STORMWATER MANAGEMENT REPORT

For the proposed:

CONTRACTOR'S YARD

5 NORTHWOOD DRIVE

BLOOMFIELD, CT

Prepared for:

BURNS CONSTRUCTION

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PREPARED BY

BL Companies

100 Constitution Plaza
10th Floor
Hartford, CT 06103

Architecture
Engineering
Environmental
Land Surveying

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EXECUTIVE SUMMARY

Burns Construction is seeking to redevelop the existing parcel located at 5 Northwood Drive within the Town of Bloomfield, Hartford County, Connecticut by constructing a contractor's yard on the south side of the property and expanding the existing parking on the north side of the property. The proposed development will include an approximately 40,500 S.F. paved contractor's yard, expanded parking lot, and associated landscaping. The existing building, utilities, and much of the existing pavement will remain. The total area of the subject property is 6.6 acres.

The subject property currently consists of a 17,800 S.F. building and approximately 50,000 S.F. of pavement or gravel parking lot and outdoor storage. The site is largely wooded with a wetland on the south side and a wetland on the north side. The total limits of disturbance are approximately 4 acres. There is currently no stormwater treatment on site. Runoff drains to two general locations: the street system through sheet flow or catch basins with no treatment or direct discharge to the onsite wetland.

The stormwater management system has been designed to effectively capture, detain, and treat stormwater runoff from the site, ensuring both quantity and quality control. On the southern portion of the site, runoff from the proposed contractor's yard sheet flows into a swale between the paved yard and the street. This swale conveys the runoff into a stormwater management basin in the southeast corner. The swale provides pretreatment by capturing sediment, increasing travel time, and reducing runoff velocity. The infiltration basin provides further treatment via sorption, trapping, and bacterial degradation. The basin is sized to contain water for the 100-year storm, but an exit swale is included in the design in the event of an emergency overflow.

The northern portion of the site will collect runoff via catch basin, directing the water into an underground stormwater system. Inlets will enter an isolator to treat water quality. The treated water is then conveyed to an underground chamber system, allowing for water quantity control. The outlet discharges to the drainage system in the road, where the existing runoff currently drains to with no treatment.

The proposed management system has been modeled using HydroCAD with TR-55 and SCS methodology, demonstrating no increase in peak flow rates for the 2-, 10-, 25-, 50-, and 100-year storm events.

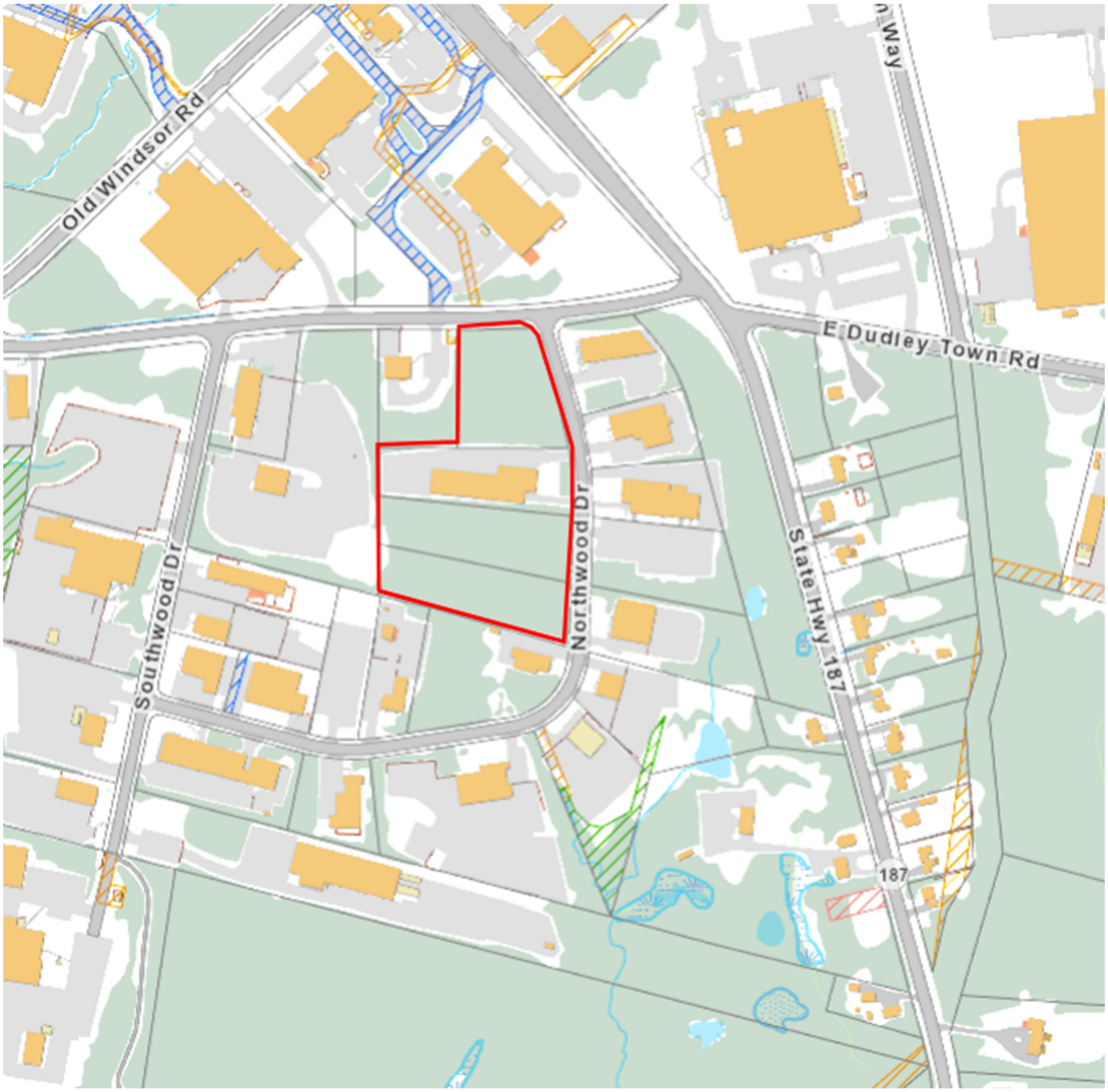
1.0 SITE INFORMATION

Project Description:

The overall subject property is located at 5 Northwood Drive in Bloomfield, Hartford County, Connecticut. The property is located at the corner of Northwood Drive and West Dudley Town Road. The property currently consists of four parcels: 9 West Dudley Town Road (ID 5087), 5 Northwood Drive (ID: 5085), 7 Northwood Drive (ID: 5084), and 9 Northwood Drive (ID: 5086). These parcels are currently under the same ownership and will be combined through a lot consolidation plan as part of this development project. In the existing condition, the majority of the site has slopes that convey stormwater runoff to the street or the onsite wetland. There are 3 catch basins on site that directly discharge runoff from the pavement to the street system or to the onsite wetland, with no treatment.

The proposed development will include an approximately 40,500 S.F. paved contractor's yard, expanded parking lot, and associated landscaping. The existing building, utilities, and much of the existing pavement will remain. The development will include swales, a surface infiltration basin, and an underground infiltration system. The total area of the subject property is 6.6 acres. The total limit of disturbance is approximately 4 acres.

SITE LOCATION



SITE SOILS

Offsite soils were mapped using NRCS and are shown in Appendix H.

The soils in the area of the Property are classified by United States Department of Agriculture Natural Resources Conservation Service and consist primarily of type "B" rated soils, with some "A" rated soil. Please refer to Appendix H: NRCS Soil Survey Map with Hydrologic Soil Group Data, for soils and their classifications in the project area.

Soils located within the project area from the soil report are as follows:

Map Unit Symbol	Map Unit Name	Hydrologic Soil Group Rating
13	Walpole sandy loam, 0 to 3 percent slopes	B/D
36A	Windsor loamy sand, 0 to 3 percent slopes	A
306	Udorthents-Urban land complex	B
701A	Ninigret fine sandy loam, 0 to 3 percent slopes	B/D
701B	Ninigret fine sandy loam, 3 to 8 percent slopes	B/D

INFILTRATION TESTING

The subsurface exploration for stormwater management was performed by BL Companies, on two occasions. In December 2024, there was a series of five test pits performed to determine the estimated seasonal high groundwater elevation as well as to obtain the field-tested infiltration rate for the modeling analysis. Five test pits were dug, but due to the presence of high groundwater, infiltration tests were only completed at three tests pits that were deemed feasible stormwater locations.

Per town recommendation, further test pits were performed in June 2025 to confirm the infiltration rates. Three additional infiltration tests were performed.

Infiltration testing was completed using the double-ring infiltrometer method in accordance with the Connecticut Stormwater Quality Manual. The results of the infiltration testing are presented in the table below. Per the recommendations of the Connecticut Stormwater Quality Manual, half of the field-tested rate was used in the modeling of the stormwater management basins. A site map of test pit locations can be found in Appendix A.

TABLE 1: INFILTRATION RATES

Test Pit Number	Surface Elevation (Feet)	Estimated Seasonal High Groundwater (Feet)	Infiltration Test Depth (Feet)	Test Elevation (Feet)	Field Tested Infiltration Rate (in/hr)	Modeled Infiltration Rate (in/hr)
1	132.30	128.30	1.75	130.63	0.75	N/A*
4	126.93	124.76	1.83	125.10	1.80	N/A*
5	124.61	121.61	1.75	123.86	9.14	0.955**
12	125.30	118.3	1.00	124.3	2.44	0.955**
14	126.79	Not Observed	0.83	125.67	1.38	0.955**

*No infiltration modeled at this location

**TP-5 was dismissed as an outlier. The modeled infiltration rate for the stormwater basin was determined by finding the average field-tested rate of TP-12 and TP-14 (1.91 in/hr) and using half of that as the modeled rate.

GROUNDWATER OBSERVATION

Estimated seasonal high groundwater was determined through test pits. Test pits were dug to an elevation of about 4' below existing grade. The pits were left open for at least two hours, allowing groundwater to stabilize. Depth to groundwater was measured after stabilization.

1.1 NATURAL RESOURCES

ENVIRONMENTAL CONCERNS

A Phase 1 Site Assessment was completed by BL Companies in early 2024. The investigation revealed no evidence of historical recognized environmental conditions (HRECs) in connection with the property. Several areas of concern (AOCs) were identified in previous investigations, but remediation was not warranted. No new recognized environmental concerns were identified during BL Companies's investigation.

ENDANGERED AND TREATENED SPECIES

The Connecticut Department of Energy and Environmental Protection's (CTDEEP) Natural Diversity Data Base (NDDB) compiles maps that are representative of the locations of endangered, threatened and special concern species and significant natural communities in Connecticut. A review of the criteria for concern indicates there are no species of environmental concern within 1000 feet of the project site. This review was performed on January 24, 2025, with maps released in December 2024.

HISTORIC PRESERVATION REVIEW

Per Chapter 184a, section 10-387 of the Connecticut General Statues states that DEEP shall review, in consultation with the State Historic Preservation Office, it's policies and practices for consistency with regard to historic and archeological sites. As such, the historic preservation review procedures have been performed for the site based on the DEEP General Stormwater Discharge Permit for Construction activities, and the site is not within an area of significance.

1.2 RECEIVING SURFACE WATERS

The project site lies within the North Branch Park River subregional drainage basin (Park Regional Basin), which is within the Connecticut Major Basin. The project site is not located within a public water supply watershed.

A review of CTDEEP Aquifer Protection map for Bloomfield, Connecticut (map date December 2021) reveals that the project is not located within an aquifer protection area.

The site eventually drains to an unnamed tributary of Bearman's Brook. There are no established Total Maximum Daily Loads (TMDLs) for this receiving water.

1.3 FEMA FLOODPLAIN

The site is not located in a FEMA floodplain. Per the FEMA Flood Insurance Rate Map Numbers 09003C0352F for Town of Bloomfield, map effective date: September 26, 2008, the site resides inside Zone X (areas determined to be outside the 0.2% annual chance floodplain).

Flood Insurance Rate Maps are included in Appendix A for reference.

2.0 STORMWATER MANGEMENT STANDARDS AND PERFORMACE CRITERIA

2.1 DESIGN CRITERIA

The proposed stormwater management system is designed to be in general conformance with the current Town of Bloomfield Inland Wetlands and Watercourses Regulations, the Town of Bloomfield Zoning Regulations, the 2023 State of Connecticut Guidelines for Soil Erosion and Sediment Control, the 2023 State of Connecticut Stormwater Quality Manual, and State of Connecticut Department of Transportation Drainage Manual.

The 2023 Stormwater Quality Manual 5 Stormwater Standards are outlined below.

STANDARD 1: RUNOFF VOLUME AND POLLUTANT REDUCTION

- Retain the Required Retention Volume on site.
- Preference for non-structural Low Impact Development (LID) measures were used to the maximum extent achievable.

STANDARD 2: STORMWATER RUNOFF QUANTITY CONTROL

- The 2 Year post development peak flow has been reduced to be less than 50% of the pre-development flow.
    - BL Companies is requesting a waiver for this requirement as the site has been designed to the maximum extent possible. The overall site (Design Point 5) has reached a 43.4% reduction of the pre-development flow in the 2 year event. This site is a redevelopment. The portions of the site that are increasing in impervious coverage are being controlled via surface basin or underground stormwater system. The surface basin is designed to have no offsite flow in a 2-year storm event. The underground system is designed with a 2" orifice to reduce the flow in a 2-year storm event. Reducing this orifice size any further would make the orifice too small to effectively operate without clogging. By adding these treatment measures to a site that is currently untreated and having an overall reduction in off-site runoff, this redevelopment has an overall improvement to stormwater management.
- The 10-year post-development flow has been reduced to less than the 10-year pre-development flow.
- The 100-year post development flow has been reduced to less than the 100-year pre-development flow.
- The conveyance system has been designed to adequately flow the 10-year, 24-hour storm.
- Emergency outlet has been designed to safely pass the 100-year post development peak runoff without eroding.

STANDARD 3: CONSTRUCTION EROSION AND SEDIMENT CONTROL PLAN

We have developed a Soil Erosion and Sediment Control (SESC) Plan in general conformance with the local and state regulatory requirements, the Connecticut Guidelines for Soil Erosion

Sediment Control Guidelines (as amended), and the requirements of the CT DEEP Construction Stormwater General Permit. This can be found on Design plans and in Section 7 below.

STANDARD 4: POST-CONSTRUCTION OPERATION AND MAINTENANCE

We have developed a long-term Operation and Maintenance (O&M) Plan, which identifies required inspection and maintenance activities for structural stormwater BMPs.

STANDARD 5: STORMWATER MANAGEMENT PLAN

We have prepared Stormwater Management Plan outlining the stormwater management measures for the proposed development are in general conformance with the stormwater management standards, performance criteria, and design guidelines contained in the Connecticut Stormwater Quality Manual, as well as other local, state, and federal stormwater requirements.

3.0 HYDROLOGIC DESIGN METHODOLOGY

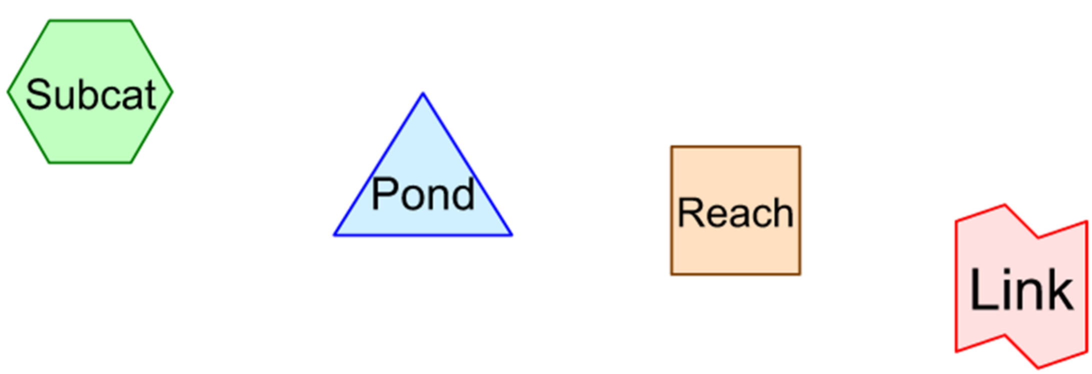
The hydrologic analysis to determine peak stormwater discharge rates was performed using the HydroCAD stormwater modeling system computer program, version 10.00 developed by HydroCAD Software Solutions, LLC. Hydrographs for each watershed were developed using the SCS Synthetic Unit Hydrograph Method. Rainfall depths and distribution per the NOAA Atlas 14 for Bloomfield, CT were used for the calculation of peak flow rates and are listed below.

TABLE 2: RAINFALL DEPTHS

Return Period (Year)	24-hour Rainfall Depth
2	3.19
10	5.10
25	6.29
50	7.16
100	8.12

The Hydrocad printouts use a series of symbols for the various modeling entities. Hydrologic Subcatchment areas are represented by a hexagon, stormwater basins are represented by blue triangles, reaches are represented by squares, and links are represented by irregular octagons. A Reach is used to perform an independent hydrograph routing through an open channel based on normal Manning's flow, and a link is used to hydrologically add multiple entities together to determine the peak discharge to an analysis point.

The hydrologic modeling results determined the change in peak rates of runoff for a 2-, 10-, 25-, 50 and 100-year storm events. The hydrologic modeling results in Appendix C and D are the overall analysis summaries from each storm event. The complete hydrographs for each storm and subcatchment can be found in the Hydrologic Report and is available upon request.



4.0 HYDROLOGIC ANALYSIS

The site layout and approach to stormwater management was completed in an integrated manner by attempting to limit the impacts of vegetation loss and soil changes; by incorporating Best Management Practices (BMPs), which includes both structural and non-structural practices; and by considering the overall impacts to the receiving waters.

4.1 PRE-DEVELOPMENT CONDITIONS

Existing runoff from the project site generally drains towards four potential design points and ultimately flow to the same final design point, generally described as follows:

- Intermediate Design Point 1: North Wetland
- Design Point 2: South Wetland
- Design Point 3: Northwood Drive
- Design Point 4: Abutter to South
- Design Point 5: Northwood Drive Network

4.1.1 ANALYSIS POINTS

Intermediate Design Point 1 is the existing wetland on the northern portion of the site. Under the existing condition there is a portion of the site (±2.13 acres) that discharges to the north wetland. This portion of the site is generally wooded with some grass and pavement. This is considered an intermediate design point because this wetland is culverted under the rear parking lot to connect with the south wetland (DP-2), so runoff is not leaving site at this point but maintaining flow to this area of wetland is critical. There is no treatment for the water flowing directly to this wetland in existing conditions.

Design Point 2 is the existing wetland on the southern portion of the site. Under the existing condition there is a portion of the site (±2.06 acres) that discharges to the south wetland. In the event that this wetland overflows, runoff would go off site through a channel (Southwest channel), combine with run-off from EDA-400, and travel through the abutter's property (South Abutter channel) towards the street system (DP-5). This portion of the site is generally paved with some grass and wooded area. There is no treatment for the water directly discharging to this wetland in existing conditions.

Design Point 3 is Northwood Drive at the catch basin(s) in front of the existing building. Under the existing condition building and much of the frontage (±1.69 acres) discharges to this. This area consists of the building, driveway, grass and woods. This catch basin is part of the municipal network in the street, ultimately flowing towards DP-5. There is no treatment infrastructure in place for this runoff.

Design Point 4 is the southern abutter to the site. Under the existing condition there is a small portion of the land (less than 1.26 acres) that discharges across the property line to the abutting neighbor, through a channel, towards an existing catch basin at the southeast corner of the site. The discharge from this area is from the wooded area south of the building. This catch basin is part of the municipal network in the street, ultimately flowing towards DP-5. There is no treatment for this runoff.

Design Point 5 is the Northwood Drive municipal stormwater system. All design points referenced above flow to this design point, through upstream catch basins or channels. This design point ultimately models the overall site. All runoff reaching this design point has directly discharged to the wetland or catch basins, with no treatment infrastructure in place.

Appendix B contains the Existing Conditions Drainage Area Map.

4.2 POST DEVELOPMENT CONDITIONS

The drainage analysis for the proposed construction encompasses the same tributary drainage area of the 7.13-acres as described in the existing conditions section. The impervious coverage percentage for the entire tributary area in the proposed condition is approximately 34.3%. The proposed drainage areas with runoff curve numbers, time of concentration paths and soil types can be found in the hydrologic modeling results in Appendix B. The proposed drainage has been designed to reduce peak stormwater discharge rates and volumes leaving the site.

The existing conditions have no treatment infrastructure. The proposed stormwater system offers two treatment options for the drainage areas with the increased impervious cover. The first area of increased impervious cover is the contractor's yard on the south side of the site. This runoff is conveyed through a grassed swale into a stormwater management basin in the southeast corner of the site. The grassed swale provides pretreatment, with the infiltration basin providing further water quality treatment. This also provides water quantity control as the basin is sized for the 100-year storm. There is an overflow swale towards the wetland in the southwest corner of the site, but this should only be necessary for storms larger than the 100-year event. This southeast corner of the site consists of the proposed contractor's yard. This provides treatment on a site that currently has none and accounts for the additional impervious cover in this portion of the site.

The second treatment infrastructure proposed on site is the underground stormwater system. The ADS StormTech chamber system collects runoff from the proposed parking lot, building roof leaders, and driveways through catch basins. The water is first treated via an isolator row for quality control and then stored in the rest of the chambers for quantity control until it can drain via orifice or over the weir. This 2" orifice is designed to hold back the runoff to the maximum extent possible as reducing the size of the orifice any further would make it too small to effectively operate without clogging. Due to the high groundwater observed in this area of the site, this underground system shall be lined and the only outlet method for the chamber system is through the outlet control structure with orifice and weir. This design provides treatment where there currently is none and accounts for the additional impervious cover in this portion of the site.

The north (wooded) and west (rear parking and wetland) portions of the site maintain or reduce the runoff in existing conditions. The reduction in runoff, particularly in the rear parking section, is due to a reduction in impervious cover as the proposed work includes the removal of pavement that is currently encroaching on adjacent properties. These portions are considered redevelopment as there is no increase in impervious cover and no change to the drainage system.

Just as the existing conditions hydrology discussed above, the project area hydrology is also broken down into five overall points of interest with ten contributing Drainage Areas.

Overall, there is a net reduction in peak discharge from each of the Design Points for the 2-year,10-year, 25-year, 50-year, and100-year storm events as seen in Table 3 and Table 4 below.

4.2.1 ANALYSIS POINTS

Intermediate Design Point 1 is the existing wetland on the northern portion of the site. Under the proposed conditions there is a portion of the site (±2.02 acres) that discharges to the north wetland. This portion of the site is generally wooded with some grass and pavement. This is considered an intermediate design point because this wetland is culverted under the rear parking lot to connect with the south wetland (DP-2), so runoff is not leaving site at this point but maintaining flow to this area of wetland is critical. This portion of the site is considered redevelopment as it is largely remaining as existing conditions and is not increasing impervious coverage.

Design Point 2 is the existing wetland on the southern portion of the site. Under the proposed condition there is a portion of the site (±3.24 acres) that discharges to the south wetland. In most cases, that is a 100-year storm or smaller, the basin that collects contractor's yard runoff will not need the overflow swale so only ±1.94 acres drains to the wetland. If this wetland overflows, runoff would go off site through a channel (Southwest channel), combine with run-off from EDA-400, and travel through the abutter's property (South Abutter channel) towards the street system (DP-5). This portion of the site is generally paved with some grass and wooded area, including the rear parking lot and the woods to the rear of the contractor's yard. The contractor's yard is an increase in impervious coverage, and this is treated through a grassed swale (pretreatment) and infiltration basin. This water only reaches DP-2 if the overflow swale is used in storms larger than the 100-year event. The rest of the site, which is the portion of this drainage area that is expected to drain to the wetland, drains to the wetland in existing conditions. This drainage area remains largely the same as part of the redevelopment, with the impervious coverage being reduced.

Design Point 3 is Northwood Drive at the catch basin(s) in front of the existing building. Under the proposed conditions, the building, much of the front yard, and the proposed parking area (±1.2 acres) discharges to this. With this exception of a small portion of the front yard (0.1 acres), this drainage area is conveyed to the proposed underground stormwater system. This ADS Stormtech chamber system provides treatment via isolator row and an outlet control structure. This catch basin is part of the municipal network in the street, ultimately flowing towards DP-5.

Design Point 4 is the southern abutter to the site. Under the proposed condition, there is a small portion of the land (±0.21 acres) that discharges across the property line to the abutting neighbor, through a channel, towards an existing catch basin at the southeast corner of the site. The discharge from this area is from the wooded area south of the proposed contractor's yard. This catch basin is part of the municipal network in the street, ultimately flowing towards DP-5.

Design Point 5 is the Northwood Drive municipal stormwater system. All design points referenced above flow to this design point, through upstream catch basins or channels. This design point ultimately models the overall site.

