has reviewed and incorporated the Measure RR project site and grading plans for the following projects either under construction or in design:

1. Food Services Building (complete)
2. Physical Education Project – Phase 1 (currently under DSA review)
3. Building 12 (complete)
4. Building 4 (complete)
5. Building 46 (complete)
6. Parking Lot M (currently under construction)
7. Major Grading (Athletic Complex Hill) (Complete)
8. Business and Computer Technology Center (currently under construction)
9. Student Success Center (complete)
10. Design Technology Center (complete)

The site conditions consist of approximately 60 buildings, parking lots, roads, a new athletic complex (Physical Education Project – Phase 1), and undeveloped hill terrain, all spread across 300 acres. The site varies in slope from 1% to 13%. Elevation ranges from approximately 850 to 660 feet above mean sea level. In the existing condition storm water runoff predominantly drains to the south west and is gathered by multiple storm drains catch basins/inlets and collected into 5 main public storm drain lines that ultimately discharge out into two creeks. The project site is located on Los Angeles County's San Dimas isohyet map. The 50-year, 24-hour isohyet is 6.9 in, (See Appendix A). The site's soil type is identified as Type 2, 16, 17 (see Appendix A).

METHODOLOGY

Drainage calculations follow the methodology outlined in the Los Angeles County Department of Public Works Hydrology Manual. The Rational Method was used in this study to determine on-site flows using the County provided HydroCalc program. As described in the Hydrology Manual for Los Angeles County, discharge was computed using the following steps.

1. On-site drainage areas were determined by a review of the topographic information.

2. Rainfall data was determined using the LACDPW Isohyetal Maps for a 50-Year 24-Hour storm (see Appendix A).
3. Soils data was found for the project site. (Appendix A)
4. The Los Angeles County Department of Public Works HydroCalc computer program was used for Modified Rational Method calculations to find values for Time of Concentration, Intensity (see Appendix B).
5. Flows were calculated for each drainage area using Q = CiA

   Where:

   Q is the design runoff (cfs)

   C is the runoff coefficient

   I is the intensity (in/hr)

   A is the drainage area (ac)

MEASURE RR CONCEPT HYDROLOGY ANALYSIS

The hydrologic analysis was performed by studying five major areas within the project site. Within Mt Sac, there are four existing public storm drain line and a creek that serve as 5 major discharge points. The areas were determined by dividing the project site into its own individual section according to which public storm drain line (A, B, C, D) the rainfall was discharging into. The 4 public storm drain lines and snow creek are identified in the Hydrology Map.

The 5 areas were then sub-divided to study flow paths lengths and flow path slopes. The average imperviousness (C-value) was determined for each sub-drainage area and from all of the values that were obtained we determined an accurate discharge values using HydroCalc.

The following table and attached Exhibit 2 summarize the results of the Measure RR 25-year hydrology analysis.

Table 1 – Measure RR 25-Year Overall Hydrology Summary

Sub-Area	Area (AC)	Length (ft)	Slope (ft/ft)	C	Tc (min)	Q (cfs)
1-A	12.8	2723	0.024	0.85	17	22.9
1-B	2.9	622	0.068	0.91	6	8.6
1-C	4.9	783	0.045	0.85	7	13.5
1-D	6.9	776	0.036	0.85	7	19.0
1-E	5.6	708	0.03	0.85	7	15.4
Subarea 1 Total	**33.1**	**-**	**-**	**-**	**-**	**79.4**
2-A	8.2	1013	0.007	0.91	11	18.4
2-B	3.3	639	0.033	0.91	6	9.9
2-C	3.4	708	0.011	0.91	8	8.9
Subarea 2 Total	**14.9**	**-**	**-**	**-**	**-**	**37.2**
3-A	27.3	2575	0.043	0.85	15	51.9
3-B	26.2	1875	0.059	0.85	12	55.5
3-C	5.8	1313	0.045	0.85	10	13.4
3-D	4.1	1741	0.013	0.85	15	7.8
Subarea 3 Total	**63.4**	**-**	**-**	**-**	**-**	**128.6**
4-A	8.1	861	0.037	0.91	8	21.1
4-B	6.2	1465	0.043	0.91	10	14.5
4-C	4.8	1035	0.044	0.85	8	12.5
4-D	14.5	1812	0.012	0.66	15	27.6
4-E	23.2	1540	0.014	0.42	13	46.7
4-F	20.9	1929	0.016	0.66	15	39.7
4-G	9.1	1138	0.13	0.25	7	24.9
4-H	16	1648	0.092	0.25	10	36.5
4-I	12.7	783	0.05	0.89	7	34.9
4-J	2.8	1716	0.012	0.85	15	5.4
Subarea 4 Total	**118.3**	**-**	**-**	**-**	**-**	**263.8**
5-A	32.1	2386	0.017	0.42	17	56.5
5-B	7.8	1074	0.022	0.25	10	18.0
5-C	4.6	1096	0.018	0.25	10	10.6
5-D	10.5	1448	0.039	0.25	11	22.8
5-E	6.3	975	0.010	0.58	11	13.9
5-F	11.5	1235	0.010	0.58	12	24.3
5-G	2.8	600	0.020	0.85	7	7.8
Subarea 5 Total	**75.6**	**-**	**-**	**-**	**-**	**153.9**

HYDROLOGY COMPARISON

A hydrology comparison between the 2012 Utility Infrastructure Master Plan and the Measure RR build out can be found in the following table.

Table 2 – Hydrology Comparison Between 2012 Utility Infrastructure Master Plan Conditions and Measure RR Build Out Conditions

	Utility Infrastructure Master Plan 2012		Measure RR		Difference		Percent Change	
Line	Area (Ac)	Q25 (cfs)	Area (Ac)	Q25 (cfs)	Area (Ac)	Q25 (cfs)	Area (Ac)	Q25 (cfs)
LINE A	215	439.3	220.5	506.8	5.5	67.5	2.6%	15.4%
LINE B	88.1	169.5	89.7	171.7	1.6	2.2	1.8%	1.3%
LINE C	15.1	34.9	14.9	37.2	-0.2	2.3	-1.3%	6.6%
LINE D	32.6	54.6	33.1	79.4	0.5	24.8	1.5%	45.4%
Total	350.8	698.3	358.2	795.1	7.4	96.8	2.1%	13.9%

A detailed breakdown of the hydrology comparison can be found in Appendix C. Reference Exhibits 1, 2, and 3 for the corresponding Hydrology Maps.

The calculations show that the areas tributary to Line A and Line D have the greatest increase in the 25-year storm flows.

Line A

The subareas 1-A, 11-B, and 4-C from the Utility Infrastructure Master Plan showed the largest increase in the 25-Year design frequency flow rates (Q25) from tributary Measure RR and Farm Precinct subareas. However, no new development occurred in these areas between 2012 and Measure RR Conditions. The differences may be derived from varying hydrology methods, including different subareas sizes and boundaries between the two studies (e.g. Measure RR and Farm Precinct studies included additional subareas).

Line D

The Utility Infrastructure Master Plan subarea 1-A showed the greatest increase in Q25 the most when compared to the Measure RR analysis. The Food Services building is the only Measure RR new development in this area and should not have increased the runoff volume by the amount indicated in the calculations. The difference may have to do with varying hydrology methods, including increased subareas between the studies (e.g. Measure RR study included additional subareas.)

For the purpose of the Mt. SAC Supplemental Environmental Impact Report (SEIR), it may be helpful to analyze the difference in conditions within these subareas in order to provide site specific hydrology analysis for the 2012 conditions using the same subareas and methodology as was employed for the Measure RR conditions study.

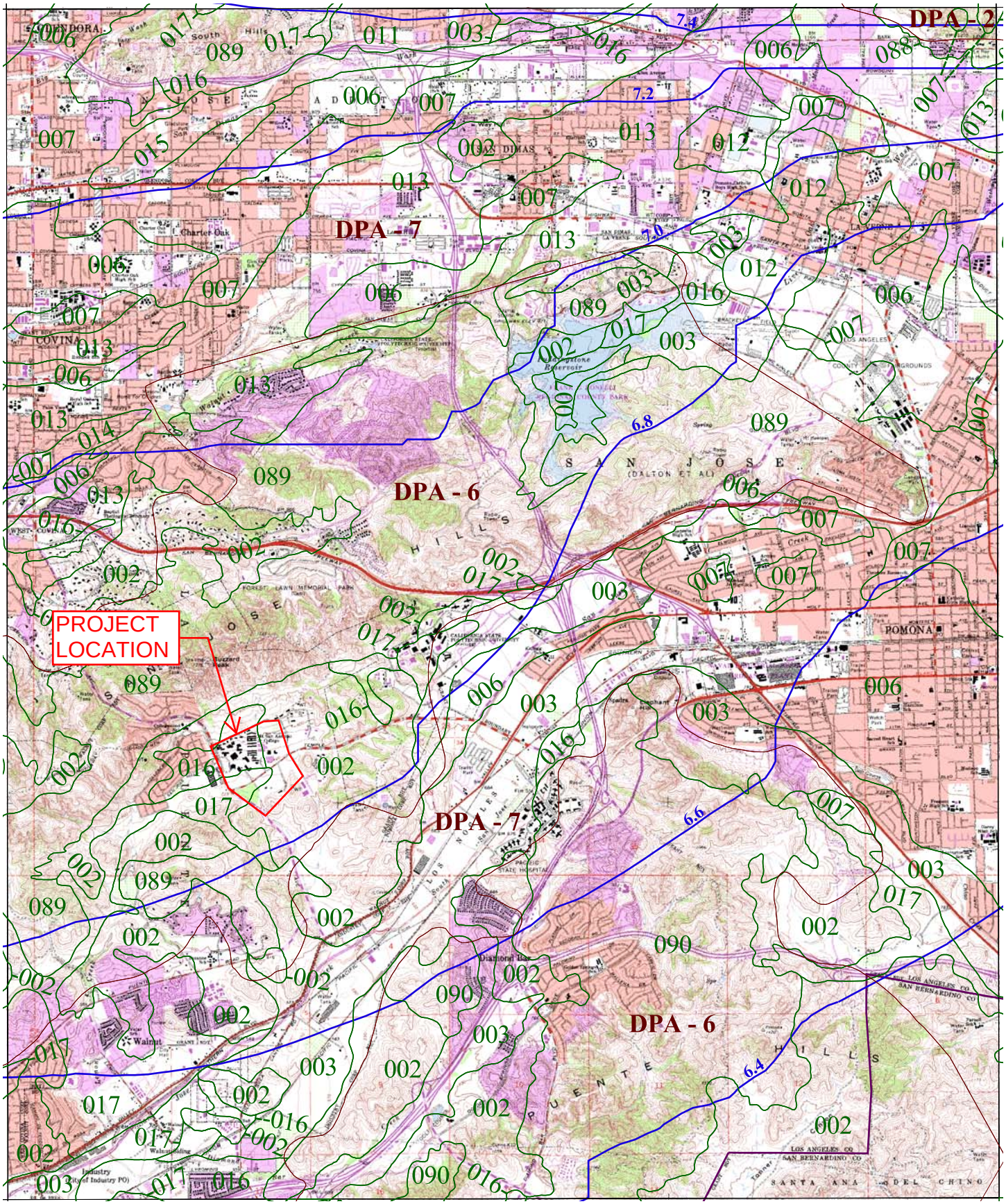
IMPERVIOUS AREA

At completion of the Measure RR implementation, the impervious area is expected to increase by approximately 20 acres, which is roughly 5% of the entire campus, including the Farm Precinct. A majority of the increase of impervious area is a result of Parking Lot M and the Physical Education Project – Phase 1, as shown in the following table.

	Building Name	Area (acres)	Difference in Impervious Area (Acres)
1.	Food Service	1.50	0.68
2.	Physical Education Project Phase 1	32.62	9.79
3.	Building 12	2.61	0.26
4.	Building 4	0.94	0.08
5.	Building 46	0.90	0.00
6.	Parking Lot M	9.43	8.68
7.	Major Grading (Athletic Complex Hill)	24.00	0.00
8.	Business and Computer Technology Center	5.76	0.58
9.	Student Success Center	0.92	-0.29
10.	Design Technology Center	1.70	0.00
	Total		**19.76**

APPENDIX A

Appendix A – LACDPW Isohyet/25-Year 24-hr Rainfall/Soils Information



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N W E S

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

SAN DIMAS
50-YEAR 24-HOUR ISOHYET

1-H1.22

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

APPENDIX B

Appendix B – Overall Existing Hydrology Results and Hydrographs

Peak Flow Hydrologic Analysis

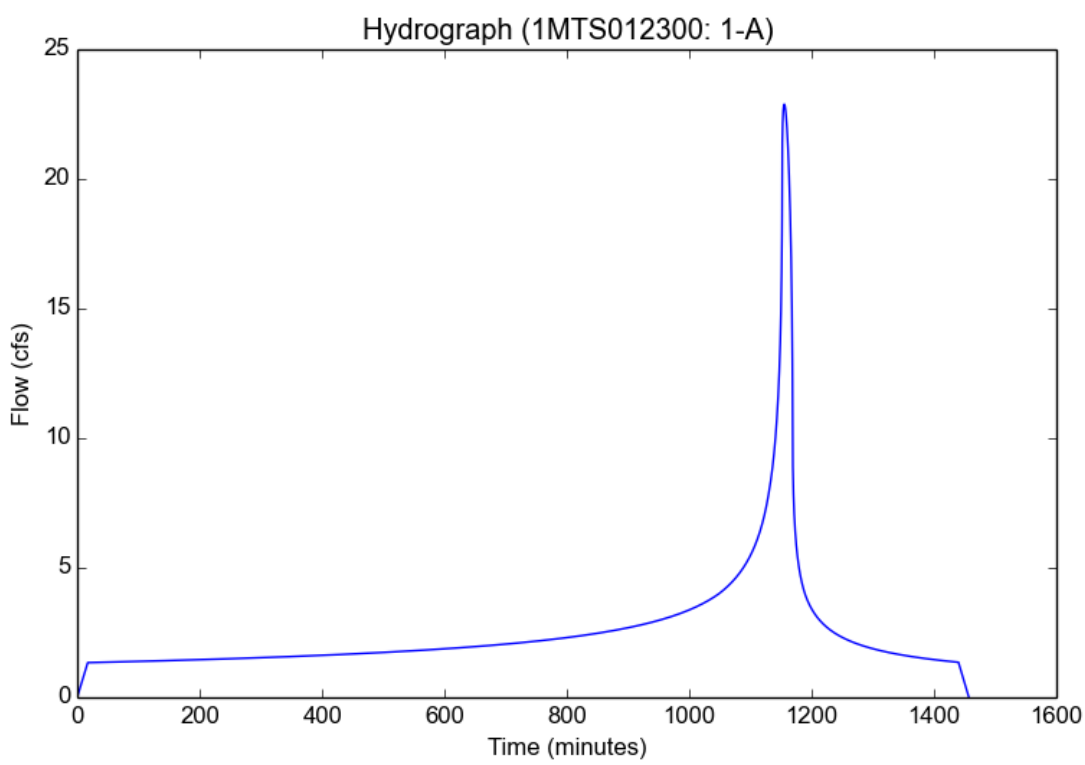
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 1-A.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	1-A
Area (ac)	12.8
Flow Path Length (ft)	2723.0
Flow Path Slope (vft/hft)	0.024
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.0335
Undeveloped Runoff Coefficient (Cu)	0.7609
Developed Runoff Coefficient (Cd)	0.8791
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	22.8833
Burned Peak Flow Rate (cfs)	22.8833
24-Hr Clear Runoff Volume (ac-ft)	5.0934
24-Hr Clear Runoff Volume (cu-ft)	221869.8211



