



Date: June 23, 2026

To: Molly Westman, Planning Coordinator, City of Mankato

From: Jen Theneman, Director of Real Estate and Community Initiatives, SWMHP

Re: Good Counsel Planned Unit Development #2 Submission (Phase 1 Amendment)

This request from Southwest Minnesota Housing Partnership (SWMHP) to the City is to amend the PUD approved by the City Council on May 11, 2026 (to be called PUD #2) to include Scheid Hall residential use and to gain approval of a revised parking plan to accommodate the parking needs of the first phase of re-use of the property.

On May 11, 2026, SWMHP received approval for a PUD, CUP, and Preliminary/Final Plat to reuse the existing buildings for a variety of uses for the Good Counsel Hill property. As part of the contingencies of approval from the City, the approving resolution clearly excluded Scheid Hall residential uses and limited the use of the property to the extent that parking compliant with city code could be achieved. Also, the approving resolution limited off-site parking allowances to 10 Chapel-only events per year. Over the past month, SWMHP has been working tirelessly to prepare the appropriate documents for meeting the contingencies of approval of the four land use applications, as well as preparing stormwater plans, building plans and permit sets for the development of additional parking and full re-use of Theresa, Isidore, and Scheid Halls. Additionally, SWMHP has been having discussions with potential tenants and partners for the eventual occupancy of the space. Therefore, an amendment is needed to accommodate a more refined vision of who will use the space.

Specifically, the amendment request is to allow:

- 1) A total of 239 parking spots to be constructed, and associated stormwater management plans. SWMHP is requesting that this number be approved to be adequate to support the uses in the original PUD approval (with minor amendments as outlined below)
- 2) The residential re-use of Scheid Hall for up to 5 residential units

Parking Request

A total of 239 parking spots, and associated stormwater management infrastructure are planned to be constructed as part of the adaptive re-use projects associated with the

original PUD approval. SWMHP is requesting that this number be approved to be adequate to support the following uses:

- 58 residential units in Isidore and Theresa Halls (same as previous PUD)
- Up to 5 residential units in Scheid Hall
- 4,000 square feet of office use (reduction in amount from previous PUD)
- 2,000 square feet of accessory office spaces
- A 400-seat chapel/event space (for unlimited events)
- Up to 300-seat conferencing/gathering areas in Theresa (lower and first floor - not to be used at the same time as the chapel)
- A 5-bed commercially-leased area in Theresa Hall previously designated as guest suites.

Providing parking on this site is inordinately difficult and has consumed the majority of thought, planning, and discussion about the re-use of this beautiful, historic community asset. There are four competing factors at play. The first factor is the city code. The second factor is the historic preservation requirements and guidelines governing the Historic Designation leading to the use of Historic Tax Credits, the primary financing source for several of the projects to maintain the integrity and condition of the complex. The third factor is the business need for parking on the site. And finally, the environmental attributes, including the sensitive bluff areas and the woodland along the bluff, both which limit the location and amount of parking and stormwater infrastructure that can be built. SWMHP is working to balance these competing interests and develop a reasonable, adequate parking plan that honors city code, environmental stewardship, and the historic nature of the site without under-building or over-building parking.

In order to meet the stormwater management requirements associated with the additional parking proposed, SWMHP has worked with its engineers to develop a stormwater management plan that accommodates a large pond/sedimentation basin to the north of the existing Scheid Hall and which will collect the runoff from the majority of the paved areas. Additionally, due to grade challenges, there is a smaller stormwater collection area on the southwest corner of proposed parking areas to capture runoff from the parking area located on the western portion of the site. These areas were carefully selected to minimize impact of the historic turnaround and lawn areas (in order to satisfy NPS and SHPO's requirements to minimize impact and honor historic significant features of the property). While tree removal will be required to accommodate these areas, the bluff and woodland conservation easement will not be impacted.

- 1) City Code. It is difficult to determine the total number of parking stalls required for this project for the following reasons:
 - a. The assembly use functions more like a religious use design as the historic use, but is no longer "church" parking standards. Because there is more assembly space on site than will be used at once (at the same time), it is difficult to calculate the parking code requirements.

- b. Regarding commercial use of the 5 guest suites, there is no provision in city code for a care initiative that utilizes a non-medication administration model. The tenants are not planning medical healthcare, assisted living or hospice. Their intent is more closely considered master leasing of rooms for the short-term stay of a client who has chosen to live out their days with assistance for comfort, food and bathing, rather than in a clinical or home setting.
- c. Based on SWMHP's evaluation, a total of 239 parking spaces are required by the city code for the above uses and the plan shows 239 spaces.

2) Historic Preservation Requirements. The project is applying for Historic Designation, which will lead to the future ability to use Federal and Minnesota State Historic Tax Credits (HTCs). In pursuing Historic Designation, SWMHP has contracted with New History, who has supported the completion of a National Park Service (NPS-the ultimate grantor of designation for the National Historic Register) Part 1 application. Consequently, all work, including site work, is subject to review and approval by the State Historic Preservation Office (SHPO) and the National Park Service (NPS). All site work must meet the [Secretary of the Interior's Standards for Rehabilitation](#) (the "Standards"). To meet the Standards, SHPO and NPS expect sensitive site and landscaping improvements that retain the historic property's significant features. For the site, these include the soft-to-hardscape ratio, (former agricultural) green areas, existing trees and vegetation, and unique features such as statues, the historic turnaround/loop on the western portion of the property, and the green lawn in front of Theresa Hall.

During an in-person meeting on May 26, the applicant presented a site plan to SHPO reflecting the significant landscaping changes required to meet City Code parking requirements. SHPO stated that these improvements would not be approved due to their significant impact on the historic site's character (i.e., the incremental loss of green space). Therefore, the revised plans attempt to accommodate the desires of SHPO while minimizing the impact to the environment.

3) Business Needs.

- a. The market need for parking is an important consideration for the housing, assembly and office uses. This includes both number of stalls and location of these stalls (as close to the building and its entrances as possible). Furthermore, the residential tenants have certain expectations and needs related to parking that run alongside, but not always in coordination with, the needs of office and assembly/event attendees. Each of these sub-populations have different needs, expectations, and behavior regarding parking.
- b. Over the past 3 months, interest in booking events on the property has been high. Demand for concerts, weddings, conferences, meetings, and

performances is larger than expected, therefore SWMHP is requesting to accommodate unlimited events (with provision of a shuttle to off-site parking as the guest counts dictate) with the proposal. SWMHP views this as an interim solution. It is the expressed intent of SWMHP to eventually provide parking for all events on the hill through additional parking lots or the future possibility of a shared parking agreement with the neighboring property.

4) Environmental Constraints.

- a. This property offers gorgeous vistas, topography, and woodlands. As discussed at the last Council meeting, many community members, including Tourtellotte and Loyola neighbors enjoy the beauty of the hill. It is the desire of all stakeholders to preserve and enhance the beauty and enjoyment of this space. Given the existing buildings' proximity to the bluff, adding parking in a convenient and sensible location becomes challenging.
- b. SWMHP wishes to balance environmental impacts with City requirements, while maintaining historic significance and cost-conscious initiatives in order to keep housing and other uses reasonably priced for community benefit.

Based on balancing all these factors, SWMHP is proposing a total of 239 stalls located on the included site plan. **SWMHP specifically requests that this parking plan be approved to satisfy the parking needs of the above uses, with the addition of allowances/requirements for shuttles for unlimited large events (over 100 people attending). If this request cannot be accommodated, SWMHP asks that the City put a denial of the parking plan/allowance request in the resolution to be submitted with the SHPO Part 2 Historic Review application. SWMHP must show that efforts are being made to minimize historic and environmental impact through a PUD for parking as proposed in order to move forward in SHPO review.**

Scheid Hall Request

We request evaluation for the residential re-use of Scheid Hall for up to 5 residential units. At the time of PUD approval, the plans for Scheid Hall were not finalized. SWMHP has finalized building permit layouts for Scheid Hall and therefore, seeks to include the use of the building for residential apartments in this amendment. The plans are included for reference and the number of units is reflected in the parking calculation.

SWMHP is asking for a PUD amendment to include Scheid Hall residential units in PUD approval.

Next Steps/Schedule

SWMHP is eager to finalize tenant finish/remodel plans for the first phase of this adaptive re-use, which includes:

- 1) Re-model/re-use of Scheid Hall as up to 5 rental units;
- 2) Isidore Hall West (original building) for 16 rental units and 3,000 sq. ft of leased office (to be used by SWMHP's offices and another Mankato-based non-profits);
- 3) Isidore Hall East for 11 rental units, and 500 square feet of office space;
- 4) Theresa Hall for use of the Chapel and conferencing/gathering space for assembly/events (unlimited), and 26 rental units, 5 leased residential spaces (previously guest suites), and 1,000 sq ft of leased office space (to be used by a local non-profit and housing property management);
- 5) SWMHP desires to start construction on the residential component of the project July/August 2026, for occupancy by the end of 2026.

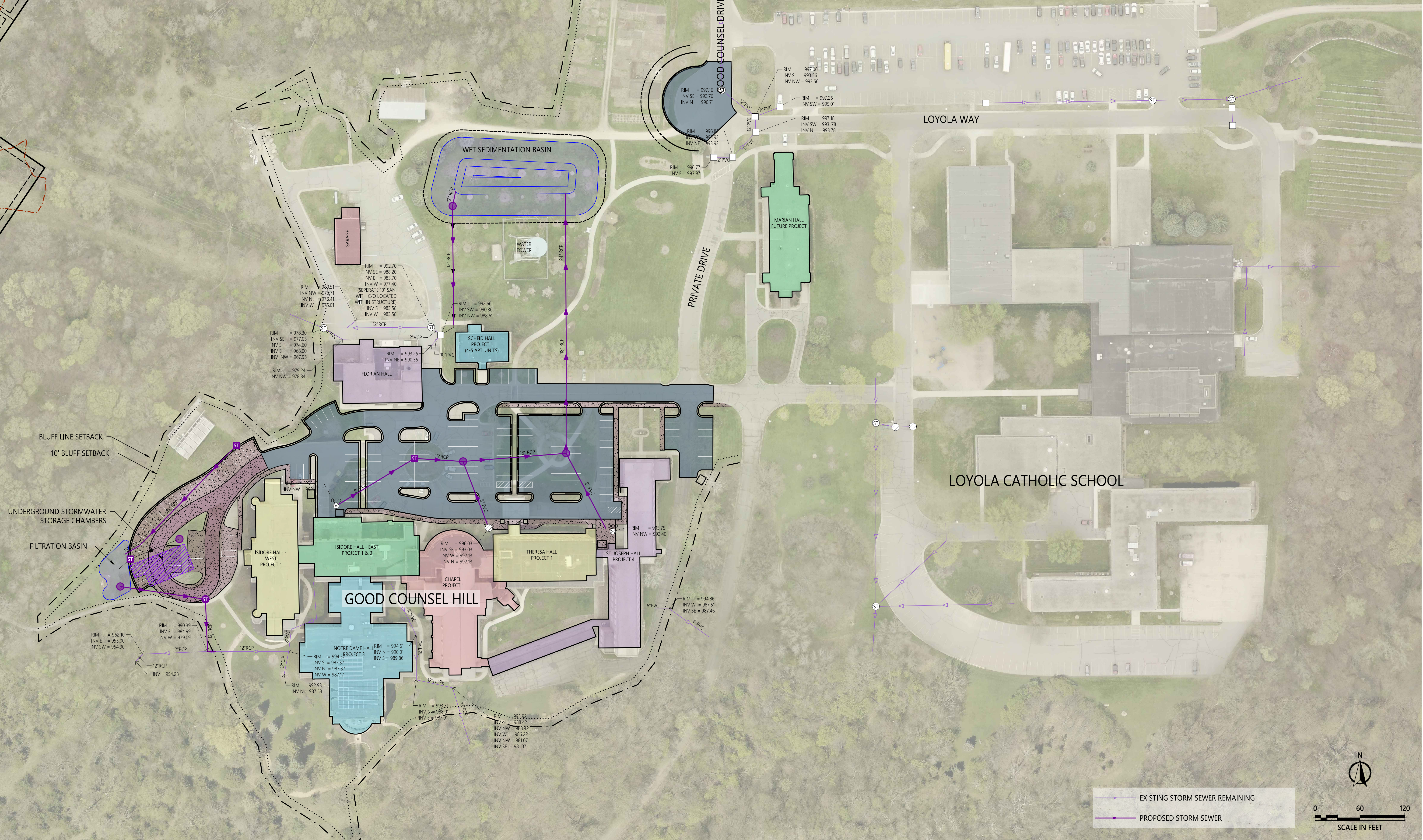
Future Requests – SWMHP intends to submit an amendment to the PUD and IO amendment for the tenant finish and occupancy of Notre Dame Hall as an assisted living community (same as historic use) by September of 2026 for occupancy Spring of 2027.

SWMHP intends to remodel/re-use St. Joseph's Hall for approximately 50 rental units. In addition to a future request for local housing vouchers, applications for future funding to accomplish this complex task are intended to be submitted throughout 2027. If successful, construction could start in early 2028 for a Fall 2028 occupancy.

SWMHP remains extremely excited about the potential of the reuse of the Good Counsel campus. Diligent pursuit of partners, financing, and the development of plans that find a balance between environmental and historic preservation, while at the same time meeting the desires of the city and the needs of the future residents, guests, and office occupants, are constantly top of mind. SWMHP feels confident this plan meets that balance, and that updated iterations and opportunities will necessitate amendments and innovations in the future. Our desire is to honor the legacy vision of this beautiful campus, therefore SWMHP may be seeking alternative storm water designs in future PUD amendments to minimize the impact on existing green space and trees on top of the hill. The future of this campus is impactful for City of Mankato economic development, preservation of important history, and the number one strategic priority of housing. This project provides a place for workforce, individuals, families, seniors, small business, nonprofits and more, a safe place to call home.

We appreciate the collaboration with City Staff, Planning Commission and City Council to date, and invite all parties to recognize the uniqueness of the opportunities before us, and creatively create successful outcomes for city policy, historic preservation and the community we all serve.

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DATE	REV#	REVISIONS DESCRIPTION

**Good Counsel – Main Campus
Mankato, MN**

HYDRAULIC DESIGN SUMMARY REPORT

For

Southwest Minnesota Housing Partnership

January 2026

Prepared by:
Widseth Consulting Engineers, Rochester, Minnesota

Project # 2025-10591

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.



Andre T. Ringle

06/19/2026

Lic. No. 60708

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DRAINAGE REPORT

Project Name:
Widseth Project #

Good Counsel Main Campus – Mankato, MN
2025-10591

SECTION 1.0 – Project Summary and Proposed Site Improvements

We have completed our analysis and design recommendation for the stormwater management system associated with the above referenced project. This design was guided by the MPCA NPDES permit and MnDOT.

Hydrologic & Hydraulic Modeling

The HydroCAD™ Ver. 10.0 modeling software was utilized to develop the hydrologic contributions serving the proposed project site. This software is adept at modeling urban drainage settings and can provide storage routing calculations under dynamic outlet conditions.

In accordance with MnDOT Technical Memorandum No. 13_08_B_04, NOAA Atlas 14 precipitation frequency data was utilized. Basin characteristics developed using the survey, along with NOAA Atlas 14 rainfall data, peak flows were generated utilizing SCS procedures. Where storage routing calculations were completed, SCS Unit Hydrograph procedures were utilized. See Appendix 1 for NOAA Atlas 14 precipitation frequency table.

PRE-Improvement Condition

The existing site consists of a developed campus that includes several buildings, an existing parking lot, and on-site utilities. There are steep, forested slopes surrounding the existing campus.

The existing soils on the project site are classified as HSG C/D according to web soil survey. See Appendix 2 for Soils Map.

POST-Improvement Condition

Proposed site improvements include the reconstruction and expansion of the existing parking lot and the associated stormwater and utility improvements to accommodate the expanded parking lot.

The stormwater runoff from the site will flow to proposed stormwater treatment basins located throughout the site. There will be one wet sedimentation basin and three filtration basins. Infiltration was not considered due to the presence of type D soils. Stormwater from the basins will be routed to existing storm sewer that flows down the adjacent bluff. The proposed stormwater improvements will reduce the runoff rate from the site and peak rate of water flowing directly down the bluff.

SECTION 2.0 – Water Quality Volume

Impervious Area:

Proposed impervious surface:	5.89	acres
Existing impervious surface:	4.75	acres
New & Reconstructed Impervious surface:	2.27	acres

Subcatchment / Node	Basin Type	Subcatchment Area (acres)	Impervious Area (acres)	Elevation of Max Water Quality Volume	Proposed Water Quality Volume (ft ³)
1S (1P)	Wet Sedimentation Basin	4.032	2.359	989.0	12462
3S (2P)	Filtration Basin	1.269	0.935	993.5	4691
Total		5.301	3.294		17153

Impervious area shown is the entire impervious area planned to be routed to the given basin and does not represent the new and reconstructed impervious in a given catchment area.

The choice of BMP was made primarily due the presence of HSG C/D soils throughout the project area. Filtration basins were chosen for smaller drainage areas while a wet sedimentation basin was chosen for the largest drainage area due to the availability of horizontal and vertical space. An infiltration rate of 1.63 was chosen for the filter basin media because it is the same rate as Type A soils in the Design Infiltration Rates table of the MN Stormwater Manual. The media expected to perform at least at this level through the majority of its useful lifespan.

Water Quality Volume:

Required Water Quality Volume:	0.21	acres-feet
Proposed Water Quality Volume:	0.39	acres-feet
Excess Water Quality Volume:	0.18	acres-feet

The required water quality volume was calculated using 1.1” of depth across the entire new and reconstructed impervious area.

SECTION 3.0 – PRE & POST-Improvement Discharge Rates:

Discharge Rates:

See Tables 1 & 2 for the PRE-Improvement & POST-Improvement Conditions for discharge rates for the 2, 10, and 100-year storm events.

Table 1 – PRE-Improvement Discharge Rates

Subcatchment	HydroCAD Node	Area (acres)	CN	2-Year Storm (cfs)	10-Year Storm (cfs)	100-Year Storm (cfs)
NW Storm Sewer	1R	4.887	88	6.3	24.9	46.3
West Storm Sewer	2R	1.739	85	1	3.4	6
West Bluff	3R	0.613	92	1.7	8.0	15.6
South Storm Sewer	4R	1.19	91	1.9	6.4	11.5
SE Bluff - To Road	5R	1.578	85	1.9	7.7	14.5
East Storm Sewer	6R	0.411	88	0.6	1.7	2.8
North Bluff	7R	0.492	97	0.3	1.6	3.3
Total		10.91	88	13.7	53.7	100

Table 2 – POST-Improvement Discharge Rates

Subcatchment	HydroCAD Node	Area (acres)	CN	2-Year Storm (cfs)	10-Year Storm (cfs)	100-Year Storm (cfs)
NW Storm Sewer	1R	5.343	91	2.6	13.9	20.5
West Storm Sewer	2R	2.034	91	1	7.0	11.5
West Bluff	3R	0.502	82	0.6	3.7	7.5
South Storm Sewer	4R	2.144	91	1.9	6.4	11.5
SE Bluff - To Road	5R	0.099	80	1.3	5.8	10.6
East Storm Sewer	6R	0.788	91	0.6	1.7	2.8
North Bluff	7R	0.000	-	0.0	0.0	0.0
Total		10.91	90	8	38.5	64.4

SECTION 4.0 – Risk Assessment

All proposed stormwater treatment basins and low points have HWL's at least one foot below the lowest adjacent FFE and emergency overflow of sufficient width to convey flows beyond the design storm.

IN order to ensure sufficient outlet capacity during all seasons, larger grates than necessary were chosen for the filtration basin as it is near wooded areas. The grate was then modeled with a 50% reduction in outflow to simulate clogging.

The flow rates into the west storm sewer are proposed to increase while the overall flows and overland flowrates to the west bluff are proposed to decrease. Because the flow rates in minor (less than 2-year) storms are not projected to increase, the increased flowrates to the storm sewer is not anticipated to cause erosion concerns. A more thorough analysis of the storm sewer system will be conducted as part of the full build drainage report.

Minor Adjustments

Minor adjustments in placement of structures and conveyance piping orientation will not invalidate this design/analysis. A variety of design and performance data can be found in the attached summary results information. Additional calculations and results will be stored in the project design file. Any exceptions to system contribution, sizing, invert elevations or locations should be revisited before final plans, specifications, and engineering.

Appendix

- 1 NOAA Atlas 14 Precipitation Frequency Table
- 2 Hydrologic Soils Group Map
- 3 Pre-Development Drainage Map & Hydrology Calculations for the 2, 10, & 100-year storm events (HydroCAD)
- 4 Post-Development Drainage Map & Hydrology Calculations for the 2, 10, & 100-year storm events (HydroCAD)

APPENDIX 1

NOAA Atlas 14 Precipitation Frequency Table



NOAA Atlas 14, Volume 8, Version 2
Location name: Mankato, Minnesota, USA*
Latitude: 44.1661°, Longitude: -94.0054°
Elevation: 778 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffrey Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerals](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.376 (0.297-0.489)	0.448 (0.353-0.582)	0.569 (0.447-0.741)	0.673 (0.525-0.879)	0.821 (0.619-1.10)	0.938 (0.690-1.27)	1.06 (0.751-1.45)	1.18 (0.805-1.66)	1.36 (0.884-1.93)	1.49 (0.944-2.14)
10-min	0.551 (0.434-0.715)	0.656 (0.517-0.853)	0.833 (0.655-1.08)	0.985 (0.769-1.29)	1.20 (0.907-1.61)	1.37 (1.01-1.86)	1.55 (1.10-2.13)	1.74 (1.18-2.43)	1.99 (1.30-2.83)	2.18 (1.38-3.14)
15-min	0.671 (0.530-0.873)	0.800 (0.631-1.04)	1.02 (0.798-1.32)	1.20 (0.938-1.57)	1.46 (1.11-1.96)	1.68 (1.23-2.26)	1.89 (1.34-2.60)	2.12 (1.44-2.96)	2.42 (1.58-3.45)	2.66 (1.69-3.82)
30-min	0.909 (0.718-1.18)	1.09 (0.857-1.41)	1.39 (1.09-1.81)	1.64 (1.28-2.15)	2.01 (1.52-2.69)	2.30 (1.69-3.11)	2.60 (1.84-3.57)	2.91 (1.98-4.07)	3.34 (2.18-4.76)	3.67 (2.32-5.27)
60-min	1.18 (0.928-1.53)	1.40 (1.10-1.81)	1.78 (1.39-2.31)	2.11 (1.65-2.76)	2.60 (1.97-3.51)	3.01 (2.22-4.08)	3.44 (2.44-4.74)	3.89 (2.64-5.45)	4.52 (2.95-6.46)	5.02 (3.18-7.21)
2-hr	1.44 (1.15-1.84)	1.70 (1.36-2.18)	2.16 (1.72-2.78)	2.58 (2.04-3.32)	3.20 (2.46-4.27)	3.72 (2.78-4.99)	4.27 (3.08-5.83)	4.86 (3.35-6.76)	5.70 (3.76-8.07)	6.38 (4.08-9.06)
3-hr	1.62 (1.30-2.05)	1.90 (1.53-2.41)	2.41 (1.93-3.06)	2.88 (2.29-3.67)	3.59 (2.79-4.77)	4.20 (3.17-5.61)	4.85 (3.52-6.59)	5.56 (3.86-7.69)	6.58 (4.38-9.26)	7.40 (4.76-10.4)
6-hr	1.90 (1.55-2.38)	2.23 (1.82-2.79)	2.83 (2.30-3.55)	3.39 (2.74-4.26)	4.26 (3.35-5.59)	5.00 (3.82-6.59)	5.80 (4.27-7.79)	6.68 (4.70-9.14)	7.94 (5.35-11.1)	8.98 (5.84-12.5)
12-hr	2.17 (1.79-2.66)	2.55 (2.10-3.14)	3.24 (2.67-4.00)	3.88 (3.18-4.81)	4.87 (3.88-6.29)	5.70 (4.41-7.41)	6.60 (4.92-8.74)	7.59 (5.39-10.2)	9.00 (6.12-12.4)	10.1 (6.68-14.0)
24-hr	2.47 (2.07-2.99)	2.87 (2.40-3.48)	3.60 (3.00-4.37)	4.28 (3.55-5.22)	5.33 (4.31-6.79)	6.22 (4.88-7.98)	7.19 (5.42-9.40)	8.25 (5.94-11.0)	9.77 (6.72-13.3)	11.0 (7.32-15.1)
2-day	2.87 (2.44-3.42)	3.24 (2.75-3.86)	3.94 (3.33-4.70)	4.61 (3.87-5.53)	5.67 (4.65-7.14)	6.59 (5.24-8.35)	7.61 (5.82-9.83)	8.73 (6.37-11.5)	10.4 (7.23-14.0)	11.7 (7.88-15.8)
3-day	3.14 (2.69-3.70)	3.52 (3.01-4.15)	4.23 (3.61-5.01)	4.91 (4.16-5.84)	5.99 (4.95-7.46)	6.92 (5.54-8.68)	7.94 (6.11-10.2)	9.07 (6.66-11.9)	10.7 (7.52-14.4)	12.1 (8.17-16.2)
4-day	3.35 (2.89-3.93)	3.75 (3.23-4.40)	4.50 (3.86-5.29)	5.20 (4.43-6.14)	6.29 (5.22-7.76)	7.22 (5.81-8.99)	8.24 (6.37-10.5)	9.36 (6.90-12.2)	11.0 (7.74-14.6)	12.3 (8.38-16.5)
7-day	3.88 (3.38-4.49)	4.35 (3.78-5.03)	5.18 (4.49-6.01)	5.93 (5.11-6.91)	7.06 (5.90-8.56)	8.00 (6.49-9.80)	9.01 (7.02-11.3)	10.1 (7.50-13.0)	11.6 (8.26-15.3)	12.9 (8.84-17.1)
10-day	4.39 (3.86-5.04)	4.92 (4.31-5.64)	5.82 (5.08-6.69)	6.61 (5.74-7.64)	7.77 (6.52-9.30)	8.72 (7.11-10.6)	9.72 (7.62-12.0)	10.8 (8.05-13.7)	12.3 (8.74-16.0)	13.4 (9.27-17.7)
20-day	6.03 (5.37-6.80)	6.70 (5.96-7.56)	7.80 (6.90-8.82)	8.72 (7.67-9.90)	9.99 (8.46-11.7)	11.0 (9.06-13.0)	12.0 (9.49-14.6)	13.0 (9.81-16.2)	14.4 (10.4-18.4)	15.4 (10.8-20.1)
30-day	7.45 (6.69-8.31)	8.26 (7.40-9.22)	9.56 (8.54-10.7)	10.6 (9.42-11.9)	12.0 (10.3-13.9)	13.1 (10.9-15.4)	14.2 (11.3-17.0)	15.2 (11.5-18.8)	16.6 (12.0-21.0)	17.5 (12.4-22.7)
45-day	9.24 (8.37-10.2)	10.3 (9.29-11.4)	11.9 (10.7-13.2)	13.2 (11.8-14.7)	14.9 (12.7-16.9)	16.1 (13.4-18.6)	17.2 (13.8-20.5)	18.3 (14.0-22.4)	19.7 (14.4-24.8)	20.7 (14.6-26.6)
60-day	10.8 (9.80-11.8)	12.0 (10.9-13.2)	13.9 (12.6-15.3)	15.4 (13.9-17.1)	17.4 (14.9-19.6)	18.8 (15.7-21.5)	20.0 (16.1-23.6)	21.2 (16.3-25.7)	22.7 (16.6-28.3)	23.6 (16.8-30.2)

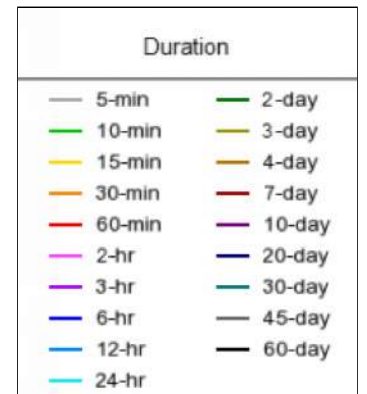
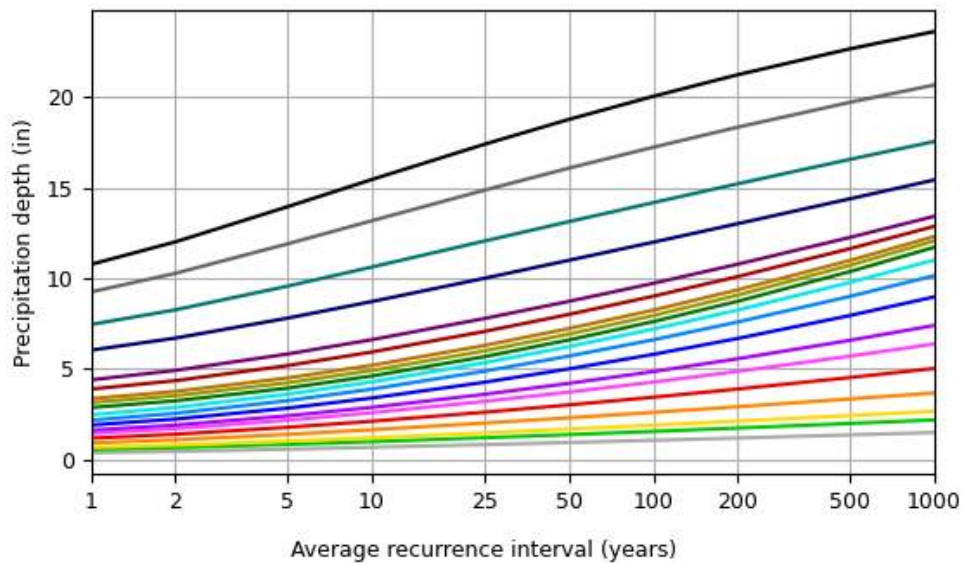
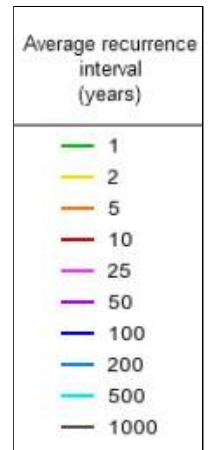
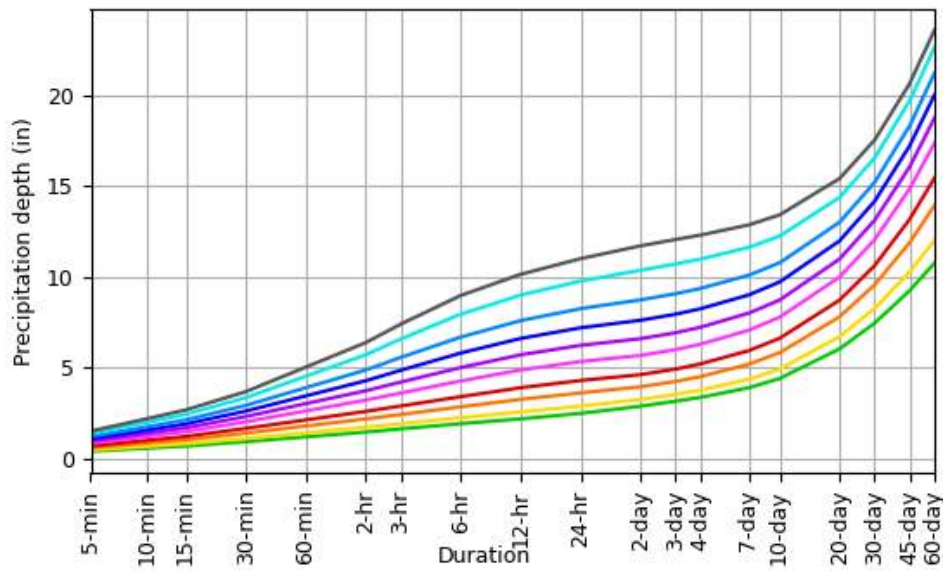
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves

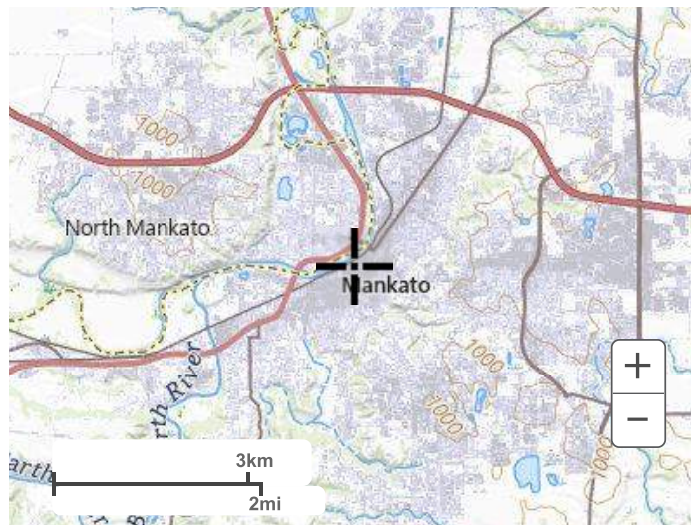
Latitude: 44.1661°, Longitude: -94.0054°



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Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

[Back to Top](#)

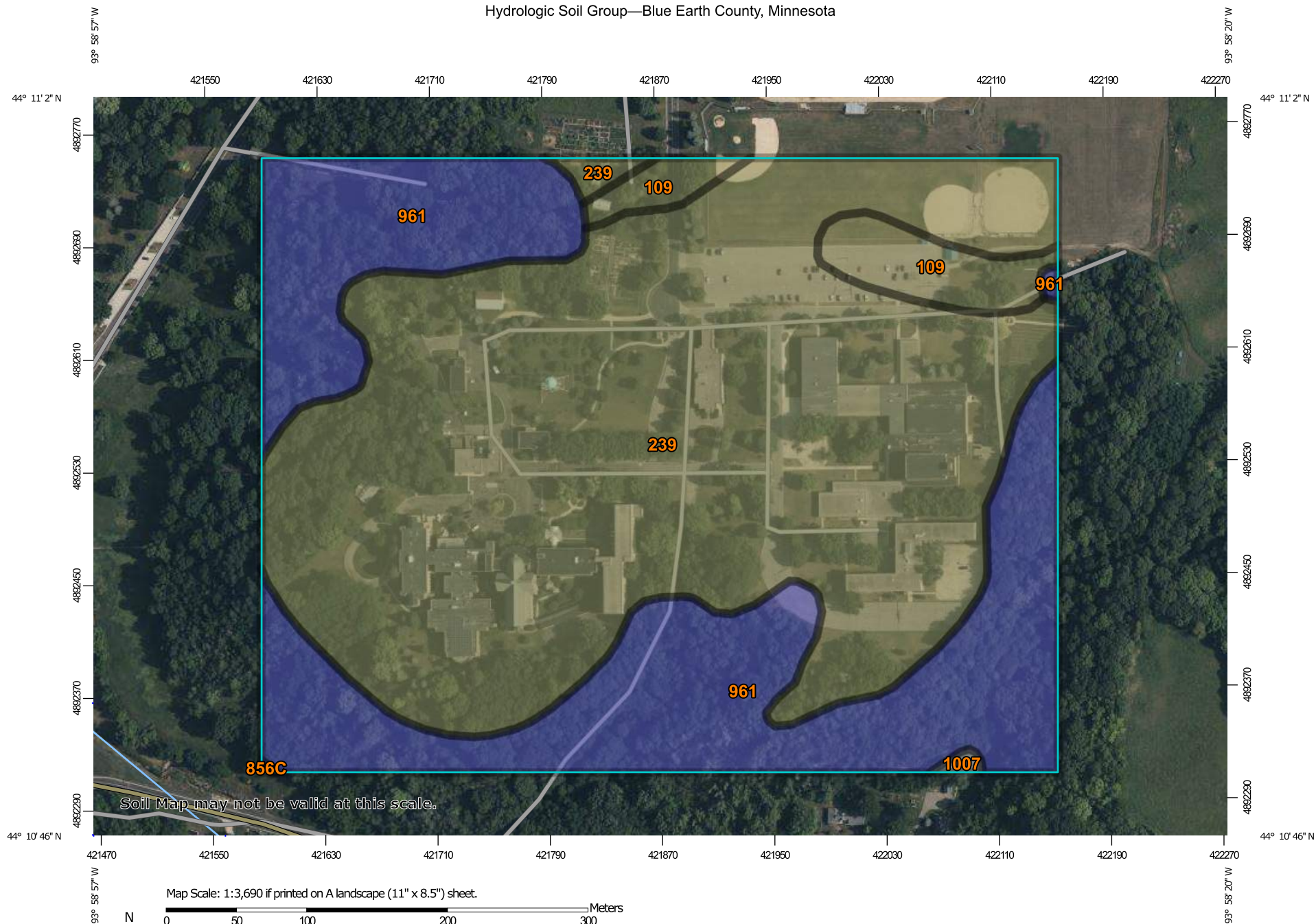
[US Department of Commerce](#)
[National Oceanic and Atmospheric Administration](#)
[National Weather Service](#)
[National Water Center](#)
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)

APPENDIX 2

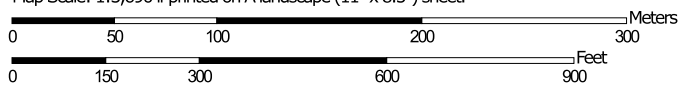
Hydrologic Soils Group Map

Hydrologic Soil Group—Blue Earth County, Minnesota



Soil Map may not be valid at this scale.

Map Scale: 1:3,690 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

12/3/2025
Page 1 of 4

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

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 1:12,000.

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: Blue Earth County, Minnesota
 Survey Area Data: Version 23, Sep 9, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 2, 2023—Aug 8, 2023

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
109	Cordova clay loam, 0 to 2 percent slopes	C/D	2.4	4.0%
239	Le Sueur loam, 1 to 3 percent slopes	C/D	39.8	64.8%
856C	Terril-Urban land complex, 6 to 15 percent slopes	B	0.0	0.0%
961	Storden complex, very steep	B	19.0	31.0%
1007	Alluvial-Urban land complex		0.1	0.2%
Totals for Area of Interest			61.4	100.0%

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

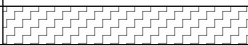
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX 3

Pre-Development Drainage Area Map And HydroCAD Report

PRE-DEVELOPMENT DRAINAGE MAP

EXISTING SUBCATCHMENT BOUNDARY	
EXISTING IMPERVIOUS AREA	



DRAWN BY:
ATR
CHECKED BY:
CNB

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

CRAIG N. BRITTON

LIC. NO.: 44228

DATE: JANUARY 2025

DATE	REV#	REVISIONS DESCRIPTION

WIDSETH
ARCHITECTS • ENGINEERS • SCIENTISTS • SURVEYORS

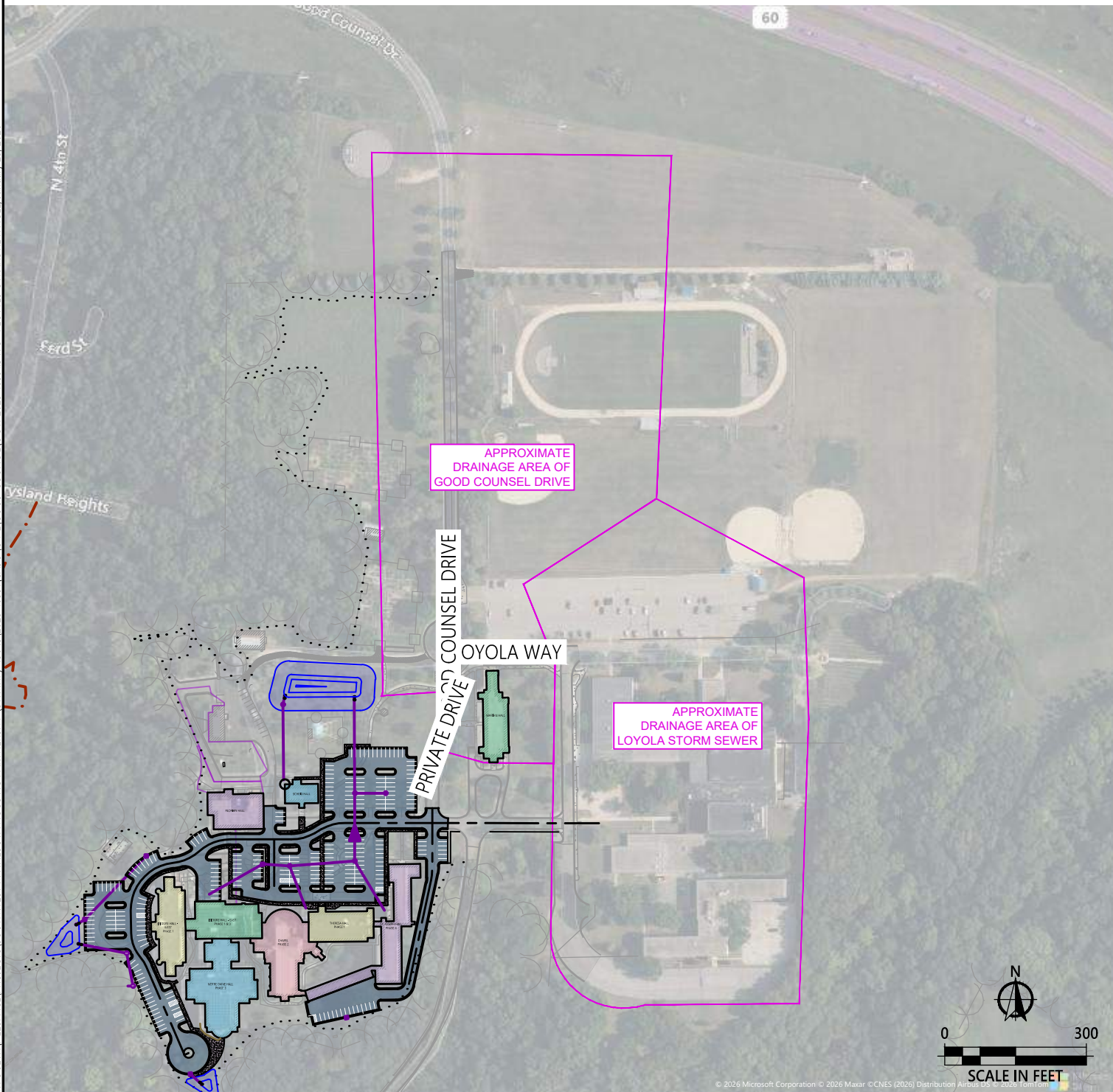
PRE-DEVELOPMENT DRAINAGE MAP

GOOD COUNSEL MAIN CAMPUS

PROJECT #: 2025-10591

LOYOLA STORM SEWER DRAINAGE MAP

SUBCATCHMENT BOUNDARY



DRAWN BY:
ATR
CHECKED BY:
CNB

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SIGNER NAME

LIC. NO.: NUMBER DATE: JANUARY 2025

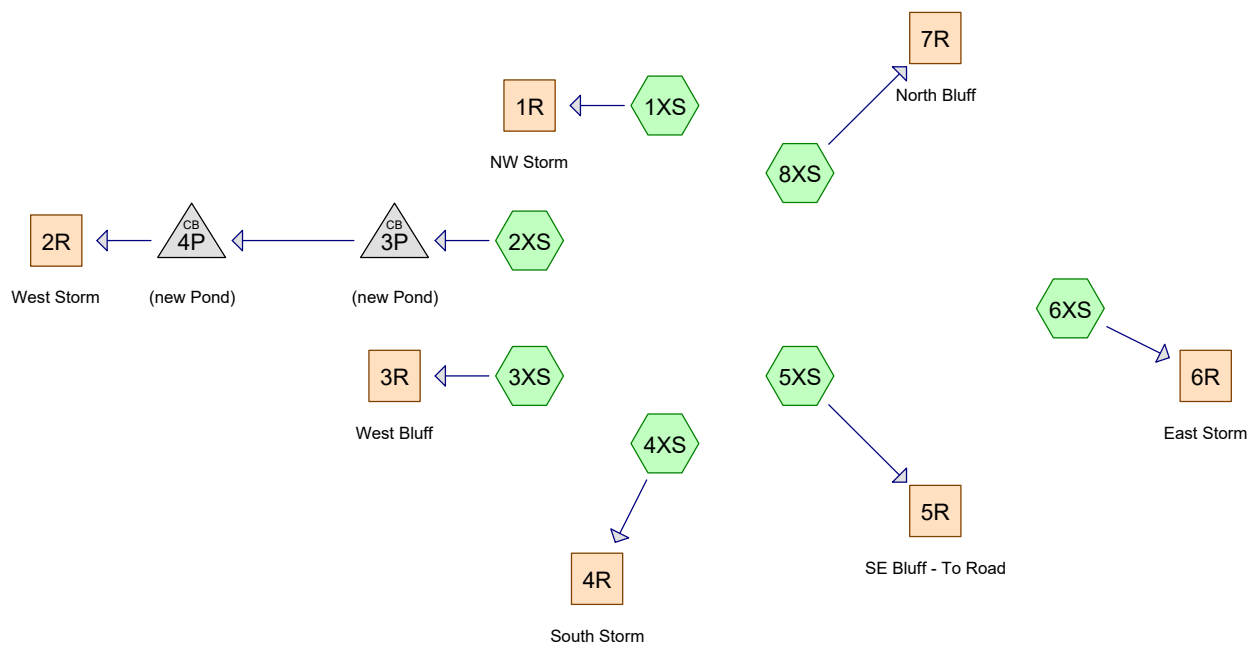
DATE	REV#	REVISIONS DESCRIPTION

WIDSETH
ARCHITECTS • ENGINEERS • SCIENTISTS • SURVEYORS

LOYOLA STORM SEWER DRAINAGE MAP

GOOD COUNSEL MAIN CAMPUS

PROJECT #: 2025-10591



Pre-Development

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Page 2

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR	MSE 24-hr	3	Default	24.00	1	1.70	2
2	10-YR	MSE 24-hr	3	Default	24.00	1	4.28	2
3	100-YR	MSE 24-hr	3	Default	24.00	1	7.19	2

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Page 3

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
6.030	80	>75% Grass cover, Good, HSG D (1XS, 2XS, 3XS, 4XS, 5XS, 8XS)
4.732	98	Paved parking, HSG D (1XS, 2XS, 3XS, 4XS, 5XS, 6XS)
10.762	88	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
10.762	HSG D	1XS, 2XS, 3XS, 4XS, 5XS, 6XS, 8XS
0.000	Other	
10.762		TOTAL AREA

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Page 5

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	6.030	0.000	6.030	>75% Grass cover, Good	1XS, 2XS, 3XS, 4XS, 5XS, 8XS
0.000	0.000	0.000	4.732	0.000	4.732	Paved parking	1XS, 2XS, 3XS, 4XS, 5XS, 6XS
0.000	0.000	0.000	10.762	0.000	10.762	TOTAL AREA	

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MSE 24-hr 3 2-YR Rainfall=1.70"

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Page 6

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1XS:	Runoff Area=216,068 sf 45.85% Impervious Runoff Depth>0.70" Tc=7.0 min CN=88 Runoff=6.3 cfs 0.287 af
Subcatchment2XS:	Runoff Area=26,713 sf 64.20% Impervious Runoff Depth>0.93" Tc=7.0 min CN=92 Runoff=1.0 cfs 0.048 af
Subcatchment3XS:	Runoff Area=75,763 sf 26.31% Impervious Runoff Depth>0.55" Tc=7.0 min CN=85 Runoff=1.7 cfs 0.080 af
Subcatchment4XS:	Runoff Area=51,828 sf 60.81% Impervious Runoff Depth>0.87" Tc=7.0 min CN=91 Runoff=1.9 cfs 0.086 af
Subcatchment5XS:	Runoff Area=68,786 sf 38.28% Impervious Runoff Depth>0.64" Tc=7.0 min CN=87 Runoff=1.9 cfs 0.085 af
Subcatchment6XS:	Runoff Area=12,130 sf 100.00% Impervious Runoff Depth>1.43" Tc=7.0 min CN=98 Runoff=0.6 cfs 0.033 af
Subcatchment8XS:	Runoff Area=17,512 sf 0.00% Impervious Runoff Depth>0.36" Tc=7.0 min CN=80 Runoff=0.3 cfs 0.012 af
Reach 1R: NW Storm	Inflow=6.3 cfs 0.287 af Outflow=6.3 cfs 0.287 af
Reach 2R: West Storm	Inflow=1.0 cfs 0.048 af Outflow=1.0 cfs 0.048 af
Reach 3R: West Bluff	Inflow=1.7 cfs 0.080 af Outflow=1.7 cfs 0.080 af
Reach 4R: South Storm	Inflow=1.9 cfs 0.086 af Outflow=1.9 cfs 0.086 af
Reach 5R: SE Bluff - To Road	Inflow=1.9 cfs 0.085 af Outflow=1.9 cfs 0.085 af
Reach 6R: East Storm	Inflow=0.6 cfs 0.033 af Outflow=0.6 cfs 0.033 af
Reach 7R: North Bluff	Inflow=0.3 cfs 0.012 af Outflow=0.3 cfs 0.012 af
Pond 3P: (new Pond)	Peak Elev=979.61' Inflow=1.0 cfs 0.048 af 12.0" Round Culvert n=0.013 L=87.0' S=0.2769 '/' Outflow=1.0 cfs 0.048 af
Pond 4P: (new Pond)	Peak Elev=955.42' Inflow=1.0 cfs 0.048 af 12.0" Round Culvert n=0.013 L=13.0' S=0.0515 '/' Outflow=1.0 cfs 0.048 af

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MSE 24-hr 3 2-YR Rainfall=1.70"

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Total Runoff Area = 10.762 ac Runoff Volume = 0.631 af Average Runoff Depth = 0.70"
56.03% Pervious = 6.030 ac 43.97% Impervious = 4.732 ac

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MSE 24-hr 3 2-YR Rainfall=1.70"

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Page 8

Summary for Subcatchment 1XS:

Runoff = 6.3 cfs @ 12.15 hrs, Volume= 0.287 af, Depth> 0.70"
Routed to Reach 1R : NW Storm

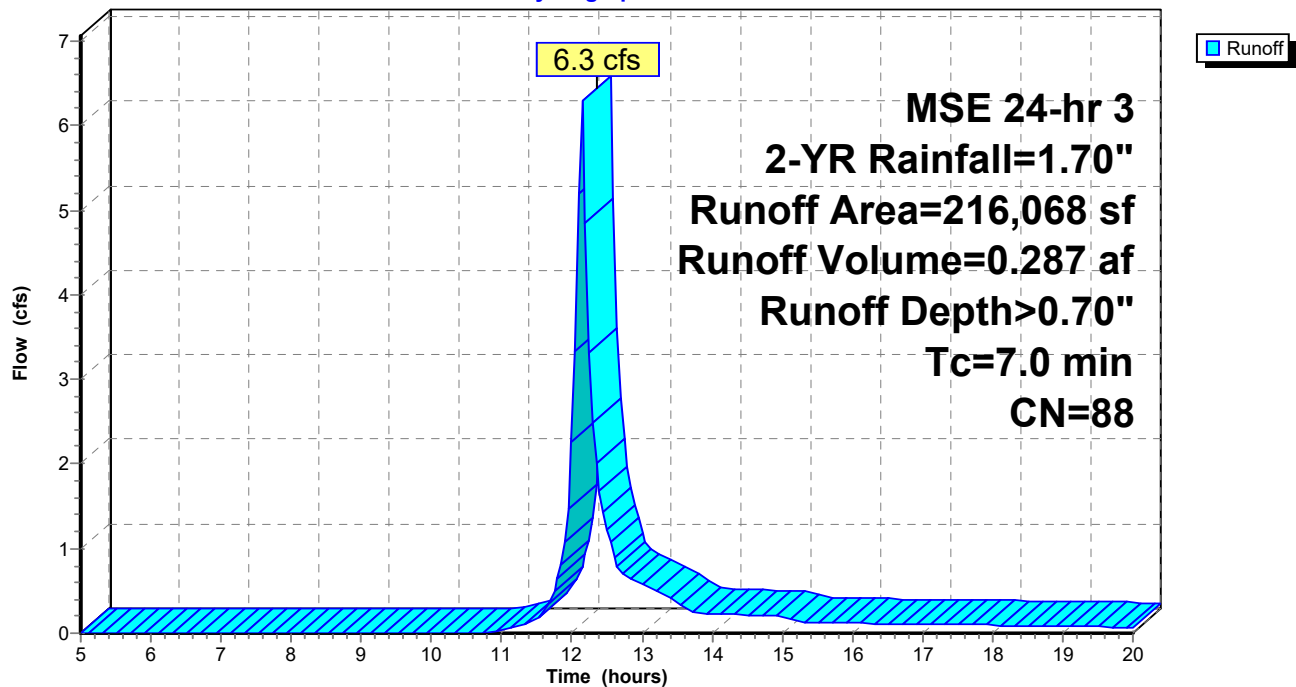
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YR Rainfall=1.70"

Area (sf)	CN	Description
99,068	98	Paved parking, HSG D
117,000	80	>75% Grass cover, Good, HSG D
216,068	88	Weighted Average
117,000		54.15% Pervious Area
99,068		45.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 1XS:

Hydrograph



Pre-Development

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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Subcatchment 2XS:

Runoff = 1.0 cfs @ 12.14 hrs, Volume= 0.048 af, Depth> 0.93"
Routed to Pond 3P : (new Pond)

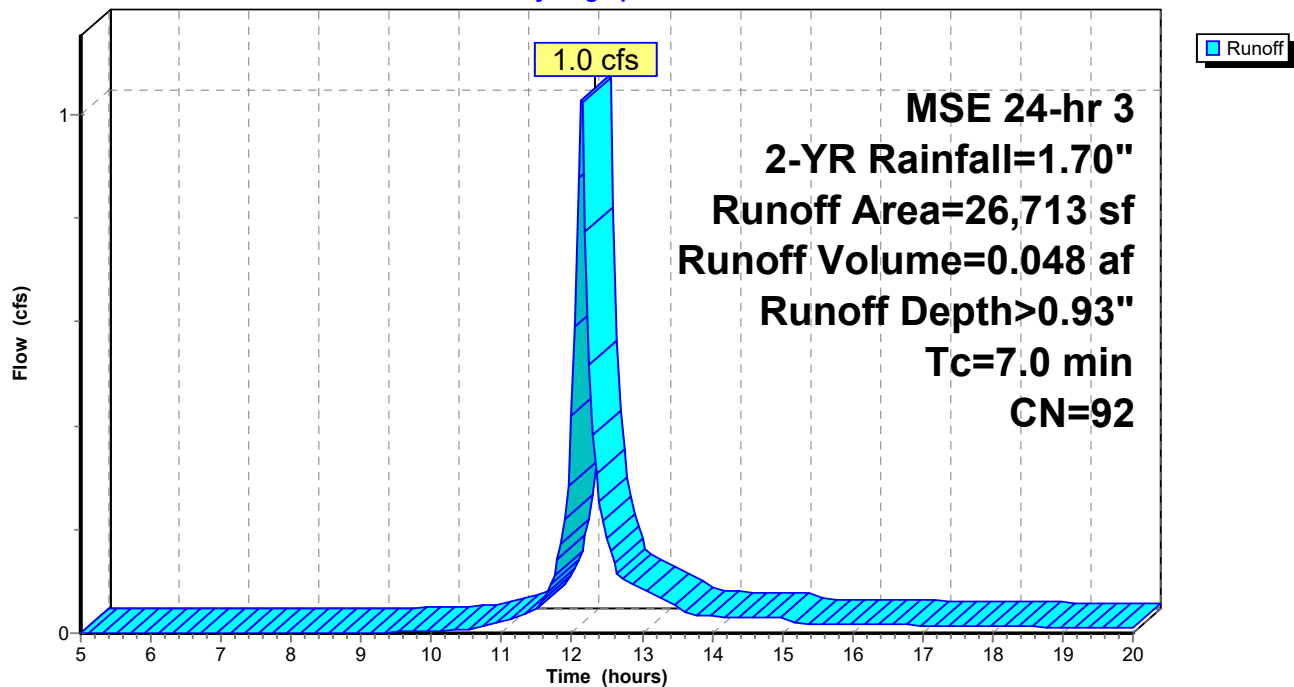
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YR Rainfall=1.70"

Area (sf)	CN	Description
17,151	98	Paved parking, HSG D
9,562	80	>75% Grass cover, Good, HSG D
26,713	92	Weighted Average
9,562		35.80% Pervious Area
17,151		64.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 2XS:

Hydrograph



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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Subcatchment 3XS:

Runoff = 1.7 cfs @ 12.15 hrs, Volume= 0.080 af, Depth> 0.55"
Routed to Reach 3R : West Bluff

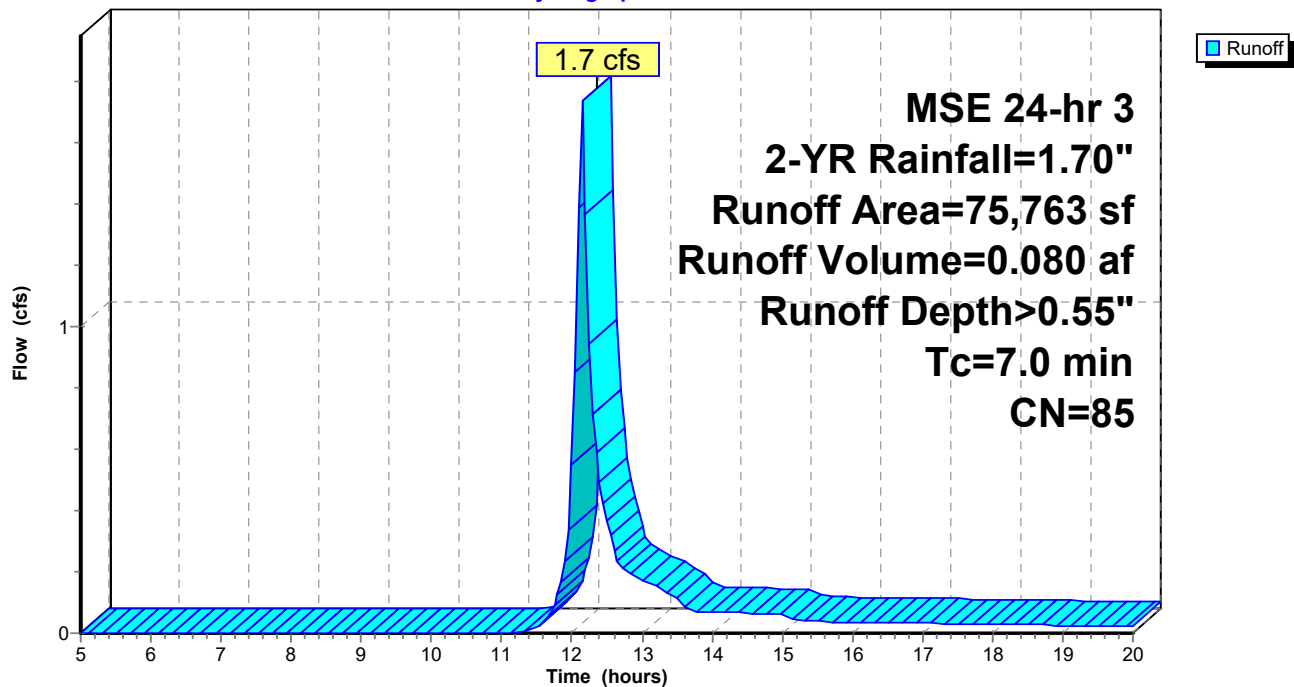
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YR Rainfall=1.70"

Area (sf)	CN	Description
19,931	98	Paved parking, HSG D
55,832	80	>75% Grass cover, Good, HSG D
75,763	85	Weighted Average
55,832		73.69% Pervious Area
19,931		26.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 3XS:

Hydrograph



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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Subcatchment 4XS:

Runoff = 1.9 cfs @ 12.14 hrs, Volume= 0.086 af, Depth> 0.87"
Routed to Reach 4R : South Storm

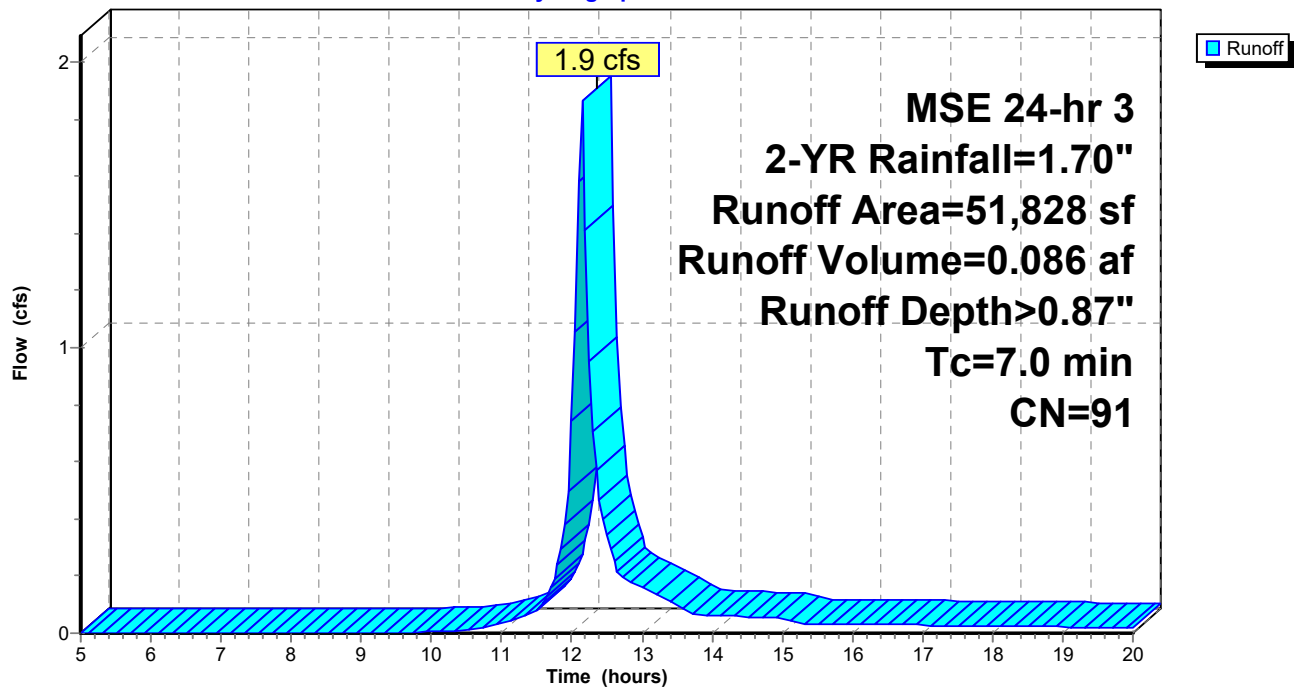
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YR Rainfall=1.70"

Area (sf)	CN	Description
31,516	98	Paved parking, HSG D
20,312	80	>75% Grass cover, Good, HSG D
51,828	91	Weighted Average
20,312		39.19% Pervious Area
31,516		60.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 4XS:

Hydrograph



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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Subcatchment 5XS:

Runoff = 1.9 cfs @ 12.15 hrs, Volume= 0.085 af, Depth> 0.64"
Routed to Reach 5R : SE Bluff - To Road

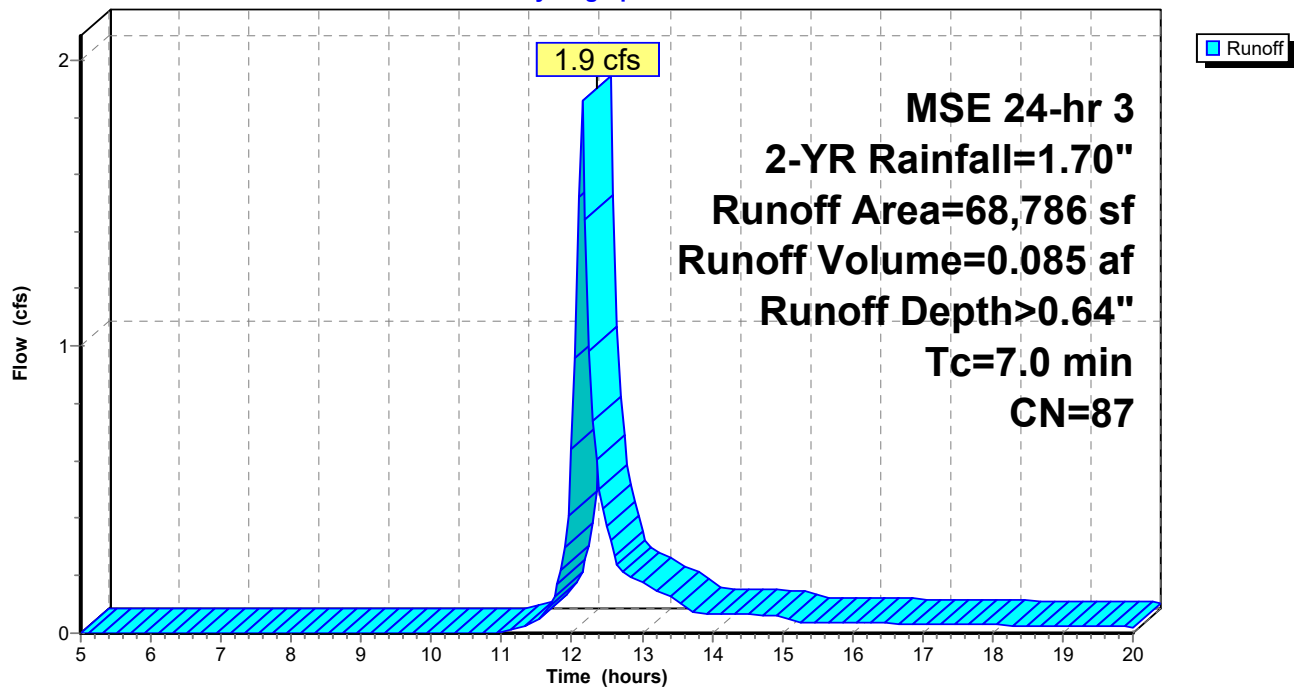
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YR Rainfall=1.70"

