

**Exhibit H**

**Stormwater Management Report**

**(Including Drainage Analysis –**

**Review of Pre-And Post-Development Runoff At The Project Site)**

**- APPENDIX B –**

**Existing Drainage Area Map & Hydrologic Computation**

**APPENDIX B: EXISTING DRAINAGE AREA MAP (EDA-1) &  
HYDROLOGIC COMPUTATION (HYDROCAD)**

**BETHLEHEM SOLAR**  
ONE & TWO, LLC  
28 POCOTPAUG DRIVE  
EAST HAMPTON, CT 06424

**ALL-POINTS**  
TECHNOLOGY CORPORATION  
100 MILLERS CREEK DRIVE, SUITE 111  
EAST HAMPTON, CT 06424  
WWW.ALLPOINTSTECH.COM FAX: 860-843-9922

CNC PERMIT SET

NO.	DATE	REVISION
1		
2		
3		
4		
5		
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7		
8		
9		
10		

**NOT FOR CONSTRUCTION**

DESIGN PROFESSIONAL OF RECORD

PROJECT: BRADLEY J. PARSONS P.E.  
COMP.: ALL-POINTS TECHNOLOGY CORPORATION  
ADDRESS: 28 THOMPSON ROAD  
EAST HAMPTON, CT 06424  
ADJ.: 867 VALDAMAIL STREET  
WATERBURY, CT 06725  
OWNER: LEONARD TESSIE KZEMETH  
& LEONARD KASBUD  
ADDRESS: 28 THOMPSON ROAD  
EAST HAMPTON, CT 06424

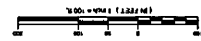
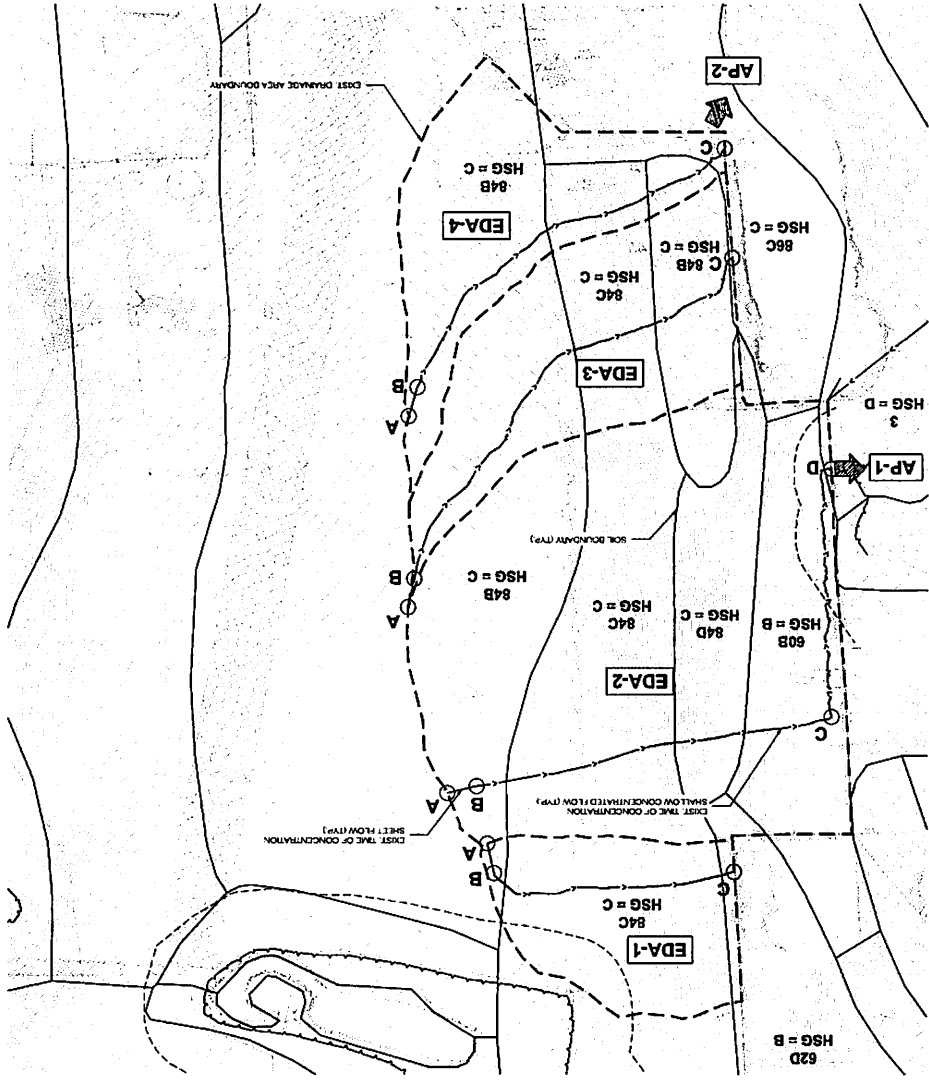
BETHLEHEM SOLAR  
ONE & TWO, LLC  
ADDRESS: 28 THOMPSON ROAD  
EAST HAMPTON, CT 06424

DRAWN BY: KAM  
CHECKED BY: BLP  
DATE: 06/26/2009

SHEET TITLE:  
**EXISTING CONDITIONS  
HYDROLOGY PLAN**

SHEET NUMBER:  
**EDA-1**

DRAFT



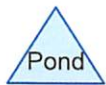
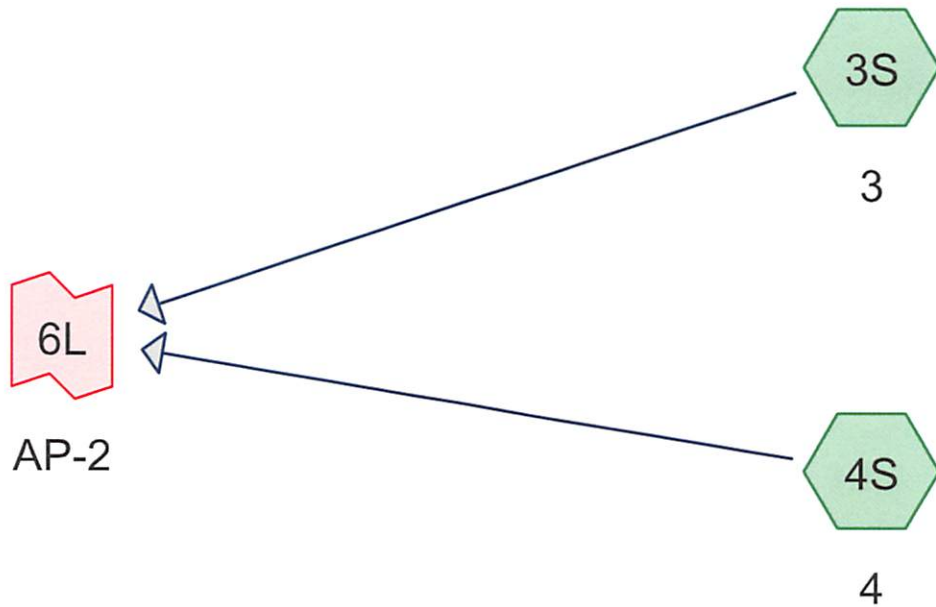
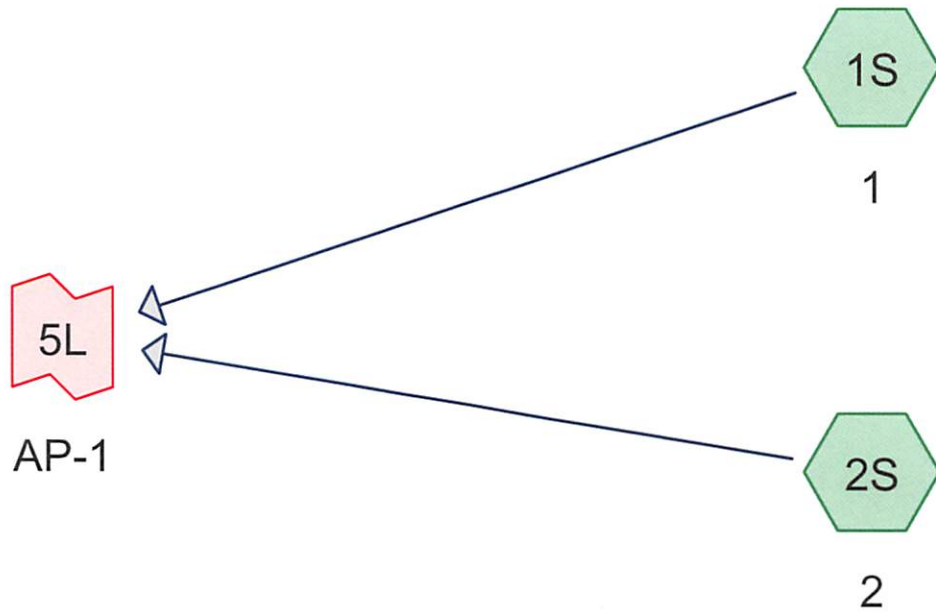
**EXISTING DRAINAGE AREA PLAN**  
SCALE: 1" = 100'

**EXISTING CONDITIONS FLOWS**

FLOW POINT	2-YEAR (CFR)	25-YEAR (CFR)	50-YEAR (CFR)	100-YEAR (CFR)
AP-1	11.5	11.8	51.2	81.8
AP-2	6.5	20.7	24.8	41.6
SITE	20.0	70.5	86.0	100.4

**EXISTING DRAINAGE AREAS**

WATER-ED	TOTAL AREA (ACRES)	COMPOSITE CN	TC (INCH)
EDA-1	2.404	73	6
EDA-2	10.555	71	14
EDA-3	3.777	74	10
EDA-4	3.252	73	8
SITE	19.988	72	-



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**Area Listing (all nodes)**

Area (sq-ft)	CN	Description (subcatchment-numbers)
8,312	65	Brush, Good, HSG C (4S)
110,308	61	Pasture/grassland/range, Good, HSG B (1S, 2S)
749,988	74	Pasture/grassland/range, Good, HSG C (1S, 2S, 3S, 4S)
2,099	80	Pasture/grassland/range, Good, HSG D (2S)
<b>870,707</b>	<b>72</b>	<b>TOTAL AREA</b>

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**Soil Listing (all nodes)**

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
110,308	HSG B	1S, 2S
758,300	HSG C	1S, 2S, 3S, 4S
2,099	HSG D	2S
0	Other	
<b>870,707</b>		<b>TOTAL AREA</b>

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**Ground Covers (all nodes)**

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
0	0	8,312	0	0	8,312	Brush, Good
0	110,308	749,988	2,099	0	862,395	Pasture/grassland /range, Good
<b>0</b>	<b>110,308</b>	<b>758,300</b>	<b>2,099</b>	<b>0</b>	<b>870,707</b>	<b>TOTAL AREA</b>

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Type III 24-hr 2-Year Rainfall=3.52"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: 1** Runoff Area=104,729 sf 0.00% Impervious Runoff Depth=1.19"  
Flow Length=480' Slope=0.0960 '/ Tc=5.9 min CN=73 Runoff=3.17 cfs 10,413 cf

**Subcatchment 2S: 2** Runoff Area=459,823 sf 0.00% Impervious Runoff Depth=1.08"  
Flow Length=1,115' Tc=14.4 min CN=71 Runoff=9.47 cfs 41,249 cf