Peak Flow Hydrologic Analysis

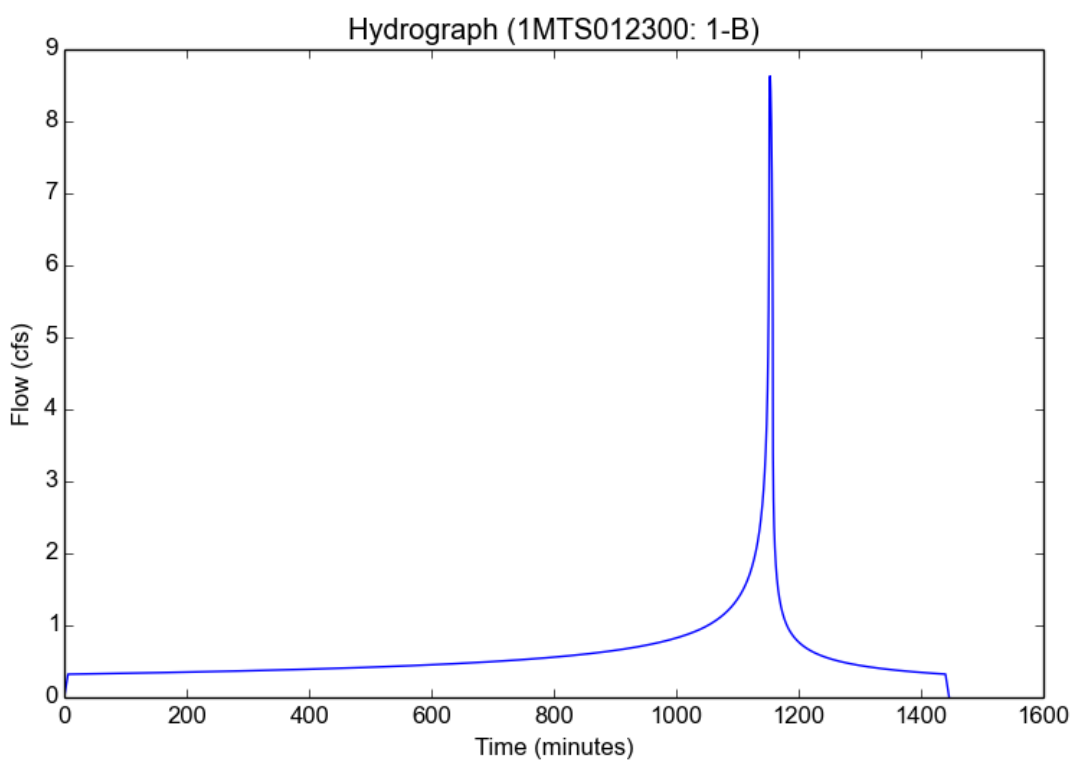
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 1-B.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	1-B
Area (ac)	2.9
Flow Path Length (ft)	622.0
Flow Path Slope (vft/hft)	0.068
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.91
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.3177
Undeveloped Runoff Coefficient (Cu)	0.8657
Developed Runoff Coefficient (Cd)	0.8969
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	8.6294
Burned Peak Flow Rate (cfs)	8.6294
24-Hr Clear Runoff Volume (ac-ft)	1.2153
24-Hr Clear Runoff Volume (cu-ft)	52938.7926



Peak Flow Hydrologic Analysis

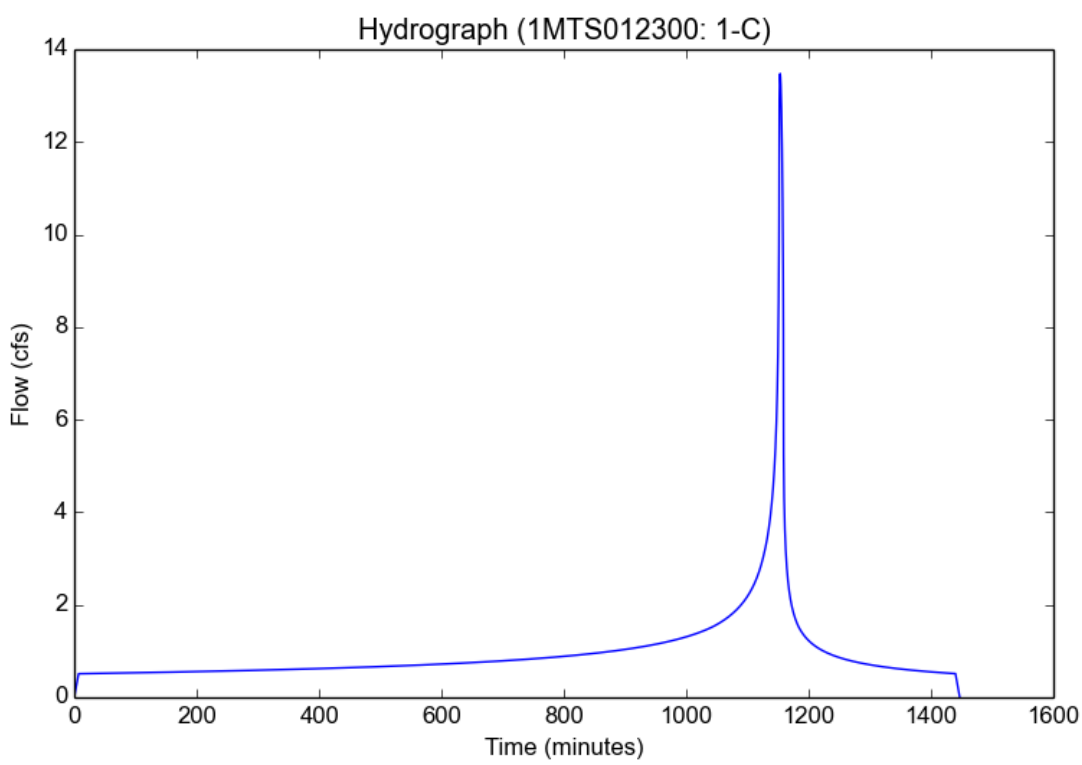
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 1-C.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	1-C
Area (ac)	4.89
Flow Path Length (ft)	783.0
Flow Path Slope (vft/hft)	0.045
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.0858
Undeveloped Runoff Coefficient (Cu)	0.8538
Developed Runoff Coefficient (Cd)	0.8931
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	13.476
Burned Peak Flow Rate (cfs)	13.476
24-Hr Clear Runoff Volume (ac-ft)	1.9464
24-Hr Clear Runoff Volume (cu-ft)	84785.4708



Peak Flow Hydrologic Analysis

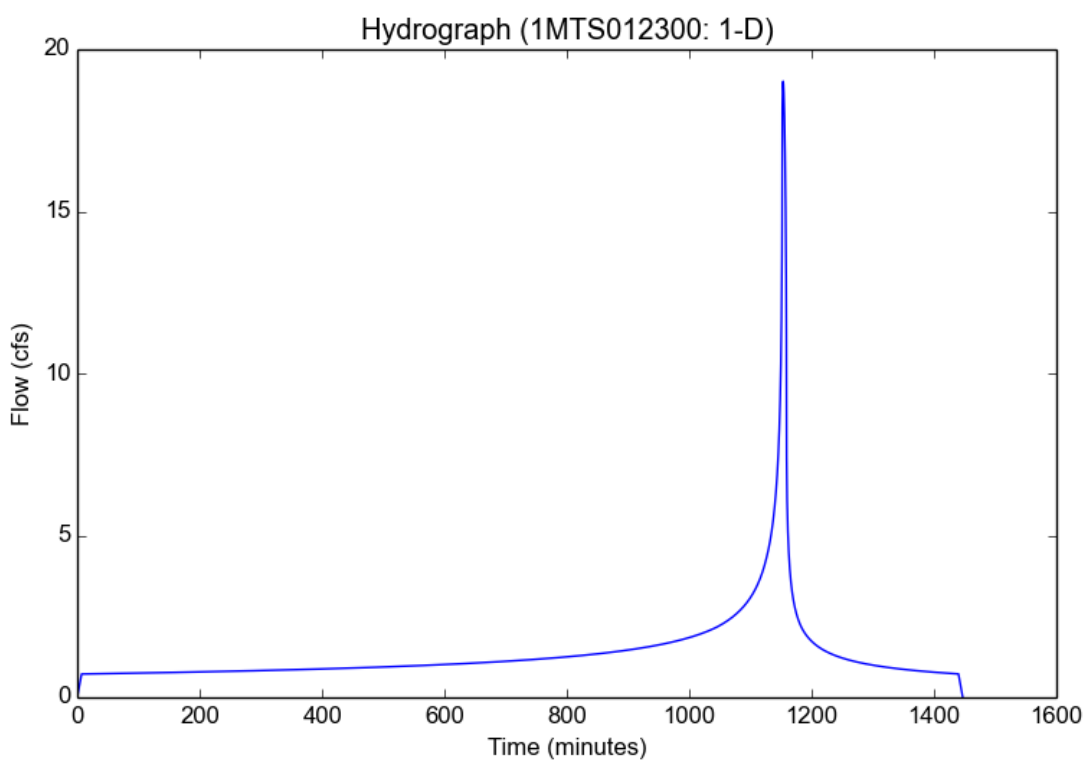
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 1-D.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	1-D
Area (ac)	6.9
Flow Path Length (ft)	776.0
Flow Path Slope (vft/hft)	0.036
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.0858
Undeveloped Runoff Coefficient (Cu)	0.8538
Developed Runoff Coefficient (Cd)	0.8931
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	19.0152
Burned Peak Flow Rate (cfs)	19.0152
24-Hr Clear Runoff Volume (ac-ft)	2.7465
24-Hr Clear Runoff Volume (cu-ft)	119635.9404



Peak Flow Hydrologic Analysis

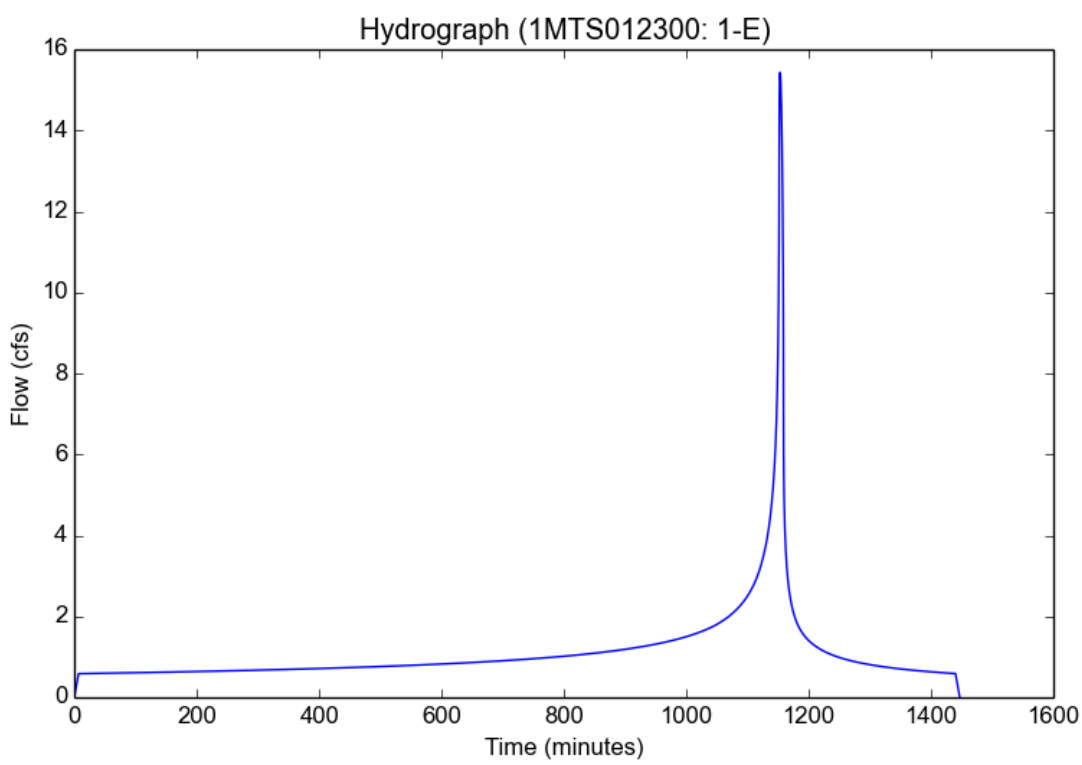
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 1-E.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	1-E
Area (ac)	5.6
Flow Path Length (ft)	708.0
Flow Path Slope (vft/hft)	0.03
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.0858
Undeveloped Runoff Coefficient (Cu)	0.8538
Developed Runoff Coefficient (Cd)	0.8931
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	15.4326
Burned Peak Flow Rate (cfs)	15.4326
24-Hr Clear Runoff Volume (ac-ft)	2.229
24-Hr Clear Runoff Volume (cu-ft)	97095.8357



Peak Flow Hydrologic Analysis

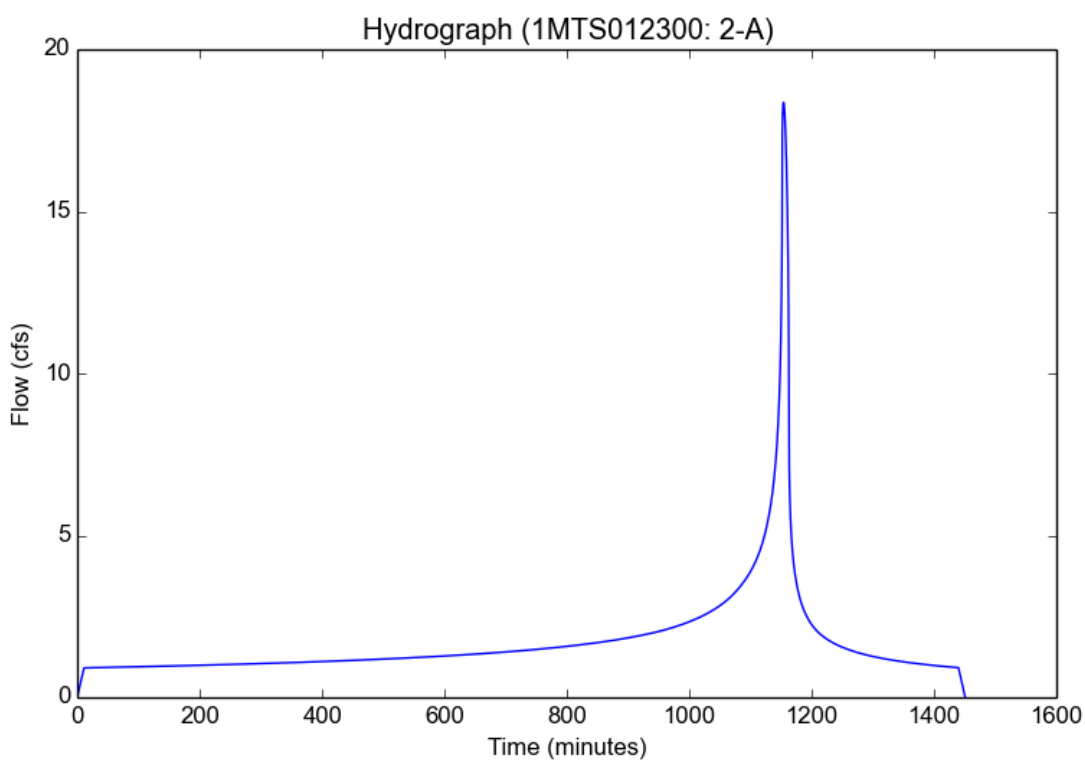
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 2-A.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	2-A
Area (ac)	8.2
Flow Path Length (ft)	1013.0
Flow Path Slope (vft/hft)	0.007
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.91
Soil Type	17
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.4952
Undeveloped Runoff Coefficient (Cu)	0.8731
Developed Runoff Coefficient (Cd)	0.8976
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	18.3651
Burned Peak Flow Rate (cfs)	18.3651
24-Hr Clear Runoff Volume (ac-ft)	3.4584
24-Hr Clear Runoff Volume (cu-ft)	150646.0569