Area (sf)	CN	Description
26,329	98	Paved parking, HSG D
42,457	80	>75% Grass cover, Good, HSG D
68,786	87	Weighted Average
42,457		61.72% Pervious Area
26,329		38.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 5XS:

Hydrograph



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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Subcatchment 6XS:

Runoff = 0.6 cfs @ 12.14 hrs, Volume= 0.033 af, Depth> 1.43"
Routed to Reach 6R : East Storm

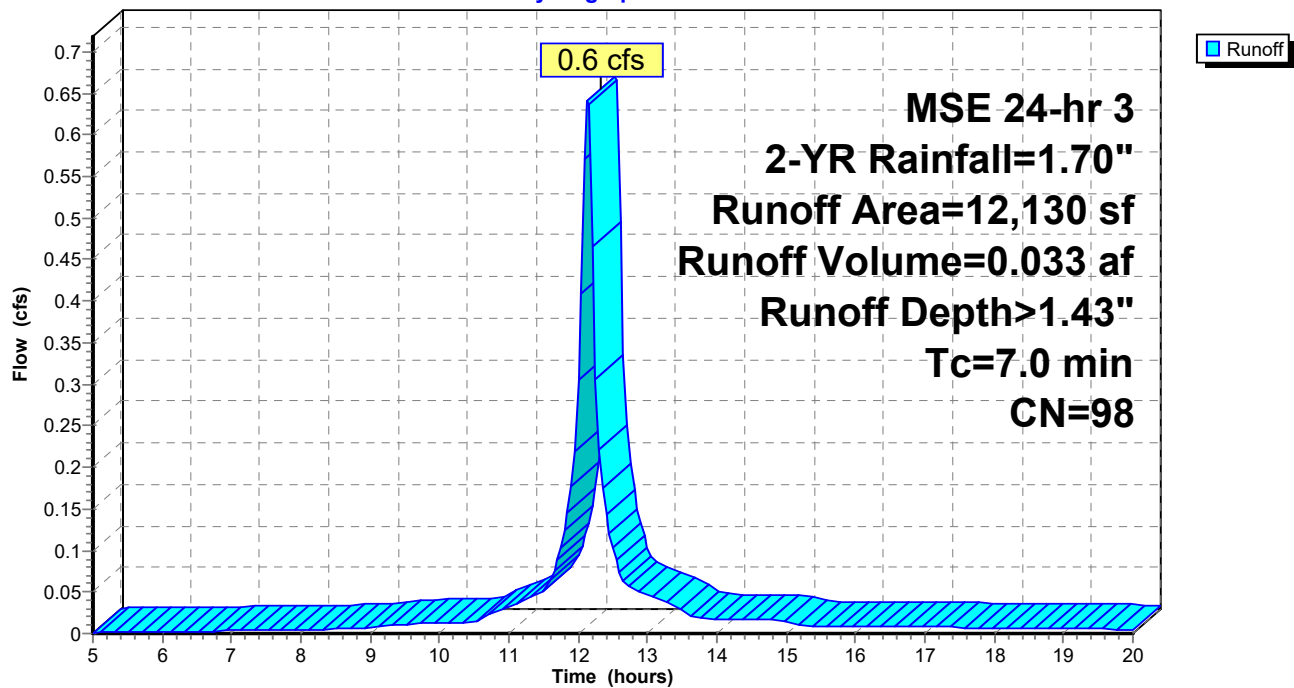
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YR Rainfall=1.70"

Area (sf)	CN	Description
12,130	98	Paved parking, HSG D
0	80	>75% Grass cover, Good, HSG D
12,130	98	Weighted Average
12,130		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 6XS:

Hydrograph



Pre-Development

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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Subcatchment 8XS:

Runoff = 0.3 cfs @ 12.15 hrs, Volume= 0.012 af, Depth> 0.36"
Routed to Reach 7R : North Bluff

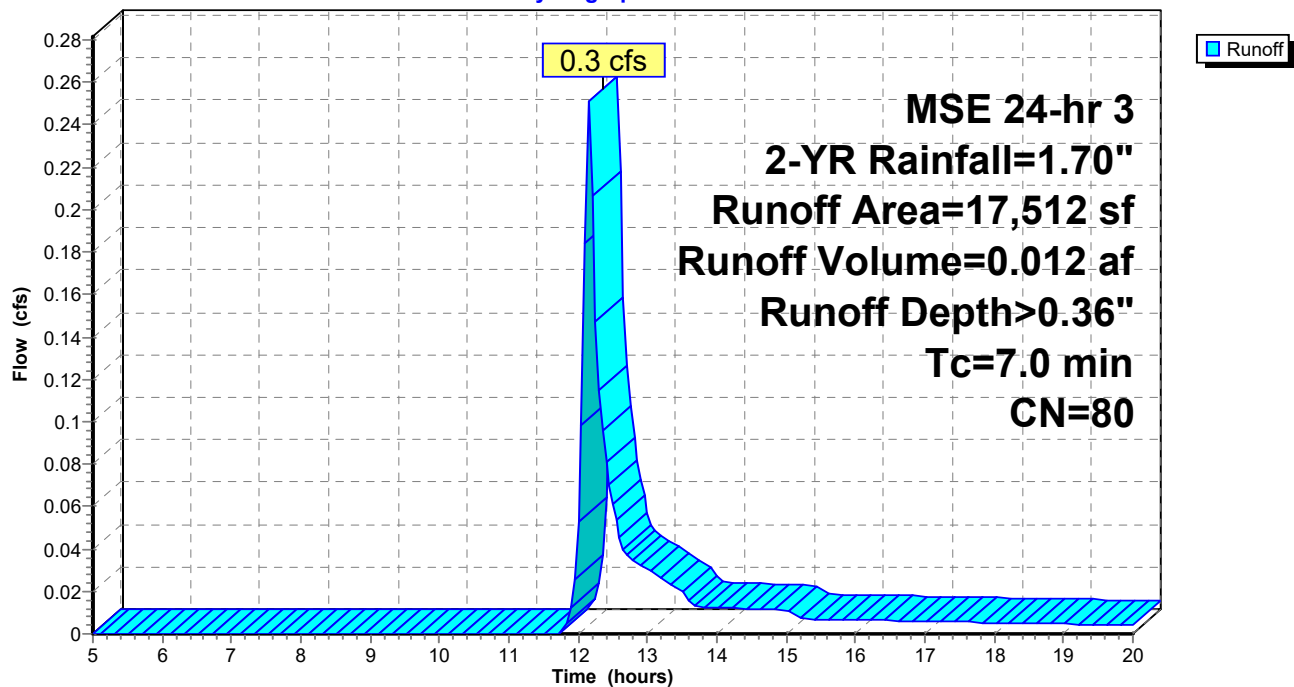
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YR Rainfall=1.70"

Area (sf)	CN	Description
17,512	80	>75% Grass cover, Good, HSG D
17,512		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 8XS:

Hydrograph



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MSE 24-hr 3 2-YR Rainfall=1.70"

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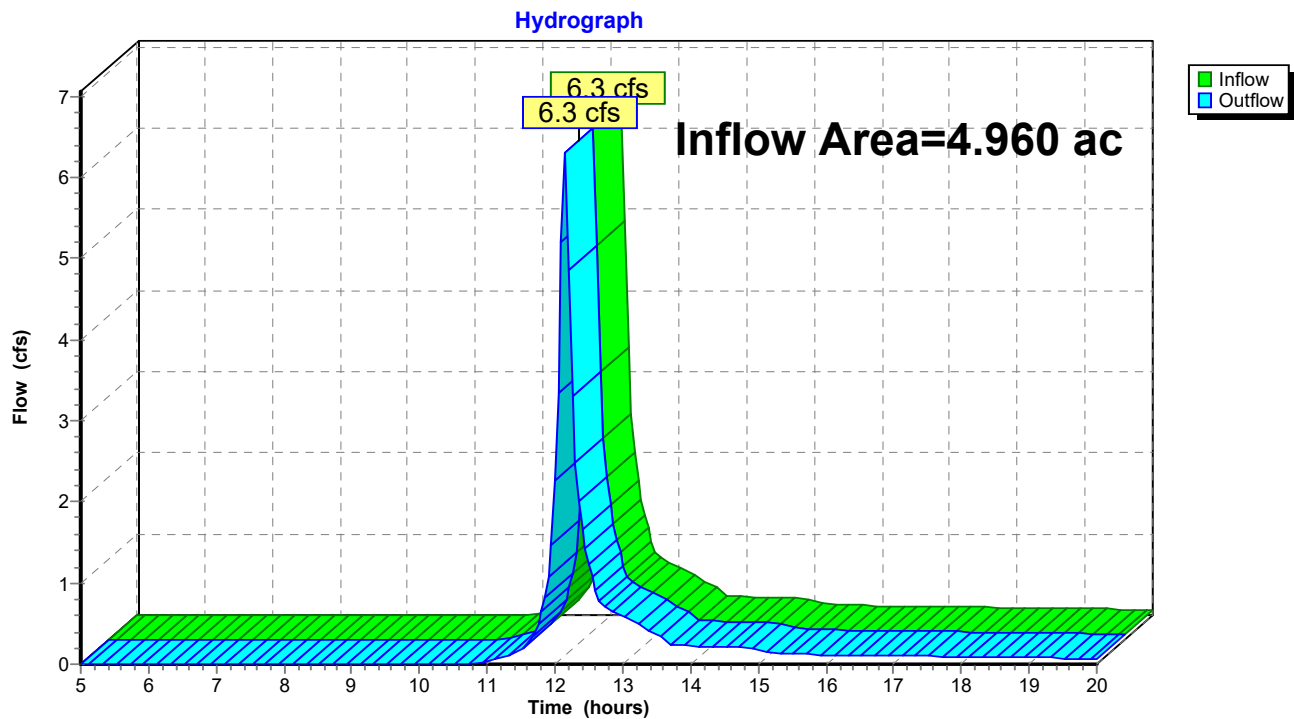
Page 15

Summary for Reach 1R: NW Storm

Inflow Area = 4.960 ac, 45.85% Impervious, Inflow Depth > 0.70" for 2-YR event
Inflow = 6.3 cfs @ 12.15 hrs, Volume= 0.287 af
Outflow = 6.3 cfs @ 12.15 hrs, Volume= 0.287 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: NW Storm



Pre-Development

Prepared by Widseth Smith Nolting

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MSE 24-hr 3 2-YR Rainfall=1.70"

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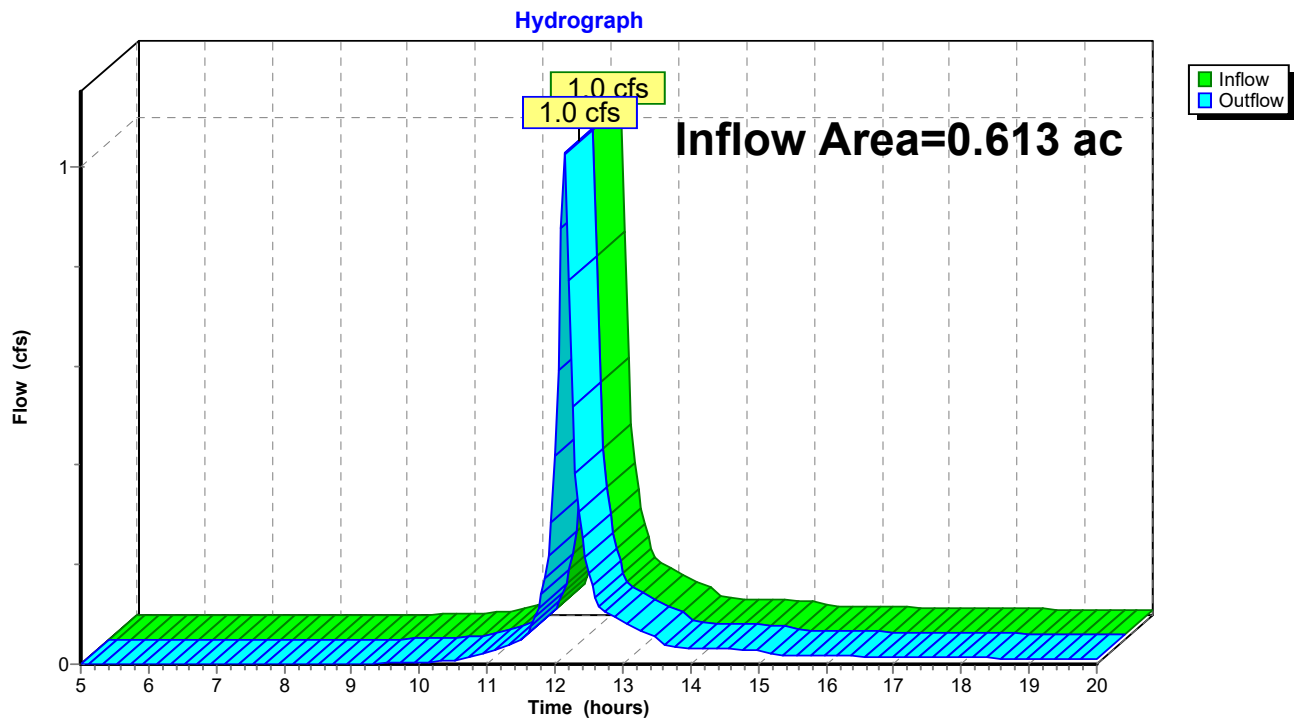
Page 16

Summary for Reach 2R: West Storm

Inflow Area = 0.613 ac, 64.20% Impervious, Inflow Depth > 0.93" for 2-YR event
Inflow = 1.0 cfs @ 12.14 hrs, Volume= 0.048 af
Outflow = 1.0 cfs @ 12.14 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: West Storm



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MSE 24-hr 3 2-YR Rainfall=1.70"

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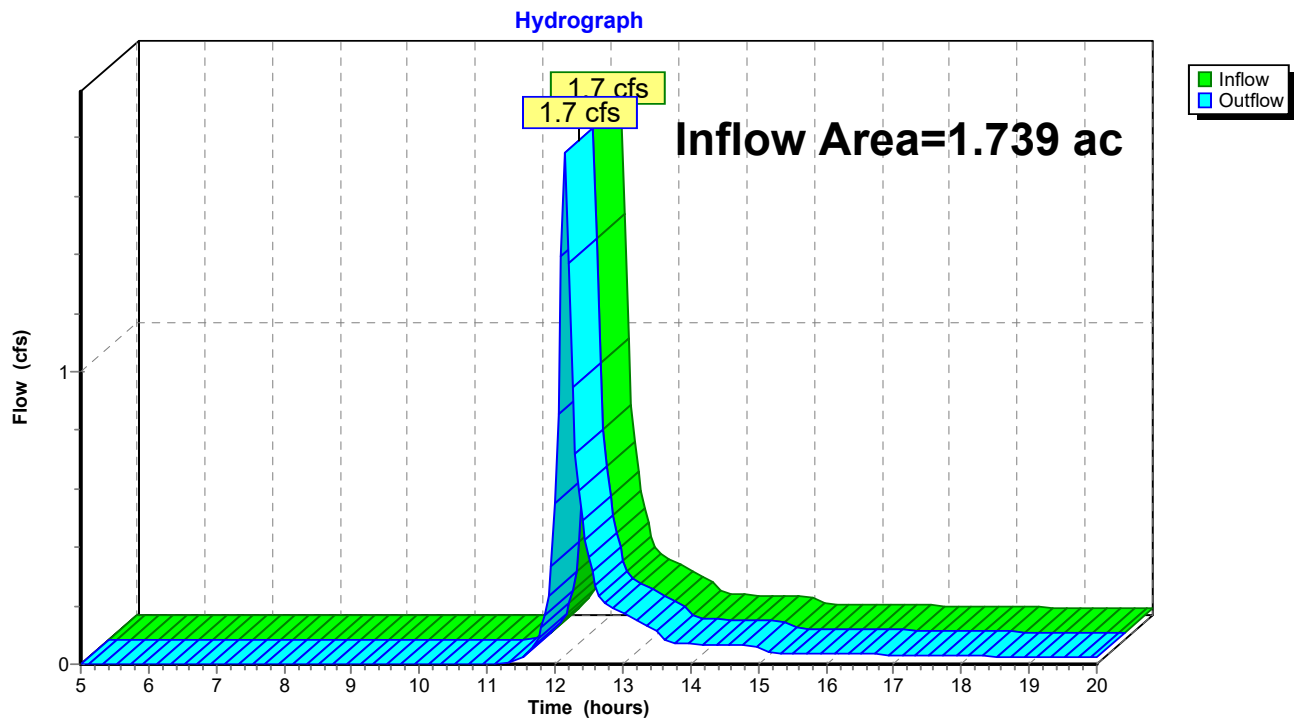
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Summary for Reach 3R: West Bluff

Inflow Area = 1.739 ac, 26.31% Impervious, Inflow Depth > 0.55" for 2-YR event
Inflow = 1.7 cfs @ 12.15 hrs, Volume= 0.080 af
Outflow = 1.7 cfs @ 12.15 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: West Bluff



Pre-Development

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MSE 24-hr 3 2-YR Rainfall=1.70"

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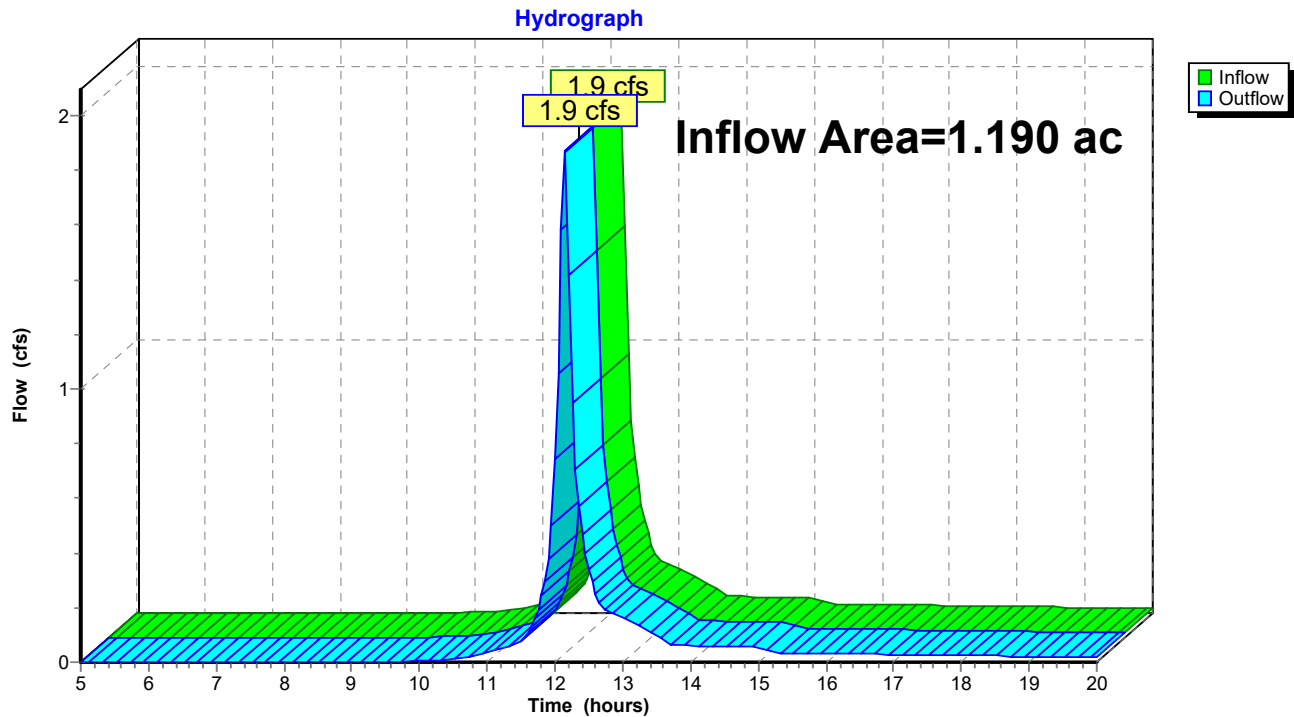
Page 18

Summary for Reach 4R: South Storm

Inflow Area = 1.190 ac, 60.81% Impervious, Inflow Depth > 0.87" for 2-YR event
Inflow = 1.9 cfs @ 12.14 hrs, Volume= 0.086 af
Outflow = 1.9 cfs @ 12.14 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 4R: South Storm



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MSE 24-hr 3 2-YR Rainfall=1.70"

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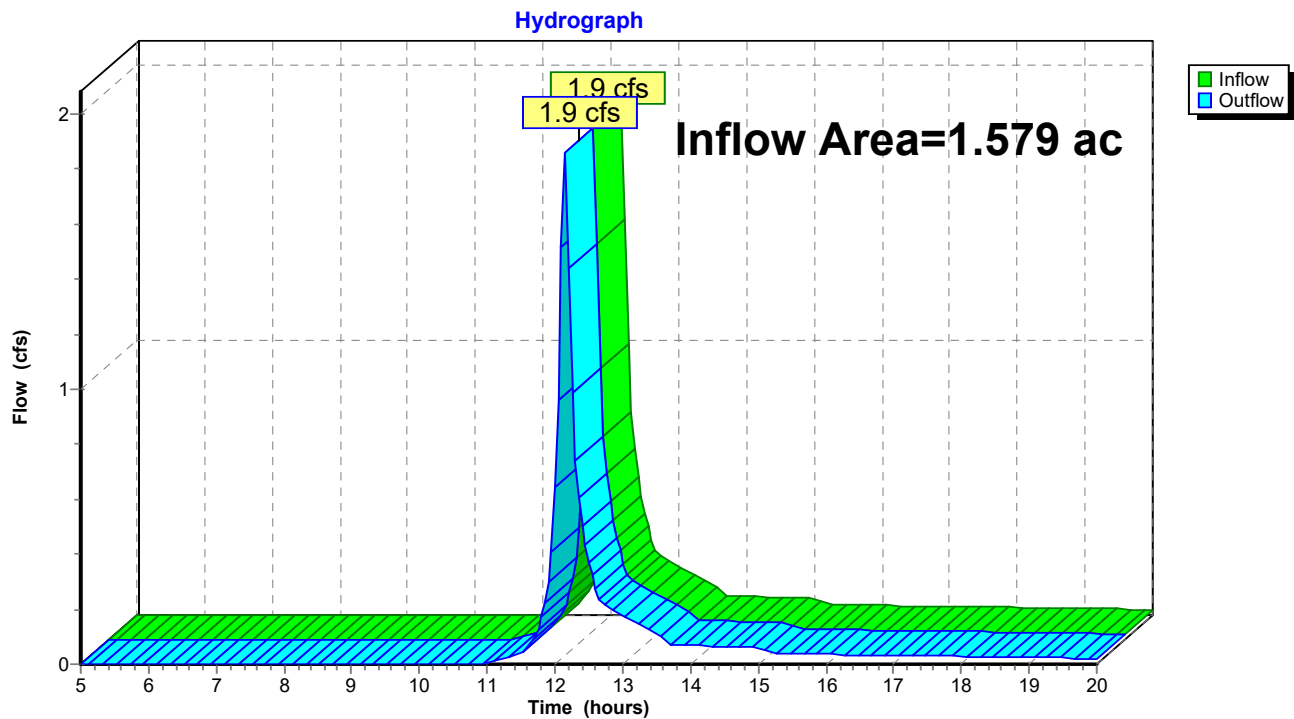
Page 19

Summary for Reach 5R: SE Bluff - To Road

Inflow Area = 1.579 ac, 38.28% Impervious, Inflow Depth > 0.64" for 2-YR event
Inflow = 1.9 cfs @ 12.15 hrs, Volume= 0.085 af
Outflow = 1.9 cfs @ 12.15 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 5R: SE Bluff - To Road



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MSE 24-hr 3 2-YR Rainfall=1.70"

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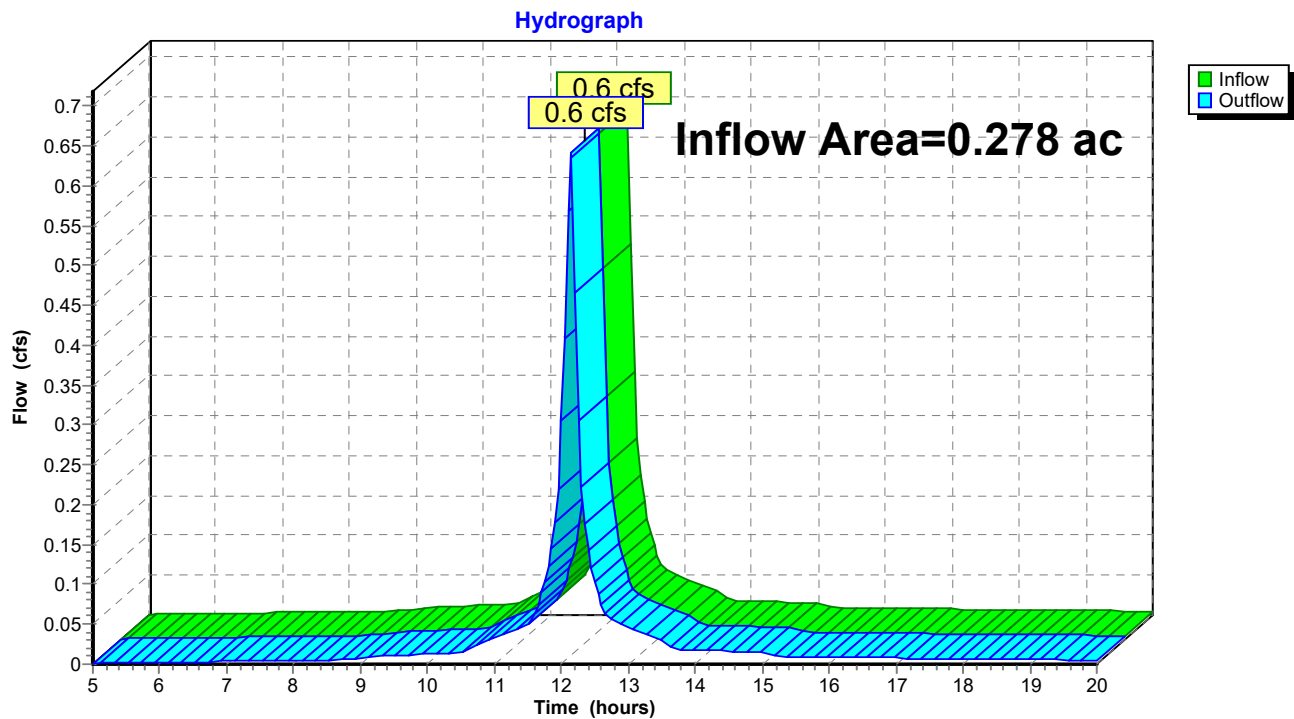
Page 20

Summary for Reach 6R: East Storm

Inflow Area = 0.278 ac, 100.00% Impervious, Inflow Depth > 1.43" for 2-YR event
Inflow = 0.6 cfs @ 12.14 hrs, Volume= 0.033 af
Outflow = 0.6 cfs @ 12.14 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 6R: East Storm



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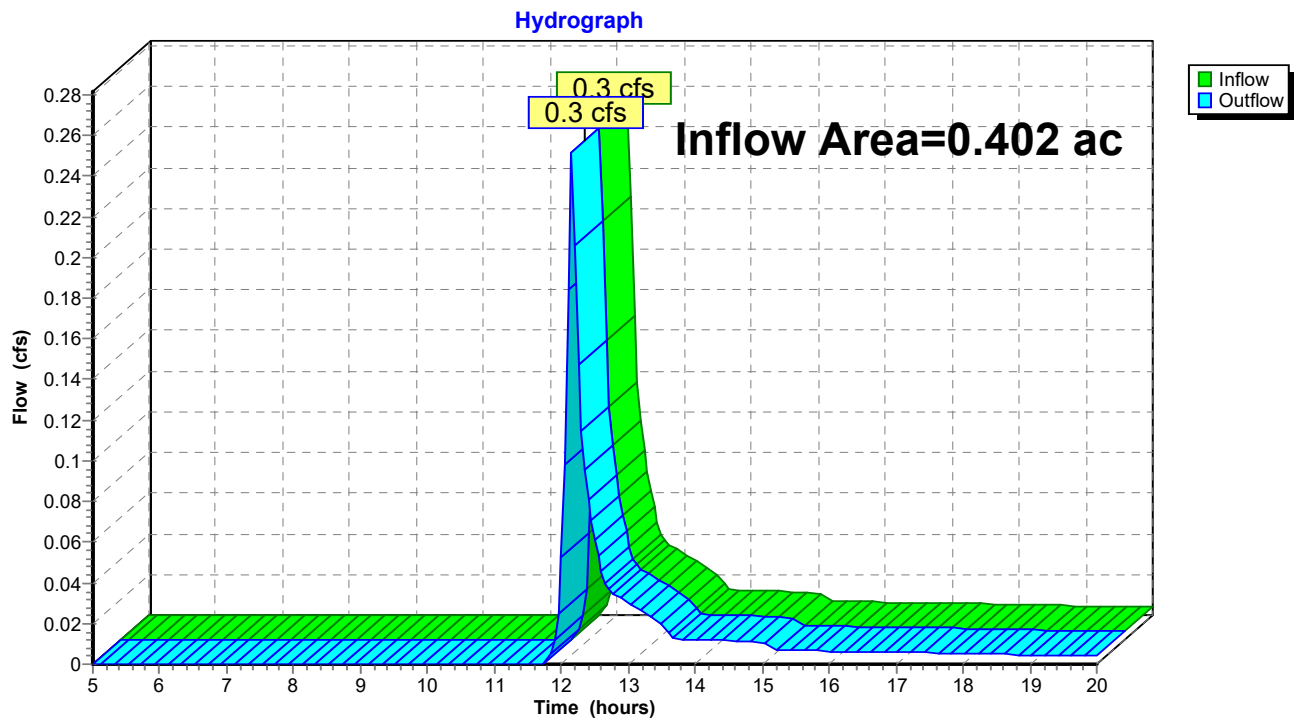
Page 21

Summary for Reach 7R: North Bluff

Inflow Area = 0.402 ac, 0.00% Impervious, Inflow Depth > 0.36" for 2-YR event
Inflow = 0.3 cfs @ 12.15 hrs, Volume= 0.012 af
Outflow = 0.3 cfs @ 12.15 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 7R: North Bluff



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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Pond 3P: (new Pond)

Inflow Area = 0.613 ac, 64.20% Impervious, Inflow Depth > 0.93" for 2-YR event
Inflow = 1.0 cfs @ 12.14 hrs, Volume= 0.048 af
Outflow = 1.0 cfs @ 12.14 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min
Primary = 1.0 cfs @ 12.14 hrs, Volume= 0.048 af
Routed to Pond 4P : (new Pond)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

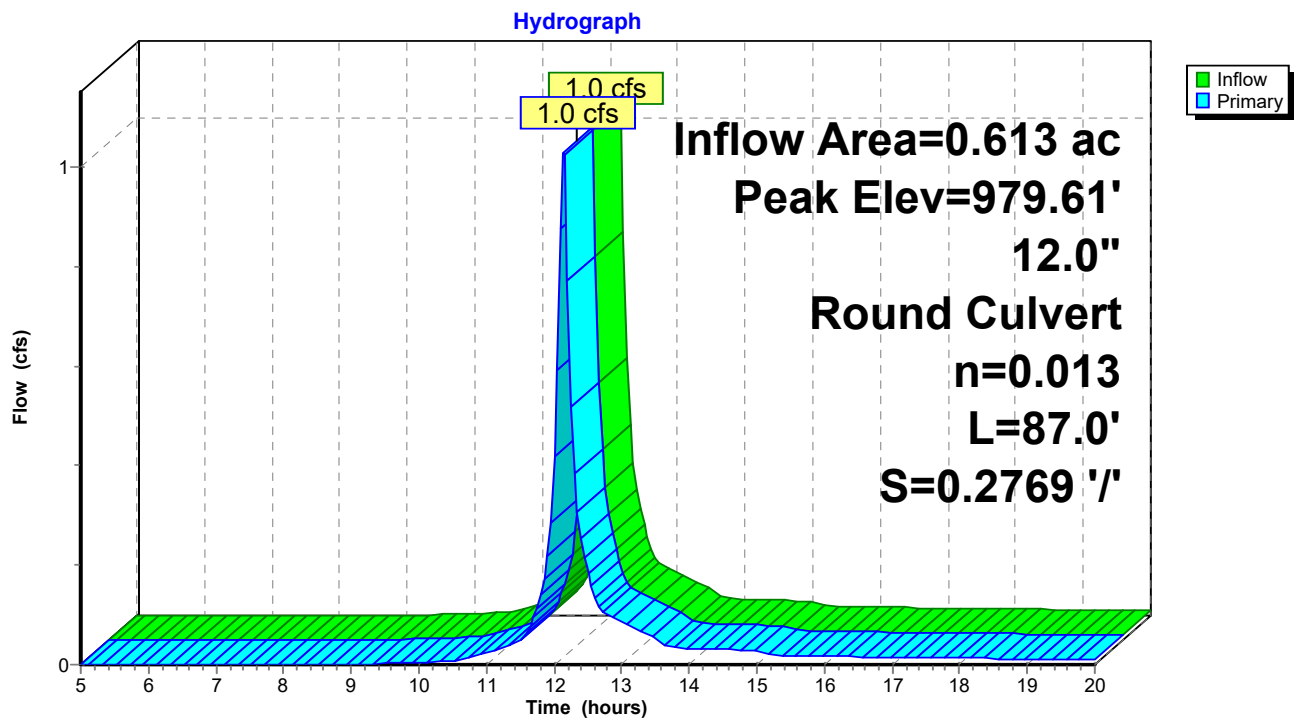
Peak Elev= 979.61' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	979.09'	12.0" Round RCP_Round 12" L= 87.0' Ke= 0.500 Inlet / Outlet Invert= 979.09' / 955.00' S= 0.2769 '/ Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=1.0 cfs @ 12.14 hrs HW=979.61' (Free Discharge)

↑1=RCP_Round 12" (Inlet Controls 1.0 cfs @ 2.45 fps)

Pond 3P: (new Pond)



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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Pond 4P: (new Pond)

Inflow Area = 0.613 ac, 64.20% Impervious, Inflow Depth > 0.93" for 2-YR event
Inflow = 1.0 cfs @ 12.14 hrs, Volume= 0.048 af
Outflow = 1.0 cfs @ 12.14 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min
Primary = 1.0 cfs @ 12.14 hrs, Volume= 0.048 af
Routed to Reach 2R : West Storm

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

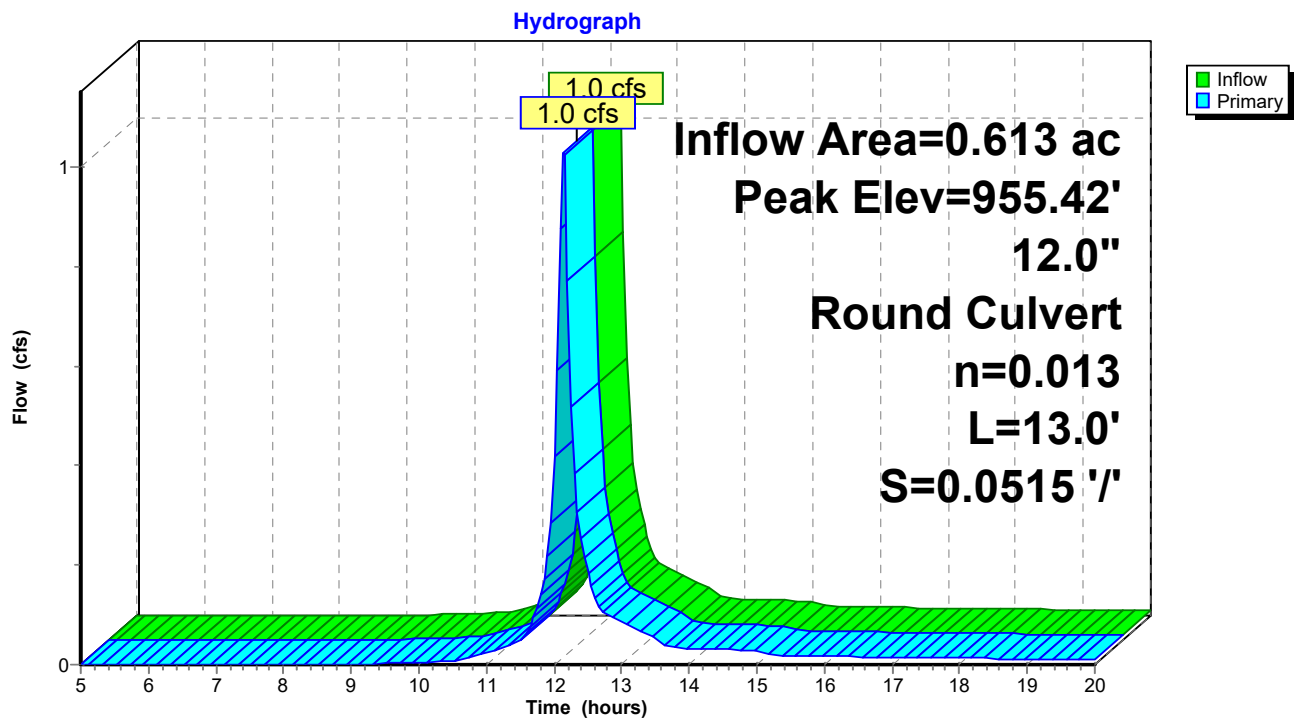
Peak Elev= 955.42' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	954.90'	12.0" Round RCP_Round 12" L= 13.0' Ke= 0.500 Inlet / Outlet Invert= 954.90' / 954.23' S= 0.0515 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=1.0 cfs @ 12.14 hrs HW=955.42' (Free Discharge)

↑1=RCP_Round 12" (Inlet Controls 1.0 cfs @ 2.45 fps)

Pond 4P: (new Pond)



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MSE 24-hr 3 10-YR Rainfall=4.28"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1XS:	Runoff Area=216,068 sf 45.85% Impervious Runoff Depth>2.88" Tc=7.0 min CN=88 Runoff=24.9 cfs 1.191 af
Subcatchment2XS:	Runoff Area=26,713 sf 64.20% Impervious Runoff Depth>3.28" Tc=7.0 min CN=92 Runoff=3.4 cfs 0.167 af
Subcatchment3XS:	Runoff Area=75,763 sf 26.31% Impervious Runoff Depth>2.61" Tc=7.0 min CN=85 Runoff=8.0 cfs 0.378 af
Subcatchment4XS:	Runoff Area=51,828 sf 60.81% Impervious Runoff Depth>3.18" Tc=7.0 min CN=91 Runoff=6.4 cfs 0.315 af
Subcatchment5XS:	Runoff Area=68,786 sf 38.28% Impervious Runoff Depth>2.79" Tc=7.0 min CN=87 Runoff=7.7 cfs 0.367 af
Subcatchment6XS:	Runoff Area=12,130 sf 100.00% Impervious Runoff Depth>3.89" Tc=7.0 min CN=98 Runoff=1.7 cfs 0.090 af
Subcatchment8XS:	Runoff Area=17,512 sf 0.00% Impervious Runoff Depth>2.18" Tc=7.0 min CN=80 Runoff=1.6 cfs 0.073 af
Reach 1R: NW Storm	Inflow=24.9 cfs 1.191 af Outflow=24.9 cfs 1.191 af
Reach 2R: West Storm	Inflow=3.4 cfs 0.167 af Outflow=3.4 cfs 0.167 af
Reach 3R: West Bluff	Inflow=8.0 cfs 0.378 af Outflow=8.0 cfs 0.378 af
Reach 4R: South Storm	Inflow=6.4 cfs 0.315 af Outflow=6.4 cfs 0.315 af
Reach 5R: SE Bluff - To Road	Inflow=7.7 cfs 0.367 af Outflow=7.7 cfs 0.367 af
Reach 6R: East Storm	Inflow=1.7 cfs 0.090 af Outflow=1.7 cfs 0.090 af
Reach 7R: North Bluff	Inflow=1.6 cfs 0.073 af Outflow=1.6 cfs 0.073 af
Pond 3P: (new Pond)	Peak Elev=980.38' Inflow=3.4 cfs 0.167 af 12.0" Round Culvert n=0.013 L=87.0' S=0.2769 '/' Outflow=3.4 cfs 0.167 af
Pond 4P: (new Pond)	Peak Elev=956.19' Inflow=3.4 cfs 0.167 af 12.0" Round Culvert n=0.013 L=13.0' S=0.0515 '/' Outflow=3.4 cfs 0.167 af

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MSE 24-hr 3 10-YR Rainfall=4.28"

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Total Runoff Area = 10.762 ac Runoff Volume = 2.581 af Average Runoff Depth = 2.88"
56.03% Pervious = 6.030 ac 43.97% Impervious = 4.732 ac

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Summary for Subcatchment 1XS:

Runoff = 24.9 cfs @ 12.14 hrs, Volume= 1.191 af, Depth> 2.88"
Routed to Reach 1R : NW Storm

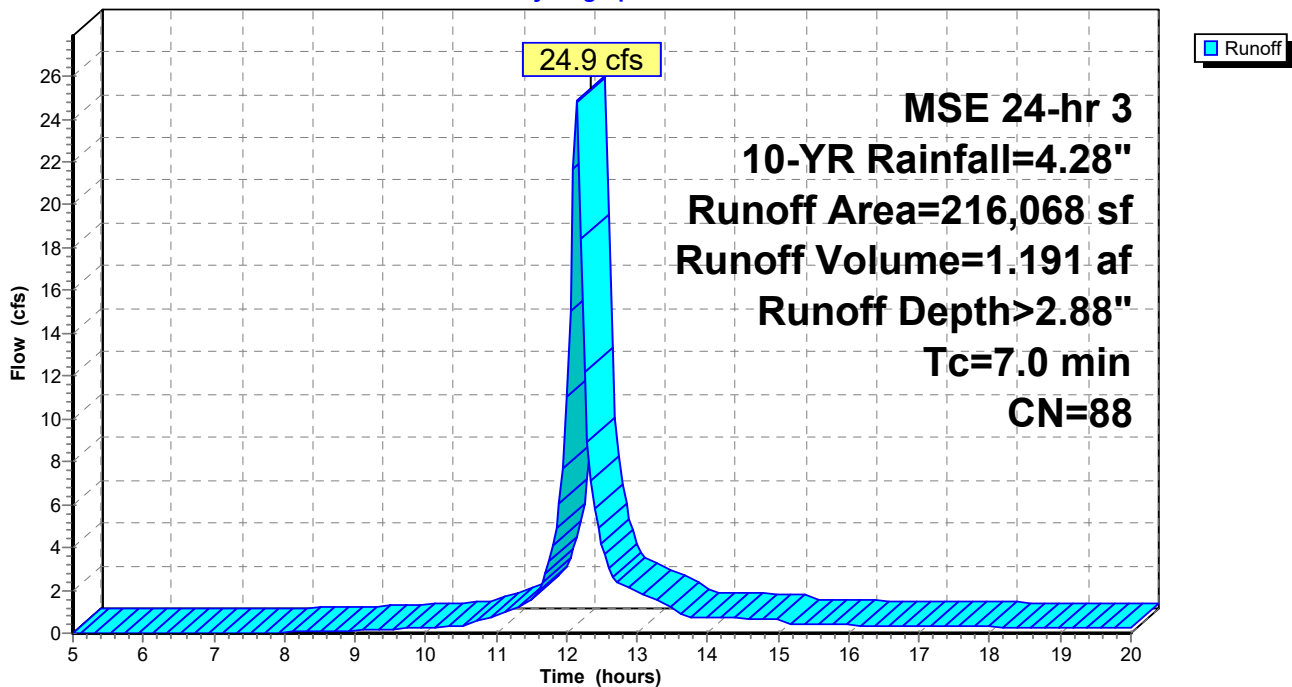
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YR Rainfall=4.28"

Area (sf)	CN	Description
99,068	98	Paved parking, HSG D
117,000	80	>75% Grass cover, Good, HSG D
216,068	88	Weighted Average
117,000		54.15% Pervious Area
99,068		45.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 1XS:

Hydrograph



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MSE 24-hr 3 10-YR Rainfall=4.28"

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Summary for Subcatchment 2XS:

Runoff = 3.4 cfs @ 12.14 hrs, Volume= 0.167 af, Depth> 3.28"
Routed to Pond 3P : (new Pond)

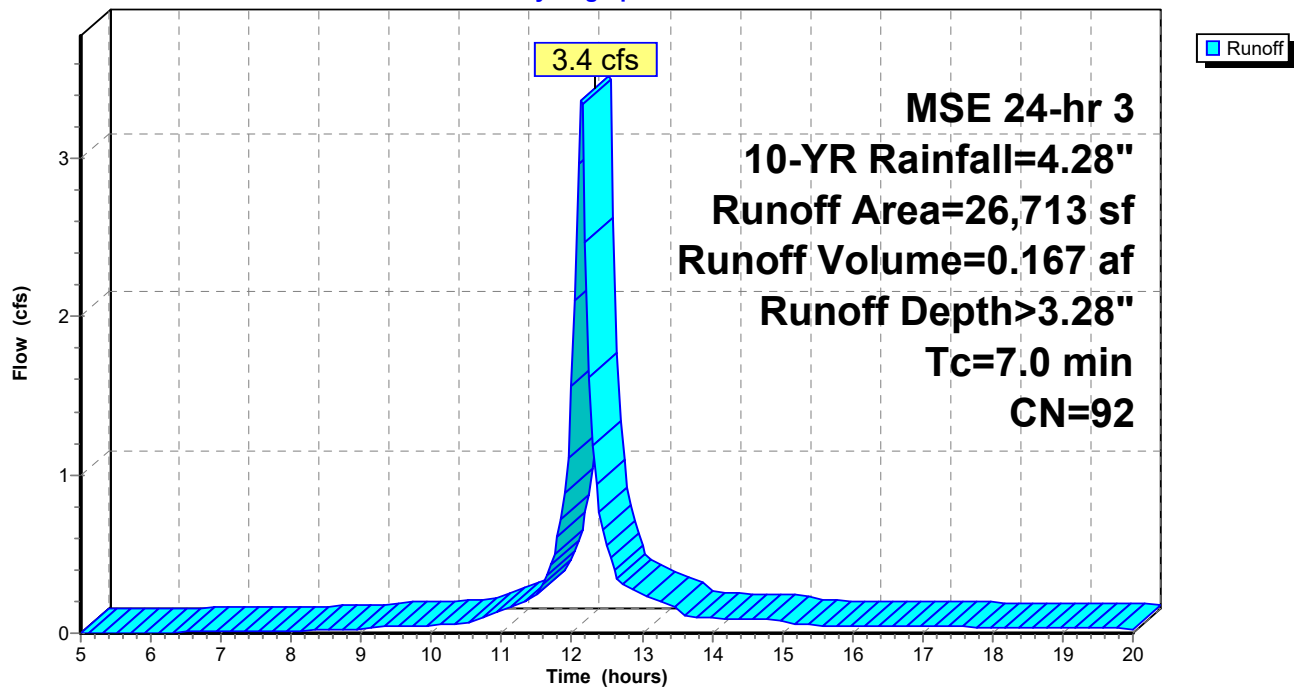
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YR Rainfall=4.28"

Area (sf)	CN	Description
17,151	98	Paved parking, HSG D
9,562	80	>75% Grass cover, Good, HSG D
26,713	92	Weighted Average
9,562		35.80% Pervious Area
17,151		64.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 2XS:

Hydrograph



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MSE 24-hr 3 10-YR Rainfall=4.28"

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Summary for Subcatchment 3XS:

Runoff = 8.0 cfs @ 12.14 hrs, Volume= 0.378 af, Depth> 2.61"
Routed to Reach 3R : West Bluff

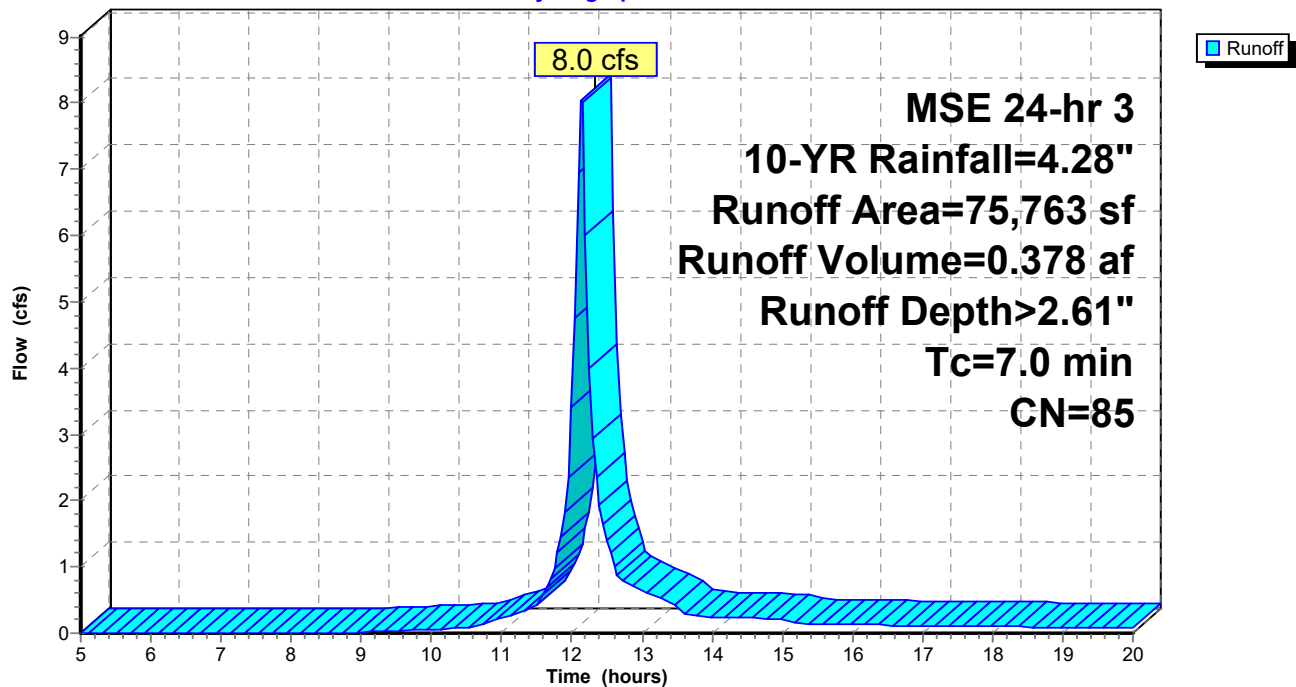
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YR Rainfall=4.28"

Area (sf)	CN	Description
19,931	98	Paved parking, HSG D
55,832	80	>75% Grass cover, Good, HSG D
75,763	85	Weighted Average
55,832		73.69% Pervious Area
19,931		26.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 3XS:

Hydrograph



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MSE 24-hr 3 10-YR Rainfall=4.28"

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Summary for Subcatchment 4XS:

Runoff = 6.4 cfs @ 12.14 hrs, Volume= 0.315 af, Depth> 3.18"
Routed to Reach 4R : South Storm

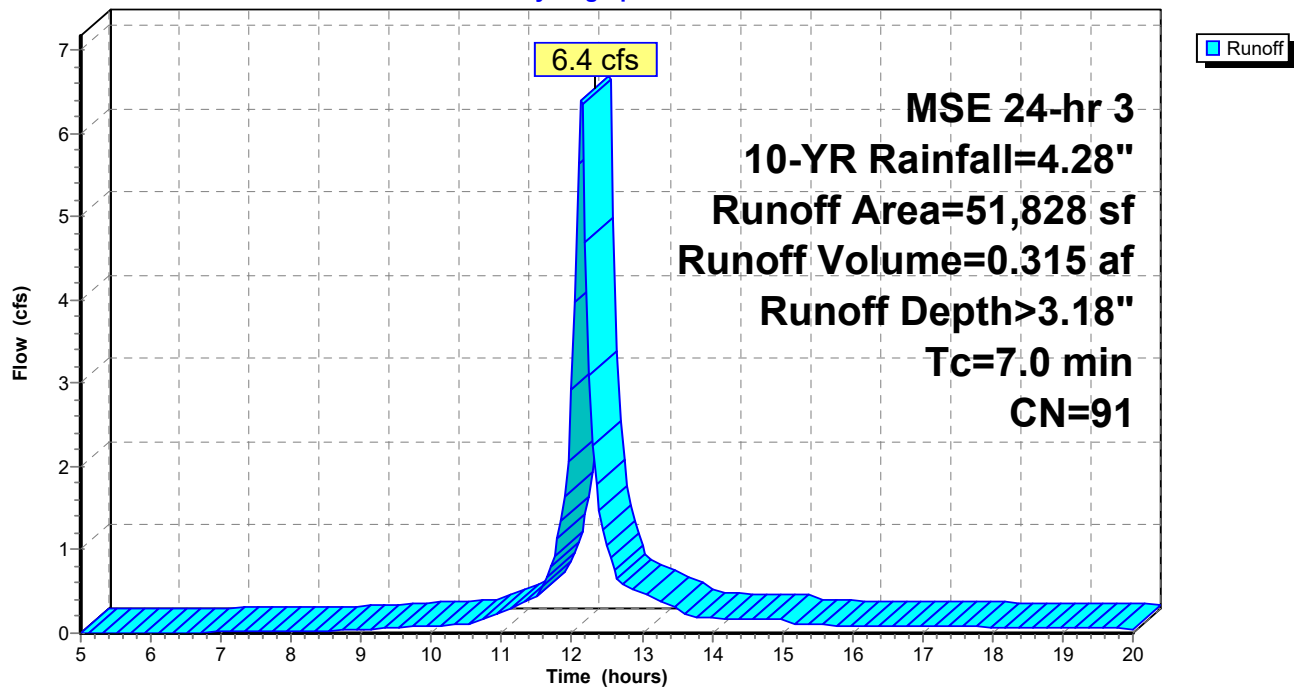
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YR Rainfall=4.28"

Area (sf)	CN	Description
31,516	98	Paved parking, HSG D
20,312	80	>75% Grass cover, Good, HSG D
51,828	91	Weighted Average
20,312		39.19% Pervious Area
31,516		60.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 4XS:

Hydrograph



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MSE 24-hr 3 10-YR Rainfall=4.28"

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Summary for Subcatchment 5XS:

Runoff = 7.7 cfs @ 12.14 hrs, Volume= 0.367 af, Depth> 2.79"
Routed to Reach 5R : SE Bluff - To Road

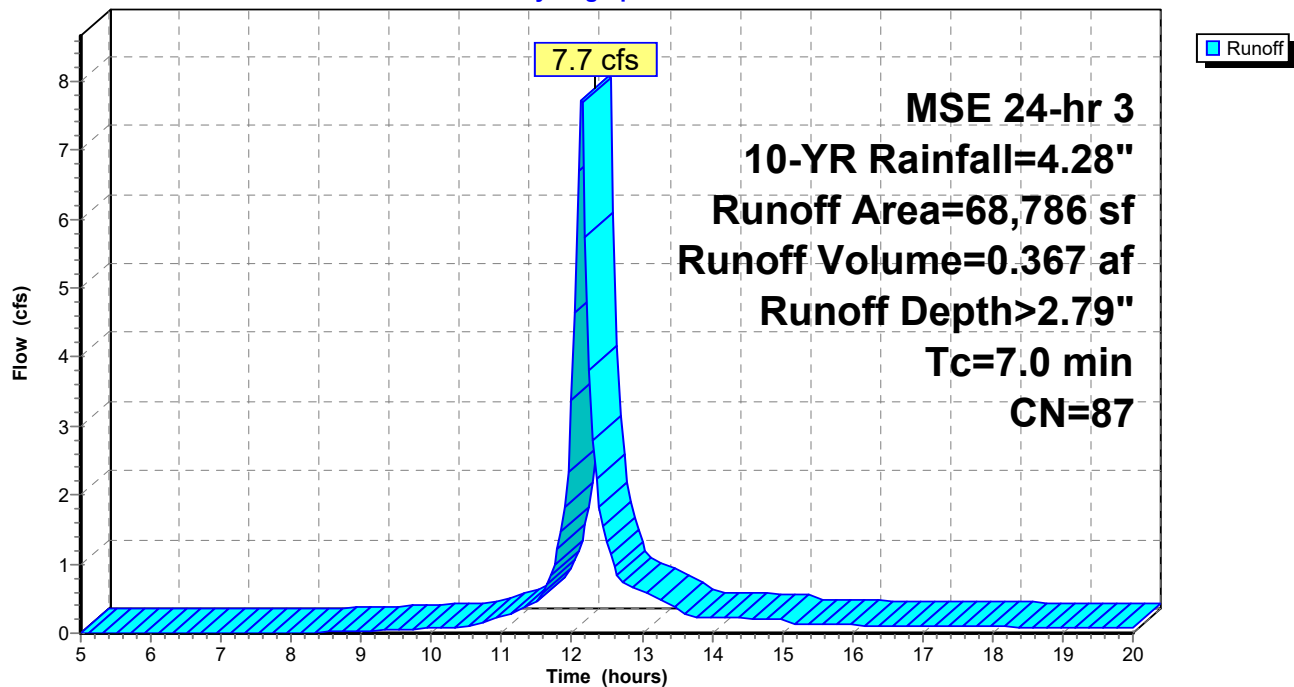
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YR Rainfall=4.28"

Area (sf)	CN	Description
26,329	98	Paved parking, HSG D
42,457	80	>75% Grass cover, Good, HSG D
68,786	87	Weighted Average
42,457		61.72% Pervious Area
26,329		38.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 5XS:

Hydrograph



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MSE 24-hr 3 10-YR Rainfall=4.28"

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Summary for Subcatchment 6XS:

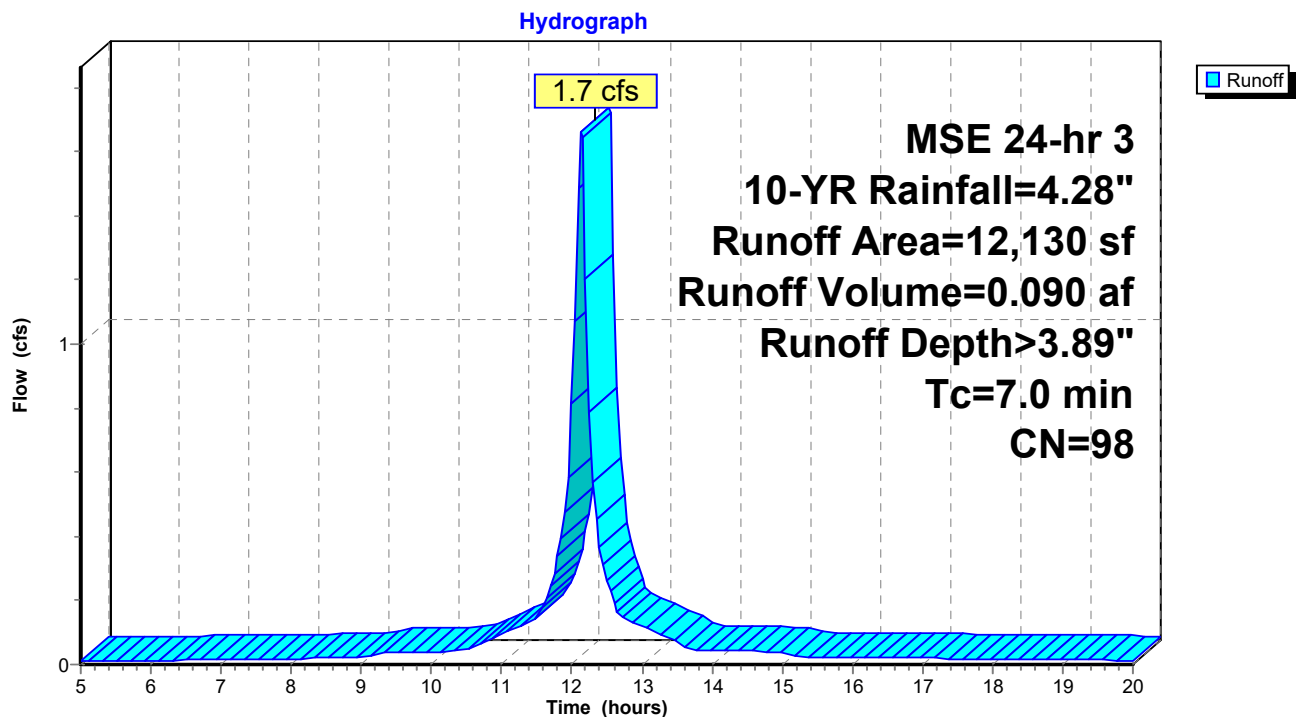
Runoff = 1.7 cfs @ 12.14 hrs, Volume= 0.090 af, Depth> 3.89"
Routed to Reach 6R : East Storm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YR Rainfall=4.28"

Area (sf)	CN	Description
12,130	98	Paved parking, HSG D
0	80	>75% Grass cover, Good, HSG D
12,130	98	Weighted Average
12,130		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 6XS:



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MSE 24-hr 3 10-YR Rainfall=4.28"

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Summary for Subcatchment 8XS:

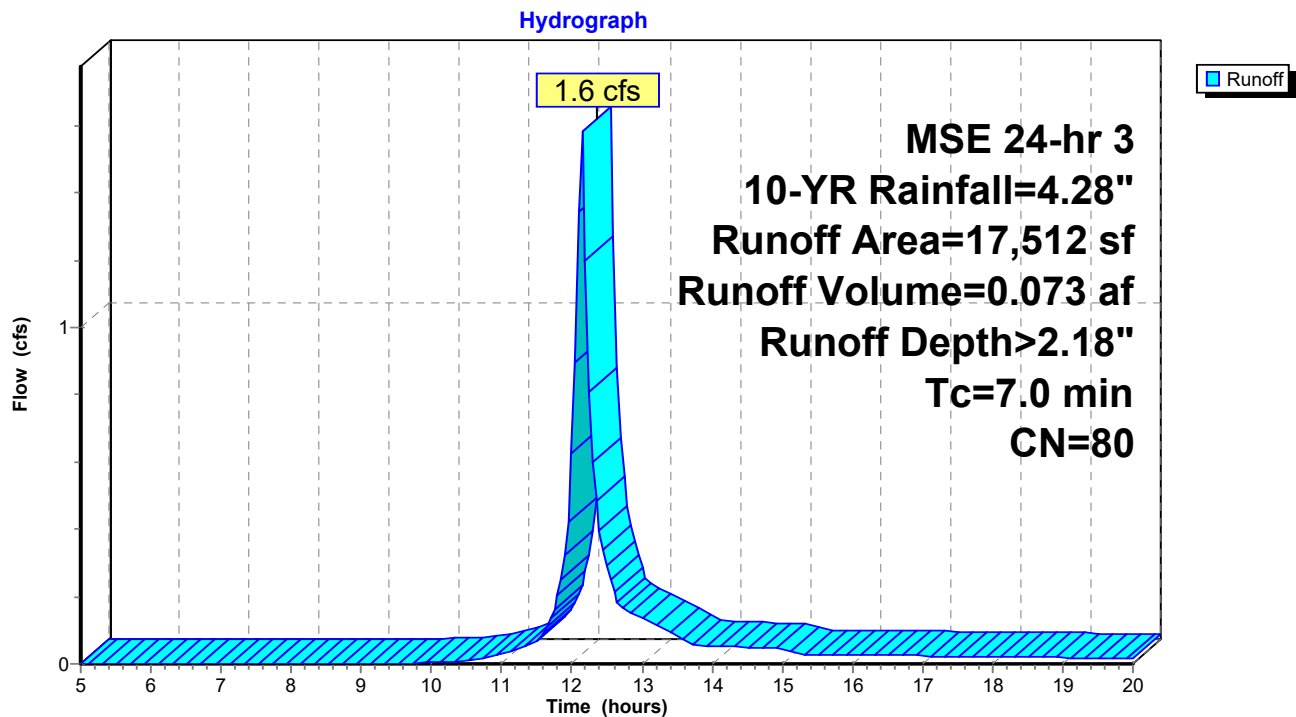
Runoff = 1.6 cfs @ 12.14 hrs, Volume= 0.073 af, Depth> 2.18"
Routed to Reach 7R : North Bluff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YR Rainfall=4.28"