**Subcatchment 3S: 3** Runoff Area=164,510 sf 0.00% Impervious Runoff Depth=1.25"  
Flow Length=860' Slope=0.0750 '/ Tc=9.8 min CN=74 Runoff=4.64 cfs 17,188 cf

**Subcatchment 4S: 4** Runoff Area=141,645 sf 0.00% Impervious Runoff Depth=1.19"  
Flow Length=735' Slope=0.0840 '/ Tc=8.3 min CN=73 Runoff=3.91 cfs 14,083 cf

**Link 5L: AP-1** Inflow=11.46 cfs 51,662 cf  
Primary=11.46 cfs 51,662 cf

**Link 6L: AP-2** Inflow=8.51 cfs 31,271 cf  
Primary=8.51 cfs 31,271 cf

**Total Runoff Area = 870,707 sf Runoff Volume = 82,933 cf Average Runoff Depth = 1.14"**  
**100.00% Pervious = 870,707 sf 0.00% Impervious = 0 sf**



**Summary for Subcatchment 1S: 1**

[49] Hint:  $T_c < 2dt$  may require smaller dt

Runoff = 3.17 cfs @ 12.10 hrs, Volume= 10,413 cf, Depth= 1.19"

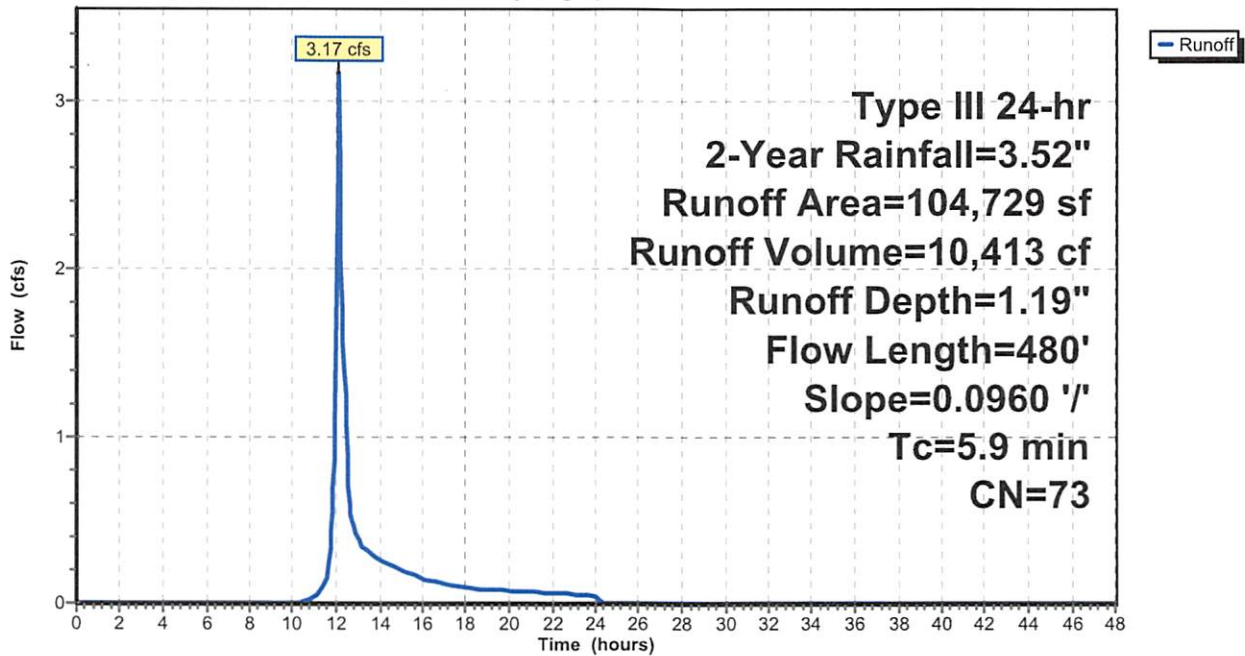
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-Year Rainfall=3.52"

Area (sf)	CN	Description
5,354	61	Pasture/grassland/range, Good, HSG B
99,375	74	Pasture/grassland/range, Good, HSG C
104,729	73	Weighted Average
104,729		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	50	0.0960	0.33		Sheet Flow, Range n= 0.130 P2= 3.52"
3.3	430	0.0960	2.17		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
5.9	480	Total			

**Subcatchment 1S: 1**

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.52"

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**Summary for Subcatchment 2S: 2**

Runoff = 9.47 cfs @ 12.22 hrs, Volume= 41,249 cf, Depth= 1.08"

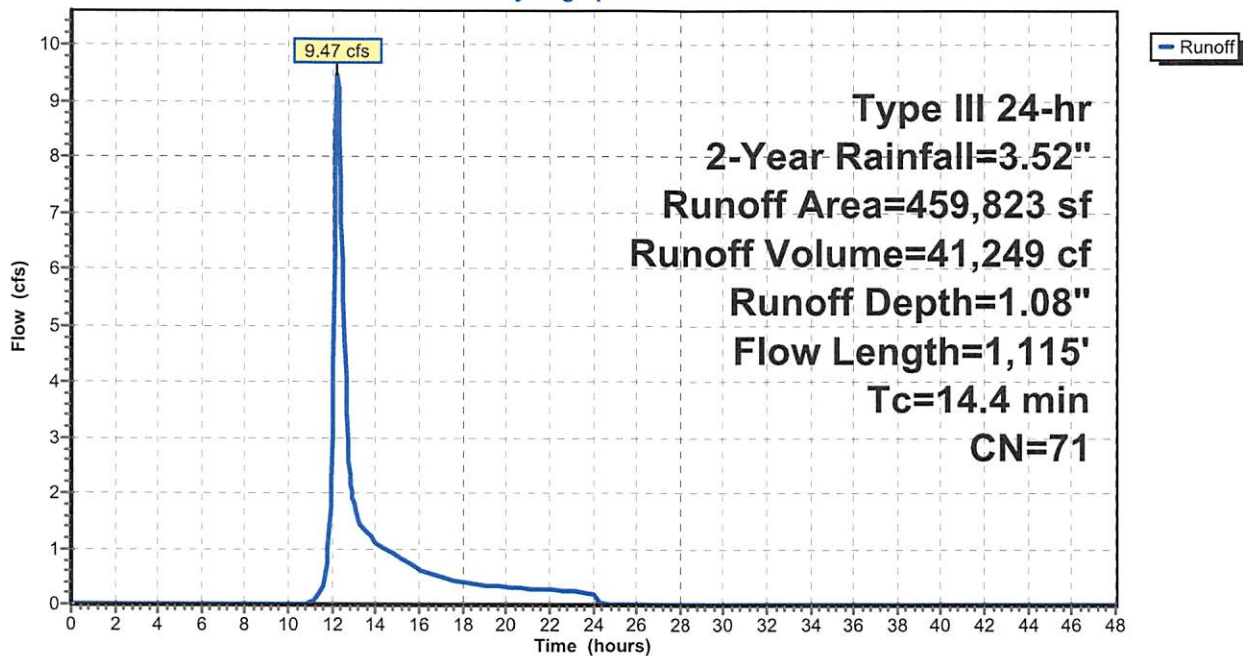
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-Year Rainfall=3.52"

Area (sf)	CN	Description
104,954	61	Pasture/grassland/range, Good, HSG B
352,770	74	Pasture/grassland/range, Good, HSG C
2,099	80	Pasture/grassland/range, Good, HSG D
459,823	71	Weighted Average
459,823		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	50	0.1110	0.35		<b>Sheet Flow,</b> Range n= 0.130 P2= 3.52"
4.3	605	0.1110	2.33		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.7	460	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
14.4	1,115	Total			

**Subcatchment 2S: 2**

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.52"

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**Summary for Subcatchment 3S: 3**

Runoff = 4.64 cfs @ 12.15 hrs, Volume= 17,188 cf, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-Year Rainfall=3.52"

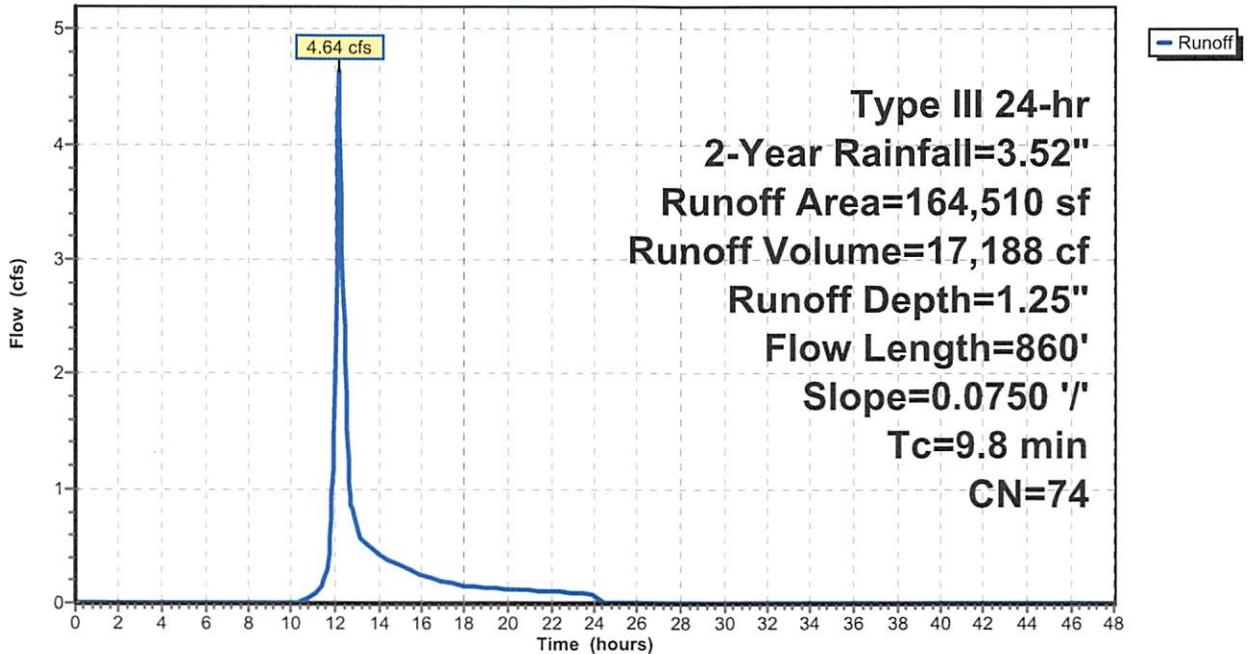
Area (sf)	CN	Description
164,510	74	Pasture/grassland/range, Good, HSG C
164,510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	50	0.0750	0.30		<b>Sheet Flow,</b> Range n= 0.130 P2= 3.52"
7.0	810	0.0750	1.92		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
9.8	860	Total			

**Subcatchment 3S: 3**

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.52"

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**Summary for Subcatchment 4S: 4**

Runoff = 3.91 cfs @ 12.13 hrs, Volume= 14,083 cf, Depth= 1.19"