4.3 POST-DEVELOPMENT HYDROLOGIC CONCLUSIONS

TABLE 3: PEAK FLOW COMPARISON CHART

Design Point	2-Year Flow (CFS)	10-Year Flow (CFS)	25-Year Flow (CFS)	100-Year Flow (CFS)
DP 1 – Existing Condition	0.68	2.22	3.36	5.24
DP 1 – Proposed Condition	0.35	1.59	2.56	4.22
Difference	-0.33 (-48.5%)	-0.63 (-28.4%)	-0.80 (-23.8%)	-1.02 (-19.5%)
DP 2 – Existing Condition	2.07	5.62	8.11	12.13
DP 2 – Proposed Condition	1.25	3.74	5.68	8.95
Difference	-0.82 (-39.6%)	-1.88 (-33.5%)	-2.43 (-30.0%)	-3.18 (-26.2%)
DP 3 – Existing Condition	1.56	2.72	3.47	4.65
DP 3 – Proposed Condition	0.18	0.39	0.71	3.53
Difference	-1.38 (-88.5%)	-2.33 (-85.7%)	-2.76 (-79.5%)	-1.12 (-24.1%)
DP 4 – Existing Condition	0.18	1.01	1.67	2.82
DP 4 – Proposed Condition	0.05	0.25	0.41	0.69
Difference	-0.13 (-72.2%)	-0.76 (-75.3%)	-1.26 (-75.4%)	-2.13 (-75.5%)
DP 5 – Existing Condition	2.26	6.82	10.22	15.94
DP 5 – Proposed Condition	1.28	3.93	6.47	10.59
Difference	-0.98 (-43.4%)	-2.89 (-42.4%)	-3.75 (-36.7%)	-5.35 (-33.6%)

TABLE 4: PEAK VOLUME COMPARISON CHART

Design Point	2-Year Volume (AC/FT)	10-Year Volume (AC/FT)	25-Year Volume (AC/FT)	100-Year Volume (AC/FT)
DP 1 – Existing Condition	0.121	0.332	0.488	0.749
DP 1 – Proposed Condition	0.080	0.253	0.386	0.614
Difference	-0.041 (-33.9%)	-0.079 (-23.8%)	-0.102 (-20.9%)	-0.135 (-18.0%)
DP 2 – Existing Condition	0.328	0.797	1.129	1.674
DP 2 – Proposed Condition	0.278	0.673	0.962	1.444
Difference	-0.050 (-15.2%)	-0.124 (-15.6%)	-0.167 (-14.8%)	-0.230 (-13.7%)
DP 3 – Existing Condition	0.145	0.275	0.362	0.499
DP 3 – Proposed Condition	0.203	0.365	0.471	0.643
Difference	0.058 (40.0%)	0.090 (32.7%)	0.109 (30.1%)	0.144 (28.9%)

DP 4 – Existing Condition	0.048	0.160	0.249	0.403
DP 4 – Proposed Condition	0.011	0.035	0.054	0.087
Difference	-0.037 (-77.1%)	-0.125 (-78.1%)	-0.195 (-78.3%)	-0.316 (-78.4%)
DP 5 – Existing Condition	0.539	1.295	1.837	2.733
DP 5 – Proposed Condition	0.505	1.117	1.550	2.265
Difference	-0.034 (-6.3%)	-0.178 (-13.7%)	-0.287 (-15.6%)	-0.468 (-17.1%)

5.0 HYDRAULIC ANALYSIS

5.1 PRELIMINARY HYDRAULICS

The hydraulic study of the on-site drainage system has been designed to comply with the requirements set forth in the Town of Bloomfield Zoning Regulations and the State of Connecticut Department of Transportation Drainage Manual.

The proposed drainage systems have been sized to convey the 10-year storm event to their respective discharge points without ponding or surcharging above the catch basin / manhole grates. Bloomfield Rainfall Intensity per NOAA Atlas 14 was utilized. The site drainage system improvements have been designed to comply with the requirements set forth in the State of Connecticut Department of Transportation Drainage Manual, dated 2000, as amended. Drainage areas contributing to each catch basin have been determined and are found in Appendix E.

The minimum pipe size maintained onsite is 12 inches.

The runoff coefficients for each inlet drainage area have been calculated as the weighted average of impervious and pervious surfaces contributing to the runoff. Impervious surfaces including asphalt pavement, concrete pavement, and building roof area were computed using a rational runoff coefficient of 0.90. Pervious surfaces including lawn and landscaped area were computing using a rational runoff coefficient of 0.30.

Tailwater elevations for the stormwater management areas and flared end sections are based on the 10-year design storm.

StormCAD version 8i by Haestad Methods, utilizing the Rational Method, was used to model the proposed drainage system. Calculation data can be found in Appendix E.

5.2 OFF-SITE HYDRAULICS ANALYSIS

The off-site municipal stormwater system in Northwood Drive was analyzed to confirm that the increased volume due to the proposed project would not adversely affect the existing system. This analysis was prompted by the increase in peak volume at Design Point 3, a catch basin in the street. This analysis started at the catch basin located just south of the intersection of West Dudley Town Road and Northwood Drive and extended to the flared end section approximately between 14 and 16 Northwood Drive. Most of the pipes in the street are RCP ranging from 12" to 18". Catch basins are located along the curb line, as expected with a crowned road surface. The network generally flows south until it reaches the manhole labeled STRC-17. At this point, the flow combines with the network along the south bend of Northwood Drive. This flow then discharges to the southeast, to a 24"x48" Oval CMP with a flared end section.

In existing conditions, several pipes in the street are above capacity. As seen in the profiles, some pipes are surcharged, but the flow does not appear to exceed the manhole or catch basin frames (i.e. no flooding).

In proposed conditions, the pipe use (design/capacity %) matches or is reduced from existing conditions. As in existing conditions, some pipes are surcharging, but are not flooding the street. Overall, the increased volume associated with this project does not adversely affect the municipal stormwater system. For several pipes, the proposed onsite design reduces the surcharging problem due to the onsite retention features. The proposed design does not exacerbate the problems in the municipal stormwater network, and in some structures it improves conditions.

Profiles for the existing and proposed flows for the 10-year storm event are shown in Appendix E. The conduit tables are also included.

6.0 SITE DESIGN SUMMARY

The proposed site includes two methods of stormwater treatment where the existing site currently has no treatment. A stormwater management basin in the southeast corner collects and treats the runoff from the proposed contractor's yard with a grassed swale for pretreatment and a grassed swale for emergency overflow. The emergency overflow would only be engaged in storms larger than the 100-year storm event. Therefore, the stormwater management basin effectively eliminates off-site runoff for that portion of the site. An underground stormwater management system, an ADS StormTech chamber system, treats the runoff from the building and proposed parking lot. This provides treatment through an isolator row and outlet control structure. This is designed to the maximum extent possible with a 2" orifice to hold back stormwater. Making the orifice any smaller to further hold back runoff would make it too small to effectively operate without clogging.

BL Companies is looking to waive part of Standard 2, "The 2 Year post development peak flow has been reduced to be less than 50% of the pre-development flow." This has been met in the portions of site that are being developed and increasing impervious coverage, the contractor's yard into the stormwater basin and the proposed parking lot into the underground chamber system. The stormwater basin is sized so that there is no off-site runoff during the 2-year storm event. The underground chamber system is sized to reduce the runoff to DP-3 (municipal network in street) by over 88% in the 2-year storm event. The rest of the site (woods to the north, parking and wetland to the west) are remaining largely untouched, not increasing impervious cover, but rather decreasing cover to eliminate existing encroachments. Therefore, these areas of the site do not meet the 2-year, 50% reduction requirement. Overall at DP-5, the proposed site decreases runoff flow and volume at each storm and decreases the 2-year storm runoff by 43.4%.

7.0 SITE CONSTRUCTION AND EROSION CONTROLS

The erosion control measures for the proposed project include the installation of silt sacks at existing stormwater inlets, rock construction entrances and silt fence around the proposed area of disturbance prior to the commencement of any earth disturbance activities.

All areas that have achieved final grade will need to be immediately covered with 6" of topsoil, seeded and mulched. Slopes that are 3:1 or greater will need to be covered with erosion control matting prior receiving seed and mulch. All erosion control matting will be wildlife friendly, with all-natural material and no photodegradable content.

Any topsoil that is stripped will need to be stockpiled onsite to be used later. Stockpiles will need to receive temporary seeding and have a filter sock around its base to prevent the loss of materials.

Dewatering of any trenches and/or basin will need to be completed in a manner that will avoid creating any areas of accelerated erosion.

During construction of this project, all erosion control measures will need to be inspected weekly and following any major rain event. Any repairs to the erosion control BMPs will need to be completed within 24 hours of any major rain event.

See detailed plans for the full Construction Sequence.

8.0 CONCLUSIONS & RECOMMENDATION

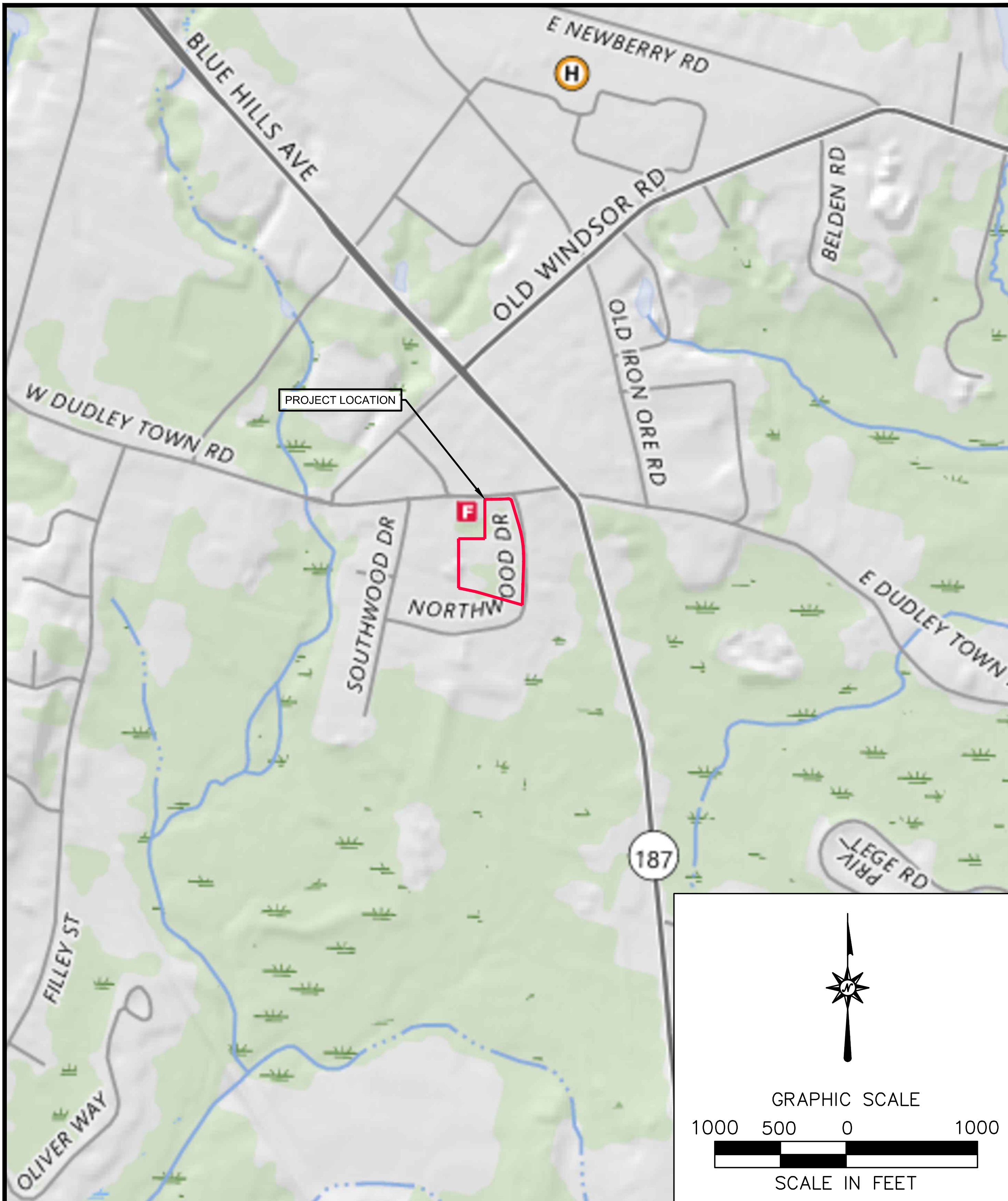
With the implementation of the stormwater management system designed for this project, there will be no negative impacts on-site or on downstream properties or off-site storm drainage systems from the proposed development. The rate of stormwater runoff and the volume of stormwater runoff for the proposed project is decreased through all storm events. Existing runoff discharge points will be maintained in the proposed design and appropriate measures are included to ensure that drainage will continue to flow to existing locations using the previously approved rainfall runoff amounts as well as the new NOAA Atlas 14 rainfall runoff rates.

The stormwater management systems have been designed to reduce peak flow rates. The on-site drainage collection system is sized for the 10-year storm to operate without ponding or surcharging and numerous measures have been implemented to improve stormwater quality including a stormwater management basin with grassed swale and an underground chamber system with isolator row.

This report, as noted above, has been prepared to complement the submitted project plans as well as to represent the technical basis for the designs presented herein. In consideration of the overall project, we conclude that the stormwater management systems have been designed to be in general conformance with the design parameters set forth by the Town and State.

APPENDIX A

FIGURES



Architecture
Engineering
Environmental
Land Surveying

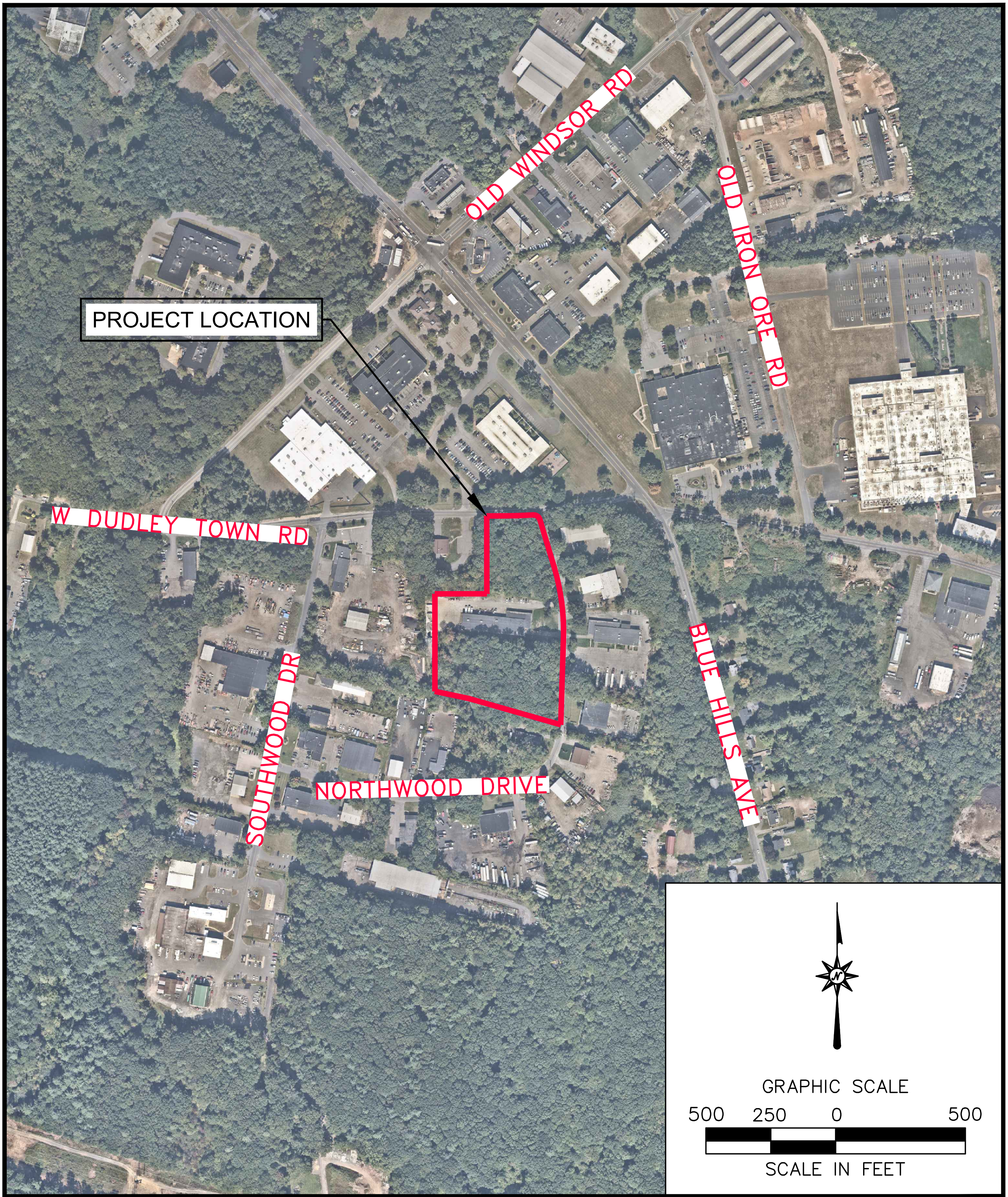
BL Companies

PROPOSED DEVELOPMENT
5 NORTHWOOD DRIVE
BLOOMFIELD, CONNECTICUT

Designed	K.R.
Drawn	K.R.
Reviewed	J.N.B.
Scale	1"=1000'
Project No.	2302966
Date	11/18/2024
CAD File:	EXH2302699-01

FIGURE 1
USGS LOCATION MAP

1/10/2025, JGERMANO, \\BLCOMPANIES.COM\DFS\PROJ\JOBS23\26\2302699\DWG\EXH2302699-01.DWG.FIGURE 1 8.5X11 1000SC.



BL Companies
Architecture
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PROPOSED DEVELOPMENT
5 NORTHWOOD DRIVE
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Date	11/18/2024
CAD File:	EXH2302699-01

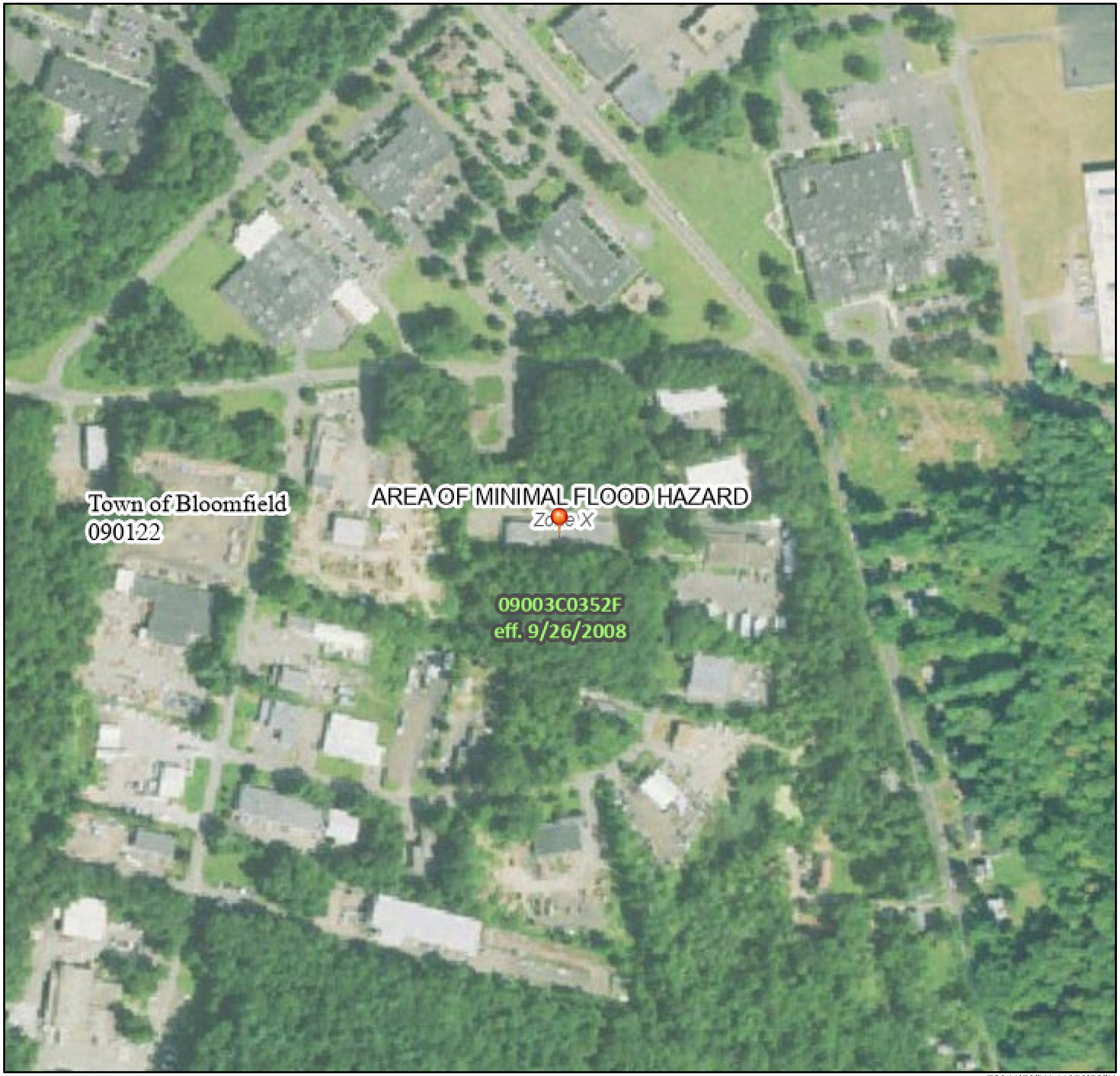
FIGURE 2
AERIAL LOCATION MAP

1/10/2025, JGERMANO, \\BLCOMPANIES.COM\DFS\PROJ\JOBS23\26\2302699\DWG\EXH2302699-01.DWG.FIGURE 2 8.5X11 1000SC.