Peak Flow Hydrologic Analysis

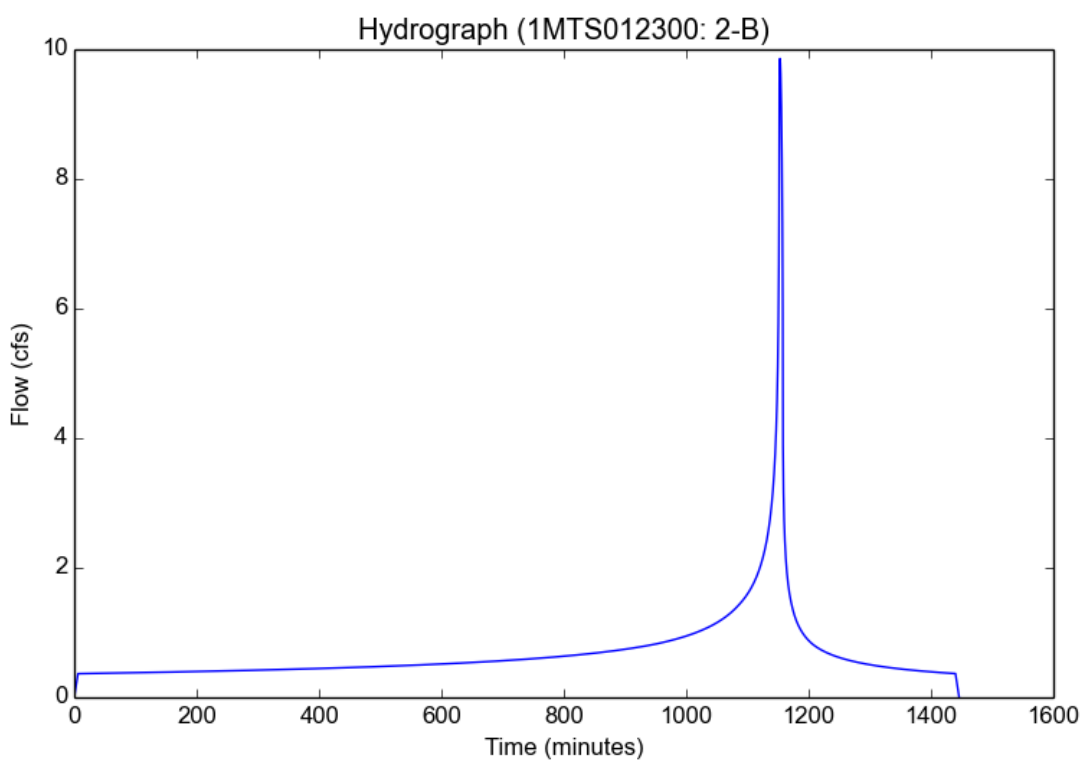
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 2-B.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	2-B
Area (ac)	3.3
Flow Path Length (ft)	639.0
Flow Path Slope (vft/hft)	0.033
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.91
Soil Type	17
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.3177
Undeveloped Runoff Coefficient (Cu)	0.9047
Developed Runoff Coefficient (Cd)	0.9004
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	9.8581
Burned Peak Flow Rate (cfs)	9.8581
24-Hr Clear Runoff Volume (ac-ft)	1.3918
24-Hr Clear Runoff Volume (cu-ft)	60626.9239



Peak Flow Hydrologic Analysis

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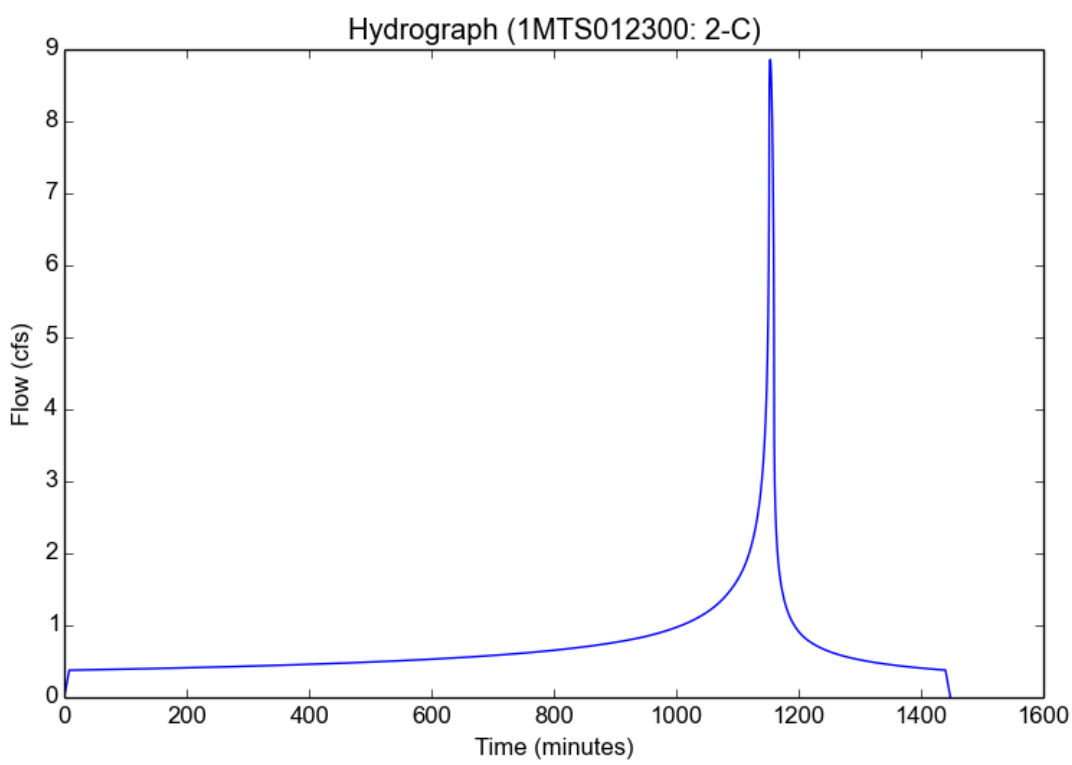
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	2-C
Area (ac)	3.4
Flow Path Length (ft)	708.0
Flow Path Slope (vft/hft)	0.011
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.91
Soil Type	17
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.8981
Undeveloped Runoff Coefficient (Cu)	0.8886
Developed Runoff Coefficient (Cd)	0.899
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	8.858
Burned Peak Flow Rate (cfs)	8.858
24-Hr Clear Runoff Volume (ac-ft)	1.434
24-Hr Clear Runoff Volume (cu-ft)	62463.4363



Peak Flow Hydrologic Analysis

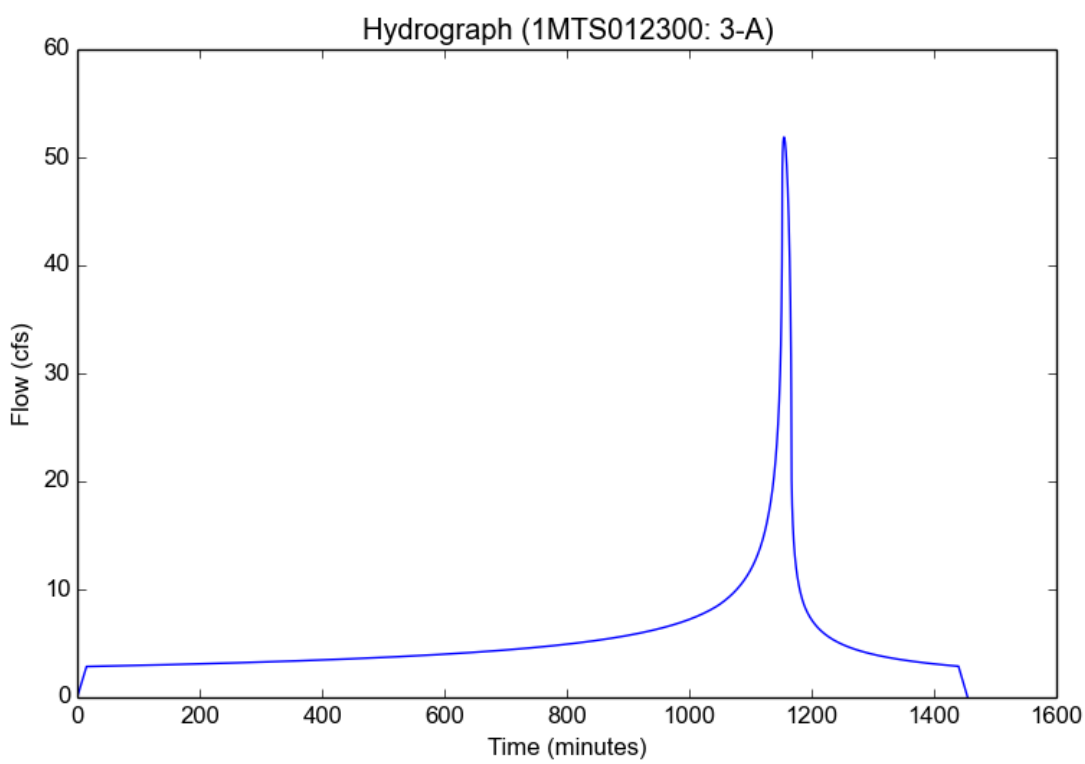
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 3-A.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	3-A
Area (ac)	27.3
Flow Path Length (ft)	2575.0
Flow Path Slope (vft/hft)	0.043
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.1568
Undeveloped Runoff Coefficient (Cu)	0.7741
Developed Runoff Coefficient (Cd)	0.8811
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	51.8793
Burned Peak Flow Rate (cfs)	51.8793
24-Hr Clear Runoff Volume (ac-ft)	10.8639
24-Hr Clear Runoff Volume (cu-ft)	473231.0065



Peak Flow Hydrologic Analysis

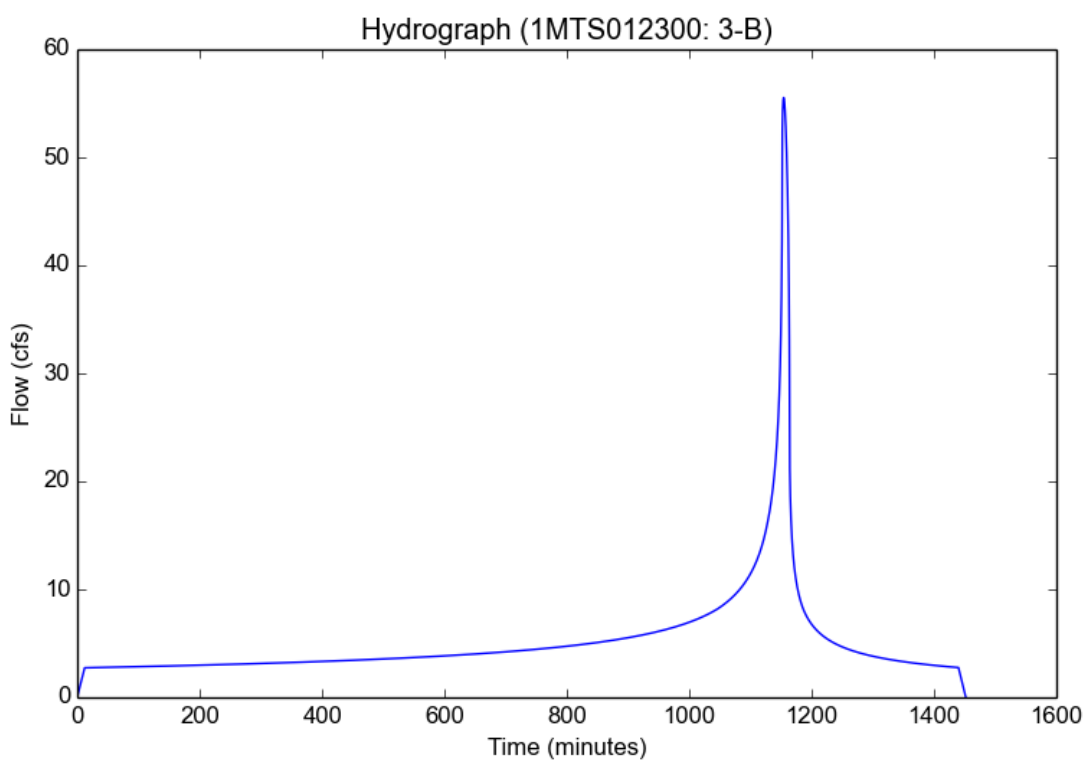
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 3-B.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	3-B
Area (ac)	26.2
Flow Path Length (ft)	1875.0
Flow Path Slope (vft/hft)	0.059
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.3952
Undeveloped Runoff Coefficient (Cu)	0.7996
Developed Runoff Coefficient (Cd)	0.8849
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	55.5341
Burned Peak Flow Rate (cfs)	55.5341
24-Hr Clear Runoff Volume (ac-ft)	10.427
24-Hr Clear Runoff Volume (cu-ft)	454200.8583