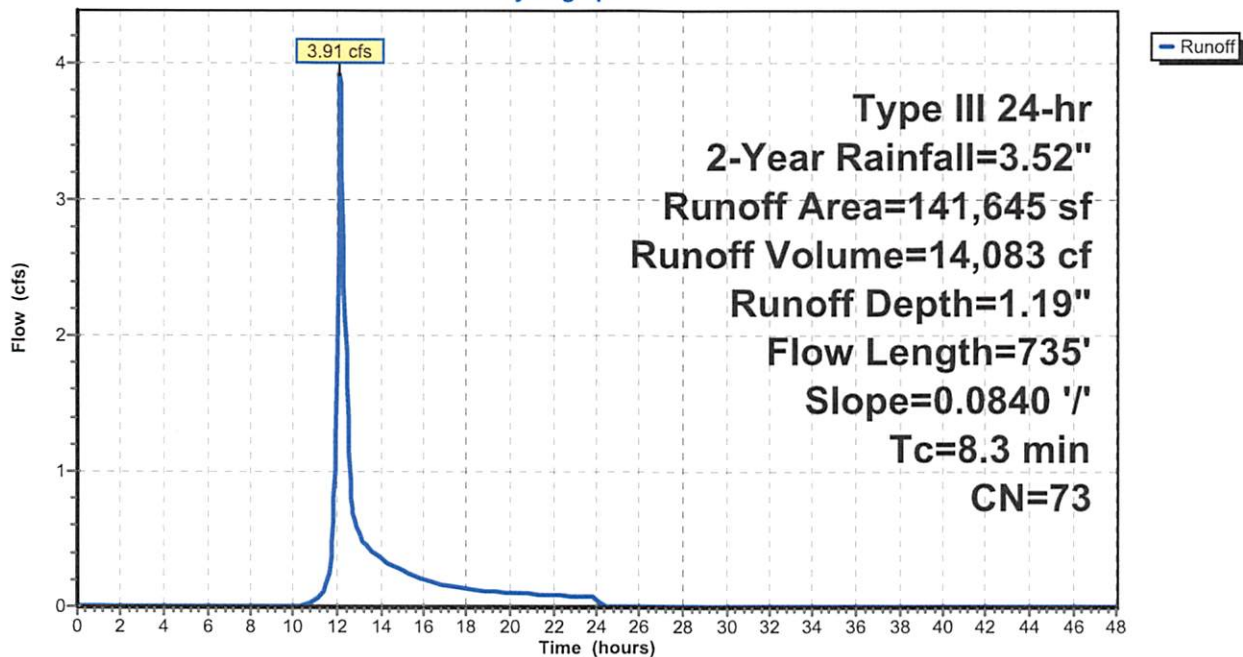
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-Year Rainfall=3.52"

Area (sf)	CN	Description
133,333	74	Pasture/grassland/range, Good, HSG C
8,312	65	Brush, Good, HSG C
141,645	73	Weighted Average
141,645		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	50	0.0840	0.31		<b>Sheet Flow,</b> Range n= 0.130 P2= 3.52"
5.6	685	0.0840	2.03		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
8.3	735	Total			

**Subcatchment 4S: 4**

Hydrograph





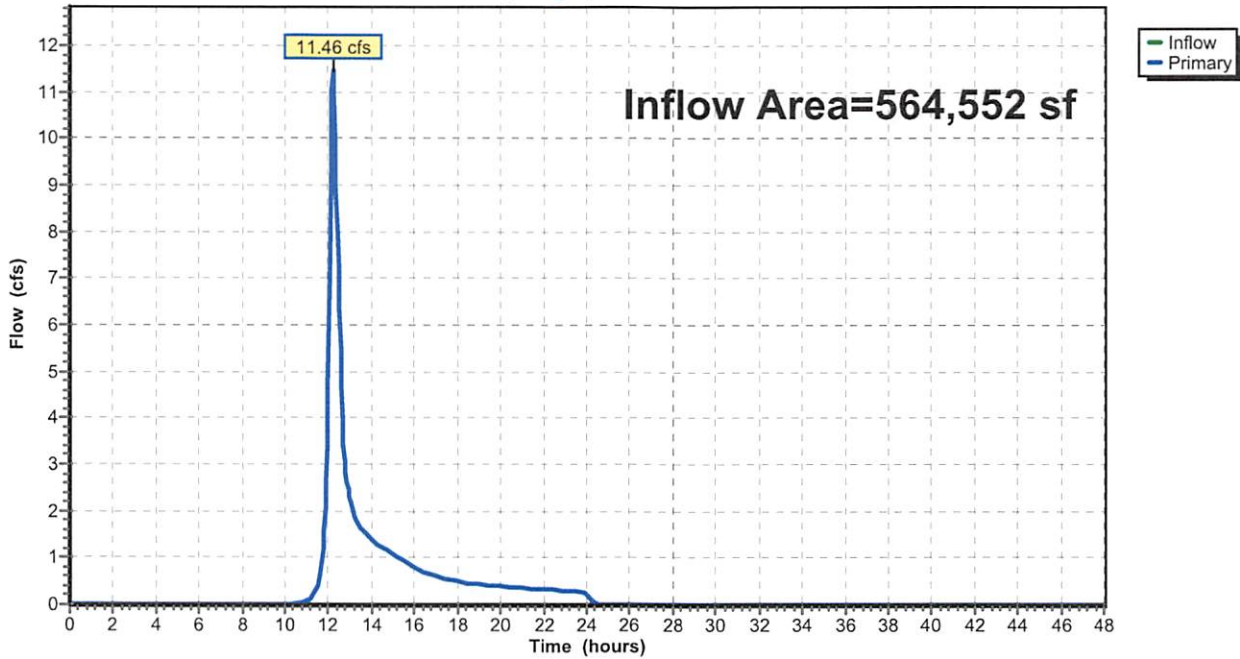
Summary for Link 5L: AP-1

Inflow Area = 564,552 sf, 0.00% Impervious, Inflow Depth = 1.10" for 2-Year event  
Inflow = 11.46 cfs @ 12.20 hrs, Volume= 51,662 cf  
Primary = 11.46 cfs @ 12.20 hrs, Volume= 51,662 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 5L: AP-1

Hydrograph



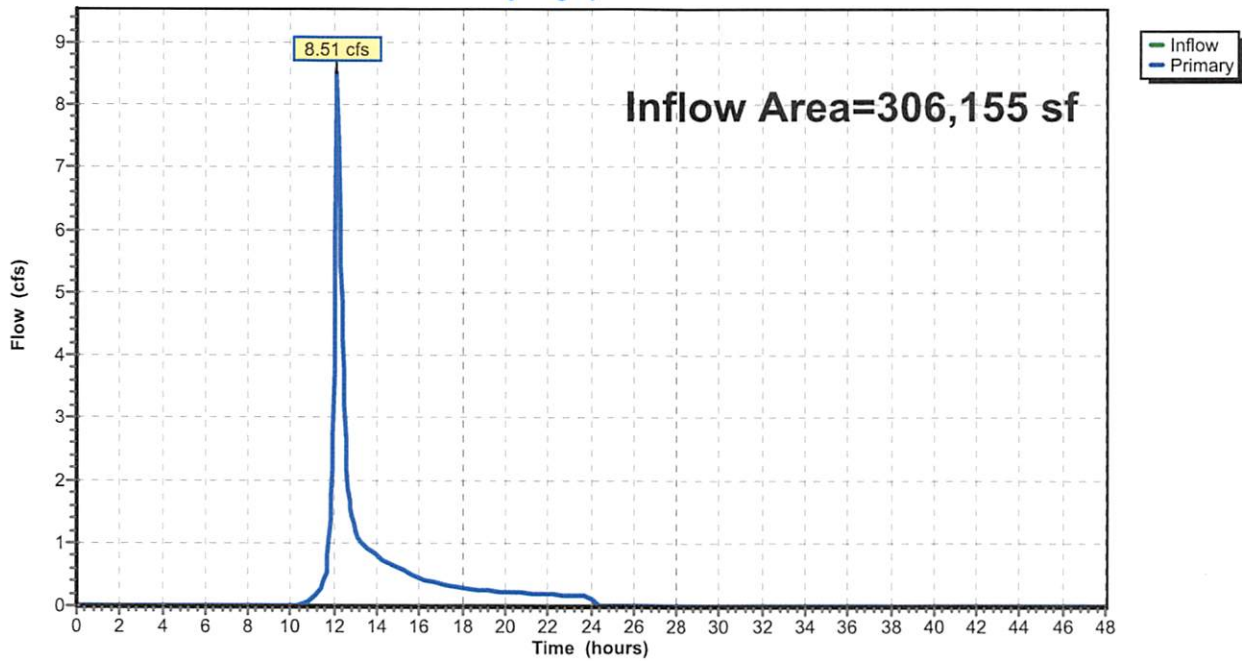
### Summary for Link 6L: AP-2

Inflow Area = 306,155 sf, 0.00% Impervious, Inflow Depth = 1.23" for 2-Year event  
Inflow = 8.51 cfs @ 12.14 hrs, Volume= 31,271 cf  
Primary = 8.51 cfs @ 12.14 hrs, Volume= 31,271 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

### Link 6L: AP-2

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.97"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: 1** Runoff Area=104,729 sf 0.00% Impervious Runoff Depth=3.91"  
Flow Length=480' Slope=0.0960 '/' Tc=5.9 min CN=73 Runoff=10.83 cfs 34,119 cf

**Subcatchment 2S: 2** Runoff Area=459,823 sf 0.00% Impervious Runoff Depth=3.70"  
Flow Length=1,115' Tc=14.4 min CN=71 Runoff=34.97 cfs 141,709 cf

**Subcatchment 3S: 3** Runoff Area=164,510 sf 0.00% Impervious Runoff Depth=4.02"  
Flow Length=860' Slope=0.0750 '/' Tc=9.8 min CN=74 Runoff=15.43 cfs 55,055 cf

**Subcatchment 4S: 4** Runoff Area=141,645 sf 0.00% Impervious Runoff Depth=3.91"  
Flow Length=735' Slope=0.0840 '/' Tc=8.3 min CN=73 Runoff=13.58 cfs 46,146 cf

**Link 5L: AP-1** Inflow=41.79 cfs 175,829 cf  
Primary=41.79 cfs 175,829 cf

**Link 6L: AP-2** Inflow=28.71 cfs 101,201 cf  
Primary=28.71 cfs 101,201 cf

**Total Runoff Area = 870,707 sf Runoff Volume = 277,030 cf Average Runoff Depth = 3.82"**  
**100.00% Pervious = 870,707 sf 0.00% Impervious = 0 sf**

**Summary for Subcatchment 1S: 1**

[49] Hint: Tc<2dt may require smaller dt

Runoff = 10.83 cfs @ 12.09 hrs, Volume= 34,119 cf, Depth= 3.91"