National Flood Hazard Layer FIRMette

FEMA

72°42'37"W 41°51'19"N



72°41'59"W 41°50'52"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard *Zone X*
	Effective LOMRs
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
OTHER FEATURES	B 20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
	8 Coastal Transect
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
MAP PANELS	Digital Data Available
	No Digital Data Available
	Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/12/2024 at 9:14 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NOAA Atlas 14, Volume 10, Version 3
Location name: Bloomfield, Connecticut, USA*
Latitude: 41.8516°, Longitude: -72.705°
Elevation: 131 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

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	0.343 (0.265-0.444)	0.413 (0.318-0.535)	0.527 (0.405-0.686)	0.621 (0.474-0.812)	0.751 (0.556-1.03)	0.849 (0.616-1.19)	0.951 (0.673-1.38)	1.07 (0.716-1.59)	1.23 (0.797-1.90)	1.37 (0.865-2.15)
10-min	0.486 (0.375-0.629)	0.585 (0.450-0.758)	0.746 (0.573-0.971)	0.880 (0.672-1.15)	1.06 (0.788-1.46)	1.20 (0.874-1.68)	1.35 (0.953-1.96)	1.51 (1.01-2.25)	1.74 (1.13-2.69)	1.94 (1.23-3.05)
15-min	0.572 (0.441-0.740)	0.688 (0.530-0.891)	0.877 (0.674-1.14)	1.04 (0.790-1.35)	1.25 (0.927-1.71)	1.41 (1.03-1.98)	1.58 (1.12-2.30)	1.78 (1.19-2.64)	2.05 (1.33-3.17)	2.28 (1.44-3.59)
30-min	0.767 (0.592-0.993)	0.927 (0.714-1.20)	1.19 (0.913-1.55)	1.41 (1.07-1.84)	1.70 (1.26-2.33)	1.93 (1.40-2.70)	2.17 (1.53-3.15)	2.43 (1.63-3.62)	2.81 (1.82-4.33)	3.12 (1.97-4.90)
60-min	0.963 (0.743-1.25)	1.17 (0.899-1.51)	1.50 (1.15-1.95)	1.78 (1.36-2.32)	2.16 (1.60-2.95)	2.45 (1.78-3.42)	2.75 (1.94-3.99)	3.08 (2.07-4.58)	3.56 (2.30-5.49)	3.95 (2.50-6.22)
2-hr	1.24 (0.966-1.60)	1.50 (1.16-1.93)	1.92 (1.48-2.48)	2.27 (1.74-2.95)	2.75 (2.05-3.74)	3.10 (2.27-4.33)	3.48 (2.49-5.06)	3.93 (2.65-5.81)	4.59 (2.98-7.04)	5.14 (3.26-8.05)
3-hr	1.43 (1.12-1.84)	1.73 (1.35-2.22)	2.21 (1.72-2.85)	2.61 (2.02-3.38)	3.16 (2.37-4.30)	3.57 (2.63-4.98)	4.01 (2.88-5.83)	4.54 (3.06-6.70)	5.34 (3.47-8.16)	6.02 (3.82-9.38)
6-hr	1.80 (1.41-2.29)	2.18 (1.71-2.78)	2.81 (2.19-3.59)	3.33 (2.58-4.28)	4.04 (3.05-5.47)	4.57 (3.39-6.34)	5.14 (3.73-7.46)	5.85 (3.96-8.58)	6.94 (4.52-10.5)	7.88 (5.02-12.2)
12-hr	2.20 (1.74-2.78)	2.70 (2.13-3.42)	3.52 (2.77-4.47)	4.20 (3.28-5.37)	5.14 (3.90-6.92)	5.82 (4.35-8.05)	6.58 (4.80-9.52)	7.52 (5.11-11.0)	8.99 (5.88-13.6)	10.3 (6.57-15.8)
24-hr	2.56 (2.03-3.21)	3.19 (2.53-4.01)	4.23 (3.35-5.34)	5.10 (4.01-6.47)	6.29 (4.81-8.45)	7.16 (5.39-9.88)	8.12 (5.99-11.8)	9.36 (6.39-13.6)	11.3 (7.45-17.1)	13.1 (8.41-20.1)
2-day	2.85 (2.28-3.56)	3.63 (2.90-4.53)	4.89 (3.89-6.13)	5.94 (4.70-7.49)	7.39 (5.70-9.91)	8.44 (6.41-11.6)	9.62 (7.18-14.0)	11.2 (7.67-16.2)	13.8 (9.10-20.7)	16.2 (10.4-24.7)
3-day	3.10 (2.49-3.85)	3.96 (3.17-4.92)	5.35 (4.28-6.68)	6.51 (5.17-8.18)	8.10 (6.28-10.8)	9.26 (7.06-12.7)	10.6 (7.92-15.3)	12.3 (8.46-17.8)	15.3 (10.1-22.8)	18.0 (11.6-27.3)
4-day	3.34 (2.69-4.14)	4.25 (3.42-5.27)	5.74 (4.60-7.15)	6.98 (5.56-8.74)	8.68 (6.75-11.6)	9.91 (7.58-13.6)	11.3 (8.50-16.4)	13.2 (9.07-19.0)	16.4 (10.8-24.4)	19.2 (12.4-29.2)
7-day	3.99 (3.23-4.92)	5.02 (4.06-6.19)	6.71 (5.40-8.30)	8.11 (6.49-10.1)	10.0 (7.83-13.3)	11.4 (8.77-15.6)	13.0 (9.78-18.7)	15.1 (10.4-21.6)	18.6 (12.3-27.6)	21.8 (14.1-32.8)
10-day	4.64 (3.77-5.70)	5.74 (4.65-7.05)	7.52 (6.08-9.28)	9.00 (7.23-11.2)	11.0 (8.63-14.5)	12.5 (9.62-17.0)	14.2 (10.7-20.2)	16.4 (11.3-23.3)	20.0 (13.3-29.5)	23.2 (15.0-34.9)
20-day	6.70 (5.48-8.17)	7.85 (6.41-9.58)	9.73 (7.92-11.9)	11.3 (9.13-13.9)	13.4 (10.5-17.4)	15.0 (11.5-20.0)	16.7 (12.5-23.4)	18.9 (13.1-26.7)	22.3 (14.9-32.6)	25.2 (16.4-37.7)
30-day	8.46 (6.95-10.3)	9.63 (7.90-11.7)	11.5 (9.43-14.1)	13.1 (10.7-16.1)	15.3 (12.0-19.7)	16.9 (13.0-22.3)	18.7 (13.9-25.7)	20.7 (14.5-29.1)	23.8 (15.9-34.7)	26.4 (17.2-39.3)
45-day	10.7 (8.79-12.9)	11.9 (9.78-14.4)	13.9 (11.4-16.8)	15.5 (12.6-18.9)	17.8 (13.9-22.6)	19.5 (14.9-25.4)	21.2 (15.7-28.7)	23.1 (16.2-32.3)	25.7 (17.3-37.3)	27.8 (18.1-41.3)
60-day	12.5 (10.4-15.1)	13.8 (11.4-16.6)	15.8 (13.0-19.2)	17.6 (14.3-21.4)	19.9 (15.6-25.2)	21.7 (16.6-28.1)	23.5 (17.3-31.4)	25.3 (17.8-35.2)	27.5 (18.5-39.7)	29.1 (19.0-43.1)

[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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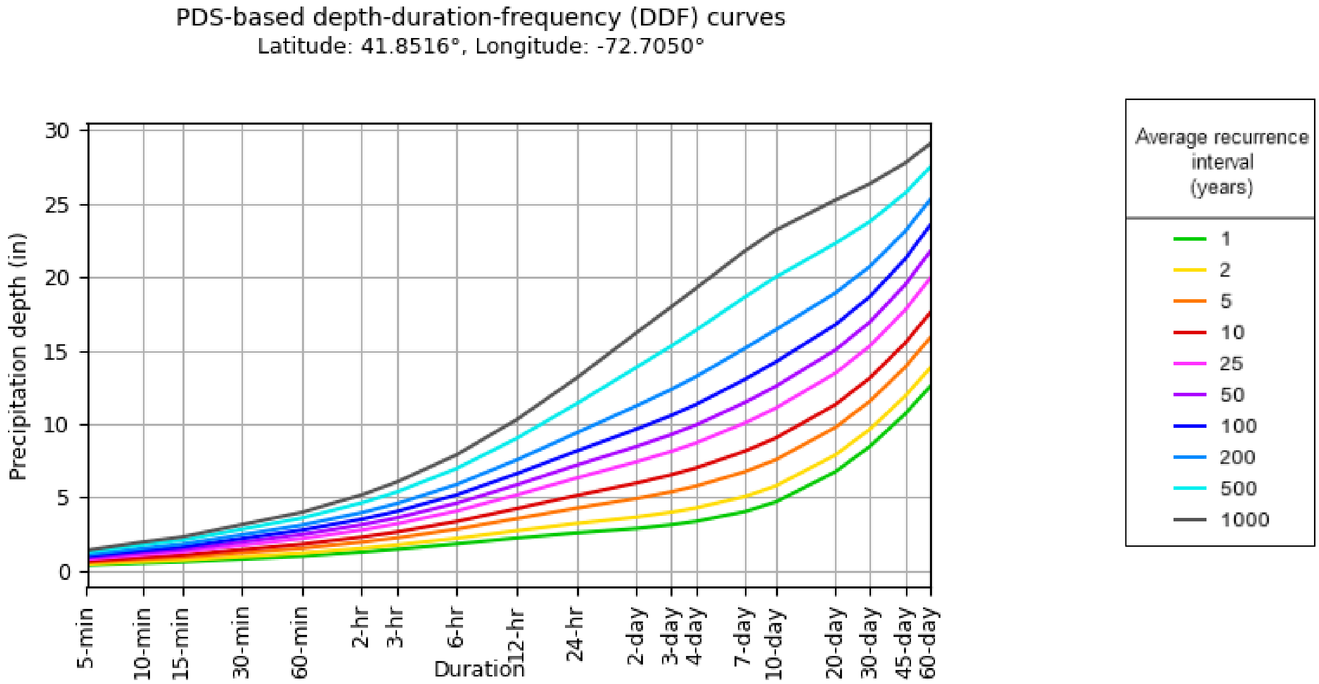
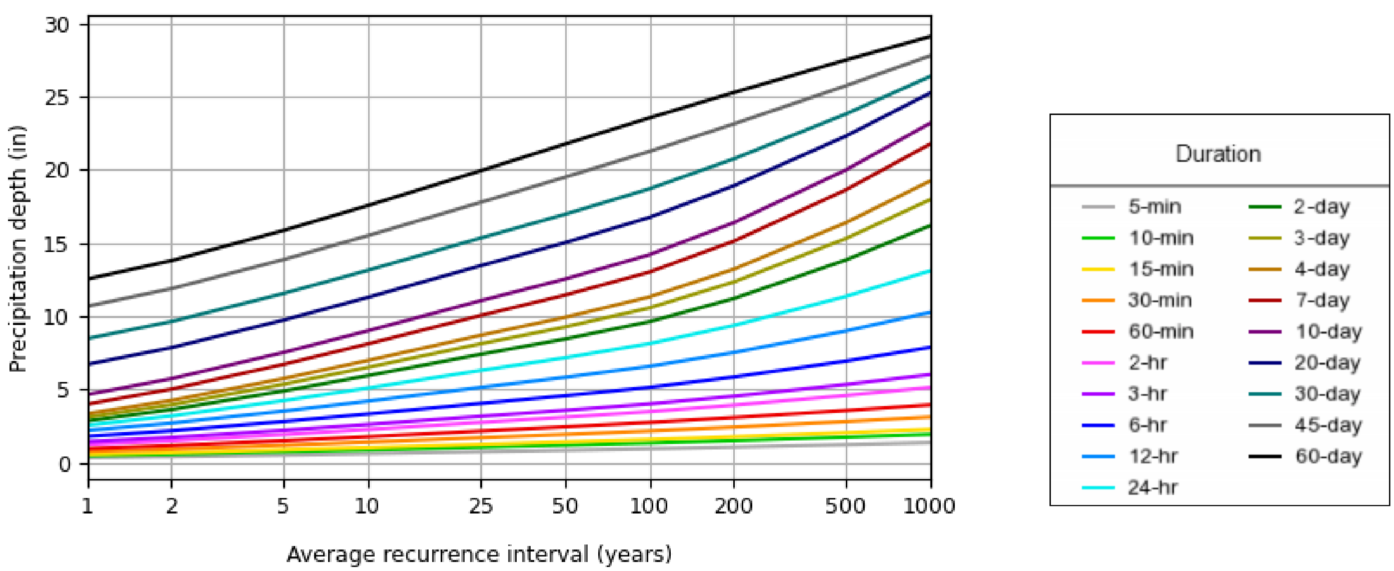
PF graphical





NOAA Atlas 14, Volume 10, Version 3 Created (GMT): Fri Nov 15 17:16:13 2024

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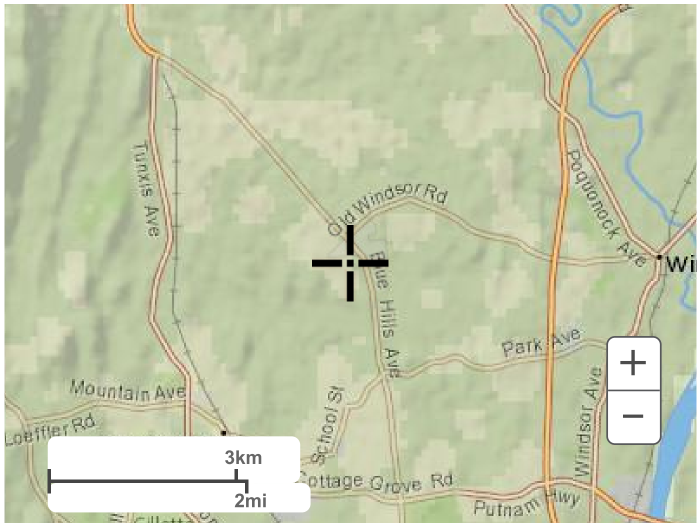
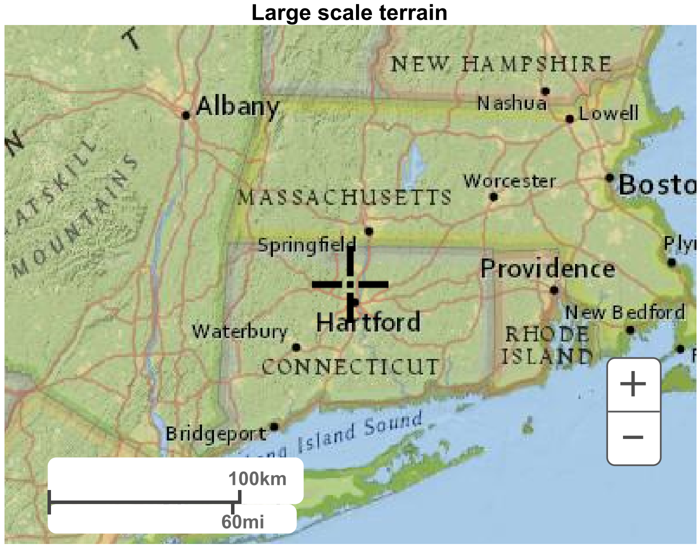
Maps & aerials

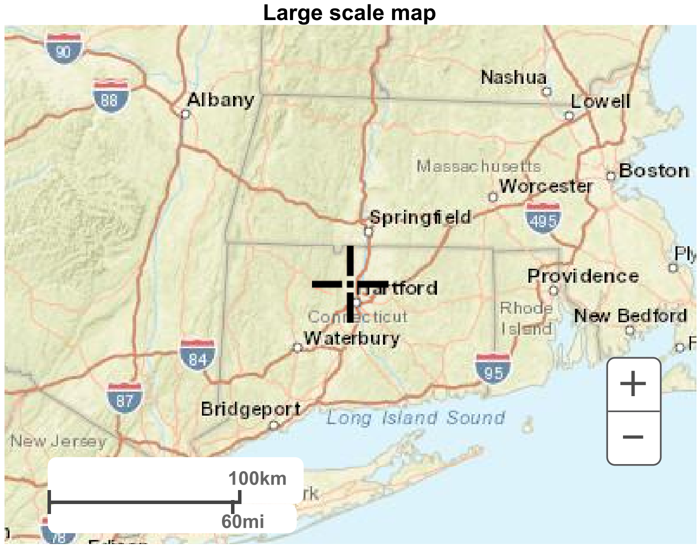
Small scale terrain



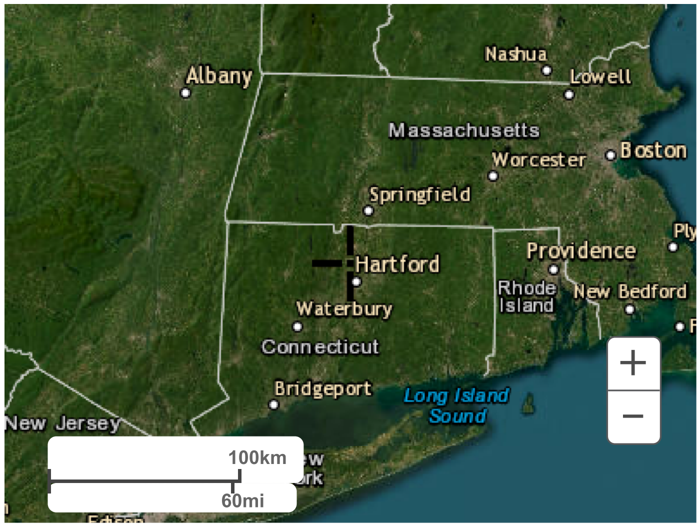
Large scale terrain



Large scale map



Large scale aerial



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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

NOAA Atlas 14, Volume 10, Version 3
Location name: Bloomfield, Connecticut, USA*
Latitude: 41.8516°, Longitude: -72.705°
Elevation: 131 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**4.12** (3.18-5.33)	**4.96** (3.82-6.42)	**6.32** (4.86-8.23)	**7.45** (5.69-9.74)	**9.01** (6.67-12.3)	**10.2** (7.39-14.2)	**11.4** (8.08-16.6)	**12.8** (8.59-19.0)	**14.8** (9.56-22.8)	**16.4** (10.4-25.8)
10-min	**2.92** (2.25-3.77)	**3.51** (2.70-4.55)	**4.48** (3.44-5.83)	**5.28** (4.03-6.91)	**6.38** (4.73-8.74)	**7.21** (5.24-10.1)	**8.08** (5.72-11.7)	**9.06** (6.08-13.5)	**10.5** (6.77-16.1)	**11.6** (7.36-18.3)
15-min	**2.29** (1.76-2.96)	**2.75** (2.12-3.56)	**3.51** (2.70-4.57)	**4.14** (3.16-5.42)	**5.00** (3.71-6.85)	**5.66** (4.11-7.91)	**6.34** (4.48-9.21)	**7.11** (4.77-10.6)	**8.21** (5.32-12.7)	**9.11** (5.77-14.3)
30-min	**1.53** (1.18-1.99)	**1.85** (1.43-2.40)	**2.38** (1.83-3.09)	**2.81** (2.15-3.68)	**3.41** (2.53-4.67)	**3.86** (2.81-5.40)	**4.33** (3.06-6.29)	**4.86** (3.26-7.23)	**5.61** (3.63-8.66)	**6.23** (3.94-9.81)
60-min	**0.963** (0.743-1.25)	**1.17** (0.899-1.51)	**1.50** (1.15-1.95)	**1.78** (1.36-2.32)	**2.16** (1.60-2.95)	**2.45** (1.78-3.42)	**2.75** (1.94-3.99)	**3.08** (2.07-4.58)	**3.56** (2.30-5.49)	**3.95** (2.50-6.22)
2-hr	**0.622** (0.483-0.800)	**0.750** (0.582-0.966)	**0.960** (0.742-1.24)	**1.13** (0.871-1.47)	**1.37** (1.02-1.87)	**1.55** (1.14-2.16)	**1.74** (1.24-2.53)	**1.96** (1.32-2.91)	**2.30** (1.49-3.52)	**2.57** (1.63-4.03)
3-hr	**0.477** (0.371-0.611)	**0.575** (0.448-0.738)	**0.736** (0.571-0.947)	**0.869** (0.670-1.13)	**1.05** (0.789-1.43)	**1.19** (0.875-1.66)	**1.34** (0.959-1.94)	**1.51** (1.02-2.23)	**1.78** (1.16-2.72)	**2.00** (1.27-3.12)
6-hr	**0.300** (0.235-0.382)	**0.364** (0.285-0.464)	**0.468** (0.366-0.599)	**0.555** (0.431-0.714)	**0.675** (0.509-0.913)	**0.763** (0.565-1.06)	**0.859** (0.622-1.25)	**0.976** (0.661-1.43)	**1.16** (0.755-1.76)	**1.32** (0.839-2.04)
12-hr	**0.182** (0.144-0.230)	**0.224** (0.176-0.283)	**0.292** (0.229-0.371)	**0.348** (0.272-0.445)	**0.426** (0.323-0.574)	**0.483** (0.360-0.668)	**0.546** (0.398-0.790)	**0.624** (0.424-0.910)	**0.746** (0.488-1.13)	**0.851** (0.545-1.31)
24-hr	**0.106** (0.084-0.133)	**0.133** (0.105-0.167)	**0.176** (0.139-0.222)	**0.212** (0.167-0.269)	**0.262** (0.200-0.352)	**0.298** (0.224-0.411)	**0.338** (0.249-0.490)	**0.390** (0.266-0.566)	**0.472** (0.310-0.711)	**0.545** (0.350-0.837)
2-day	**0.059** (0.047-0.074)	**0.075** (0.060-0.094)	**0.101** (0.081-0.127)	**0.123** (0.097-0.156)	**0.153** (0.118-0.206)	**0.175** (0.133-0.242)	**0.200** (0.149-0.291)	**0.233** (0.159-0.337)	**0.288** (0.189-0.431)	**0.337** (0.217-0.514)
3-day	**0.043** (0.034-0.053)	**0.054** (0.044-0.068)	**0.074** (0.059-0.092)	**0.090** (0.071-0.113)	**0.112** (0.087-0.150)	**0.128** (0.098-0.176)	**0.146** (0.109-0.213)	**0.171** (0.117-0.246)	**0.212** (0.140-0.316)	**0.249** (0.160-0.379)
4-day	**0.034** (0.028-0.043)	**0.044** (0.035-0.054)	**0.059** (0.047-0.074)	**0.072** (0.057-0.091)	**0.090** (0.070-0.120)	**0.103** (0.078-0.141)	**0.117** (0.088-0.170)	**0.137** (0.094-0.197)	**0.170** (0.112-0.253)	**0.200** (0.129-0.303)
7-day	**0.023** (0.019-0.029)	**0.029** (0.024-0.036)	**0.039** (0.032-0.049)	**0.048** (0.038-0.060)	**0.059** (0.046-0.079)	**0.068** (0.052-0.092)	**0.077** (0.058-0.111)	**0.089** (0.062-0.128)	**0.110** (0.073-0.164)	**0.129** (0.083-0.195)
10-day	**0.019** (0.015-0.023)	**0.023** (0.019-0.029)	**0.031** (0.025-0.038)	**0.037** (0.030-0.046)	**0.046** (0.035-0.060)	**0.052** (0.040-0.070)	**0.059** (0.044-0.084)	**0.068** (0.047-0.097)	**0.083** (0.055-0.122)	**0.096** (0.062-0.145)
20-day	**0.013** (0.011-0.017)	**0.016** (0.013-0.019)	**0.020** (0.016-0.024)	**0.023** (0.019-0.028)	**0.027** (0.021-0.036)	**0.031** (0.024-0.041)	**0.034** (0.026-0.048)	**0.039** (0.027-0.055)	**0.046** (0.030-0.068)	**0.052** (0.034-0.078)
30-day	**0.011** (0.009-0.014)	**0.013** (0.010-0.016)	**0.016** (0.013-0.019)	**0.018** (0.014-0.022)	**0.021** (0.016-0.027)	**0.023** (0.018-0.030)	**0.025** (0.019-0.035)	**0.028** (0.020-0.040)	**0.033** (0.022-0.048)	**0.036** (0.023-0.054)
45-day	**0.009** (0.008-0.011)	**0.011** (0.009-0.013)	**0.012** (0.010-0.015)	**0.014** (0.011-0.017)	**0.016** (0.012-0.020)	**0.018** (0.013-0.023)	**0.019** (0.014-0.026)	**0.021** (0.015-0.029)	**0.023** (0.015-0.034)	**0.025** (0.016-0.038)
60-day	**0.008** (0.007-0.010)	**0.009** (0.007-0.011)	**0.011** (0.009-0.013)	**0.012** (0.009-0.014)	**0.013** (0.010-0.017)	**0.015** (0.011-0.019)	**0.016** (0.012-0.021)	**0.017** (0.012-0.024)	**0.019** (0.012-0.027)	**0.020** (0.013-0.029)

[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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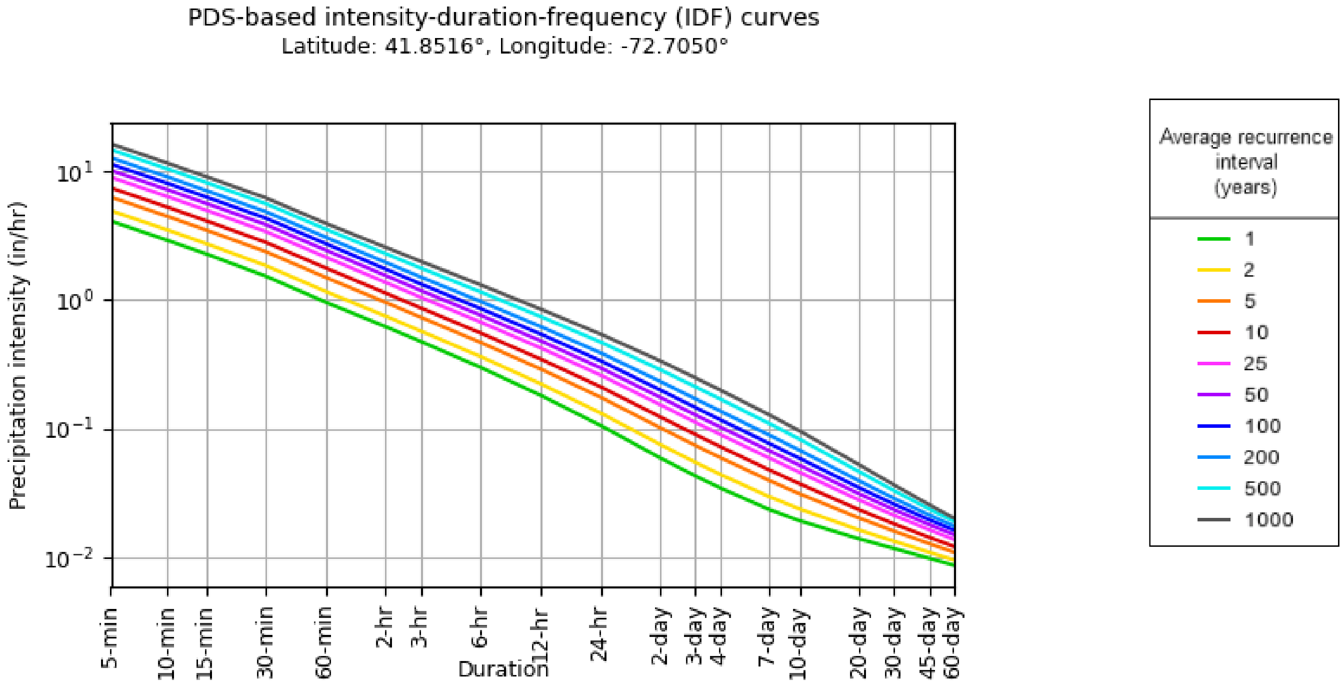
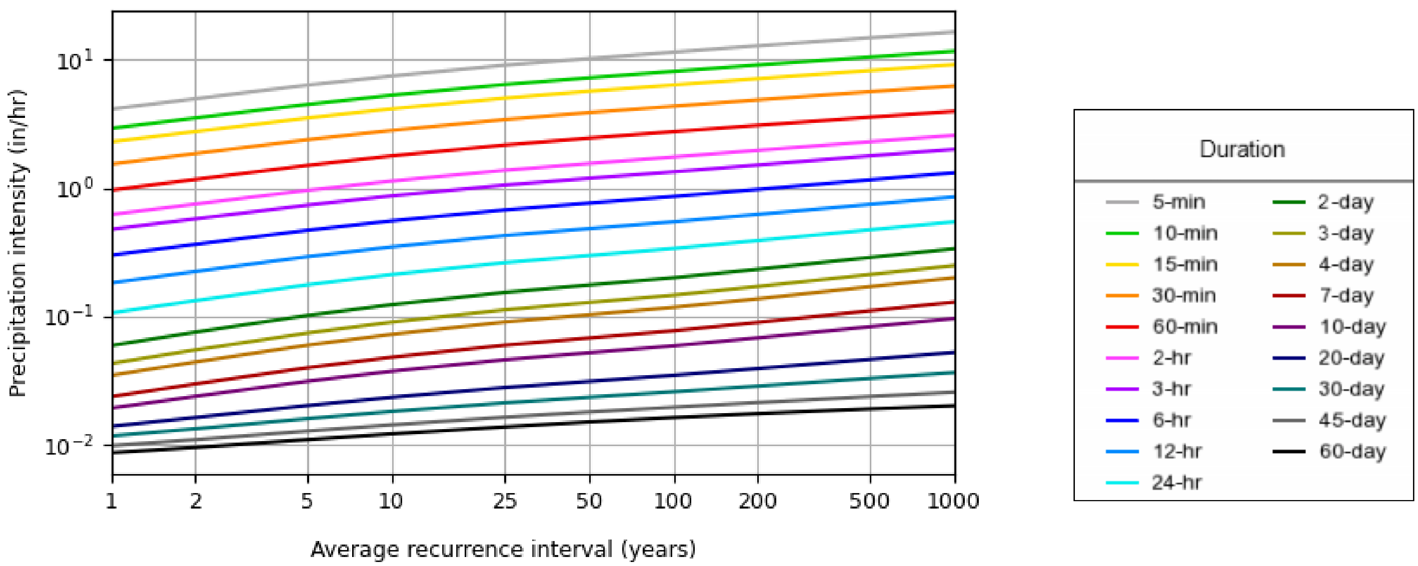
PF graphical





NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Fri Nov 15 17:16:55 2024

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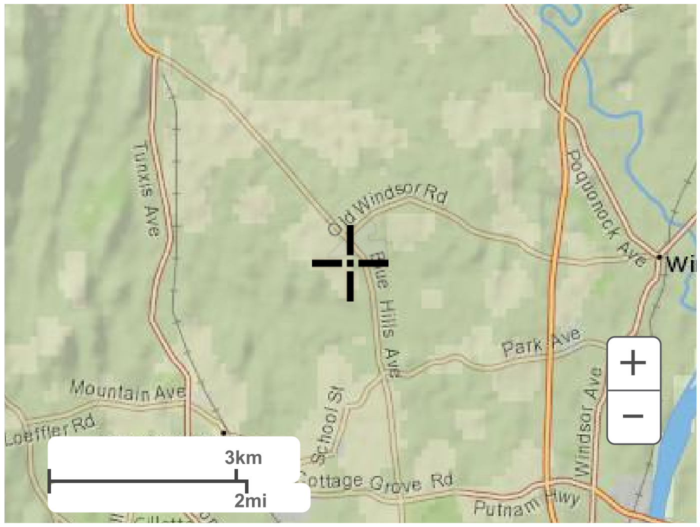
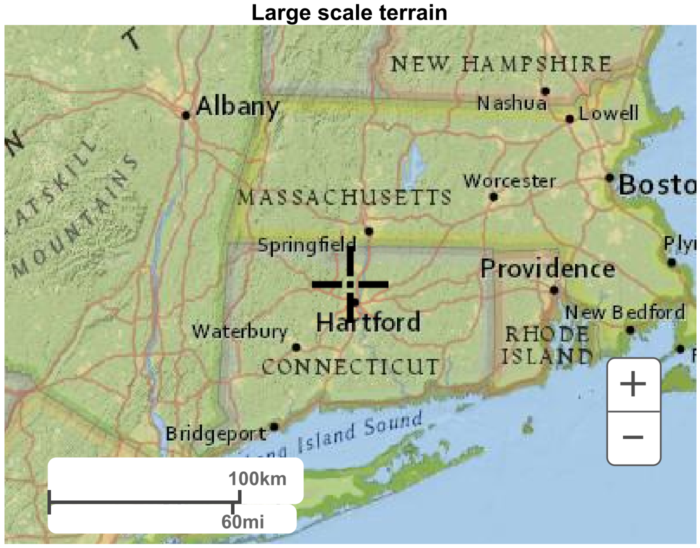
Maps & aerials

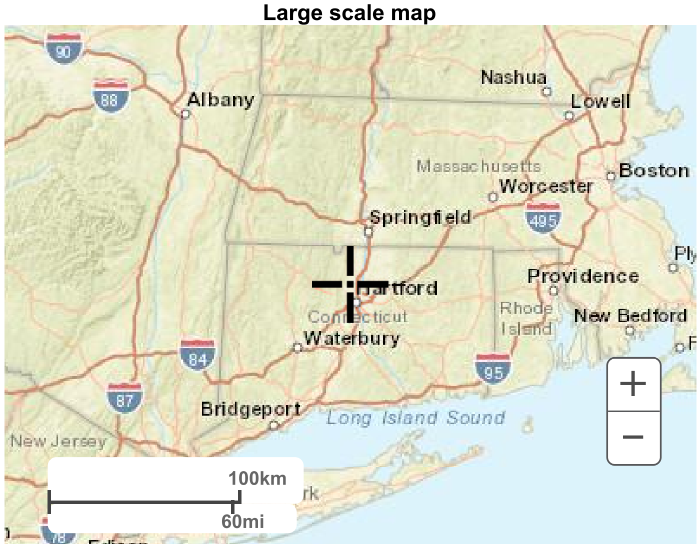
Small scale terrain



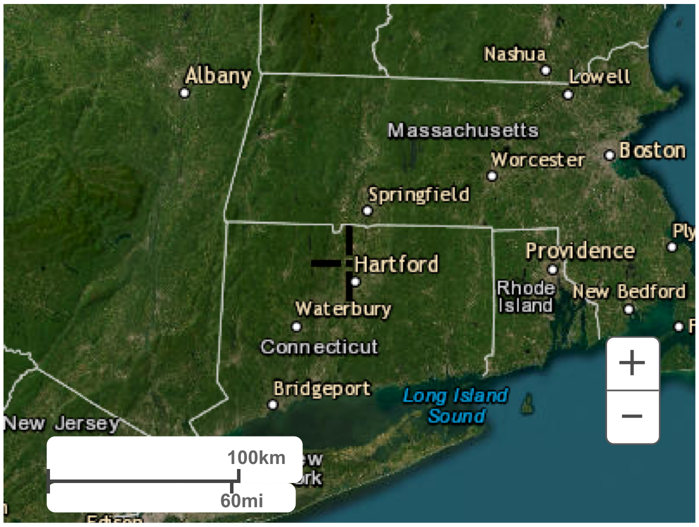
Large scale terrain



Large scale map



Large scale aerial



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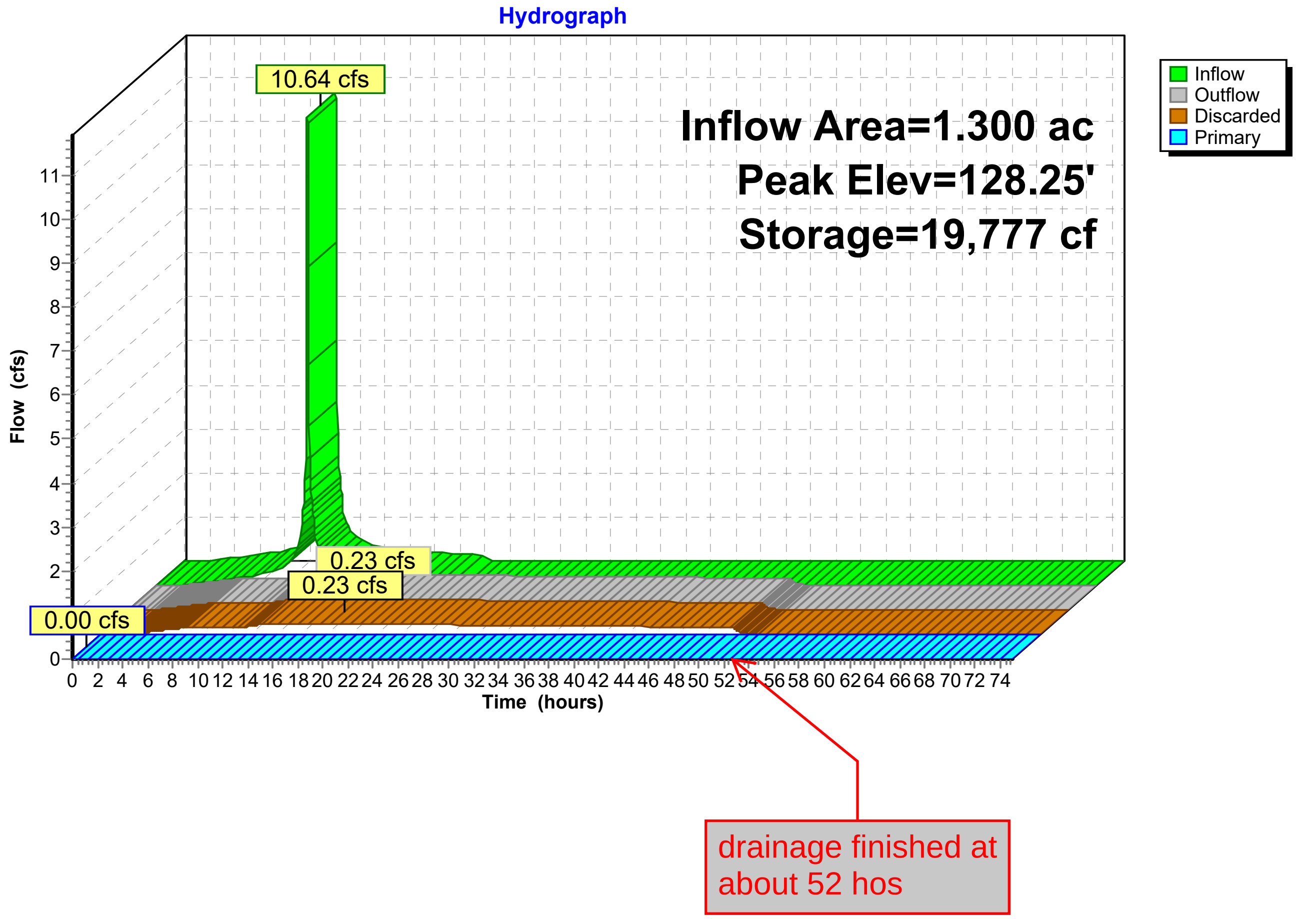
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Pond 5P: Surface Basin



APPENDIX B

DRAINAGE AREA MAPS

EXISTING HYDROLOGY

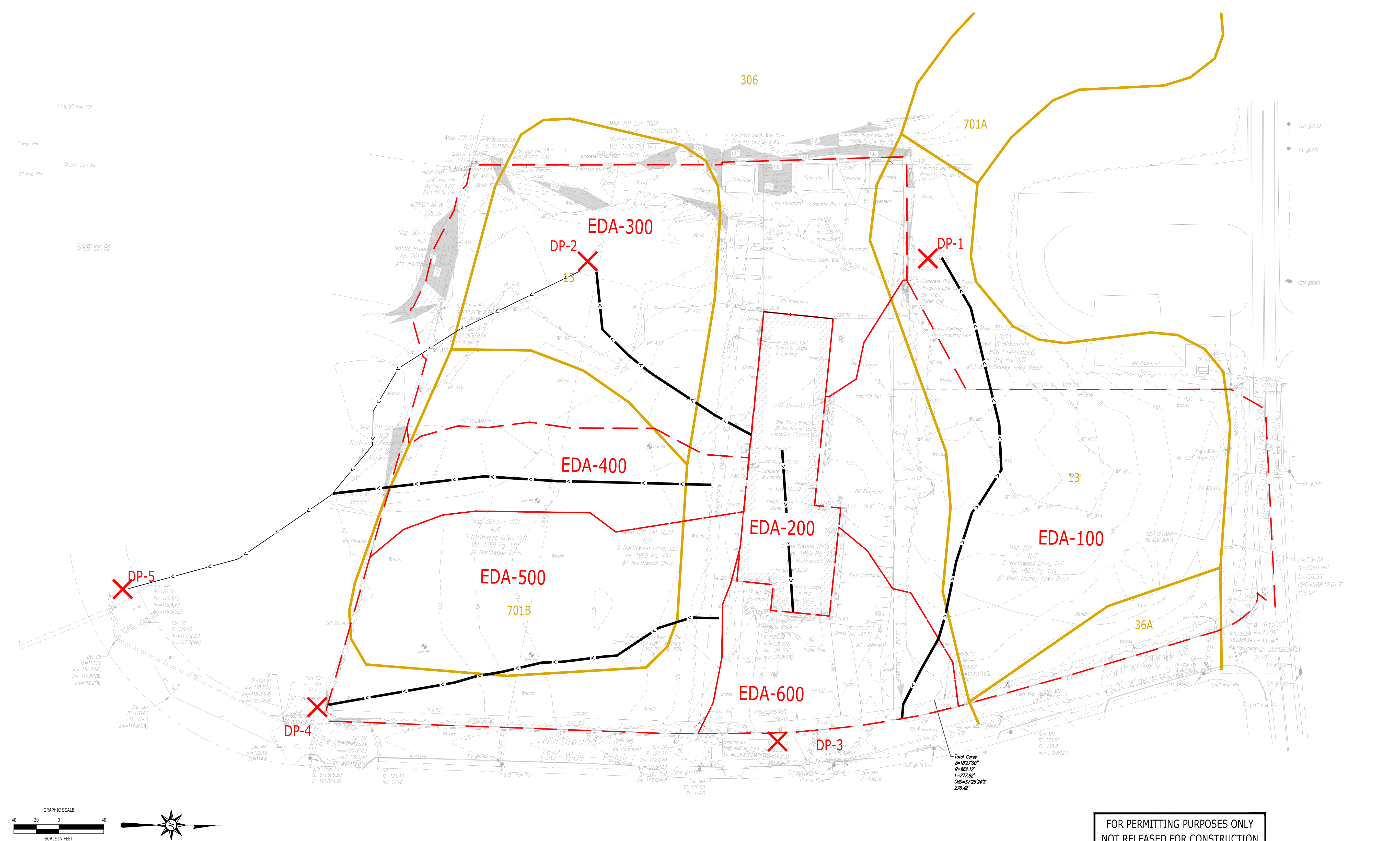
Drainage Area	Total Area	Composite Curve Number	Imperviousness Cover	Time of Concentration
	SF		%	Minutes
EDA-100	92,700	67	17.2	30.50
EDA-200	17,850	98	100.0	6.00
EDA-300	89,800	77	29.2	6.00
EDA-400	24,025	60	0.2	22.20
EDA-500	61,525	60	0.0	29.60
EDA-600	25,075	72	30.3	18.90

LEGEND

- EXISTING DRAINAGE AREA BOUNDARY
- DESIGN POINT
- EDA-100 — DRAINAGE AREA
- TIME OF CONCENTRATION
- EXISTING HYDROLOGIC SOIL BOUNDARY

SOIL TYPE LEGEND

9	SCITICO, SHAKER, AND MAYBID SOILS
13	WALPOLE SANDY LOAM
36A	WINDSOR LOAMY SAND
306	UDORTHENTS-URBAN LAND COMPLEX
701A	NINIGRET FINE SANDY LOAM, 0 TO 3 PERCENT SLOPES
701B	NINIGRET FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES



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PROPOSED DEVELOPMENT
5 NORTHWOOD DRIVE
BLOOMFIELD, CONNECTICUT

REVISIONS

No.	Date	Desc.
1	7/3/2025	RESPONSE TO TOWN COMMENTS

Designed	J.N.B.
Drawn	J.N.B.
Reviewed	R.M.R.
Scale	1"=40'
Project No.	2302699
Date	2/10/2025
CAD File:	ED230269901

Title
EXISTING DRAINAGE MAP

Sheet No.
ED-1

PROPOSED HYDROLOGY

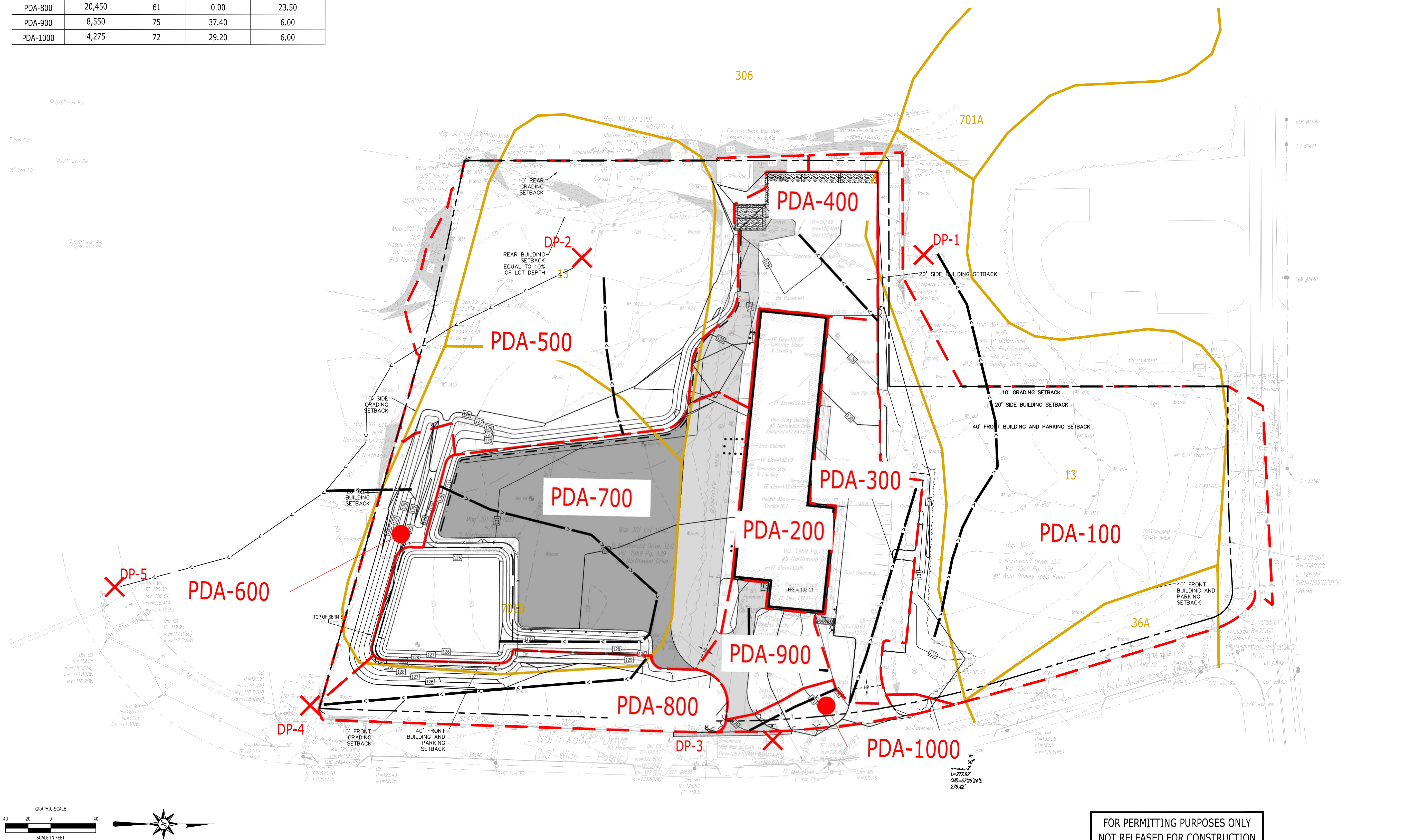
Drainage Area	Total Area SF	Composite Curve Number	Imperviousness Cover %	Time of Concentration Minutes
PDA-100	88,000	62	3.0	30.50
PDA-200	17,850	98	100.0	6.00
PDA-300	21,400	94	89.3	6.00
PDA-400	18,850	98	98.9	6.00
PDA-500	65,775	68	0.0	23.70
PDA-600	9,200	61	0.0	10.60
PDA-700	56,625	91	77.50	6.00
PDA-800	20,450	61	0.00	23.50
PDA-900	8,550	75	37.40	6.00
PDA-1000	4,275	72	29.20	6.00

LEGEND

	EXISTING DRAINAGE AREA BOUNDARY
X	DESIGN POINT
PDA-100	DRAINAGE AREA
	TIME OF CONCENTRATION
	EXISTING HYDROLOGIC SOIL BOUNDARY

SOIL TYPE LEGEND

9	SCITICO, SHAKER, AND MAYBID SOILS
13	WALPOLE SANDY LOAM
36A	WINDSOR LOAMY SAND
306	UDORTHENTS-URBAN LAND COMPLEX
701A	NINIGRET FINE SANDY LOAM, 0 TO 3 PERCENT SLOPES
701B	NINIGRET FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES



GRAPHIC SCALE
40 20 0 40
SCALE IN FEET

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5 NORTHWOOD DRIVE
BLOOMFIELD, CONNECTICUT

REVISIONS

No.	Date	Desc.
1	7/3/2025	RESPONSE TO TOWN COMMENTS

Designed	J.N.B.
Drawn	J.N.B.
Reviewed	R.M.R.
Scale	1"=40'
Project No.	2302699
Date	2/10/2025
CAD File:	PD230269901

Title
PROPOSED DRAINAGE MAP

Sheet No.
PD-1

Xref (s): ; XB2302699-00 ; XC2302699-20 ; XC2302699-10 ; XY230269902 ; XY230269901

7/1/2025, JBUSLEWICZ, G:\JOBS23\26\2302699\DWG\PD230269901.DWG,PD-01 24X36 40SC,

PROPOSED HYDROLOGY

Drainage Area	Total Area	Rational Coefficient	Time of Concentration
	SF		Minutes
PDA-100	88,000	0.30	35.40
PDA-200*			
PDA-300*			
PDA-400	18,850	0.89	10.10
PDA-500	66,775	0.30	27.80
PDA-600	9,200	0.30	14.70
PDA-700**			
PDA-800	12,825	0.30	6.00
PDA-900*			
PDA-1000	4,275	0.48	6.00
EDA-10	21,125	0.51	93.9
EDA-20	100,525	0.69	89.8
EDA-30	5,025	0.90	6.0
EDA-40	50,750	0.69	43.7
EDA-50	1,975	0.90	6.0
EDA-60	4,175	0.90	6.0
EDA-70	23,025	0.69	43.2
EDA-80	18,750	0.78	43.7
EDA-90	84,525	0.35	100.7

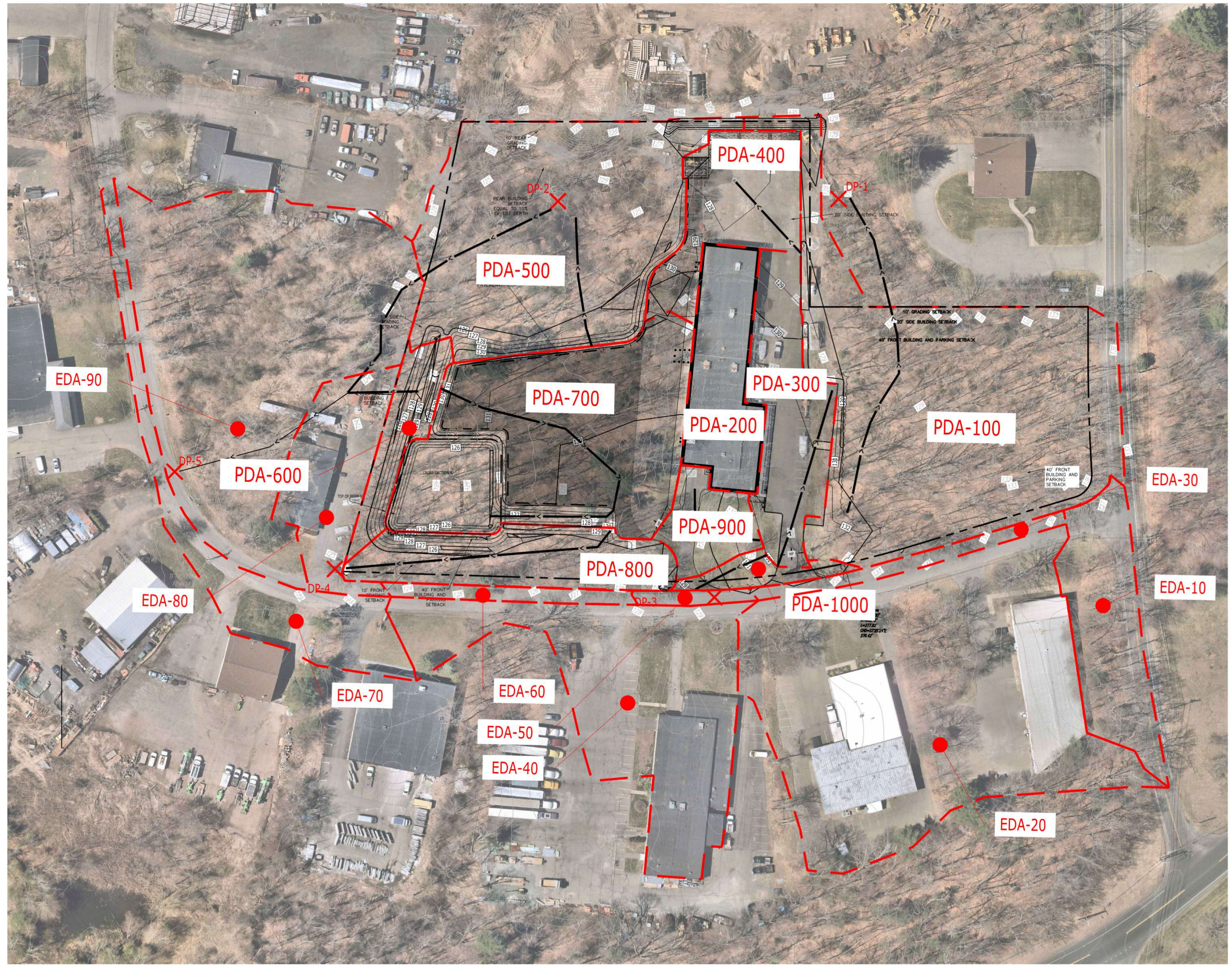
*PDA-200, 300, AND 900 DRAIN TO THE UNDERGROUND CHAMBER SYSTEM. THEIR CONTRIBUTION TO THE OFF-SITE NETWORK WAS BASED ON THE OUTFLOW OF THE CHAMEBR SYSTEM (0.16 CFS IN 10-YEAR STORM)
**PDA-700 DRAINS TO ~~THE PROPOSED STORMWATER BASIN~~. ITS CONTRIBUTION TO THE OFF-SITE NETWORK WAS BASED ON THE OUTFLOW OF THE BASIN (0 CFS IN 10-YEAR STORM)