Area (sf)	CN	Description
17,512	80	>75% Grass cover, Good, HSG D
17,512		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 8XS:



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MSE 24-hr 3 10-YR Rainfall=4.28"

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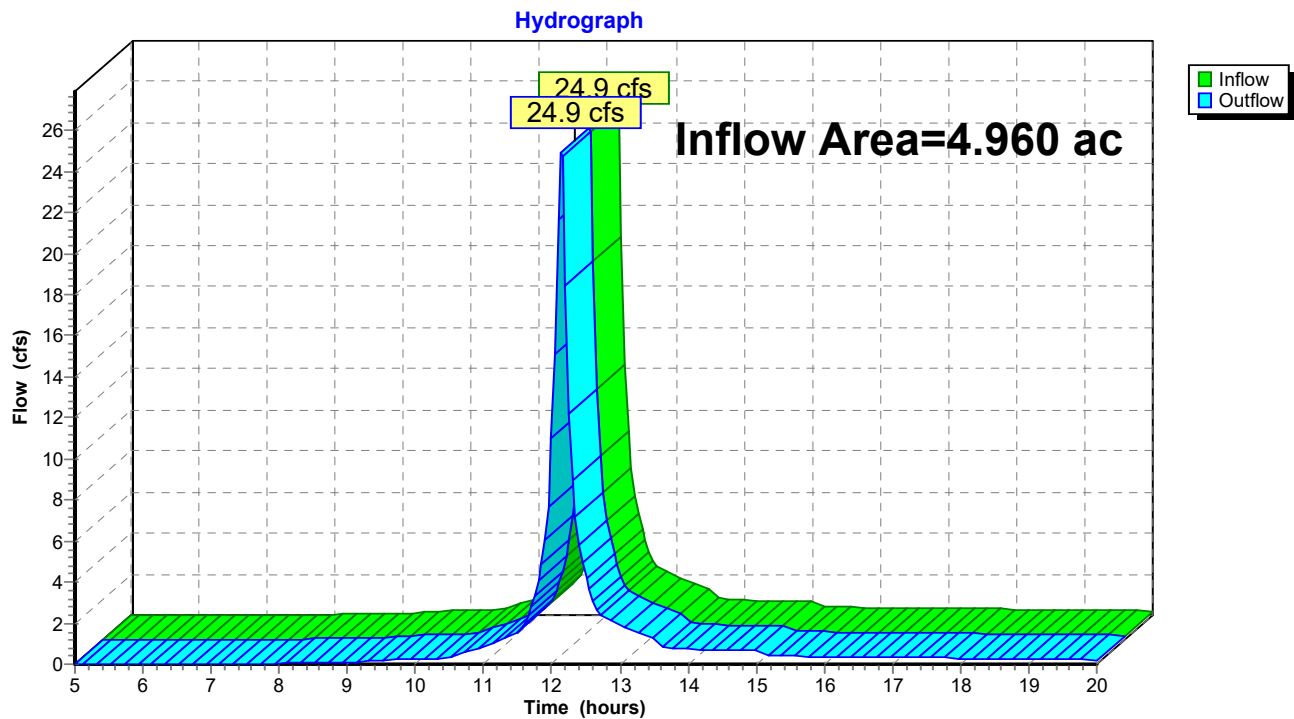
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Summary for Reach 1R: NW Storm

Inflow Area = 4.960 ac, 45.85% Impervious, Inflow Depth > 2.88" for 10-YR event
Inflow = 24.9 cfs @ 12.14 hrs, Volume= 1.191 af
Outflow = 24.9 cfs @ 12.14 hrs, Volume= 1.191 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: NW Storm



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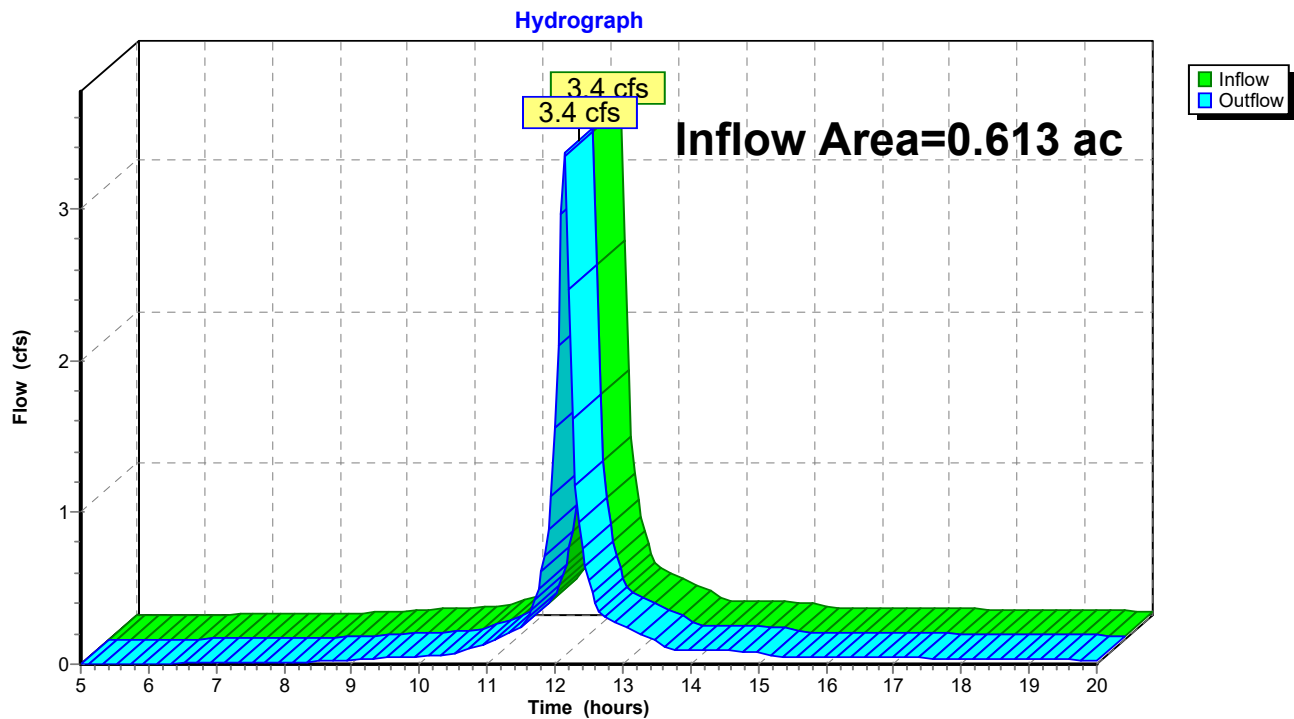
Page 34

Summary for Reach 2R: West Storm

Inflow Area = 0.613 ac, 64.20% Impervious, Inflow Depth > 3.28" for 10-YR event
Inflow = 3.4 cfs @ 12.14 hrs, Volume= 0.167 af
Outflow = 3.4 cfs @ 12.14 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: West Storm



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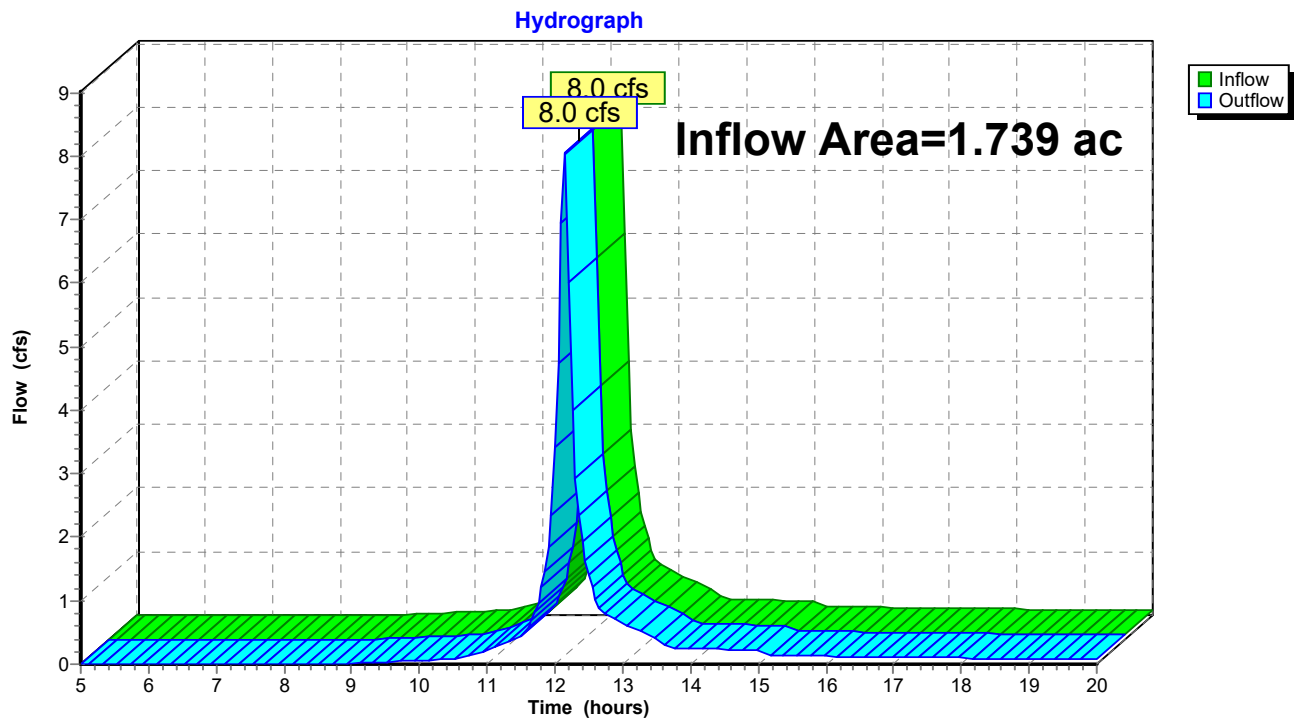
Page 35

Summary for Reach 3R: West Bluff

Inflow Area = 1.739 ac, 26.31% Impervious, Inflow Depth > 2.61" for 10-YR event
Inflow = 8.0 cfs @ 12.14 hrs, Volume= 0.378 af
Outflow = 8.0 cfs @ 12.14 hrs, Volume= 0.378 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: West Bluff



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MSE 24-hr 3 10-YR Rainfall=4.28"

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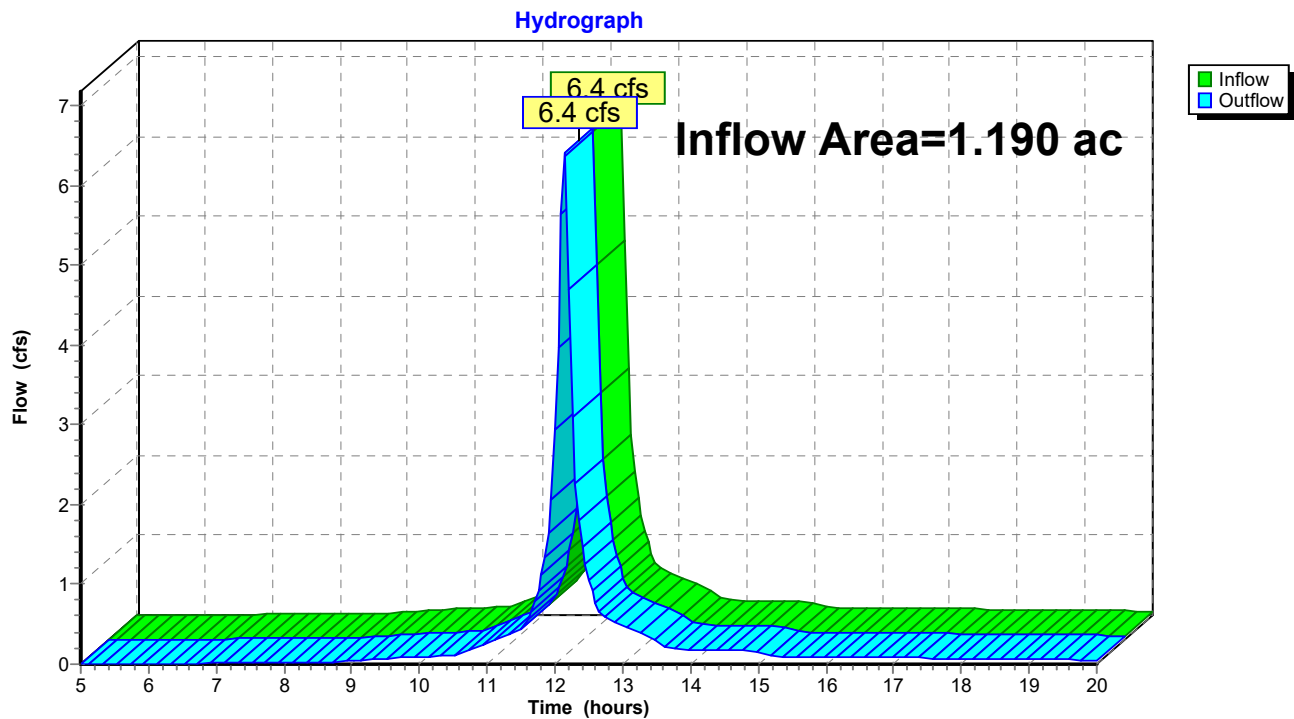
Page 36

Summary for Reach 4R: South Storm

Inflow Area = 1.190 ac, 60.81% Impervious, Inflow Depth > 3.18" for 10-YR event
Inflow = 6.4 cfs @ 12.14 hrs, Volume= 0.315 af
Outflow = 6.4 cfs @ 12.14 hrs, Volume= 0.315 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 4R: South Storm



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MSE 24-hr 3 10-YR Rainfall=4.28"

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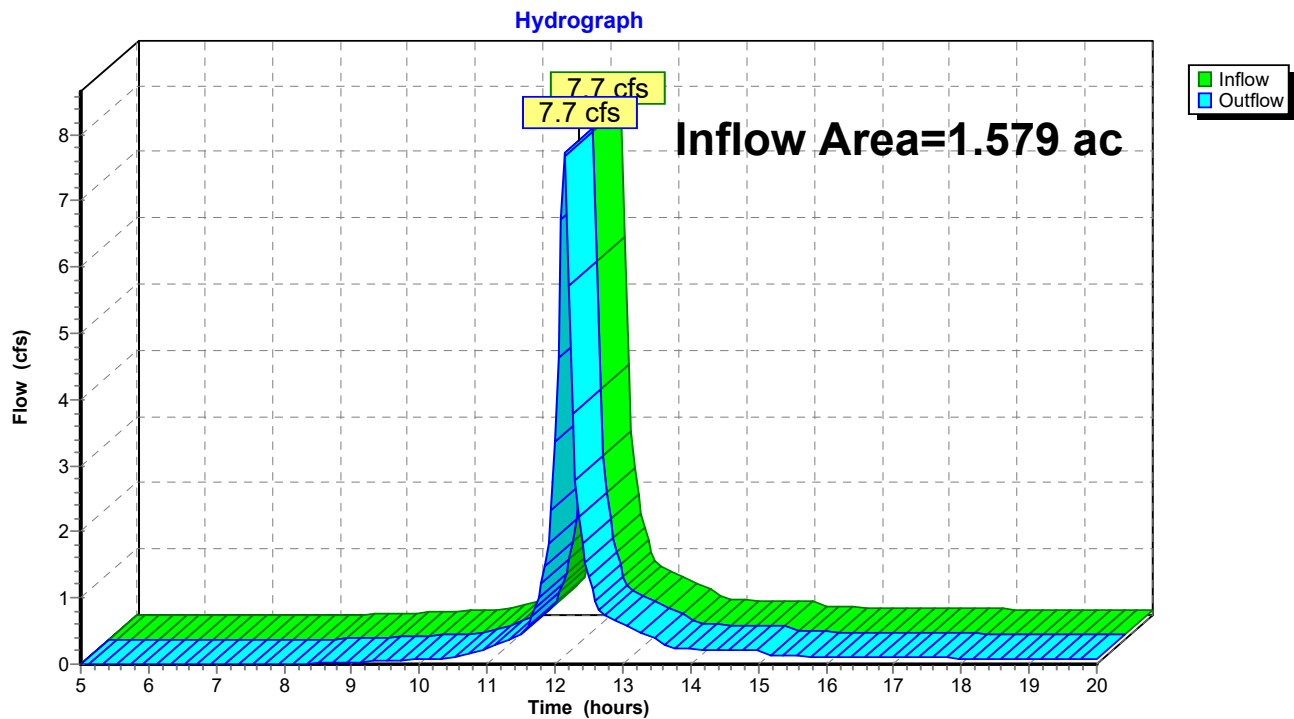
Page 37

Summary for Reach 5R: SE Bluff - To Road

Inflow Area = 1.579 ac, 38.28% Impervious, Inflow Depth > 2.79" for 10-YR event
Inflow = 7.7 cfs @ 12.14 hrs, Volume= 0.367 af
Outflow = 7.7 cfs @ 12.14 hrs, Volume= 0.367 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 5R: SE Bluff - To Road



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MSE 24-hr 3 10-YR Rainfall=4.28"

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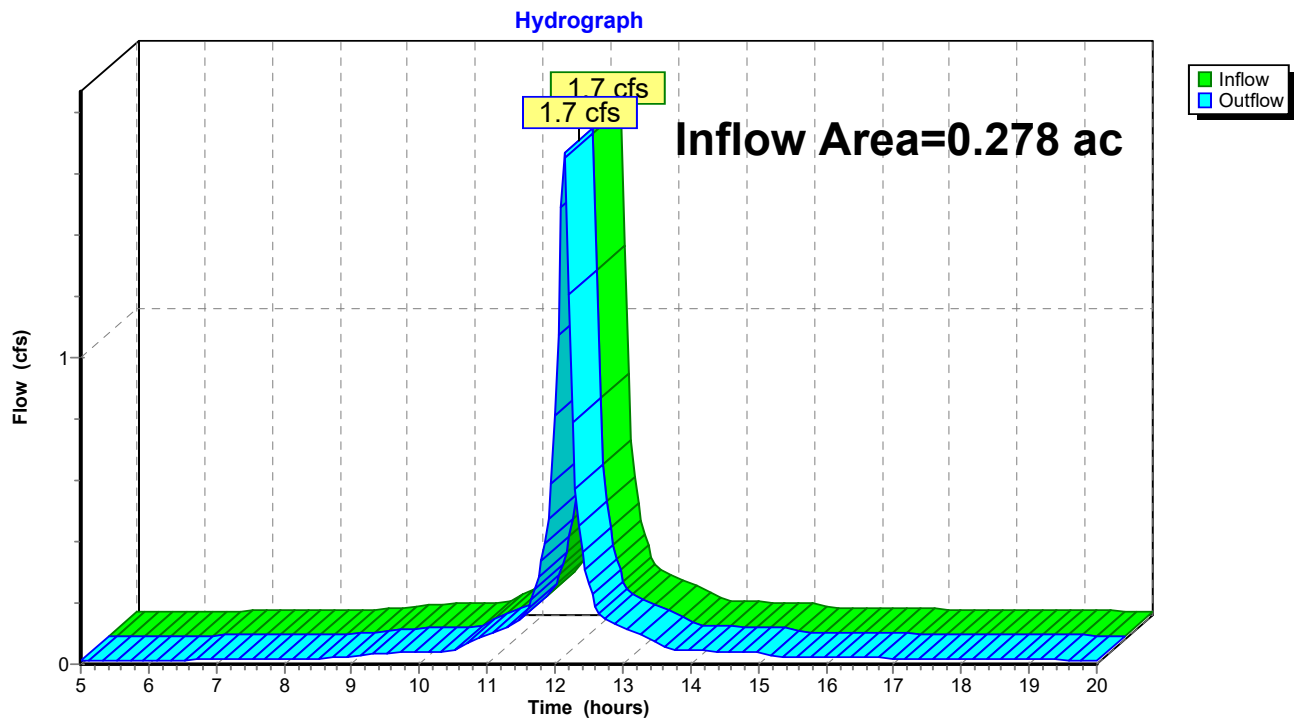
Page 38

Summary for Reach 6R: East Storm

Inflow Area = 0.278 ac, 100.00% Impervious, Inflow Depth > 3.89" for 10-YR event
Inflow = 1.7 cfs @ 12.14 hrs, Volume= 0.090 af
Outflow = 1.7 cfs @ 12.14 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 6R: East Storm



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MSE 24-hr 3 10-YR Rainfall=4.28"

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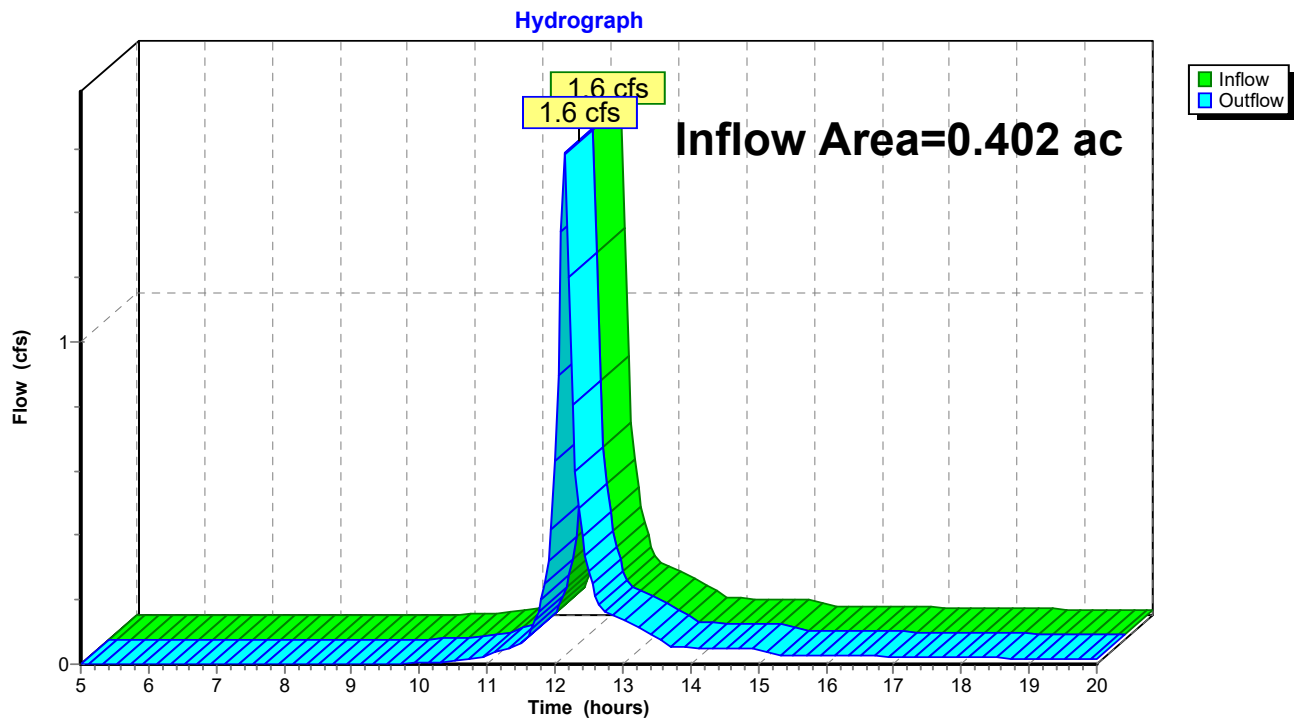
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Summary for Reach 7R: North Bluff

Inflow Area = 0.402 ac, 0.00% Impervious, Inflow Depth > 2.18" for 10-YR event
Inflow = 1.6 cfs @ 12.14 hrs, Volume= 0.073 af
Outflow = 1.6 cfs @ 12.14 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 7R: North Bluff



Pre-Development

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MSE 24-hr 3 10-YR Rainfall=4.28"

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Summary for Pond 3P: (new Pond)

Inflow Area = 0.613 ac, 64.20% Impervious, Inflow Depth > 3.28" for 10-YR event
Inflow = 3.4 cfs @ 12.14 hrs, Volume= 0.167 af
Outflow = 3.4 cfs @ 12.14 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.0 min
Primary = 3.4 cfs @ 12.14 hrs, Volume= 0.167 af
Routed to Pond 4P : (new Pond)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

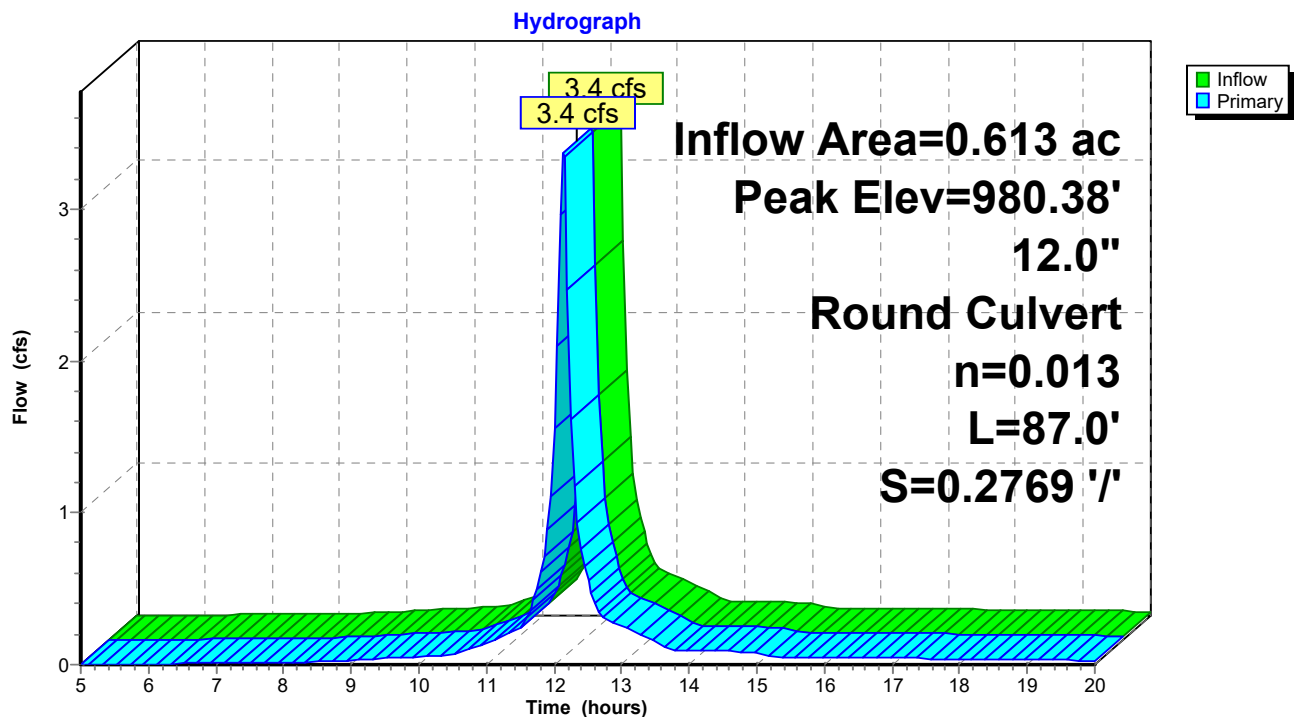
Peak Elev= 980.38' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	979.09'	12.0" Round RCP_Round 12" L= 87.0' Ke= 0.500 Inlet / Outlet Invert= 979.09' / 955.00' S= 0.2769 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=3.3 cfs @ 12.14 hrs HW=980.34' (Free Discharge)

↑1=RCP_Round 12" (Inlet Controls 3.3 cfs @ 4.17 fps)

Pond 3P: (new Pond)



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MSE 24-hr 3 10-YR Rainfall=4.28"

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Summary for Pond 4P: (new Pond)

Inflow Area = 0.613 ac, 64.20% Impervious, Inflow Depth > 3.28" for 10-YR event
Inflow = 3.4 cfs @ 12.14 hrs, Volume= 0.167 af
Outflow = 3.4 cfs @ 12.14 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.0 min
Primary = 3.4 cfs @ 12.14 hrs, Volume= 0.167 af
Routed to Reach 2R : West Storm

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

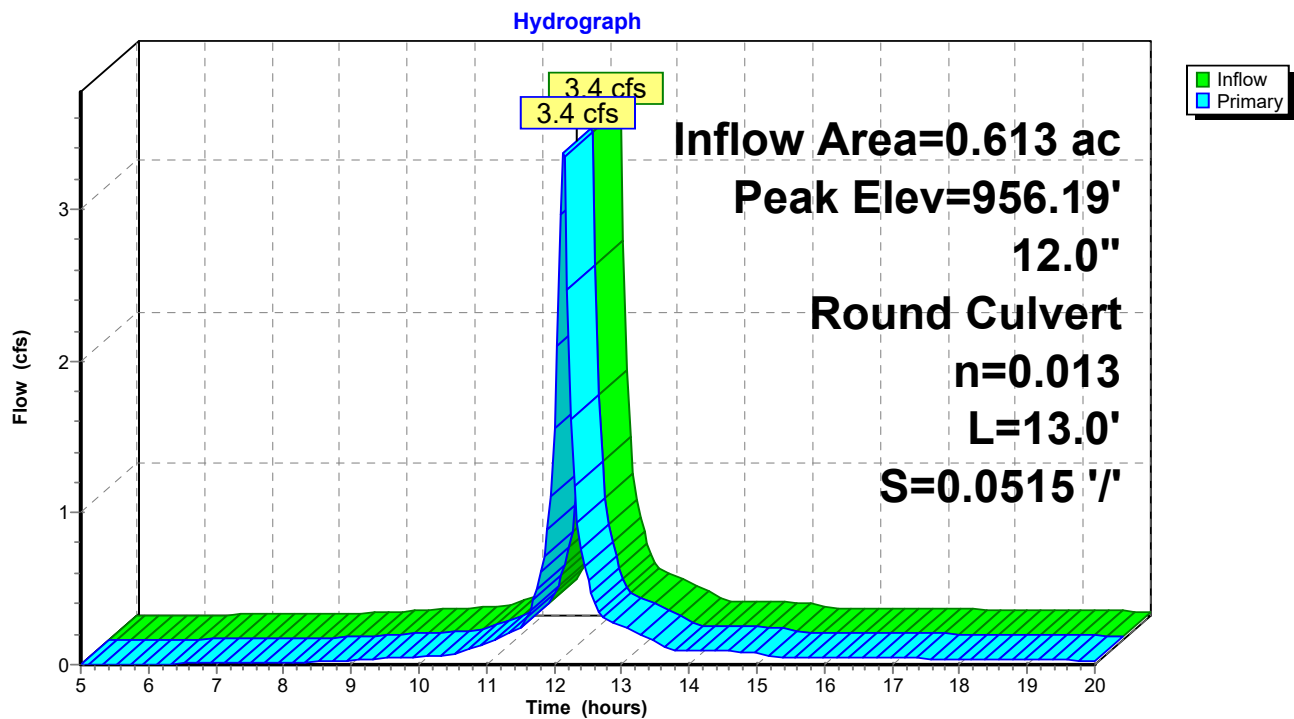
Peak Elev= 956.19' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	954.90'	12.0" Round RCP_Round 12" L= 13.0' Ke= 0.500 Inlet / Outlet Invert= 954.90' / 954.23' S= 0.0515 '/ Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=3.3 cfs @ 12.14 hrs HW=956.15' (Free Discharge)

↑1=RCP_Round 12" (Inlet Controls 3.3 cfs @ 4.17 fps)

Pond 4P: (new Pond)



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MSE 24-hr 3 100-YR Rainfall=7.19"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1XS:	Runoff Area=216,068 sf 45.85% Impervious Runoff Depth>5.59" Tc=7.0 min CN=88 Runoff=46.3 cfs 2.311 af
Subcatchment2XS:	Runoff Area=26,713 sf 64.20% Impervious Runoff Depth>6.04" Tc=7.0 min CN=92 Runoff=6.0 cfs 0.309 af
Subcatchment3XS:	Runoff Area=75,763 sf 26.31% Impervious Runoff Depth>5.25" Tc=7.0 min CN=85 Runoff=15.6 cfs 0.761 af
Subcatchment4XS:	Runoff Area=51,828 sf 60.81% Impervious Runoff Depth>5.93" Tc=7.0 min CN=91 Runoff=11.5 cfs 0.588 af
Subcatchment5XS:	Runoff Area=68,786 sf 38.28% Impervious Runoff Depth>5.48" Tc=7.0 min CN=87 Runoff=14.5 cfs 0.721 af
Subcatchment6XS:	Runoff Area=12,130 sf 100.00% Impervious Runoff Depth>6.64" Tc=7.0 min CN=98 Runoff=2.8 cfs 0.154 af
Subcatchment8XS:	Runoff Area=17,512 sf 0.00% Impervious Runoff Depth>4.69" Tc=7.0 min CN=80 Runoff=3.3 cfs 0.157 af
Reach 1R: NW Storm	Inflow=46.3 cfs 2.311 af Outflow=46.3 cfs 2.311 af
Reach 2R: West Storm	Inflow=6.0 cfs 0.309 af Outflow=6.0 cfs 0.309 af
Reach 3R: West Bluff	Inflow=15.6 cfs 0.761 af Outflow=15.6 cfs 0.761 af
Reach 4R: South Storm	Inflow=11.5 cfs 0.588 af Outflow=11.5 cfs 0.588 af
Reach 5R: SE Bluff - To Road	Inflow=14.5 cfs 0.721 af Outflow=14.5 cfs 0.721 af
Reach 6R: East Storm	Inflow=2.8 cfs 0.154 af Outflow=2.8 cfs 0.154 af
Reach 7R: North Bluff	Inflow=3.3 cfs 0.157 af Outflow=3.3 cfs 0.157 af
Pond 3P: (new Pond)	Peak Elev=982.07' Inflow=6.0 cfs 0.309 af 12.0" Round Culvert n=0.013 L=87.0' S=0.2769 '/' Outflow=6.0 cfs 0.309 af
Pond 4P: (new Pond)	Peak Elev=957.88' Inflow=6.0 cfs 0.309 af 12.0" Round Culvert n=0.013 L=13.0' S=0.0515 '/' Outflow=6.0 cfs 0.309 af

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MSE 24-hr 3 100-YR Rainfall=7.19"

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Total Runoff Area = 10.762 ac Runoff Volume = 5.000 af Average Runoff Depth = 5.58"
56.03% Pervious = 6.030 ac 43.97% Impervious = 4.732 ac

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Summary for Subcatchment 1XS:

Runoff = 46.3 cfs @ 12.14 hrs, Volume= 2.311 af, Depth> 5.59"
Routed to Reach 1R : NW Storm

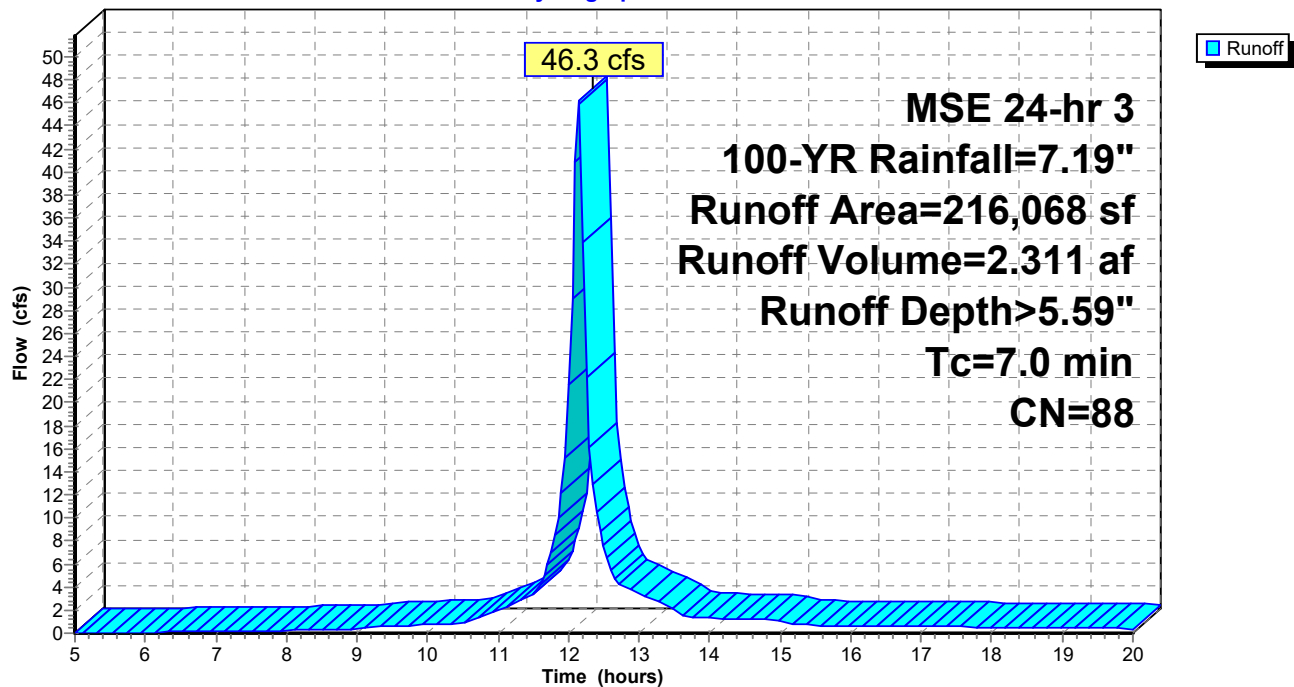
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YR Rainfall=7.19"

Area (sf)	CN	Description
99,068	98	Paved parking, HSG D
117,000	80	>75% Grass cover, Good, HSG D
216,068	88	Weighted Average
117,000		54.15% Pervious Area
99,068		45.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 1XS:

Hydrograph



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MSE 24-hr 3 100-YR Rainfall=7.19"

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Summary for Subcatchment 2XS:

Runoff = 6.0 cfs @ 12.14 hrs, Volume= 0.309 af, Depth> 6.04"
Routed to Pond 3P : (new Pond)

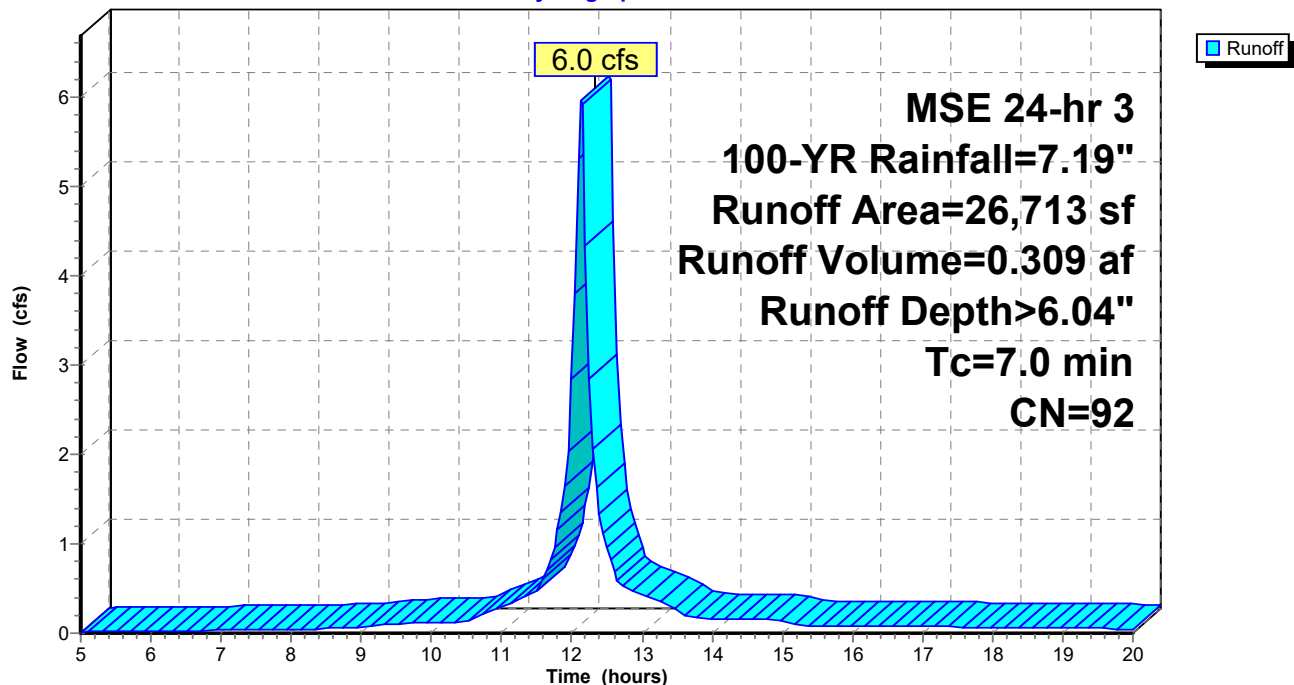
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YR Rainfall=7.19"

Area (sf)	CN	Description
17,151	98	Paved parking, HSG D
9,562	80	>75% Grass cover, Good, HSG D
26,713	92	Weighted Average
9,562		35.80% Pervious Area
17,151		64.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 2XS:

Hydrograph



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MSE 24-hr 3 100-YR Rainfall=7.19"

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Summary for Subcatchment 3XS:

Runoff = 15.6 cfs @ 12.14 hrs, Volume= 0.761 af, Depth> 5.25"
Routed to Reach 3R : West Bluff

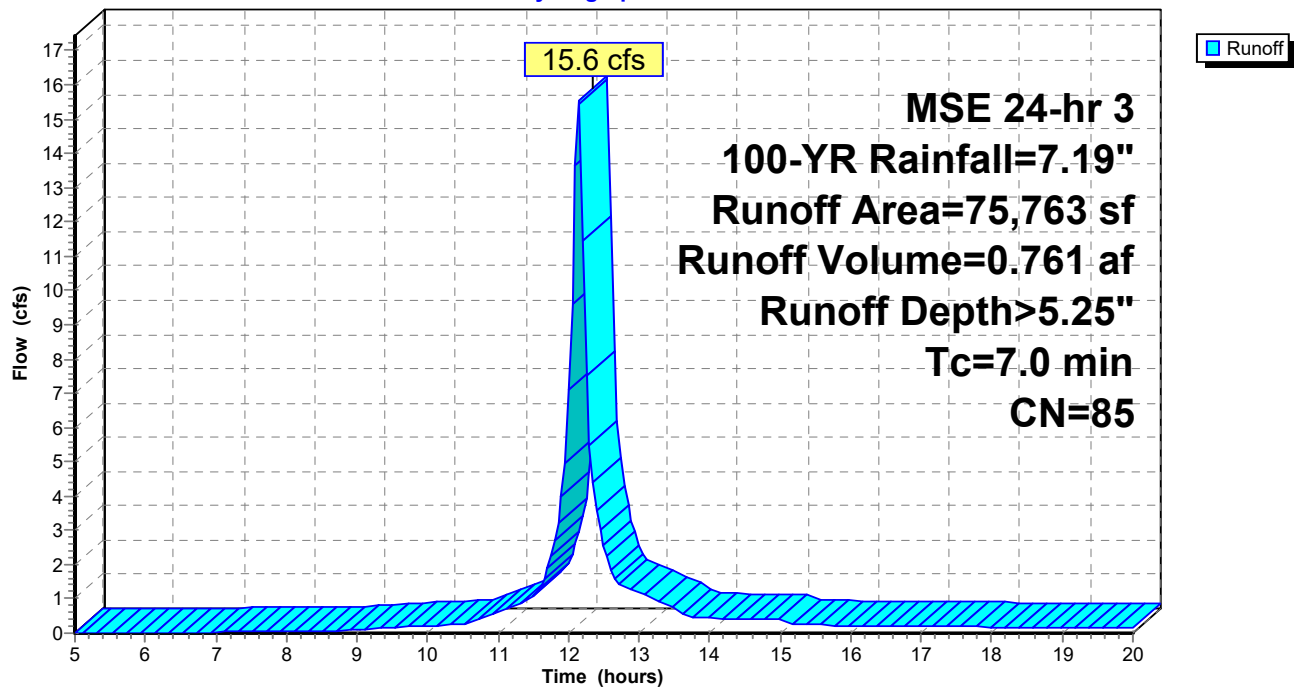
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YR Rainfall=7.19"

Area (sf)	CN	Description
19,931	98	Paved parking, HSG D
55,832	80	>75% Grass cover, Good, HSG D
75,763	85	Weighted Average
55,832		73.69% Pervious Area
19,931		26.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 3XS:

Hydrograph



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MSE 24-hr 3 100-YR Rainfall=7.19"

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Summary for Subcatchment 4XS:

Runoff = 11.5 cfs @ 12.14 hrs, Volume= 0.588 af, Depth> 5.93"
Routed to Reach 4R : South Storm

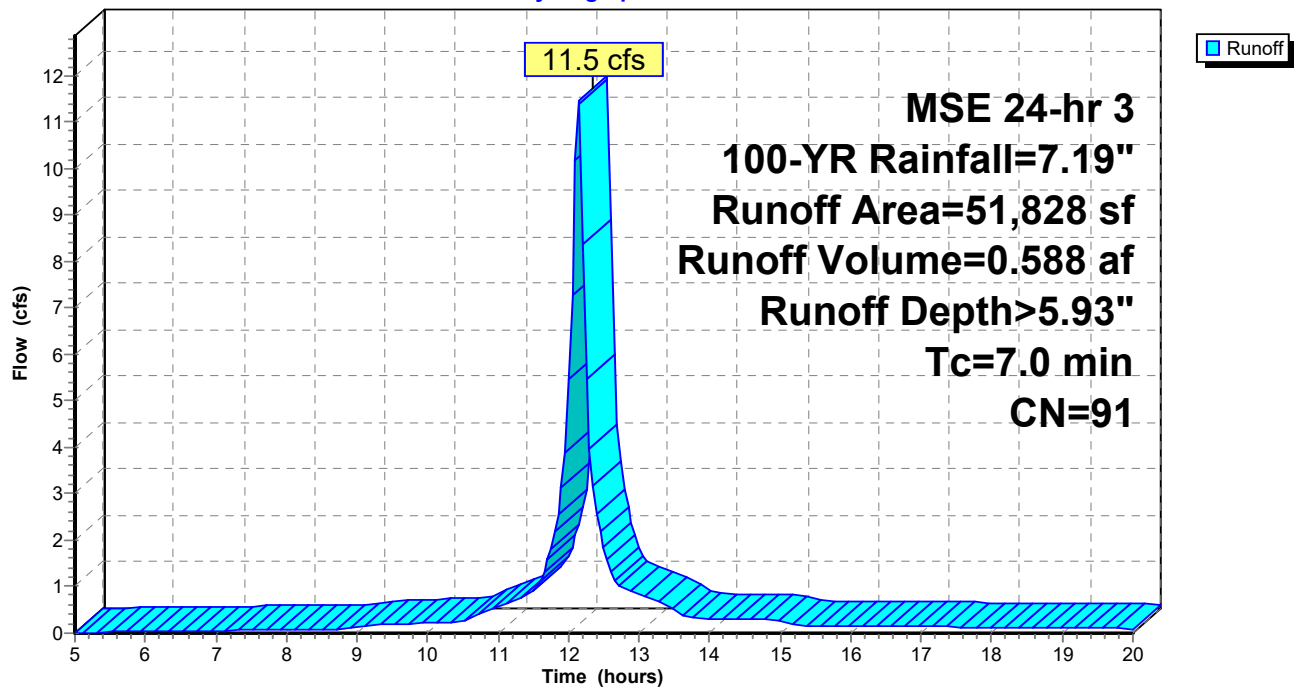
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YR Rainfall=7.19"

Area (sf)	CN	Description
31,516	98	Paved parking, HSG D
20,312	80	>75% Grass cover, Good, HSG D
51,828	91	Weighted Average
20,312		39.19% Pervious Area
31,516		60.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 4XS:

Hydrograph



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MSE 24-hr 3 100-YR Rainfall=7.19"

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Summary for Subcatchment 5XS:

Runoff = 14.5 cfs @ 12.14 hrs, Volume= 0.721 af, Depth> 5.48"
Routed to Reach 5R : SE Bluff - To Road

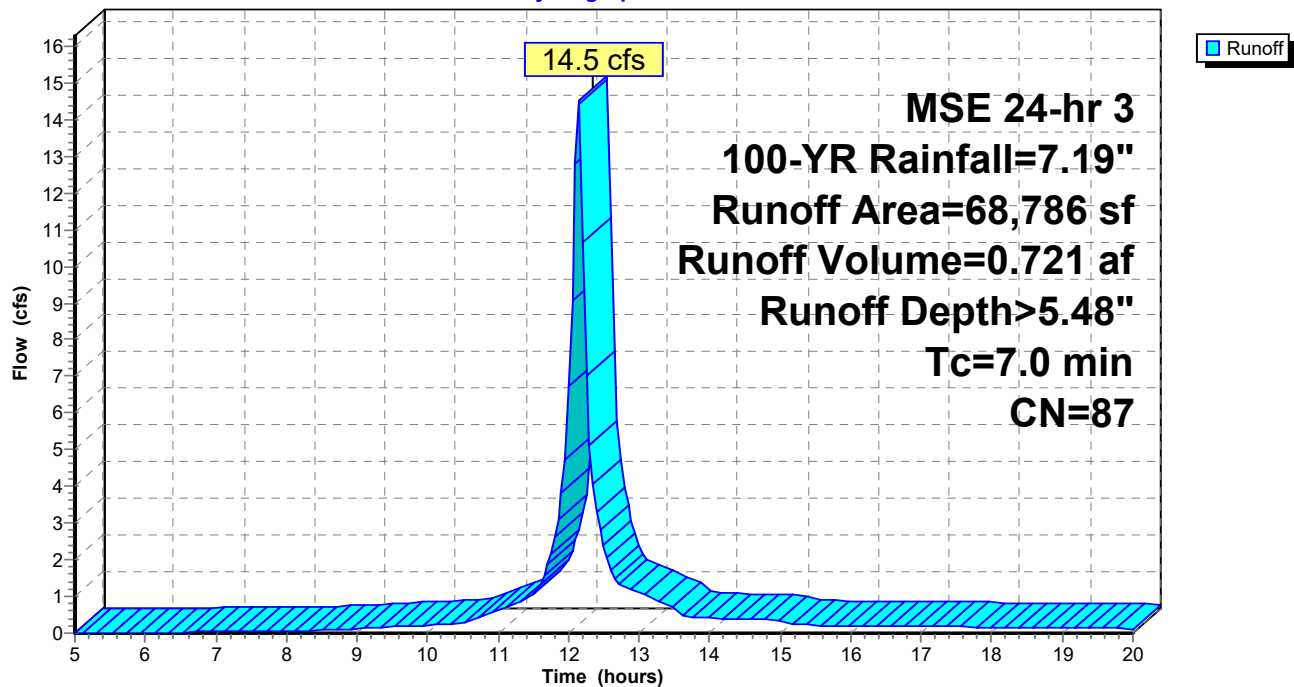
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YR Rainfall=7.19"

Area (sf)	CN	Description
26,329	98	Paved parking, HSG D
42,457	80	>75% Grass cover, Good, HSG D
68,786	87	Weighted Average
42,457		61.72% Pervious Area
26,329		38.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 5XS:

Hydrograph



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MSE 24-hr 3 100-YR Rainfall=7.19"

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Summary for Subcatchment 6XS:

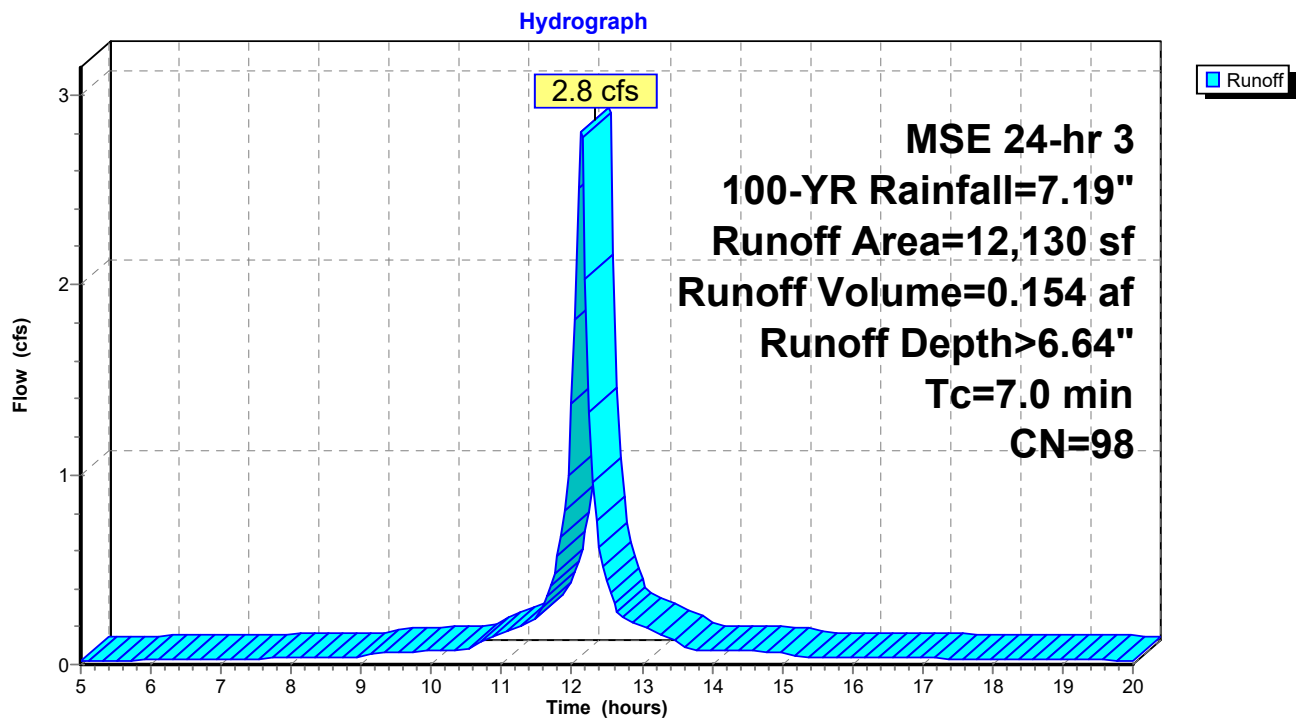
Runoff = 2.8 cfs @ 12.14 hrs, Volume= 0.154 af, Depth> 6.64"
Routed to Reach 6R : East Storm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YR Rainfall=7.19"

Area (sf)	CN	Description
12,130	98	Paved parking, HSG D
0	80	>75% Grass cover, Good, HSG D
12,130	98	Weighted Average
12,130		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 6XS:



Summary for Subcatchment 8XS:

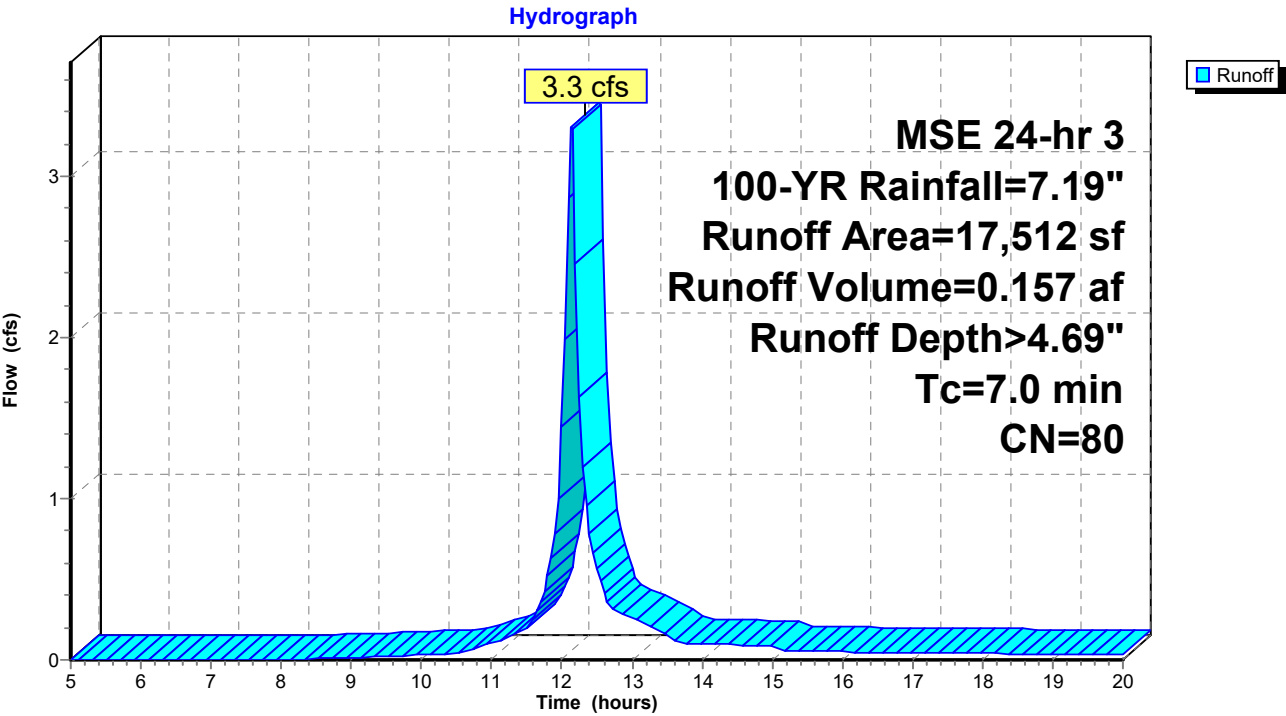
Runoff = 3.3 cfs @ 12.14 hrs, Volume= 0.157 af, Depth> 4.69"
Routed to Reach 7R : North Bluff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YR Rainfall=7.19"

Area (sf)	CN	Description
17,512	80	>75% Grass cover, Good, HSG D
17,512		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 8XS:



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MSE 24-hr 3 100-YR Rainfall=7.19"

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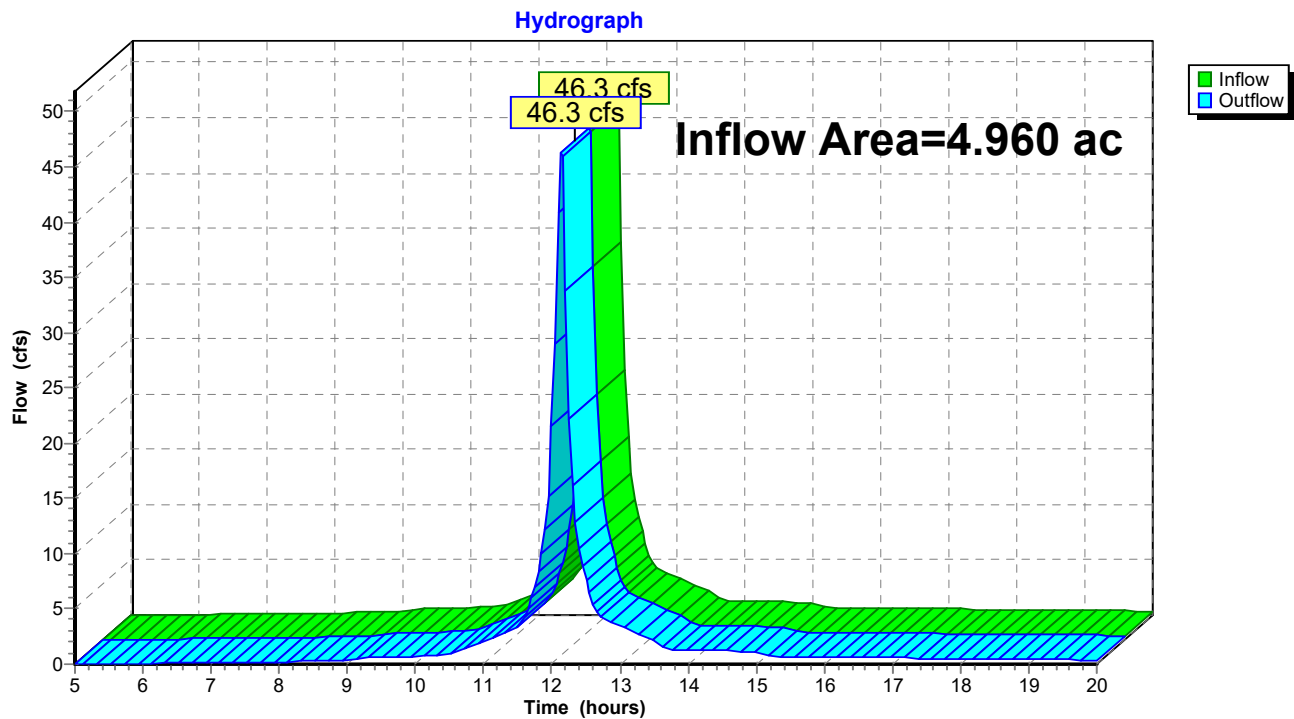
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Summary for Reach 1R: NW Storm

Inflow Area = 4.960 ac, 45.85% Impervious, Inflow Depth > 5.59" for 100-YR event
Inflow = 46.3 cfs @ 12.14 hrs, Volume= 2.311 af
Outflow = 46.3 cfs @ 12.14 hrs, Volume= 2.311 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: NW Storm



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MSE 24-hr 3 100-YR Rainfall=7.19"

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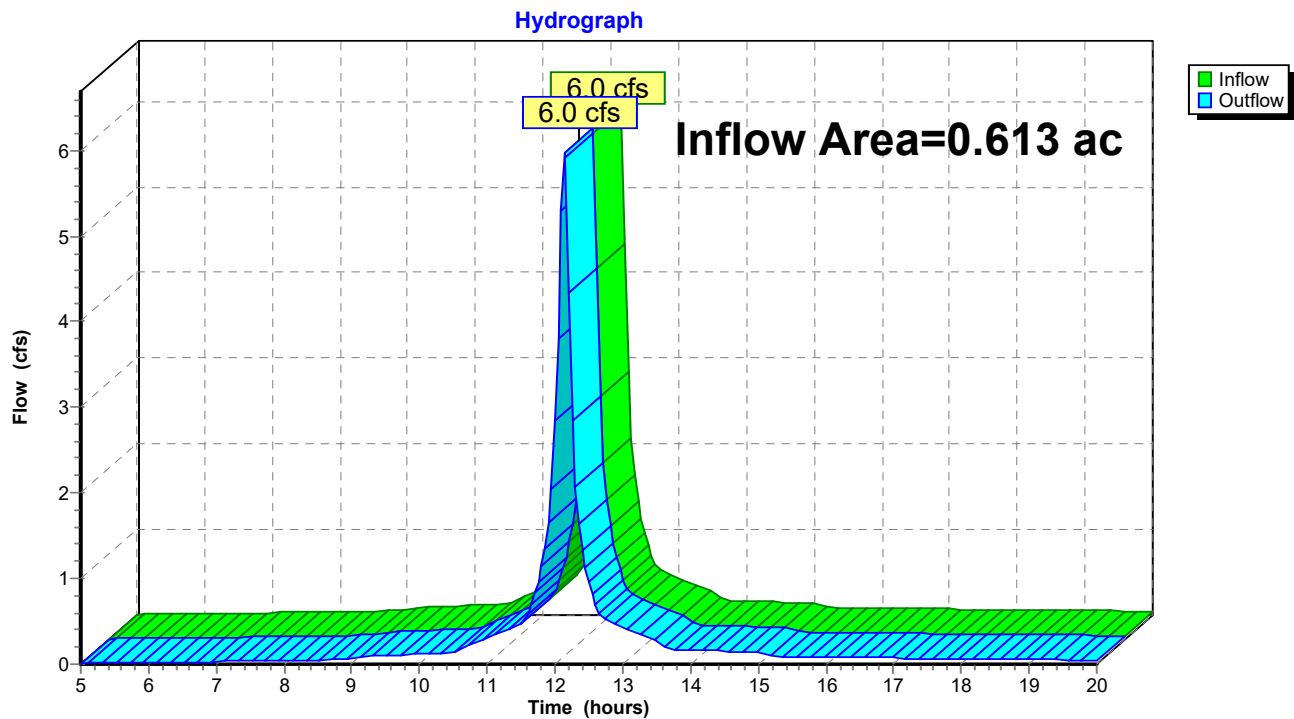
Page 52

Summary for Reach 2R: West Storm

Inflow Area = 0.613 ac, 64.20% Impervious, Inflow Depth > 6.04" for 100-YR event
Inflow = 6.0 cfs @ 12.14 hrs, Volume= 0.309 af
Outflow = 6.0 cfs @ 12.14 hrs, Volume= 0.309 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: West Storm



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MSE 24-hr 3 100-YR Rainfall=7.19"