Peak Flow Hydrologic Analysis

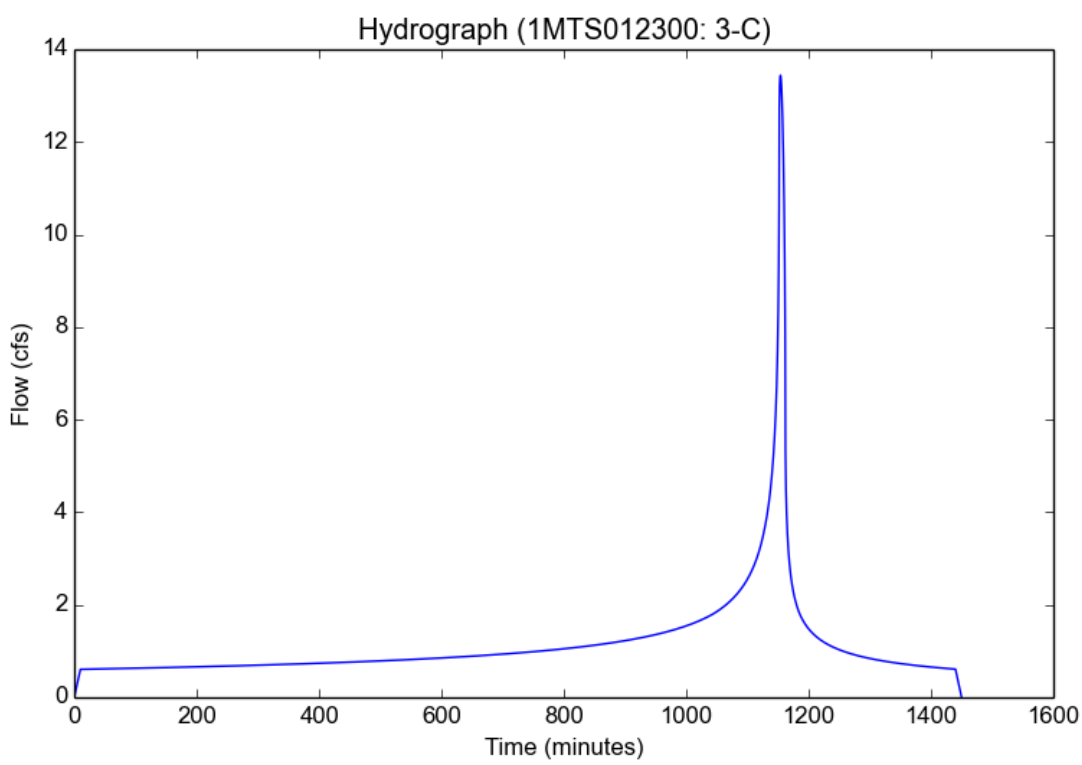
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 3-C.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	3-C
Area (ac)	5.8
Flow Path Length (ft)	1313.0
Flow Path Slope (vft/hft)	0.045
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.6095
Undeveloped Runoff Coefficient (Cu)	0.8192
Developed Runoff Coefficient (Cd)	0.8879
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	13.4384
Burned Peak Flow Rate (cfs)	13.4384
24-Hr Clear Runoff Volume (ac-ft)	2.3084
24-Hr Clear Runoff Volume (cu-ft)	100554.857



Peak Flow Hydrologic Analysis

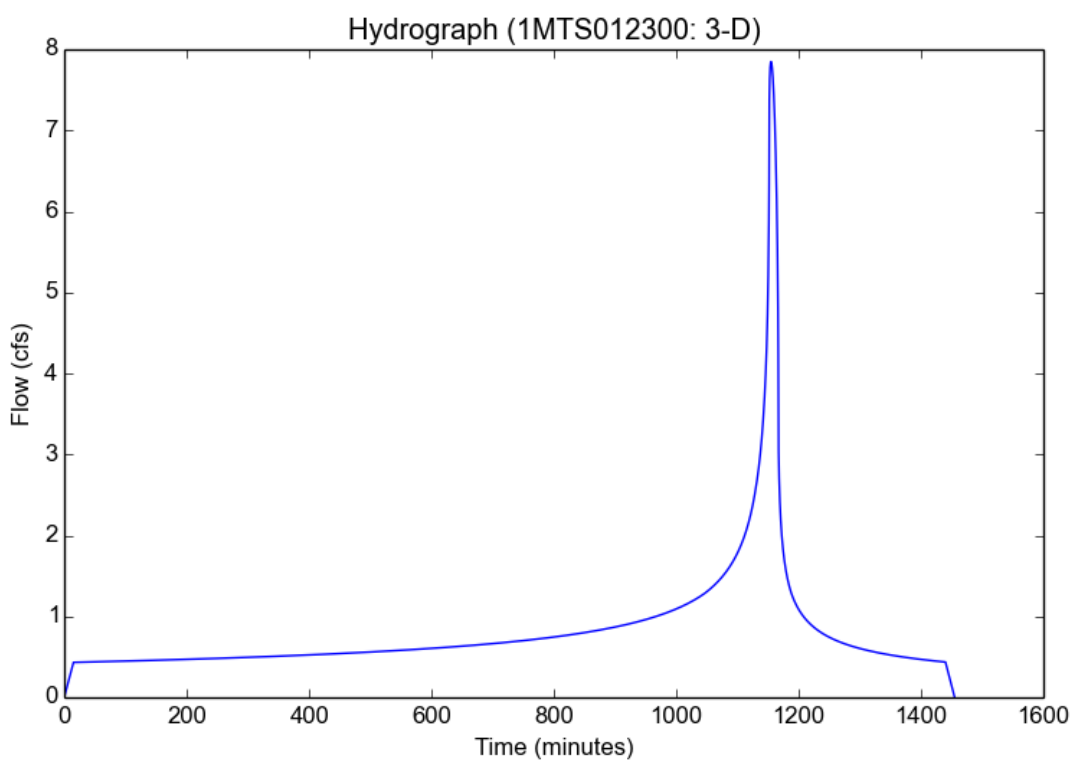
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 3-D.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	3-D
Area (ac)	4.13
Flow Path Length (ft)	1742.0
Flow Path Slope (vft/hft)	0.013
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.1568
Undeveloped Runoff Coefficient (Cu)	0.7741
Developed Runoff Coefficient (Cd)	0.8811
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	7.8484
Burned Peak Flow Rate (cfs)	7.8484
24-Hr Clear Runoff Volume (ac-ft)	1.6435
24-Hr Clear Runoff Volume (cu-ft)	71591.3574



Peak Flow Hydrologic Analysis

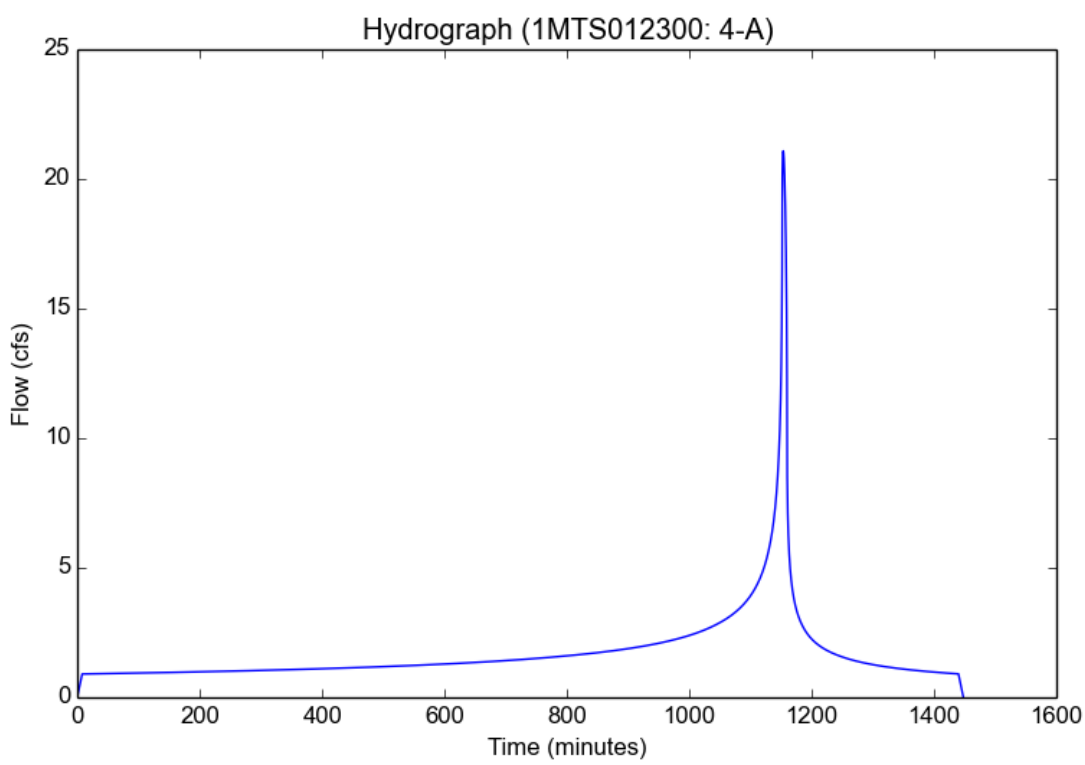
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-A.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-A
Area (ac)	8.1
Flow Path Length (ft)	861.0
Flow Path Slope (vft/hft)	0.037
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.91
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.8981
Undeveloped Runoff Coefficient (Cu)	0.8792
Developed Runoff Coefficient (Cd)	0.8981
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	21.083
Burned Peak Flow Rate (cfs)	21.083
24-Hr Clear Runoff Volume (ac-ft)	3.4717
24-Hr Clear Runoff Volume (cu-ft)	151225.2453



Peak Flow Hydrologic Analysis

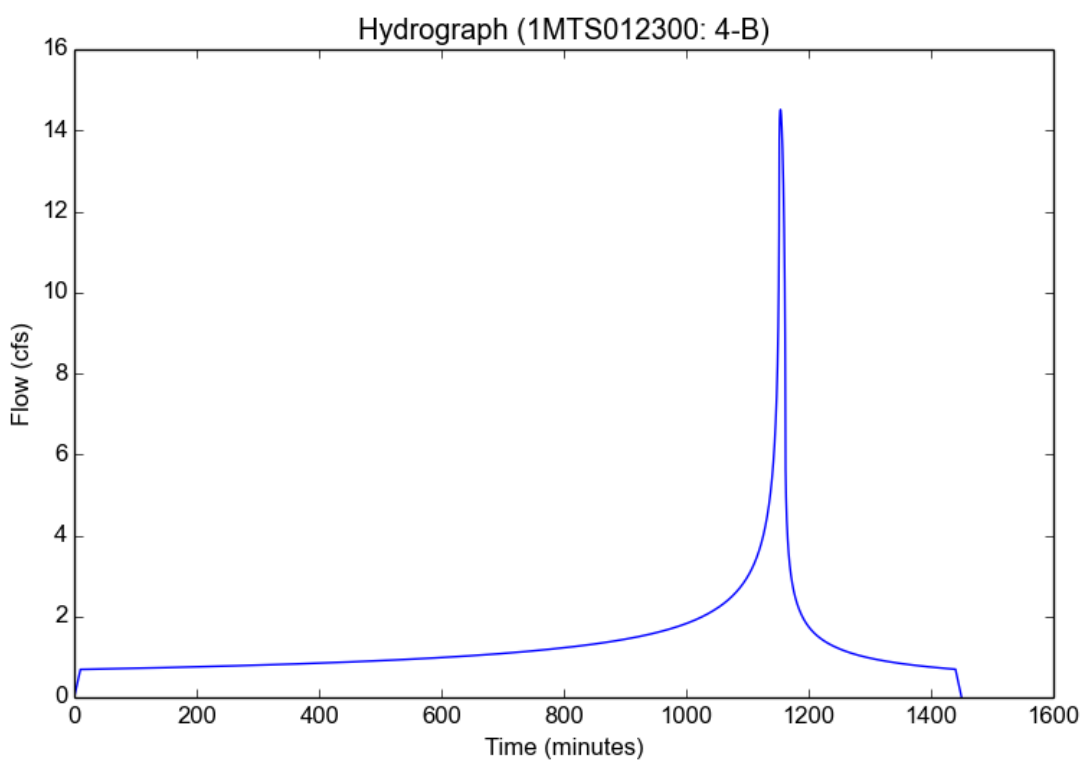
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-B.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-B
Area (ac)	6.2
Flow Path Length (ft)	1465.0
Flow Path Slope (vft/hft)	0.043
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.91
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.6095
Undeveloped Runoff Coefficient (Cu)	0.8664
Developed Runoff Coefficient (Cd)	0.897
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	14.5123
Burned Peak Flow Rate (cfs)	14.5123
24-Hr Clear Runoff Volume (ac-ft)	2.6573
24-Hr Clear Runoff Volume (cu-ft)	115750.3007



Peak Flow Hydrologic Analysis

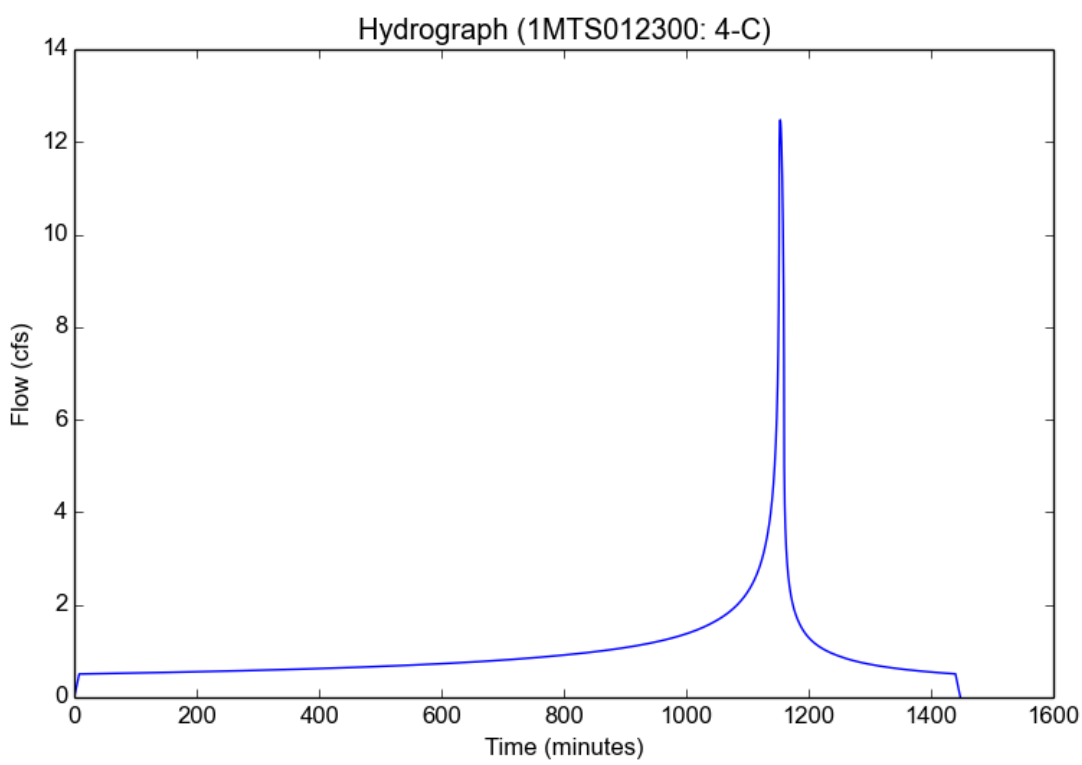
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-C.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-C
Area (ac)	4.8
Flow Path Length (ft)	1035.0
Flow Path Slope (vft/hft)	0.044
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.8981
Undeveloped Runoff Coefficient (Cu)	0.8792
Developed Runoff Coefficient (Cd)	0.8969
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	12.4762
Burned Peak Flow Rate (cfs)	12.4762
24-Hr Clear Runoff Volume (ac-ft)	1.9868
24-Hr Clear Runoff Volume (cu-ft)	86546.7989