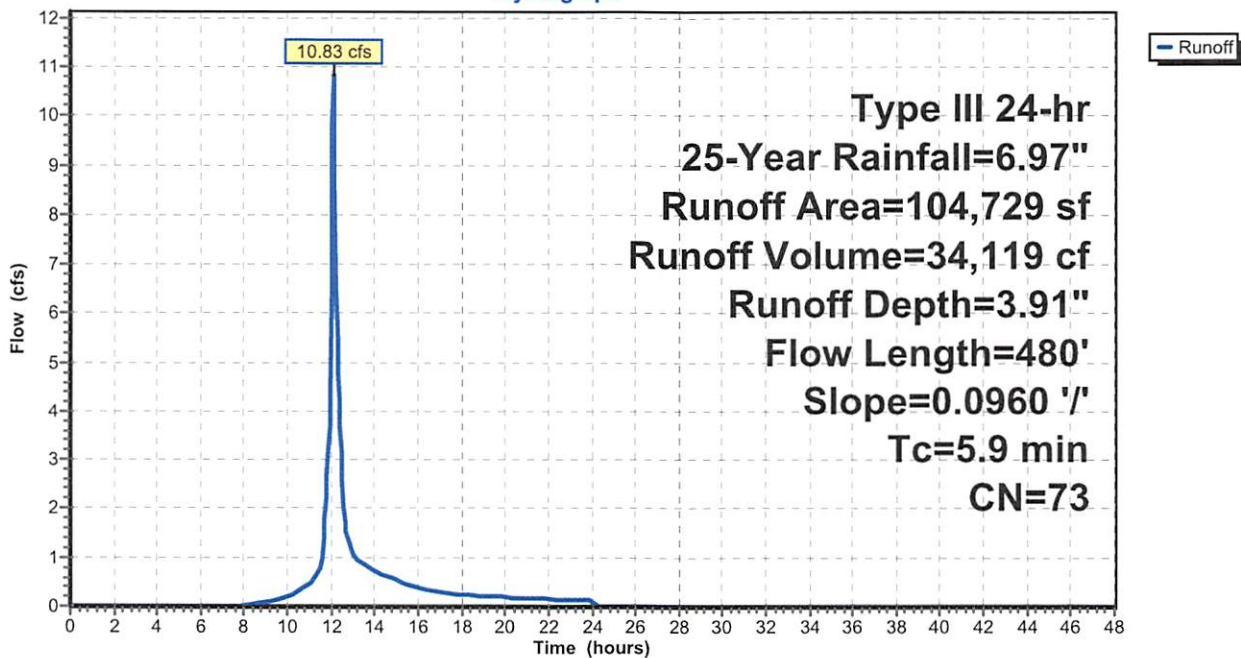
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25-Year Rainfall=6.97"

Area (sf)	CN	Description
5,354	61	Pasture/grassland/range, Good, HSG B
99,375	74	Pasture/grassland/range, Good, HSG C
104,729	73	Weighted Average
104,729		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	50	0.0960	0.33		Sheet Flow, Range n= 0.130 P2= 3.52"
3.3	430	0.0960	2.17		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
5.9	480	Total			

**Subcatchment 1S: 1**

Hydrograph





**Summary for Subcatchment 2S: 2**

Runoff = 34.97 cfs @ 12.20 hrs, Volume= 141,709 cf, Depth= 3.70"

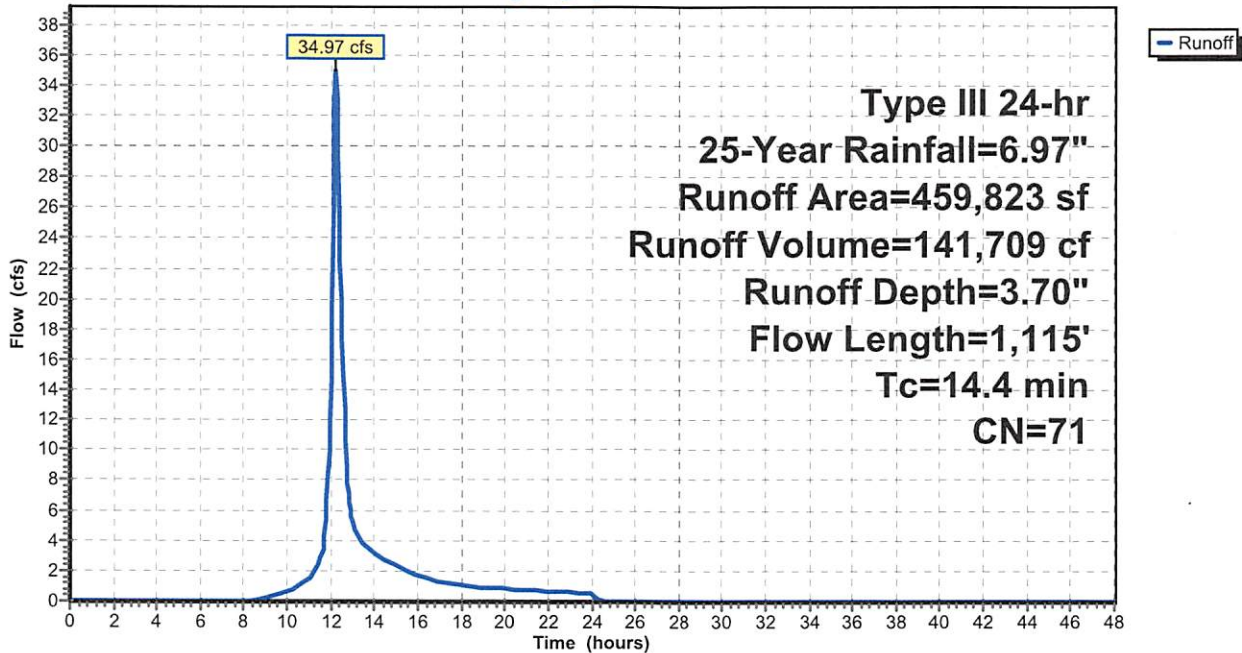
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=6.97"

Area (sf)	CN	Description
104,954	61	Pasture/grassland/range, Good, HSG B
352,770	74	Pasture/grassland/range, Good, HSG C
2,099	80	Pasture/grassland/range, Good, HSG D
459,823	71	Weighted Average
459,823		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	50	0.1110	0.35		<b>Sheet Flow,</b> Range n= 0.130 P2= 3.52"
4.3	605	0.1110	2.33		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.7	460	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
14.4	1,115	Total			

**Subcatchment 2S: 2**

Hydrograph



**Summary for Subcatchment 3S: 3**

Runoff = 15.43 cfs @ 12.14 hrs, Volume= 55,055 cf, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25-Year Rainfall=6.97"

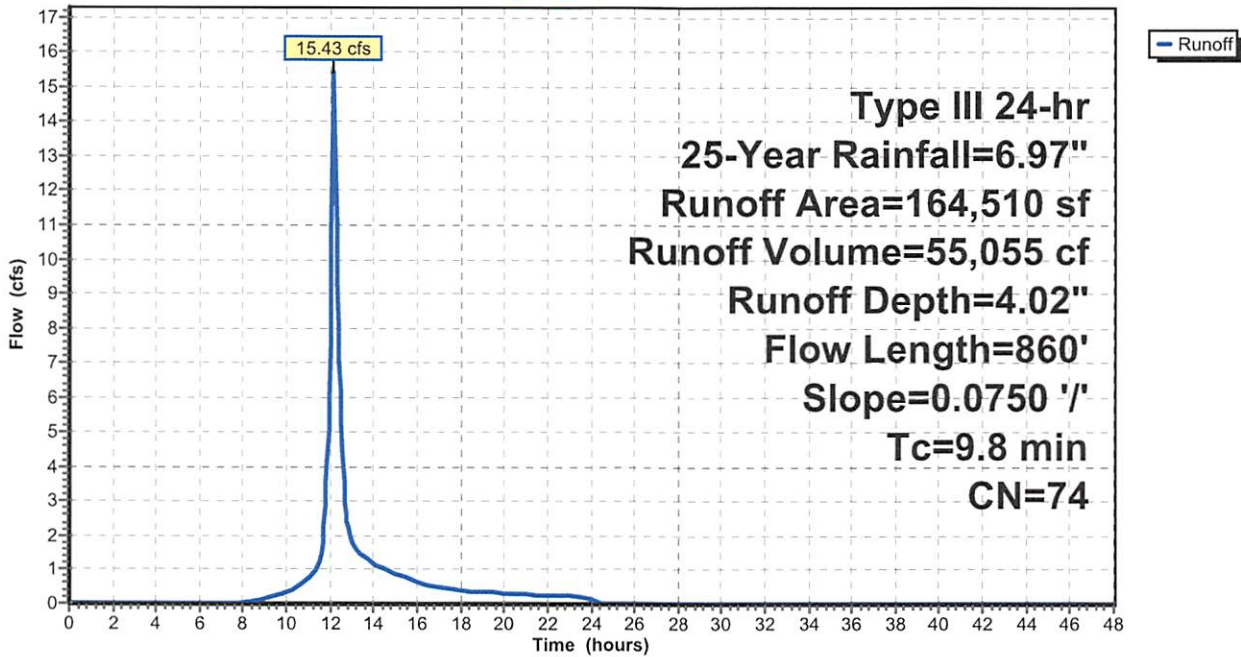
Area (sf)	CN	Description
164,510	74	Pasture/grassland/range, Good, HSG C
164,510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	50	0.0750	0.30		<b>Sheet Flow,</b> Range n= 0.130 P2= 3.52"
7.0	810	0.0750	1.92		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
9.8	860	Total			

**Subcatchment 3S: 3**

Hydrograph



**Summary for Subcatchment 4S: 4**

Runoff = 13.58 cfs @ 12.12 hrs, Volume= 46,146 cf, Depth= 3.91"

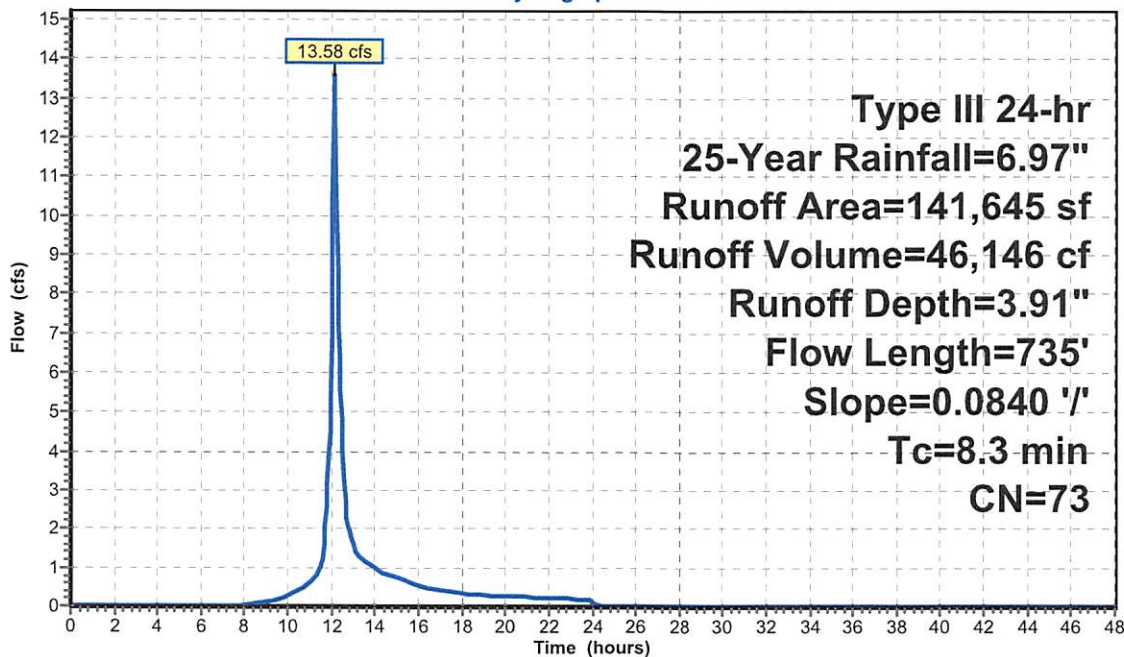
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25-Year Rainfall=6.97"