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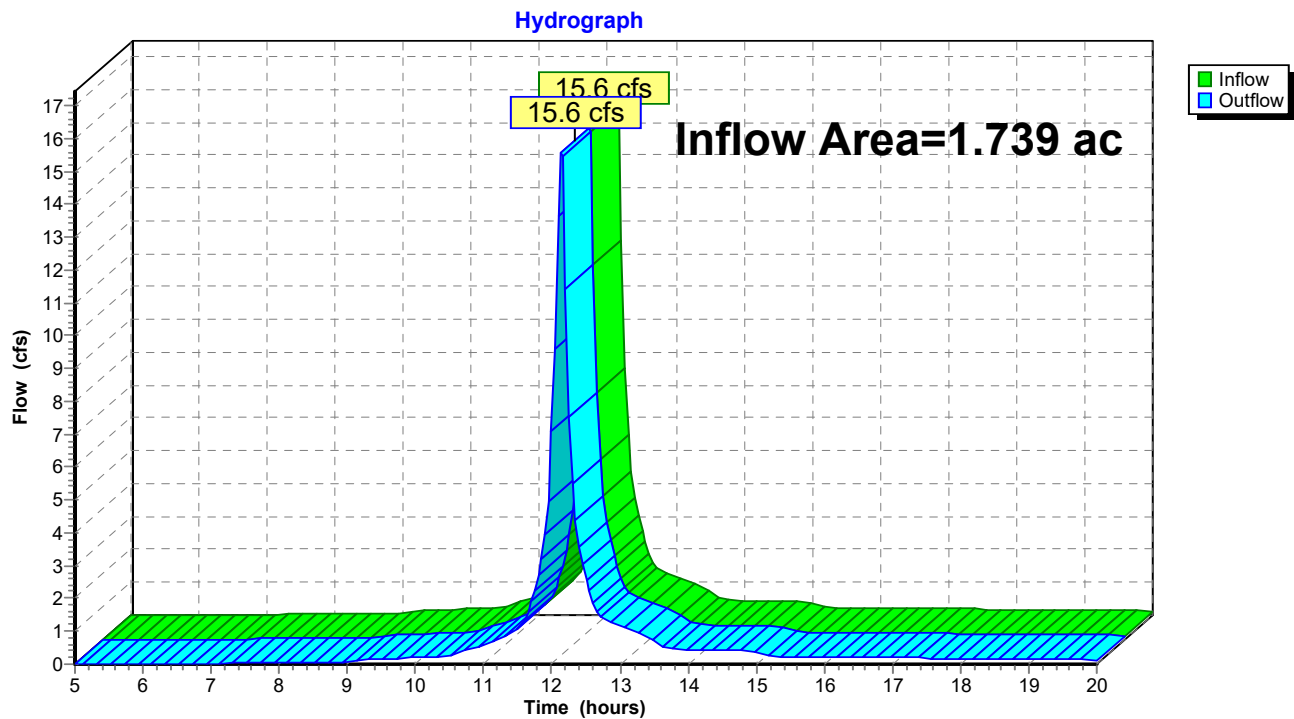
Page 53

Summary for Reach 3R: West Bluff

Inflow Area = 1.739 ac, 26.31% Impervious, Inflow Depth > 5.25" for 100-YR event
Inflow = 15.6 cfs @ 12.14 hrs, Volume= 0.761 af
Outflow = 15.6 cfs @ 12.14 hrs, Volume= 0.761 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: West Bluff



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MSE 24-hr 3 100-YR Rainfall=7.19"

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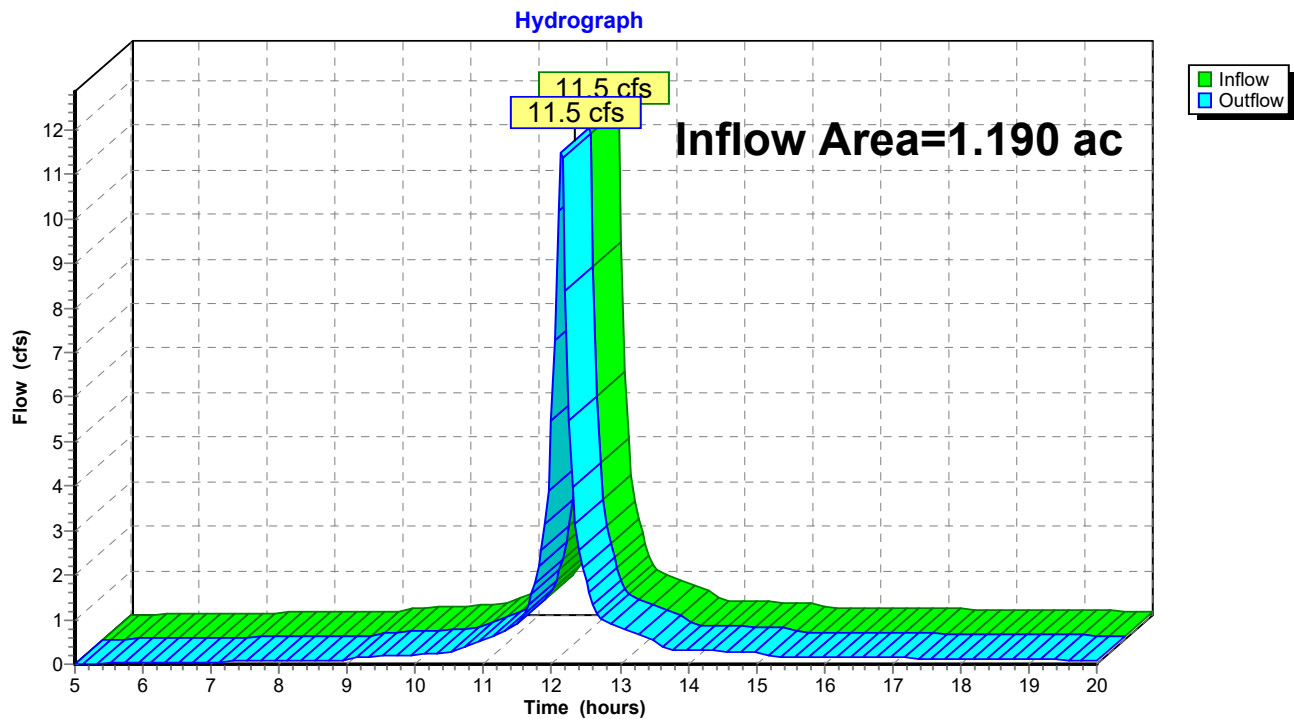
Page 54

Summary for Reach 4R: South Storm

Inflow Area = 1.190 ac, 60.81% Impervious, Inflow Depth > 5.93" for 100-YR event
Inflow = 11.5 cfs @ 12.14 hrs, Volume= 0.588 af
Outflow = 11.5 cfs @ 12.14 hrs, Volume= 0.588 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 4R: South Storm



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MSE 24-hr 3 100-YR Rainfall=7.19"

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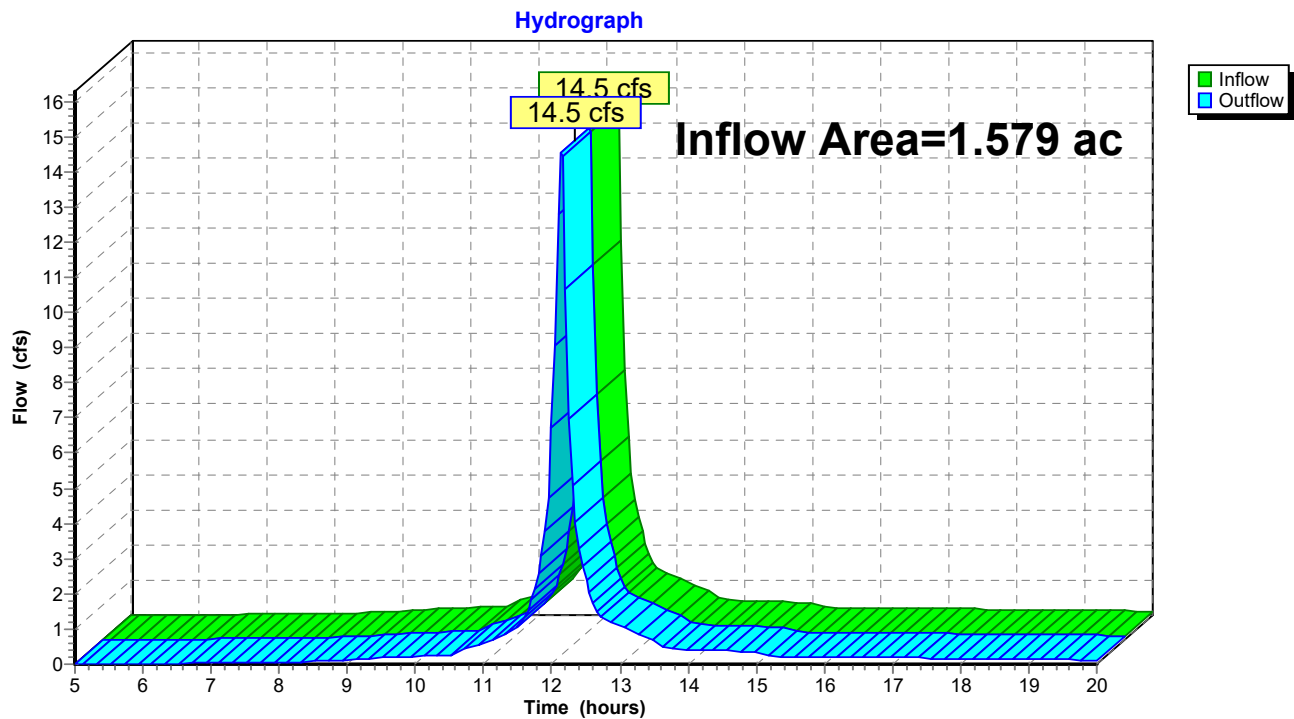
Page 55

Summary for Reach 5R: SE Bluff - To Road

Inflow Area = 1.579 ac, 38.28% Impervious, Inflow Depth > 5.48" for 100-YR event
Inflow = 14.5 cfs @ 12.14 hrs, Volume= 0.721 af
Outflow = 14.5 cfs @ 12.14 hrs, Volume= 0.721 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 5R: SE Bluff - To Road



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MSE 24-hr 3 100-YR Rainfall=7.19"

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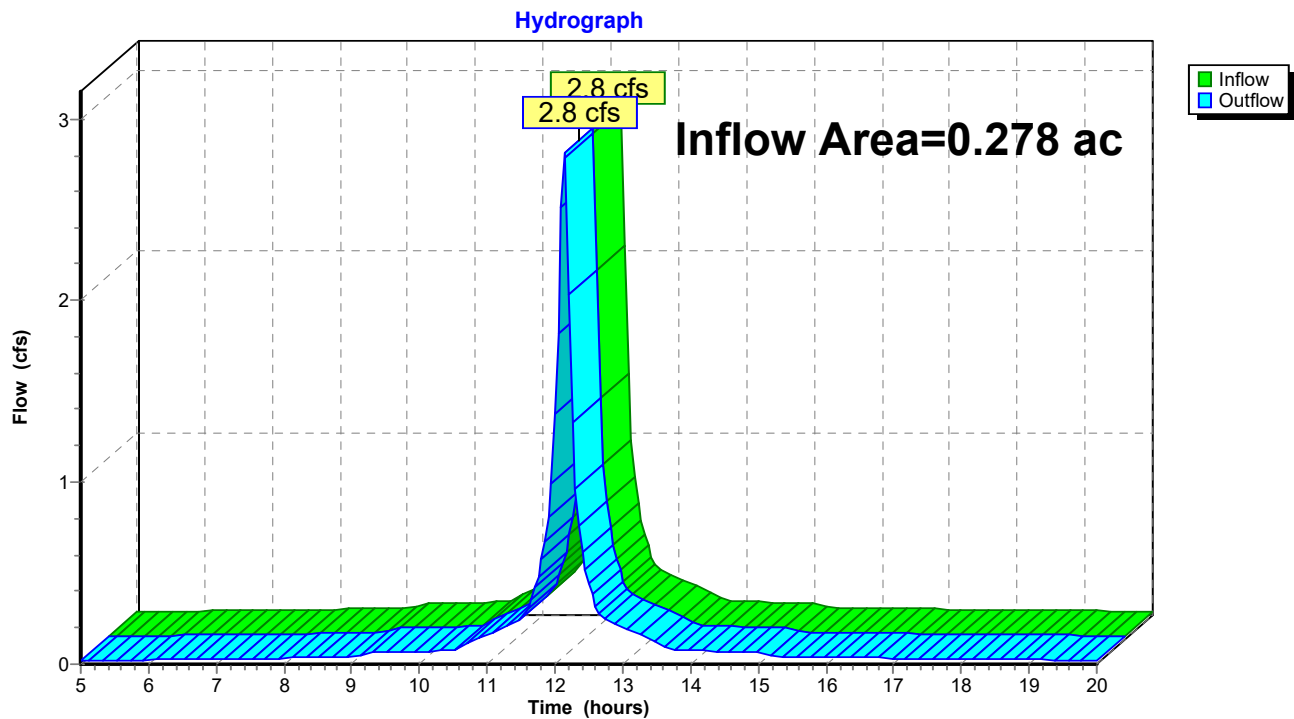
Page 56

Summary for Reach 6R: East Storm

Inflow Area = 0.278 ac, 100.00% Impervious, Inflow Depth > 6.64" for 100-YR event
Inflow = 2.8 cfs @ 12.14 hrs, Volume= 0.154 af
Outflow = 2.8 cfs @ 12.14 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 6R: East Storm



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MSE 24-hr 3 100-YR Rainfall=7.19"

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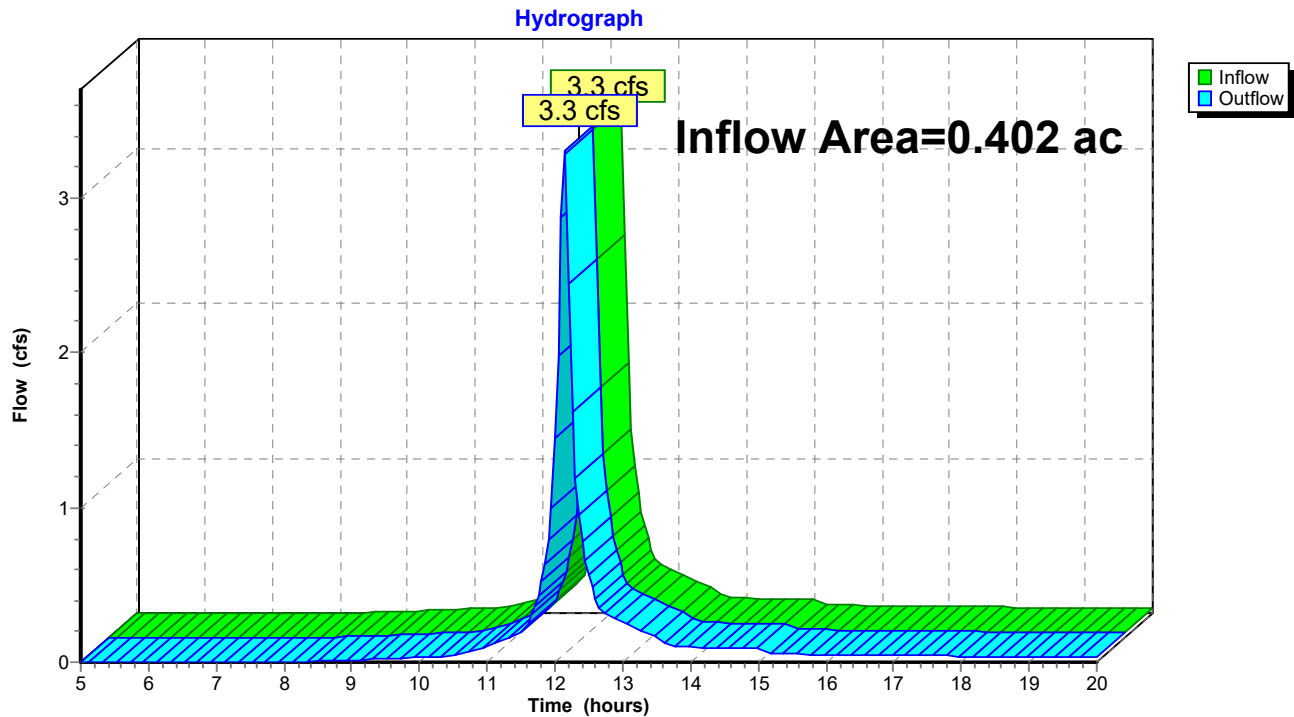
Page 57

Summary for Reach 7R: North Bluff

Inflow Area = 0.402 ac, 0.00% Impervious, Inflow Depth > 4.69" for 100-YR event
Inflow = 3.3 cfs @ 12.14 hrs, Volume= 0.157 af
Outflow = 3.3 cfs @ 12.14 hrs, Volume= 0.157 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 7R: North Bluff



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MSE 24-hr 3 100-YR Rainfall=7.19"

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Summary for Pond 3P: (new Pond)

Inflow Area = 0.613 ac, 64.20% Impervious, Inflow Depth > 6.04" for 100-YR event
Inflow = 6.0 cfs @ 12.14 hrs, Volume= 0.309 af
Outflow = 6.0 cfs @ 12.14 hrs, Volume= 0.309 af, Atten= 0%, Lag= 0.0 min
Primary = 6.0 cfs @ 12.14 hrs, Volume= 0.309 af
Routed to Pond 4P : (new Pond)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

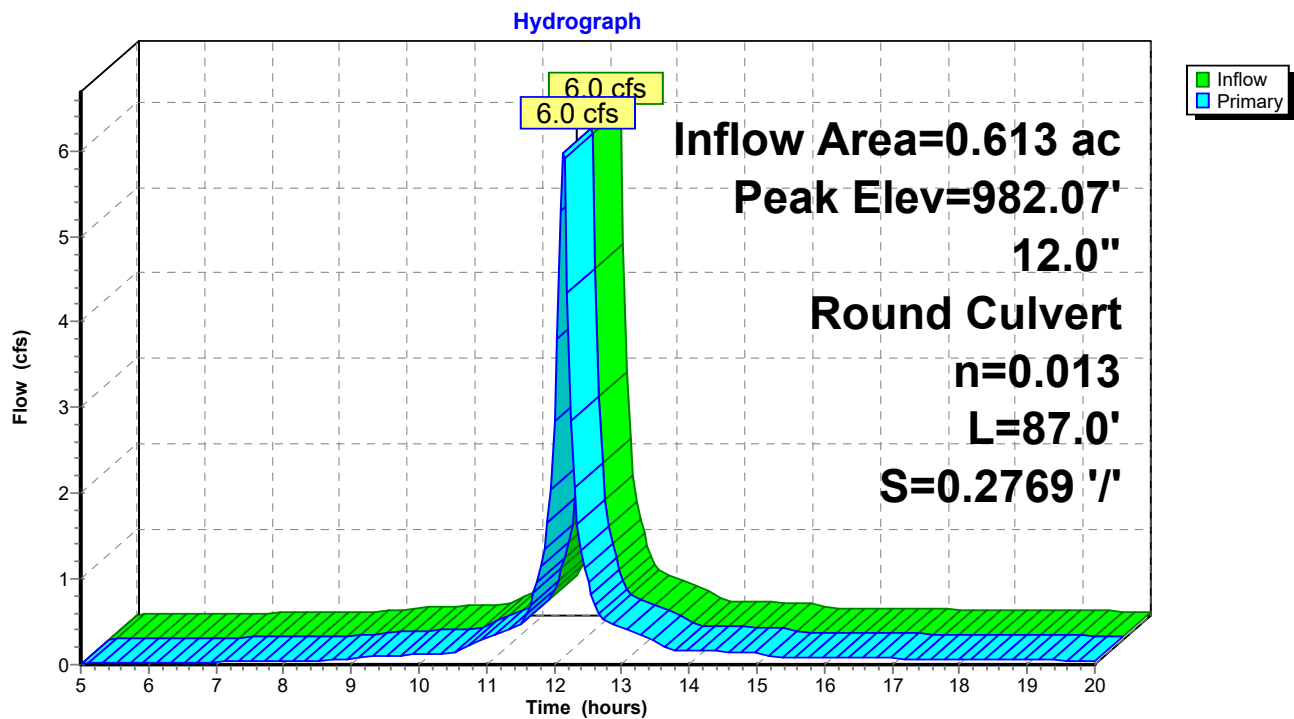
Peak Elev= 982.07' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	979.09'	12.0" Round RCP_Round 12" L= 87.0' Ke= 0.500 Inlet / Outlet Invert= 979.09' / 955.00' S= 0.2769 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=5.8 cfs @ 12.14 hrs HW=981.93' (Free Discharge)

↑1=RCP_Round 12" (Inlet Controls 5.8 cfs @ 7.37 fps)

Pond 3P: (new Pond)



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MSE 24-hr 3 100-YR Rainfall=7.19"

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Summary for Pond 4P: (new Pond)

Inflow Area = 0.613 ac, 64.20% Impervious, Inflow Depth > 6.04" for 100-YR event
Inflow = 6.0 cfs @ 12.14 hrs, Volume= 0.309 af
Outflow = 6.0 cfs @ 12.14 hrs, Volume= 0.309 af, Atten= 0%, Lag= 0.0 min
Primary = 6.0 cfs @ 12.14 hrs, Volume= 0.309 af
Routed to Reach 2R : West Storm

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

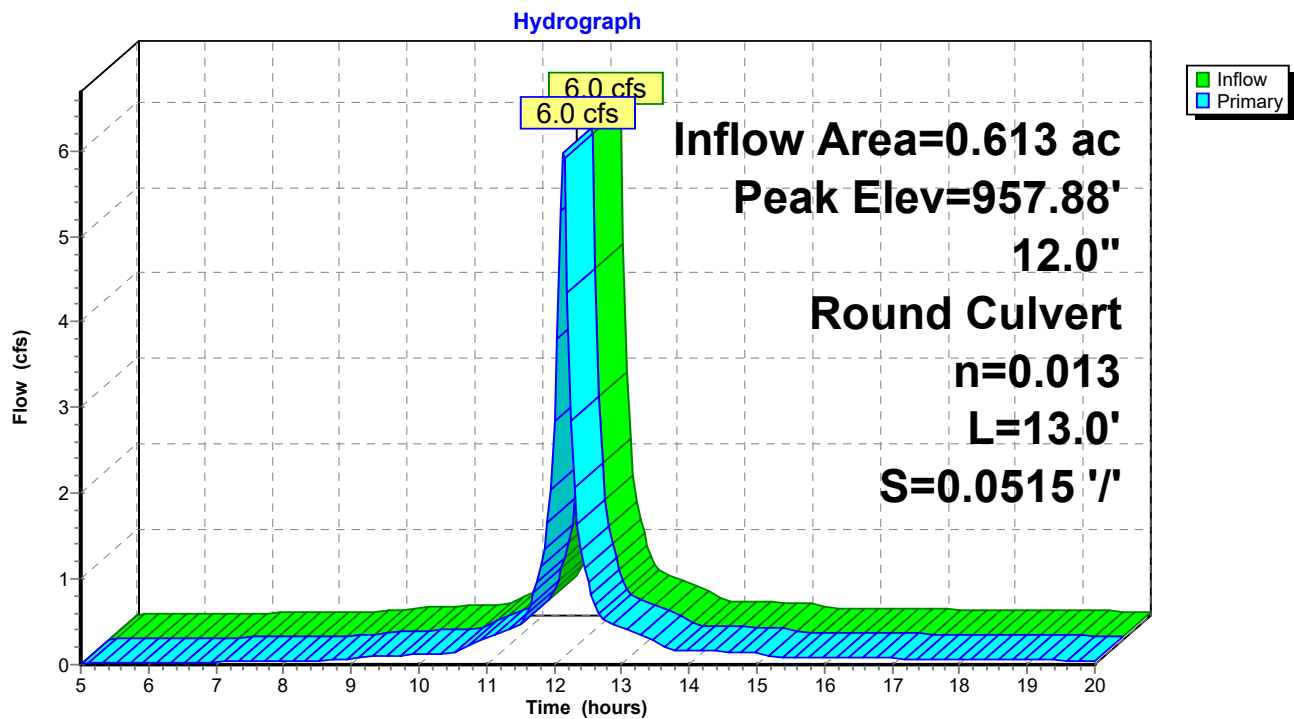
Peak Elev= 957.88' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	954.90'	12.0" Round RCP_Round 12" L= 13.0' Ke= 0.500 Inlet / Outlet Invert= 954.90' / 954.23' S= 0.0515 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=5.8 cfs @ 12.14 hrs HW=957.74' (Free Discharge)

↑1=RCP_Round 12" (Inlet Controls 5.8 cfs @ 7.37 fps)

Pond 4P: (new Pond)

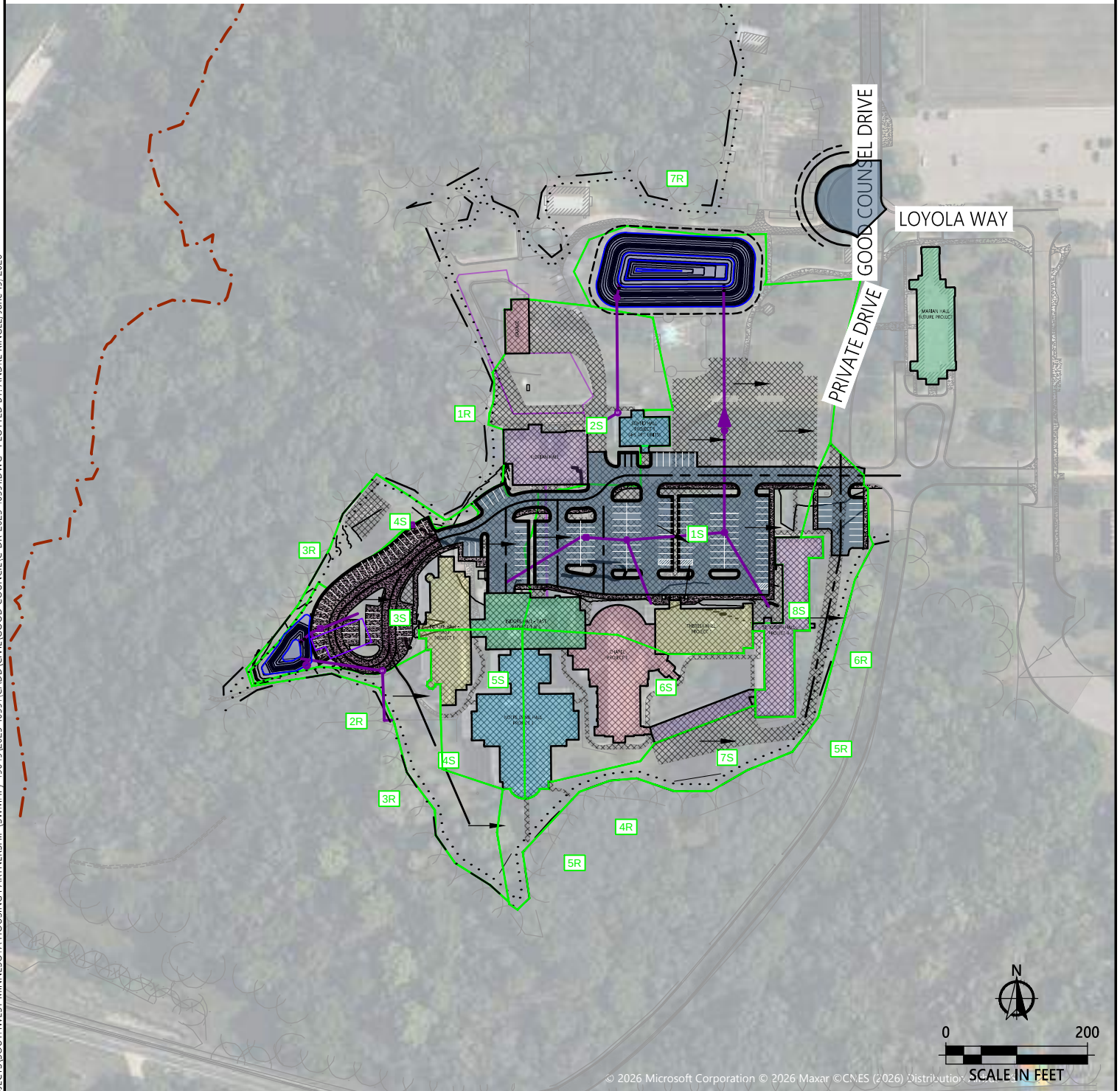


APPENDIX 4

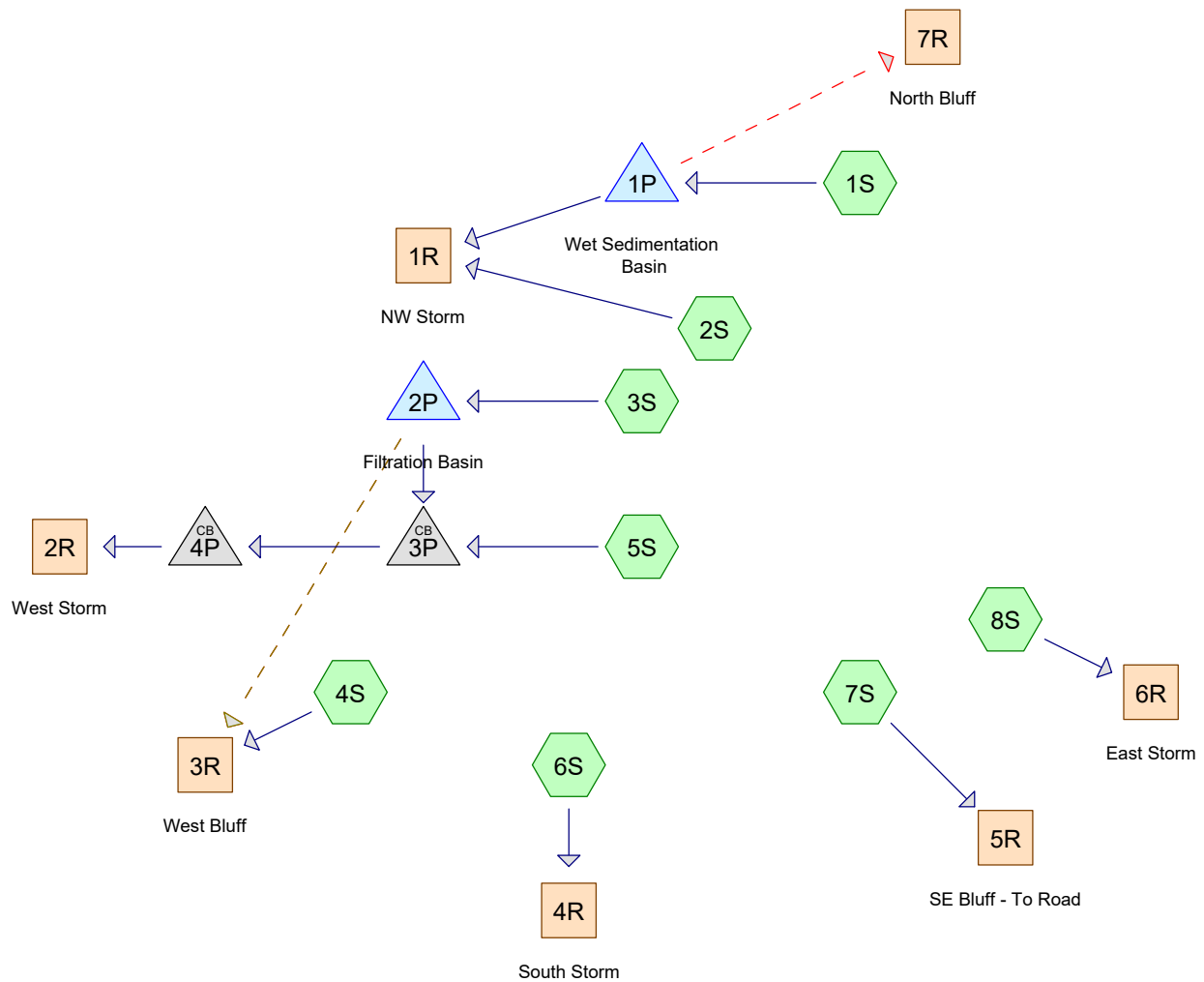
Post-Development Drainage Area Map And HydroCAD Report

POST-DEVELOPMENT DRAINAGE MAP

PROPOSED SUBCATCHMENT BOUNDARY	
PROPOSED IMPERVIOUS AREA	



DRAWN BY: ATR CHECKED BY: CNB	I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL PROFESSION UNDER THE LAWS OF THE STATE OF MINNESOTA.	DATE	REV#	REVISIONS	DESCRIPTION
SIGNER NAME		LIC. NO.: NUMBER		DATE: JANUARY 2026	
WIDSETH ARCHITECTS ■ ENGINEERS ■ SCIENTISTS ■ SURVEYORS	POST-DEVELOPMENT DRAINAGE MAP				-
	GOOD COUNSEL MAIN CAMPUS				PROJECT #: 2025-10591



Routing Diagram for Post-Development

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR	MSE 24-hr	3	Default	24.00	1	1.70	2
2	10-YR	MSE 24-hr	3	Default	24.00	1	4.28	2
3	100-YR	MSE 24-hr	3	Default	24.00	1	7.19	2

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.365	80	>75% Grass cover, Good, HSG D (1S, 2S, 3S, 4S, 5S, 6S, 7S)
5.397	98	Paved parking, HSG D (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S)
10.762	89	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
10.762	HSG D	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S
0.000	Other	
10.762		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	5.365	0.000	5.365	>75% Grass cover, Good	1S, 2S, 3S, 4S, 5S, 6S, 7S
0.000	0.000	0.000	5.397	0.000	5.397	Paved parking	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S
0.000	0.000	0.000	10.762	0.000	10.762	TOTAL AREA	

Post-Development

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MSE 24-hr 3 2-YR Rainfall=1.70"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S:	Runoff Area=175,645 sf 46.16% Impervious Runoff Depth>0.70" Tc=7.0 min CN=88 Runoff=5.1 cfs 0.234 af
Subcatchment2S:	Runoff Area=57,101 sf 58.18% Impervious Runoff Depth>0.81" Tc=7.0 min CN=90 Runoff=1.9 cfs 0.088 af
Subcatchment3S:	Runoff Area=55,265 sf 73.72% Impervious Runoff Depth>1.00" Tc=7.0 min CN=93 Runoff=2.3 cfs 0.106 af
Subcatchment4S:	Runoff Area=39,227 sf 6.44% Impervious Runoff Depth>0.40" Tc=7.0 min CN=81 Runoff=0.6 cfs 0.030 af
Subcatchment5S:	Runoff Area=26,713 sf 64.20% Impervious Runoff Depth>0.93" Tc=7.0 min CN=92 Runoff=1.0 cfs 0.048 af
Subcatchment6S:	Runoff Area=51,828 sf 60.81% Impervious Runoff Depth>0.87" Tc=7.0 min CN=91 Runoff=1.9 cfs 0.086 af
Subcatchment7S:	Runoff Area=50,881 sf 32.92% Impervious Runoff Depth>0.60" Tc=7.0 min CN=86 Runoff=1.3 cfs 0.058 af
Subcatchment8S:	Runoff Area=12,130 sf 100.00% Impervious Runoff Depth>1.43" Tc=7.0 min CN=98 Runoff=0.6 cfs 0.033 af
Reach 1R: NW Storm	Inflow=2.6 cfs 0.312 af Outflow=2.6 cfs 0.312 af
Reach 2R: West Storm	Inflow=1.0 cfs 0.056 af Outflow=1.0 cfs 0.056 af
Reach 3R: West Bluff	Inflow=0.6 cfs 0.030 af Outflow=0.6 cfs 0.030 af
Reach 4R: South Storm	Inflow=1.9 cfs 0.086 af Outflow=1.9 cfs 0.086 af
Reach 5R: SE Bluff - To Road	Inflow=1.3 cfs 0.058 af Outflow=1.3 cfs 0.058 af
Reach 6R: East Storm	Inflow=0.6 cfs 0.033 af Outflow=0.6 cfs 0.033 af
Reach 7R: North Bluff	Inflow=0.0 cfs 0.000 af Outflow=0.0 cfs 0.000 af
Pond 1P: Wet SedimentationBasin	Peak Elev=987.27' Storage=10,188 cf Inflow=5.1 cfs 0.234 af Primary=1.0 cfs 0.224 af Secondary=0.0 cfs 0.000 af Outflow=1.0 cfs 0.224 af

Post-Development

MSE 24-hr 3 2-YR Rainfall=1.70"

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Pond 2P: Filtration Basin

Peak Elev=983.33' Storage=4,241 cf Inflow=2.3 cfs 0.106 af

Primary=0.0 cfs 0.009 af Secondary=0.0 cfs 0.000 af Tertiary=0.0 cfs 0.000 af Outflow=0.0 cfs 0.009 af

Pond 3P:

Peak Elev=979.62' Inflow=1.0 cfs 0.056 af

12.0" Round Culvert n=0.013 L=87.0' S=0.2769 '/' Outflow=1.0 cfs 0.056 af

Pond 4P:

Peak Elev=955.43' Inflow=1.0 cfs 0.056 af

12.0" Round Culvert n=0.013 L=13.0' S=0.0515 '/' Outflow=1.0 cfs 0.056 af

Total Runoff Area = 10.762 ac Runoff Volume = 0.682 af Average Runoff Depth = 0.76"
49.85% Pervious = 5.365 ac 50.15% Impervious = 5.397 ac

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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Subcatchment 1S:

Runoff = 5.1 cfs @ 12.15 hrs, Volume= 0.234 af, Depth> 0.70"
Routed to Pond 1P : Wet Sedimentation Basin

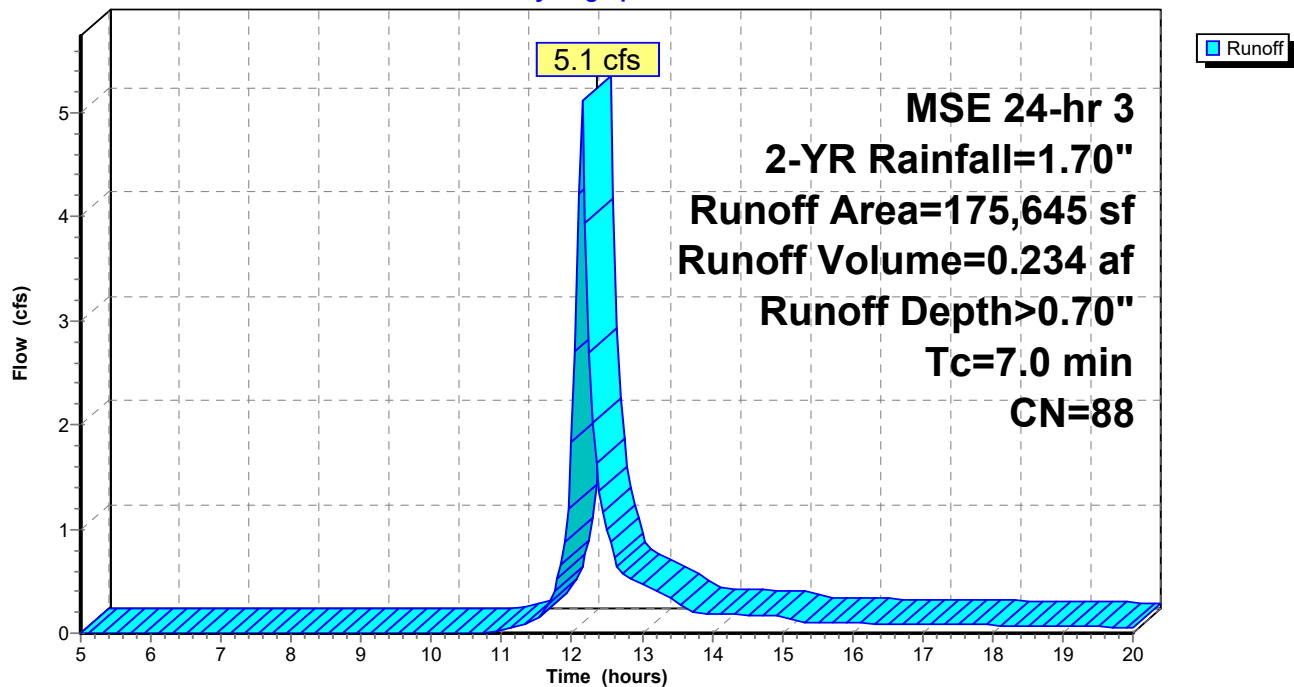
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YR Rainfall=1.70"

Area (sf)	CN	Description
81,069	98	Paved parking, HSG D
94,576	80	>75% Grass cover, Good, HSG D
175,645	88	Weighted Average
94,576		53.84% Pervious Area
81,069		46.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 1S:

Hydrograph



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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Subcatchment 2S:

Runoff = 1.9 cfs @ 12.15 hrs, Volume= 0.088 af, Depth> 0.81"
Routed to Reach 1R : NW Storm

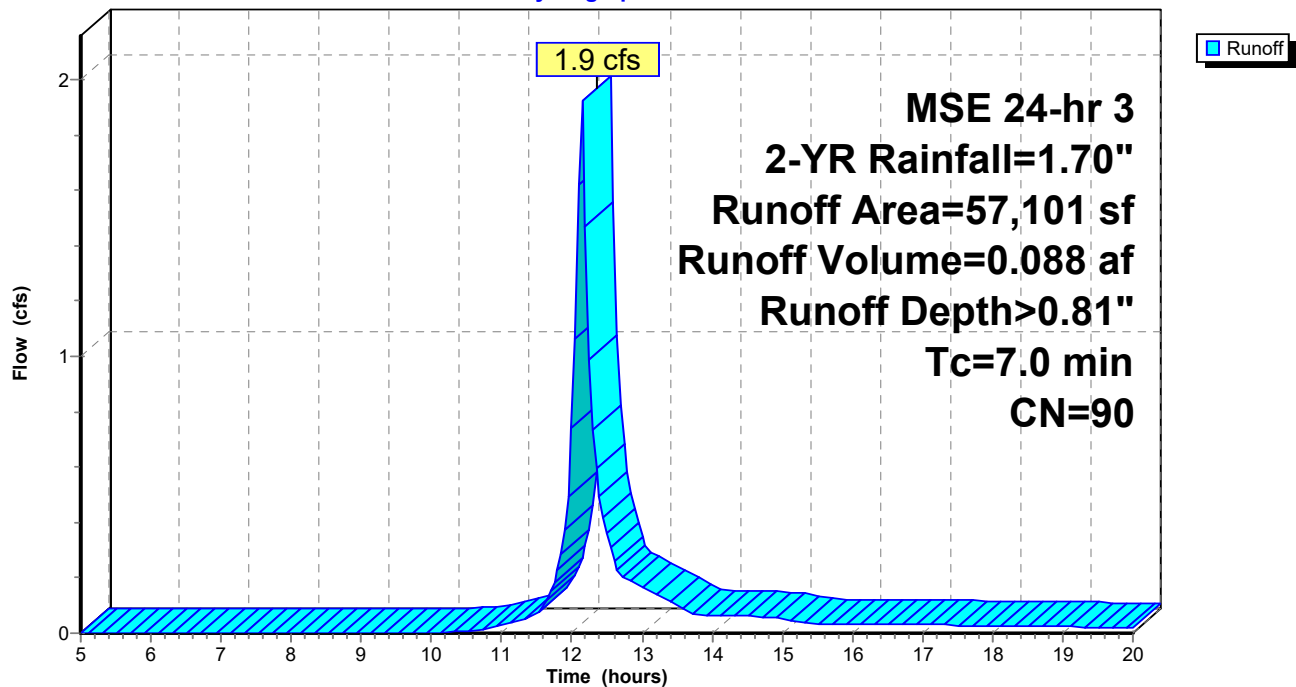
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YR Rainfall=1.70"

Area (sf)	CN	Description
33,220	98	Paved parking, HSG D
23,881	80	>75% Grass cover, Good, HSG D
57,101	90	Weighted Average
23,881		41.82% Pervious Area
33,220		58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 2S:

Hydrograph



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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Subcatchment 3S:

Runoff = 2.3 cfs @ 12.14 hrs, Volume= 0.106 af, Depth> 1.00"
Routed to Pond 2P : Filtration Basin

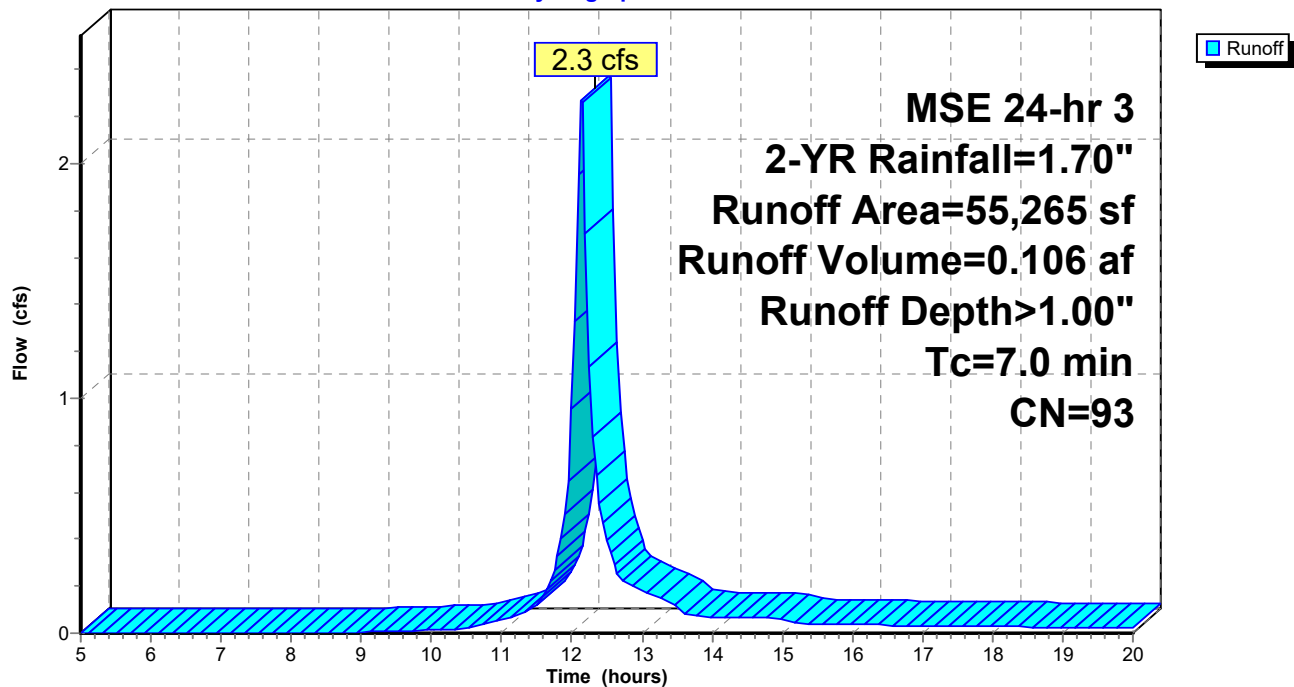
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YR Rainfall=1.70"

Area (sf)	CN	Description
40,744	98	Paved parking, HSG D
14,521	80	>75% Grass cover, Good, HSG D
55,265	93	Weighted Average
14,521		26.28% Pervious Area
40,744		73.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 3S:

Hydrograph



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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Subcatchment 4S:

Runoff = 0.6 cfs @ 12.15 hrs, Volume= 0.030 af, Depth> 0.40"
Routed to Reach 3R : West Bluff

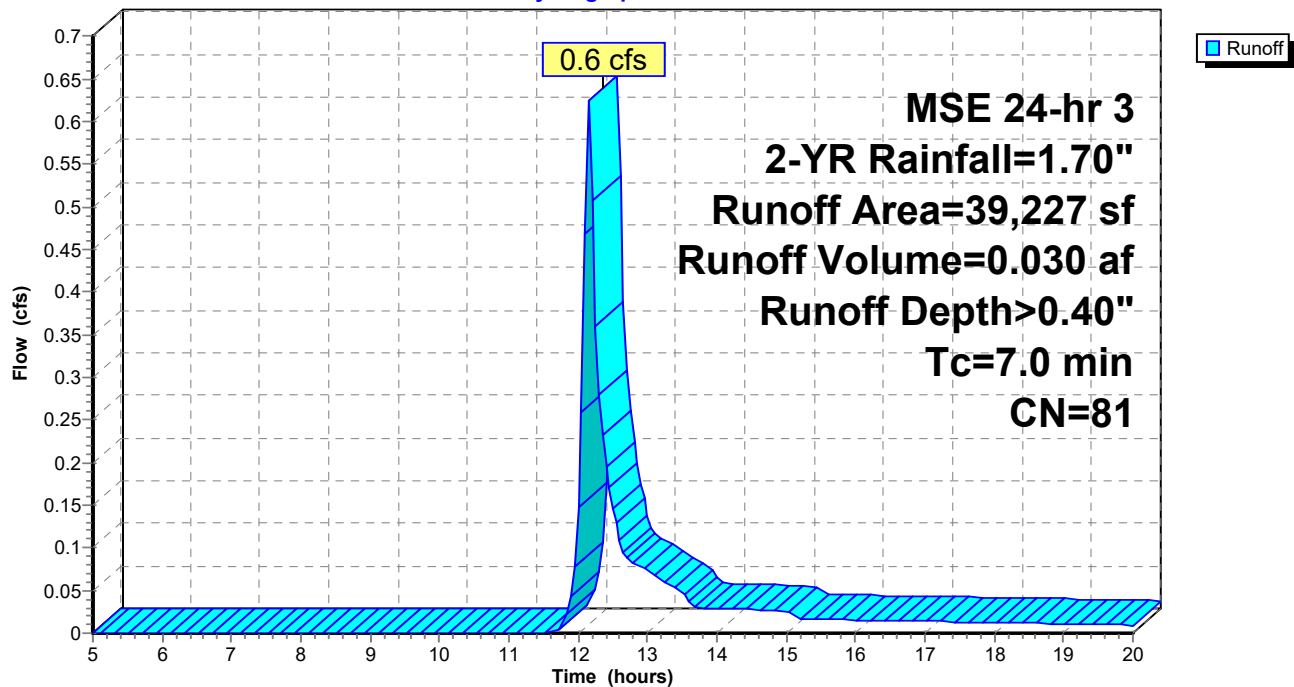
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YR Rainfall=1.70"

Area (sf)	CN	Description
2,525	98	Paved parking, HSG D
36,702	80	>75% Grass cover, Good, HSG D
39,227	81	Weighted Average
36,702		93.56% Pervious Area
2,525		6.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 4S:

Hydrograph



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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Subcatchment 5S:

Runoff = 1.0 cfs @ 12.14 hrs, Volume= 0.048 af, Depth> 0.93"
Routed to Pond 3P :

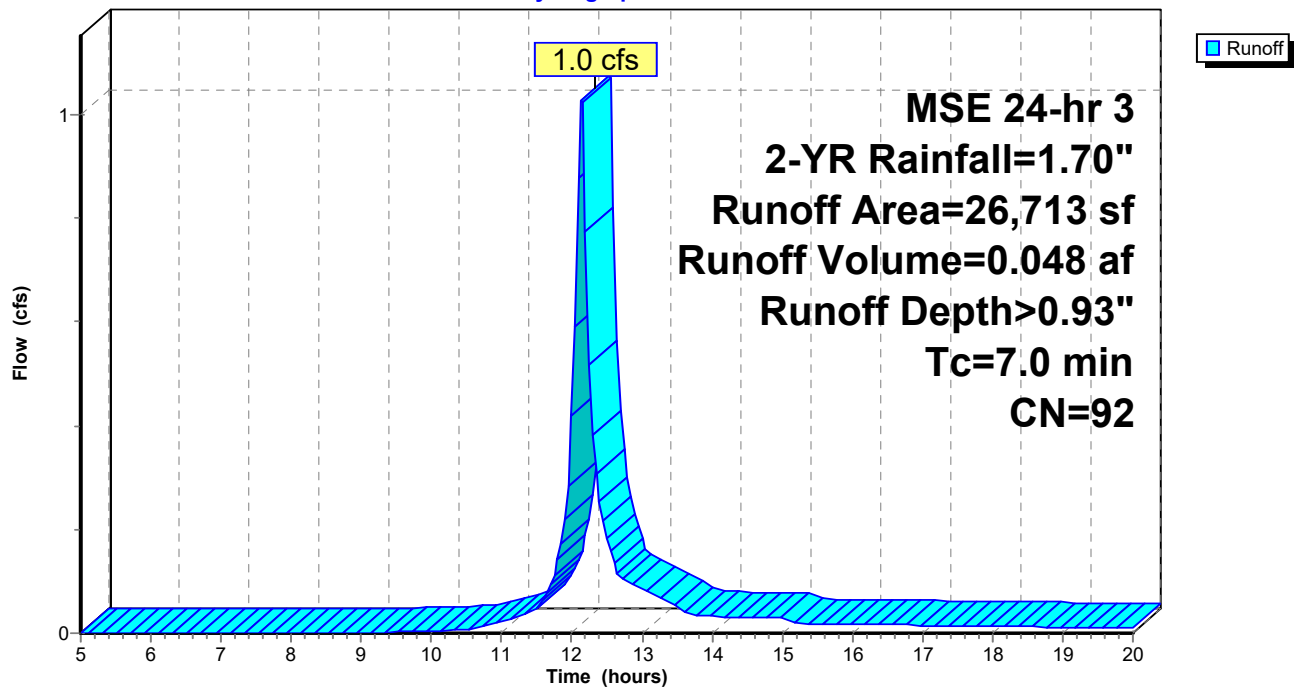
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YR Rainfall=1.70"

Area (sf)	CN	Description
17,151	98	Paved parking, HSG D
9,562	80	>75% Grass cover, Good, HSG D
26,713	92	Weighted Average
9,562		35.80% Pervious Area
17,151		64.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 5S:

Hydrograph



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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Subcatchment 6S:

Runoff = 1.9 cfs @ 12.14 hrs, Volume= 0.086 af, Depth> 0.87"
Routed to Reach 4R : South Storm

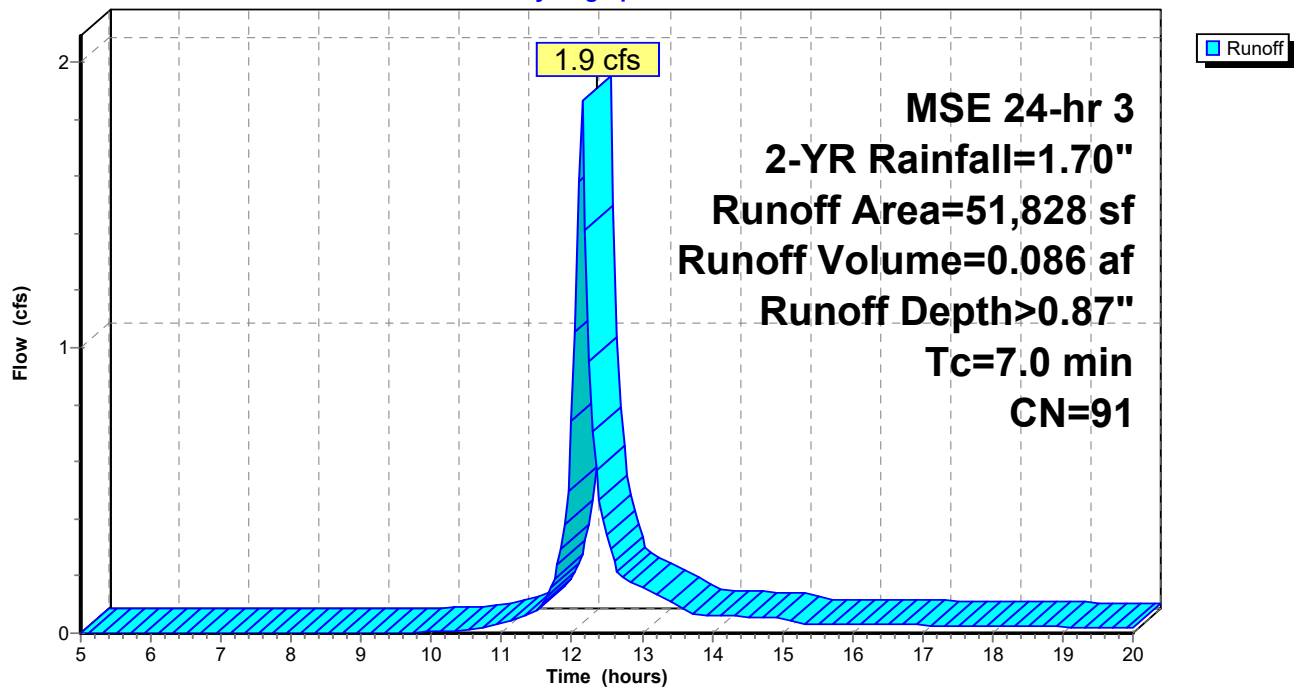
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YR Rainfall=1.70"

Area (sf)	CN	Description
31,516	98	Paved parking, HSG D
20,312	80	>75% Grass cover, Good, HSG D
51,828	91	Weighted Average
20,312		39.19% Pervious Area
31,516		60.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 6S:

Hydrograph



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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Subcatchment 7S:

Runoff = 1.3 cfs @ 12.15 hrs, Volume= 0.058 af, Depth> 0.60"
Routed to Reach 5R : SE Bluff - To Road

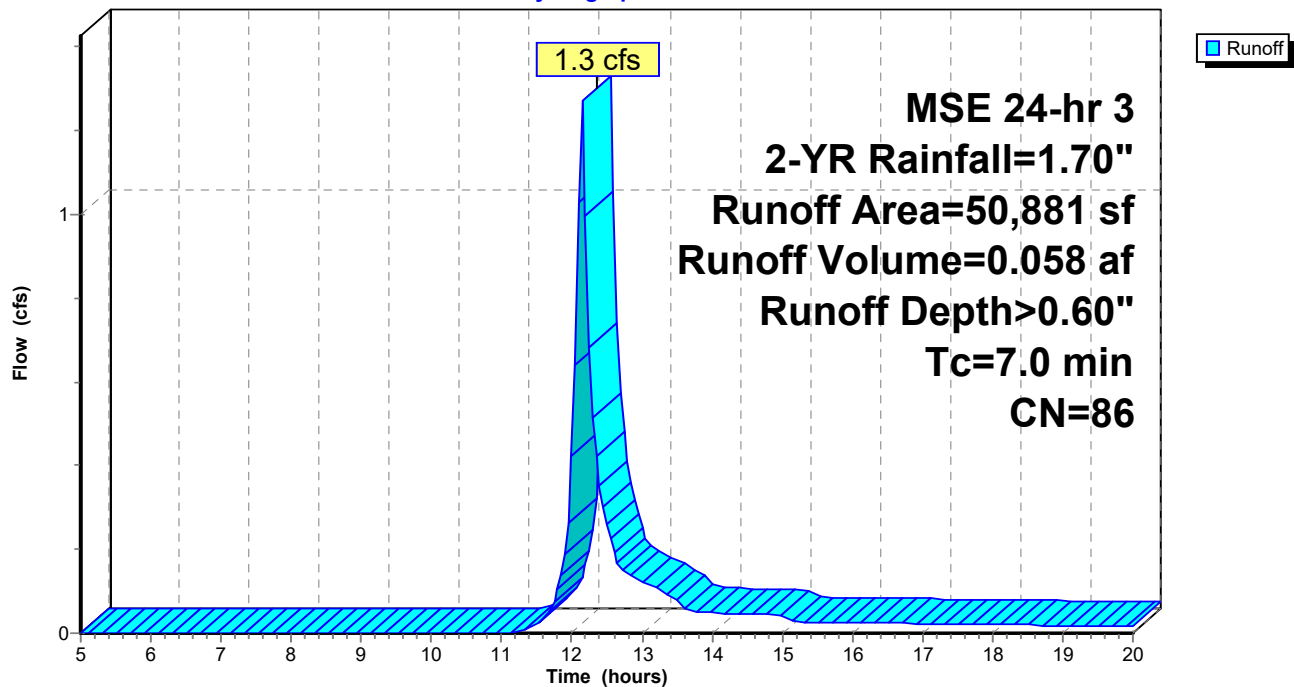
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YR Rainfall=1.70"

Area (sf)	CN	Description
16,752	98	Paved parking, HSG D
34,129	80	>75% Grass cover, Good, HSG D
50,881	86	Weighted Average
34,129		67.08% Pervious Area
16,752		32.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 7S:

Hydrograph



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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Subcatchment 8S:

Runoff = 0.6 cfs @ 12.14 hrs, Volume= 0.033 af, Depth> 1.43"
Routed to Reach 6R : East Storm

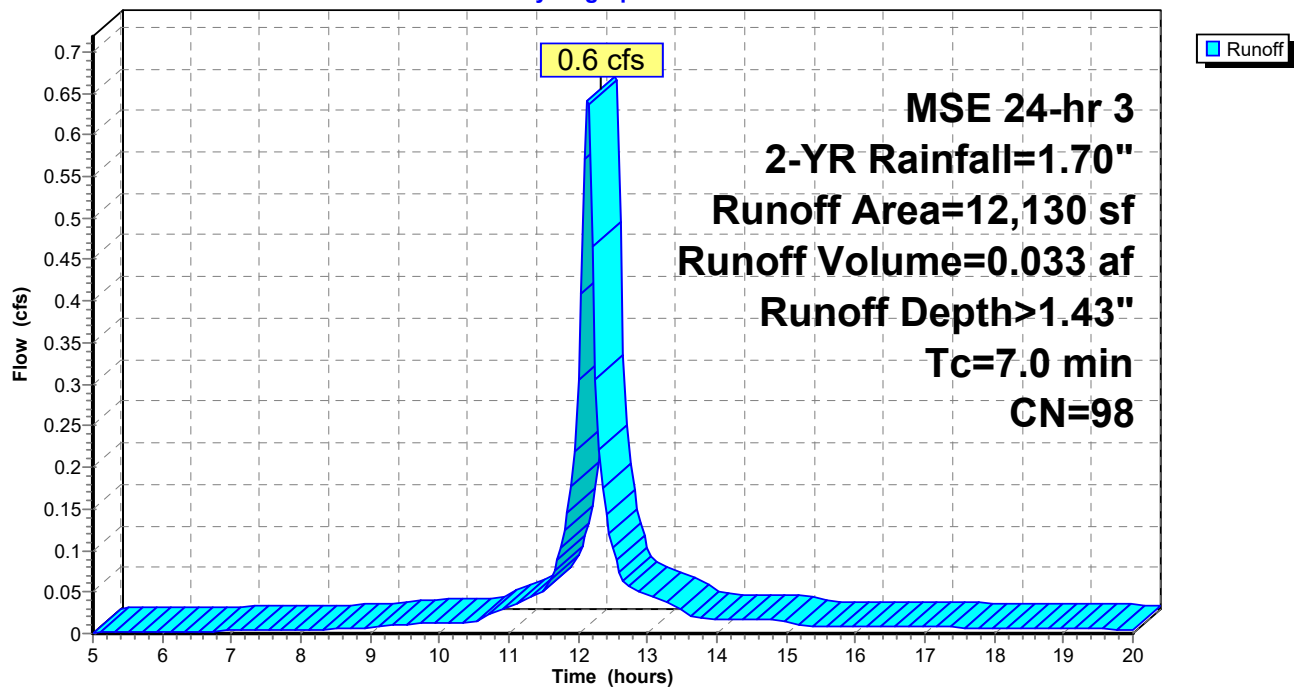
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YR Rainfall=1.70"

Area (sf)	CN	Description
12,130	98	Paved parking, HSG D
0	80	>75% Grass cover, Good, HSG D
12,130	98	Weighted Average
12,130		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 8S:

Hydrograph



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MSE 24-hr 3 2-YR Rainfall=1.70"

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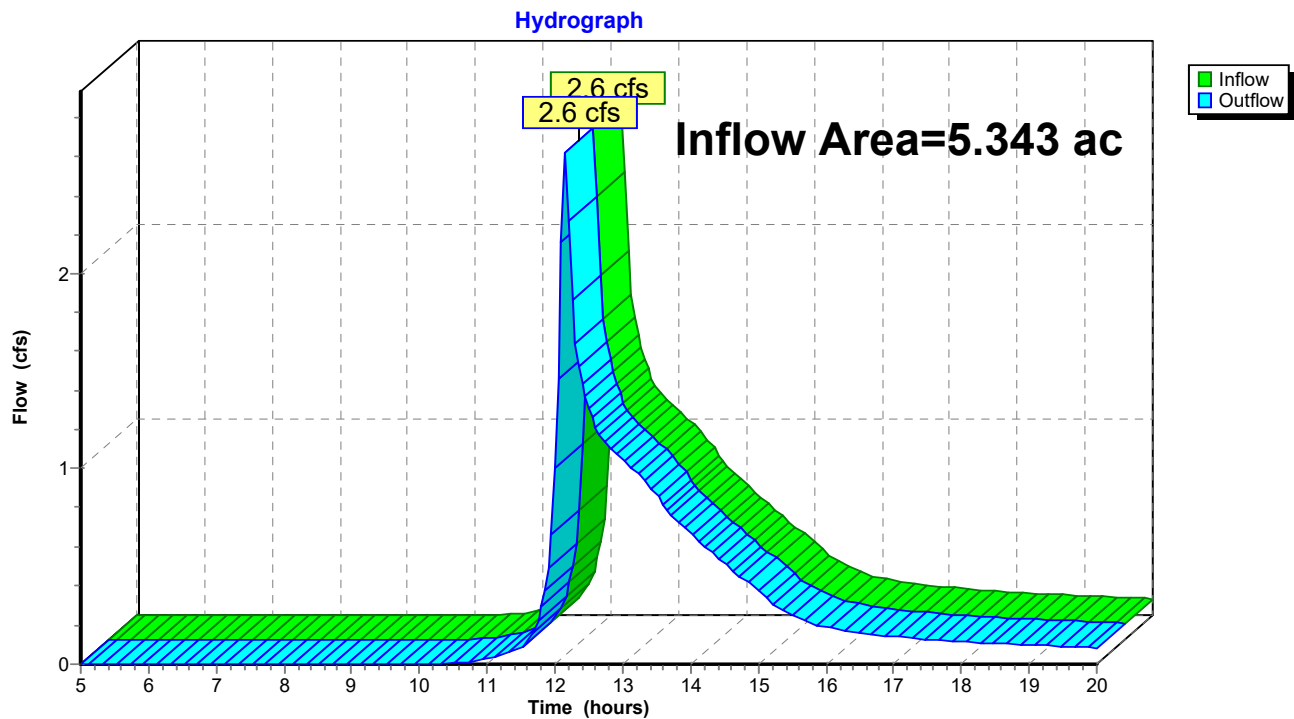
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Summary for Reach 1R: NW Storm