Peak Flow Hydrologic Analysis

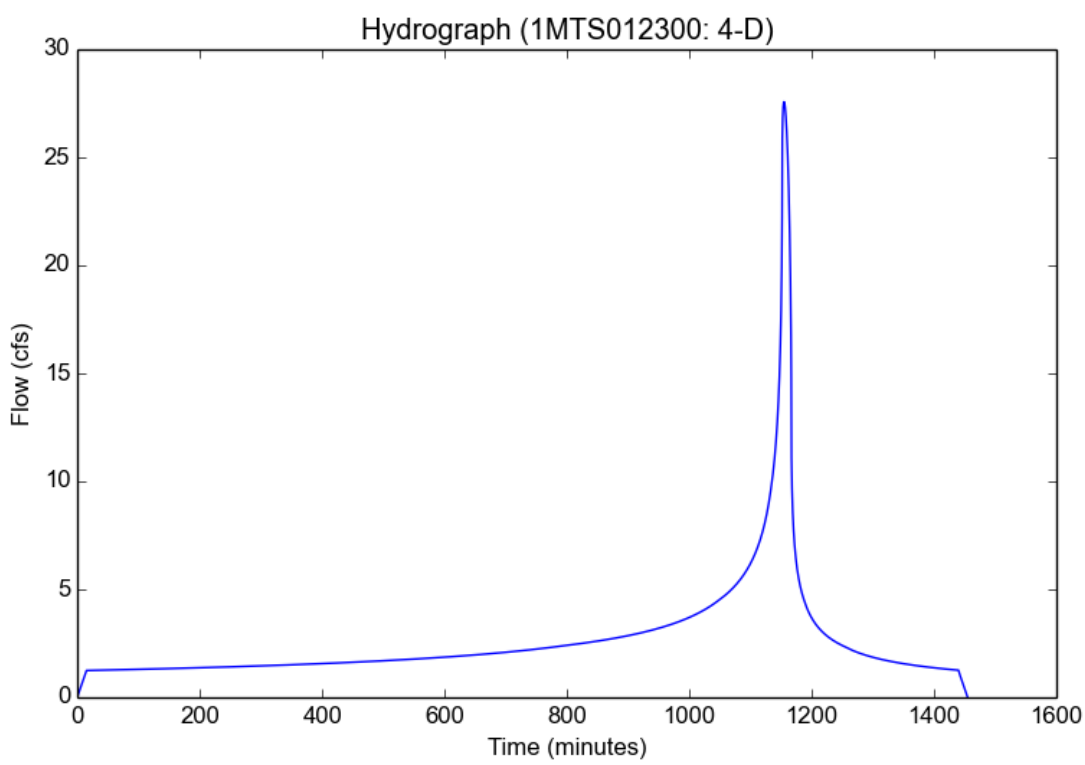
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-D.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-D
Area (ac)	14.5
Flow Path Length (ft)	1812.0
Flow Path Slope (vft/hft)	0.012
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.66
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.1568
Undeveloped Runoff Coefficient (Cu)	0.8464
Developed Runoff Coefficient (Cd)	0.8818
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	27.5755
Burned Peak Flow Rate (cfs)	27.5755
24-Hr Clear Runoff Volume (ac-ft)	5.327
24-Hr Clear Runoff Volume (cu-ft)	232044.1867



Peak Flow Hydrologic Analysis

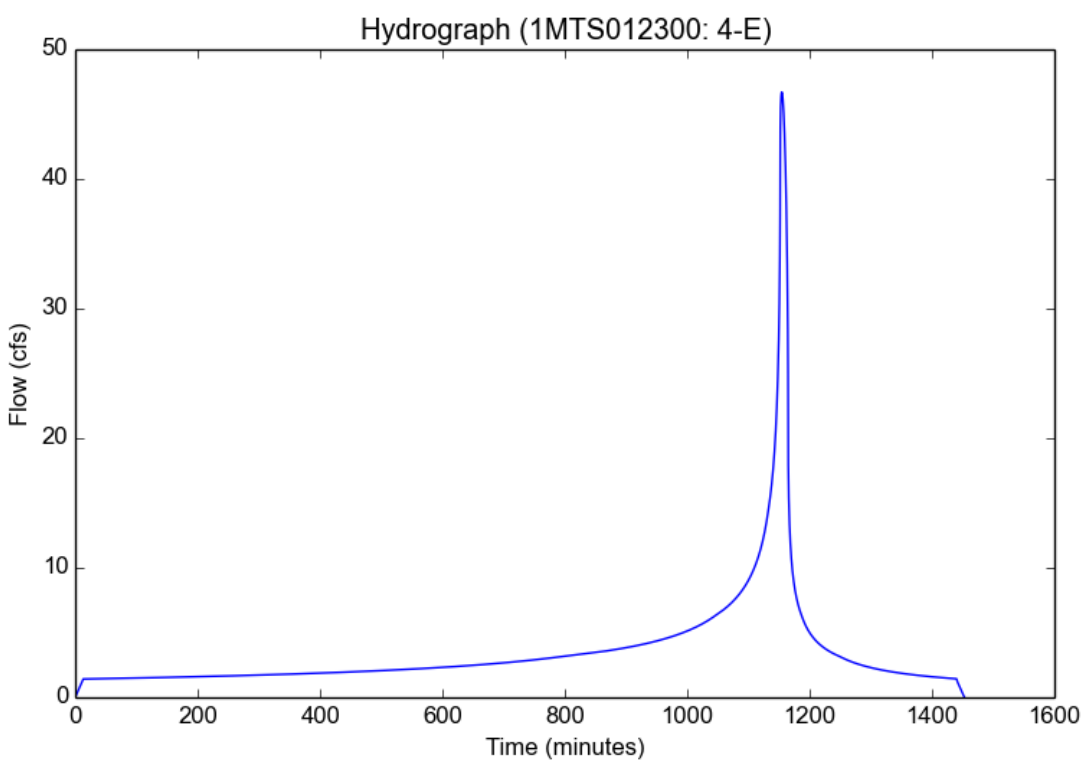
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-E.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-E
Area (ac)	23.2
Flow Path Length (ft)	1540.0
Flow Path Slope (vft/hft)	0.014
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.42
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.3068
Undeveloped Runoff Coefficient (Cu)	0.853
Developed Runoff Coefficient (Cd)	0.8727
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	46.7075
Burned Peak Flow Rate (cfs)	46.7075
24-Hr Clear Runoff Volume (ac-ft)	7.1608
24-Hr Clear Runoff Volume (cu-ft)	311922.5943



Peak Flow Hydrologic Analysis

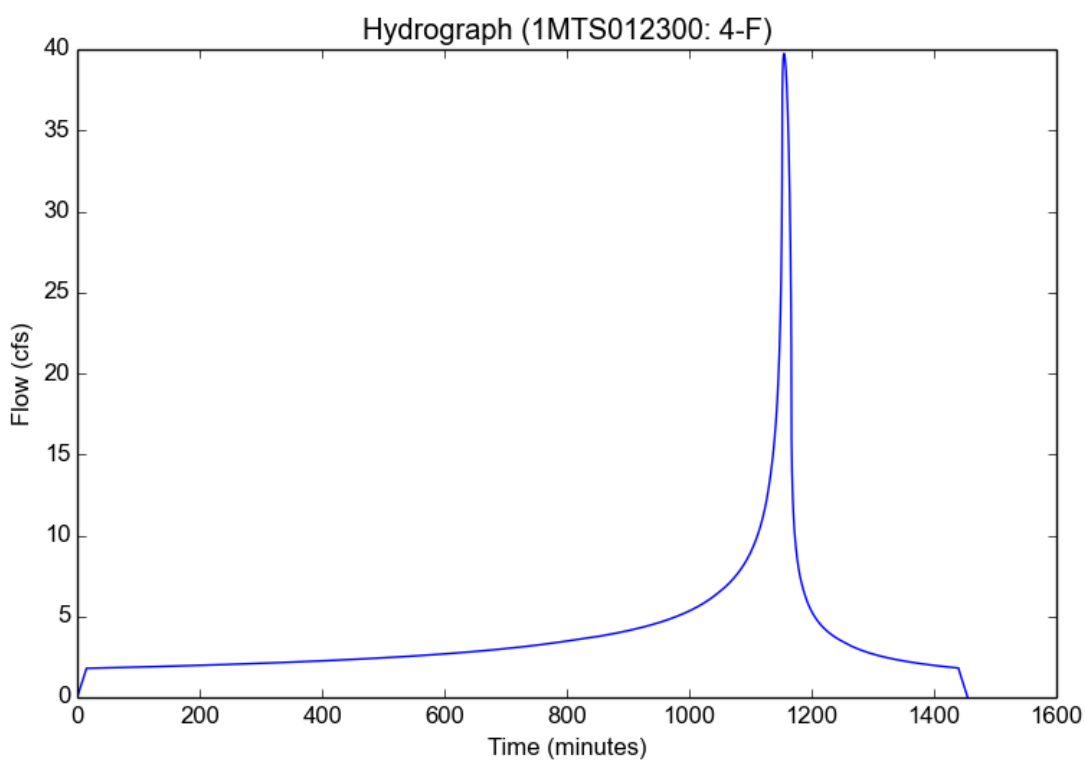
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-F.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-F
Area (ac)	20.9
Flow Path Length (ft)	1929.0
Flow Path Slope (vft/hft)	0.016
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.66
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.1568
Undeveloped Runoff Coefficient (Cu)	0.8464
Developed Runoff Coefficient (Cd)	0.8818
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	39.7467
Burned Peak Flow Rate (cfs)	39.7467
24-Hr Clear Runoff Volume (ac-ft)	7.6782
24-Hr Clear Runoff Volume (cu-ft)	334463.6898



Peak Flow Hydrologic Analysis

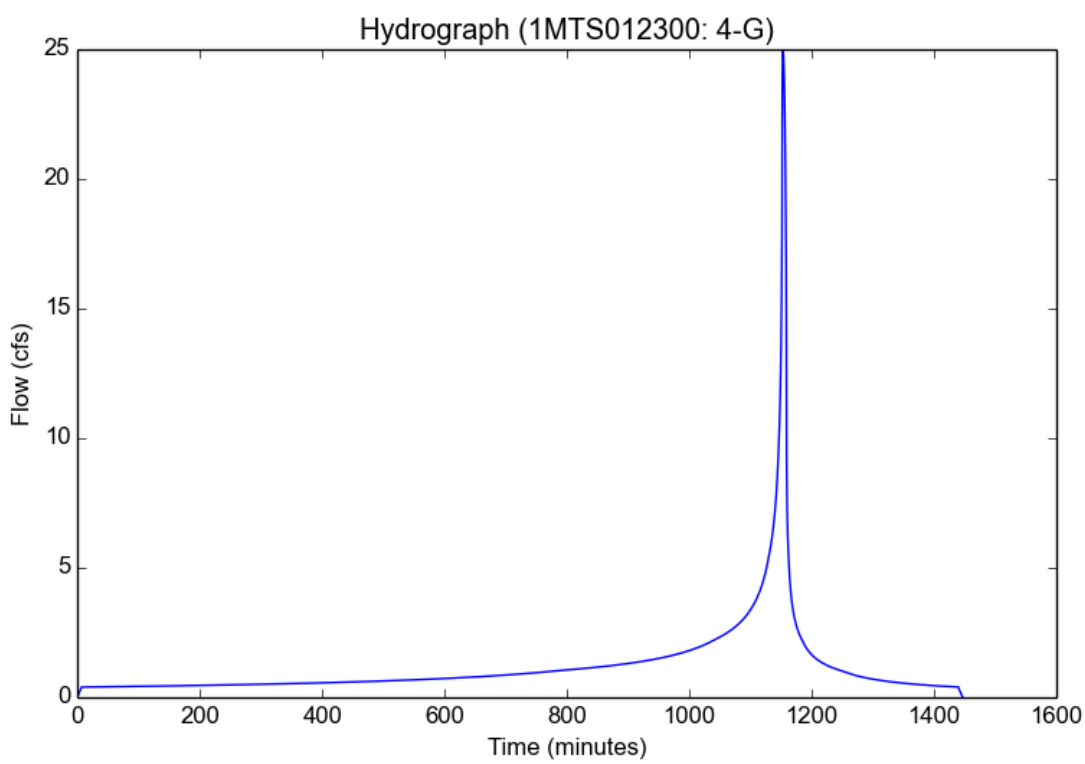
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-G.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-G
Area (ac)	9.1
Flow Path Length (ft)	1138.0
Flow Path Slope (vft/hft)	0.13
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.25
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.0858
Undeveloped Runoff Coefficient (Cu)	0.8857
Developed Runoff Coefficient (Cd)	0.8893
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	24.9723
Burned Peak Flow Rate (cfs)	24.9723
24-Hr Clear Runoff Volume (ac-ft)	2.4318
24-Hr Clear Runoff Volume (cu-ft)	105928.2608



Peak Flow Hydrologic Analysis

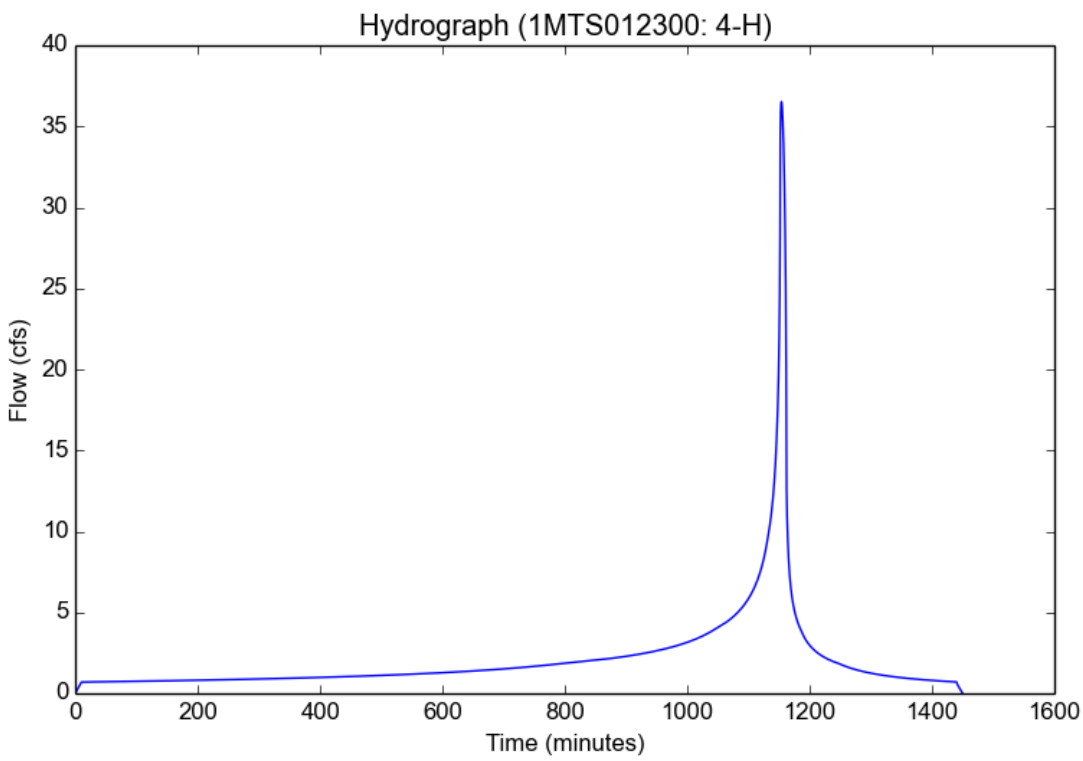
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-H.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-H
Area (ac)	16.0
Flow Path Length (ft)	1648.0
Flow Path Slope (vft/hft)	0.092
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.25
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.6095
Undeveloped Runoff Coefficient (Cu)	0.8664
Developed Runoff Coefficient (Cd)	0.8748
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	36.5252
Burned Peak Flow Rate (cfs)	36.5252
24-Hr Clear Runoff Volume (ac-ft)	4.2738
24-Hr Clear Runoff Volume (cu-ft)	186165.5661