LEGEND

EXISTING DRAINAGE AREA BOUNDARY

DESIGN POINT

PDA-100 — DRAINAGE AREA



GRAPHIC SCALE
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SCALE IN FEET

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BLOOMFIELD, CONNECTICUT

REVISIONS		
No.	Date	Desc.
1	7/3/2025	RESPONSE TO TOWN COMMENTS

Designed	J.N.B.
Drawn	J.N.B.
Reviewed	R.M.R.
Scale	1"=60'
Project No.	2302699
Date	2/10/2025
CAD File: PD230269902	

Title
PROPOSED OFF-SITE DRAINAGE MAP

Sheet No.
PD-2

Xref (s): ; XB2302699-00 ; XC2302699-20 ; XC2302699-10 ; XY2302699902 ; XY2302699901

EXISTING HYDROLOGY

Drainage Area	Total Area	Rational Coefficient	Time of Concentration
	SF		Minutes
EDA-100	92,700	0.37	35.40
EDA-200	17,825	0.90	6.00
EDA-300	89,800	0.48	26.30
EDA-400	24,025	0.30	32.70
EDA-500	61,525	0.30	29.60
EDA-601	13,512	0.52	6.00
EDA-602	11,564	0.43	6.00
EDA-10	21,125	0.51	93.9
EDA-20	100,525	0.69	89.8
EDA-30	5,025	0.90	6.0
EDA-40	50,750	0.69	43.7
EDA-50	1,975	0.90	6.0
EDA-60	4,175	0.90	6.0
EDA-70	23,025	0.69	43.2
EDA-80	18,750	0.78	43.7
EDA-90	84,525	0.35	100.7

LEGEND

EXISTING DRAINAGE AREA BOUNDARY

DESIGN POINT

EDA-100 — DRAINAGE AREA

GRAPHIC SCALE

60 30 0 60

SCALE IN FEET

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5 NORTHWOOD DRIVE
BLOOMFIELD, CONNECTICUT

REVISIONS

No.	Date	Desc.
1	7/3/2025	RESPONSE TO TOWN COMMENTS

Designed	J.N.B.
Drawn	J.N.B.
Reviewed	R.M.R.
Scale	1"=60'
Project No.	2302699
Date	2/10/2025

CAD File: ED230269902

Title

EXISTING OFF-SITE DRAINAGE MAP

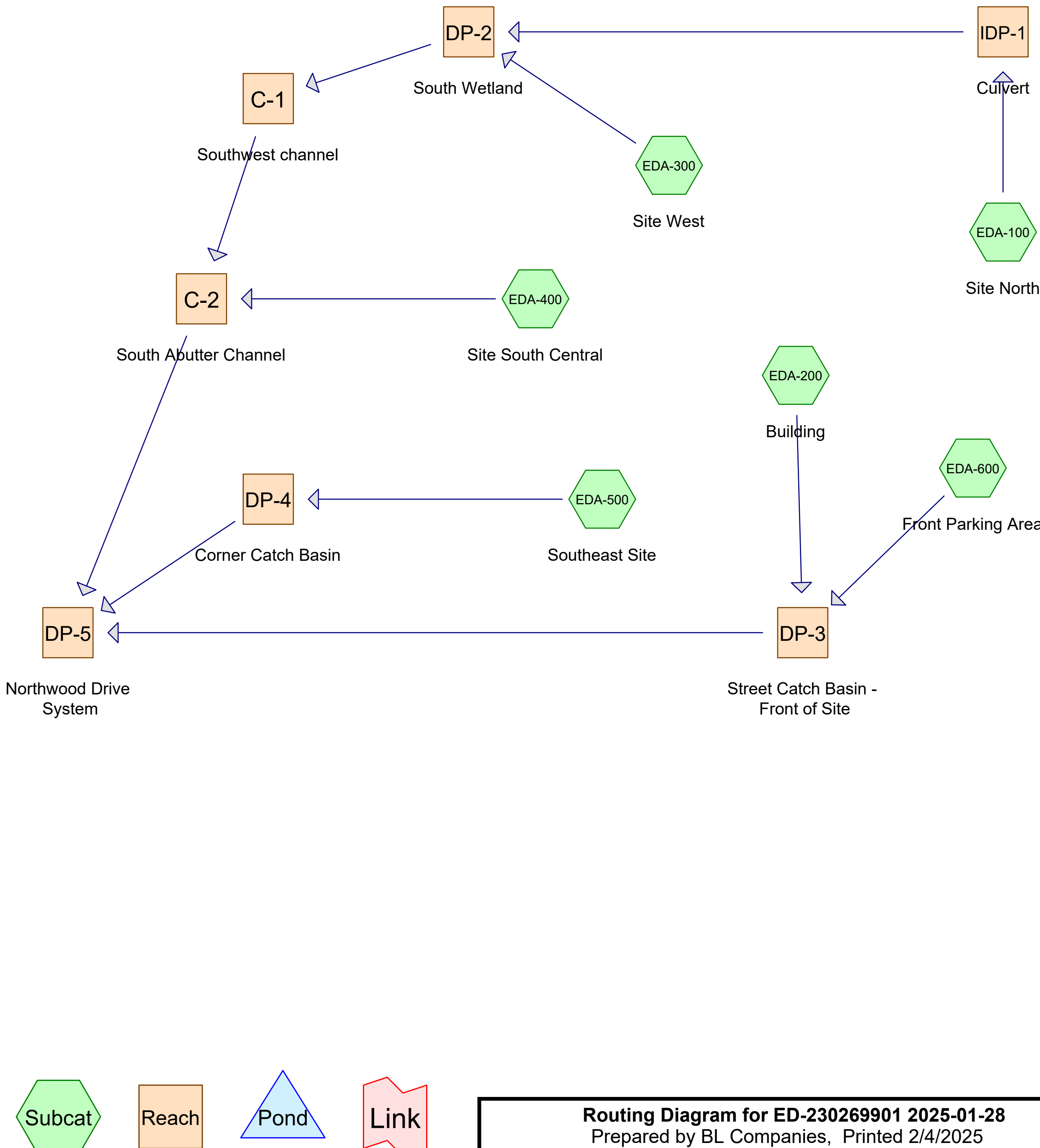
Sheet No.

ED-2

Xref (s): ; XB2302699-00 ; XY230269902 ; XY230269901

APPENDIX C

PRE-DEVELOPMENT HYDROLOGIC ANALYSIS



Routing Diagram for ED-230269901 2025-01-28
Prepared by BL Companies, Printed 2/4/2025
HydroCAD® 10.20-6a s/n 01334 © 2024 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	CT-Bloomfield 24-hr S1	100-yr	Default	24.00	1	3.19	2
2	10-yr	CT-Bloomfield 24-hr S1	100-yr	Default	24.00	1	5.10	2
3	25-yr	CT-Bloomfield 24-hr S1	100-yr	Default	24.00	1	6.29	2
4	100-yr	CT-Bloomfield 24-hr S1	100-yr	Default	24.00	1	8.12	2

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EDA-100: Site North Runoff Area=92,700 sf 11.08% Impervious Runoff Depth=0.68"
Flow Length=360' Tc=30.5 min CN=67 Runoff=0.68 cfs 0.121 af

Subcatchment EDA-200: Building Runoff Area=17,850 sf 100.00% Impervious Runoff Depth=2.96"
Tc=6.0 min CN=98 Runoff=1.42 cfs 0.101 af

Subcatchment EDA-300: Site West Runoff Area=89,800 sf 21.99% Impervious Runoff Depth=1.20"
Flow Length=213' Tc=22.2 min CN=77 Runoff=1.67 cfs 0.207 af

Subcatchment EDA-400: Site South Central Runoff Area=24,025 sf 0.21% Impervious Runoff Depth=0.40"
Flow Length=337' Tc=31.1 min CN=60 Runoff=0.07 cfs 0.019 af

Subcatchment EDA-500: Southeast Site Runoff Area=61,525 sf 0.00% Impervious Runoff Depth=0.40"
Flow Length=360' Tc=29.6 min CN=60 Runoff=0.18 cfs 0.048 af

Subcatchment EDA-600: Front Parking Runoff Area=25,075 sf 30.31% Impervious Runoff Depth=0.92"
Flow Length=78' Tc=18.9 min CN=72 Runoff=0.36 cfs 0.044 af

Reach C-1: Southwest channel Avg. Flow Depth=0.35' Max Vel=0.64 fps Inflow=2.07 cfs 0.328 af
n=0.070 L=312.0' S=0.0064 '/' Capacity=81.72 cfs Outflow=1.89 cfs 0.328 af

Reach C-2: South Abutter Channel Avg. Flow Depth=0.20' Max Vel=0.92 fps Inflow=1.96 cfs 0.346 af
n=0.050 L=250.0' S=0.0140 '/' Capacity=62.53 cfs Outflow=1.91 cfs 0.346 af

Reach DP-2: South Wetland Avg. Flow Depth=0.25' Max Vel=0.40 fps Inflow=2.18 cfs 0.328 af
n=0.070 L=130.0' S=0.0038 '/' Capacity=40.17 cfs Outflow=2.07 cfs 0.328 af

Reach DP-3: Street Catch Basin - Front of Site Inflow=1.56 cfs 0.145 af
Outflow=1.56 cfs 0.145 af

Reach DP-4: Corner Catch Basin Inflow=0.18 cfs 0.048 af
Outflow=0.18 cfs 0.048 af

Reach DP-5: Northwood Drive System Inflow=2.26 cfs 0.539 af
Outflow=2.26 cfs 0.539 af

Reach IDP-1: Culvert Avg. Flow Depth=0.33' Max Vel=2.39 fps Inflow=0.68 cfs 0.121 af
18.0" Round Pipe n=0.025 L=175.0' S=0.0143 '/' Capacity=6.53 cfs Outflow=0.68 cfs 0.121 af

Total Runoff Area = 7.139 ac Runoff Volume = 0.539 af Average Runoff Depth = 0.91"
82.14% Pervious = 5.864 ac 17.86% Impervious = 1.275 ac

Summary for Subcatchment EDA-100: Site North

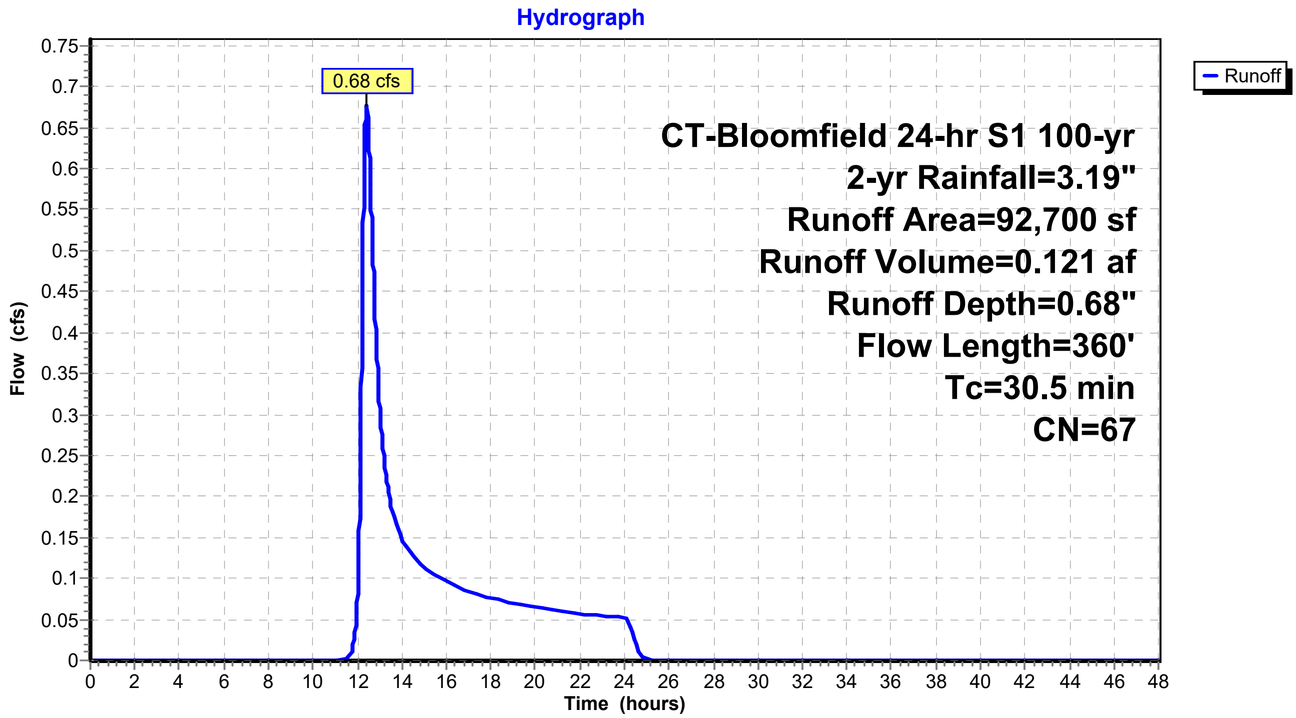
Runoff = 0.68 cfs @ 12.41 hrs, Volume= 0.121 af, Depth= 0.68"
Routed to Reach IDP-1 : Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 2-yr Rainfall=3.19"

Area (sf)	CN	Description
1,425	39	>75% Grass cover, Good, HSG A
4,850	61	>75% Grass cover, Good, HSG B
7,250	36	Woods, Fair, HSG A
51,275	60	Woods, Fair, HSG B
10,275	98	Paved parking, HSG A
5,625	96	Gravel surface, HSG B
12,000	79	Woods, Fair, HSG D
92,700	67	Weighted Average
82,425		88.92% Pervious Area
10,275		11.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4	100	0.0180	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
8.1	260	0.0115	0.54		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
30.5	360	Total			

Subcatchment EDA-100: Site North



Summary for Subcatchment EDA-200: Building

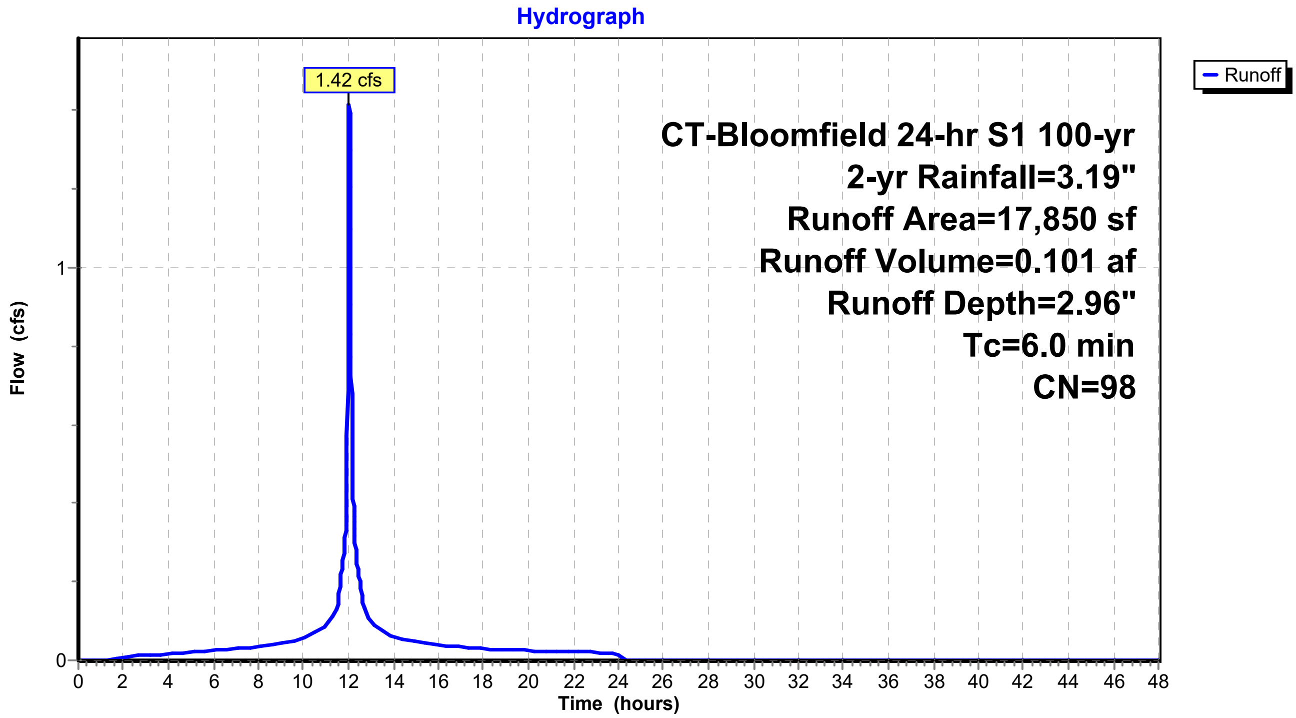
Runoff = 1.42 cfs @ 12.04 hrs, Volume= 0.101 af, Depth= 2.96"
Routed to Reach DP-3 : Street Catch Basin - Front of Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 2-yr Rainfall=3.19"

Area (sf)	CN	Description
17,850	98	Roofs, HSG A
17,850		100.00% Impervious Area

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

Subcatchment EDA-200: Building



Summary for Subcatchment EDA-300: Site West

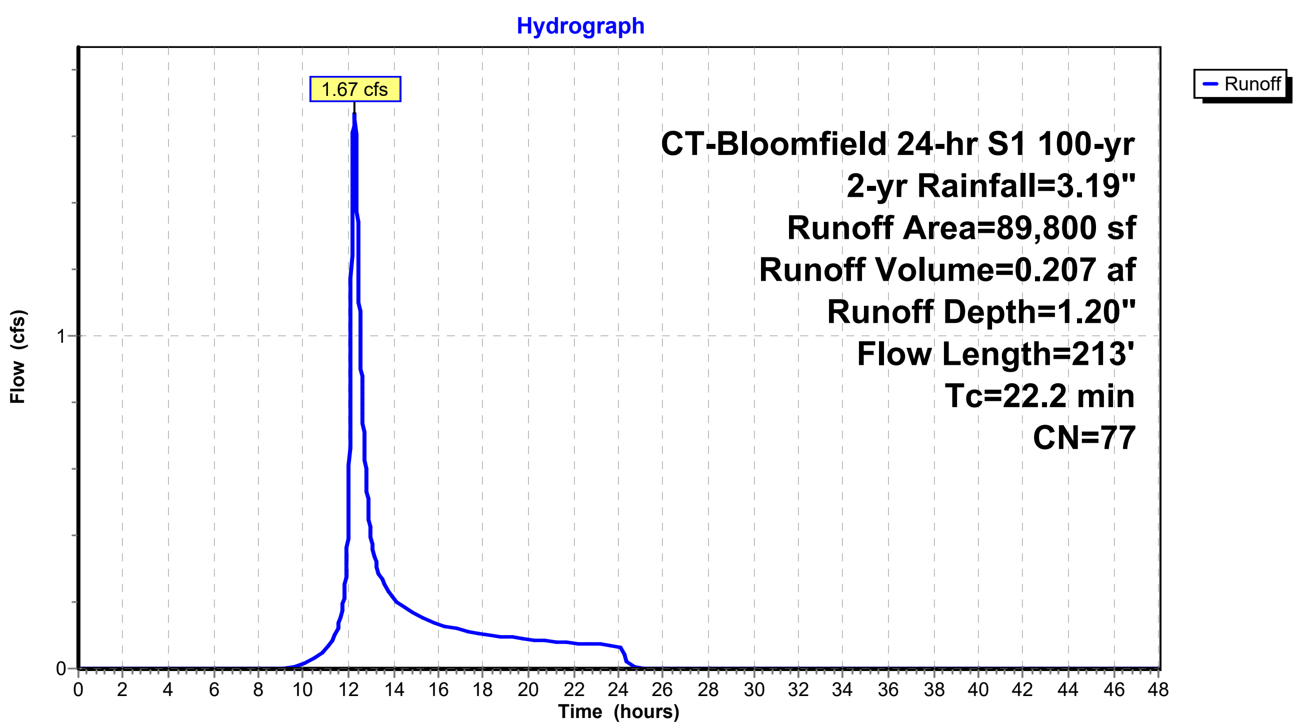
Runoff = 1.67 cfs @ 12.26 hrs, Volume= 0.207 af, Depth= 1.20"
Routed to Reach DP-2 : South Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 2-yr Rainfall=3.19"

Area (sf)	CN	Description
6,800	61	>75% Grass cover, Good, HSG B
29,550	60	Woods, Fair, HSG B
19,750	98	Paved parking, HSG A
6,450	96	Gravel surface, HSG B
27,250	79	Woods, Fair, HSG D
89,800	77	Weighted Average
70,050		78.01% Pervious Area
19,750		21.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
2.5	113	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.2	213	Total			

Subcatchment EDA-300: Site West



Summary for Subcatchment EDA-400: Site South Central

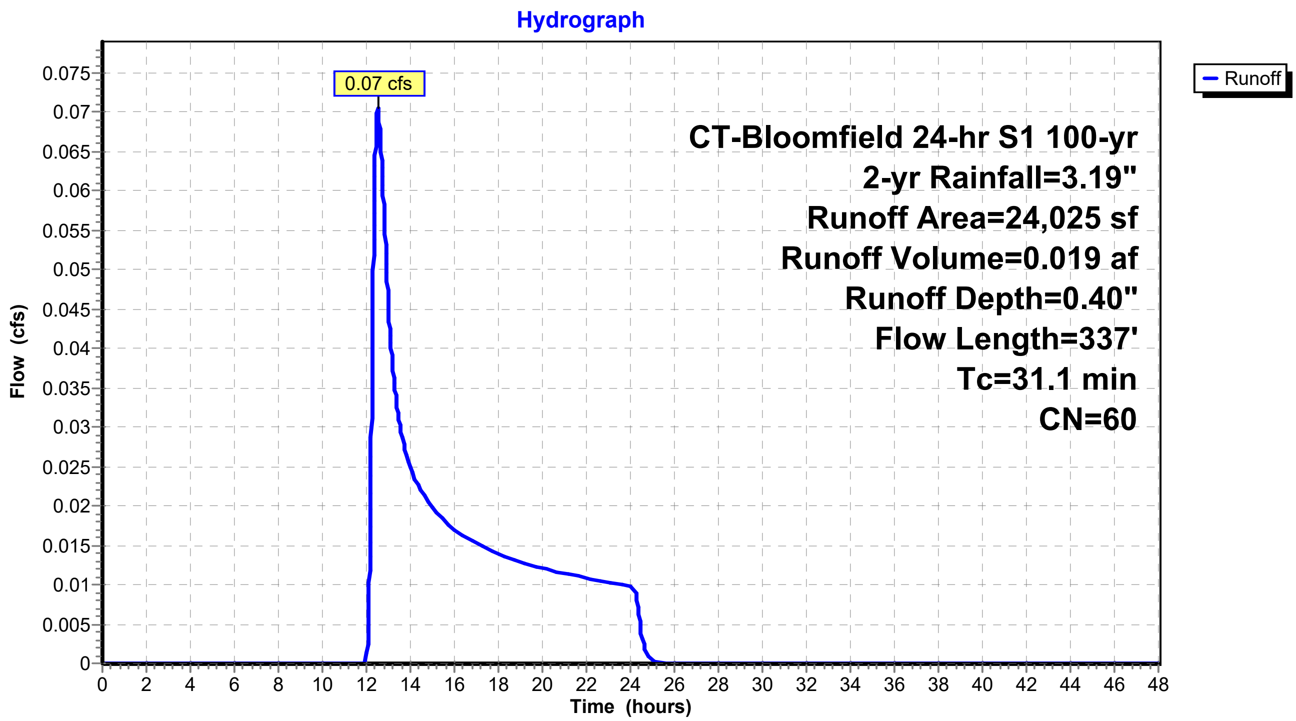
Runoff = 0.07 cfs @ 12.51 hrs, Volume= 0.019 af, Depth= 0.40"
Routed to Reach C-2 : South Abutter Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 2-yr Rainfall=3.19"