Area (sf)	CN	Description
133,333	74	Pasture/grassland/range, Good, HSG C
8,312	65	Brush, Good, HSG C
141,645	73	Weighted Average
141,645		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	50	0.0840	0.31		<b>Sheet Flow,</b> Range n= 0.130 P2= 3.52"
5.6	685	0.0840	2.03		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
8.3	735	Total			

**Subcatchment 4S: 4**

Hydrograph





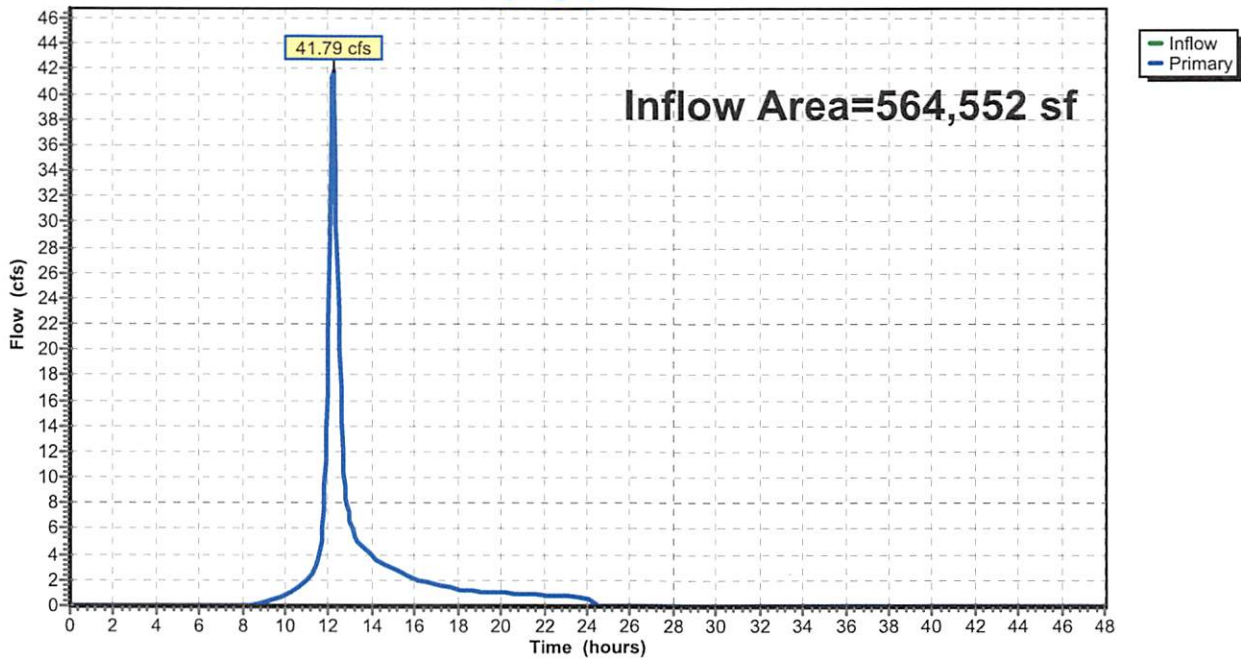
Summary for Link 5L: AP-1

Inflow Area = 564,552 sf, 0.00% Impervious, Inflow Depth = 3.74" for 25-Year event  
Inflow = 41.79 cfs @ 12.18 hrs, Volume= 175,829 cf  
Primary = 41.79 cfs @ 12.18 hrs, Volume= 175,829 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 5L: AP-1

Hydrograph



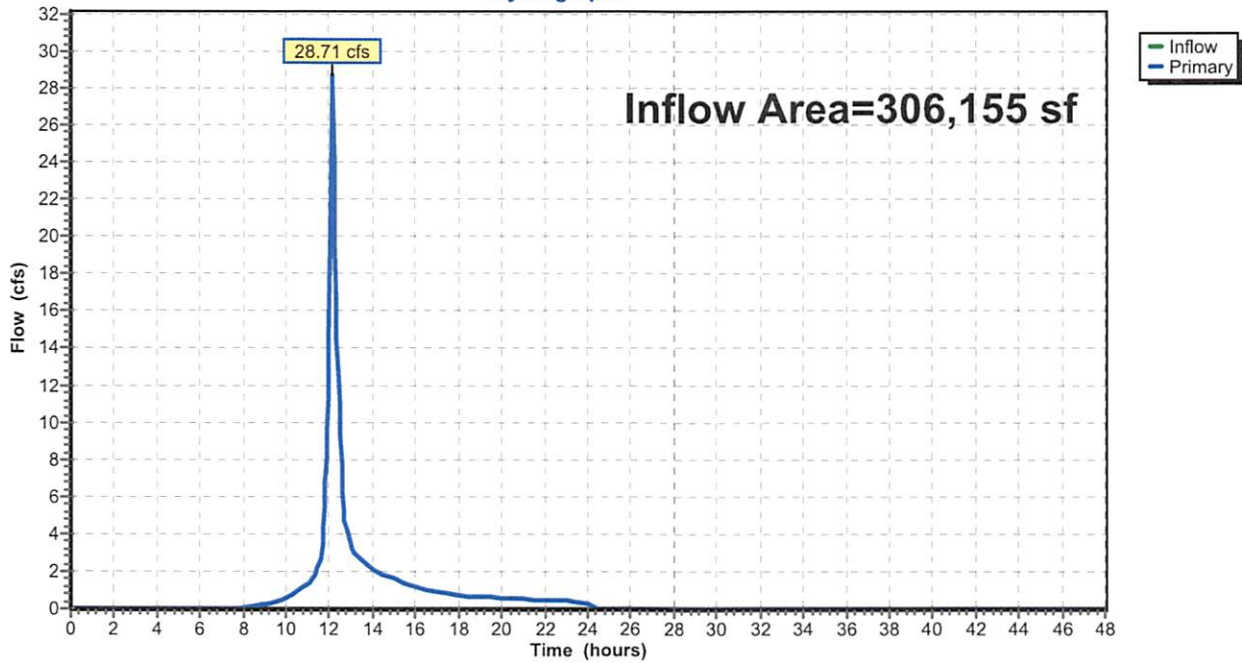
Summary for Link 6L: AP-2

Inflow Area = 306,155 sf, 0.00% Impervious, Inflow Depth = 3.97" for 25-Year event  
Inflow = 28.71 cfs @ 12.13 hrs, Volume= 101,201 cf  
Primary = 28.71 cfs @ 12.13 hrs, Volume= 101,201 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 6L: AP-2

Hydrograph



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Type III 24-hr 50-Year Rainfall=7.94"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: 1** Runoff Area=104,729 sf 0.00% Impervious Runoff Depth=4.76"  
Flow Length=480' Slope=0.0960 '/' Tc=5.9 min CN=73 Runoff=13.15 cfs 41,515 cf

**Subcatchment 2S: 2** Runoff Area=459,823 sf 0.00% Impervious Runoff Depth=4.53"  
Flow Length=1,115' Tc=14.4 min CN=71 Runoff=42.85 cfs 173,474 cf

**Subcatchment 3S: 3** Runoff Area=164,510 sf 0.00% Impervious Runoff Depth=4.87"  
Flow Length=860' Slope=0.0750 '/' Tc=9.8 min CN=74 Runoff=18.68 cfs 66,792 cf

**Subcatchment 4S: 4** Runoff Area=141,645 sf 0.00% Impervious Runoff Depth=4.76"  
Flow Length=735' Slope=0.0840 '/' Tc=8.3 min CN=73 Runoff=16.51 cfs 56,148 cf

**Link 5L: AP-1** Inflow=51.15 cfs 214,989 cf  
Primary=51.15 cfs 214,989 cf

**Link 6L: AP-2** Inflow=34.82 cfs 122,940 cf  
Primary=34.82 cfs 122,940 cf

**Total Runoff Area = 870,707 sf Runoff Volume = 337,928 cf Average Runoff Depth = 4.66"**  
**100.00% Pervious = 870,707 sf 0.00% Impervious = 0 sf**

**Summary for Subcatchment 1S: 1**

[49] Hint:  $T_c < 2dt$  may require smaller  $dt$

Runoff = 13.15 cfs @ 12.09 hrs, Volume= 41,515 cf, Depth= 4.76"

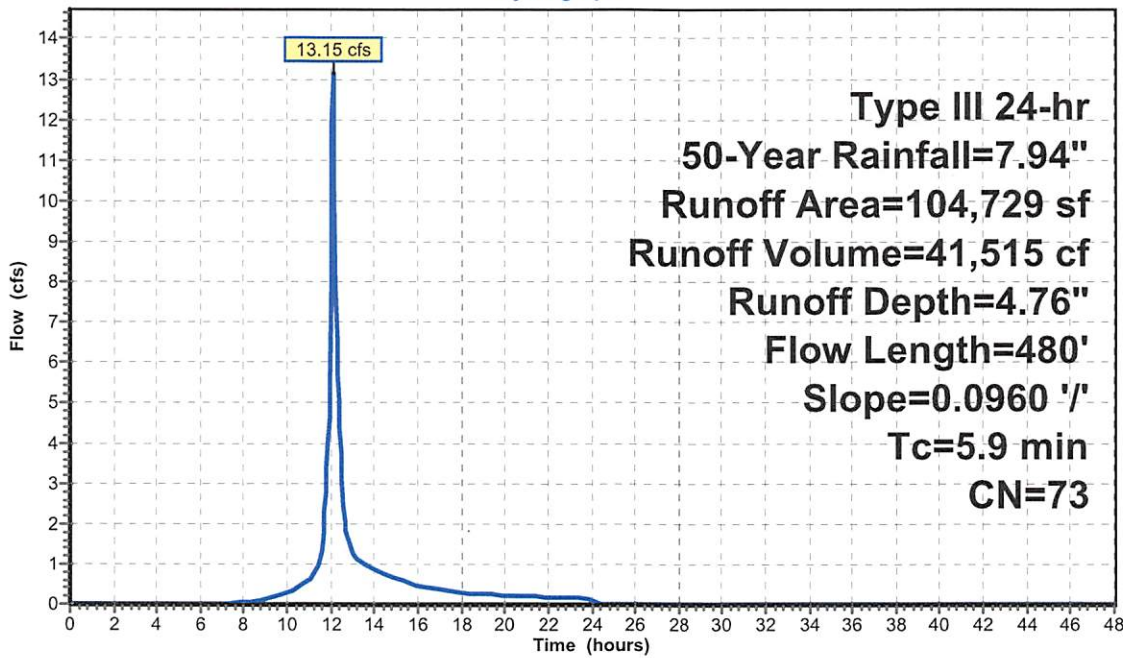
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs,  $dt= 0.05$  hrs  
 Type III 24-hr 50-Year Rainfall=7.94"

Area (sf)	CN	Description
5,354	61	Pasture/grassland/range, Good, HSG B
99,375	74	Pasture/grassland/range, Good, HSG C
104,729	73	Weighted Average
104,729		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	50	0.0960	0.33		Sheet Flow, Range $n= 0.130$ $P2= 3.52"$
3.3	430	0.0960	2.17		Shallow Concentrated Flow, Short Grass Pasture $K_v= 7.0$ fps
5.9	480	Total			