Peak Flow Hydrologic Analysis

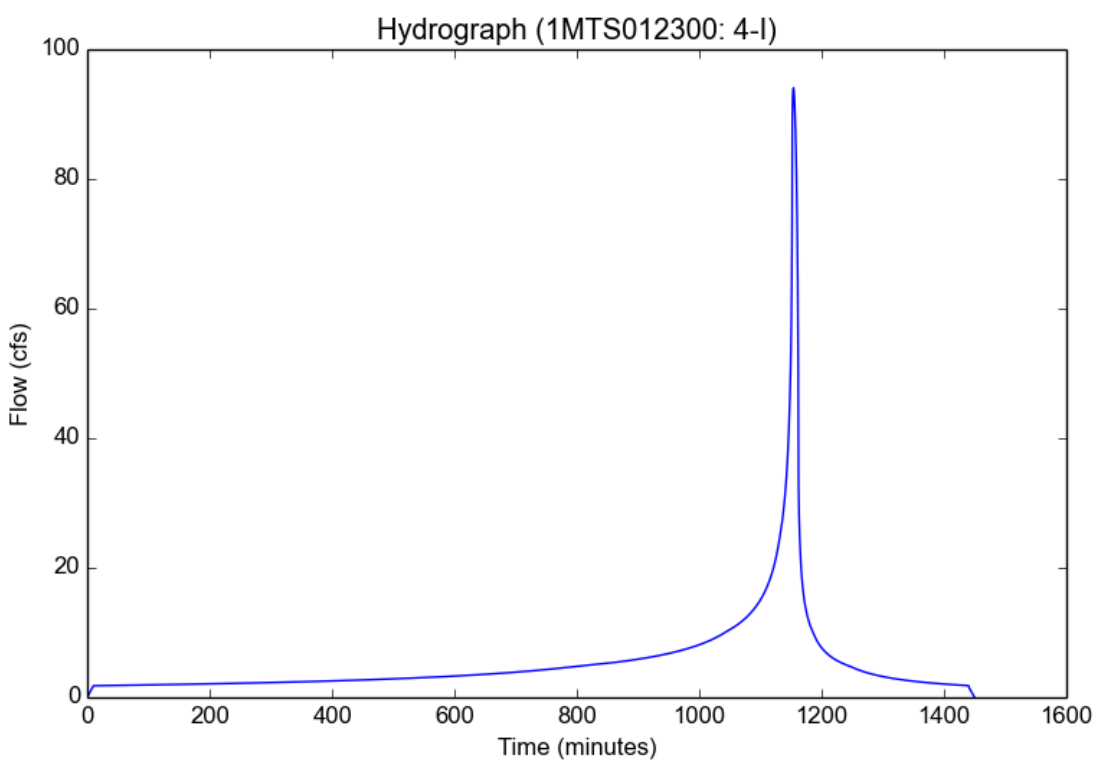
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-I.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-I
Area (ac)	41.2
Flow Path Length (ft)	1877.0
Flow Path Slope (vft/hft)	0.12
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.25
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.6095
Undeveloped Runoff Coefficient (Cu)	0.8664
Developed Runoff Coefficient (Cd)	0.8748
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	94.0524
Burned Peak Flow Rate (cfs)	94.0524
24-Hr Clear Runoff Volume (ac-ft)	11.005
24-Hr Clear Runoff Volume (cu-ft)	479376.3328



Peak Flow Hydrologic Analysis

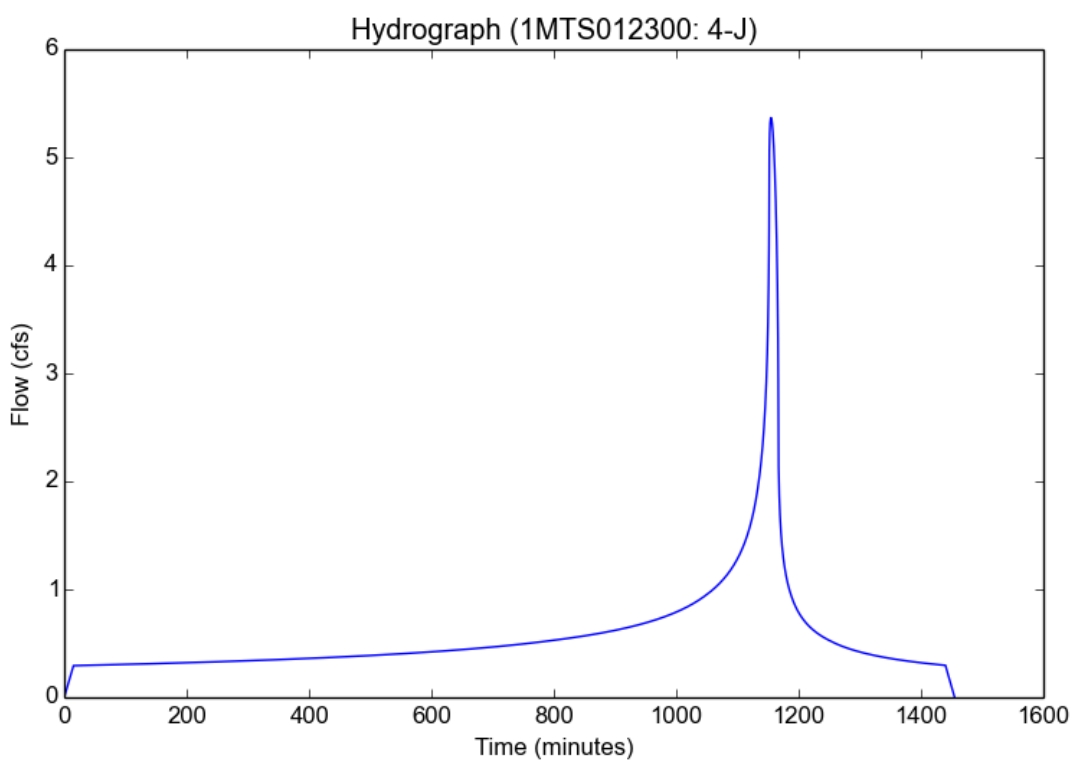
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-J.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-J
Area (ac)	2.79
Flow Path Length (ft)	1716.0
Flow Path Slope (vft/hft)	0.012
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.1568
Undeveloped Runoff Coefficient (Cu)	0.8464
Developed Runoff Coefficient (Cd)	0.892
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	5.3672
Burned Peak Flow Rate (cfs)	5.3672
24-Hr Clear Runoff Volume (ac-ft)	1.1548
24-Hr Clear Runoff Volume (cu-ft)	50301.2023



Peak Flow Hydrologic Analysis

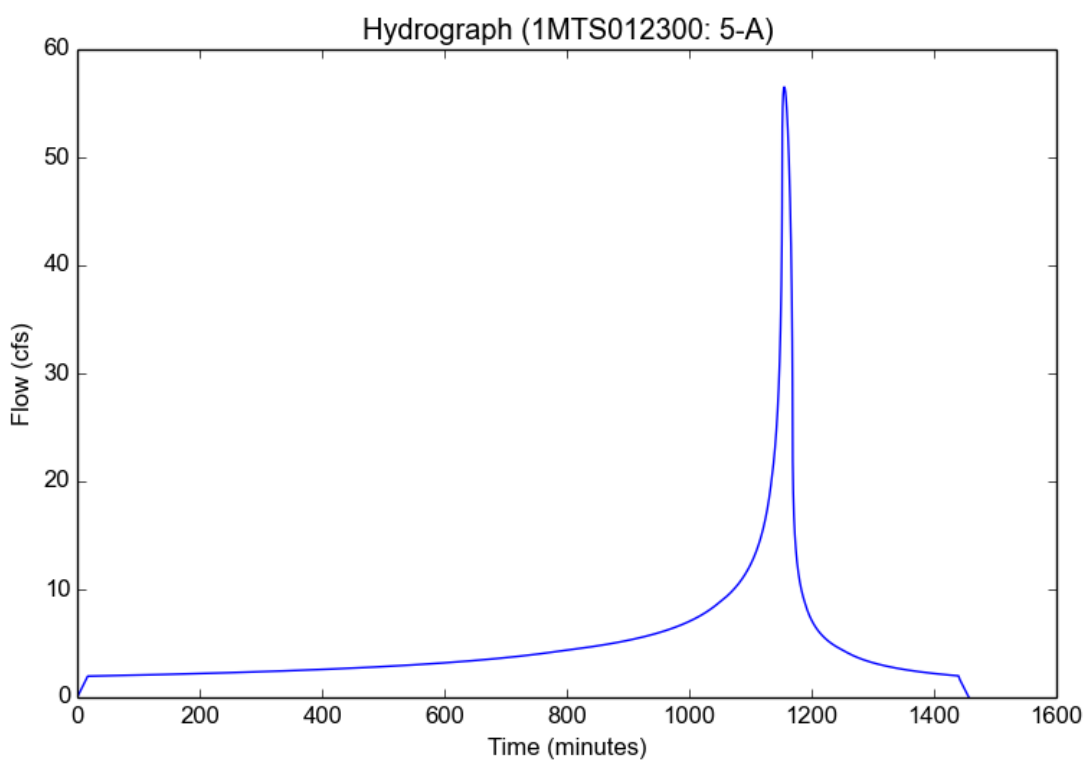
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 5-A.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	5-A
Area (ac)	32.1
Flow Path Length (ft)	2386.0
Flow Path Slope (vft/hft)	0.017
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.42
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.0335
Undeveloped Runoff Coefficient (Cu)	0.8409
Developed Runoff Coefficient (Cd)	0.8657
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	56.5125
Burned Peak Flow Rate (cfs)	56.5125
24-Hr Clear Runoff Volume (ac-ft)	9.9059
24-Hr Clear Runoff Volume (cu-ft)	431498.8286



Peak Flow Hydrologic Analysis

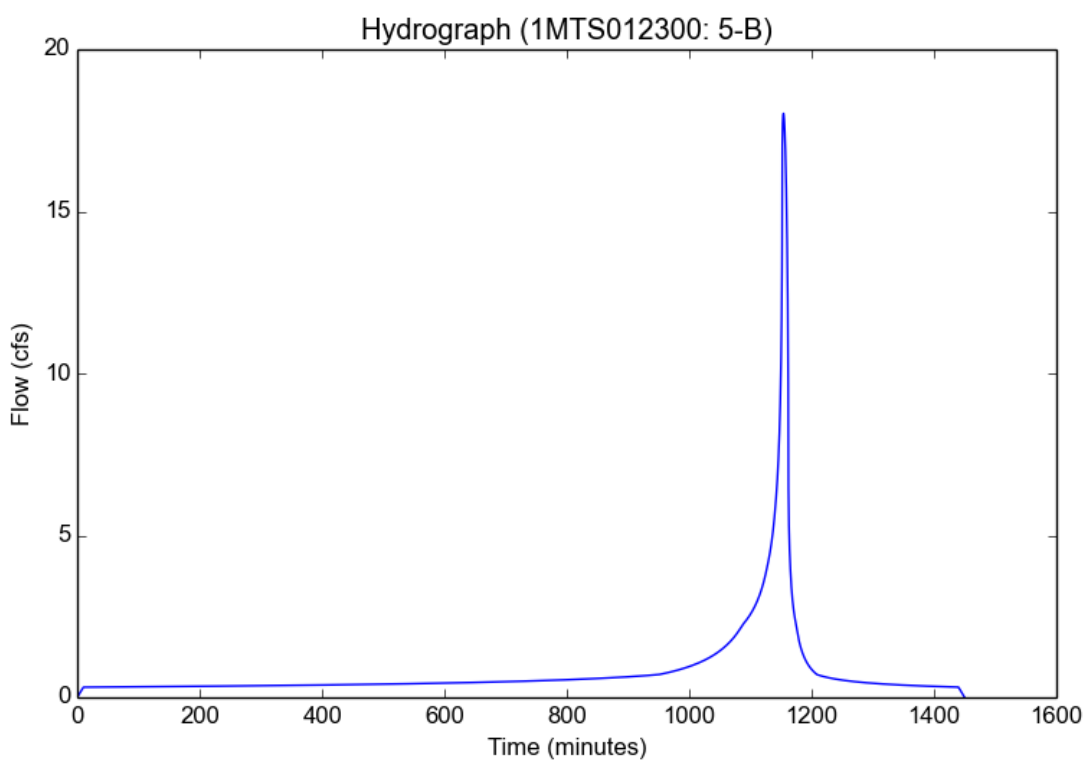
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 5-B.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	5-B
Area (ac)	7.82
Flow Path Length (ft)	1074.0
Flow Path Slope (vft/hft)	0.022
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.25
Soil Type	17
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.6095
Undeveloped Runoff Coefficient (Cu)	0.8776
Developed Runoff Coefficient (Cd)	0.8832
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	18.0226
Burned Peak Flow Rate (cfs)	18.0226
24-Hr Clear Runoff Volume (ac-ft)	1.6432
24-Hr Clear Runoff Volume (cu-ft)	71578.0756