Area (sf)	CN	Description
1,575	61	>75% Grass cover, Good, HSG B
22,400	60	Woods, Fair, HSG B
50	98	Paved parking, HSG A
24,025	60	Weighted Average
23,975		99.79% Pervious Area
50		0.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	100	0.0150	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
7.0	237	0.0126	0.56		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
31.1	337	Total			

Subcatchment EDA-400: Site South Central



Summary for Subcatchment EDA-500: Southeast Site

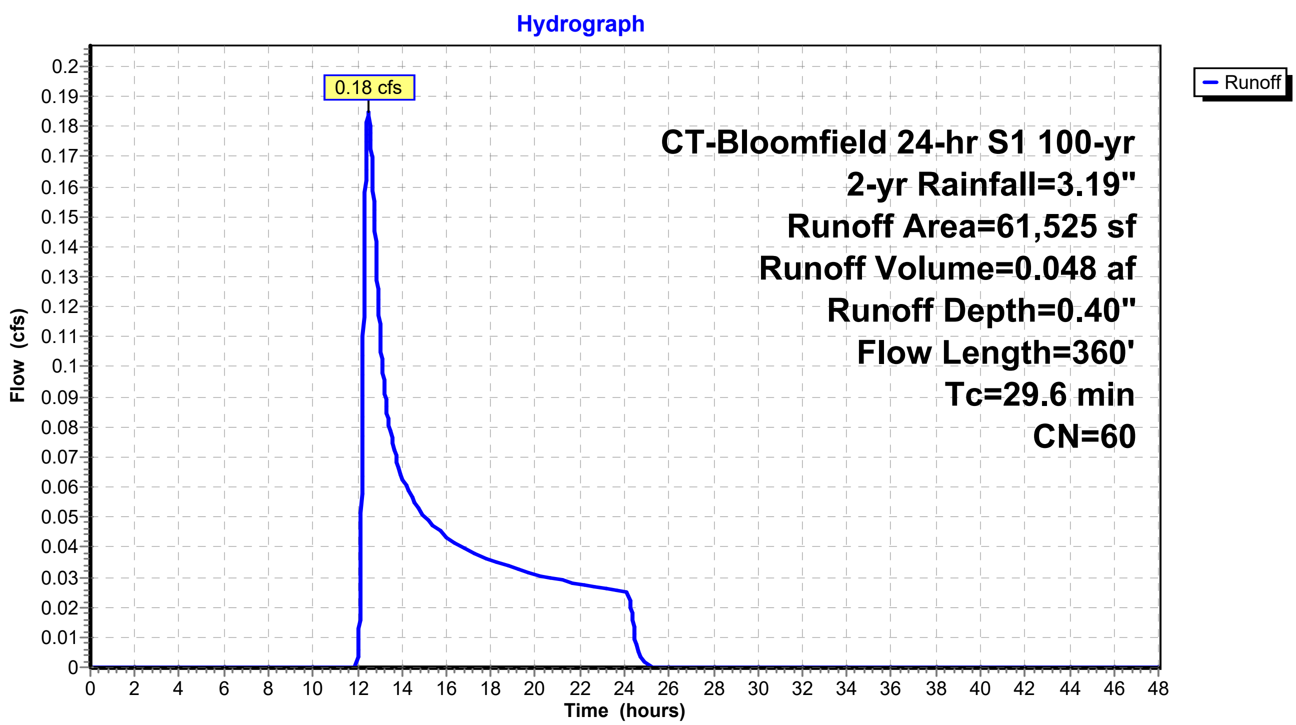
Runoff = 0.18 cfs @ 12.47 hrs, Volume= 0.048 af, Depth= 0.40"
Routed to Reach DP-4 : Corner Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 2-yr Rainfall=3.19"

Area (sf)	CN	Description
6,675	61	>75% Grass cover, Good, HSG B
54,850	60	Woods, Fair, HSG B
61,525	60	Weighted Average
61,525		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.5	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
8.1	260	0.0115	0.54		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
29.6	360	Total			

Subcatchment EDA-500: Southeast Site



Summary for Subcatchment EDA-600: Front Parking Area

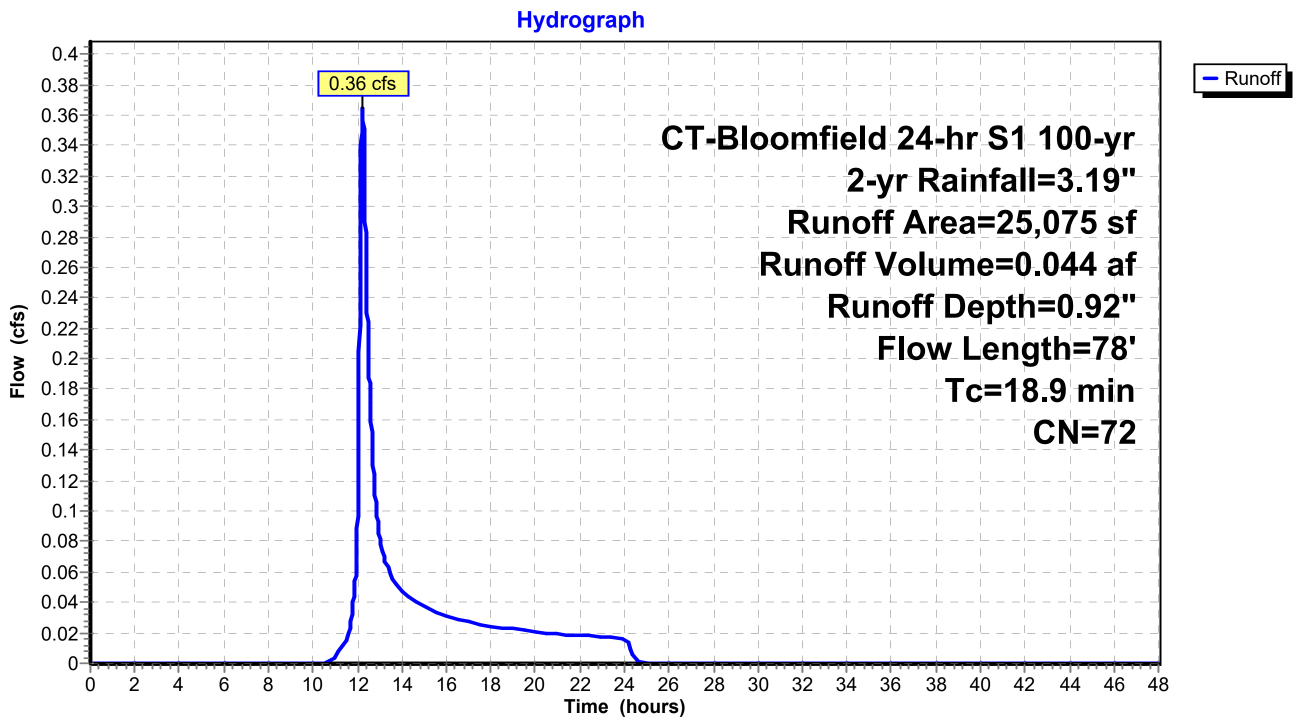
Runoff = 0.36 cfs @ 12.22 hrs, Volume= 0.044 af, Depth= 0.92"
Routed to Reach DP-3 : Street Catch Basin - Front of Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 2-yr Rainfall=3.19"

Area (sf)	CN	Description
15,750	61	>75% Grass cover, Good, HSG B
1,725	60	Woods, Fair, HSG B
7,600	98	Paved parking, HSG B
25,075	72	Weighted Average
17,475		69.69% Pervious Area
7,600		30.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	30	0.0083	0.04		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
7.2	48	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.19"
18.9	78	Total			

Subcatchment EDA-600: Front Parking Area



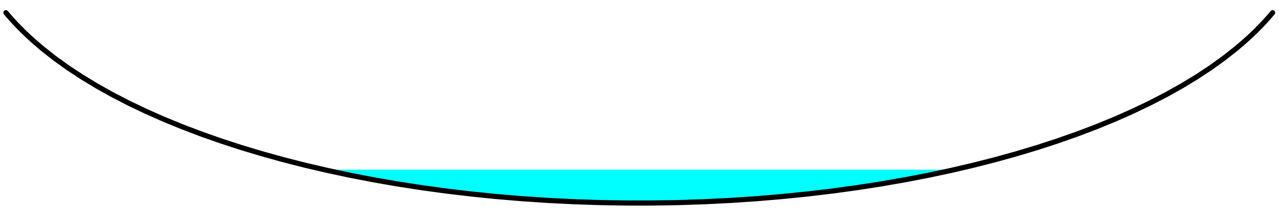
Summary for Reach C-1: Southwest channel

Inflow Area = 4.190 ac, 16.45% Impervious, Inflow Depth = 0.94" for 2-yr event
Inflow = 2.07 cfs @ 12.46 hrs, Volume= 0.328 af
Outflow = 1.89 cfs @ 12.71 hrs, Volume= 0.328 af, Atten= 8%, Lag= 15.0 min
Routed to Reach C-2 : South Abutter Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.64 fps, Min. Travel Time= 8.1 min
Avg. Velocity = 0.24 fps, Avg. Travel Time= 21.4 min

Peak Storage= 917 cf @ 12.58 hrs
Average Depth at Peak Storage= 0.35' , Surface Width= 12.56'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 81.72 cfs

30.00' x 2.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 312.0' Slope= 0.0064 '/'
Inlet Invert= 125.00', Outlet Invert= 123.00'



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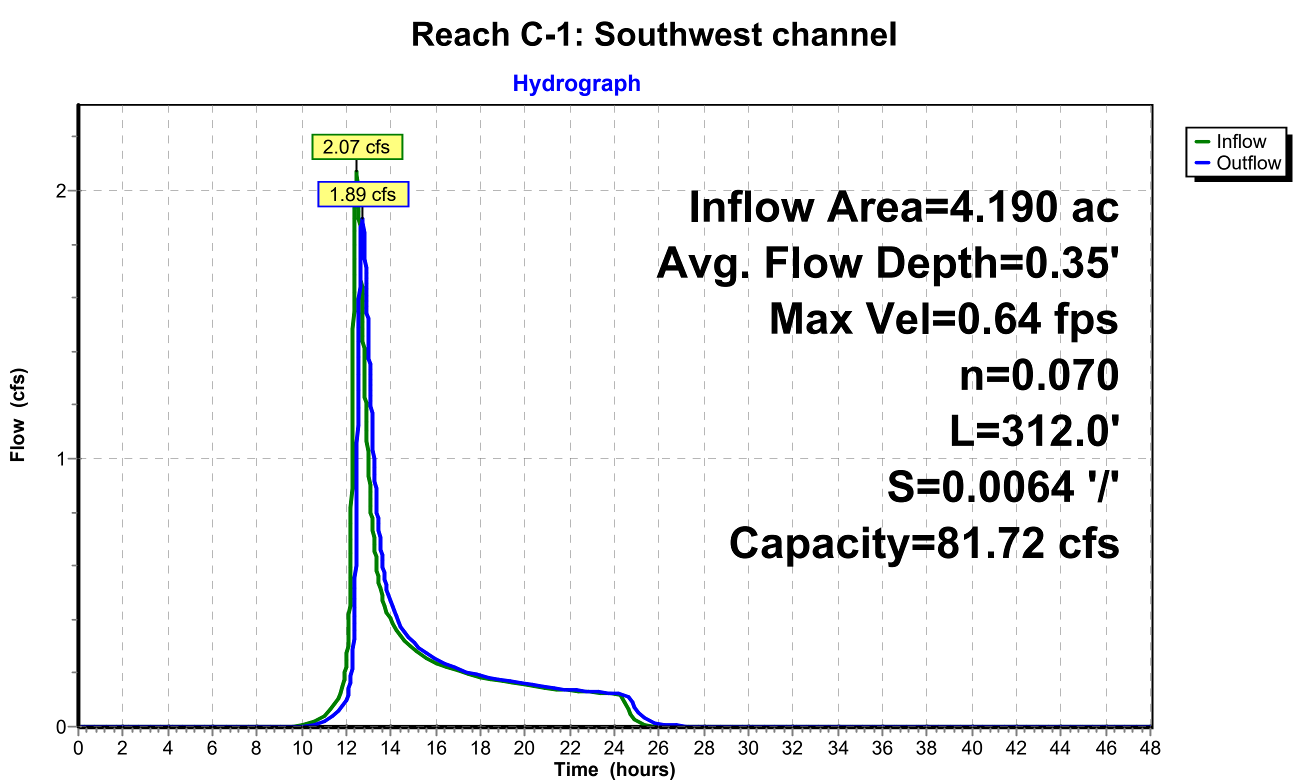


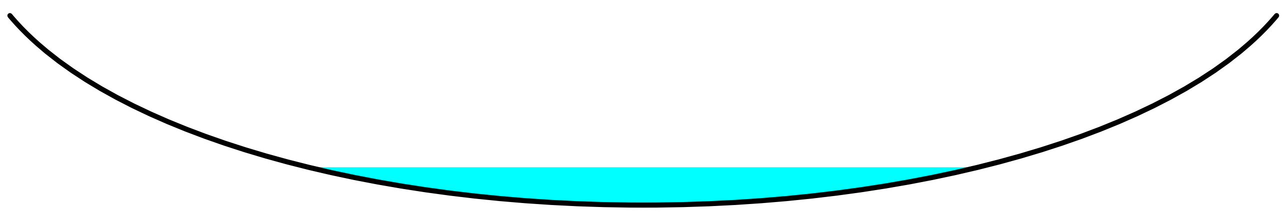
Summary for Reach C-2: South Abutter Channel

Inflow Area = 4.741 ac, 14.56% Impervious, Inflow Depth = 0.88" for 2-yr event
Inflow = 1.96 cfs @ 12.71 hrs, Volume= 0.346 af
Outflow = 1.91 cfs @ 12.85 hrs, Volume= 0.346 af, Atten= 2%, Lag= 8.3 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.92 fps, Min. Travel Time= 4.5 min
Avg. Velocity = 0.34 fps, Avg. Travel Time= 12.1 min

Peak Storage= 521 cf @ 12.78 hrs
Average Depth at Peak Storage= 0.20' , Surface Width= 15.65'
Bank-Full Depth= 1.00' Flow Area= 23.3 sf, Capacity= 62.53 cfs

35.00' x 1.00' deep Parabolic Channel, n= 0.050 Sluggish weedy reaches w/pools
Length= 250.0' Slope= 0.0140 '/'
Inlet Invert= 124.00', Outlet Invert= 120.50'



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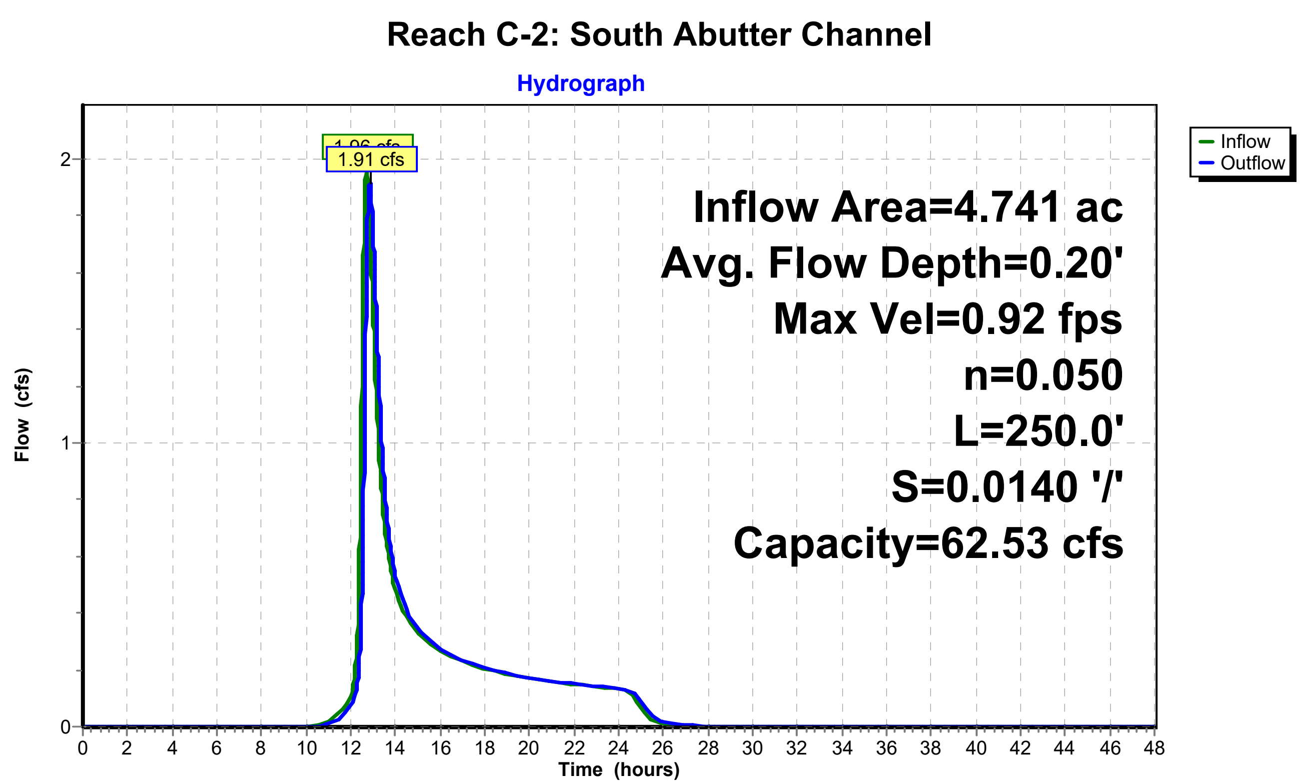


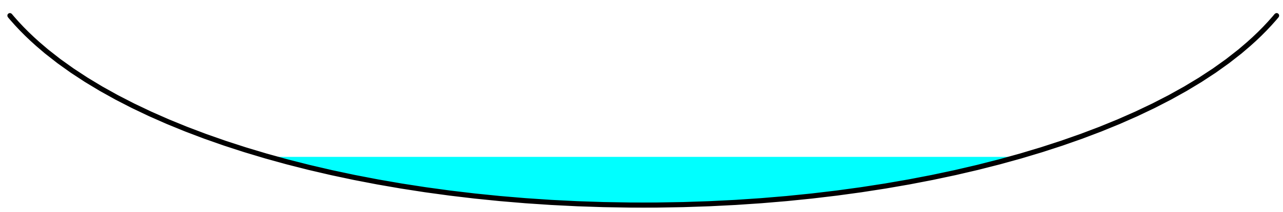
Summary for Reach DP-2: South Wetland

Inflow Area = 4.190 ac, 16.45% Impervious, Inflow Depth = 0.94" for 2-yr event
Inflow = 2.18 cfs @ 12.31 hrs, Volume= 0.328 af
Outflow = 2.07 cfs @ 12.46 hrs, Volume= 0.328 af, Atten= 5%, Lag= 9.4 min
Routed to Reach C-1 : Southwest channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.40 fps, Min. Travel Time= 5.4 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 14.3 min

Peak Storage= 667 cf @ 12.37 hrs
Average Depth at Peak Storage= 0.25' , Surface Width= 30.26'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 40.17 cfs

60.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 130.0' Slope= 0.0038 '/'
Inlet Invert= 125.50', Outlet Invert= 125.00'



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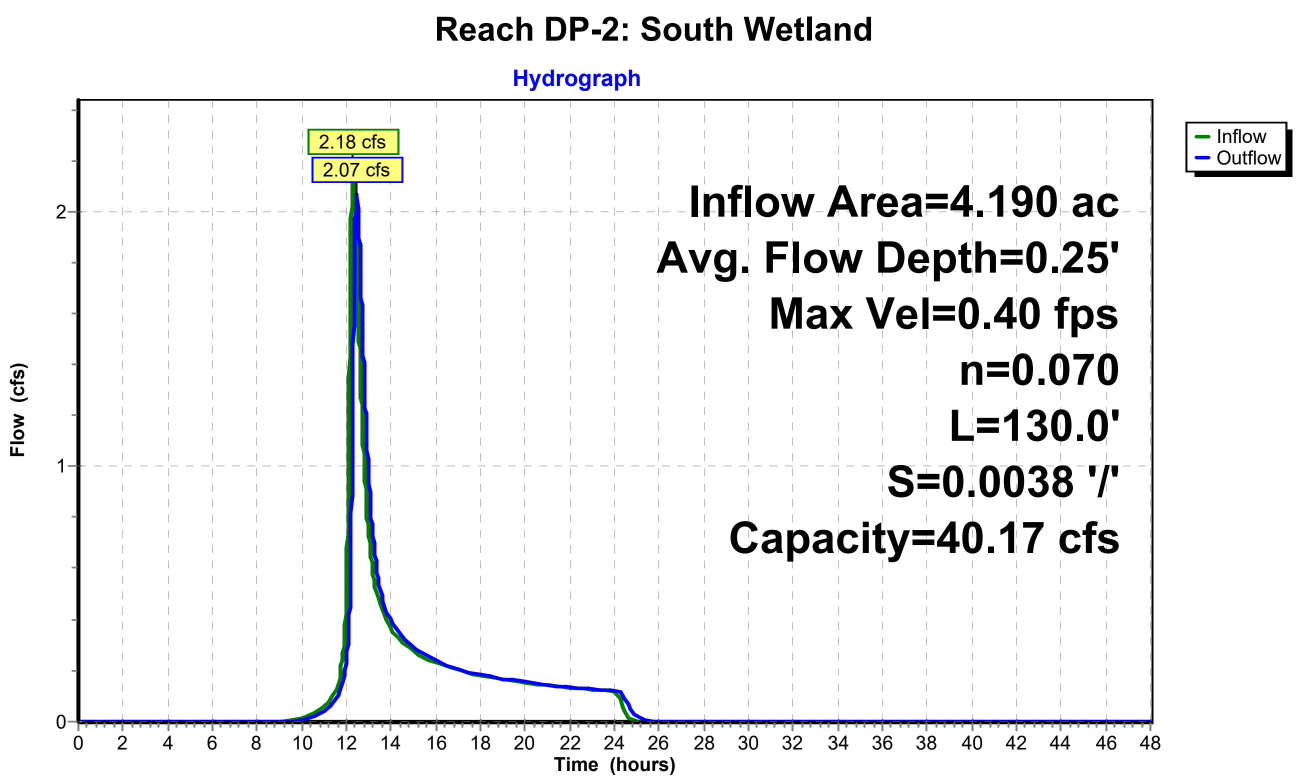
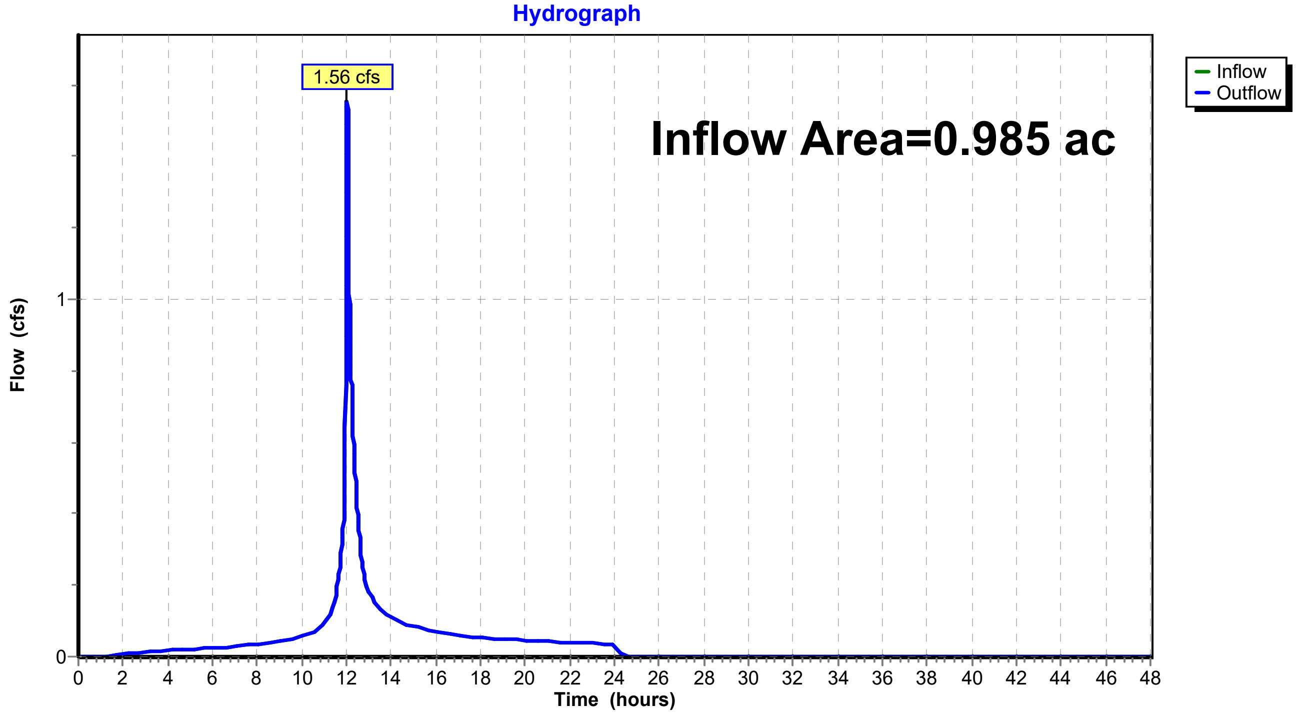