**Subcatchment 1S: 1**

Hydrograph



**Summary for Subcatchment 2S: 2**

Runoff = 42.85 cfs @ 12.20 hrs, Volume= 173,474 cf, Depth= 4.53"

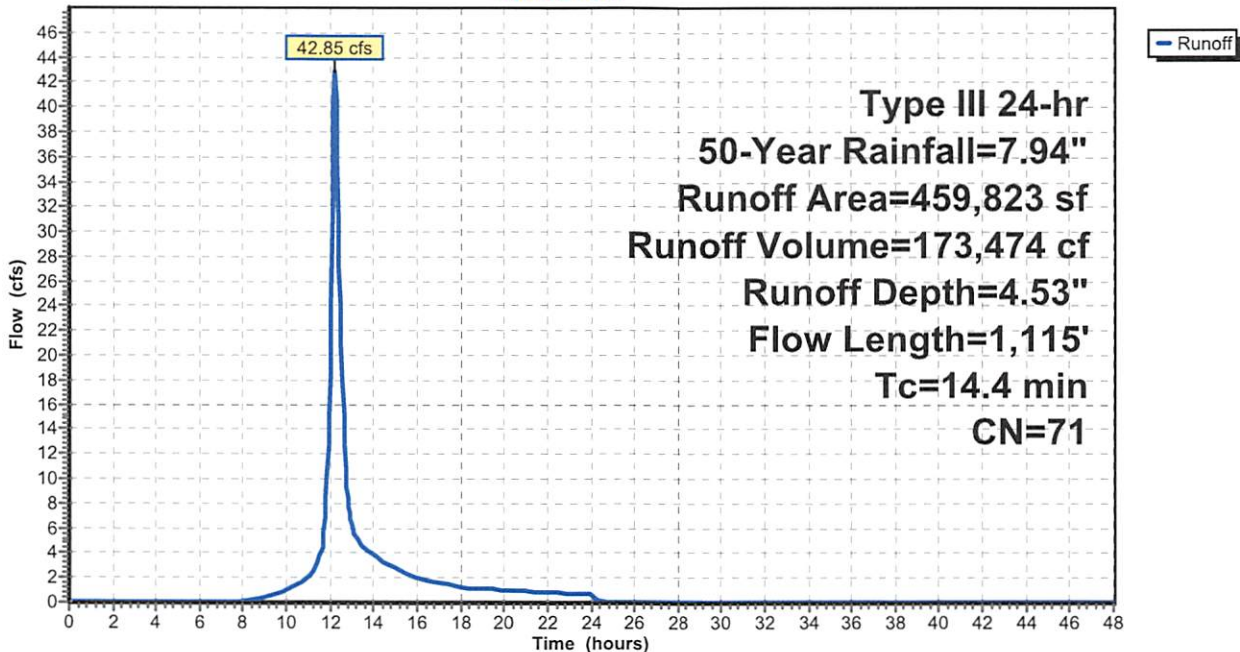
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 50-Year Rainfall=7.94"

Area (sf)	CN	Description
104,954	61	Pasture/grassland/range, Good, HSG B
352,770	74	Pasture/grassland/range, Good, HSG C
2,099	80	Pasture/grassland/range, Good, HSG D
459,823	71	Weighted Average
459,823		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	50	0.1110	0.35		<b>Sheet Flow,</b> Range n= 0.130 P2= 3.52"
4.3	605	0.1110	2.33		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.7	460	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
14.4	1,115	Total			

**Subcatchment 2S: 2**

Hydrograph





**Summary for Subcatchment 3S: 3**

Runoff = 18.68 cfs @ 12.14 hrs, Volume= 66,792 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 50-Year Rainfall=7.94"

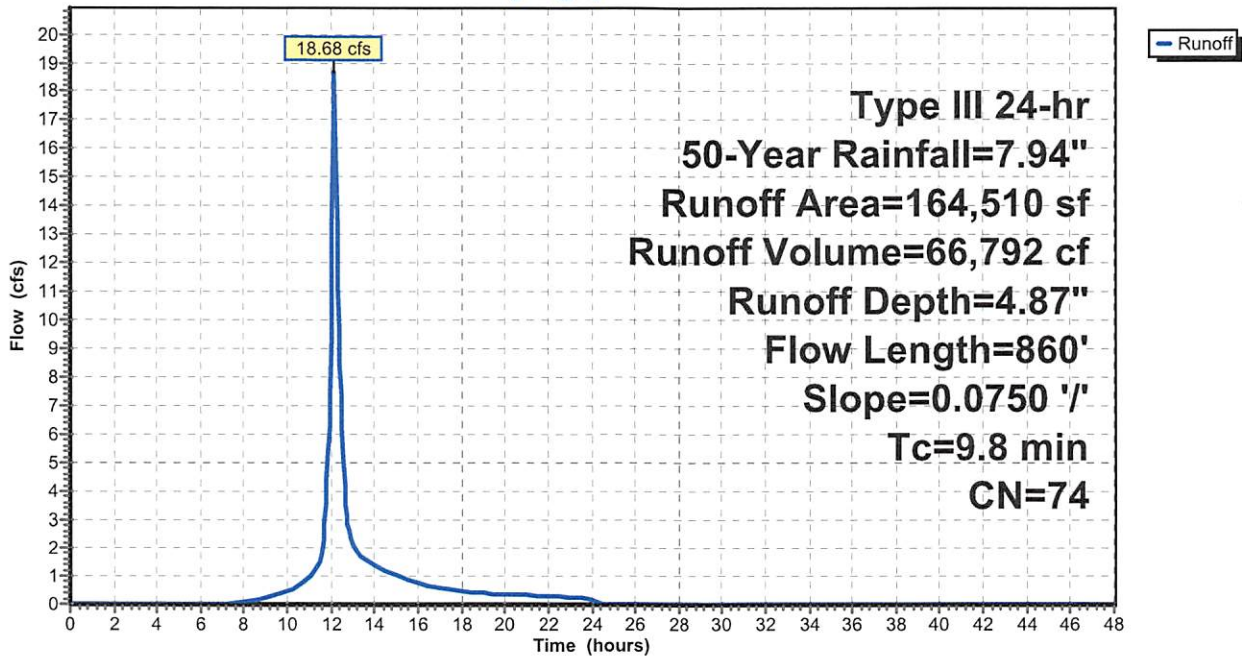
Area (sf)	CN	Description
164,510	74	Pasture/grassland/range, Good, HSG C
164,510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	50	0.0750	0.30		<b>Sheet Flow,</b> Range n= 0.130 P2= 3.52"
7.0	810	0.0750	1.92		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
9.8	860	Total			

**Subcatchment 3S: 3**

Hydrograph



**Summary for Subcatchment 4S: 4**

Runoff = 16.51 cfs @ 12.12 hrs, Volume= 56,148 cf, Depth= 4.76"

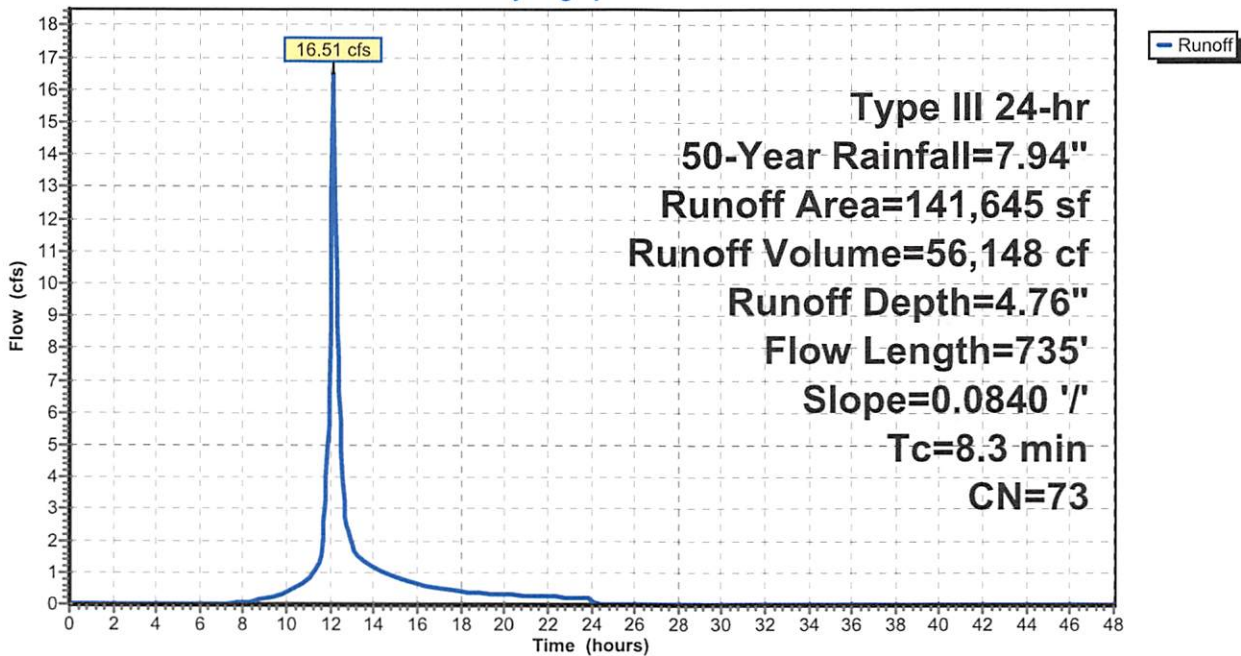
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 50-Year Rainfall=7.94"

Area (sf)	CN	Description
133,333	74	Pasture/grassland/range, Good, HSG C
8,312	65	Brush, Good, HSG C
141,645	73	Weighted Average
141,645		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	50	0.0840	0.31		<b>Sheet Flow,</b> Range n= 0.130 P2= 3.52"
5.6	685	0.0840	2.03		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
8.3	735	Total			