Peak Flow Hydrologic Analysis

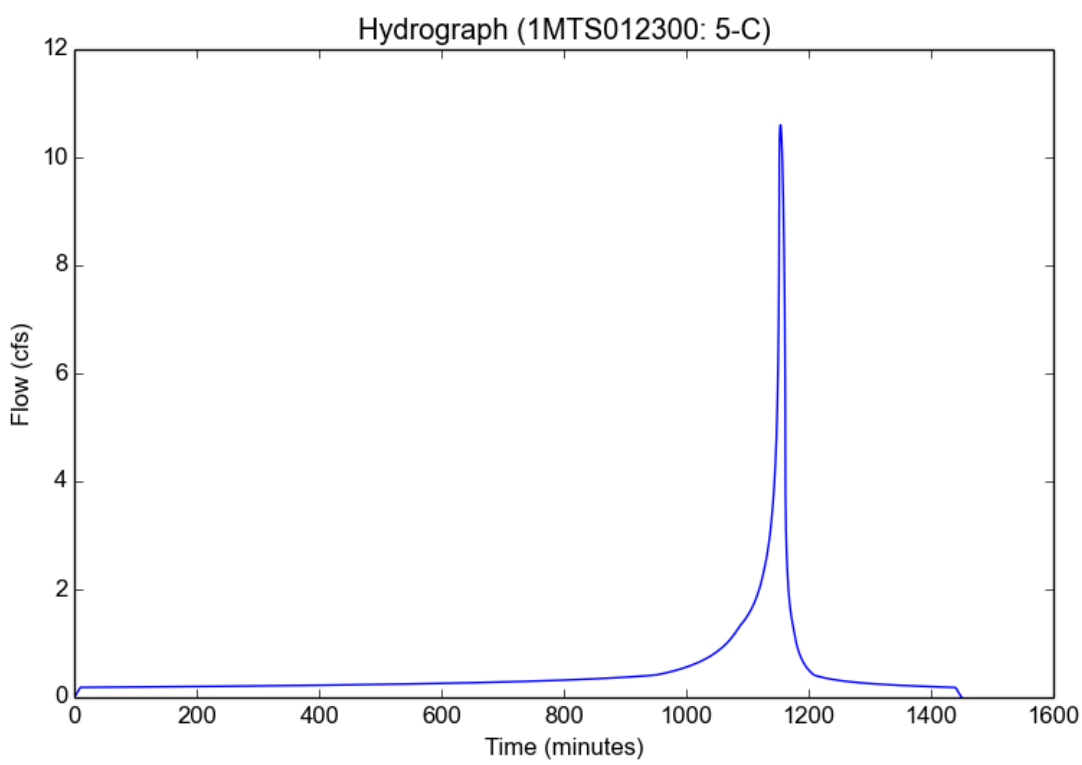
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 5-C.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	5-C
Area (ac)	4.6
Flow Path Length (ft)	1096.0
Flow Path Slope (vft/hft)	0.018
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.25
Soil Type	17
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.6095
Undeveloped Runoff Coefficient (Cu)	0.8776
Developed Runoff Coefficient (Cd)	0.8832
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	10.6015
Burned Peak Flow Rate (cfs)	10.6015
24-Hr Clear Runoff Volume (ac-ft)	0.9666
24-Hr Clear Runoff Volume (cu-ft)	42104.7503



Peak Flow Hydrologic Analysis

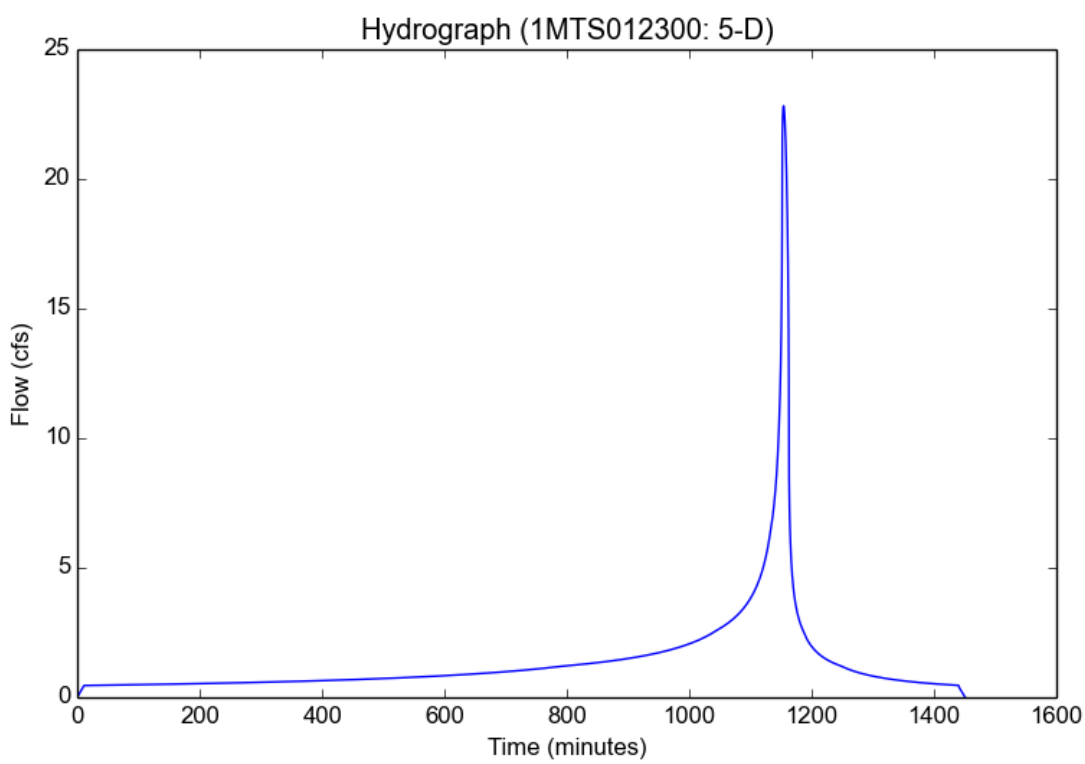
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 5-D.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	5-D
Area (ac)	10.5
Flow Path Length (ft)	1448.0
Flow Path Slope (vft/hft)	0.039
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.25
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.4952
Undeveloped Runoff Coefficient (Cu)	0.8613
Developed Runoff Coefficient (Cd)	0.871
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	22.8203
Burned Peak Flow Rate (cfs)	22.8203
24-Hr Clear Runoff Volume (ac-ft)	2.8044
24-Hr Clear Runoff Volume (cu-ft)	122159.1376



Peak Flow Hydrologic Analysis

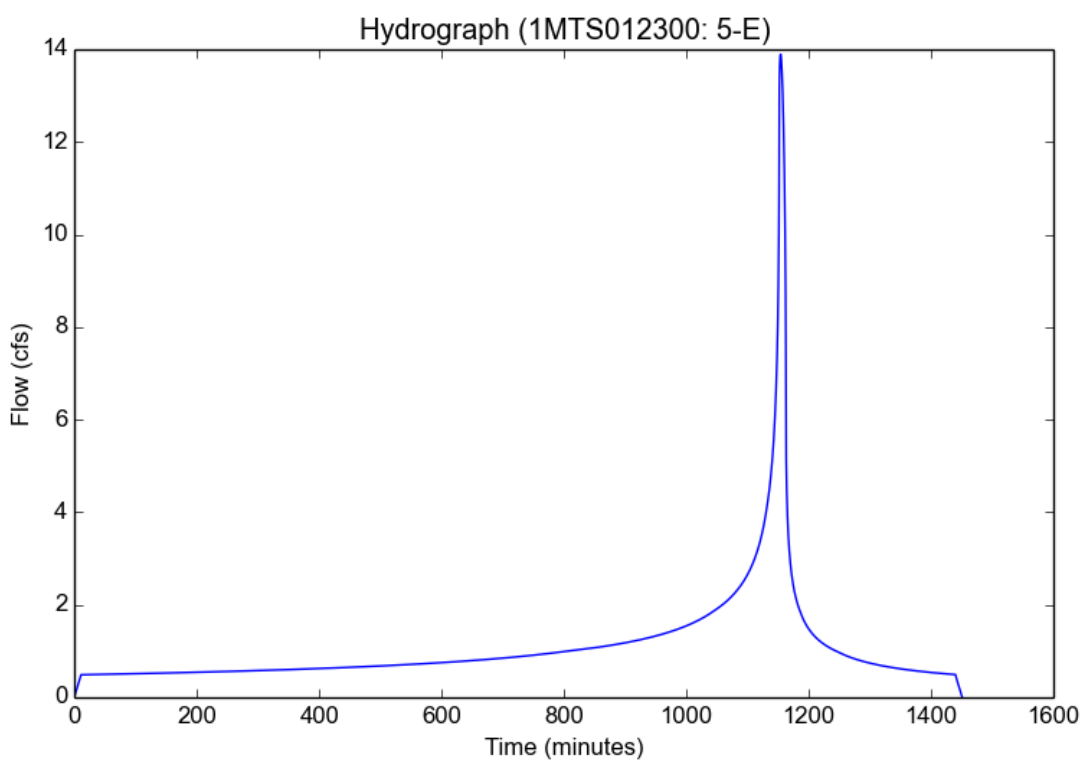
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 5-E.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	5-E
Area (ac)	6.3
Flow Path Length (ft)	975.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.58
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.4952
Undeveloped Runoff Coefficient (Cu)	0.8613
Developed Runoff Coefficient (Cd)	0.8838
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	13.8927
Burned Peak Flow Rate (cfs)	13.8927
24-Hr Clear Runoff Volume (ac-ft)	2.1914
24-Hr Clear Runoff Volume (cu-ft)	95455.9437



Peak Flow Hydrologic Analysis

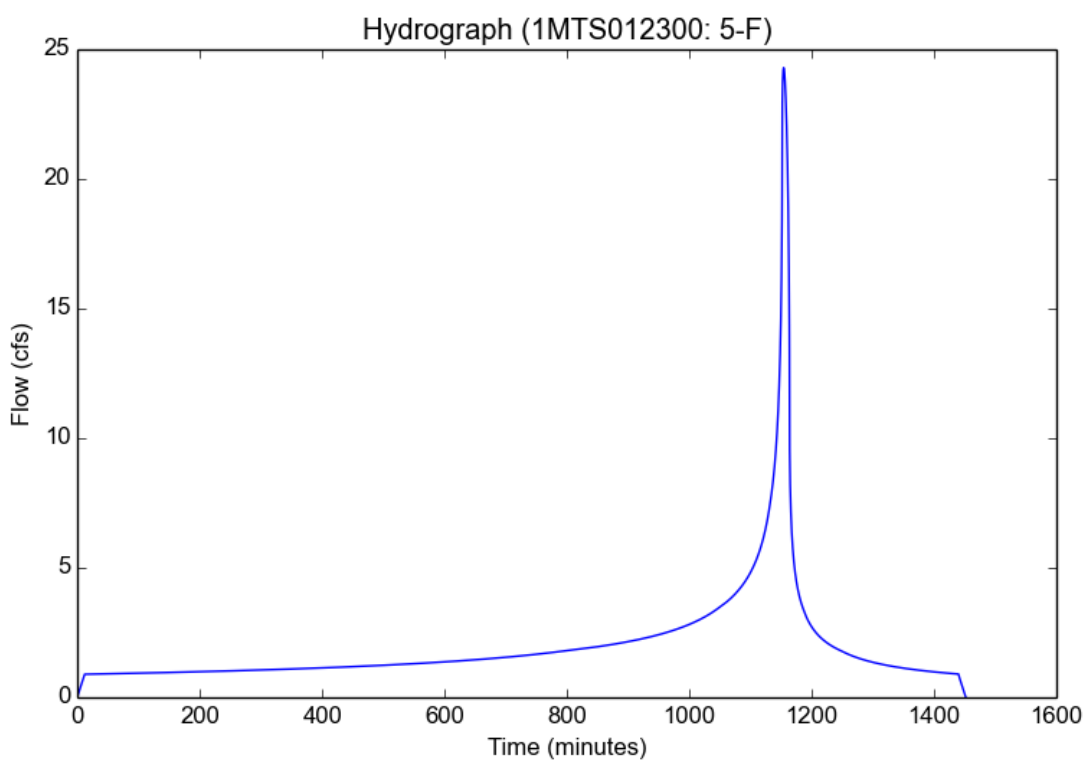
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 5-F.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	5-F
Area (ac)	11.5
Flow Path Length (ft)	1235.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.58
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.3952
Undeveloped Runoff Coefficient (Cu)	0.8569
Developed Runoff Coefficient (Cd)	0.8819
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	24.2923
Burned Peak Flow Rate (cfs)	24.2923
24-Hr Clear Runoff Volume (ac-ft)	4.0
24-Hr Clear Runoff Volume (cu-ft)	174238.9184



Peak Flow Hydrologic Analysis

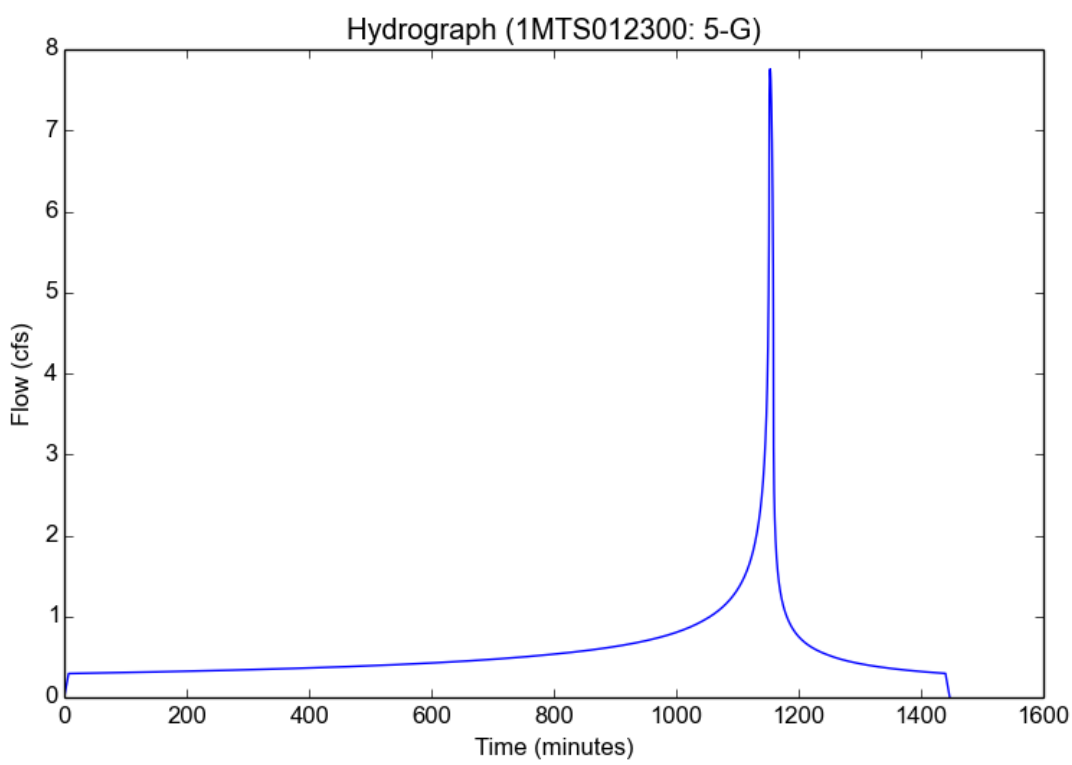
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 5-G.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	5-G
Area (ac)	2.8
Flow Path Length (ft)	600.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.0858
Undeveloped Runoff Coefficient (Cu)	0.8857
Developed Runoff Coefficient (Cd)	0.8979
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	7.7577
Burned Peak Flow Rate (cfs)	7.7577
24-Hr Clear Runoff Volume (ac-ft)	1.159
24-Hr Clear Runoff Volume (cu-ft)	50486.6816



APPENDIX C

Appendix C – Hydrology Comparison Breakdown and Exhibits

HYDROLOGY COMPARISON BETWEEN 2012 UTILITY INFRASTRUCTURE MASTER PLAN CONDITIONS AND MEASURE RR BUILD OUT CONDITIONS (25-YEAR DESIGN FREQUENCY)