Summary for Reach DP-3: Street Catch Basin - Front of Site

Inflow Area = 0.985 ac, 59.29% Impervious, Inflow Depth = 1.77" for 2-yr event
Inflow = 1.56 cfs @ 12.04 hrs, Volume= 0.145 af
Outflow = 1.56 cfs @ 12.04 hrs, Volume= 0.145 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-3: Street Catch Basin - Front of Site

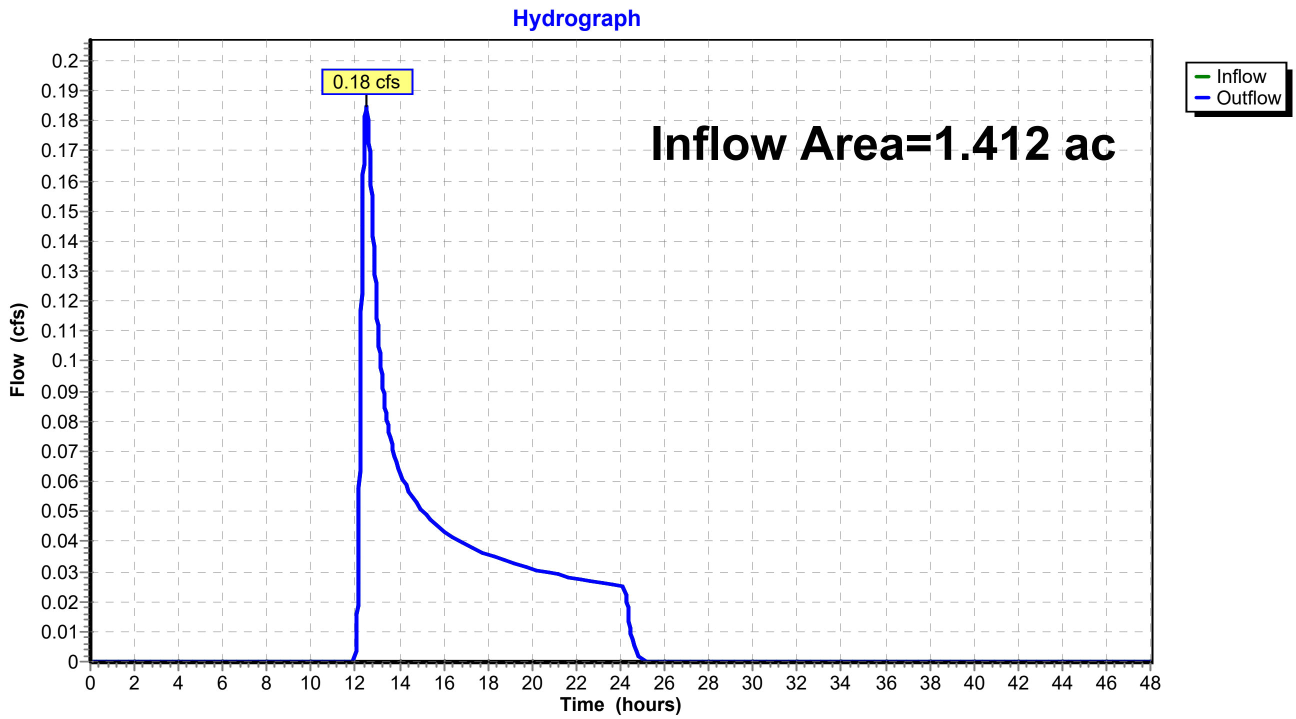


Summary for Reach DP-4: Corner Catch Basin

Inflow Area = 1.412 ac, 0.00% Impervious, Inflow Depth = 0.40" for 2-yr event
Inflow = 0.18 cfs @ 12.47 hrs, Volume= 0.048 af
Outflow = 0.18 cfs @ 12.47 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-4: Corner Catch Basin

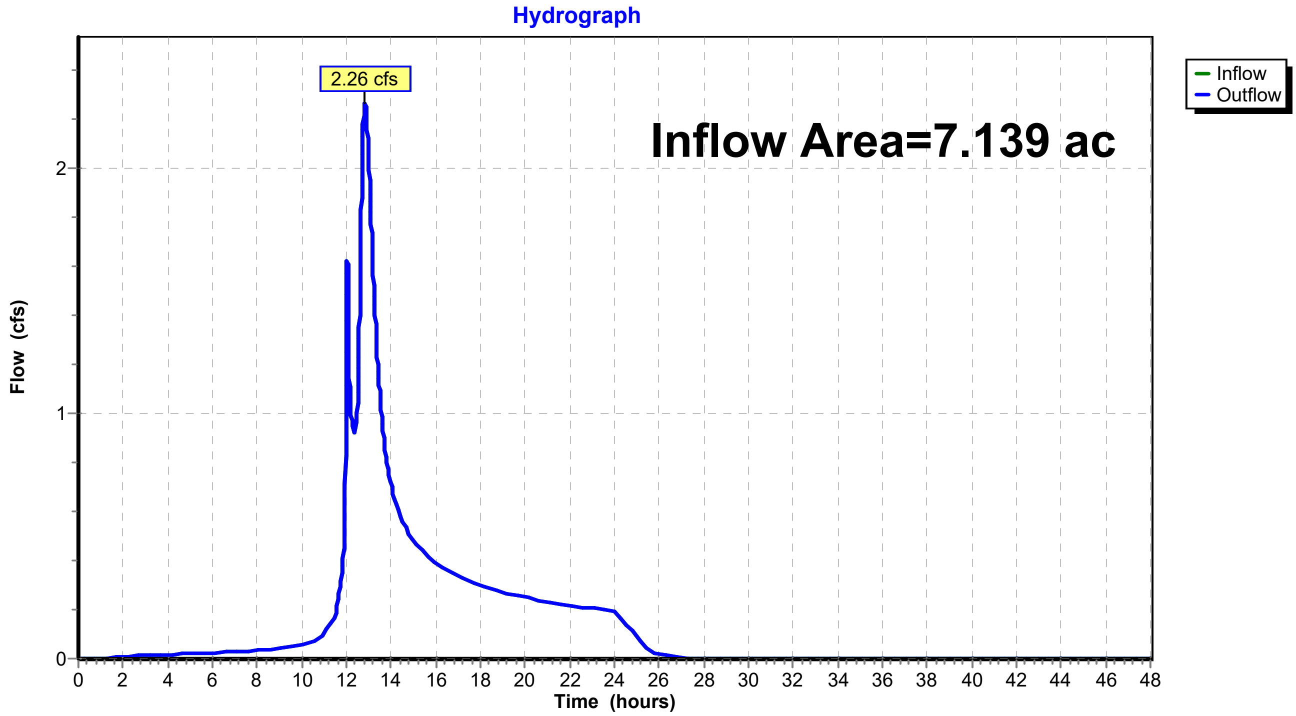


Summary for Reach DP-5: Northwood Drive System

Inflow Area =	7.139 ac,	17.86% Impervious, Inflow Depth =	0.91"	for 2-yr event
Inflow =	2.26 cfs @	12.83 hrs, Volume=	0.539 af	
Outflow =	2.26 cfs @	12.83 hrs, Volume=	0.539 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-5: Northwood Drive System



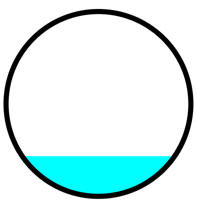
Summary for Reach IDP-1: Culvert

Inflow Area = 2.128 ac, 11.08% Impervious, Inflow Depth = 0.68" for 2-yr event
Inflow = 0.68 cfs @ 12.41 hrs, Volume= 0.121 af
Outflow = 0.68 cfs @ 12.46 hrs, Volume= 0.121 af, Atten= 0%, Lag= 2.7 min
Routed to Reach DP-2 : South Wetland

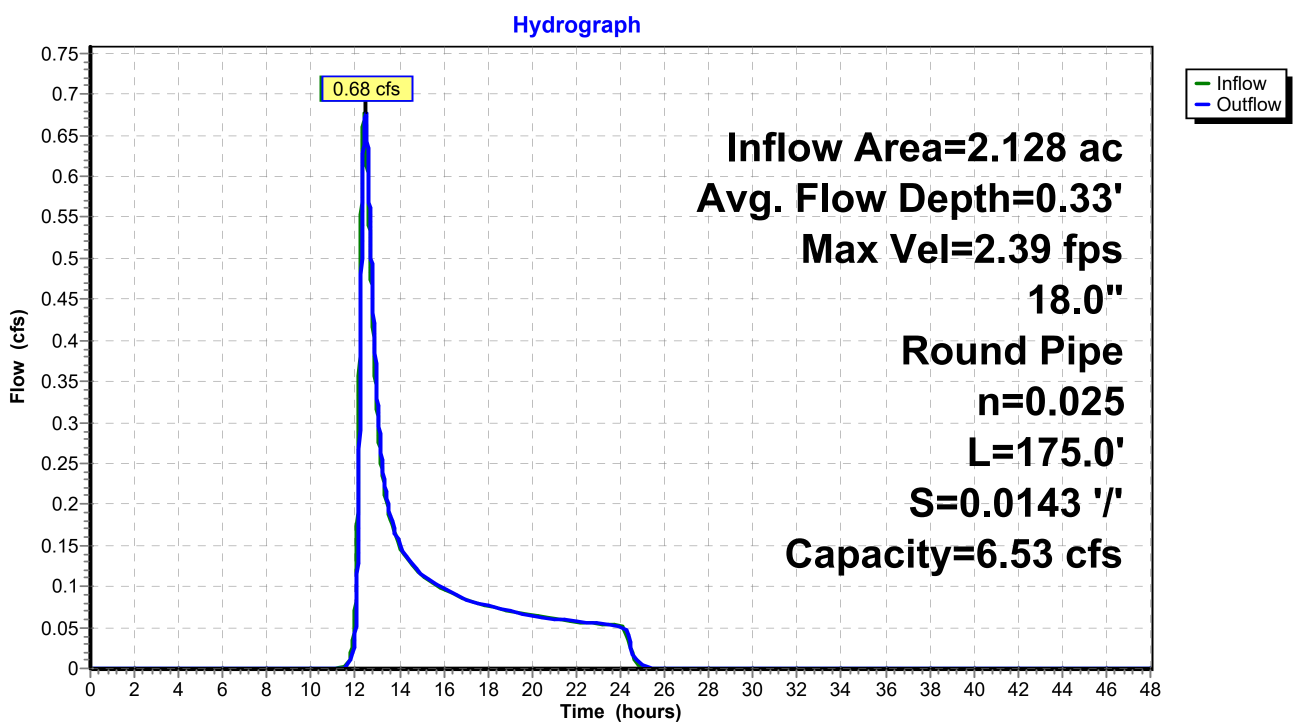
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.39 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.22 fps, Avg. Travel Time= 2.4 min

Peak Storage= 50 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.33' , Surface Width= 1.24'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.53 cfs

18.0" Round Pipe
n= 0.025 Corrugated metal
Length= 175.0' Slope= 0.0143 '/'
Inlet Invert= 128.00', Outlet Invert= 125.50'



Reach IDP-1: Culvert



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EDA-100: Site North Runoff Area=92,700 sf 11.08% Impervious Runoff Depth=1.87"
Flow Length=360' Tc=30.5 min CN=67 Runoff=2.23 cfs 0.332 af

Subcatchment EDA-200: Building Runoff Area=17,850 sf 100.00% Impervious Runoff Depth=4.86"
Tc=6.0 min CN=98 Runoff=2.29 cfs 0.166 af

Subcatchment EDA-300: Site West Runoff Area=89,800 sf 21.99% Impervious Runoff Depth=2.71"
Flow Length=213' Tc=22.2 min CN=77 Runoff=3.90 cfs 0.465 af

Subcatchment EDA-400: Site South Central Runoff Area=24,025 sf 0.21% Impervious Runoff Depth=1.36"
Flow Length=337' Tc=31.1 min CN=60 Runoff=0.38 cfs 0.063 af

Subcatchment EDA-500: Southeast Site Runoff Area=61,525 sf 0.00% Impervious Runoff Depth=1.36"
Flow Length=360' Tc=29.6 min CN=60 Runoff=1.01 cfs 0.160 af

Subcatchment EDA-600: Front Parking Runoff Area=25,075 sf 30.31% Impervious Runoff Depth=2.28"
Flow Length=78' Tc=18.9 min CN=72 Runoff=0.98 cfs 0.109 af

Reach C-1: Southwest channel Avg. Flow Depth=0.57' Max Vel=0.89 fps Inflow=5.62 cfs 0.797 af
n=0.070 L=312.0' S=0.0064 '/' Capacity=81.72 cfs Outflow=5.33 cfs 0.797 af

Reach C-2: South Abutter Channel Avg. Flow Depth=0.33' Max Vel=1.27 fps Inflow=5.65 cfs 0.860 af
n=0.050 L=250.0' S=0.0140 '/' Capacity=62.53 cfs Outflow=5.57 cfs 0.860 af

Reach DP-2: South Wetland Avg. Flow Depth=0.40' Max Vel=0.55 fps Inflow=5.78 cfs 0.797 af
n=0.070 L=130.0' S=0.0038 '/' Capacity=40.17 cfs Outflow=5.62 cfs 0.797 af

Reach DP-3: Street Catch Basin - Front of Site Inflow=2.72 cfs 0.275 af
Outflow=2.72 cfs 0.275 af

Reach DP-4: Corner Catch Basin Inflow=1.01 cfs 0.160 af
Outflow=1.01 cfs 0.160 af

Reach DP-5: Northwood Drive System Inflow=6.82 cfs 1.295 af
Outflow=6.82 cfs 1.295 af

Reach IDP-1: Culvert Avg. Flow Depth=0.60' Max Vel=3.34 fps Inflow=2.23 cfs 0.332 af
18.0" Round Pipe n=0.025 L=175.0' S=0.0143 '/' Capacity=6.53 cfs Outflow=2.22 cfs 0.332 af

Total Runoff Area = 7.139 ac Runoff Volume = 1.295 af Average Runoff Depth = 2.18"
82.14% Pervious = 5.864 ac 17.86% Impervious = 1.275 ac

Summary for Subcatchment EDA-100: Site North

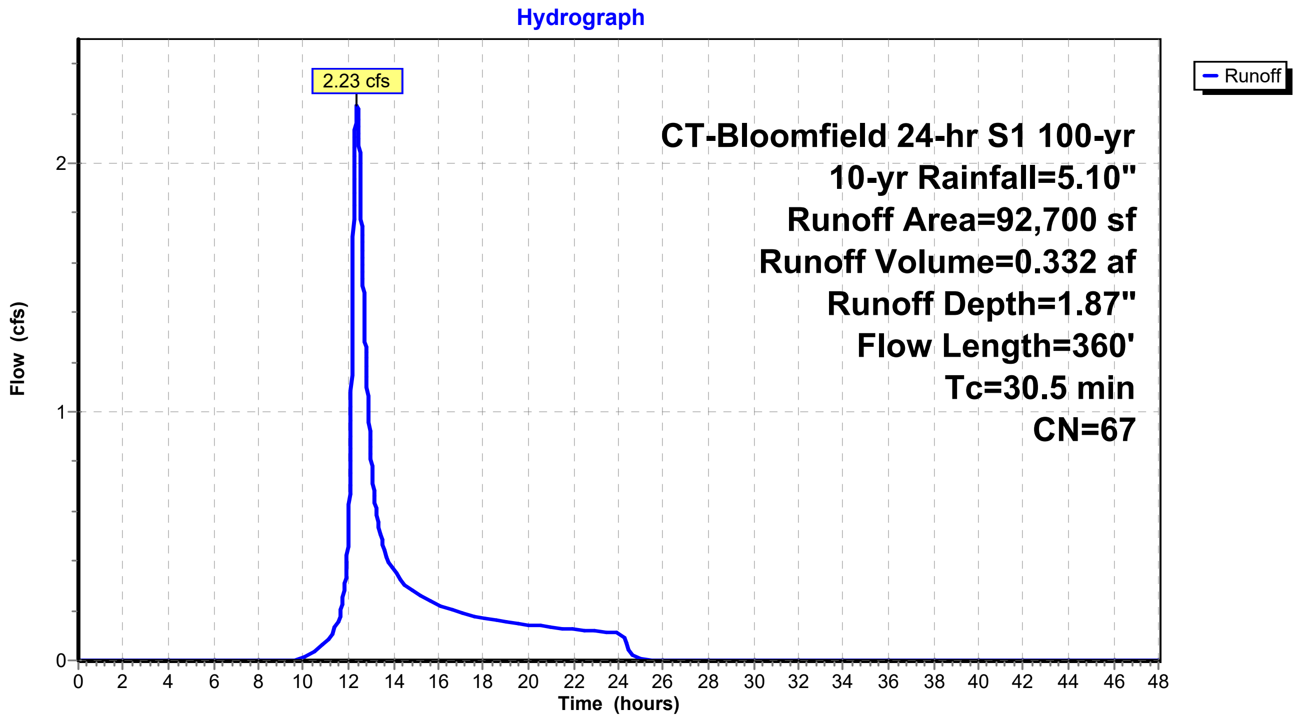
Runoff = 2.23 cfs @ 12.37 hrs, Volume= 0.332 af, Depth= 1.87"
Routed to Reach IDP-1 : Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 10-yr Rainfall=5.10"

Area (sf)	CN	Description
1,425	39	>75% Grass cover, Good, HSG A
4,850	61	>75% Grass cover, Good, HSG B
7,250	36	Woods, Fair, HSG A
51,275	60	Woods, Fair, HSG B
10,275	98	Paved parking, HSG A
5,625	96	Gravel surface, HSG B
12,000	79	Woods, Fair, HSG D
92,700	67	Weighted Average
82,425		88.92% Pervious Area
10,275		11.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4	100	0.0180	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
8.1	260	0.0115	0.54		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
30.5	360	Total			

Subcatchment EDA-100: Site North



Summary for Subcatchment EDA-200: Building

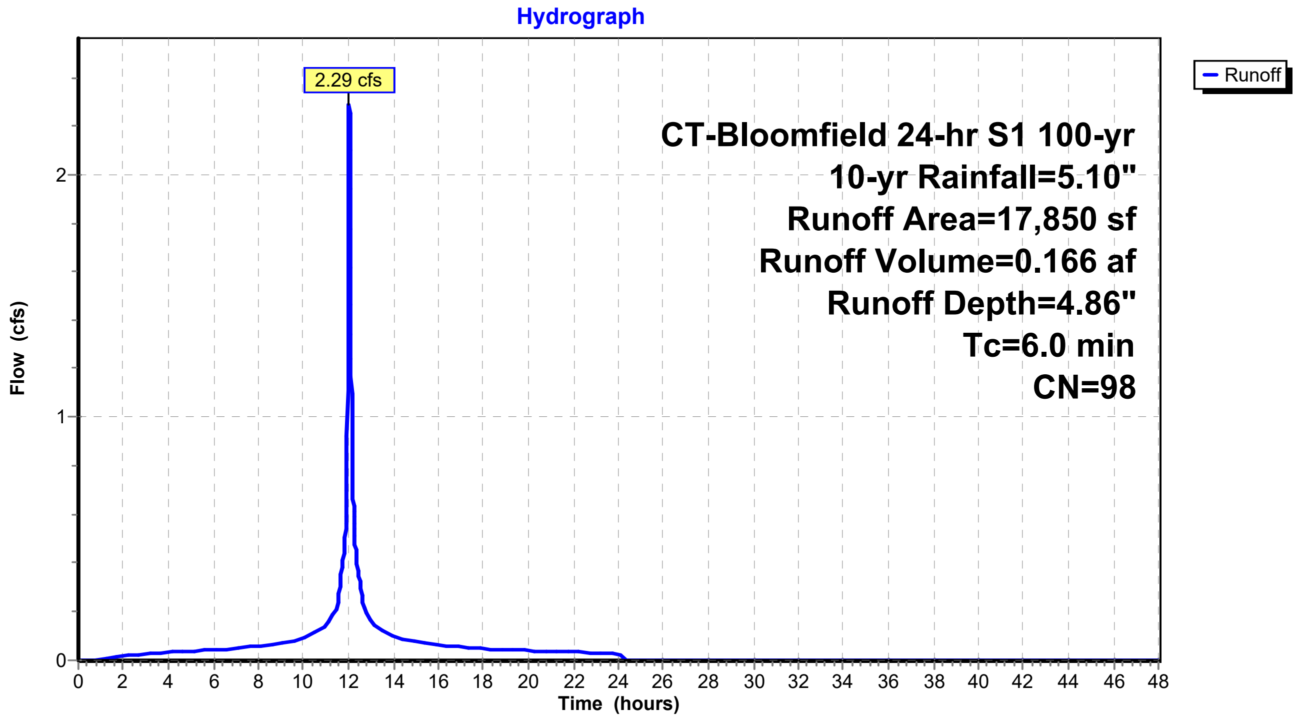
Runoff = 2.29 cfs @ 12.04 hrs, Volume= 0.166 af, Depth= 4.86"
Routed to Reach DP-3 : Street Catch Basin - Front of Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 10-yr Rainfall=5.10"

Area (sf)	CN	Description
17,850	98	Roofs, HSG A
17,850		100.00% Impervious Area

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

Subcatchment EDA-200: Building



Summary for Subcatchment EDA-300: Site West

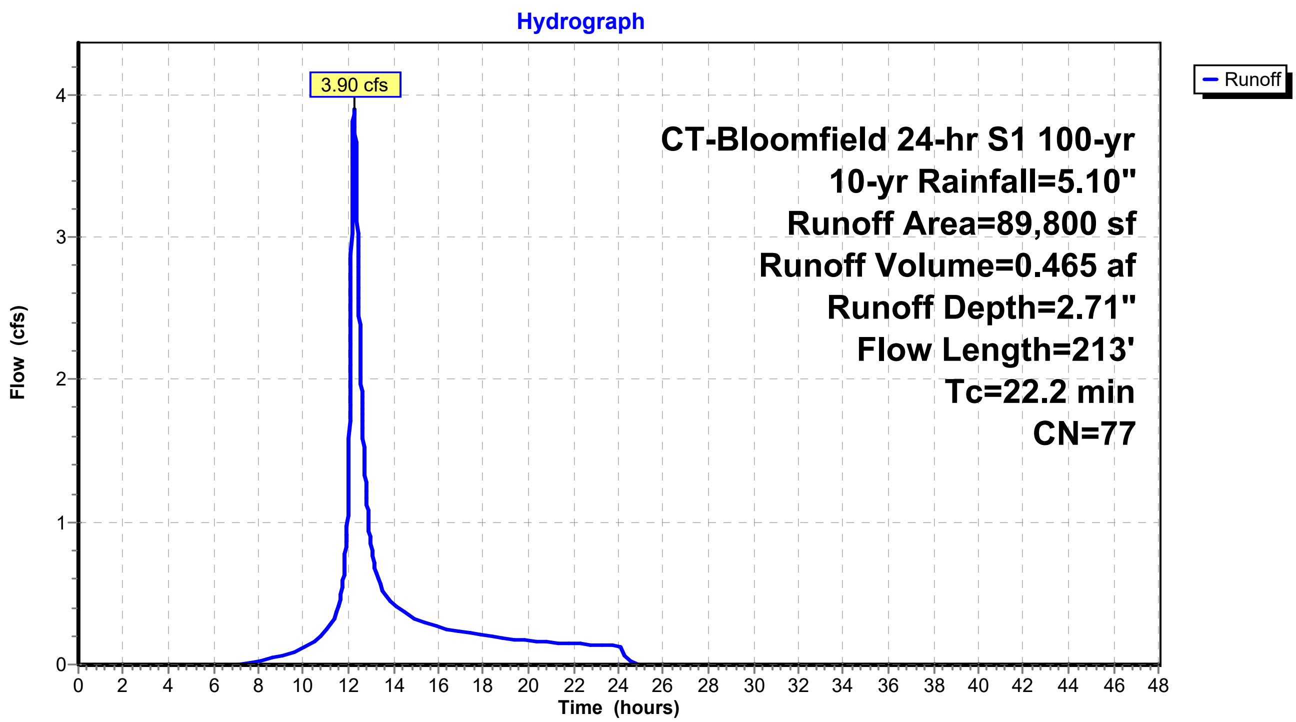
Runoff = 3.90 cfs @ 12.26 hrs, Volume= 0.465 af, Depth= 2.71"
Routed to Reach DP-2 : South Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 10-yr Rainfall=5.10"

Area (sf)	CN	Description
6,800	61	>75% Grass cover, Good, HSG B
29,550	60	Woods, Fair, HSG B
19,750	98	Paved parking, HSG A
6,450	96	Gravel surface, HSG B
27,250	79	Woods, Fair, HSG D
89,800	77	Weighted Average
70,050		78.01% Pervious Area
19,750		21.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
2.5	113	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.2	213	Total			