**Subcatchment 4S: 4**

Hydrograph



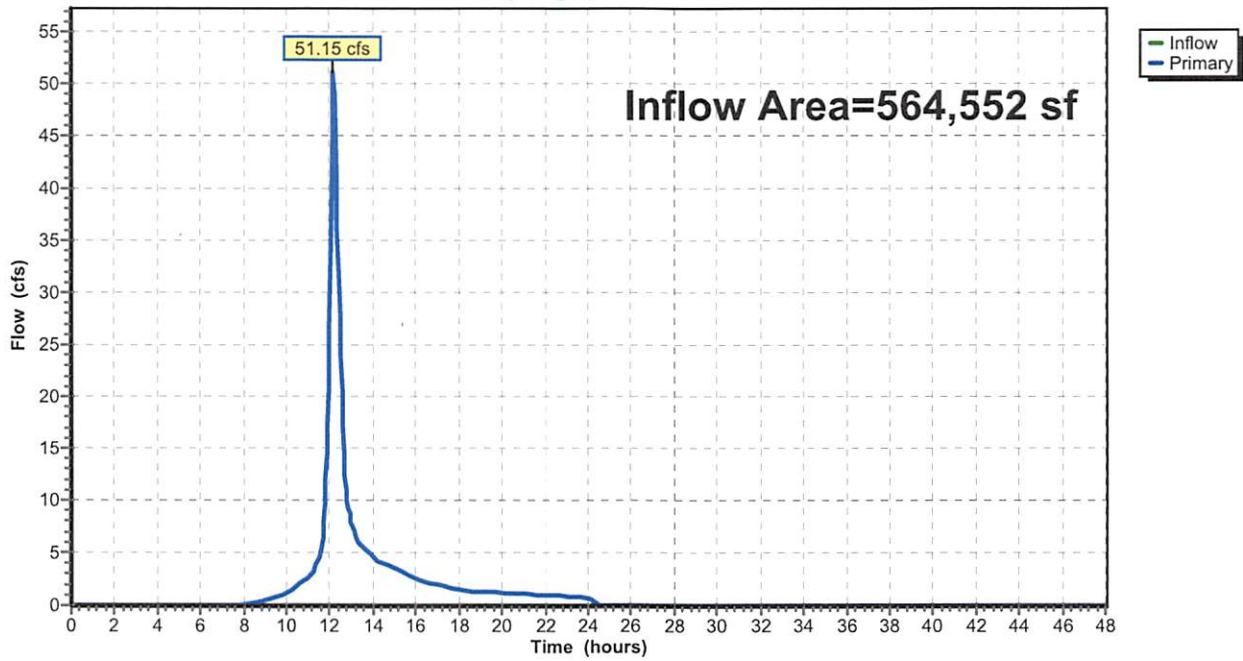
Summary for Link 5L: AP-1

Inflow Area = 564,552 sf, 0.00% Impervious, Inflow Depth = 4.57" for 50-Year event  
Inflow = 51.15 cfs @ 12.18 hrs, Volume= 214,989 cf  
Primary = 51.15 cfs @ 12.18 hrs, Volume= 214,989 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 5L: AP-1

Hydrograph



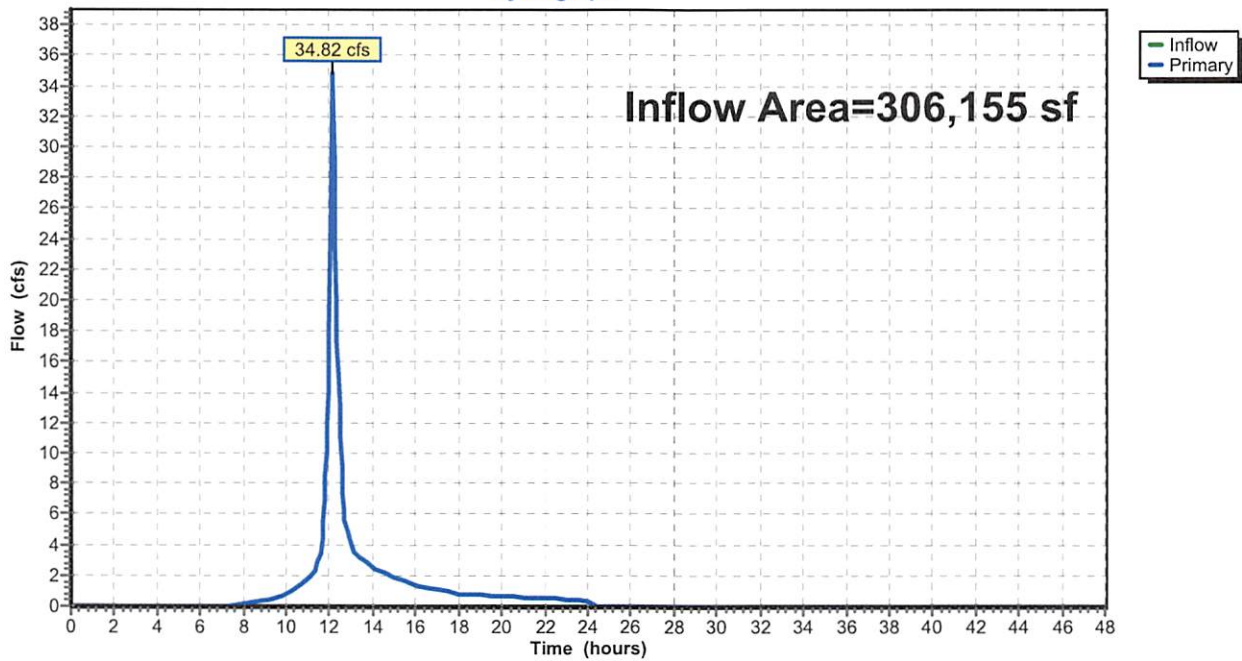
Summary for Link 6L: AP-2

Inflow Area = 306,155 sf, 0.00% Impervious, Inflow Depth = 4.82" for 50-Year event  
Inflow = 34.82 cfs @ 12.13 hrs, Volume= 122,940 cf  
Primary = 34.82 cfs @ 12.13 hrs, Volume= 122,940 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 6L: AP-2

Hydrograph



**Bethlehem\_CT562110 - EX**

Type III 24-hr 100-Year Rainfall=9.01"

Prepared by All Points Technology Corp.

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: 1** Runoff Area=104,729 sf 0.00% Impervious Runoff Depth=5.71"  
Flow Length=480' Slope=0.0960 '/' Tc=5.9 min CN=73 Runoff=15.74 cfs 49,874 cf

**Subcatchment 2S: 2** Runoff Area=459,823 sf 0.00% Impervious Runoff Depth=5.47"  
Flow Length=1,115' Tc=14.4 min CN=71 Runoff=51.69 cfs 209,504 cf

**Subcatchment 3S: 3** Runoff Area=164,510 sf 0.00% Impervious Runoff Depth=5.84"  
Flow Length=860' Slope=0.0750 '/' Tc=9.8 min CN=74 Runoff=22.30 cfs 80,036 cf

**Subcatchment 4S: 4** Runoff Area=141,645 sf 0.00% Impervious Runoff Depth=5.71"  
Flow Length=735' Slope=0.0840 '/' Tc=8.3 min CN=73 Runoff=19.78 cfs 67,454 cf

**Link 5L: AP-1** Inflow=61.80 cfs 259,378 cf  
Primary=61.80 cfs 259,378 cf

**Link 6L: AP-2** Inflow=41.63 cfs 147,489 cf  
Primary=41.63 cfs 147,489 cf

**Total Runoff Area = 870,707 sf Runoff Volume = 406,867 cf Average Runoff Depth = 5.61"**  
**100.00% Pervious = 870,707 sf 0.00% Impervious = 0 sf**



**Summary for Subcatchment 1S: 1**

[49] Hint:  $T_c < 2dt$  may require smaller dt

Runoff = 15.74 cfs @ 12.09 hrs, Volume= 49,874 cf, Depth= 5.71"

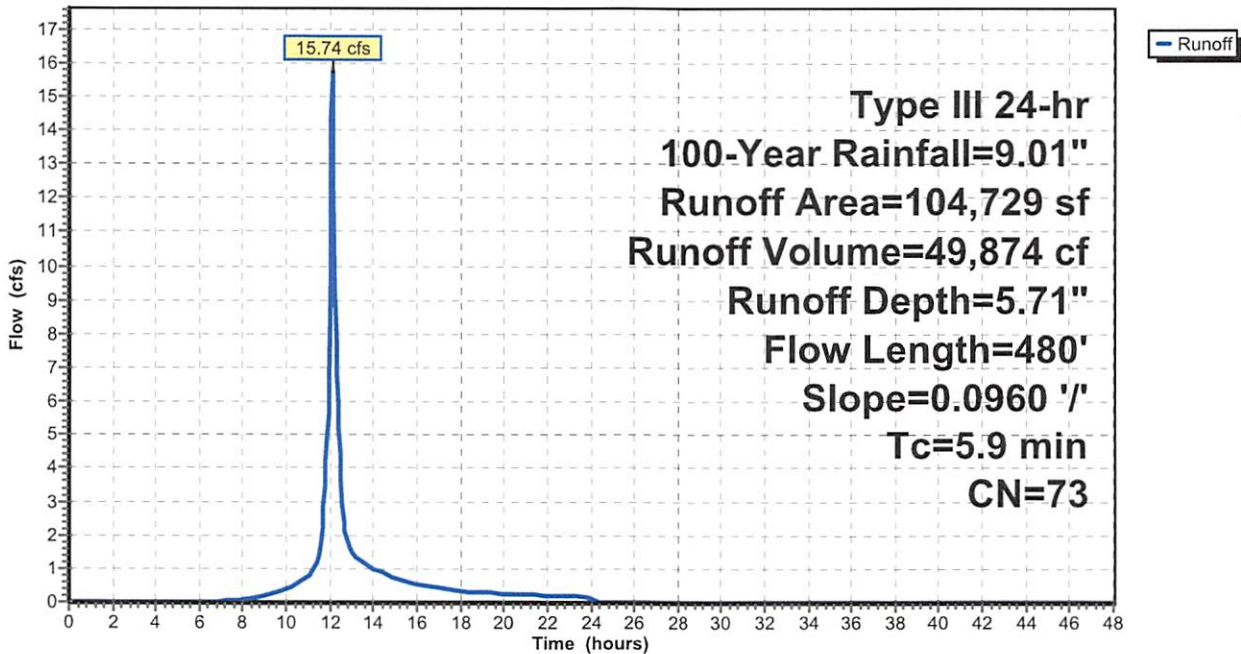
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=9.01"

Area (sf)	CN	Description
5,354	61	Pasture/grassland/range, Good, HSG B
99,375	74	Pasture/grassland/range, Good, HSG C
104,729	73	Weighted Average
104,729		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	50	0.0960	0.33		Sheet Flow, Range n= 0.130 P2= 3.52"
3.3	430	0.0960	2.17		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
5.9	480	Total			

**Subcatchment 1S: 1**

Hydrograph



**Summary for Subcatchment 2S: 2**

Runoff = 51.69 cfs @ 12.20 hrs, Volume= 209,504 cf, Depth= 5.47"

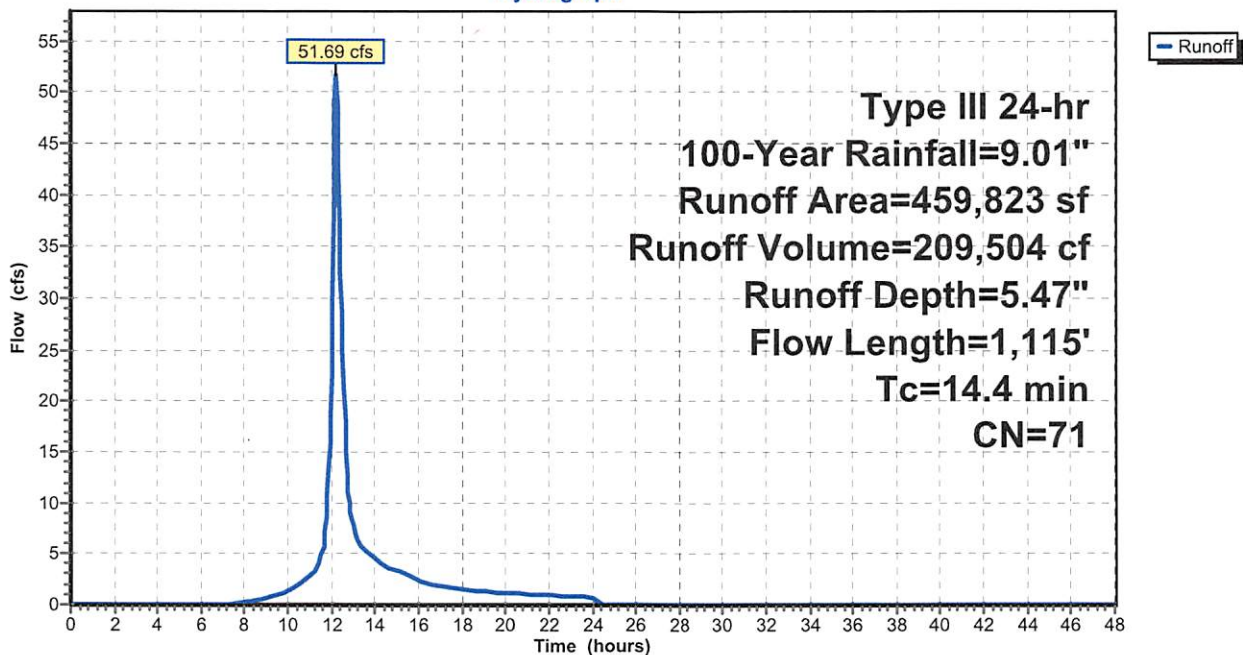
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=9.01"