Inflow Area = 5.343 ac, 49.10% Impervious, Inflow Depth > 0.70" for 2-YR event
Inflow = 2.6 cfs @ 12.15 hrs, Volume= 0.312 af
Outflow = 2.6 cfs @ 12.15 hrs, Volume= 0.312 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: NW Storm



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MSE 24-hr 3 2-YR Rainfall=1.70"

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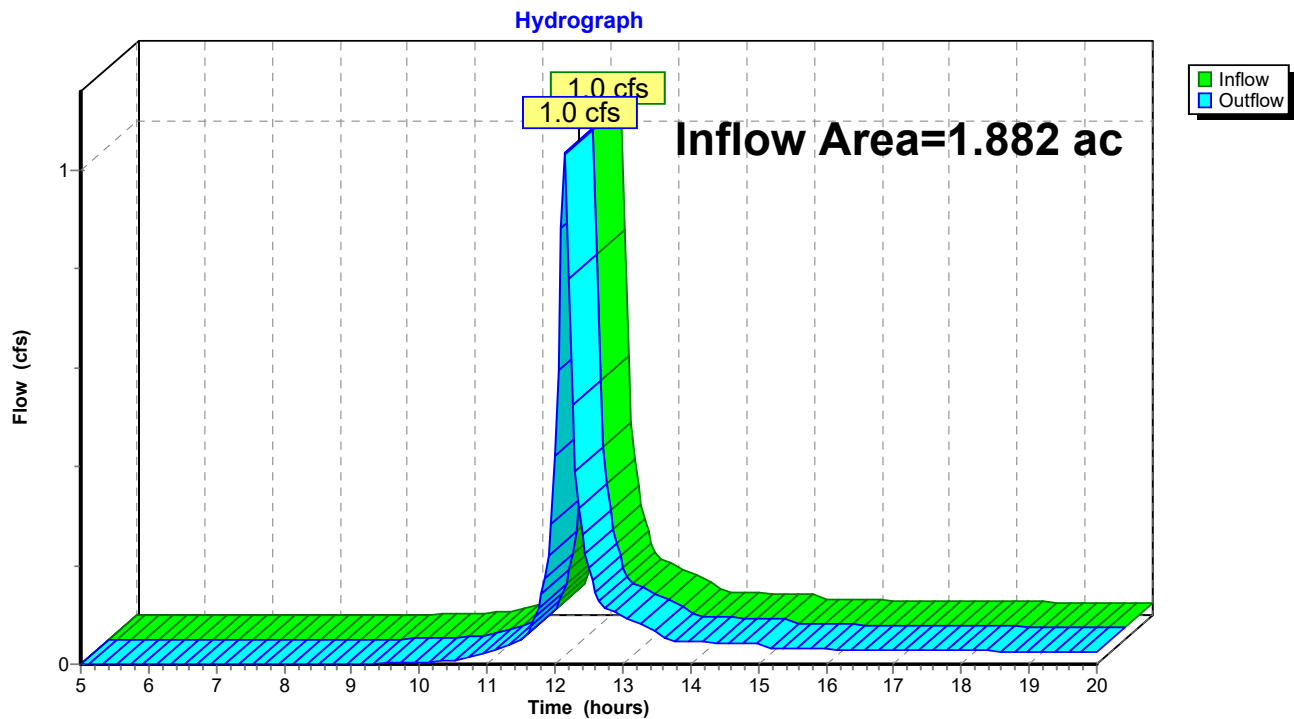
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Summary for Reach 2R: West Storm

Inflow Area = 1.882 ac, 70.62% Impervious, Inflow Depth > 0.36" for 2-YR event
Inflow = 1.0 cfs @ 12.14 hrs, Volume= 0.056 af
Outflow = 1.0 cfs @ 12.14 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: West Storm



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MSE 24-hr 3 2-YR Rainfall=1.70"

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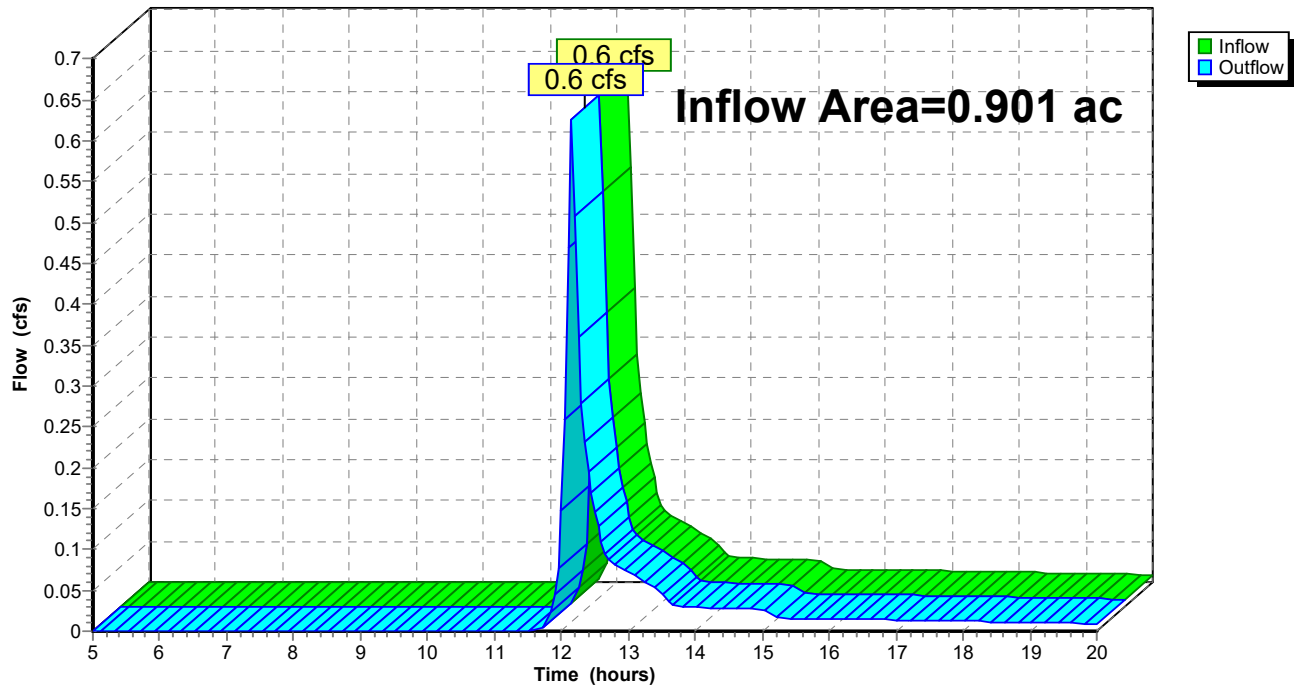
Summary for Reach 3R: West Bluff

Inflow Area = 0.901 ac, 6.44% Impervious, Inflow Depth > 0.40" for 2-YR event
Inflow = 0.6 cfs @ 12.15 hrs, Volume= 0.030 af
Outflow = 0.6 cfs @ 12.15 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: West Bluff

Hydrograph



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MSE 24-hr 3 2-YR Rainfall=1.70"

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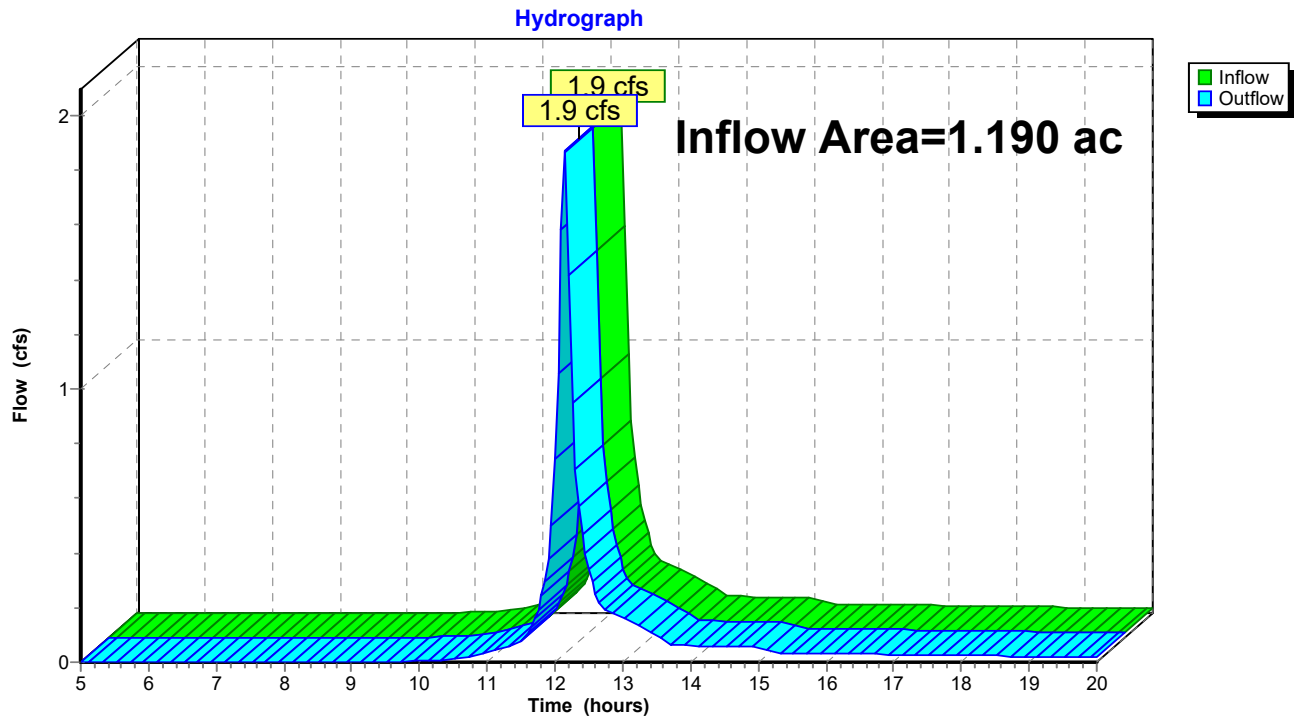
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Summary for Reach 4R: South Storm

Inflow Area = 1.190 ac, 60.81% Impervious, Inflow Depth > 0.87" for 2-YR event
Inflow = 1.9 cfs @ 12.14 hrs, Volume= 0.086 af
Outflow = 1.9 cfs @ 12.14 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 4R: South Storm



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MSE 24-hr 3 2-YR Rainfall=1.70"

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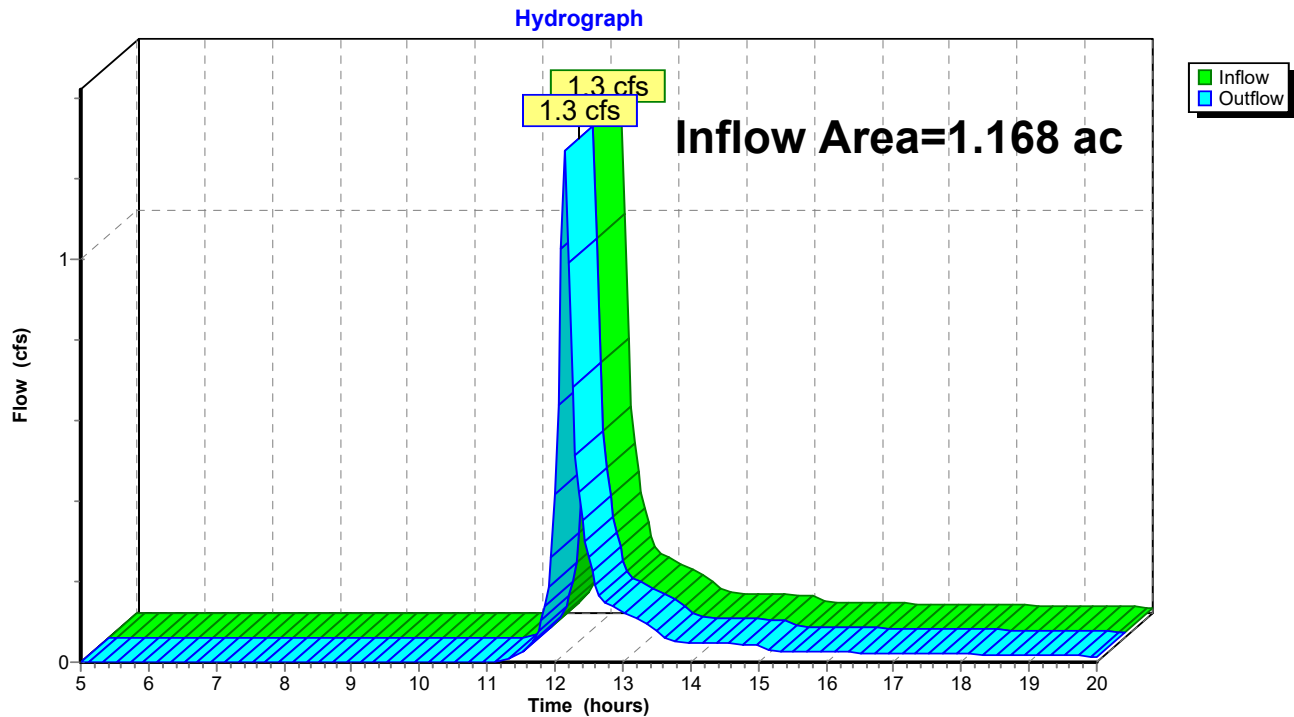
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Summary for Reach 5R: SE Bluff - To Road

Inflow Area = 1.168 ac, 32.92% Impervious, Inflow Depth > 0.60" for 2-YR event
Inflow = 1.3 cfs @ 12.15 hrs, Volume= 0.058 af
Outflow = 1.3 cfs @ 12.15 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 5R: SE Bluff - To Road



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MSE 24-hr 3 2-YR Rainfall=1.70"

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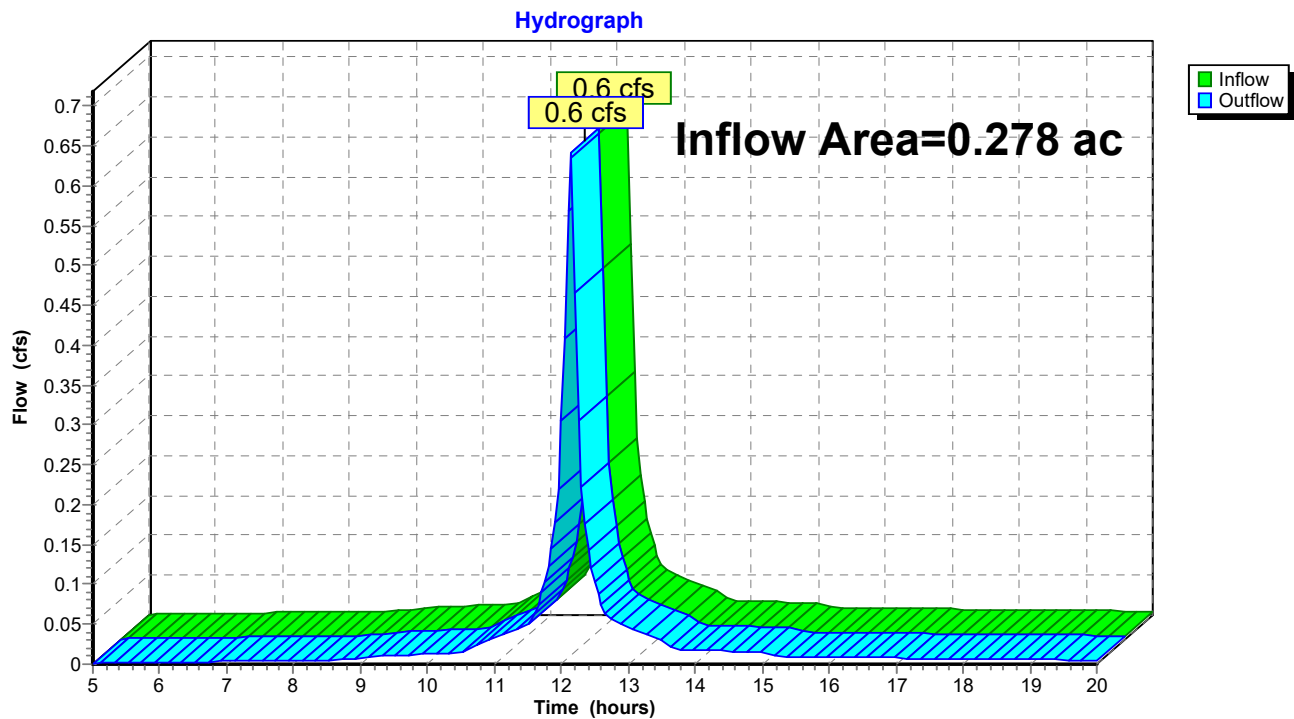
Page 21

Summary for Reach 6R: East Storm

Inflow Area = 0.278 ac, 100.00% Impervious, Inflow Depth > 1.43" for 2-YR event
Inflow = 0.6 cfs @ 12.14 hrs, Volume= 0.033 af
Outflow = 0.6 cfs @ 12.14 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 6R: East Storm



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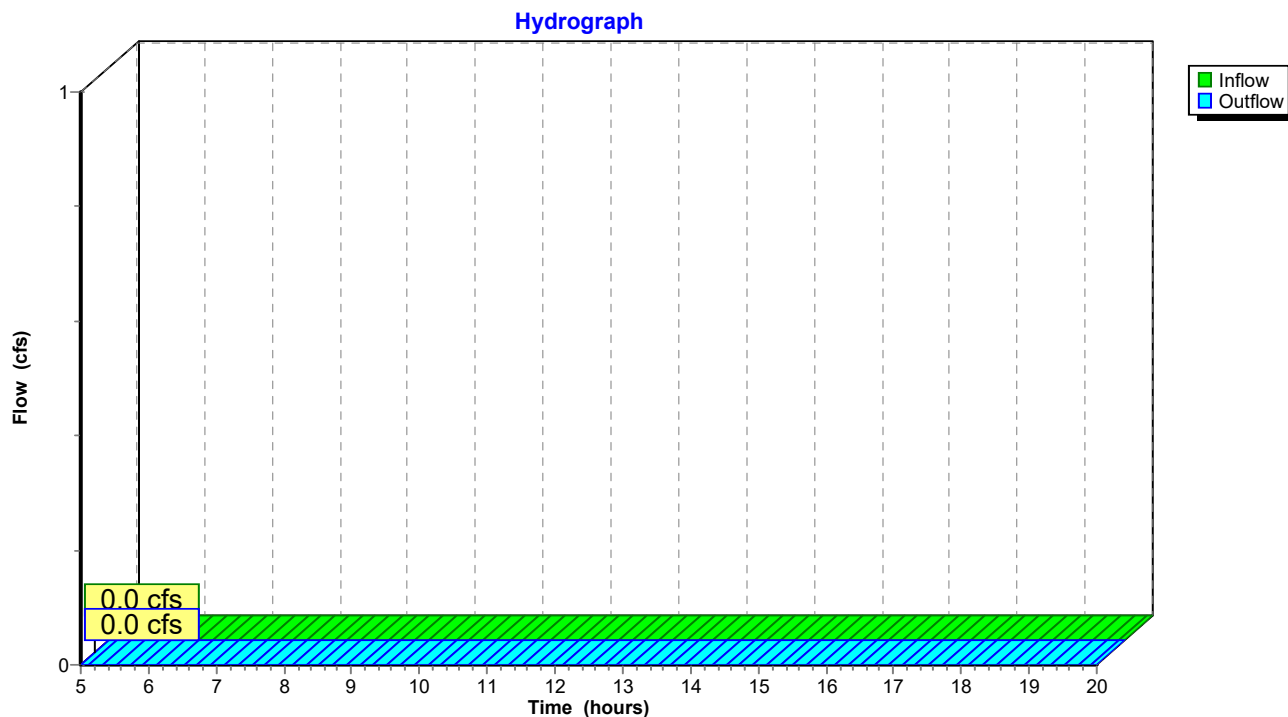
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Summary for Reach 7R: North Bluff

Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 7R: North Bluff



Post-Development

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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Pond 1P: Wet Sedimentation Basin

Inflow Area = 4.032 ac, 46.16% Impervious, Inflow Depth > 0.70" for 2-YR event
Inflow = 5.1 cfs @ 12.15 hrs, Volume= 0.234 af
Outflow = 1.0 cfs @ 12.52 hrs, Volume= 0.224 af, Atten= 81%, Lag= 22.3 min
Primary = 1.0 cfs @ 12.52 hrs, Volume= 0.224 af
Routed to Reach 1R : NW Storm
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach 7R : North Bluff

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Starting Elev= 986.00' Surf.Area= 2,905 sf Storage= 5,818 cf

Peak Elev= 987.27' @ 12.52 hrs Surf.Area= 3,701 sf Storage= 10,188 cf (4,370 cf above start)

Plug-Flow detention time= 228.1 min calculated for 0.090 af (39% of inflow)

Center-of-Mass det. time= 53.6 min (845.7 - 792.1)

Volume	Invert	Avail.Storage	Storage Description
#1	981.00'	52,963 cf	Custom Stage Data (Prismatic) Listed below (Recalc) x 0.5

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
981.00	108	0	0
985.00	3,406	7,028	7,028
986.50	7,012	7,814	14,842
995.00	11,323	77,924	92,765
996.00	15,000	13,162	105,927

Device	Routing	Invert	Outlet Devices
#1	Primary	981.69'	12.0" Round Culvert L= 169.0' Ke= 0.500 Inlet / Outlet Invert= 981.69' / 980.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	986.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	989.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 1.0' Crest Height
#4	Device 1	990.00'	HAALA 48" ID Pond Skimmer Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 Disch. (cfs) 0.000 1.320 3.740 6.870 10.580 14.790 19.250 20.790 22.220 23.570 24.850 30.430 35.140 39.280 43.030 46.480 49.690 52.700 55.560
#5	Secondary	995.50'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Post-Development

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MSE 24-hr 3 2-YR Rainfall=1.70"

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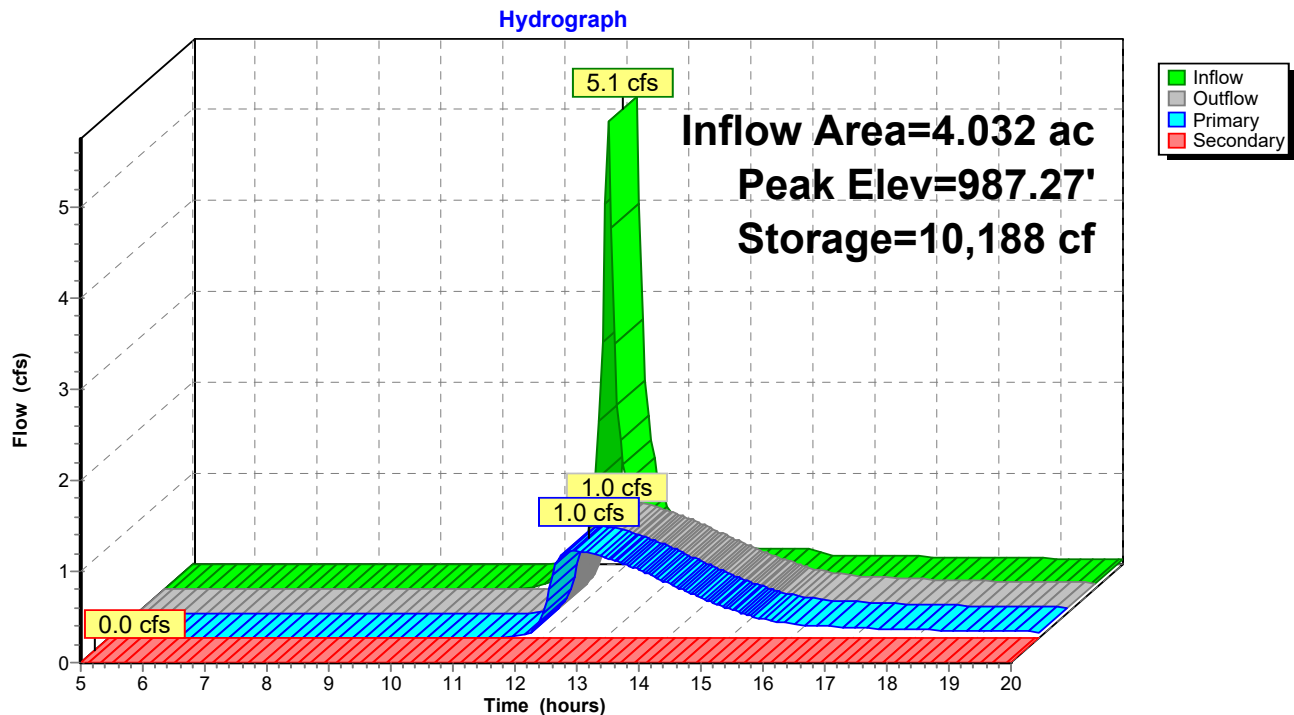
Primary OutFlow Max=1.0 cfs @ 12.52 hrs HW=987.27' (Free Discharge)

- 1=Culvert (Passes 1.0 cfs of 6.0 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 1.0 cfs @ 4.86 fps)
- 3=Sharp-Crested Rectangular Weir(Controls 0.0 cfs)
- 4=HAALA 48" ID Pond Skimmer(Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=986.00' (Free Discharge)

- 5=Broad-Crested Rectangular Weir(Controls 0.0 cfs)

Pond 1P: Wet Sedimentation Basin



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Summary for Pond 2P: Filtration Basin

Inflow Area = 1.269 ac, 73.72% Impervious, Inflow Depth > 1.00" for 2-YR event
Inflow = 2.3 cfs @ 12.14 hrs, Volume= 0.106 af
Outflow = 0.0 cfs @ 20.00 hrs, Volume= 0.009 af, Atten= 99%, Lag= 471.4 min
Primary = 0.0 cfs @ 20.00 hrs, Volume= 0.009 af
Routed to Pond 3P :
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach 3R : West Bluff
Tertiary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach 3R : West Bluff

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 983.33' @ 20.00 hrs Surf.Area= 679 sf Storage= 4,241 cf

Plug-Flow detention time= 315.8 min calculated for 0.009 af (8% of inflow)
Center-of-Mass det. time= 202.3 min (978.7 - 776.4)

Volume	Invert	Avail.Storage	Storage Description
#1	982.00'	6,940 cf	Custom Stage Data (Prismatic) Listed below (Recalc) x 0.5
#2A	981.25'	3,536 cf	36.08'W x 70.23'L x 5.50'H Field A Impervious 13,938 cf Overall - 5,097 cf Embedded = 8,841 cf x 40.0% Voids
#3A	982.00'	5,097 cf	ADS_StormTech MC-3500 d +Cap x 45 Inside #2 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 45 Chambers in 5 Rows Cap Storage= 14.9 cf x 2 x 5 rows = 149.0 cf
		15,573 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
982.00	588	0	0
987.00	3,470	10,145	10,145
988.00	4,000	3,735	13,880

Device	Routing	Invert	Outlet Devices
#1	Primary	980.00'	12.0" Round Culvert L= 200.0' Ke= 0.500 Inlet / Outlet Invert= 980.00' / 978.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	982.00'	1.630 in/hr Exfiltration over Surface area above 982.00' Excluded Surface area = 294 sf Phase-In= 0.01'
#3	Device 1	983.50'	24" Nyloplast Dome Grate X 0.50 Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 Disch. (cfs) 0.000 0.660 1.870 3.440 5.290 6.400 7.010 7.570 8.100 8.590 9.050 11.090 12.800 14.310 15.680 16.940 18.100 19.200 20.240
#4	Secondary	986.50'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

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			2.50	3.00	3.50	4.00	4.50	5.00	5.50				
			Coef. (English)	2.34	2.50	2.70	2.68	2.68	2.66	2.65	2.65	2.65	2.65
				2.65	2.67	2.66	2.68	2.70	2.74	2.79	2.88		
#5	Tertiary	987.00'	133.0' long x 3.0' breadth Broad-Crested Rectangular Weir										
			Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00
				2.50	3.00	3.50	4.00	4.50					
			Coef. (English)	2.44	2.58	2.68	2.67	2.65	2.64	2.64	2.68	2.68	
				2.72	2.81	2.92	2.97	3.07	3.32				

Primary OutFlow Max=0.0 cfs @ 20.00 hrs HW=983.33' (Free Discharge)

1=Culvert (Passes 0.0 cfs of 4.7 cfs potential flow)

2=Exfiltration (Exfiltration Controls 0.0 cfs)

3=24" Nyloplast Dome Grate (Controls 0.0 cfs)

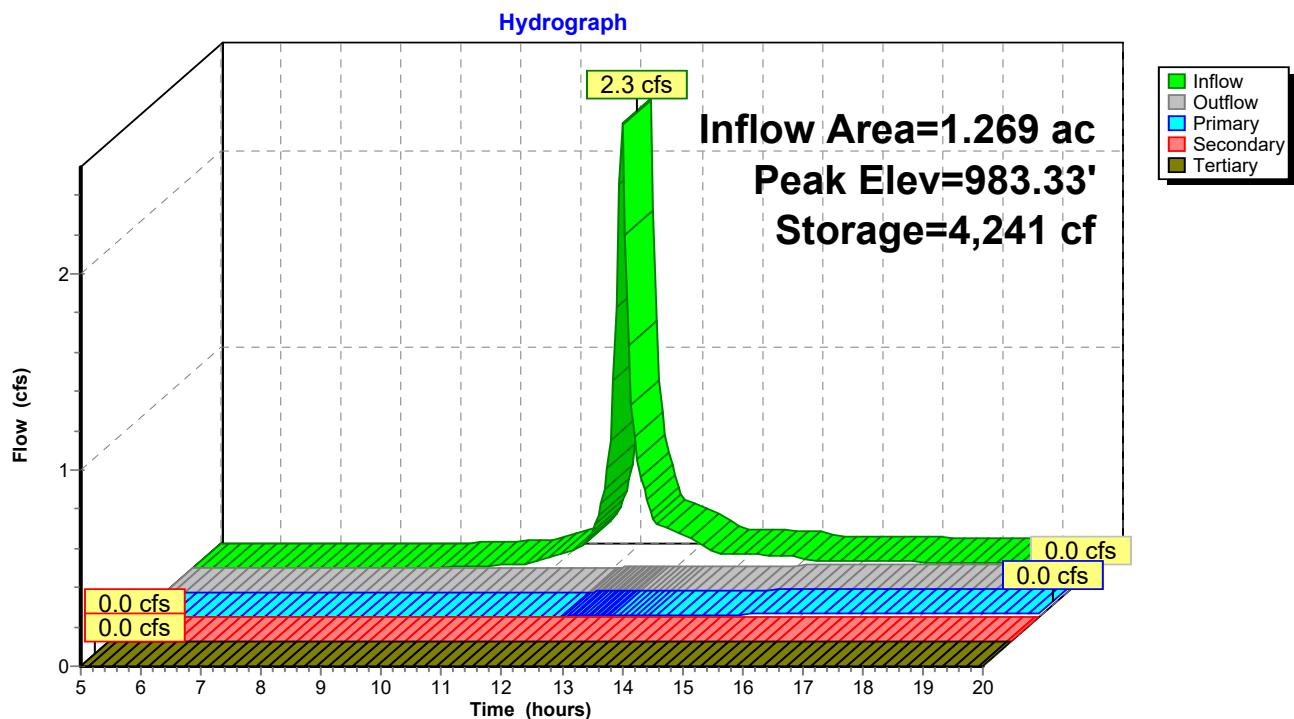
Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=981.25' (Free Discharge)

4=Broad-Crested Rectangular Weir(Controls 0.0 cfs)

Tertiary OutFlow Max=0.0 cfs @ 5.00 hrs HW=981.25' (Free Discharge)

5=Broad-Crested Rectangular Weir(Controls 0.0 cfs)

Pond 2P: Filtration Basin



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Summary for Pond 3P:

Inflow Area = 1.882 ac, 70.62% Impervious, Inflow Depth > 0.36" for 2-YR event
Inflow = 1.0 cfs @ 12.14 hrs, Volume= 0.056 af
Outflow = 1.0 cfs @ 12.14 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Primary = 1.0 cfs @ 12.14 hrs, Volume= 0.056 af
Routed to Pond 4P :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

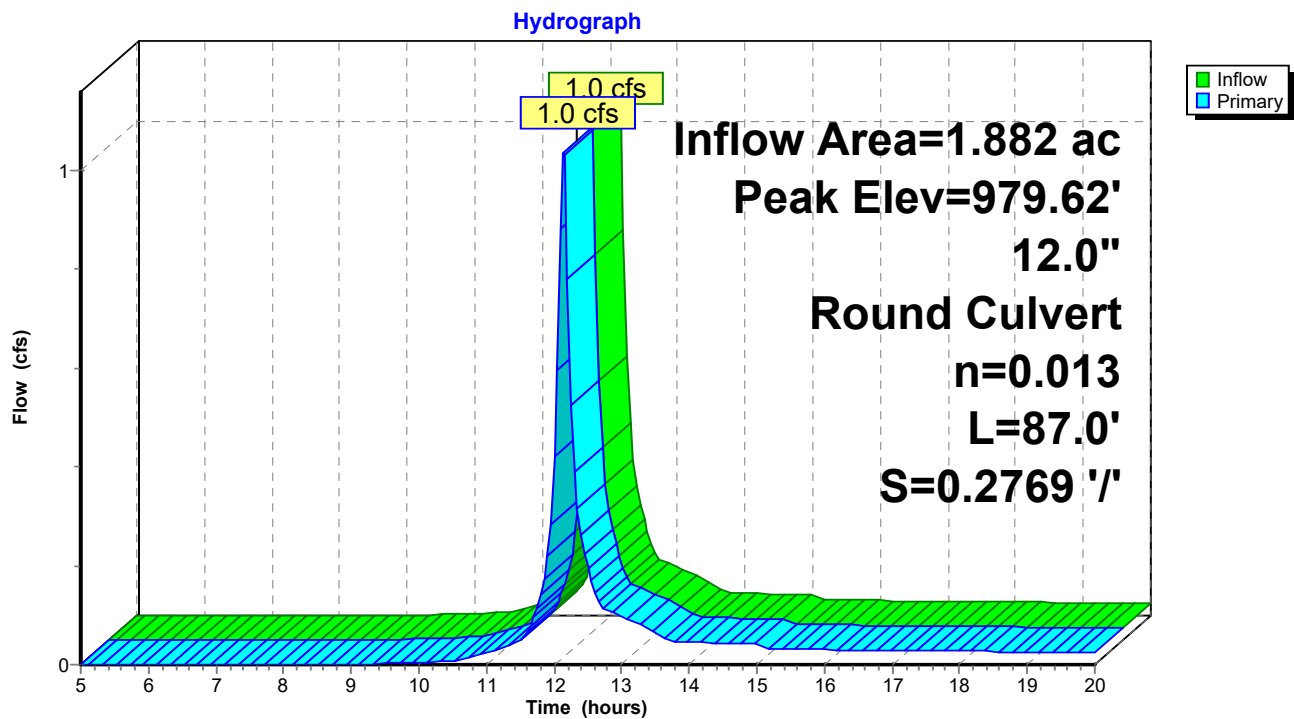
Peak Elev= 979.62' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	979.09'	12.0" Round RCP_Round 12" L= 87.0' Ke= 0.500 Inlet / Outlet Invert= 979.09' / 955.00' S= 0.2769 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=1.0 cfs @ 12.14 hrs HW=979.61' (Free Discharge)

↑1=RCP_Round 12" (Inlet Controls 1.0 cfs @ 2.45 fps)

Pond 3P:



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MSE 24-hr 3 2-YR Rainfall=1.70"

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Summary for Pond 4P:

Inflow Area = 1.882 ac, 70.62% Impervious, Inflow Depth > 0.36" for 2-YR event
Inflow = 1.0 cfs @ 12.14 hrs, Volume= 0.056 af
Outflow = 1.0 cfs @ 12.14 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Primary = 1.0 cfs @ 12.14 hrs, Volume= 0.056 af
Routed to Reach 2R : West Storm

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

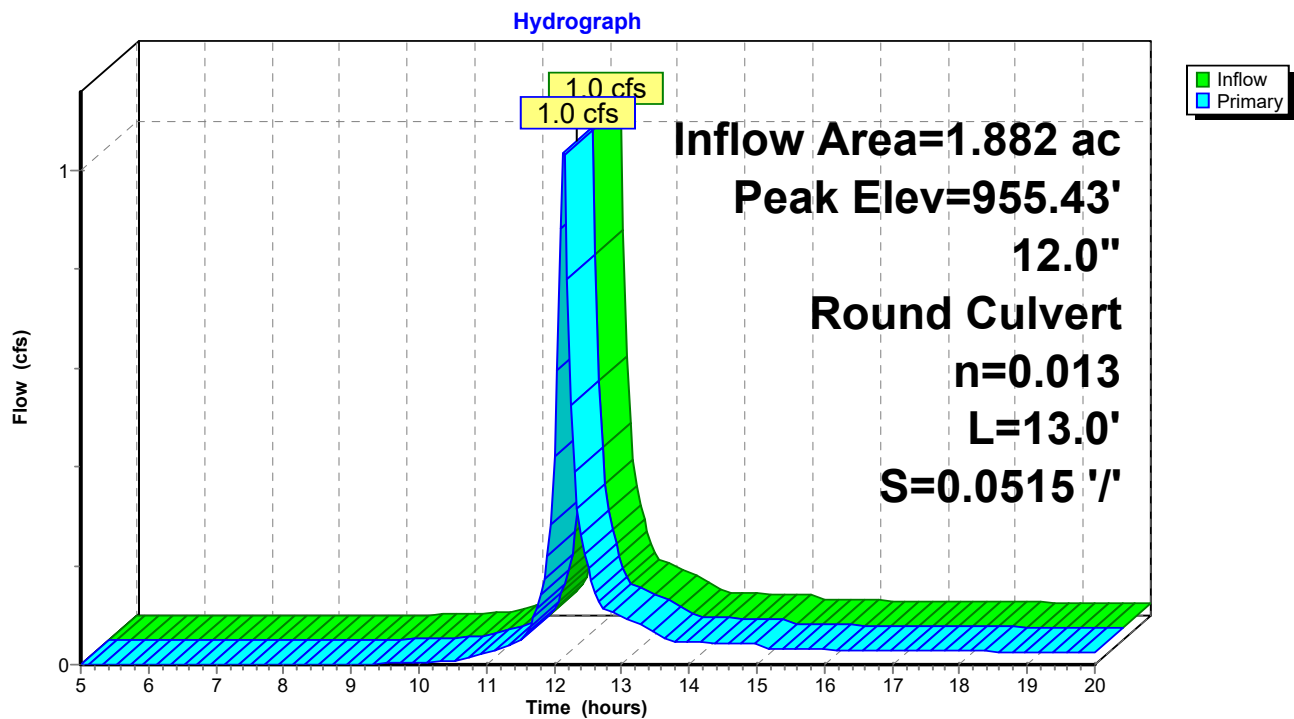
Peak Elev= 955.43' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	954.90'	12.0" Round RCP_Round 12" L= 13.0' Ke= 0.500 Inlet / Outlet Invert= 954.90' / 954.23' S= 0.0515 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=1.0 cfs @ 12.14 hrs HW=955.42' (Free Discharge)

↑1=RCP_Round 12" (Inlet Controls 1.0 cfs @ 2.45 fps)

Pond 4P:



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MSE 24-hr 3 10-YR Rainfall=4.28"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S:	Runoff Area=175,645 sf 46.16% Impervious Runoff Depth>2.88" Tc=7.0 min CN=88 Runoff=20.2 cfs 0.968 af
Subcatchment2S:	Runoff Area=57,101 sf 58.18% Impervious Runoff Depth>3.08" Tc=7.0 min CN=90 Runoff=6.9 cfs 0.336 af
Subcatchment3S:	Runoff Area=55,265 sf 73.72% Impervious Runoff Depth>3.38" Tc=7.0 min CN=93 Runoff=7.1 cfs 0.357 af
Subcatchment4S:	Runoff Area=39,227 sf 6.44% Impervious Runoff Depth>2.26" Tc=7.0 min CN=81 Runoff=3.7 cfs 0.170 af
Subcatchment5S:	Runoff Area=26,713 sf 64.20% Impervious Runoff Depth>3.28" Tc=7.0 min CN=92 Runoff=3.4 cfs 0.167 af
Subcatchment6S:	Runoff Area=51,828 sf 60.81% Impervious Runoff Depth>3.18" Tc=7.0 min CN=91 Runoff=6.4 cfs 0.315 af
Subcatchment7S:	Runoff Area=50,881 sf 32.92% Impervious Runoff Depth>2.70" Tc=7.0 min CN=86 Runoff=5.6 cfs 0.262 af
Subcatchment8S:	Runoff Area=12,130 sf 100.00% Impervious Runoff Depth>3.89" Tc=7.0 min CN=98 Runoff=1.7 cfs 0.090 af
Reach 1R: NW Storm	Inflow=13.9 cfs 1.285 af Outflow=13.9 cfs 1.285 af
Reach 2R: West Storm	Inflow=7.0 cfs 0.416 af Outflow=7.0 cfs 0.416 af
Reach 3R: West Bluff	Inflow=3.7 cfs 0.170 af Outflow=3.7 cfs 0.170 af
Reach 4R: South Storm	Inflow=6.4 cfs 0.315 af Outflow=6.4 cfs 0.315 af
Reach 5R: SE Bluff - To Road	Inflow=5.6 cfs 0.262 af Outflow=5.6 cfs 0.262 af
Reach 6R: East Storm	Inflow=1.7 cfs 0.090 af Outflow=1.7 cfs 0.090 af
Reach 7R: North Bluff	Inflow=0.0 cfs 0.000 af Outflow=0.0 cfs 0.000 af
Pond 1P: Wet SedimentationBasin	Peak Elev=990.22' Storage=22,234 cf Inflow=20.2 cfs 0.968 af Primary=7.3 cfs 0.949 af Secondary=0.0 cfs 0.000 af Outflow=7.3 cfs 0.949 af

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MSE 24-hr 3 10-YR Rainfall=4.28"

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Pond 2P: Filtration Basin

Peak Elev=984.29' Storage=6,885 cf Inflow=7.1 cfs 0.357 af

Primary=4.1 cfs 0.249 af Secondary=0.0 cfs 0.000 af Tertiary=0.0 cfs 0.000 af Outflow=4.1 cfs 0.249 af

Pond 3P:

Peak Elev=983.00' Inflow=7.0 cfs 0.416 af

12.0" Round Culvert n=0.013 L=87.0' S=0.2769 '/' Outflow=7.0 cfs 0.416 af

Pond 4P:

Peak Elev=958.81' Inflow=7.0 cfs 0.416 af

12.0" Round Culvert n=0.013 L=13.0' S=0.0515 '/' Outflow=7.0 cfs 0.416 af

Total Runoff Area = 10.762 ac Runoff Volume = 2.666 af Average Runoff Depth = 2.97"

49.85% Pervious = 5.365 ac 50.15% Impervious = 5.397 ac

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MSE 24-hr 3 10-YR Rainfall=4.28"

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Summary for Subcatchment 1S:

Runoff = 20.2 cfs @ 12.14 hrs, Volume= 0.968 af, Depth> 2.88"
Routed to Pond 1P : Wet Sedimentation Basin

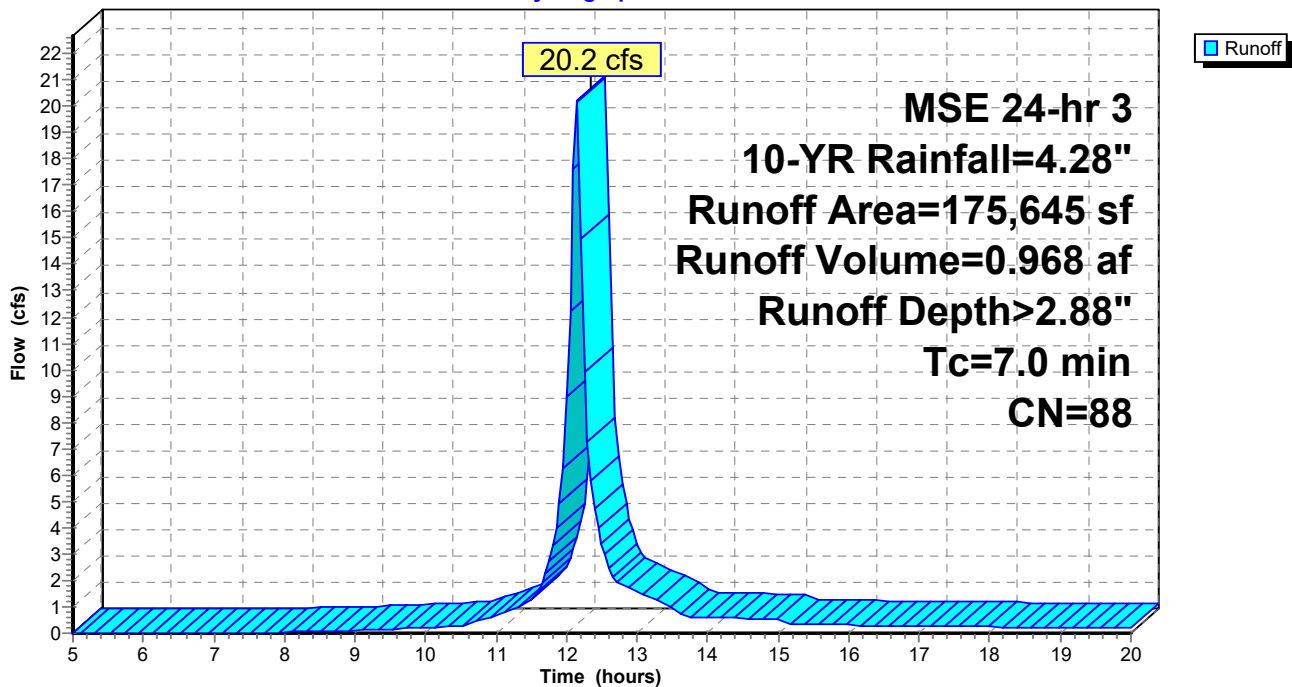
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YR Rainfall=4.28"

Area (sf)	CN	Description
81,069	98	Paved parking, HSG D
94,576	80	>75% Grass cover, Good, HSG D
175,645	88	Weighted Average
94,576		53.84% Pervious Area
81,069		46.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 1S:

Hydrograph



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MSE 24-hr 3 10-YR Rainfall=4.28"

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Summary for Subcatchment 2S:

Runoff = 6.9 cfs @ 12.14 hrs, Volume= 0.336 af, Depth> 3.08"
Routed to Reach 1R : NW Storm

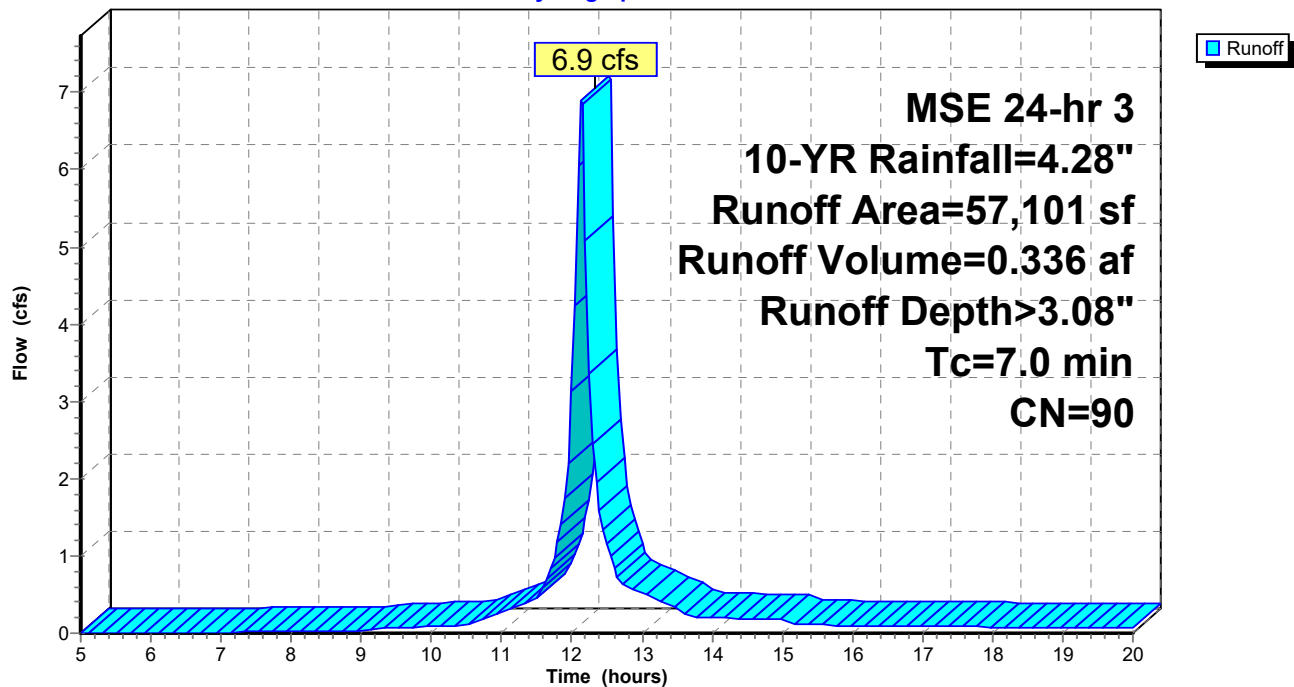
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YR Rainfall=4.28"

Area (sf)	CN	Description
33,220	98	Paved parking, HSG D
23,881	80	>75% Grass cover, Good, HSG D
57,101	90	Weighted Average
23,881		41.82% Pervious Area
33,220		58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 2S:

Hydrograph



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Summary for Subcatchment 3S:

Runoff = 7.1 cfs @ 12.14 hrs, Volume= 0.357 af, Depth> 3.38"
Routed to Pond 2P : Filtration Basin

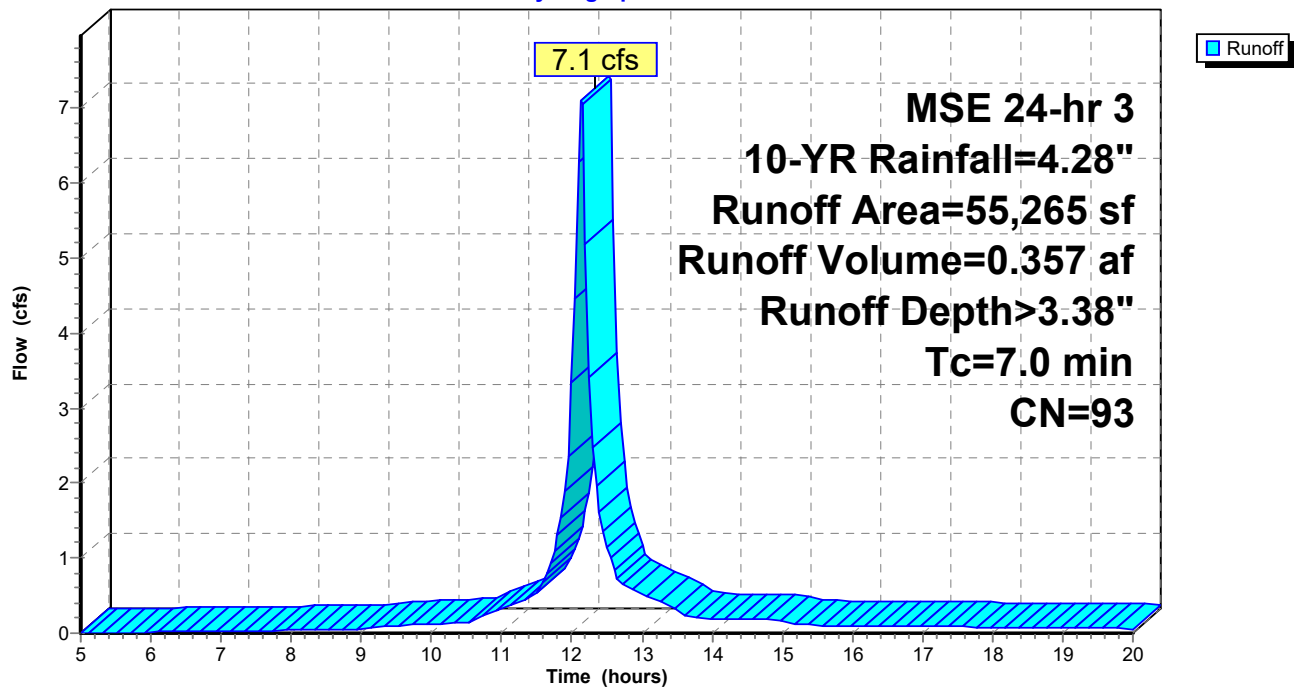
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YR Rainfall=4.28"

Area (sf)	CN	Description
40,744	98	Paved parking, HSG D
14,521	80	>75% Grass cover, Good, HSG D
55,265	93	Weighted Average
14,521		26.28% Pervious Area
40,744		73.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 3S:

Hydrograph



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Summary for Subcatchment 4S:

Runoff = 3.7 cfs @ 12.14 hrs, Volume= 0.170 af, Depth> 2.26"
Routed to Reach 3R : West Bluff

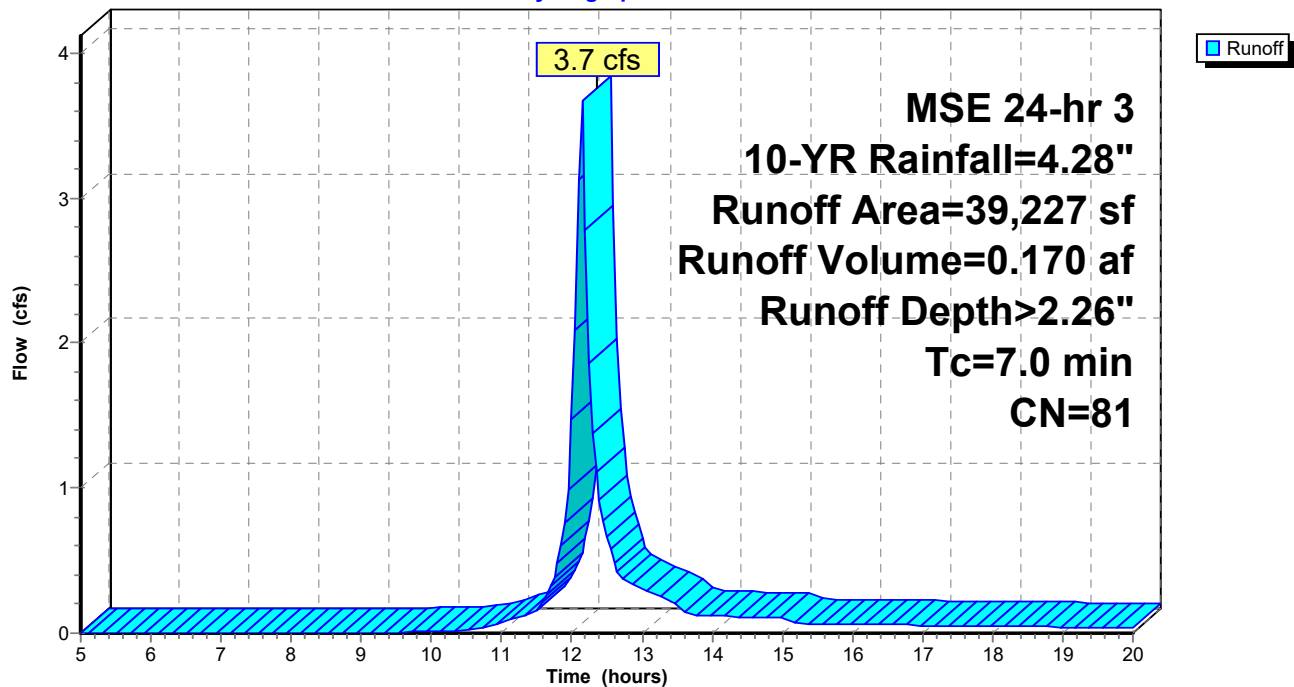
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YR Rainfall=4.28"

Area (sf)	CN	Description
2,525	98	Paved parking, HSG D
36,702	80	>75% Grass cover, Good, HSG D
39,227	81	Weighted Average
36,702		93.56% Pervious Area
2,525		6.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 4S:

Hydrograph



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MSE 24-hr 3 10-YR Rainfall=4.28"

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Summary for Subcatchment 5S:

Runoff = 3.4 cfs @ 12.14 hrs, Volume= 0.167 af, Depth> 3.28"
Routed to Pond 3P :

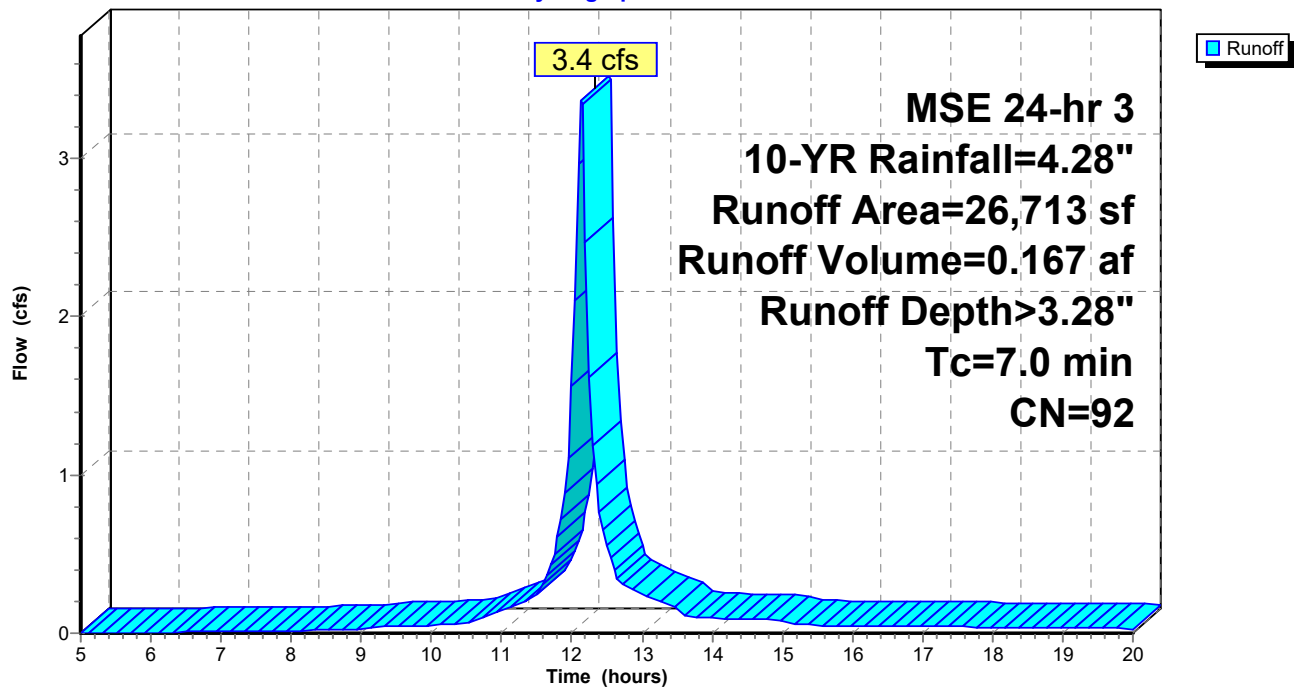
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YR Rainfall=4.28"

Area (sf)	CN	Description
17,151	98	Paved parking, HSG D
9,562	80	>75% Grass cover, Good, HSG D
26,713	92	Weighted Average
9,562		35.80% Pervious Area
17,151		64.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 5S:

Hydrograph



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MSE 24-hr 3 10-YR Rainfall=4.28"

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Summary for Subcatchment 6S:

Runoff = 6.4 cfs @ 12.14 hrs, Volume= 0.315 af, Depth> 3.18"
Routed to Reach 4R : South Storm

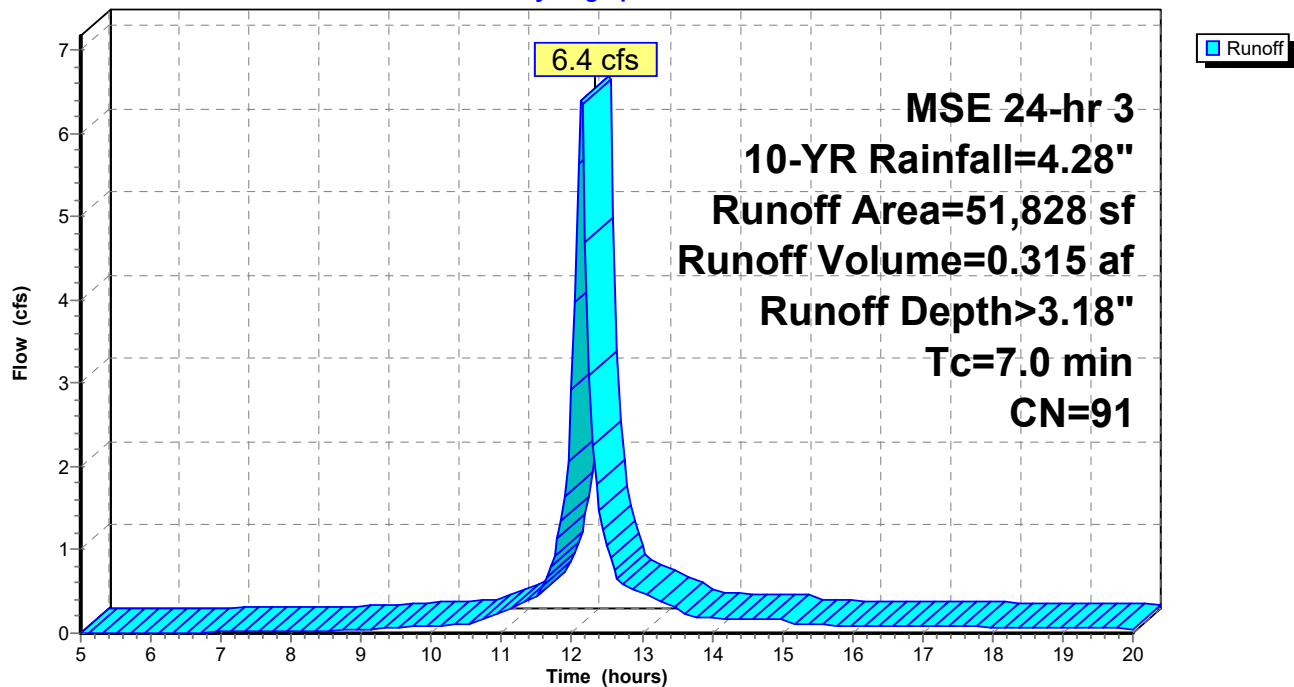
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YR Rainfall=4.28"

Area (sf)	CN	Description
31,516	98	Paved parking, HSG D
20,312	80	>75% Grass cover, Good, HSG D
51,828	91	Weighted Average
20,312		39.19% Pervious Area
31,516		60.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 6S:

Hydrograph



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MSE 24-hr 3 10-YR Rainfall=4.28"

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Summary for Subcatchment 7S:

Runoff = 5.6 cfs @ 12.14 hrs, Volume= 0.262 af, Depth> 2.70"
Routed to Reach 5R : SE Bluff - To Road