	Exhibit 1 Utility Infrastructure Master Plan (UIMP) (2012)			MEASURE RR CONDITIONS								Difference Between Measure RR Conditions and UIMP	
				Exhibit 3 Farm Precinct (2015)			*Exhibit 2 Hydrology Map - Overall 2016*			Total Measure RR Conditions			
	Subarea	Area (ac)	Q25 (cfs)	*Subarea*	*Area (ac)*	*Q25 (cfs)*	*Subarea*	*Area (ac)*	*Q25 (cfs)*	Area (ac)	Q25 (cfs)	Area (ac)	Q25 (cfs)
LINE A	1-A	28.6	56.6	*B-1*	*5.0*	*12.9*	*4-A*	*8.1*	*21.1*				
							4-B	*6.2*	*14.5*				
							4-C	*4.8*	*12.5*				
							3-C	*5.8*	*13.4*				
	Total	**28.6**	**56.6**		***5.0***	***12.9***		***24.9***	***61.5***	**29.9**	**74.4**	**1.3**	**17.8**
	2-A	13.4	29.7	*E-1*	*8.0*	*19.5*							
				A-1	*6.0*	*14.7*							
	Total	**13.4**	**29.7**		***14.0***	***34.2***				**14.0**	**34.2**	**0.6**	**4.5**
	3-B	22.2	44.0	*D-2*	*16.3*	*37.0*							
				D-1	*13.6*	*37.1*							
	Total	**22.2**	**44.0**		***29.9***	***74.1***				**29.9**	**74.1**	**7.7**	**30.1**
	4-C	47.2	100.3	*B-2*	*24.0*	*55.6*							
				C-1	*5.0*	*12.8*							
				C-2	*18.5*	*40.0*							
	Total	**47.2**	**100.3**		***47.5***	***108.4***				**47.5**	**108.4**	**0.3**	**8.1**
	7-A	19.8	33.9				*4-D*	*14.5*	*27.6*				
							4-J	*2.8*	*5.4*				
	Total	**19.8**	**33.9**					***17.3***	***33.0***	**17.3**	**33.0**	**-2.5**	**-0.9**
	8-B	20.9	40.1				*4-F*	*20.9*	*39.7*				
	Total	**20.9**	**40.1**					***20.9***	***39.7***	**20.9**	**39.7**	**0.0**	**-0.4**
	9-B	35.9	77.3				*4-E*	*23.2*	*46.7*				
							4-G	*9.1*	*24.9*				
	Total	**35.9**	**77.3**					***32.3***	***71.6***	**32.3**	**71.6**	**-3.6**	**-5.7**
	11-B	27.0	57.4				*4-H*	*16.0*	*36.5*				
							4-I	*12.7*	*34.9*				
	Total	**27.0**	**57.4**					***28.7***	***71.4***	**28.7**	**71.4**	**1.7**	**14.0**
Total Area and Flow In Line A		**215.0**	**439.3**		***96.4***	***229.6***		***124.1***	***277.2***	**220.5**	**506.8**	**5.5**	**67.5**
LINE B	1-A	22.0	46.7				*3-B*	*26.2*	*55.5*				
	Total	**22.0**	**46.7**					***26.2***	***55.5***	**26.2**	**55.5**	**4.2**	**8.8**
	2-A	4.1	7.9				*3-D*	*4.1*	*7.8*				
	Total	**4.1**	**7.9**					***4.1***	***7.8***	**4.1**	**7.8**	**0.0**	**-0.1**
	3-A	28.6	54.8				*3-A*	*27.3*	*51.9*				
	Total	**28.6**	**54.8**					***27.3***	***51.9***	**27.3**	**51.9**	**-1.3**	**-2.9**
	4-A	33.4	60.1				*5-A*	*32.1*	*56.5*				
	Total	**33.4**	**60.1**					***32.1***	***56.5***	**32.1**	**56.5**	**-1.3**	**-3.6**
Total Area and Flow In Line B		**88.1**	**169.5**					***89.7***	***171.7***	**89.7**	**171.7**	**1.6**	**2.2**
LINE C	1-A	15.1	34.9				*2-A*	*8.2*	*18.4*				
							2-B	*3.3*	*9.9*				
							2-C	*3.4*	*8.9*				
	Total	**15.1**	**34.9**					***14.9***	***37.2***	**14.9**	**37.2**	**-0.2**	**2.3**
Total Area and Flow In Line C		**15.1**	**34.9**					***14.9***	***37.2***	**14.9**	**37.2**	**-0.2**	**2.3**
LINE D	1-A	32.6	54.6				*1-A*	*12.8*	*22.9*				
							1-B	*2.9*	*8.6*				
							1-C	*4.9*	*13.5*				
							1-D	*6.9*	*19.0*				
							1-E	*5.6*	*15.4*				
	Total	**32.6**	**54.6**					***33.1***	***79.4***	**33.1**	**79.4**	**0.5**	**24.8**
Total Area and Flow In Line D		**32.6**	**54.6**					***33.1***	***79.4***	**33.1**	**79.4**	**0.5**	**24.8**

Notes:

1. Measure RR subarea 4-I flow path and tributary area extends outside of study limit. For the purpose of this comparison, only onsite Q was taken into consideration. See attached calculation for comparable onsite Q only.
2. Measure RR area 3-C is tributary to Line B. However, 2012 UIMP shows it tributary to Line A. For the purpose of this comparison, 3-C is shown tributary to Line A.
3. Measure RR areas 5-B, 5-C, 5-D, 5-E, 5-F and 5-G omitted from Hydrology Comparison.
4. Farm Precinct area D-3 was omitted from Hydrology Comparison since it is outside the project study.

Peak Flow Hydrologic Analysis

File location: W:/Mt_SAC/1MTS013200/ENGR/CALCS/1MTS013200 - 4-I.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS013200
Subarea ID	4-I
Area (ac)	12.7
Flow Path Length (ft)	783.91
Flow Path Slope (vft/hft)	0.05
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.25
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.0858
Undeveloped Runoff Coefficient (Cu)	0.8857
Developed Runoff Coefficient (Cd)	0.8893
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	34.8515
Burned Peak Flow Rate (cfs)	34.8515
24-Hr Clear Runoff Volume (ac-ft)	3.3938
24-Hr Clear Runoff Volume (cu-ft)	147833.9464

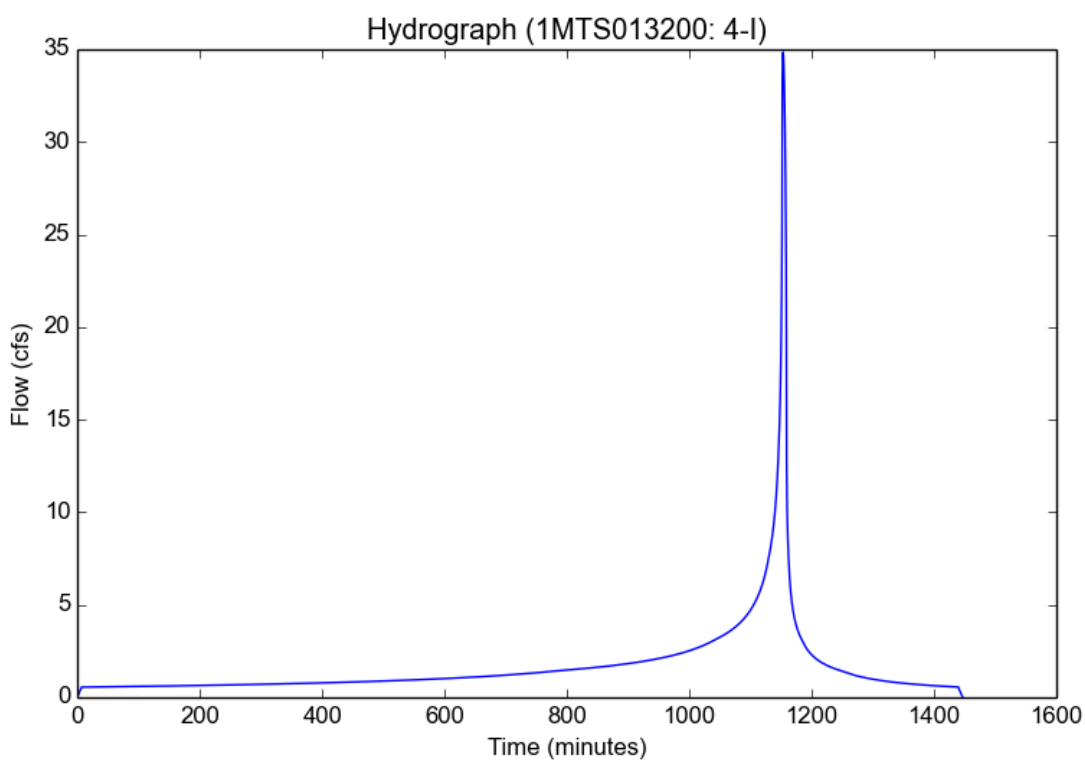


Figure 2b - Existing Utility Map - Hydrology Distribution

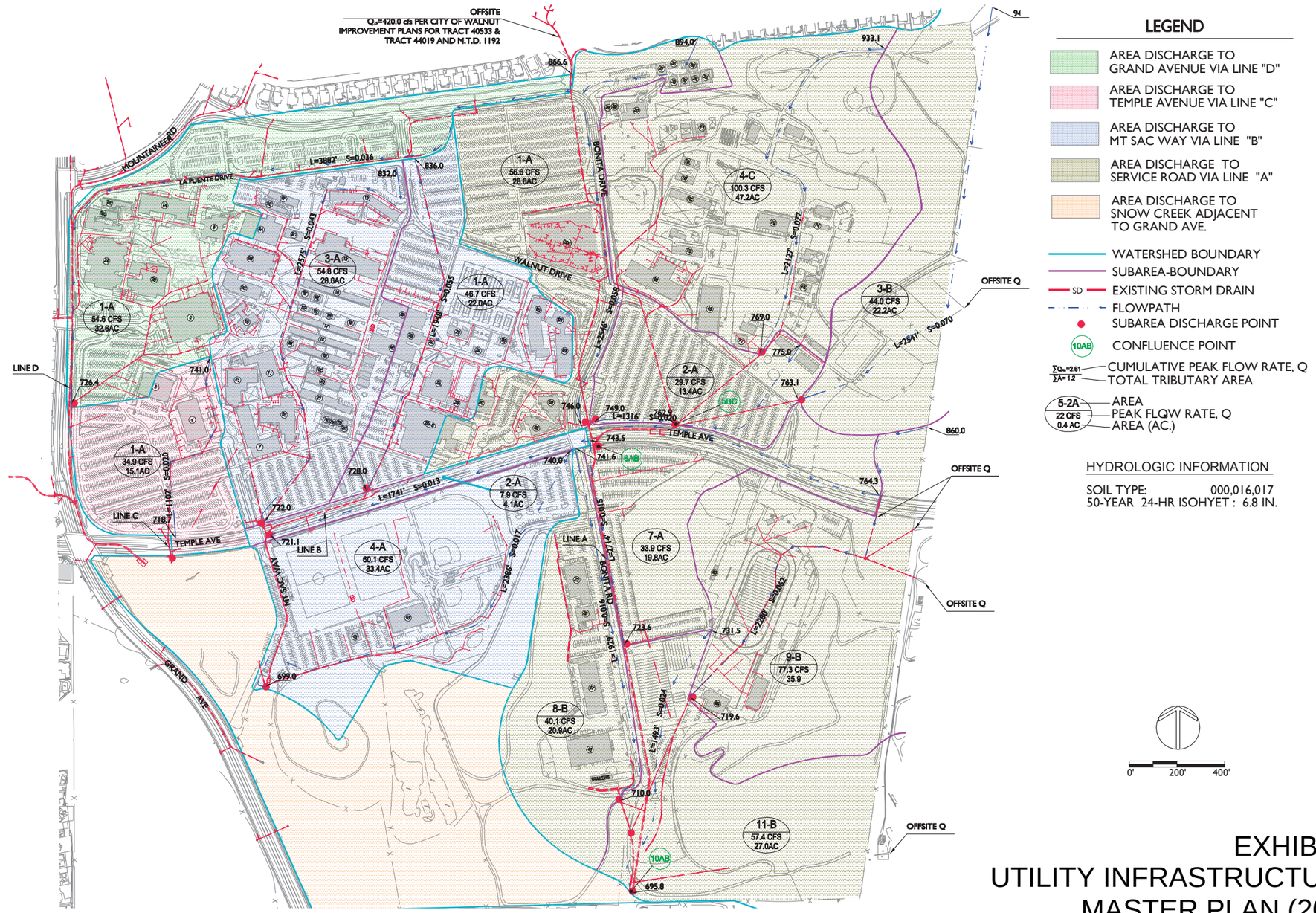


EXHIBIT 1
UTILITY INFRASTRUCTURE
MASTER PLAN (2012)
(25 - YEAR RAINFALL FREQUENCY

HYDROLOGIC INFORMATION

SOIL TYPE: 002,016,017

50-YEAR 24-HR ISOHYET : 6.9 IN.

AREA 1 DISCHARGE TO GRAND AVENUE VIA LINE "D"

AREA 2 DISCHARGE TO TEMPLE AVENUE VIA LINE "C"

AREA 3 DISCHARGE TO MT SAC WAY VIA LINE "B"

AREA 4 DISCHARGE TO SERVICE ROAD VIA LINE "A"

AREA 5 DISCHARGE TO SNOW CREEK ADJACENT TO GRAND AVE.

PUBLIC STORM DRAIN LINE

WATERSHED BOUNDARY

SUBAREA-BOUNDARY

STORM DRAIN

FLOWPATH

SUBAREA DISCHARGE POINT

5-2A — AREA

22 CFS — PEAK FLOW RATE, Q_{25}

0.4 AC — AREA (AC.)

EXHIBIT 2
HYDROLOGY MAP - OVERALL
MEASURE RR (2016)
(25-YEAR RAINFALL FREQUENCY)

5/6/2016

MT. SAN ANTONIO COLLEGE

Plotted — 5/6/2016 2:09:23 PM :: Saved — 5/6/2016 2:08:34 PM :: W:\MT_SAC\1M1S013200\ENGR\SHEETS\MTSAC-FIG-2d.dwg :: tina.tse

LEGEND

DRAINAGE BASIN
"COLOR VARIES"

FLOW PATH

EXISTING STORM DRAIN LINE — SD —

PROPERTY LINE

EXISTING DIRT ROAD

BASIN SUMMARY		
BASIN	AREA (AC)	Q_{25} (CFS)
A-1	5.98	14.70
SUBAREA TOTAL	**5.98**	**14.70**
B-1	5.02	12.87
B-2	24.41	55.55
SUBAREA TOTAL	**29.43**	**68.42**
C-1	4.99	12.78
C-2	18.52	39.95
SUBAREA TOTAL	**23.51**	**52.73**
D-1	13.58	37.12
D-2	16.34	36.96
D-3	37.78	71.54
SUBAREA TOTAL	**67.70**	**145.62**
E-1	8.00	19.53
SUBAREA TOTAL	**8.00**	**19.53**
TOTAL	**134.62**	**301**

400' 200' 0' 400' 800'

GRAPHIC SCALE: 1"=400' @ 11X17

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EXHIBIT 3
HYDROLOGY MAP - OVERALL EXISTING FARM PRECINCT (2015) (25-YEAR RAINFALL FREQUENCY)

5/6/2016