Area (sf)	CN	Description
104,954	61	Pasture/grassland/range, Good, HSG B
352,770	74	Pasture/grassland/range, Good, HSG C
2,099	80	Pasture/grassland/range, Good, HSG D
459,823	71	Weighted Average
459,823		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	50	0.1110	0.35		<b>Sheet Flow,</b> Range n= 0.130 P2= 3.52"
4.3	605	0.1110	2.33		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.7	460	0.0200	0.99		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
14.4	1,115	Total			

**Subcatchment 2S: 2**

Hydrograph



**Summary for Subcatchment 3S: 3**

Runoff = 22.30 cfs @ 12.14 hrs, Volume= 80,036 cf, Depth= 5.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=9.01"

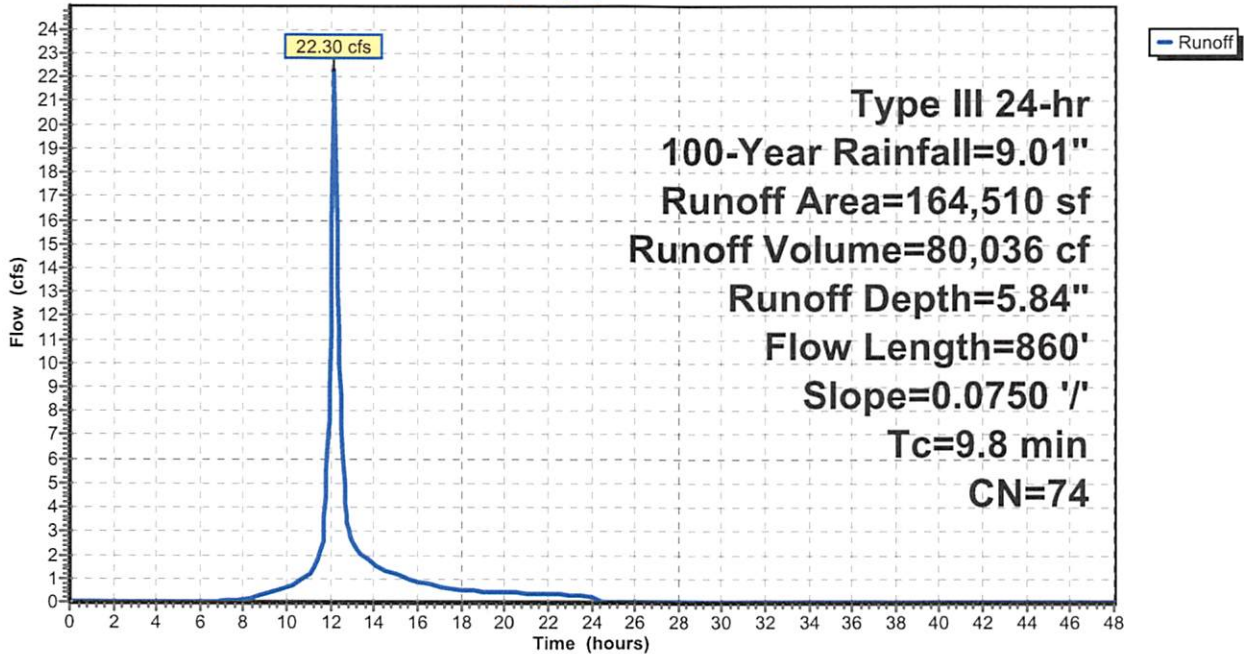
Area (sf)	CN	Description
164,510	74	Pasture/grassland/range, Good, HSG C
164,510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	50	0.0750	0.30		Sheet Flow, Range n= 0.130 P2= 3.52"
7.0	810	0.0750	1.92		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
9.8	860	Total			

**Subcatchment 3S: 3**

Hydrograph





**Summary for Subcatchment 4S: 4**

Runoff = 19.78 cfs @ 12.12 hrs, Volume= 67,454 cf, Depth= 5.71"

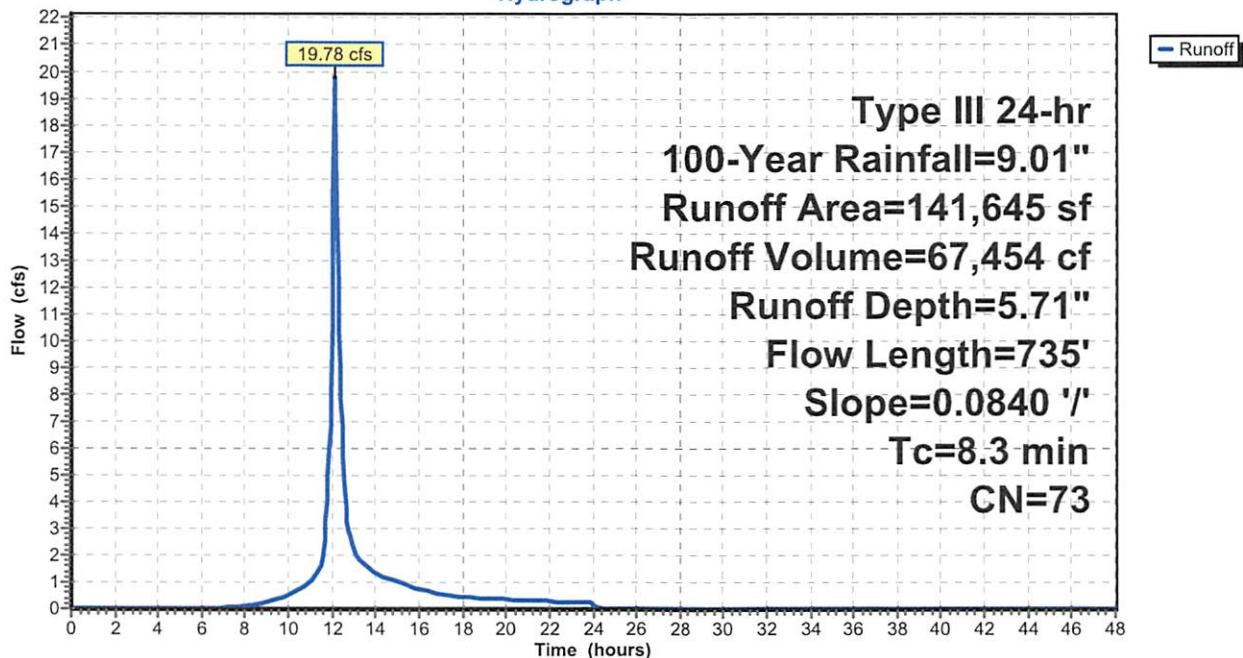
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=9.01"

Area (sf)	CN	Description
133,333	74	Pasture/grassland/range, Good, HSG C
8,312	65	Brush, Good, HSG C
141,645	73	Weighted Average
141,645		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	50	0.0840	0.31		Sheet Flow, Range n= 0.130 P2= 3.52"
5.6	685	0.0840	2.03		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.3	735	Total			

**Subcatchment 4S: 4**

Hydrograph



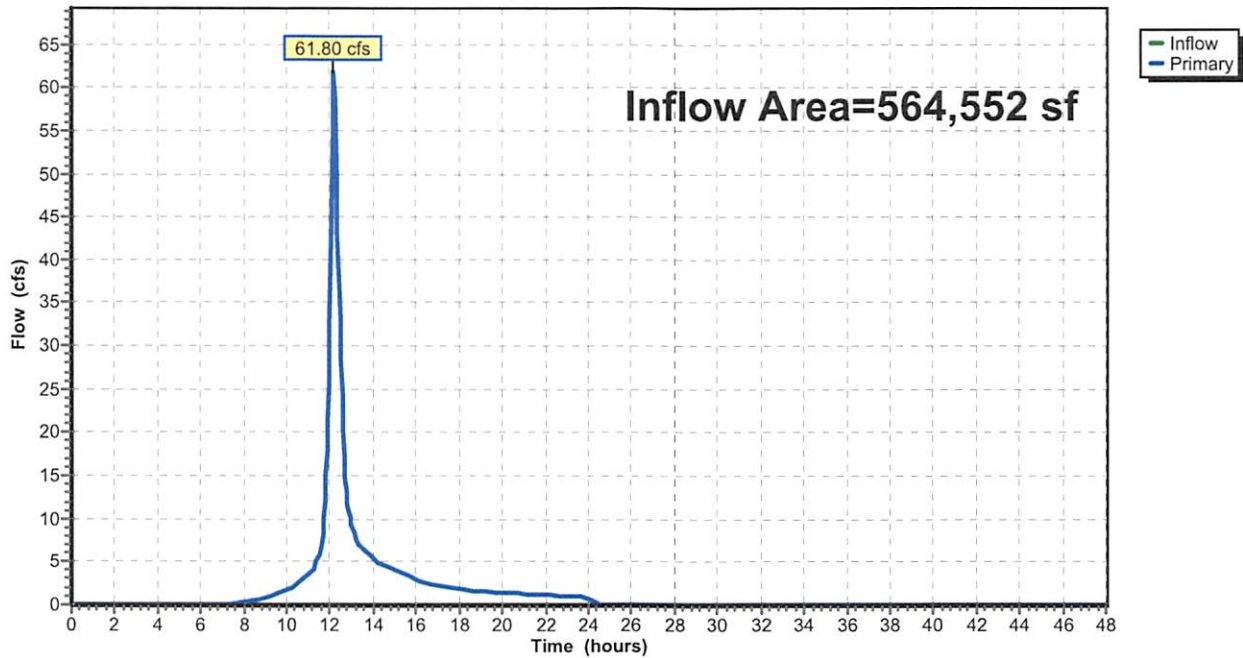
### Summary for Link 5L: AP-1

Inflow Area = 564,552 sf, 0.00% Impervious, Inflow Depth = 5.51" for 100-Year event  
Inflow = 61.80 cfs @ 12.17 hrs, Volume= 259,378 cf  
Primary = 61.80 cfs @ 12.17 hrs, Volume= 259,378 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

### Link 5L: AP-1

Hydrograph



### Summary for Link 6L: AP-2

Inflow Area = 306,155 sf, 0.00% Impervious, Inflow Depth = 5.78" for 100-Year event  
Inflow = 41.63 cfs @ 12.13 hrs, Volume= 147,489 cf  
Primary = 41.63 cfs @ 12.13 hrs, Volume= 147,489 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

### Link 6L: AP-2

Hydrograph