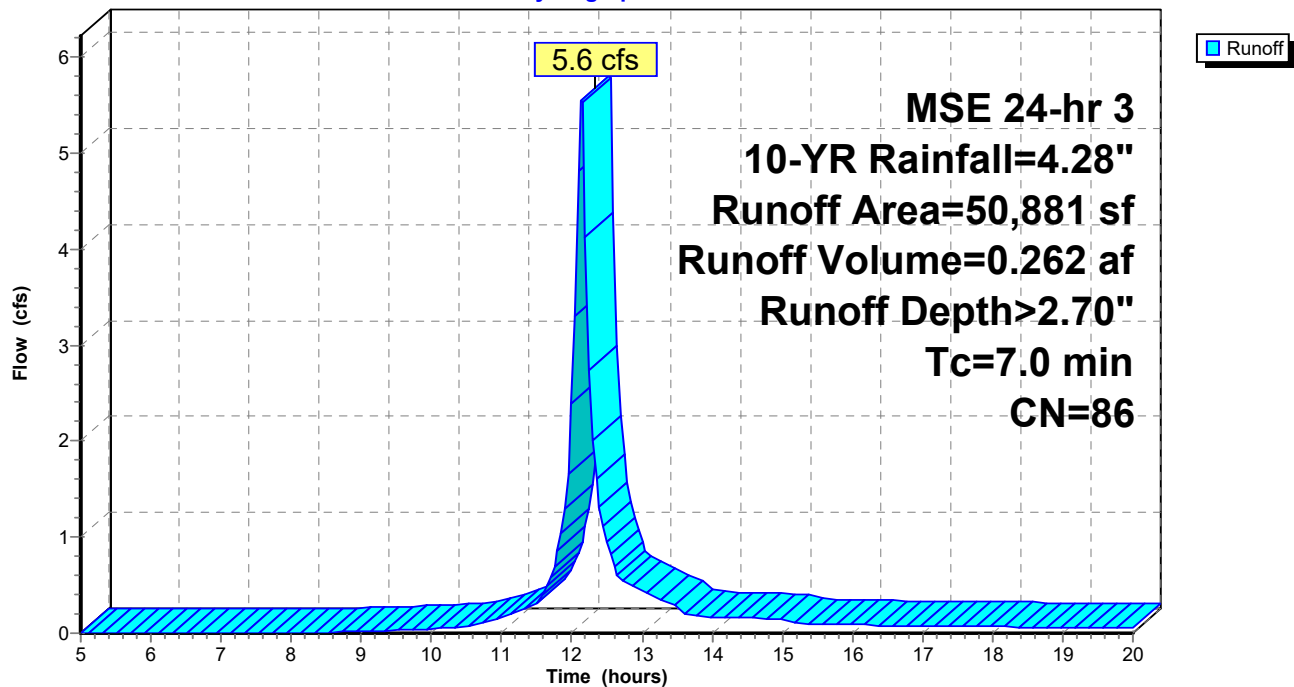
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YR Rainfall=4.28"

Area (sf)	CN	Description
16,752	98	Paved parking, HSG D
34,129	80	>75% Grass cover, Good, HSG D
50,881	86	Weighted Average
34,129		67.08% Pervious Area
16,752		32.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 7S:

Hydrograph



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Summary for Subcatchment 8S:

Runoff = 1.7 cfs @ 12.14 hrs, Volume= 0.090 af, Depth> 3.89"
Routed to Reach 6R : East Storm

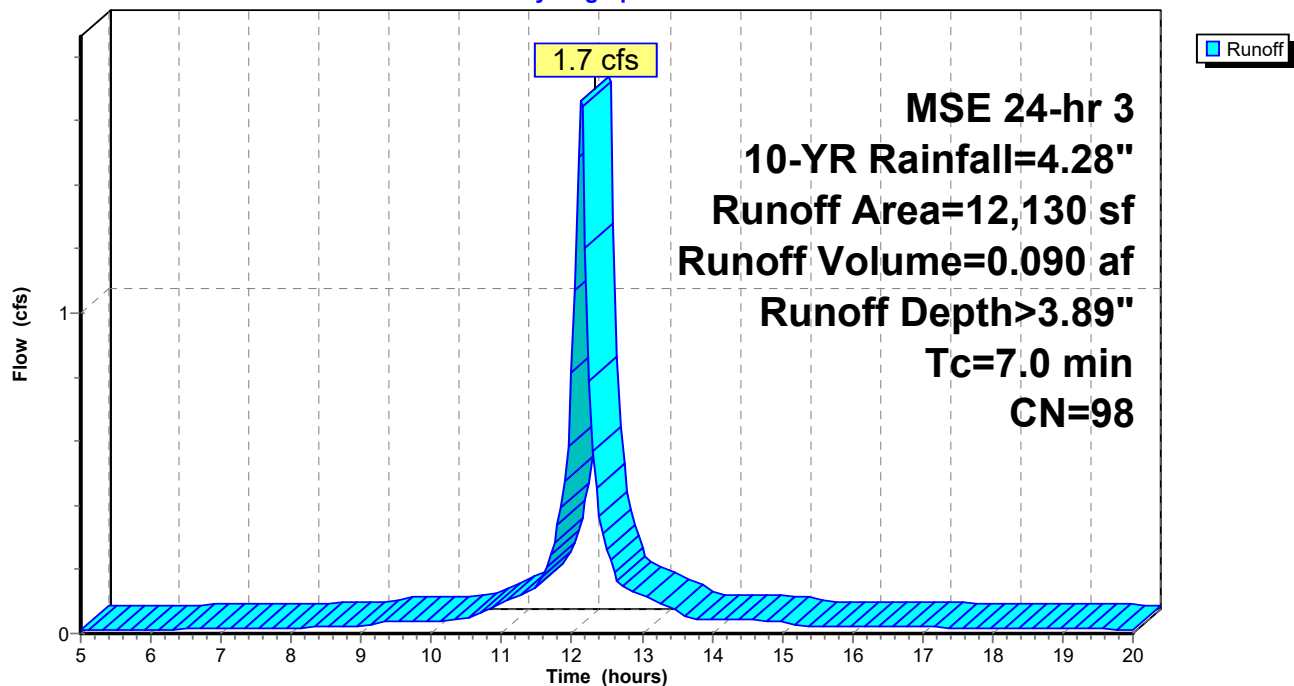
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YR Rainfall=4.28"

Area (sf)	CN	Description
12,130	98	Paved parking, HSG D
0	80	>75% Grass cover, Good, HSG D
12,130	98	Weighted Average
12,130		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 8S:

Hydrograph



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MSE 24-hr 3 10-YR Rainfall=4.28"

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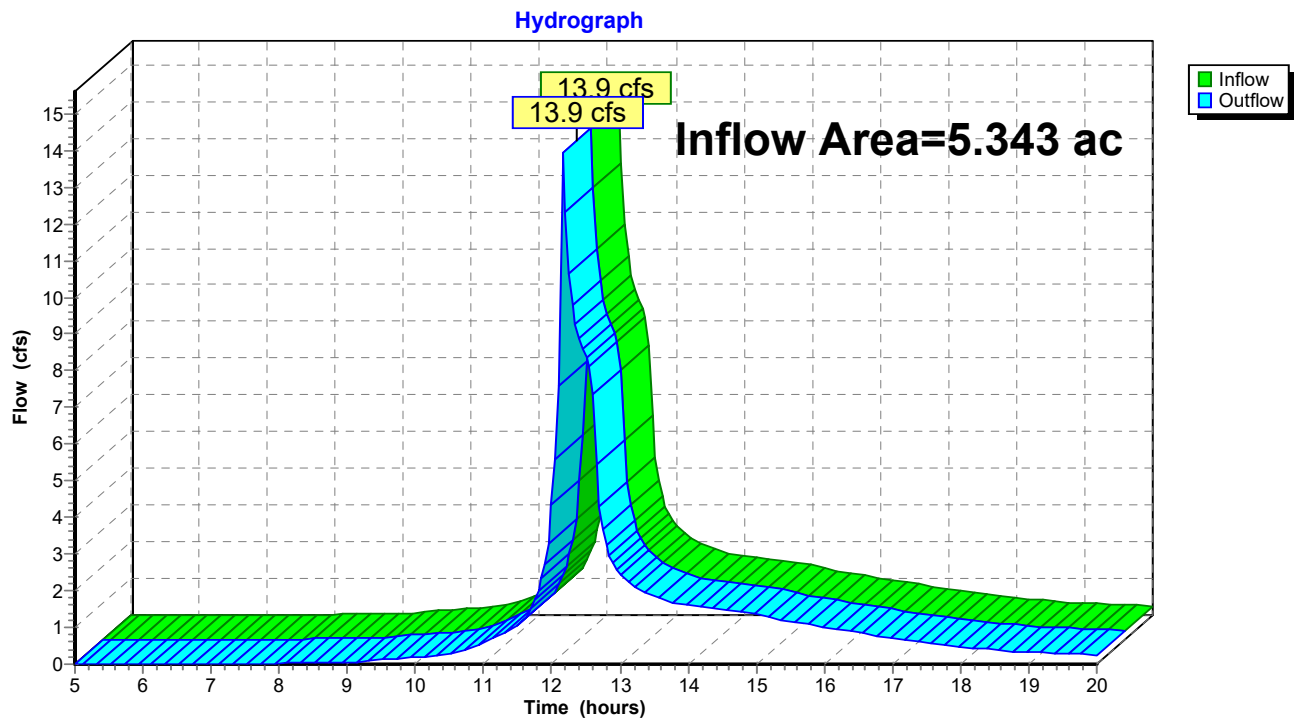
Page 39

Summary for Reach 1R: NW Storm

Inflow Area = 5.343 ac, 49.10% Impervious, Inflow Depth > 2.89" for 10-YR event
Inflow = 13.9 cfs @ 12.17 hrs, Volume= 1.285 af
Outflow = 13.9 cfs @ 12.17 hrs, Volume= 1.285 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: NW Storm



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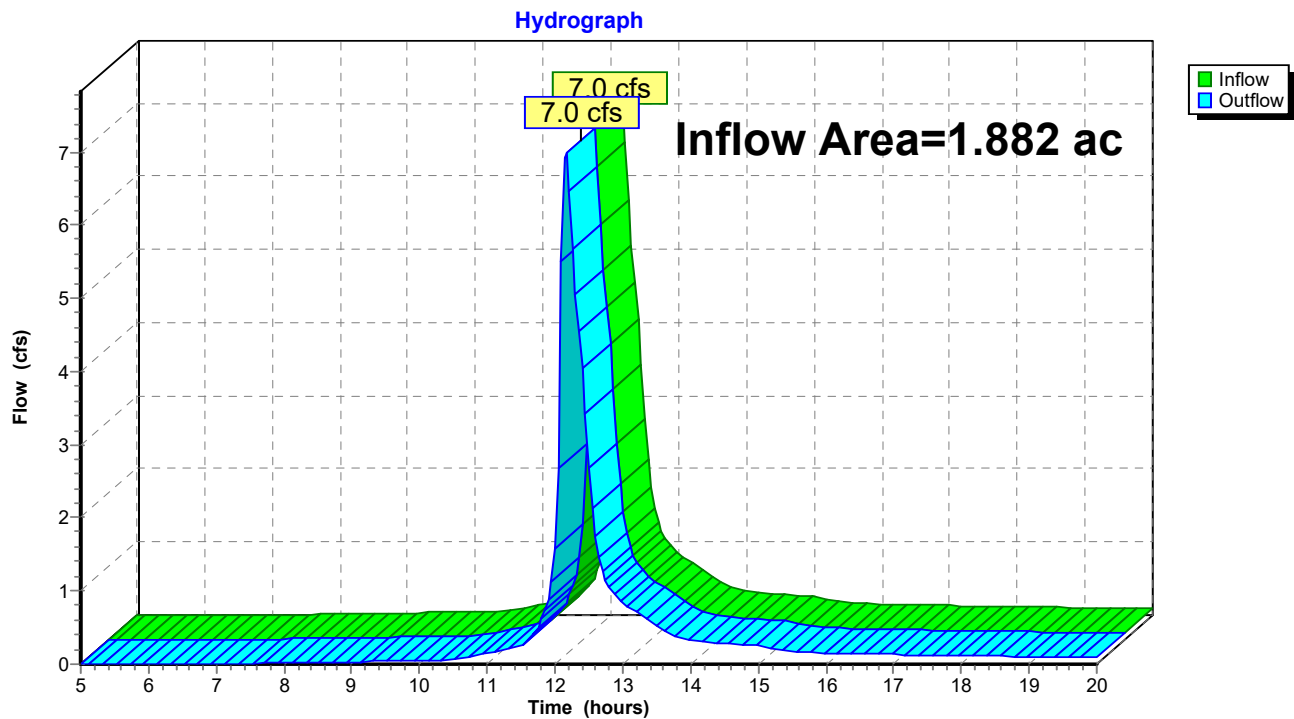
Page 40

Summary for Reach 2R: West Storm

Inflow Area = 1.882 ac, 70.62% Impervious, Inflow Depth > 2.65" for 10-YR event
Inflow = 7.0 cfs @ 12.16 hrs, Volume= 0.416 af
Outflow = 7.0 cfs @ 12.16 hrs, Volume= 0.416 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: West Storm



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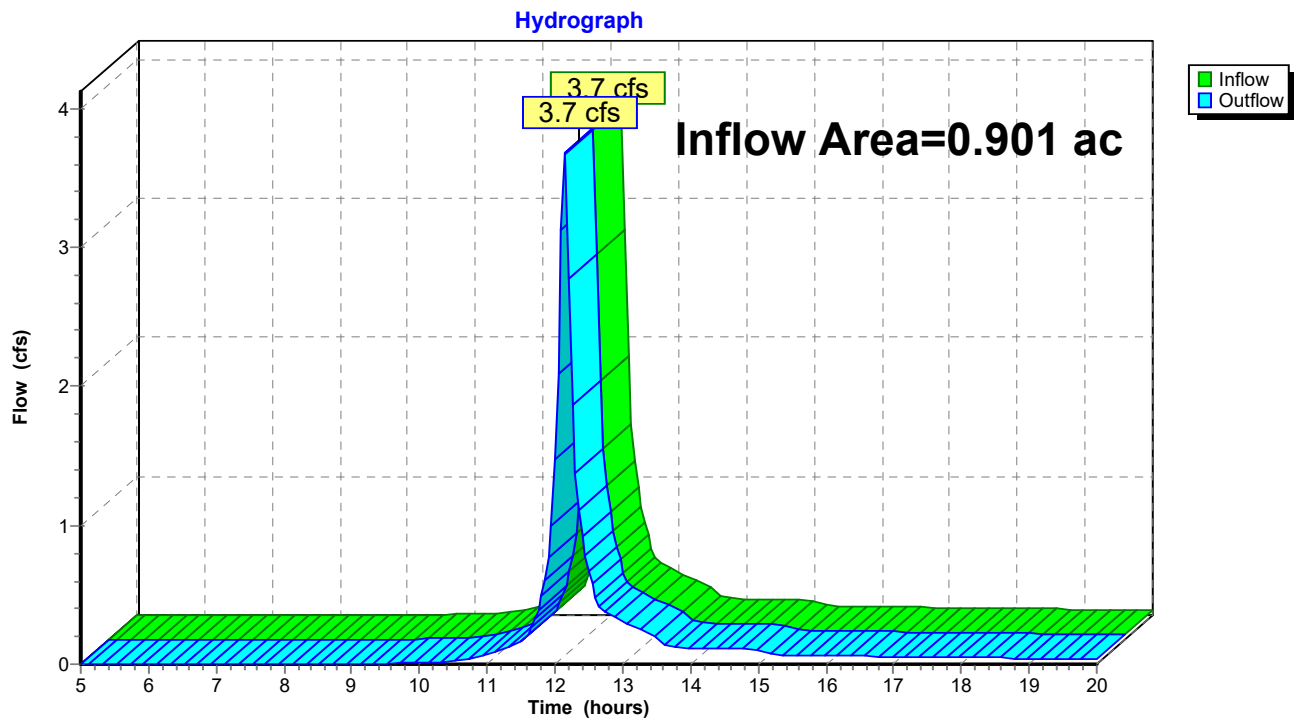
Page 41

Summary for Reach 3R: West Bluff

Inflow Area = 0.901 ac, 6.44% Impervious, Inflow Depth > 2.26" for 10-YR event
Inflow = 3.7 cfs @ 12.14 hrs, Volume= 0.170 af
Outflow = 3.7 cfs @ 12.14 hrs, Volume= 0.170 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: West Bluff



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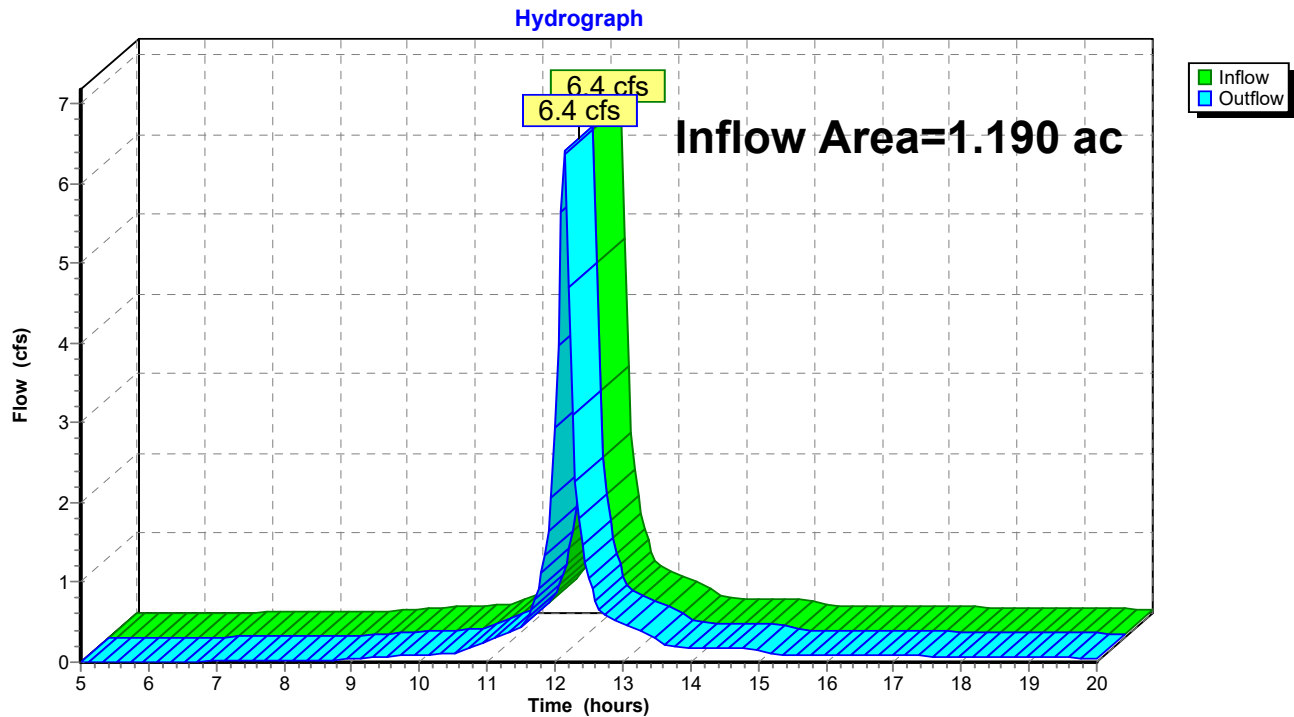
Page 42

Summary for Reach 4R: South Storm

Inflow Area = 1.190 ac, 60.81% Impervious, Inflow Depth > 3.18" for 10-YR event
Inflow = 6.4 cfs @ 12.14 hrs, Volume= 0.315 af
Outflow = 6.4 cfs @ 12.14 hrs, Volume= 0.315 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 4R: South Storm



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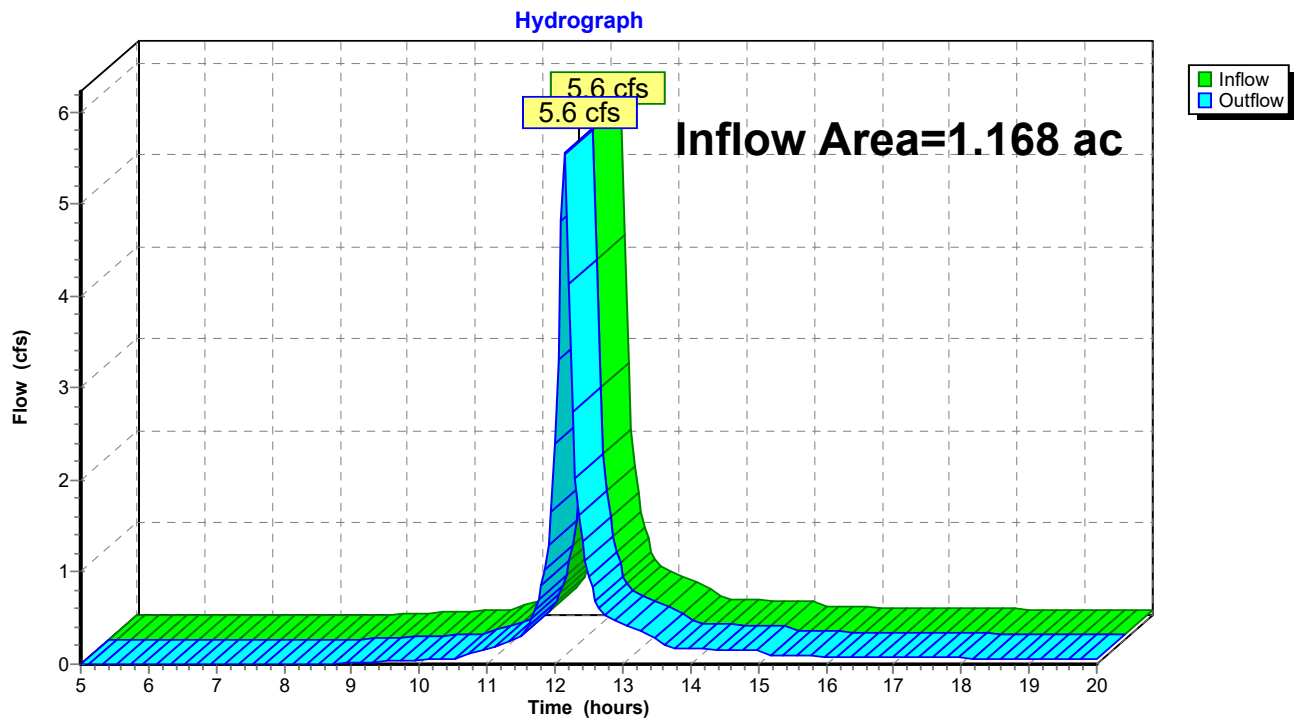
Page 43

Summary for Reach 5R: SE Bluff - To Road

Inflow Area = 1.168 ac, 32.92% Impervious, Inflow Depth > 2.70" for 10-YR event
Inflow = 5.6 cfs @ 12.14 hrs, Volume= 0.262 af
Outflow = 5.6 cfs @ 12.14 hrs, Volume= 0.262 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 5R: SE Bluff - To Road



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MSE 24-hr 3 10-YR Rainfall=4.28"

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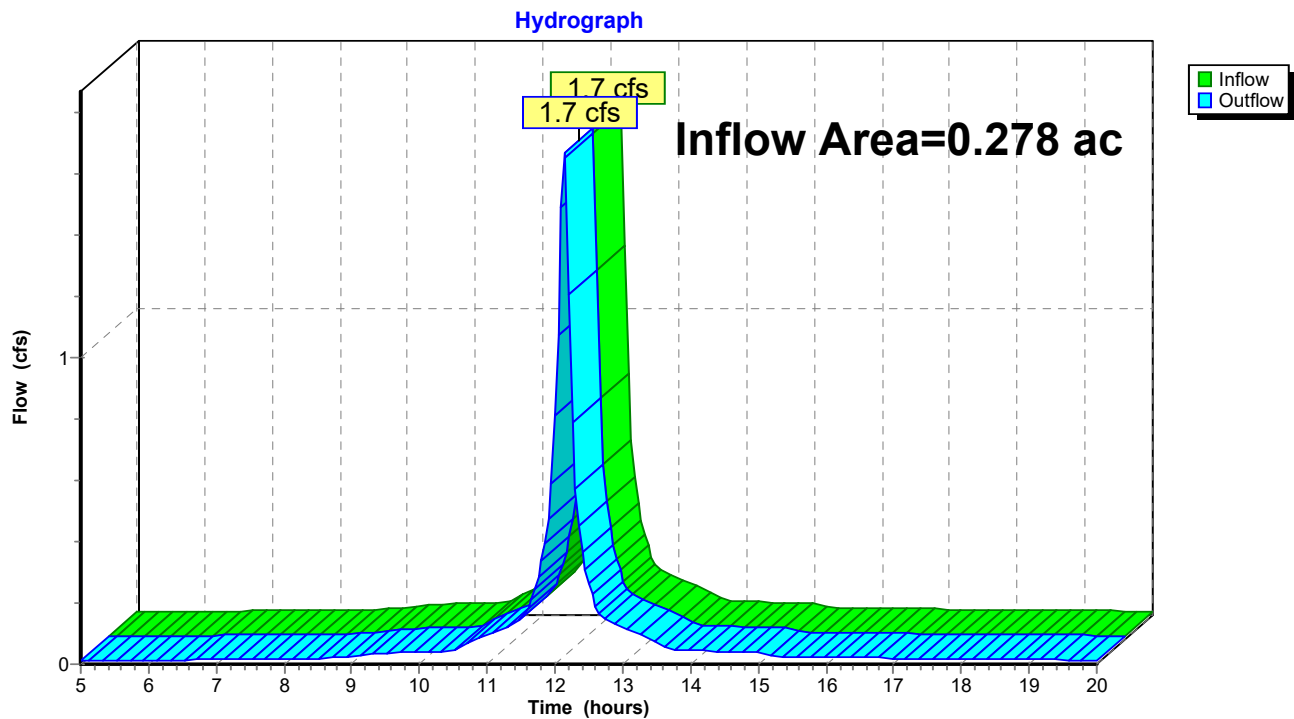
Page 44

Summary for Reach 6R: East Storm

Inflow Area = 0.278 ac, 100.00% Impervious, Inflow Depth > 3.89" for 10-YR event
Inflow = 1.7 cfs @ 12.14 hrs, Volume= 0.090 af
Outflow = 1.7 cfs @ 12.14 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 6R: East Storm



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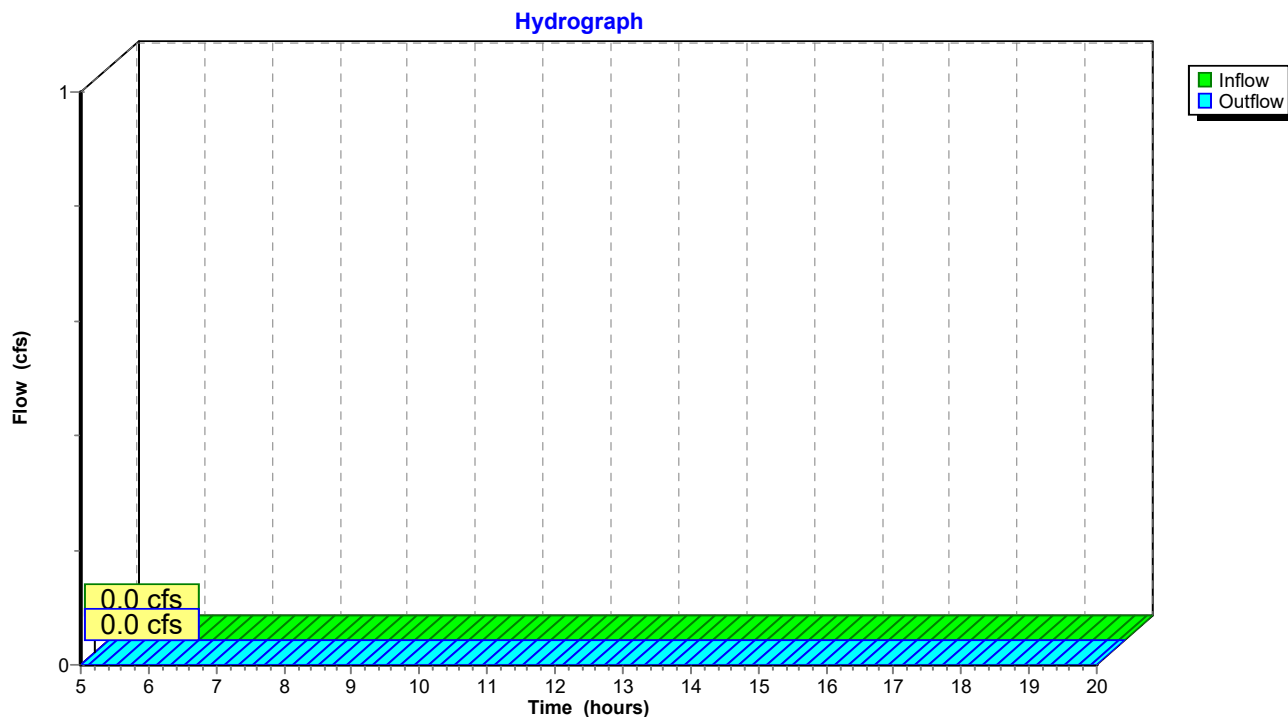
Page 45

Summary for Reach 7R: North Bluff

Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 7R: North Bluff



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MSE 24-hr 3 10-YR Rainfall=4.28"

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Summary for Pond 1P: Wet Sedimentation Basin

Inflow Area = 4.032 ac, 46.16% Impervious, Inflow Depth > 2.88" for 10-YR event
Inflow = 20.2 cfs @ 12.14 hrs, Volume= 0.968 af
Outflow = 7.3 cfs @ 12.31 hrs, Volume= 0.949 af, Atten= 64%, Lag= 9.8 min
Primary = 7.3 cfs @ 12.31 hrs, Volume= 0.949 af
Routed to Reach 1R : NW Storm
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach 7R : North Bluff

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Starting Elev= 986.00' Surf.Area= 2,905 sf Storage= 5,818 cf

Peak Elev= 990.22' @ 12.31 hrs Surf.Area= 4,450 sf Storage= 22,234 cf (16,416 cf above start)

Plug-Flow detention time= 121.4 min calculated for 0.813 af (84% of inflow)

Center-of-Mass det. time= 60.4 min (828.9 - 768.5)

Volume	Invert	Avail.Storage	Storage Description
#1	981.00'	52,963 cf	Custom Stage Data (Prismatic) Listed below (Recalc) x 0.5

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
981.00	108	0	0
985.00	3,406	7,028	7,028
986.50	7,012	7,814	14,842
995.00	11,323	77,924	92,765
996.00	15,000	13,162	105,927

Device	Routing	Invert	Outlet Devices
#1	Primary	981.69'	12.0" Round Culvert L= 169.0' Ke= 0.500 Inlet / Outlet Invert= 981.69' / 980.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	986.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	989.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 1.0' Crest Height
#4	Device 1	990.00'	HAALA 48" ID Pond Skimmer Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 Disch. (cfs) 0.000 1.320 3.740 6.870 10.580 14.790 19.250 20.790 22.220 23.570 24.850 30.430 35.140 39.280 43.030 46.480 49.690 52.700 55.560
#5	Secondary	995.50'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Post-Development

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MSE 24-hr 3 10-YR Rainfall=4.28"

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Primary OutFlow Max=7.3 cfs @ 12.31 hrs HW=990.22' (Free Discharge)

1=Culvert (Barrel Controls 7.3 cfs @ 9.34 fps)

2=Orifice/Grate (Passes < 1.9 cfs potential flow)

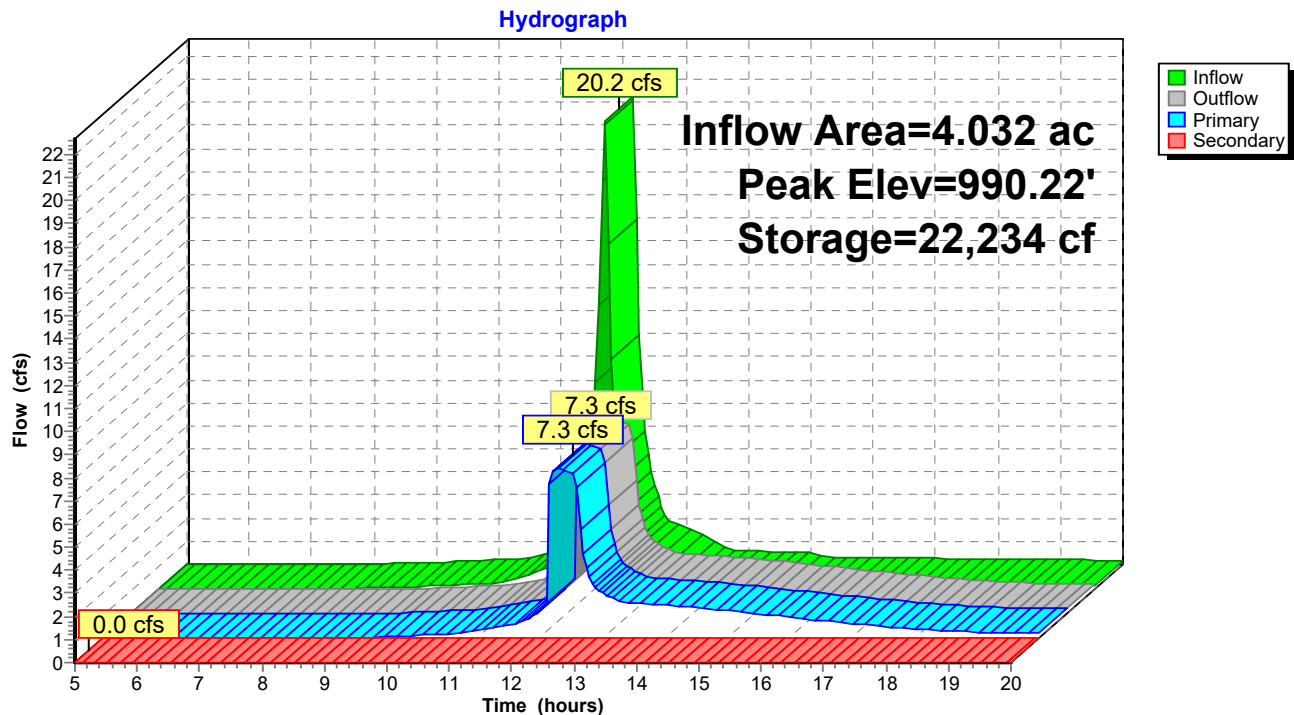
3=Sharp-Crested Rectangular Weir (Passes < 19.0 cfs potential flow)

4=HAALA 48" ID Pond Skimmer (Passes < 4.4 cfs potential flow)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=986.00' (Free Discharge)

5=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Pond 1P: Wet Sedimentation Basin



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Summary for Pond 2P: Filtration Basin

Inflow Area = 1.269 ac, 73.72% Impervious, Inflow Depth > 3.38" for 10-YR event
Inflow = 7.1 cfs @ 12.14 hrs, Volume= 0.357 af
Outflow = 4.1 cfs @ 12.24 hrs, Volume= 0.249 af, Atten= 43%, Lag= 5.8 min
Primary = 4.1 cfs @ 12.24 hrs, Volume= 0.249 af
Routed to Pond 3P :
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach 3R : West Bluff
Tertiary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach 3R : West Bluff

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 984.29' @ 12.24 hrs Surf.Area= 954 sf Storage= 6,885 cf

Plug-Flow detention time= 97.7 min calculated for 0.248 af (69% of inflow)
Center-of-Mass det. time= 46.7 min (802.1 - 755.4)

Volume	Invert	Avail.Storage	Storage Description
#1	982.00'	6,940 cf	Custom Stage Data (Prismatic) Listed below (Recalc) x 0.5
#2A	981.25'	3,536 cf	36.08'W x 70.23'L x 5.50'H Field A Impervious 13,938 cf Overall - 5,097 cf Embedded = 8,841 cf x 40.0% Voids
#3A	982.00'	5,097 cf	ADS_StormTech MC-3500 d +Cap x 45 Inside #2 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 45 Chambers in 5 Rows Cap Storage= 14.9 cf x 2 x 5 rows = 149.0 cf
15,573 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
982.00	588	0	0
987.00	3,470	10,145	10,145
988.00	4,000	3,735	13,880

Device	Routing	Invert	Outlet Devices
#1	Primary	980.00'	12.0" Round Culvert L= 200.0' Ke= 0.500 Inlet / Outlet Invert= 980.00' / 978.00' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	982.00'	1.630 in/hr Exfiltration over Surface area above 982.00' Excluded Surface area = 294 sf Phase-In= 0.01'
#3	Device 1	983.50'	24" Nyloplast Dome Grate X 0.50 Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 Disch. (cfs) 0.000 0.660 1.870 3.440 5.290 6.400 7.010 7.570 8.100 8.590 9.050 11.090 12.800 14.310 15.680 16.940 18.100 19.200 20.240
#4	Secondary	986.50'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

Post-Development

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			2.50	3.00	3.50	4.00	4.50	5.00	5.50				
			Coef. (English)	2.34	2.50	2.70	2.68	2.68	2.66	2.65	2.65	2.65	2.65
				2.65	2.67	2.66	2.68	2.70	2.74	2.79	2.88		
#5	Tertiary	987.00'	133.0' long x 3.0' breadth Broad-Crested Rectangular Weir										
			Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00
				2.50	3.00	3.50	4.00	4.50					
			Coef. (English)	2.44	2.58	2.68	2.67	2.65	2.64	2.64	2.68	2.68	
				2.72	2.81	2.92	2.97	3.07	3.32				

Primary OutFlow Max=4.0 cfs @ 12.24 hrs HW=984.28' (Free Discharge)

1=Culvert (Passes 4.0 cfs of 5.2 cfs potential flow)

2=Exfiltration (Exfiltration Controls 0.0 cfs)

3=24" Nyloplast Dome Grate (Custom Controls 4.0 cfs)

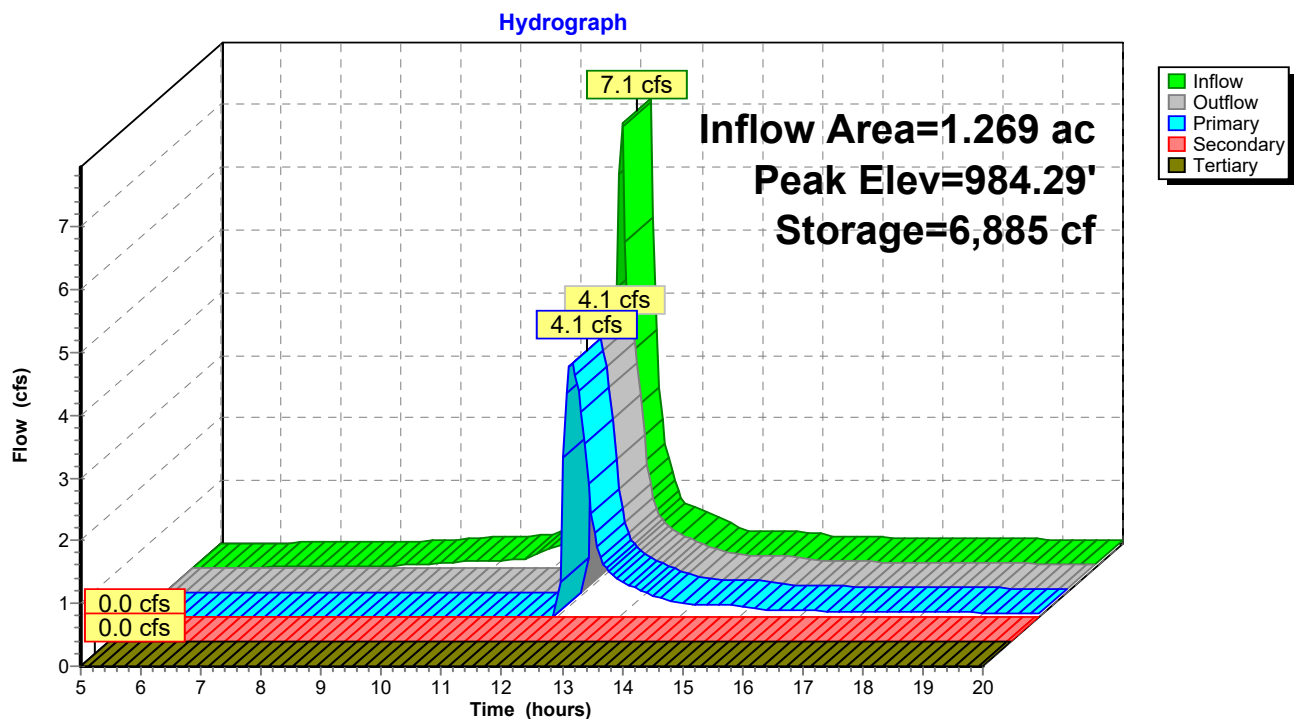
Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=981.25' (Free Discharge)

4=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Tertiary OutFlow Max=0.0 cfs @ 5.00 hrs HW=981.25' (Free Discharge)

5=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Pond 2P: Filtration Basin



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Summary for Pond 3P:

Inflow Area = 1.882 ac, 70.62% Impervious, Inflow Depth > 2.65" for 10-YR event
Inflow = 7.0 cfs @ 12.16 hrs, Volume= 0.416 af
Outflow = 7.0 cfs @ 12.16 hrs, Volume= 0.416 af, Atten= 0%, Lag= 0.0 min
Primary = 7.0 cfs @ 12.16 hrs, Volume= 0.416 af
Routed to Pond 4P :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

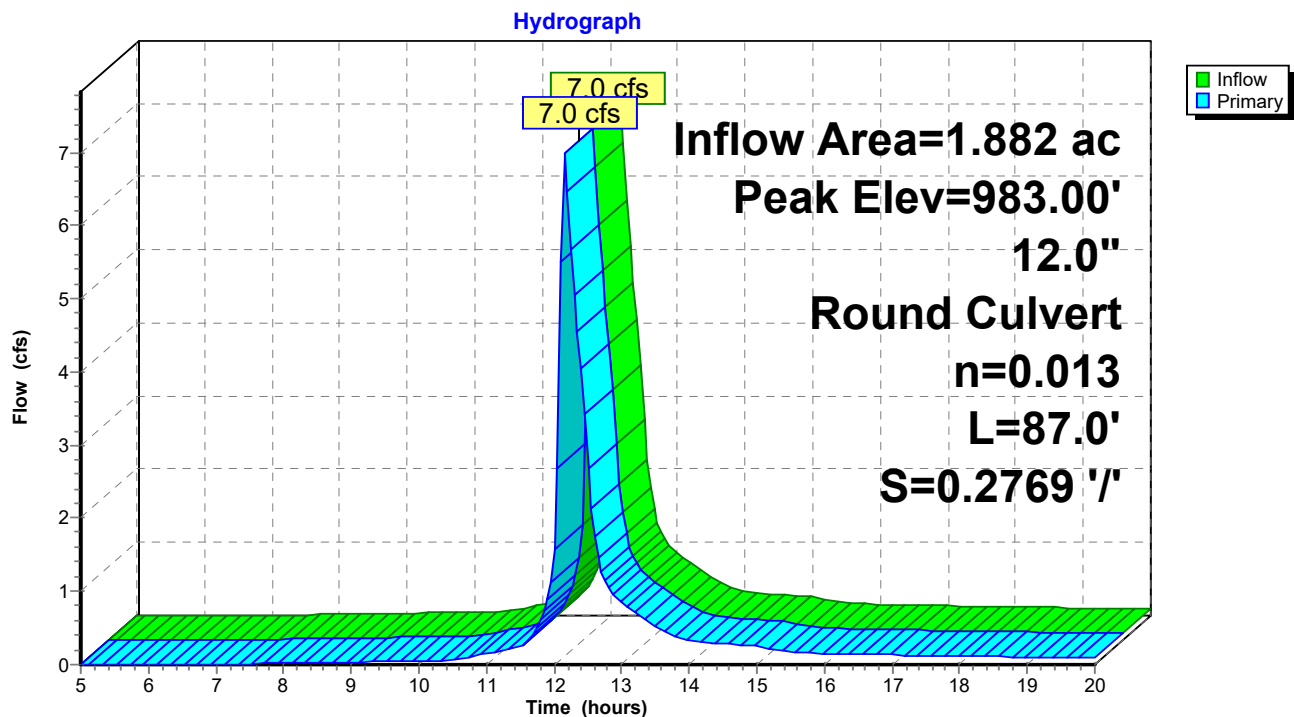
Peak Elev= 983.00' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	979.09'	12.0" Round RCP_Round 12" L= 87.0' Ke= 0.500 Inlet / Outlet Invert= 979.09' / 955.00' S= 0.2769 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=6.8 cfs @ 12.16 hrs HW=982.84' (Free Discharge)

↑1=RCP_Round 12" (Inlet Controls 6.8 cfs @ 8.68 fps)

Pond 3P:



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MSE 24-hr 3 10-YR Rainfall=4.28"

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Summary for Pond 4P:

Inflow Area = 1.882 ac, 70.62% Impervious, Inflow Depth > 2.65" for 10-YR event
Inflow = 7.0 cfs @ 12.16 hrs, Volume= 0.416 af
Outflow = 7.0 cfs @ 12.16 hrs, Volume= 0.416 af, Atten= 0%, Lag= 0.0 min
Primary = 7.0 cfs @ 12.16 hrs, Volume= 0.416 af
Routed to Reach 2R : West Storm

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

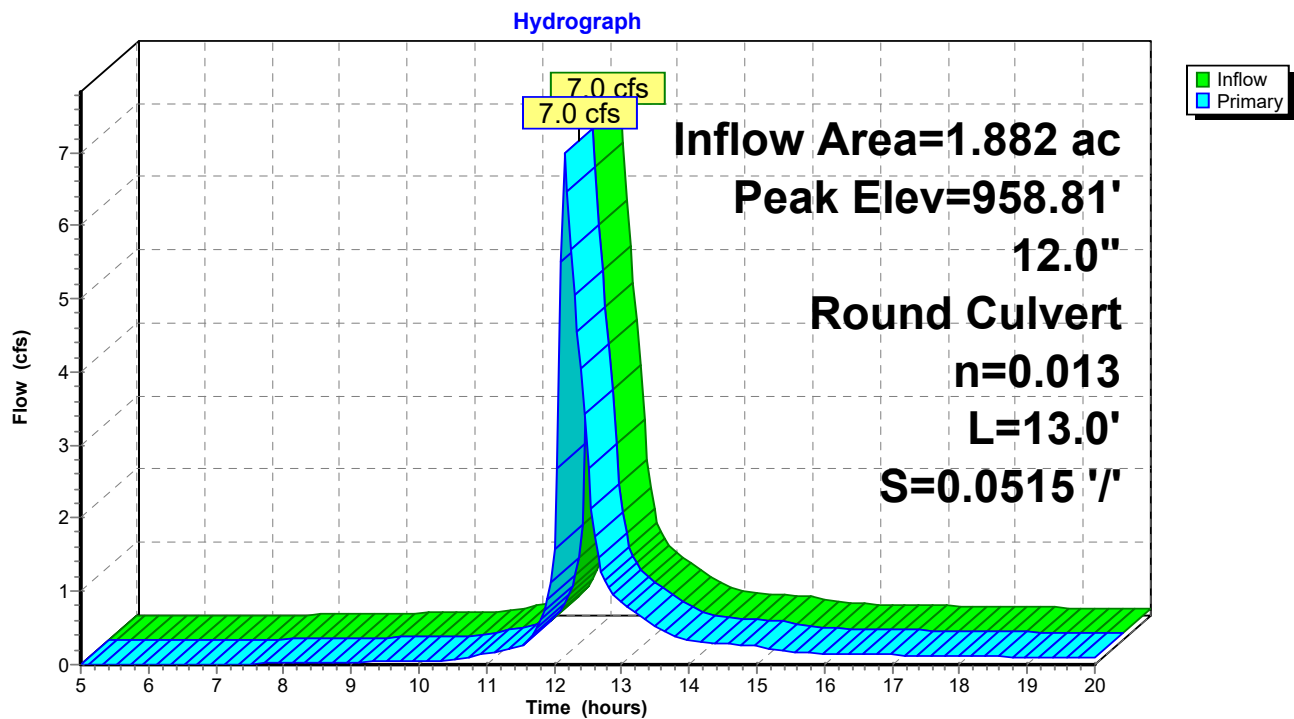
Peak Elev= 958.81' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	954.90'	12.0" Round RCP_Round 12" L= 13.0' Ke= 0.500 Inlet / Outlet Invert= 954.90' / 954.23' S= 0.0515 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=6.8 cfs @ 12.16 hrs HW=958.65' (Free Discharge)

↑1=RCP_Round 12" (Inlet Controls 6.8 cfs @ 8.68 fps)

Pond 4P:



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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S:	Runoff Area=175,645 sf 46.16% Impervious Runoff Depth>5.59" Tc=7.0 min CN=88 Runoff=37.6 cfs 1.878 af
Subcatchment2S:	Runoff Area=57,101 sf 58.18% Impervious Runoff Depth>5.82" Tc=7.0 min CN=90 Runoff=12.5 cfs 0.636 af
Subcatchment3S:	Runoff Area=55,265 sf 73.72% Impervious Runoff Depth>6.15" Tc=7.0 min CN=93 Runoff=12.5 cfs 0.651 af
Subcatchment4S:	Runoff Area=39,227 sf 6.44% Impervious Runoff Depth>4.80" Tc=7.0 min CN=81 Runoff=7.5 cfs 0.360 af
Subcatchment5S:	Runoff Area=26,713 sf 64.20% Impervious Runoff Depth>6.04" Tc=7.0 min CN=92 Runoff=6.0 cfs 0.309 af
Subcatchment6S:	Runoff Area=51,828 sf 60.81% Impervious Runoff Depth>5.93" Tc=7.0 min CN=91 Runoff=11.5 cfs 0.588 af
Subcatchment7S:	Runoff Area=50,881 sf 32.92% Impervious Runoff Depth>5.36" Tc=7.0 min CN=86 Runoff=10.6 cfs 0.522 af
Subcatchment8S:	Runoff Area=12,130 sf 100.00% Impervious Runoff Depth>6.64" Tc=7.0 min CN=98 Runoff=2.8 cfs 0.154 af
Reach 1R: NW Storm	Inflow=20.5 cfs 2.481 af Outflow=20.5 cfs 2.481 af
Reach 2R: West Storm	Inflow=11.5 cfs 0.850 af Outflow=11.5 cfs 0.850 af
Reach 3R: West Bluff	Inflow=7.5 cfs 0.360 af Outflow=7.5 cfs 0.360 af
Reach 4R: South Storm	Inflow=11.5 cfs 0.588 af Outflow=11.5 cfs 0.588 af
Reach 5R: SE Bluff - To Road	Inflow=10.6 cfs 0.522 af Outflow=10.6 cfs 0.522 af
Reach 6R: East Storm	Inflow=2.8 cfs 0.154 af Outflow=2.8 cfs 0.154 af
Reach 7R: North Bluff	Inflow=0.0 cfs 0.000 af Outflow=0.0 cfs 0.000 af
Pond 1P: Wet Sedimentation Basin	Peak Elev=993.83' Storage=39,954 cf Inflow=37.6 cfs 1.878 af Primary=8.7 cfs 1.846 af Secondary=0.0 cfs 0.000 af Outflow=8.7 cfs 1.846 af

Post-Development

MSE 24-hr 3 100-YR Rainfall=7.19"

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Pond 2P: Filtration Basin

Peak Elev=985.53' Storage=10,217 cf Inflow=12.5 cfs 0.651 af

Primary=5.8 cfs 0.541 af Secondary=0.0 cfs 0.000 af Tertiary=0.0 cfs 0.000 af Outflow=5.8 cfs 0.541 af

Pond 3P:

Peak Elev=988.80' Inflow=11.5 cfs 0.850 af

12.0" Round Culvert n=0.013 L=87.0' S=0.2769 '/' Outflow=11.5 cfs 0.850 af

Pond 4P:

Peak Elev=964.61' Inflow=11.5 cfs 0.850 af

12.0" Round Culvert n=0.013 L=13.0' S=0.0515 '/' Outflow=11.5 cfs 0.850 af

Total Runoff Area = 10.762 ac Runoff Volume = 5.098 af Average Runoff Depth = 5.68"

49.85% Pervious = 5.365 ac 50.15% Impervious = 5.397 ac

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MSE 24-hr 3 100-YR Rainfall=7.19"

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Summary for Subcatchment 1S:

Runoff = 37.6 cfs @ 12.14 hrs, Volume= 1.878 af, Depth> 5.59"
Routed to Pond 1P : Wet Sedimentation Basin

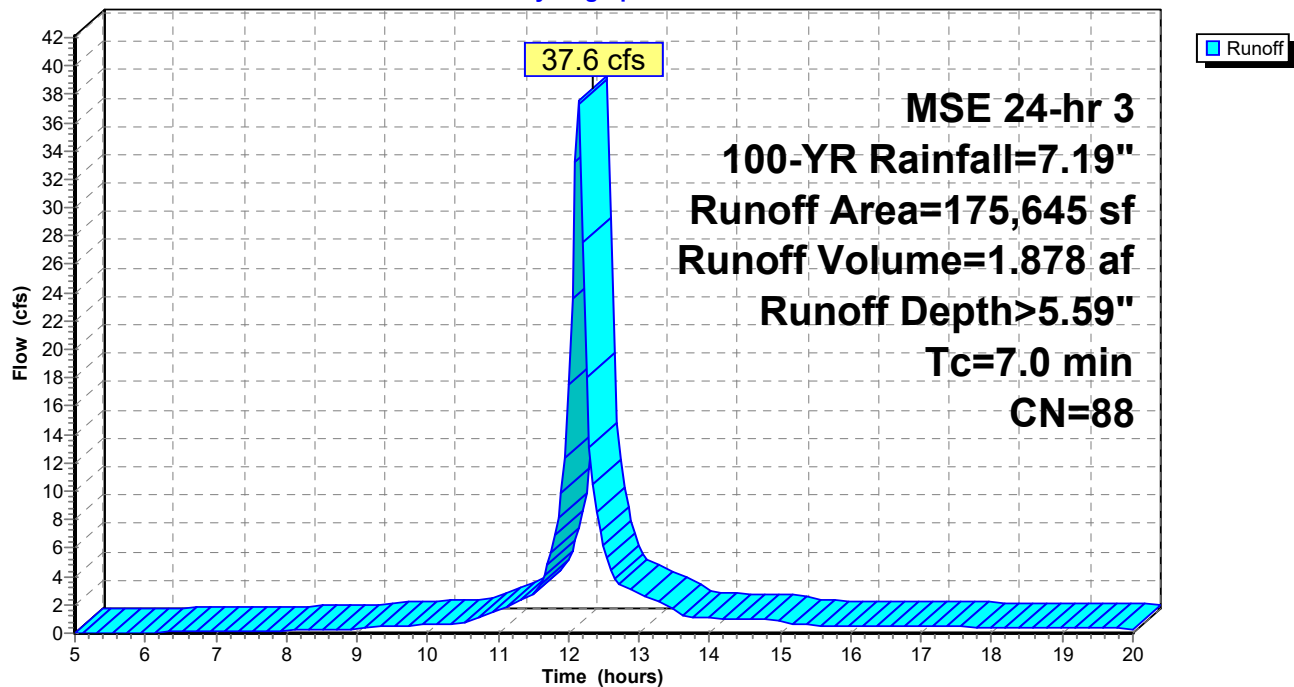
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YR Rainfall=7.19"

Area (sf)	CN	Description
81,069	98	Paved parking, HSG D
94,576	80	>75% Grass cover, Good, HSG D
175,645	88	Weighted Average
94,576		53.84% Pervious Area
81,069		46.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 1S:

Hydrograph



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MSE 24-hr 3 100-YR Rainfall=7.19"

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Summary for Subcatchment 2S:

Runoff = 12.5 cfs @ 12.14 hrs, Volume= 0.636 af, Depth> 5.82"
Routed to Reach 1R : NW Storm

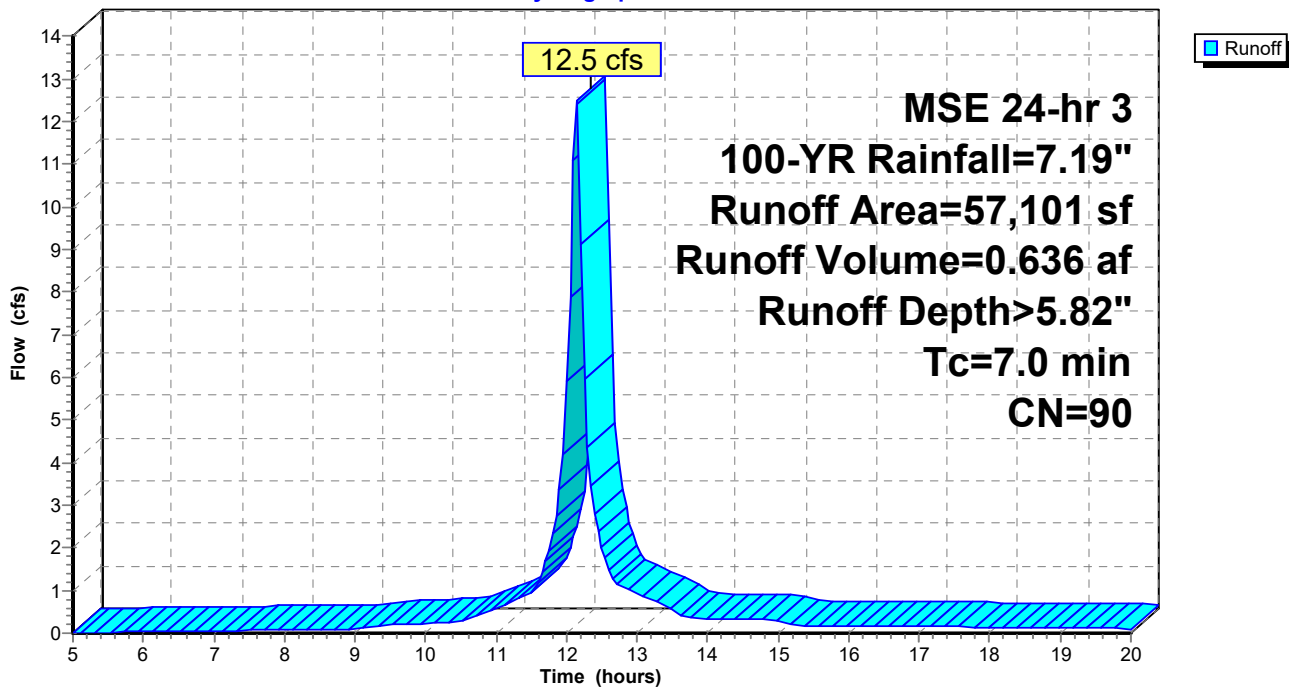
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YR Rainfall=7.19"

Area (sf)	CN	Description
33,220	98	Paved parking, HSG D
23,881	80	>75% Grass cover, Good, HSG D
57,101	90	Weighted Average
23,881		41.82% Pervious Area
33,220		58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 2S:

Hydrograph



Post-Development

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MSE 24-hr 3 100-YR Rainfall=7.19"

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Summary for Subcatchment 3S:

Runoff = 12.5 cfs @ 12.14 hrs, Volume= 0.651 af, Depth> 6.15"
Routed to Pond 2P : Filtration Basin

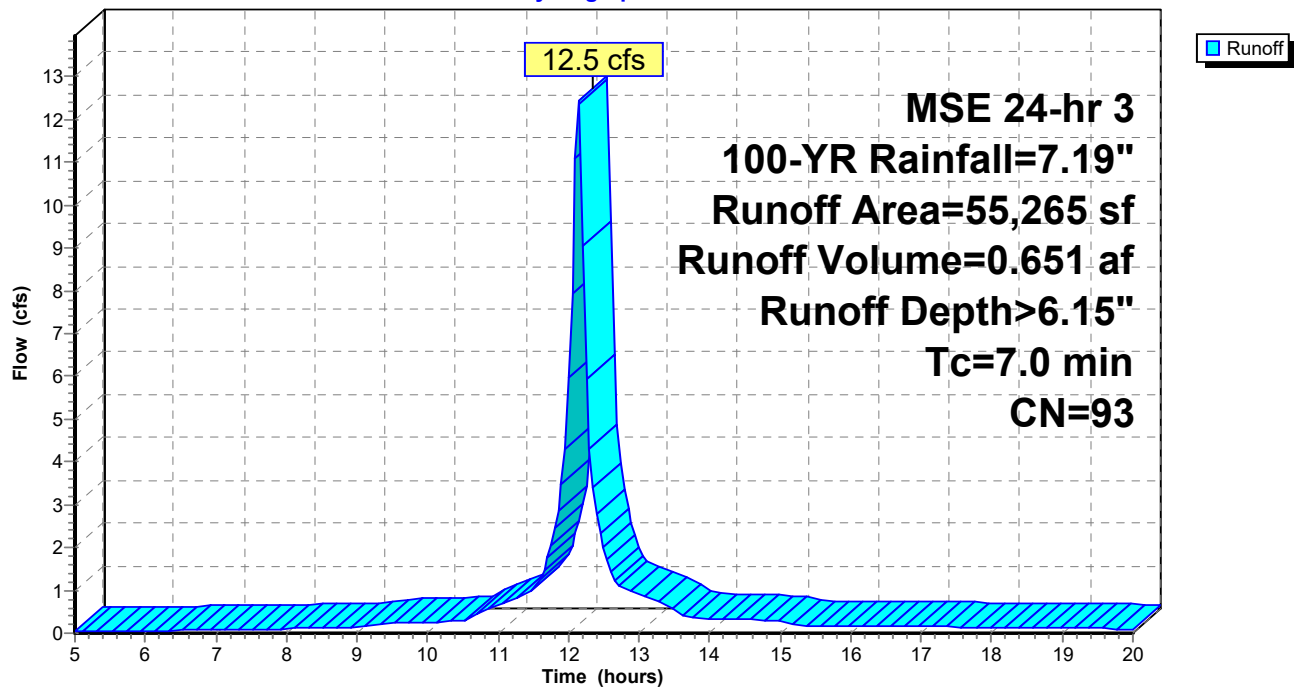
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YR Rainfall=7.19"

Area (sf)	CN	Description
40,744	98	Paved parking, HSG D
14,521	80	>75% Grass cover, Good, HSG D
55,265	93	Weighted Average
14,521		26.28% Pervious Area
40,744		73.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 3S:

Hydrograph



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Summary for Subcatchment 4S:

Runoff = 7.5 cfs @ 12.14 hrs, Volume= 0.360 af, Depth> 4.80"
Routed to Reach 3R : West Bluff

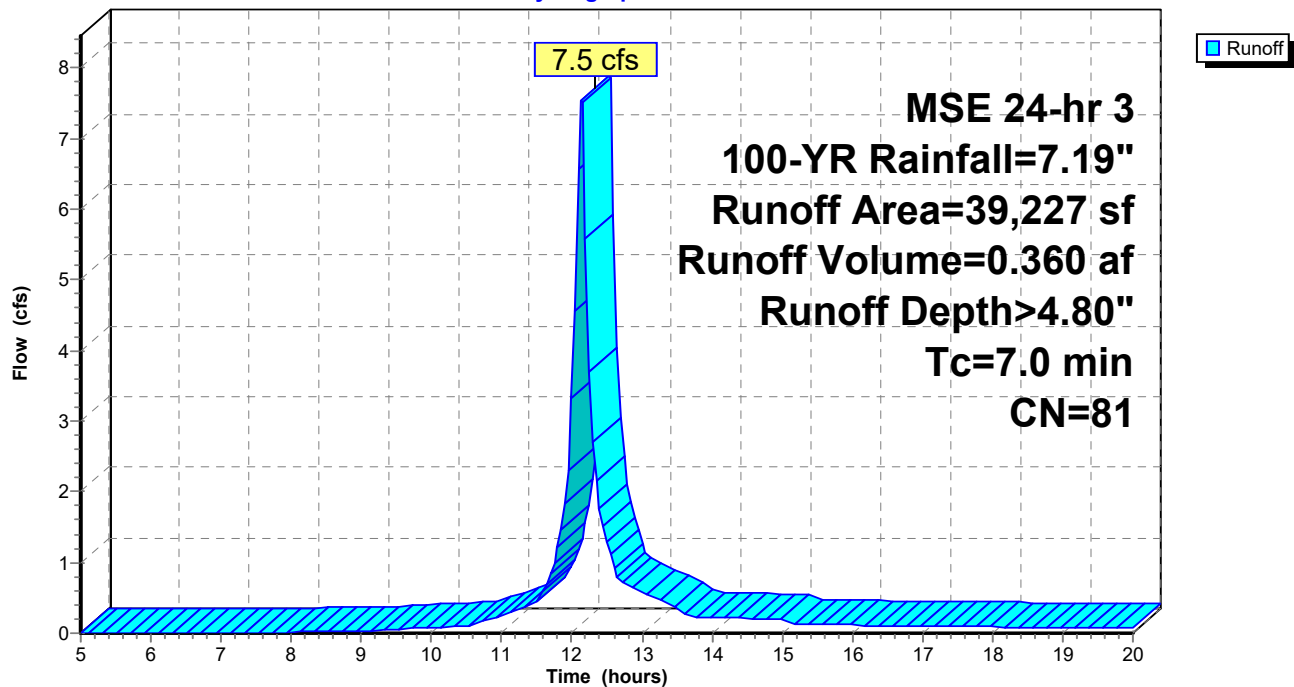
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YR Rainfall=7.19"

Area (sf)	CN	Description
2,525	98	Paved parking, HSG D
36,702	80	>75% Grass cover, Good, HSG D
39,227	81	Weighted Average
36,702		93.56% Pervious Area
2,525		6.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 4S:

Hydrograph



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Summary for Subcatchment 5S:

Runoff = 6.0 cfs @ 12.14 hrs, Volume= 0.309 af, Depth> 6.04"
Routed to Pond 3P :

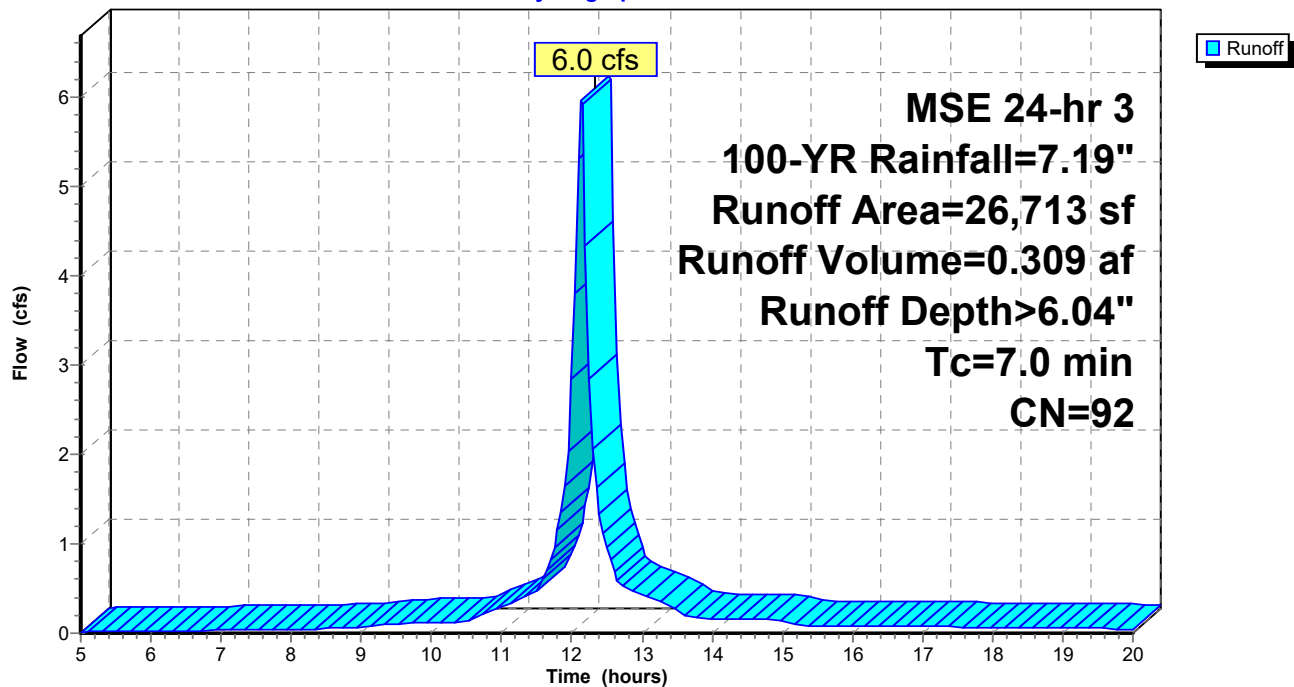
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YR Rainfall=7.19"

Area (sf)	CN	Description
17,151	98	Paved parking, HSG D
9,562	80	>75% Grass cover, Good, HSG D
26,713	92	Weighted Average
9,562		35.80% Pervious Area
17,151		64.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 5S:

Hydrograph



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Summary for Subcatchment 6S:

Runoff = 11.5 cfs @ 12.14 hrs, Volume= 0.588 af, Depth> 5.93"
Routed to Reach 4R : South Storm

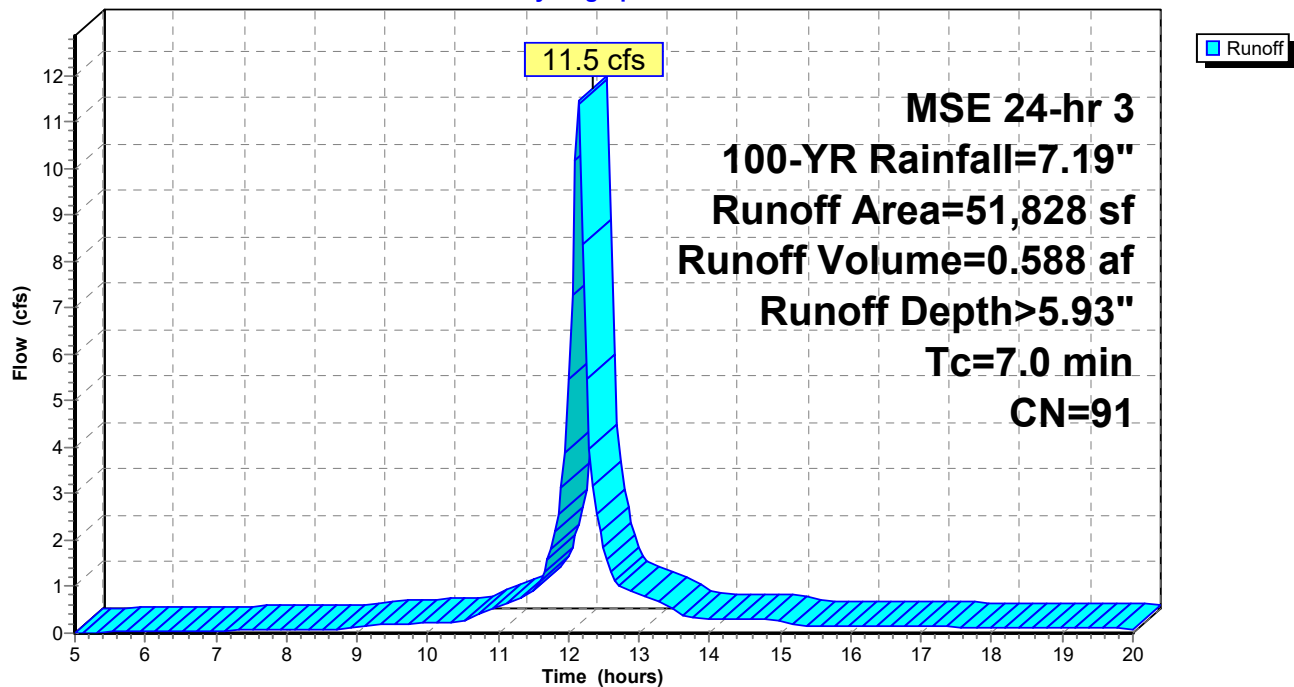
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YR Rainfall=7.19"

Area (sf)	CN	Description
31,516	98	Paved parking, HSG D
20,312	80	>75% Grass cover, Good, HSG D
51,828	91	Weighted Average
20,312		39.19% Pervious Area
31,516		60.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 6S:

Hydrograph



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Summary for Subcatchment 7S:

Runoff = 10.6 cfs @ 12.14 hrs, Volume= 0.522 af, Depth> 5.36"
Routed to Reach 5R : SE Bluff - To Road

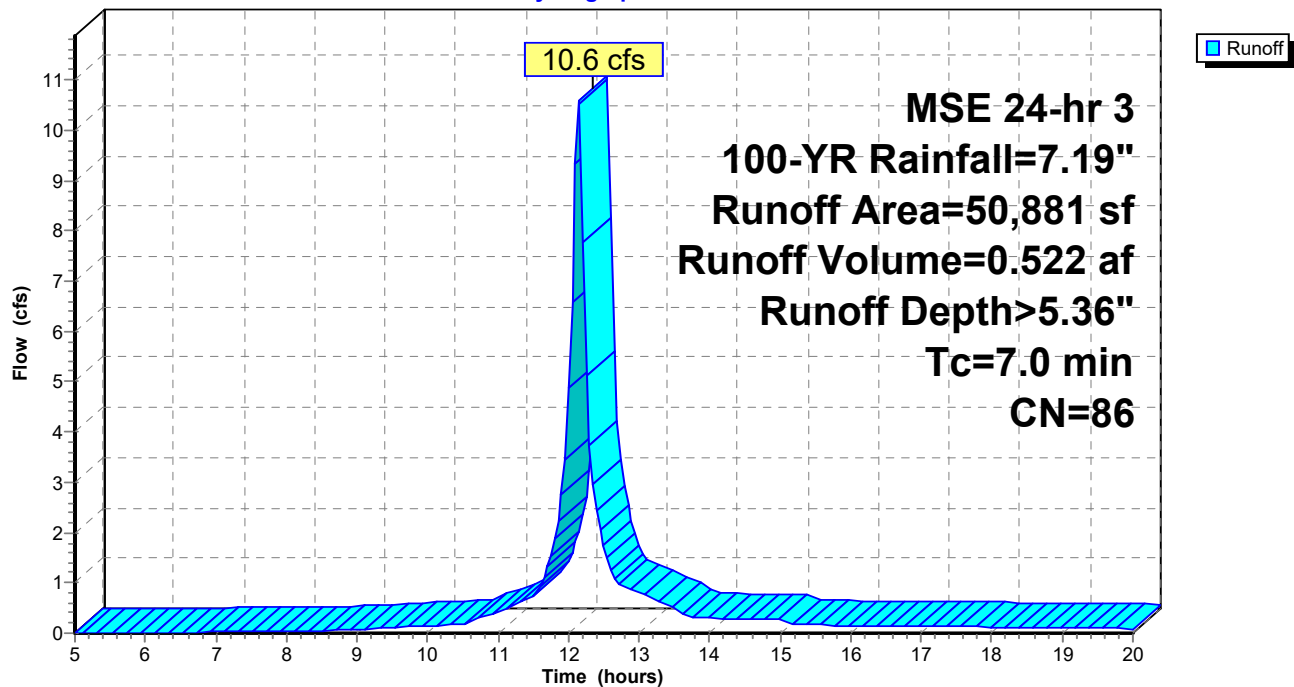
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YR Rainfall=7.19"

Area (sf)	CN	Description
16,752	98	Paved parking, HSG D
34,129	80	>75% Grass cover, Good, HSG D
50,881	86	Weighted Average
34,129		67.08% Pervious Area
16,752		32.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 7S:

Hydrograph



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Summary for Subcatchment 8S:

Runoff = 2.8 cfs @ 12.14 hrs, Volume= 0.154 af, Depth> 6.64"
Routed to Reach 6R : East Storm

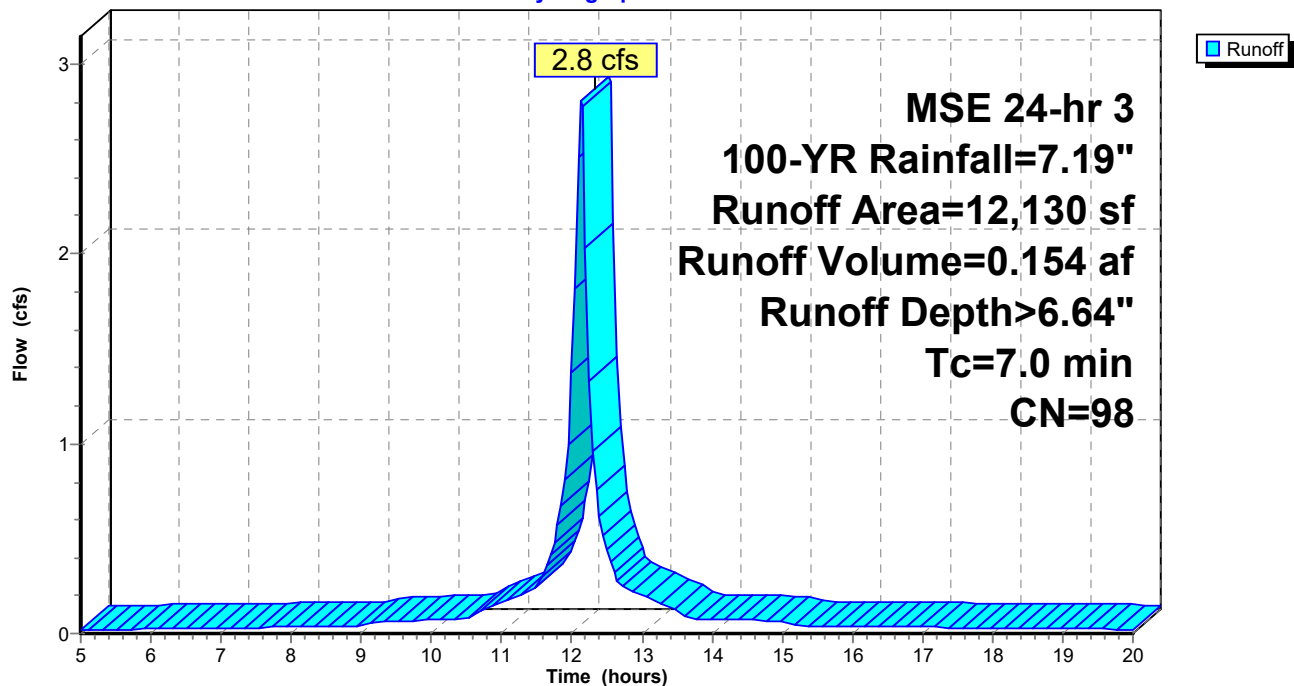
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YR Rainfall=7.19"

Area (sf)	CN	Description
12,130	98	Paved parking, HSG D
0	80	>75% Grass cover, Good, HSG D
12,130	98	Weighted Average
12,130		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry,

Subcatchment 8S:

Hydrograph



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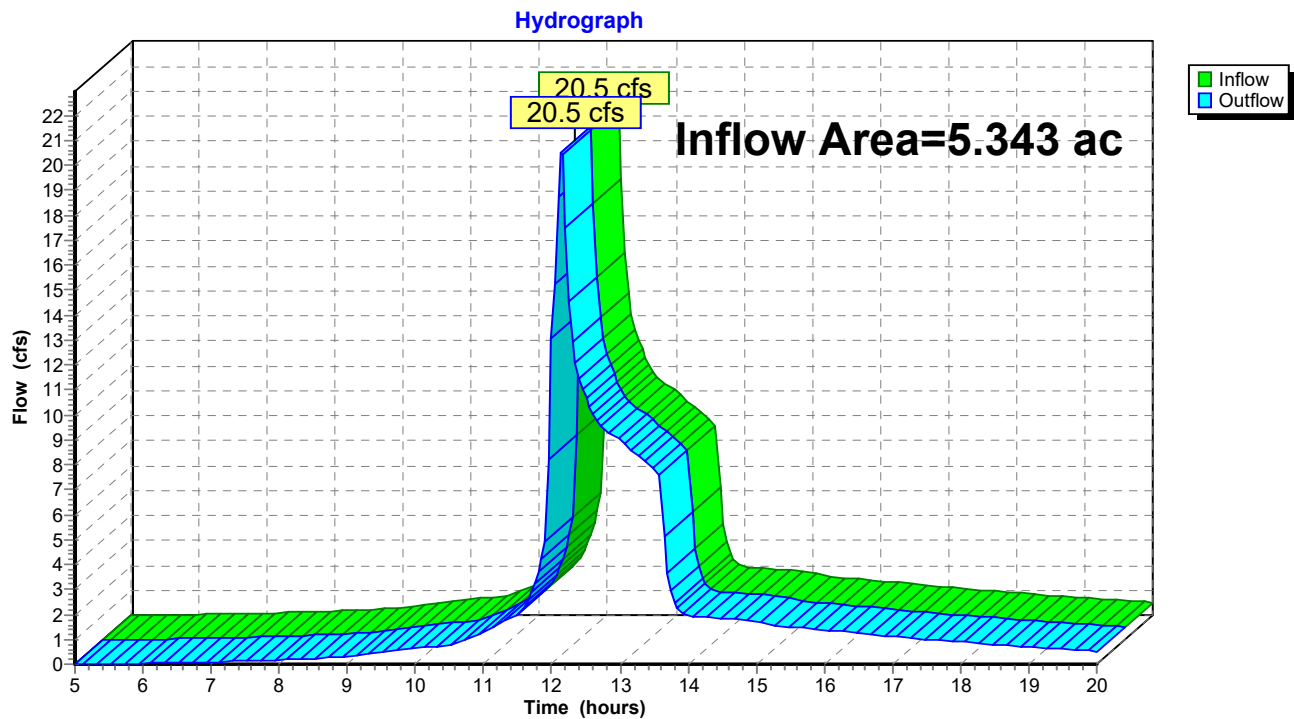
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Summary for Reach 1R: NW Storm

Inflow Area = 5.343 ac, 49.10% Impervious, Inflow Depth > 5.57" for 100-YR event
Inflow = 20.5 cfs @ 12.14 hrs, Volume= 2.481 af
Outflow = 20.5 cfs @ 12.14 hrs, Volume= 2.481 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: NW Storm



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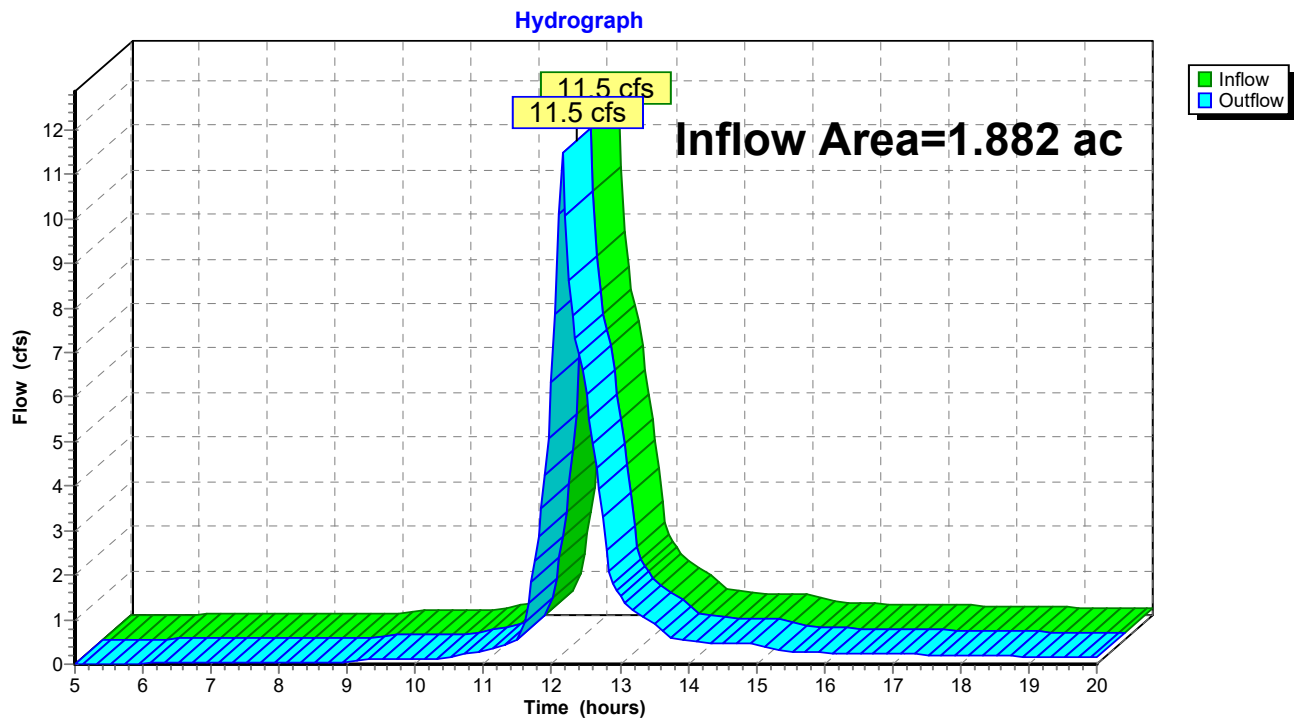
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Summary for Reach 2R: West Storm

Inflow Area = 1.882 ac, 70.62% Impervious, Inflow Depth > 5.42" for 100-YR event
Inflow = 11.5 cfs @ 12.15 hrs, Volume= 0.850 af
Outflow = 11.5 cfs @ 12.15 hrs, Volume= 0.850 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: West Storm



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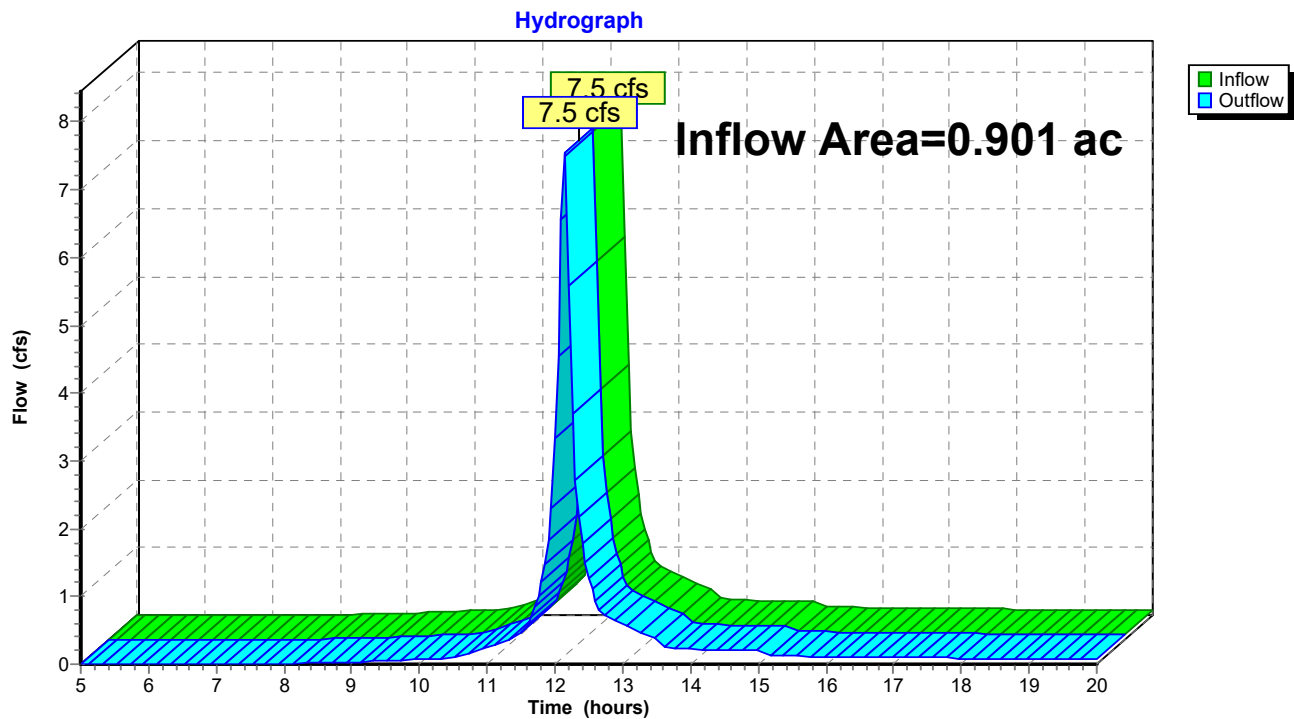
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Summary for Reach 3R: West Bluff

Inflow Area = 0.901 ac, 6.44% Impervious, Inflow Depth > 4.80" for 100-YR event
Inflow = 7.5 cfs @ 12.14 hrs, Volume= 0.360 af
Outflow = 7.5 cfs @ 12.14 hrs, Volume= 0.360 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: West Bluff



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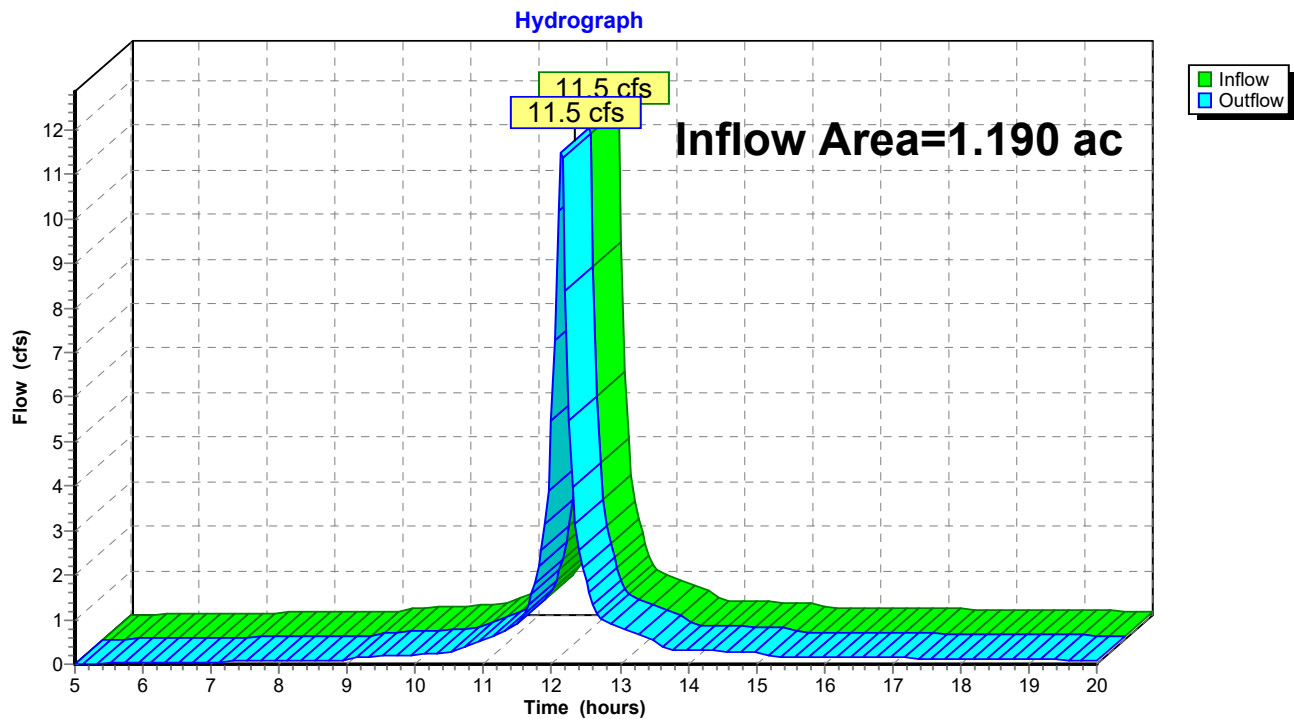
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Summary for Reach 4R: South Storm

Inflow Area = 1.190 ac, 60.81% Impervious, Inflow Depth > 5.93" for 100-YR event
Inflow = 11.5 cfs @ 12.14 hrs, Volume= 0.588 af
Outflow = 11.5 cfs @ 12.14 hrs, Volume= 0.588 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 4R: South Storm



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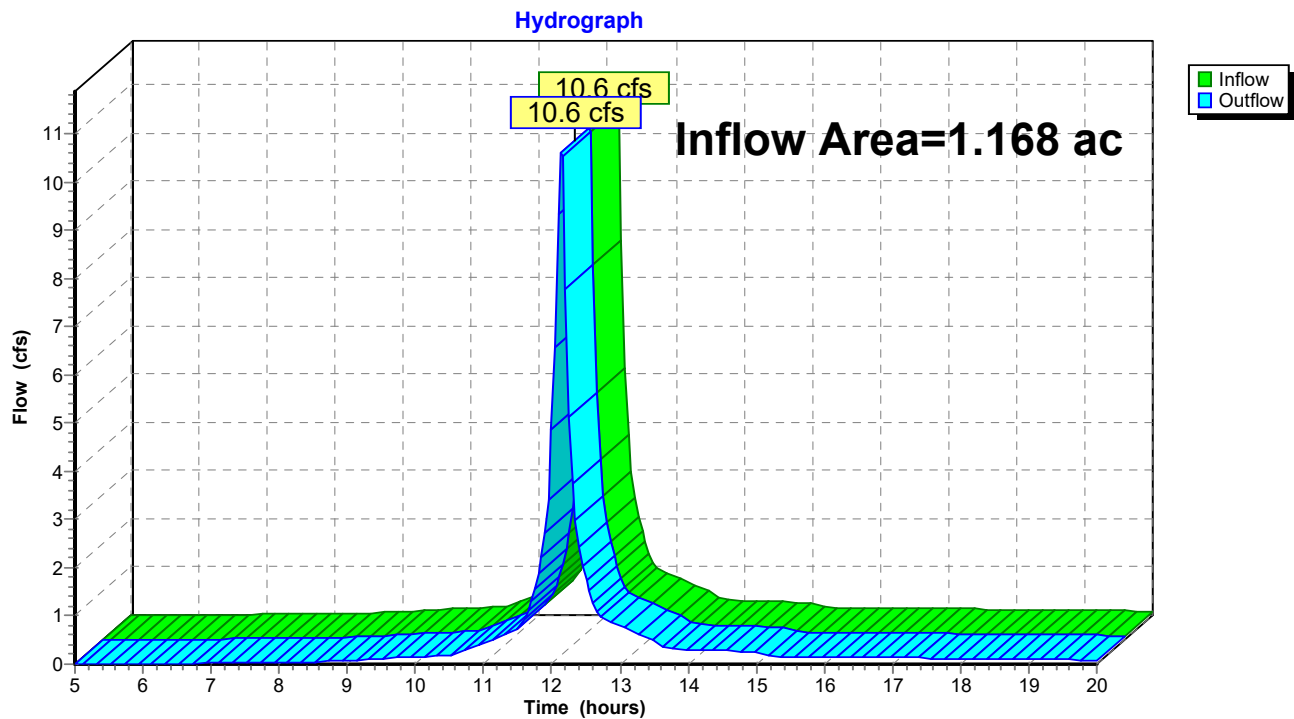
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Summary for Reach 5R: SE Bluff - To Road

Inflow Area = 1.168 ac, 32.92% Impervious, Inflow Depth > 5.36" for 100-YR event
Inflow = 10.6 cfs @ 12.14 hrs, Volume= 0.522 af
Outflow = 10.6 cfs @ 12.14 hrs, Volume= 0.522 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 5R: SE Bluff - To Road



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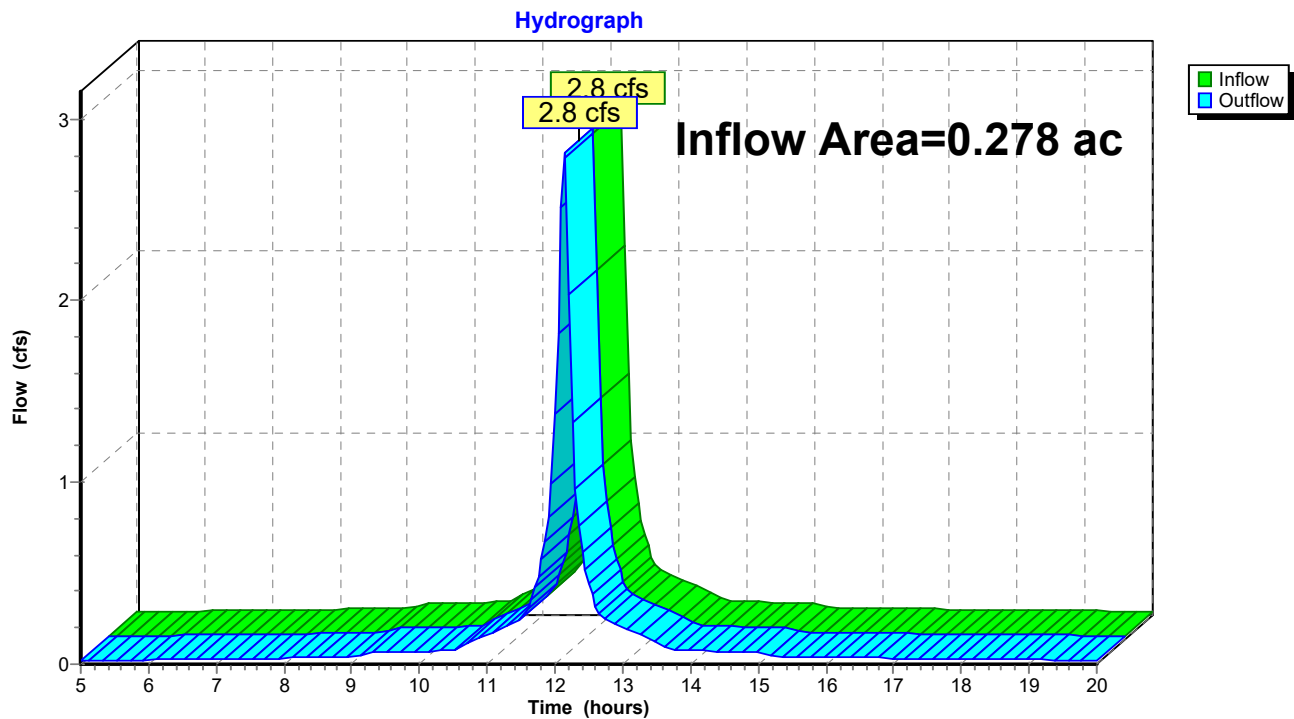
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Summary for Reach 6R: East Storm

Inflow Area = 0.278 ac, 100.00% Impervious, Inflow Depth > 6.64" for 100-YR event
Inflow = 2.8 cfs @ 12.14 hrs, Volume= 0.154 af
Outflow = 2.8 cfs @ 12.14 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 6R: East Storm



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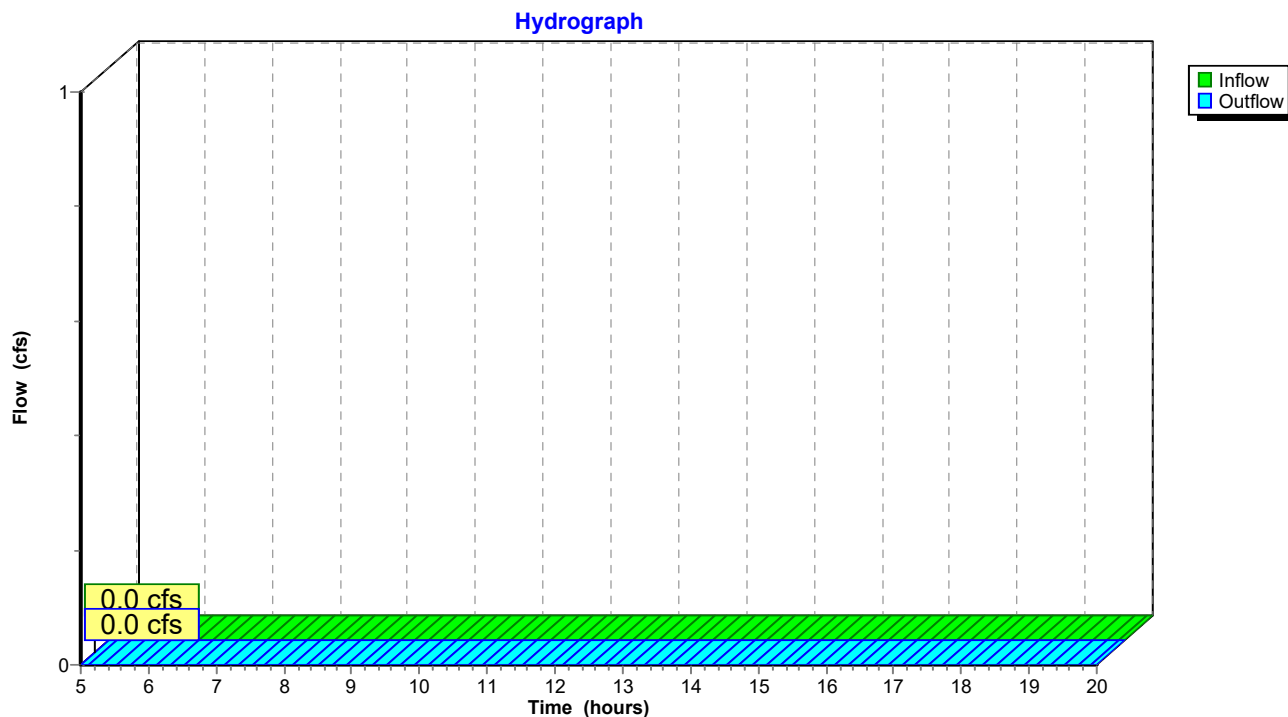
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Summary for Reach 7R: North Bluff

Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 7R: North Bluff



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Summary for Pond 1P: Wet Sedimentation Basin

Inflow Area = 4.032 ac, 46.16% Impervious, Inflow Depth > 5.59" for 100-YR event
Inflow = 37.6 cfs @ 12.14 hrs, Volume= 1.878 af
Outflow = 8.7 cfs @ 12.40 hrs, Volume= 1.846 af, Atten= 77%, Lag= 15.7 min
Primary = 8.7 cfs @ 12.40 hrs, Volume= 1.846 af
Routed to Reach 1R : NW Storm
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach 7R : North Bluff

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Starting Elev= 986.00' Surf.Area= 2,905 sf Storage= 5,818 cf

Peak Elev= 993.83' @ 12.40 hrs Surf.Area= 5,366 sf Storage= 39,954 cf (34,136 cf above start)

Plug-Flow detention time= 101.1 min calculated for 1.712 af (91% of inflow)

Center-of-Mass det. time= 57.4 min (814.4 - 757.0)

Volume	Invert	Avail.Storage	Storage Description
#1	981.00'	52,963 cf	Custom Stage Data (Prismatic) Listed below (Recalc) x 0.5

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
981.00	108	0	0
985.00	3,406	7,028	7,028
986.50	7,012	7,814	14,842
995.00	11,323	77,924	92,765
996.00	15,000	13,162	105,927

Device	Routing	Invert	Outlet Devices
#1	Primary	981.69'	12.0" Round Culvert L= 169.0' Ke= 0.500 Inlet / Outlet Invert= 981.69' / 980.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	986.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	989.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 1.0' Crest Height
#4	Device 1	990.00'	HAALA 48" ID Pond Skimmer Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 Disch. (cfs) 0.000 1.320 3.740 6.870 10.580 14.790 19.250 20.790 22.220 23.570 24.850 30.430 35.140 39.280 43.030 46.480 49.690 52.700 55.560
#5	Secondary	995.50'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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Primary OutFlow Max=8.7 cfs @ 12.40 hrs HW=993.83' (Free Discharge)

1=Culvert (Barrel Controls 8.7 cfs @ 11.02 fps)

2=Orifice/Grate (Passes < 2.6 cfs potential flow)

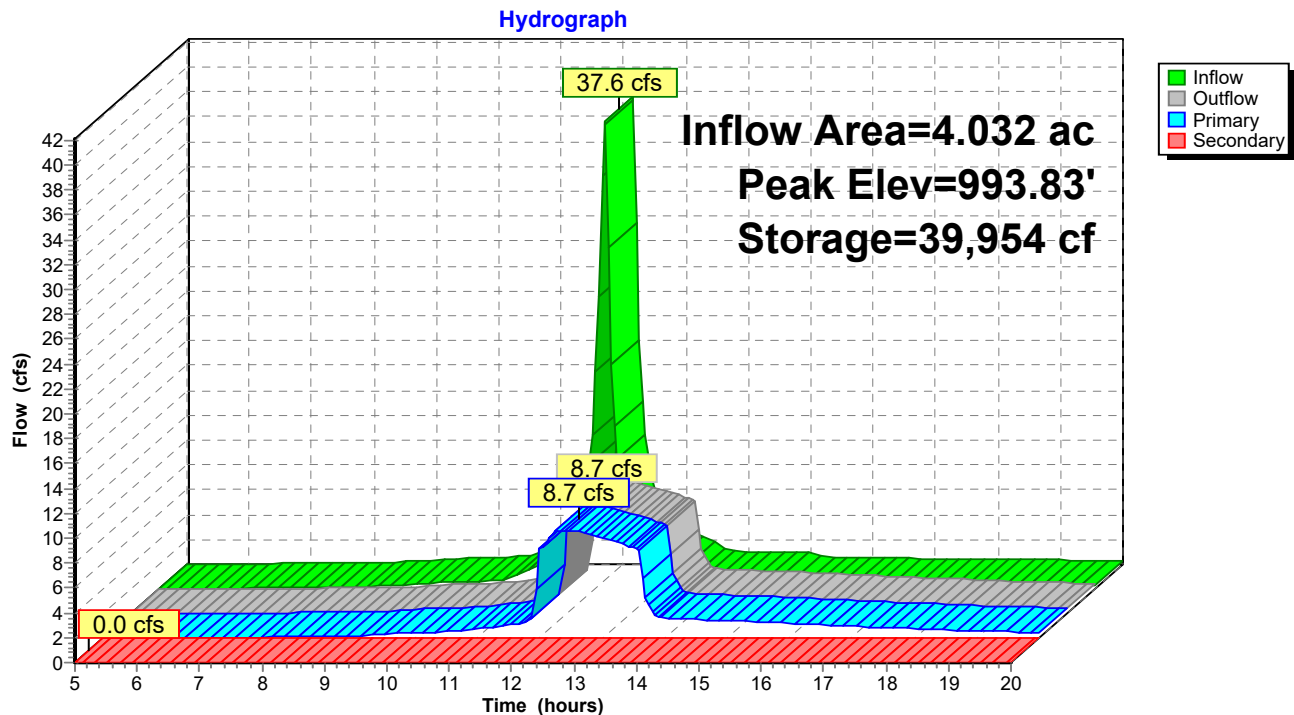
3=Sharp-Crested Rectangular Weir (Passes < 167.7 cfs potential flow)

4=HAALA 48" ID Pond Skimmer (Passes < 48.6 cfs potential flow)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=986.00' (Free Discharge)

5=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Pond 1P: Wet Sedimentation Basin



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Summary for Pond 2P: Filtration Basin

Inflow Area = 1.269 ac, 73.72% Impervious, Inflow Depth > 6.15" for 100-YR event
Inflow = 12.5 cfs @ 12.14 hrs, Volume= 0.651 af
Outflow = 5.8 cfs @ 12.26 hrs, Volume= 0.541 af, Atten= 54%, Lag= 7.3 min
Primary = 5.8 cfs @ 12.26 hrs, Volume= 0.541 af
Routed to Pond 3P :
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach 3R : West Bluff
Tertiary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach 3R : West Bluff

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 985.53' @ 12.26 hrs Surf.Area= 1,311 sf Storage= 10,217 cf

Plug-Flow detention time= 79.7 min calculated for 0.539 af (83% of inflow)
Center-of-Mass det. time= 40.1 min (786.2 - 746.1)

Volume	Invert	Avail.Storage	Storage Description
#1	982.00'	6,940 cf	Custom Stage Data (Prismatic) Listed below (Recalc) x 0.5
#2A	981.25'	3,536 cf	36.08'W x 70.23'L x 5.50'H Field A Impervious 13,938 cf Overall - 5,097 cf Embedded = 8,841 cf x 40.0% Voids
#3A	982.00'	5,097 cf	ADS_StormTech MC-3500 d +Cap x 45 Inside #2 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 45 Chambers in 5 Rows Cap Storage= 14.9 cf x 2 x 5 rows = 149.0 cf
		15,573 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
982.00	588	0	0
987.00	3,470	10,145	10,145
988.00	4,000	3,735	13,880

Device	Routing	Invert	Outlet Devices
#1	Primary	980.00'	12.0" Round Culvert L= 200.0' Ke= 0.500 Inlet / Outlet Invert= 980.00' / 978.00' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	982.00'	1.630 in/hr Exfiltration over Surface area above 982.00' Excluded Surface area = 294 sf Phase-In= 0.01'
#3	Device 1	983.50'	24" Nyloplast Dome Grate X 0.50 Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 Disch. (cfs) 0.000 0.660 1.870 3.440 5.290 6.400 7.010 7.570 8.100 8.590 9.050 11.090 12.800 14.310 15.680 16.940 18.100 19.200 20.240
#4	Secondary	986.50'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

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			2.50	3.00	3.50	4.00	4.50	5.00	5.50				
			Coef. (English)	2.34	2.50	2.70	2.68	2.68	2.66	2.65	2.65	2.65	2.65
				2.65	2.67	2.66	2.68	2.70	2.74	2.79	2.88		
#5	Tertiary	987.00'	133.0' long x 3.0' breadth Broad-Crested Rectangular Weir										
			Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00
				2.50	3.00	3.50	4.00	4.50					
			Coef. (English)	2.44	2.58	2.68	2.67	2.65	2.64	2.64	2.68	2.68	
				2.72	2.81	2.92	2.97	3.07	3.32				

Primary OutFlow Max=5.8 cfs @ 12.26 hrs HW=985.51' (Free Discharge)

1=Culvert (Barrel Controls 5.8 cfs @ 7.34 fps)

2=Exfiltration (Passes < 0.0 cfs potential flow)

3=24" Nyloplast Dome Grate (Passes < 6.4 cfs potential flow)

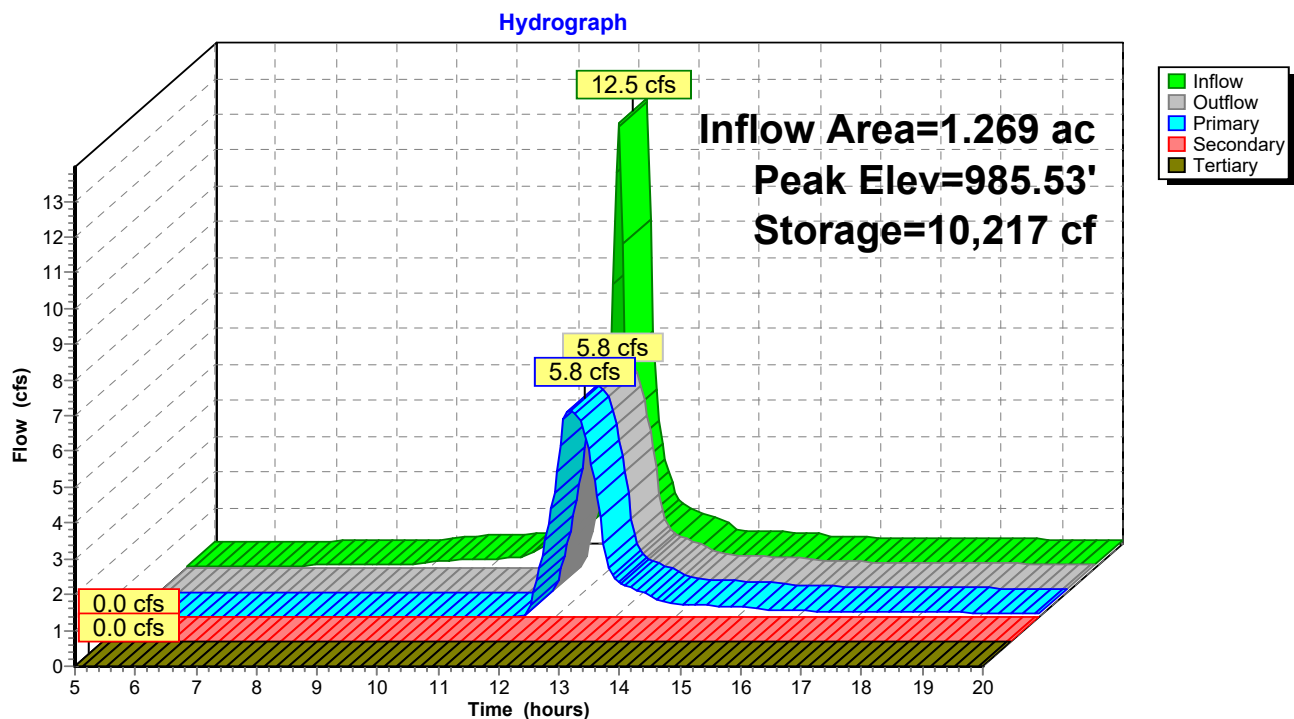
Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=981.25' (Free Discharge)

4=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Tertiary OutFlow Max=0.0 cfs @ 5.00 hrs HW=981.25' (Free Discharge)

5=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Pond 2P: Filtration Basin



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Summary for Pond 3P:

Inflow Area = 1.882 ac, 70.62% Impervious, Inflow Depth > 5.42" for 100-YR event
Inflow = 11.5 cfs @ 12.15 hrs, Volume= 0.850 af
Outflow = 11.5 cfs @ 12.15 hrs, Volume= 0.850 af, Atten= 0%, Lag= 0.0 min
Primary = 11.5 cfs @ 12.15 hrs, Volume= 0.850 af
Routed to Pond 4P :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

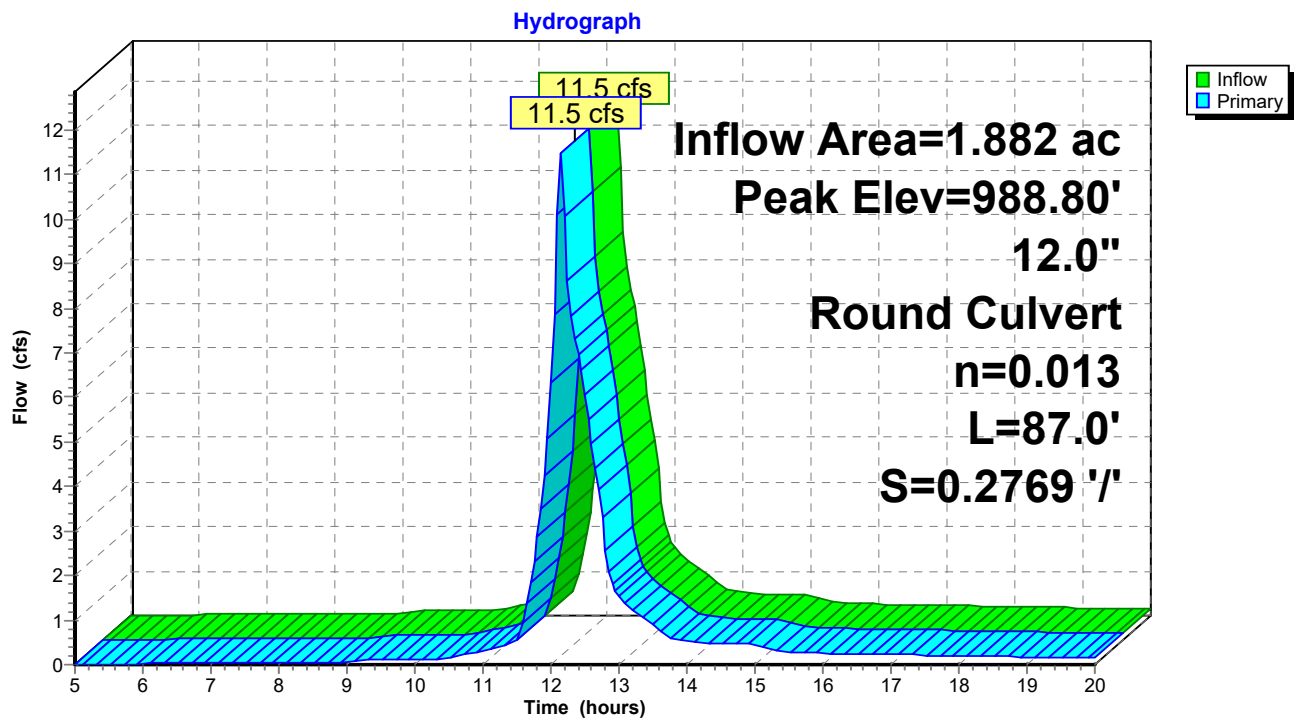
Peak Elev= 988.80' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	979.09'	12.0" Round RCP_Round 12" L= 87.0' Ke= 0.500 Inlet / Outlet Invert= 979.09' / 955.00' S= 0.2769 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=11.5 cfs @ 12.15 hrs HW=988.78' (Free Discharge)

↑1=RCP_Round 12" (Inlet Controls 11.5 cfs @ 14.60 fps)

Pond 3P:



Post-Development

Prepared by Widseth Smith Nolting

HydroCAD® 10.20-9a s/n 01722 © 2026 HydroCAD Software Solutions LLC

MSE 24-hr 3 100-YR Rainfall=7.19"

Printed 6/19/2026

Page 74

Summary for Pond 4P:

Inflow Area = 1.882 ac, 70.62% Impervious, Inflow Depth > 5.42" for 100-YR event
Inflow = 11.5 cfs @ 12.15 hrs, Volume= 0.850 af
Outflow = 11.5 cfs @ 12.15 hrs, Volume= 0.850 af, Atten= 0%, Lag= 0.0 min
Primary = 11.5 cfs @ 12.15 hrs, Volume= 0.850 af
Routed to Reach 2R : West Storm

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

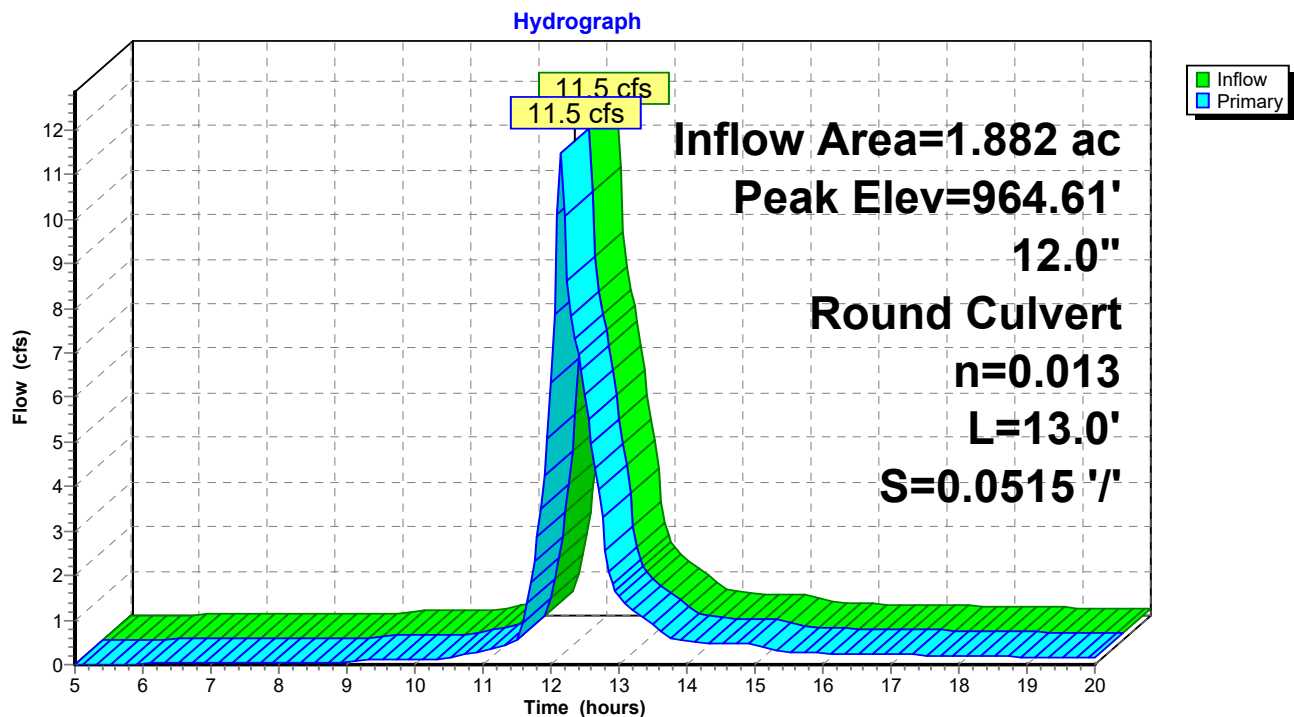
Peak Elev= 964.61' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	954.90'	12.0" Round RCP_Round 12" L= 13.0' Ke= 0.500 Inlet / Outlet Invert= 954.90' / 954.23' S= 0.0515 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

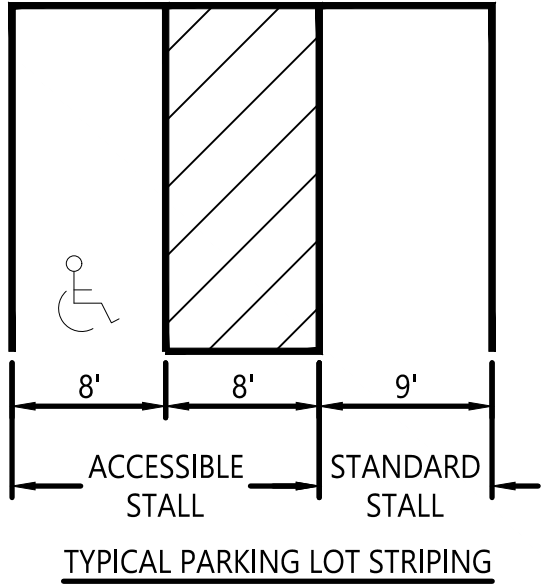
Primary OutFlow Max=11.5 cfs @ 12.15 hrs HW=964.59' (Free Discharge)

↑1=RCP_Round 12" (Inlet Controls 11.5 cfs @ 14.60 fps)

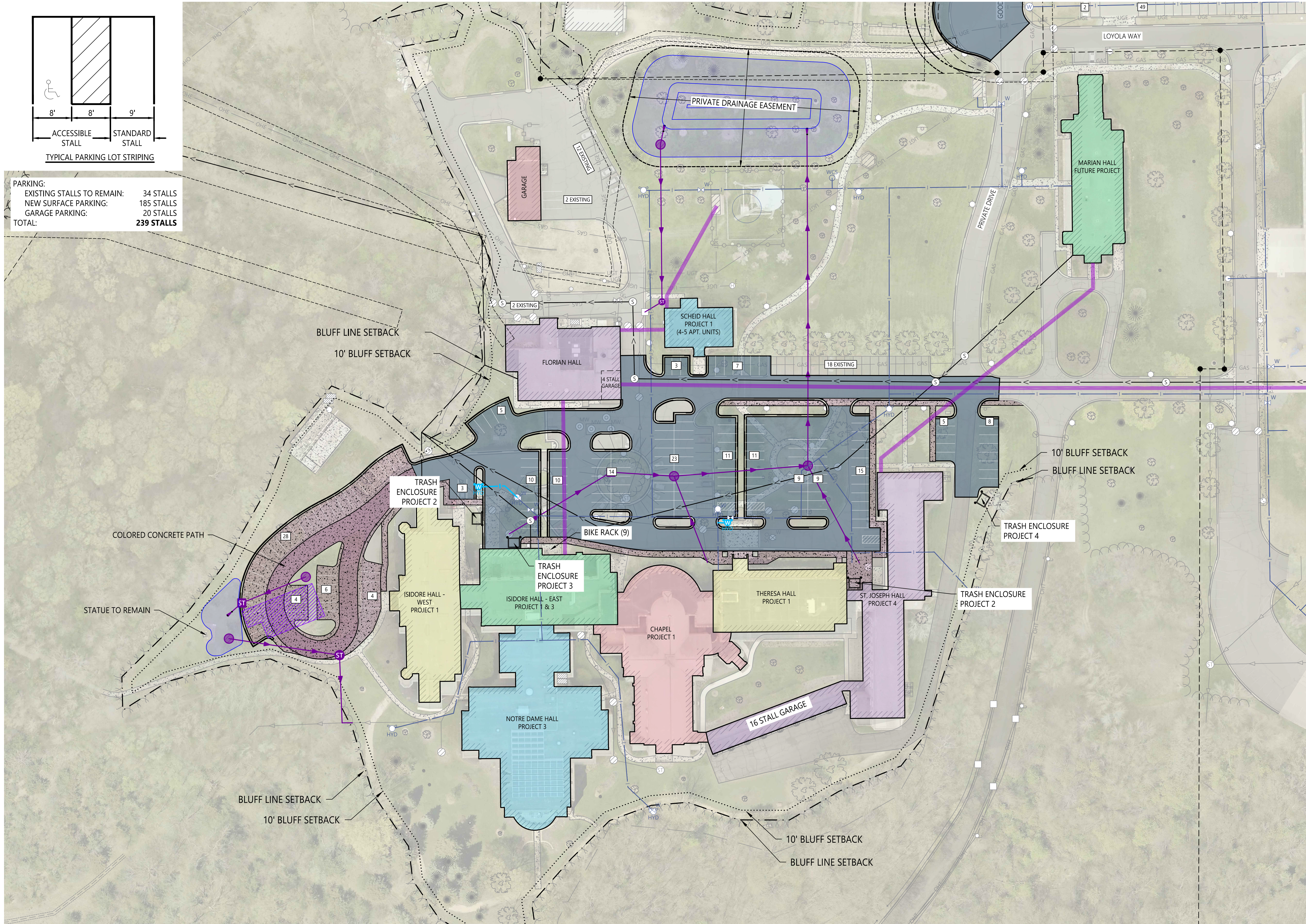
Pond 4P:



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PARKING:
EXISTING STALLS TO REMAIN: 34 STALLS
NEW SURFACE PARKING: 185 STALLS
GARAGE PARKING: 20 STALLS
TOTAL: 239 STALLS

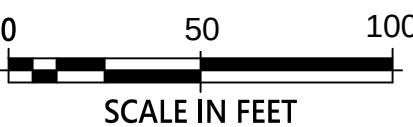


PROPOSED LEGEND

- BITUMINOUS SURFACE
- CONCRETE SURFACE
- CURB & GUTTER
- STORM SEWER CATCH BASIN
- STORM SEWER CLEANOUT
- STORM SEWER INLET STRUCTURE
- STORM SEWER MANHOLE
- STORM SEWER GRAVITY MAIN
- STORM SEWER DRAINTILE
- HYDRANT
- WATER MAIN VALVE
- WATER MAIN PIPE

EXISTING LEGEND

- SHRUB
- TREE - CONIFEROUS
- TREE - DECIDUOUS
- EDGE OF WOODS
- BUILDING
- CHAINLINK FENCE
- RETAINING WALL
- FOC - UNDERGROUND FIBER OPTIC LINE
- OHT - OVERHEAD TELEPHONE LINE
- UGT - UNDERGROUND TELEPHONE LINE
- OHC - OVERHEAD TV LINE
- UGC - UNDERGROUND TV LINE
- FOC - UNDERGROUND FIBER OPTIC LINE
- UGT - UNDERGROUND TELEPHONE LINE
- UGE - UNDERGROUND ELECTRIC LINE
- GAS - NATURAL GAS LINE
- SANITARY MANHOLE
- SANITARY GRAVITY MAIN
- STORM SEWER CATCH BASIN
- CULVERT APRON
- STORM SEWER INLET STRUCTURE
- STORM SEWER MANHOLE
- STORM SEWER GRAVITY MAIN
- CURB STOP
- FIRE HYDRANT
- WATER MAIN LINE



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RSH
CHECKED BY:
CNB

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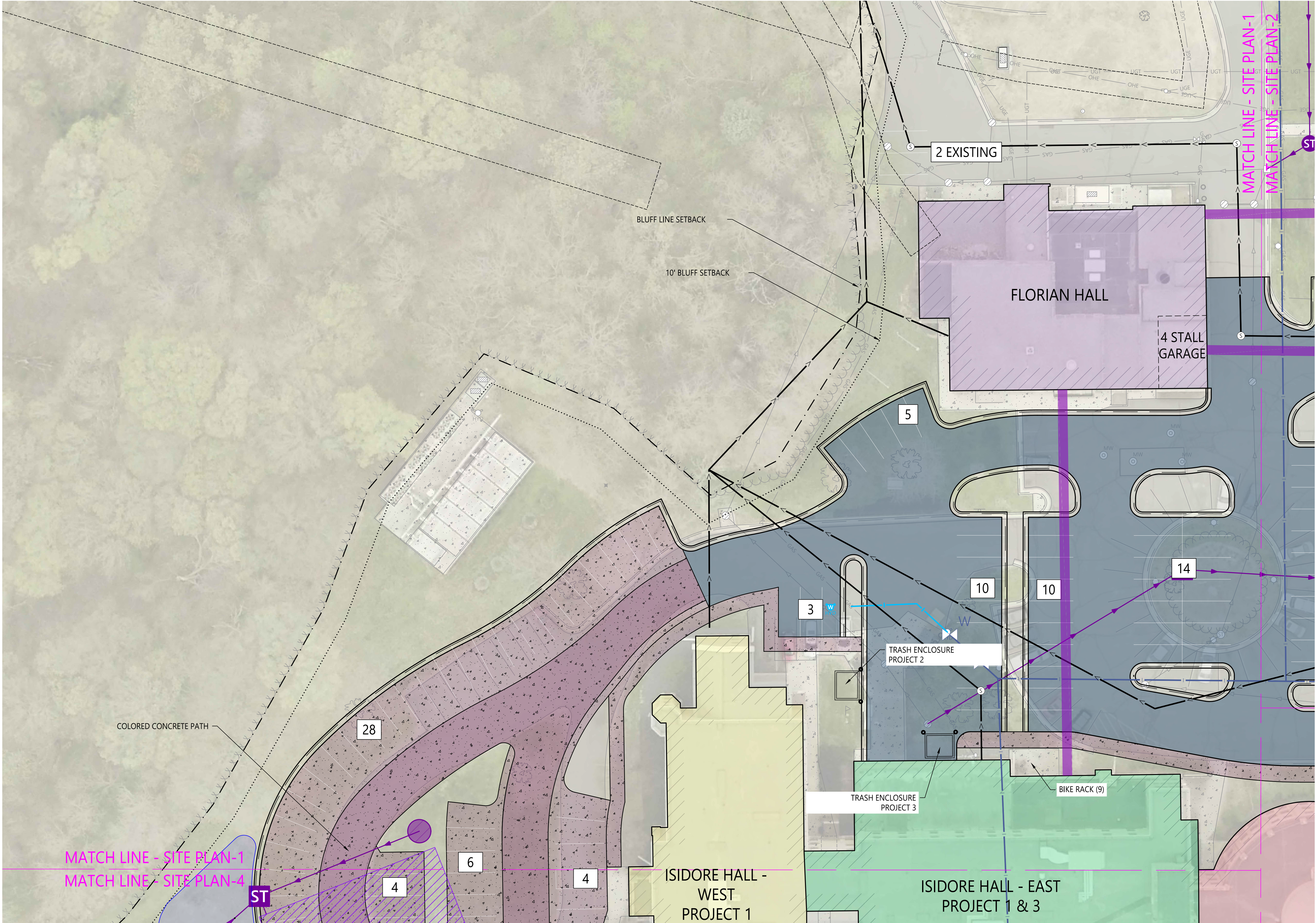
NOT FOR CONSTRUCTION

CRAIG N. BRITTON LIC. NO.: 44228 DATE: 03/24/2026

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GOOD COUNSEL
SITE PLAN - OVERALL

C2.0
PROJECT #: 2025-10591



PROPOSED LEGEND

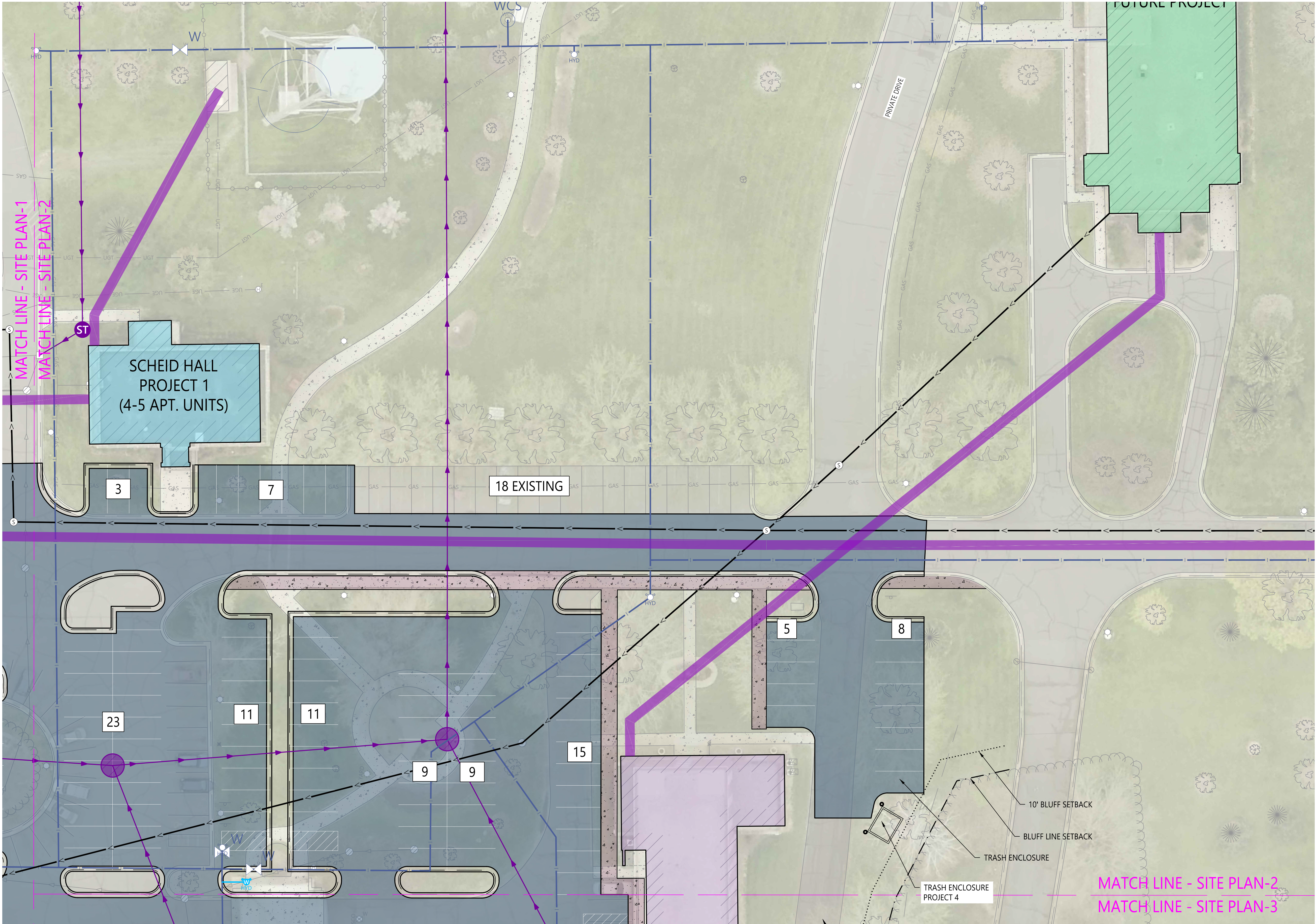
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- STORM SEWER CATCH BASIN
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DATE	REV#	REVISIONS DESCRIPTION

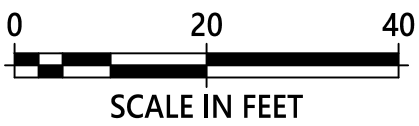


PROPOSED LEGEND

- BITUMINOUS SURFACE
- CONCRETE SURFACE
- CURB & GUTTER
- STORM SEWER CATCH BASIN
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- STORM SEWER GRAVITY MAIN
- CURB STOP
- FIRE HYDRANT
- WATER MAIN LINE



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ARCHITECTS • ENGINEERS • SCIENTISTS • SURVEYORS

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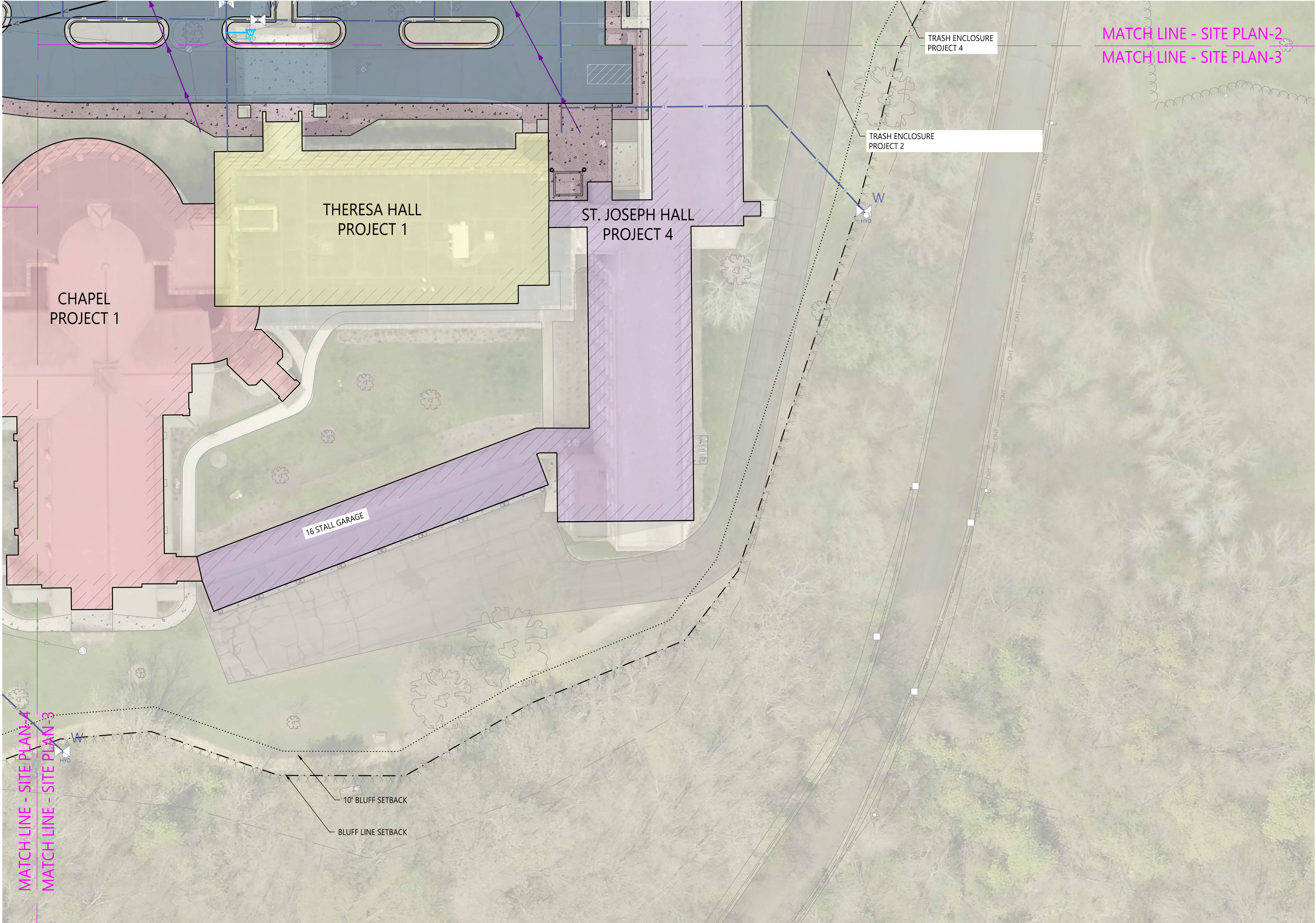
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GOOD COUNSEL

SITE PLAN - ENLARGEMENT

C2.2

PROJECT #: 2025-10591

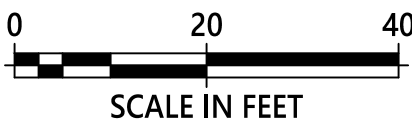


PROPOSED LEGEND

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- CURB & GUTTER
- STORM SEWER CATCH BASIN
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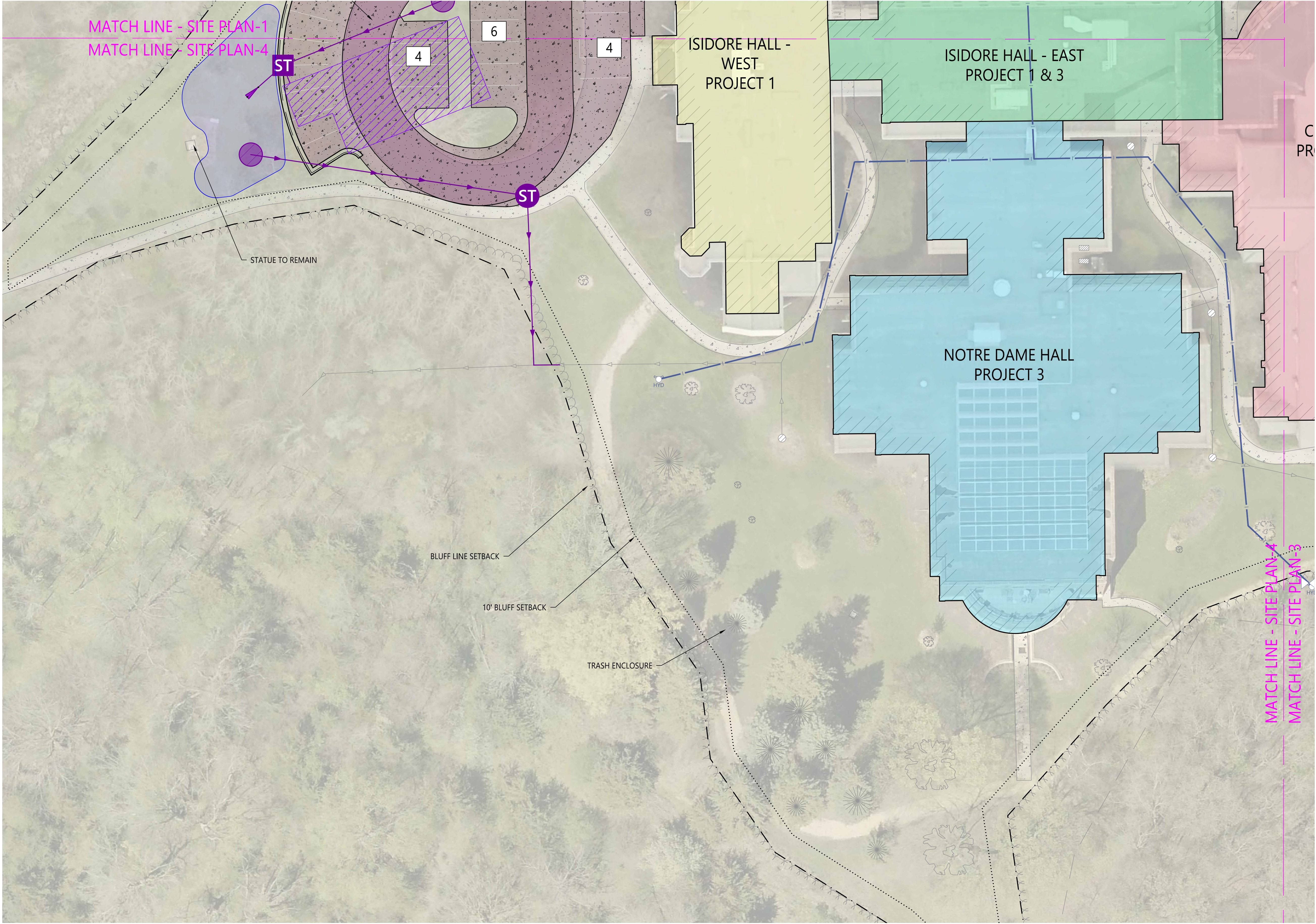
DATE	REV#	REVISIONS DESCRIPTION

GOOD COUNSEL

SITE PLAN - ENLARGEMENT

C2.3

PROJECT #: 2025-10591

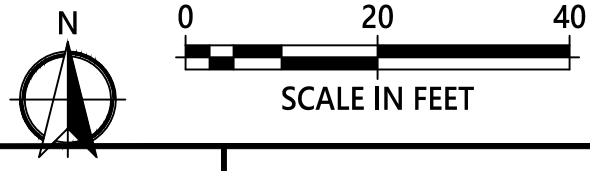


PROPOSED LEGEND

- BITUMINOUS SURFACE
- CONCRETE SURFACE
- CURB & GUTTER
- STORM SEWER CATCH BASIN
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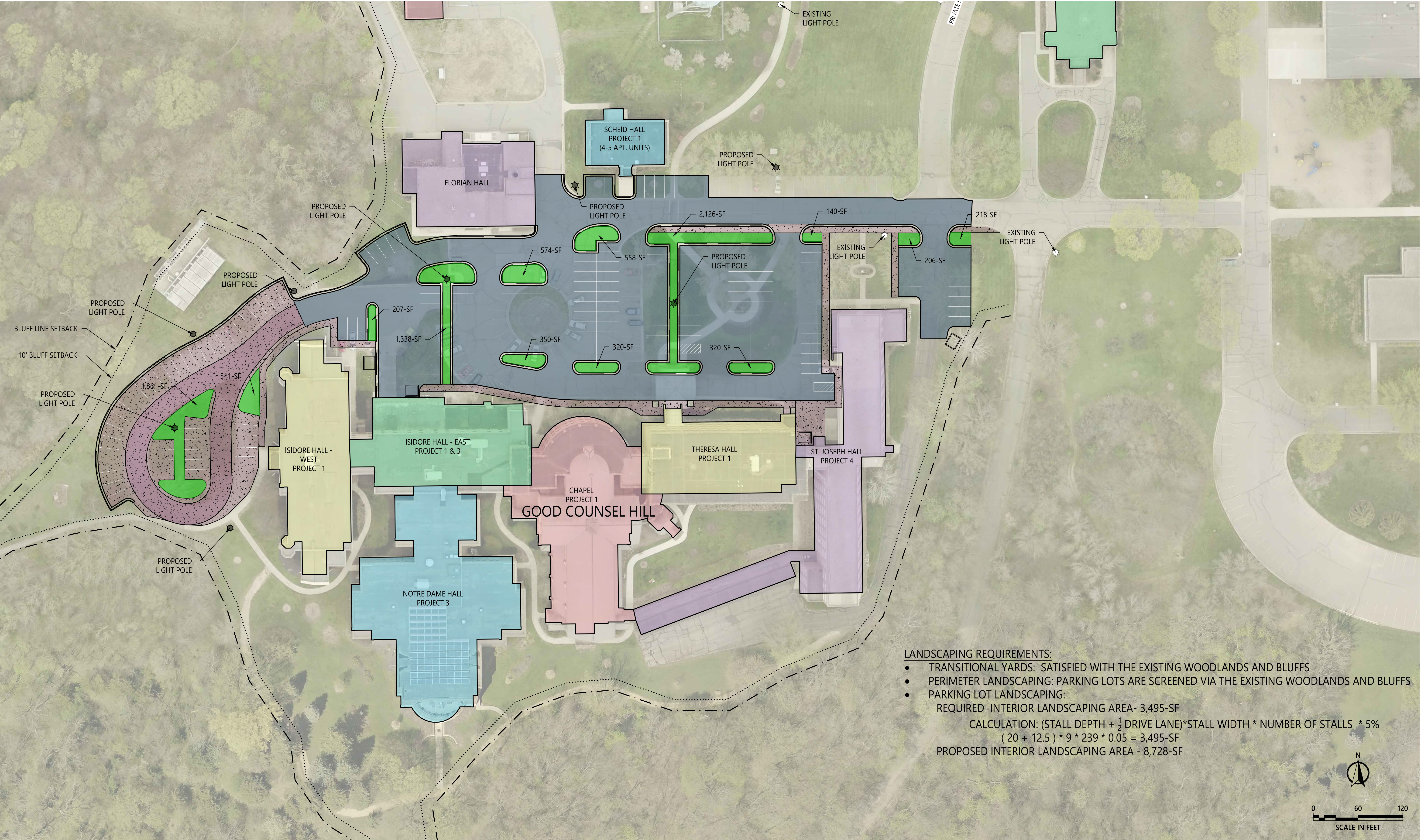
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GOOD COUNSEL
SITE PLAN - ENLARGEMENT

C2.4
PROJECT #: 2025-10591

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LANDSCAPING REQUIREMENTS:

- TRANSITIONAL YARDS: SATISFIED WITH THE EXISTING WOODLANDS AND BLUFFS
- PERIMETER LANDSCAPING: PARKING LOTS ARE SCREENED VIA THE EXISTING WOODLANDS AND BLUFFS
- PARKING LOT LANDSCAPING:
 - REQUIRED INTERIOR LANDSCAPING AREA - 3,495-SF
 - CALCULATION: $(\text{STALL DEPTH} + \frac{1}{2} \text{ DRIVE LANE}) * \text{STALL WIDTH} * \text{NUMBER OF STALLS} * 5\%$
 - $(20 + 12.5) * 9 * 239 * 0.05 = 3,495\text{-SF}$
 - PROPOSED INTERIOR LANDSCAPING AREA - 8,728-SF



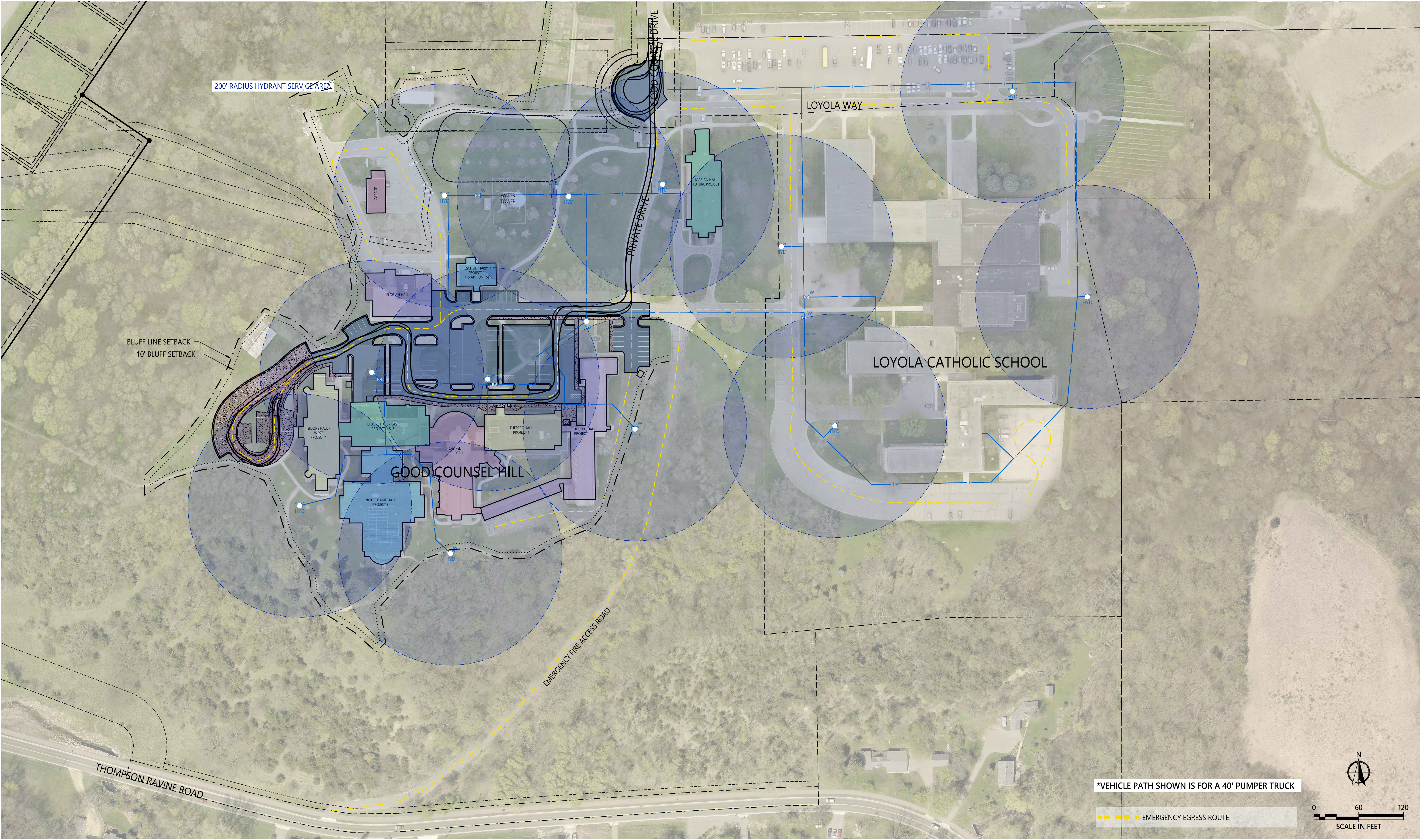
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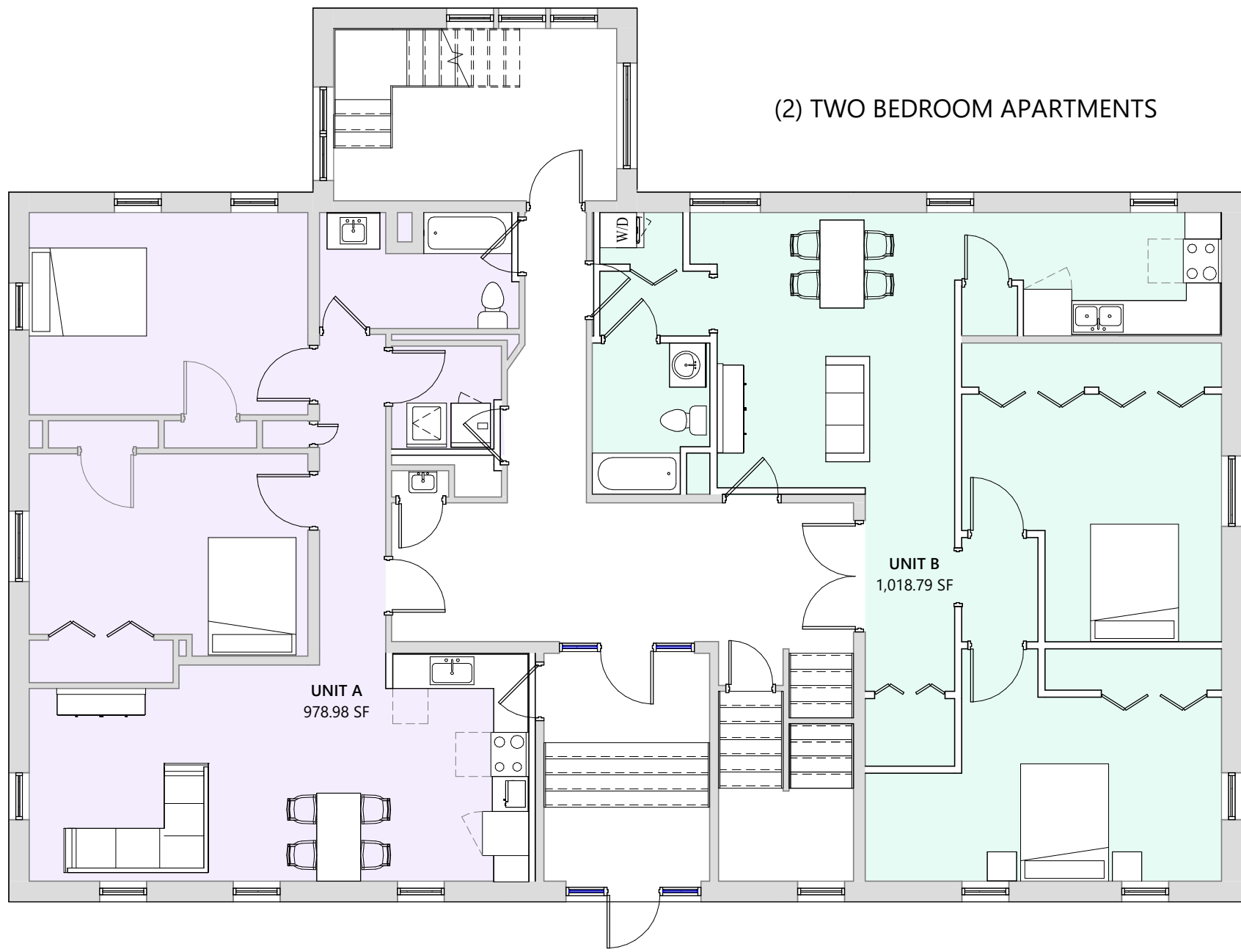
DATE	REV#	REVISIONS DESCRIPTION

GOOD COUNSEL
LANDSCAPE AND LIGHTING PLAN

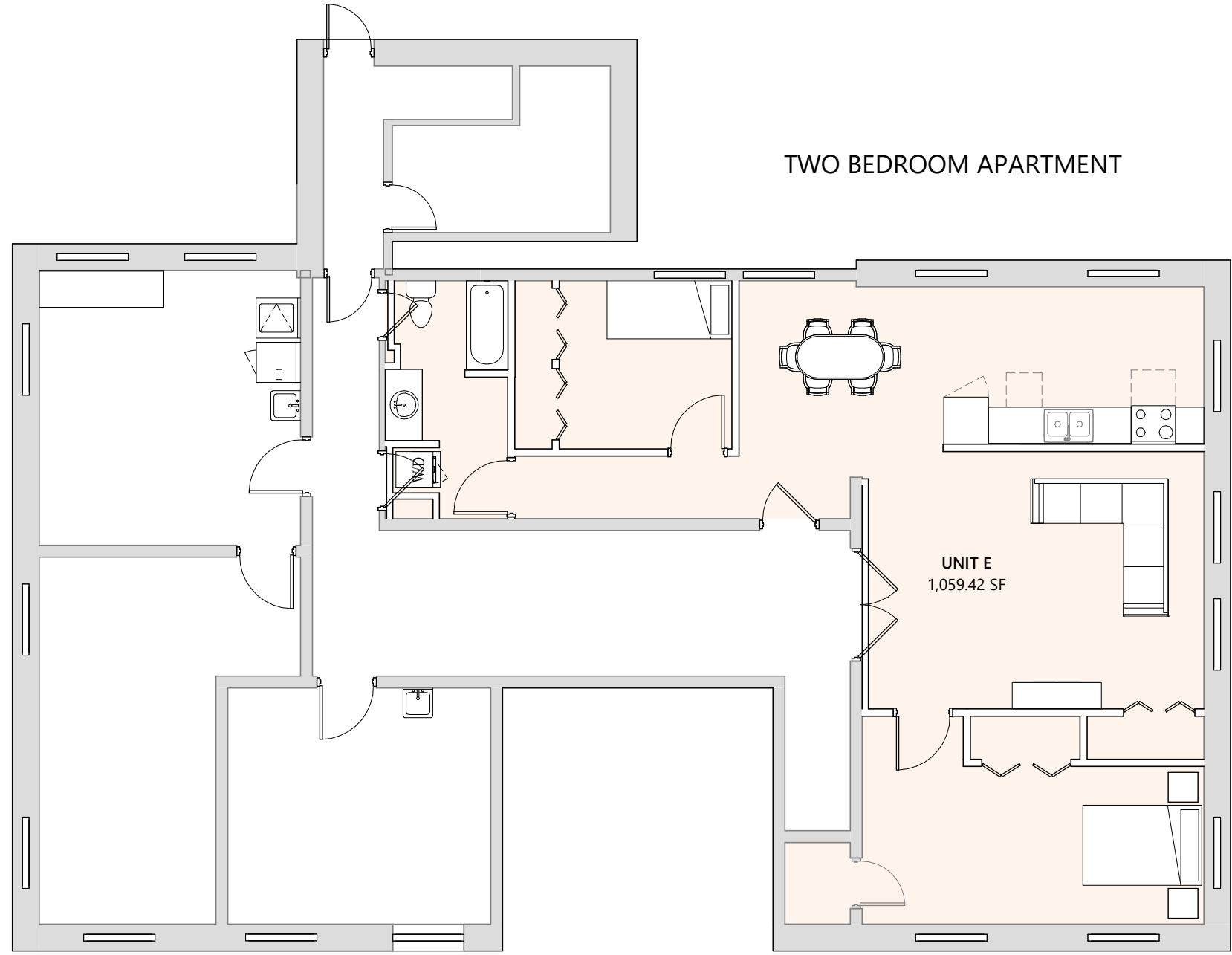
PROJECT #: 2025-10591



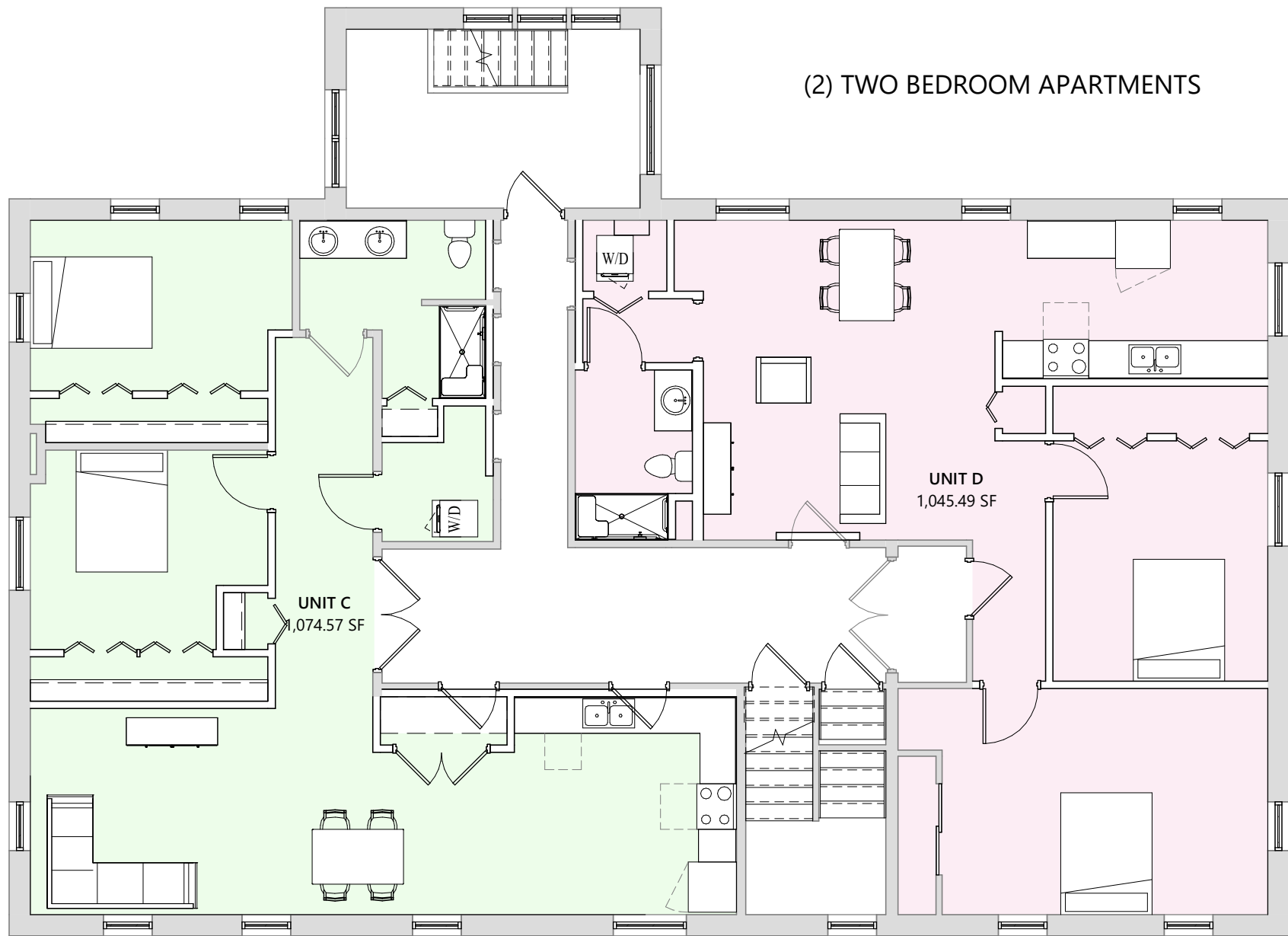
DATE	REV#	REVISIONS DESCRIPTION



4 FIRST LEVEL PLAN
1/8" = 1'-0"



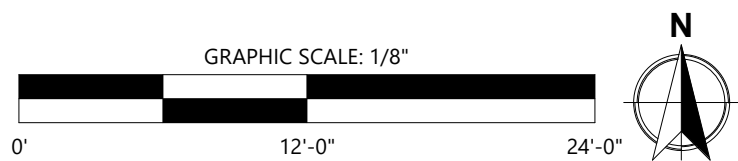
2 LOWER LEVEL FLOOR PLAN
1/8" = 1'-0"



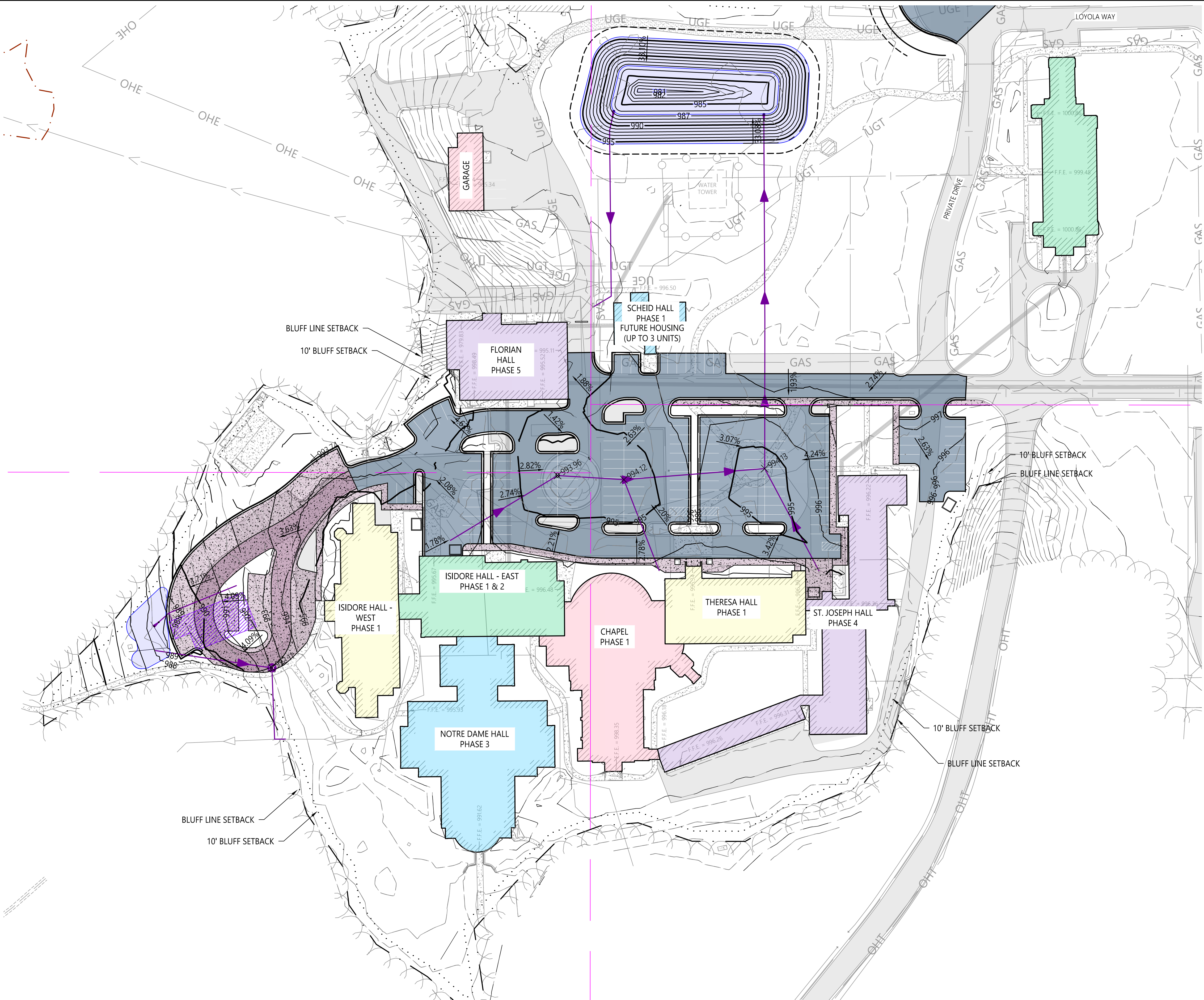
6 SECOND LEVEL PLAN
1/8" = 1'-0"

SCHEID HALL:

FIVE TOTAL PROPOSED TWO BEDROOM APARTMENTS



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PROPOSED LEGEND

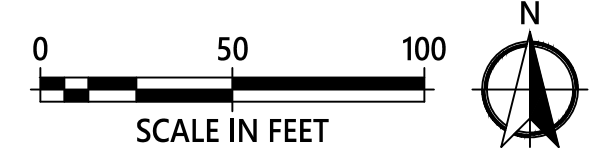
- BITUMINOUS SURFACE
- CONCRETE SURFACE
- CURB & GUTTER
- STORM SEWER CATCH BASIN
- STORM SEWER CLEANOUT
- STORM SEWER INLET STRUCTURE
- STORM SEWER MANHOLE
- STORM SEWER GRAVITY MAIN
- STORM SEWER DRAINTILE

EXISTING LEGEND

- SHRUB
- TREE - CONIFEROUS
- TREE - DECIDUOUS
- EDGE OF WOODS
- BUILDING
- CHAINLINK FENCE
- RETAINING WALL
- UNDERGROUND FIBER OPTIC LINE
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- STORM SEWER INLET STRUCTURE
- STORM SEWER MANHOLE
- STORM SEWER GRAVITY MAIN
- CURB STOP
- FIRE HYDRANT
- WATER MAIN LINE

GENERAL GRADING NOTES

- THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-2, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
- ALL CONSTRUCTION SHALL CONFORM TO LOCAL, STATE, AND FEDERAL REGULATIONS INCLUDING THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT REQUIREMENTS.
- HAULING HOURS MUST BE CONFIRMED WITH THE CITY PRIOR TO BEGINNING WORK.
- SPOT ELEVATIONS SHOWN INDICATE FINISHED PAVEMENT ELEVATIONS, GUTTER FLOW LINE OF CURB GUTTER (FL), BACK OF CURB ELEVATIONS (TC), TOP OF SIDEWALK (TW), AND FINISHED SURFACE GRADE, UNLESS OTHERWISE NOTED.
- ALL SLOPES SHALL BE GRADED TO 3:1 OR FLATTER, UNLESS OTHERWISE NOTED ON THE PLANS.



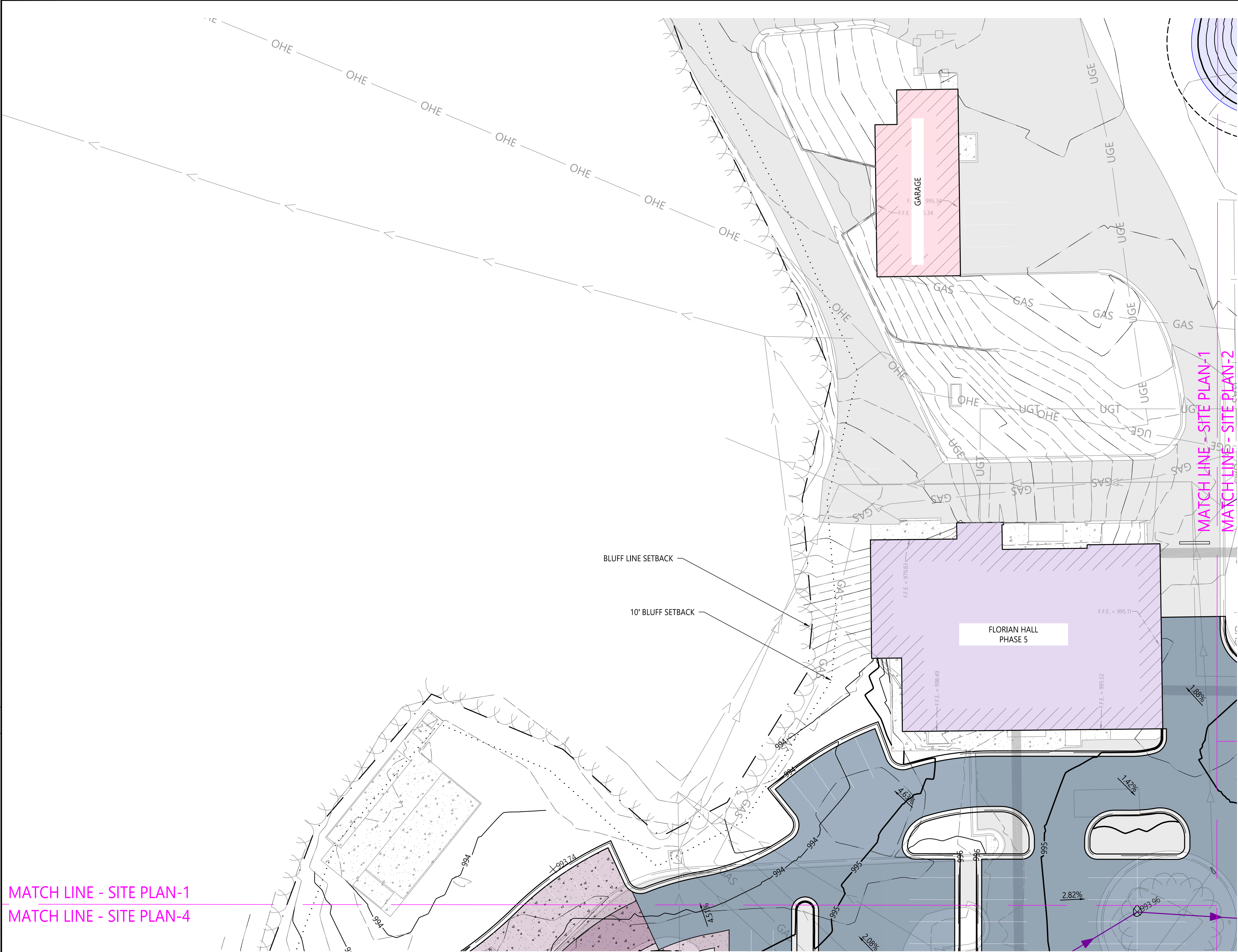
DRAWN BY: RSH
CHECKED BY: CNB

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CRAIG N. BRITTON LIC. NO.: 44228 DATE: 03/24/2026

DATE	REV#	REVISIONS DESCRIPTION

GOOD COUNSEL
GRADING PLAN - OVERALL

C4.0
PROJECT #: 2025-10591



PROPOSED LEGEND

- BITUMINOUS SURFACE
- CONCRETE SURFACE
- CURB & GUTTER
- STORM SEWER CATCH BASIN
- STORM SEWER CLEANOUT
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- STORM SEWER MANHOLE
- STORM SEWER GRAVITY MAIN
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EXISTING LEGEND

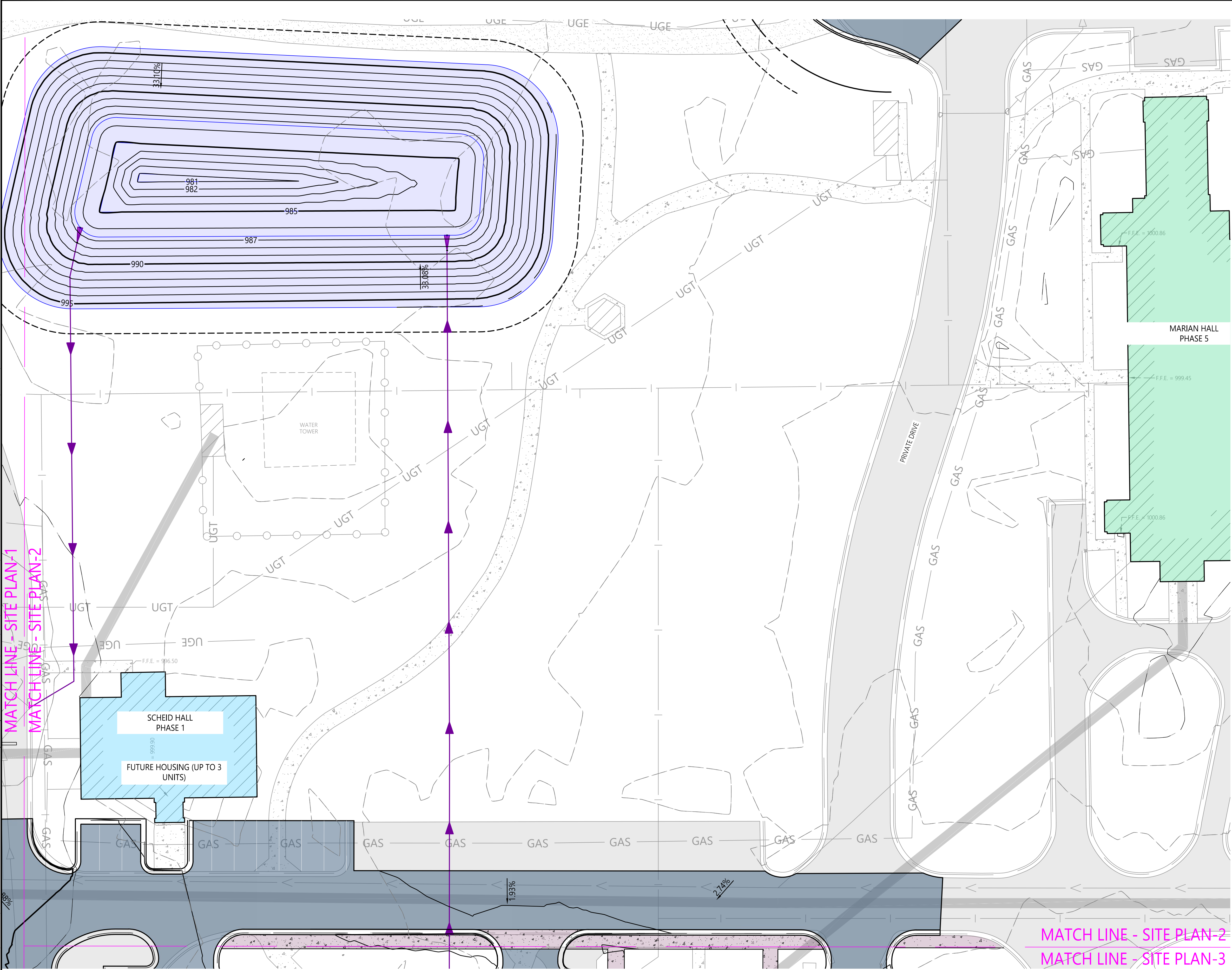
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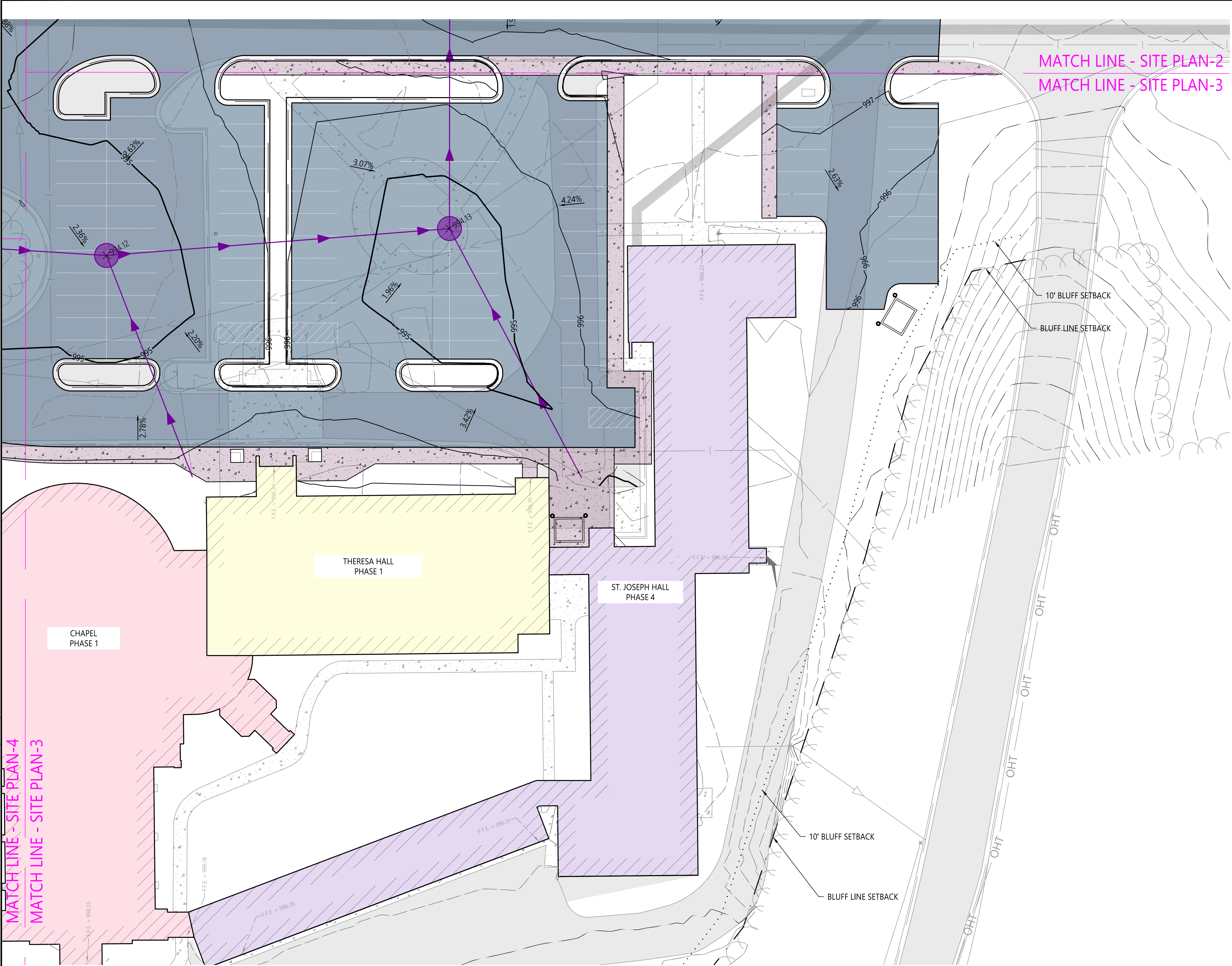
MATCH LINE - SITE PLAN-1
MATCH LINE - SITE PLAN-4

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MATCH LINE - SITE PLAN-1
MATCH LINE - SITE PLAN-2



PROPOSED LEGEND

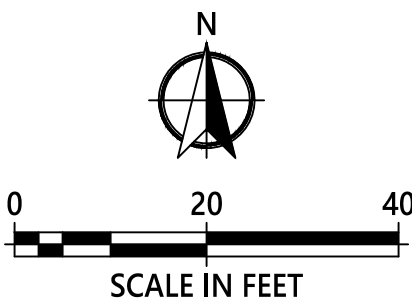
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- SANITARY MANHOLE
- SANITARY GRAVITY MAIN
- STORM SEWER CATCH BASIN
- CULVERT APRON
- STORM SEWER INLET STRUCTURE
- STORM SEWER MANHOLE
- STORM SEWER GRAVITY MAIN
- CURB STOP
- FIRE HYDRANT
- WATER MAIN LINE

GENERAL GRADING NOTES

- THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-2, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
- ALL CONSTRUCTION SHALL CONFORM TO LOCAL, STATE, AND FEDERAL REGULATIONS INCLUDING THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT REQUIREMENTS.
- HAULING HOURS MUST BE CONFIRMED WITH THE CITY PRIOR TO BEGINNING WORK.
- SPOT ELEVATIONS SHOWN INDICATE FINISHED PAVEMENT ELEVATIONS, GUTTER FLOW LINE OF CURB GUTTER (FL), BACK OF CURB ELEVATIONS (TC), TOP OF SIDEWALK (TW), AND FINISHED SURFACE GRADE, UNLESS OTHERWISE NOTED.
- ALL SLOPES SHALL BE GRADED TO 3:1 OR FLATTER, UNLESS OTHERWISE NOTED ON THE PLANS.



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MATCH LINE - SITE PLAN-4
MATCH LINE - SITE PLAN-3



DRAWN BY:
RSH
CHECKED BY:
CNB

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
NOT FOR CONSTRUCTION
CRAIG N. BRITTON LIC. NO.: 44228 DATE: 03/24/2026

DATE	REV#	REVISIONS DESCRIPTION

GOOD COUNSEL
GRADING PLAN - ENLARGEMENT

C4.3
PROJECT #: 2025-10591

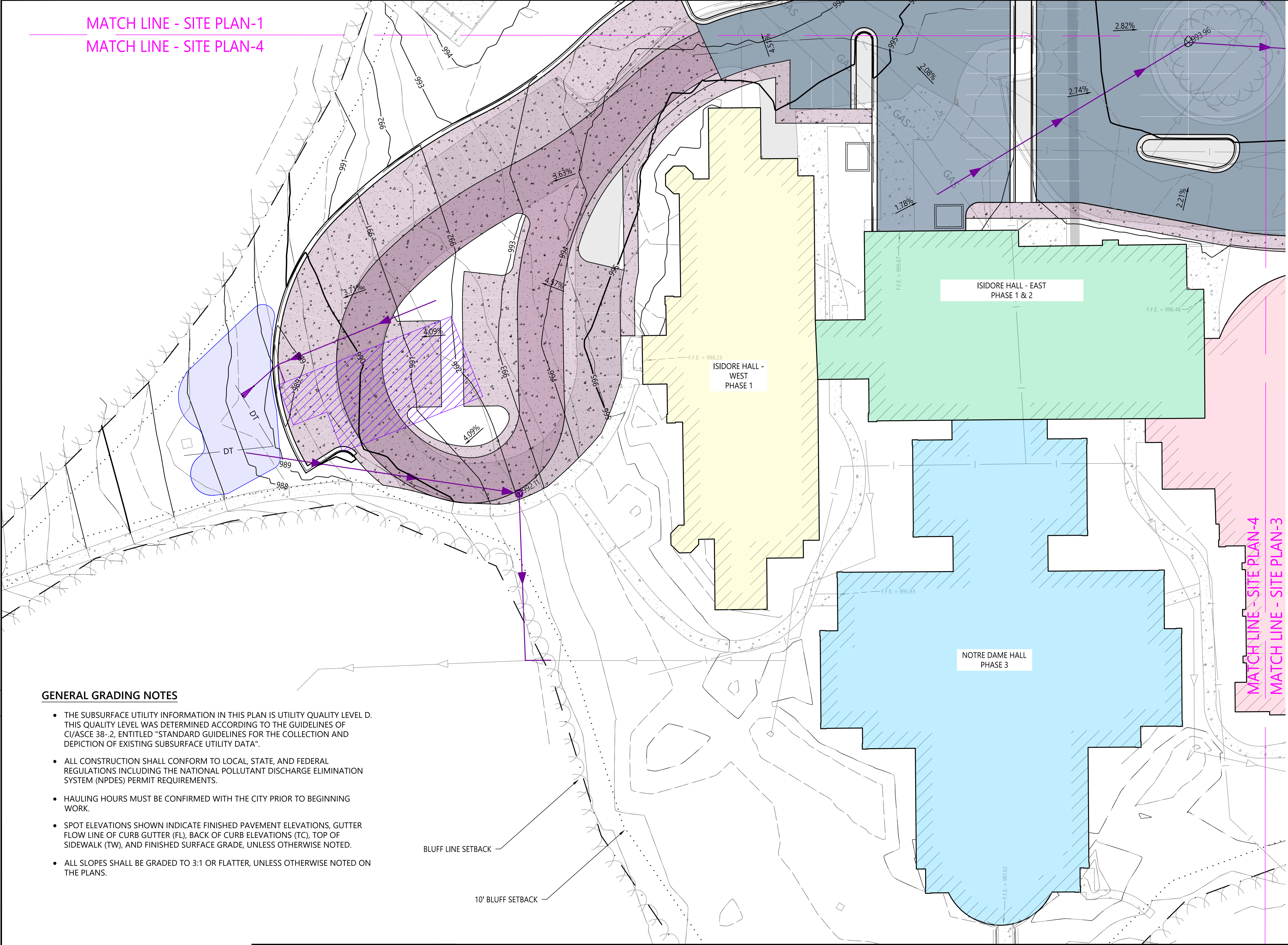
MATCH LINE - SITE PLAN-1
MATCH LINE - SITE PLAN-4

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BLUFF LINE SETBACK
10' BLUFF SETBACK

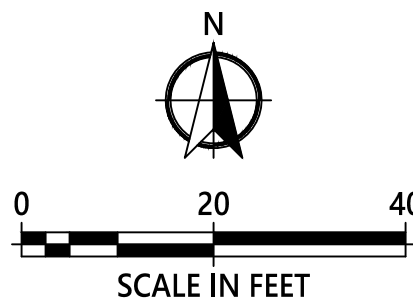


PROPOSED LEGEND

- BITUMINOUS SURFACE
- CONCRETE SURFACE
- CURB & GUTTER
- STORM SEWER CATCH BASIN
- STORM SEWER CLEANOUT
- STORM SEWER INLET STRUCTURE
- STORM SEWER MANHOLE
- STORM SEWER GRAVITY MAIN
- STORM SEWER DRAINTILE

EXISTING LEGEND

- SHRUB
- TREE - CONIFEROUS
- TREE - DECIDUOUS
- EDGE OF WOODS
- BUILDING
- CHAINLINK FENCE
- RETAINING WALL
- UNDERGROUND FIBER OPTIC LINE
- OVERHEAD TELEPHONE LINE
- UNDERGROUND TELEPHONE LINE
- OVERHEAD TV LINE
- UNDERGROUND TV LINE
- UNDERGROUND FIBER OPTIC LINE
- UNDERGROUND TELEPHONE LINE
- LIGHT POLE
- UNDERGROUND ELECTRIC LINE
- NATURAL GAS LINE
- SANITARY MANHOLE
- SANITARY GRAVITY MAIN
- STORM SEWER CATCH BASIN
- CULVERT APRON
- STORM SEWER INLET STRUCTURE
- STORM SEWER MANHOLE
- STORM SEWER GRAVITY MAIN
- CURB STOP
- FIRE HYDRANT
- WATER MAIN LINE



DRAWN BY:
RSH
CHECKED BY:
CNB

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NOT FOR CONSTRUCTION
CRAIG N. BRITTON LIC. NO.: 44228 DATE: 03/24/2026

DATE	REV#	REVISIONS DESCRIPTION

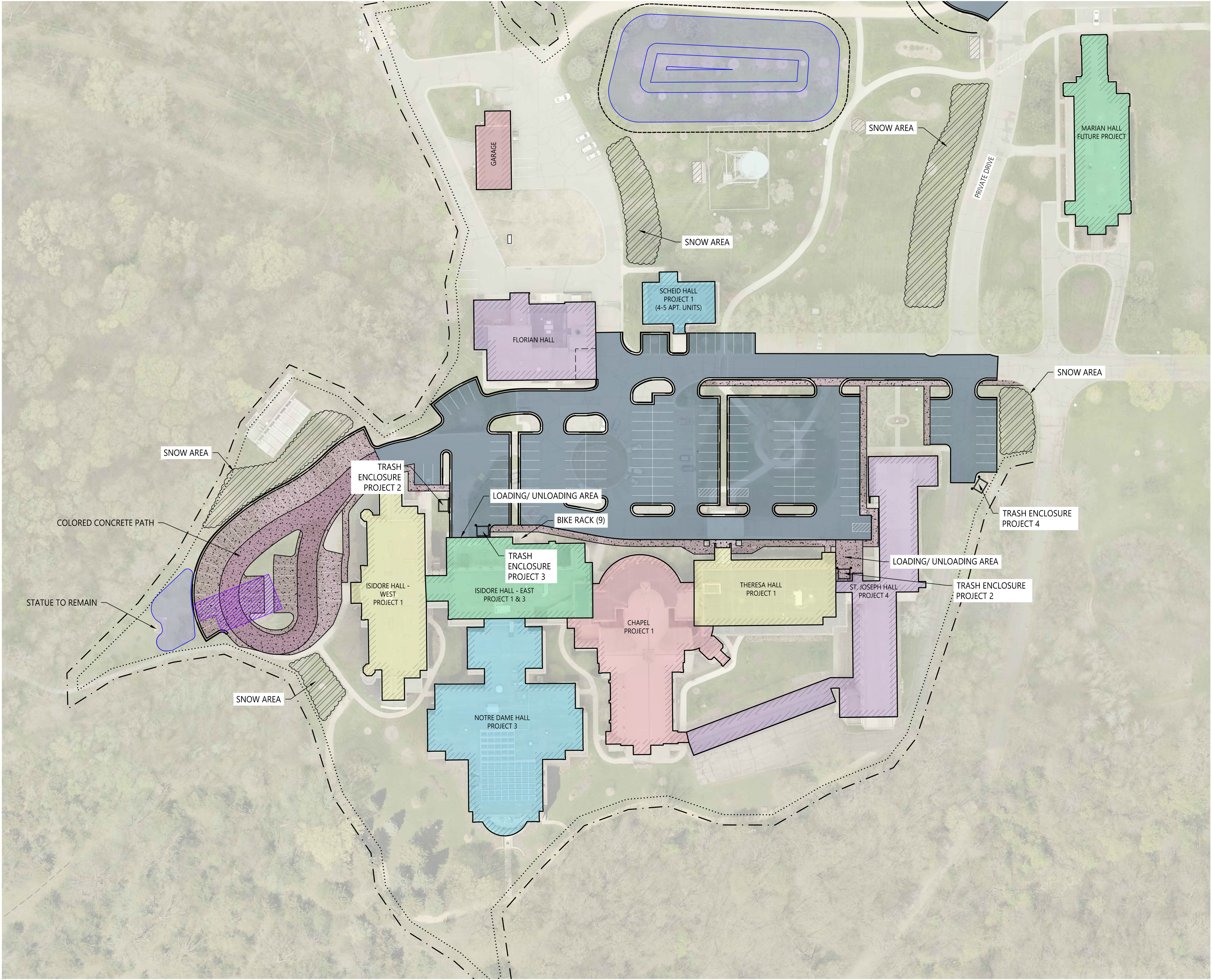
GOOD COUNSEL

GRADING PLAN - ENLARGEMENT

C4.4

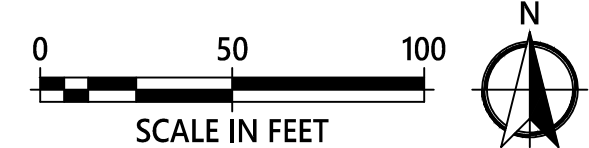
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ROADWAY/PAVEMENT LINEWORK - PROPOSED

SNOW PILING AREA



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RSH
CHECKED BY:
CNB

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NOT FOR CONSTRUCTION
CRAIG N. BRITTON LIC. NO.: 44228 DATE: 03/24/2026

DATE	REV#	REVISIONS DESCRIPTION

GOOD COUNSEL
SNOW REMOVAL, REFUSE AND LOADING PLAN

PROJECT #: 2025-10591