Subcatchment EDA-300: Site West



Summary for Subcatchment EDA-400: Site South Central

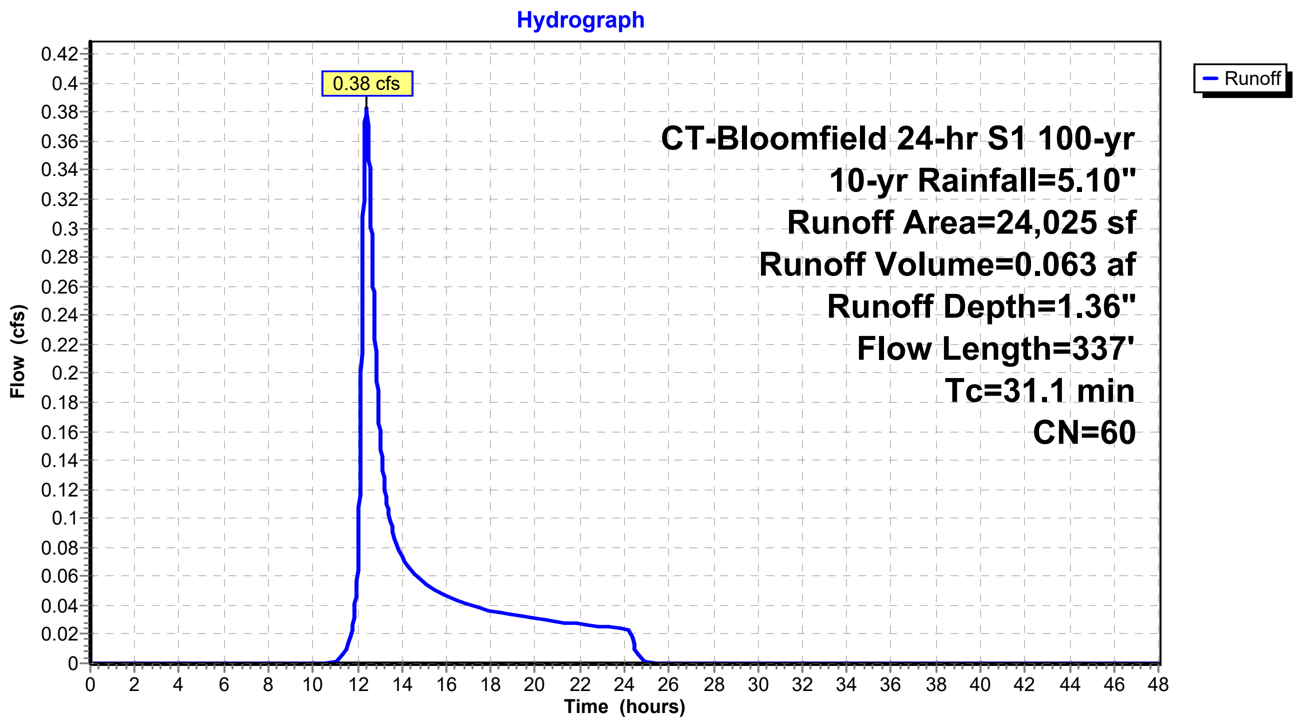
Runoff = 0.38 cfs @ 12.41 hrs, Volume= 0.063 af, Depth= 1.36"
Routed to Reach C-2 : South Abutter Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 10-yr Rainfall=5.10"

Area (sf)	CN	Description
1,575	61	>75% Grass cover, Good, HSG B
22,400	60	Woods, Fair, HSG B
50	98	Paved parking, HSG A
24,025	60	Weighted Average
23,975		99.79% Pervious Area
50		0.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	100	0.0150	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
7.0	237	0.0126	0.56		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
31.1	337	Total			

Subcatchment EDA-400: Site South Central



Summary for Subcatchment EDA-500: Southeast Site

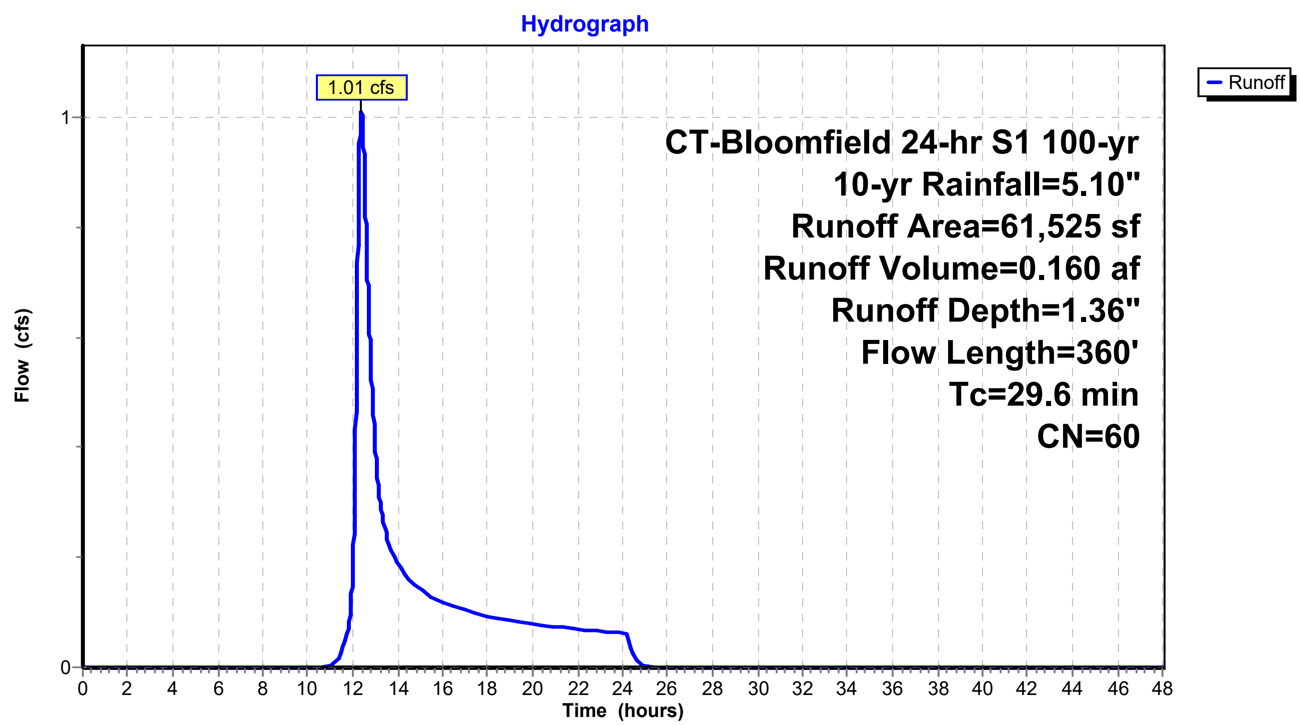
Runoff = 1.01 cfs @ 12.40 hrs, Volume= 0.160 af, Depth= 1.36"
Routed to Reach DP-4 : Corner Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 10-yr Rainfall=5.10"

Area (sf)	CN	Description
6,675	61	>75% Grass cover, Good, HSG B
54,850	60	Woods, Fair, HSG B
61,525	60	Weighted Average
61,525		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.5	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
8.1	260	0.0115	0.54		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
29.6	360	Total			

Subcatchment EDA-500: Southeast Site



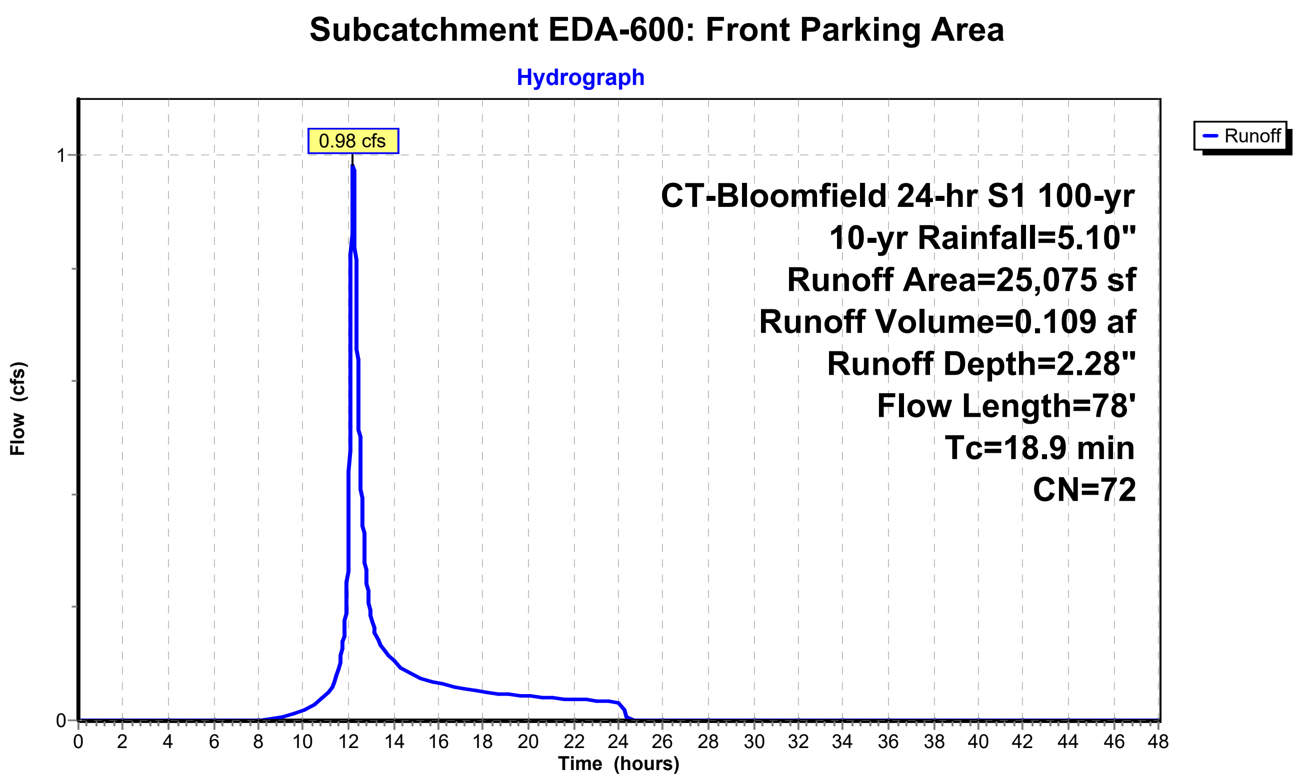
Summary for Subcatchment EDA-600: Front Parking Area

Runoff = 0.98 cfs @ 12.21 hrs, Volume= 0.109 af, Depth= 2.28"
Routed to Reach DP-3 : Street Catch Basin - Front of Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 10-yr Rainfall=5.10"

Area (sf)	CN	Description
15,750	61	>75% Grass cover, Good, HSG B
1,725	60	Woods, Fair, HSG B
7,600	98	Paved parking, HSG B
25,075	72	Weighted Average
17,475		69.69% Pervious Area
7,600		30.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	30	0.0083	0.04		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
7.2	48	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.19"
18.9	78	Total			



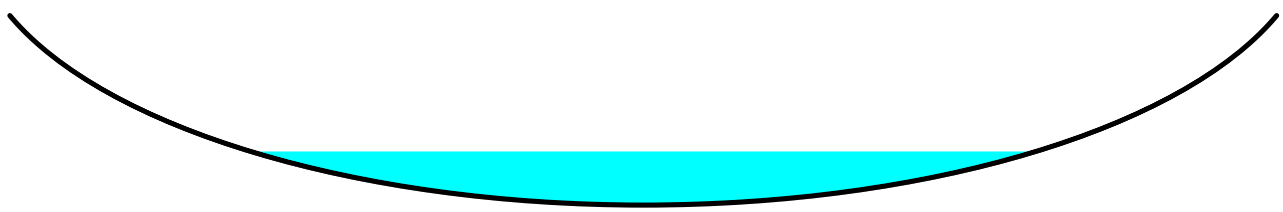
Summary for Reach C-1: Southwest channel

Inflow Area = 4.190 ac, 16.45% Impervious, Inflow Depth = 2.28" for 10-yr event
Inflow = 5.62 cfs @ 12.41 hrs, Volume= 0.797 af
Outflow = 5.33 cfs @ 12.59 hrs, Volume= 0.797 af, Atten= 5%, Lag= 10.6 min
Routed to Reach C-2 : South Abutter Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.89 fps, Min. Travel Time= 5.9 min
Avg. Velocity = 0.30 fps, Avg. Travel Time= 17.6 min

Peak Storage= 1,879 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.57' , Surface Width= 15.96'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 81.72 cfs

30.00' x 2.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 312.0' Slope= 0.0064 '/'
Inlet Invert= 125.00', Outlet Invert= 123.00'



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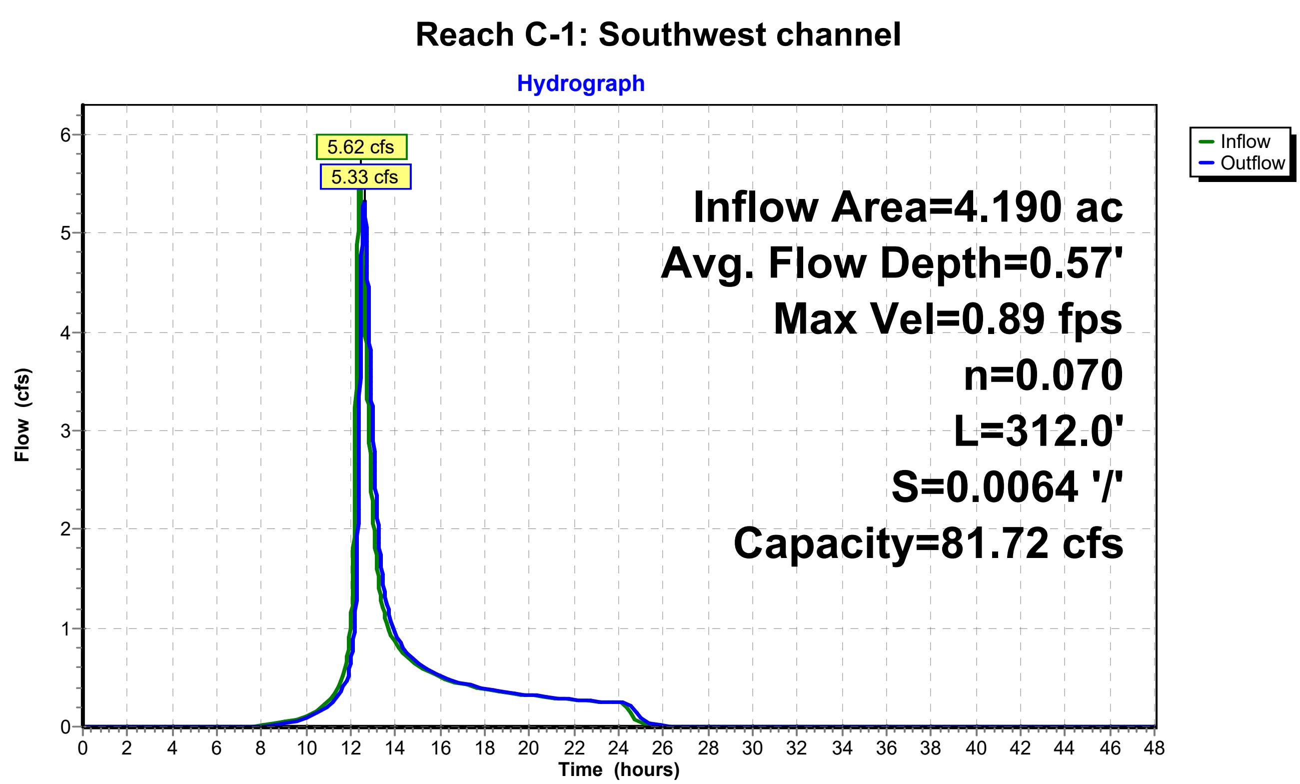


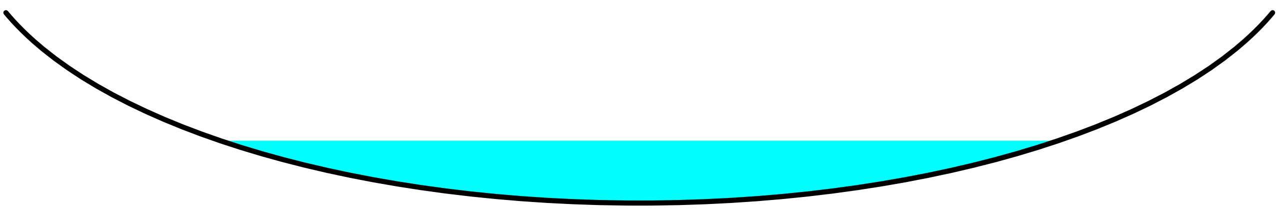
Summary for Reach C-2: South Abutter Channel

Inflow Area = 4.741 ac, 14.56% Impervious, Inflow Depth = 2.18" for 10-yr event
Inflow = 5.65 cfs @ 12.58 hrs, Volume= 0.860 af
Outflow = 5.57 cfs @ 12.68 hrs, Volume= 0.860 af, Atten= 1%, Lag= 5.8 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.27 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 0.42 fps, Avg. Travel Time= 9.9 min

Peak Storage= 1,093 cf @ 12.63 hrs
Average Depth at Peak Storage= 0.33' , Surface Width= 20.03'
Bank-Full Depth= 1.00' Flow Area= 23.3 sf, Capacity= 62.53 cfs

35.00' x 1.00' deep Parabolic Channel, n= 0.050 Sluggish weedy reaches w/pools
Length= 250.0' Slope= 0.0140 '/'
Inlet Invert= 124.00', Outlet Invert= 120.50'



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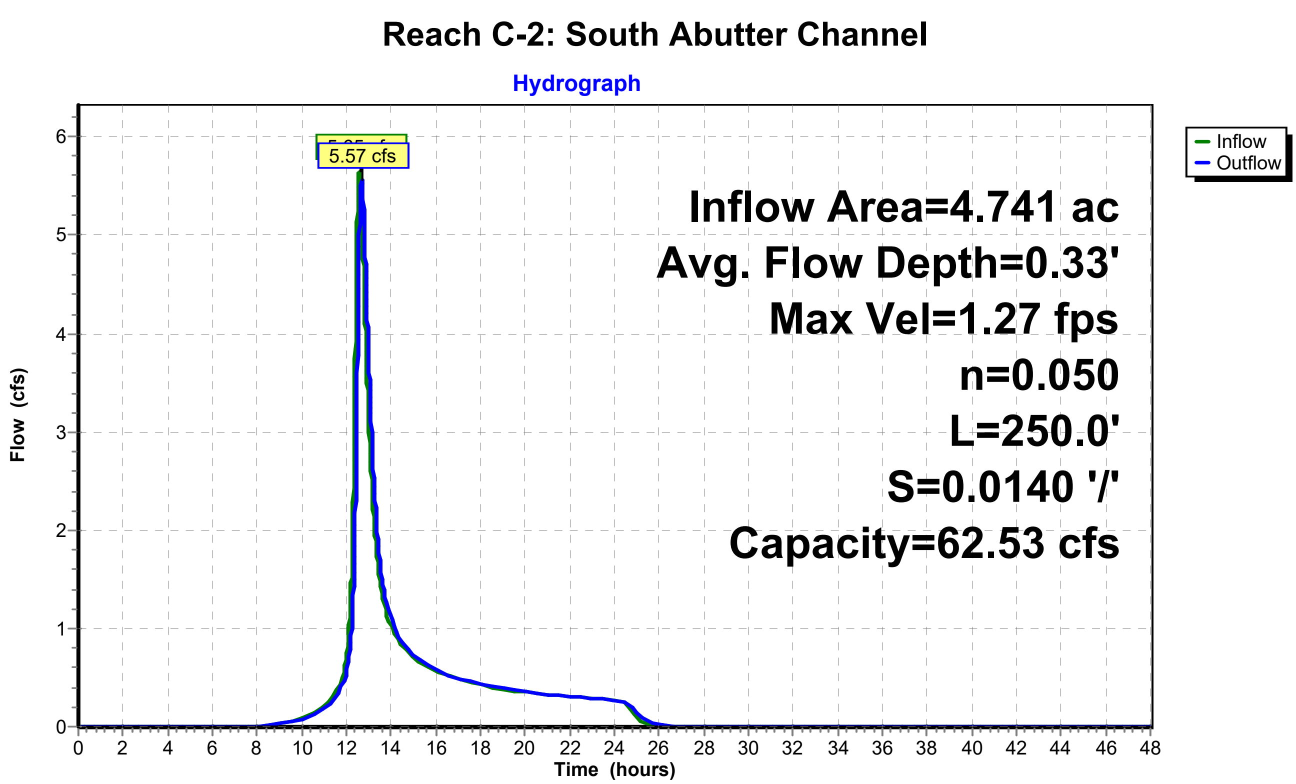


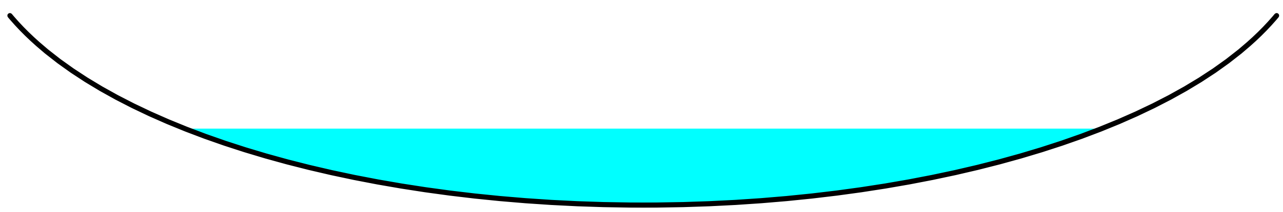
Summary for Reach DP-2: South Wetland

Inflow Area = 4.190 ac, 16.45% Impervious, Inflow Depth = 2.28" for 10-yr event
Inflow = 5.78 cfs @ 12.30 hrs, Volume= 0.797 af
Outflow = 5.62 cfs @ 12.41 hrs, Volume= 0.797 af, Atten= 3%, Lag= 6.8 min
Routed to Reach C-1 : Southwest channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.55 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 11.7 min

Peak Storage= 1,333 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.40' , Surface Width= 38.12'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 40.17 cfs

60.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 130.0' Slope= 0.0038 '/'
Inlet Invert= 125.50', Outlet Invert= 125.00'



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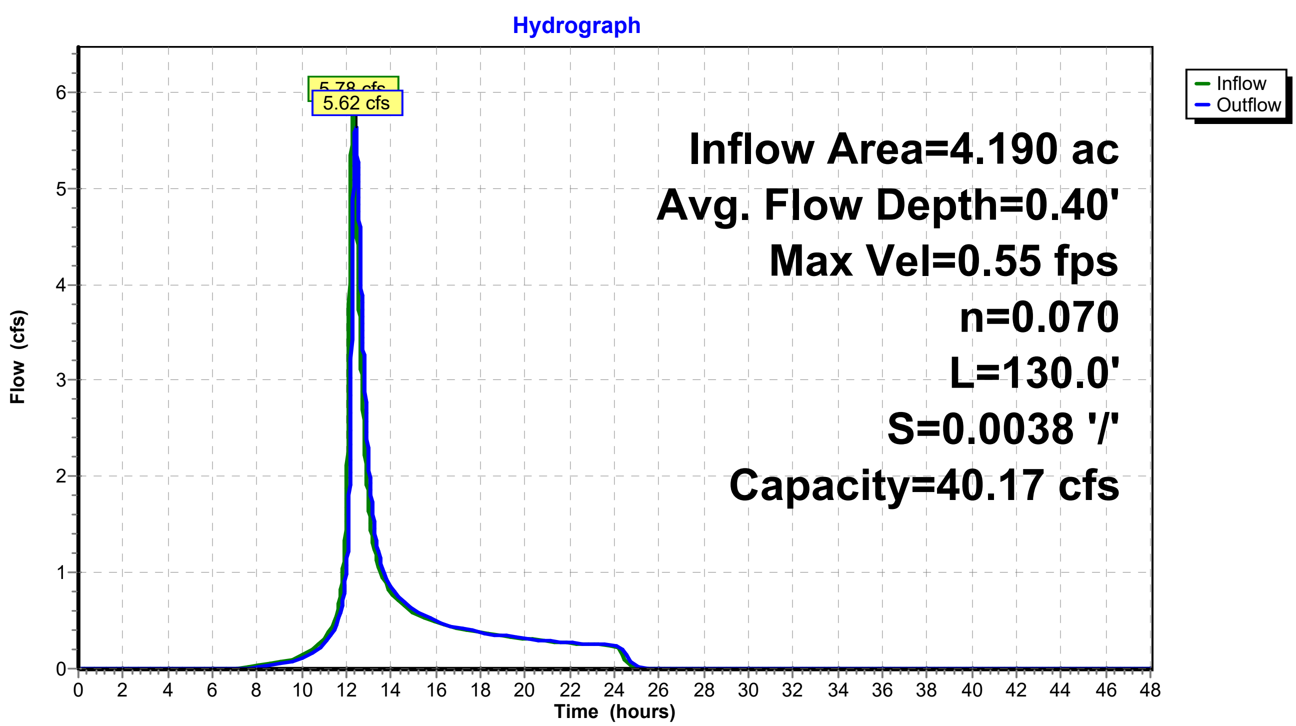
Reach DP-2: South Wetland

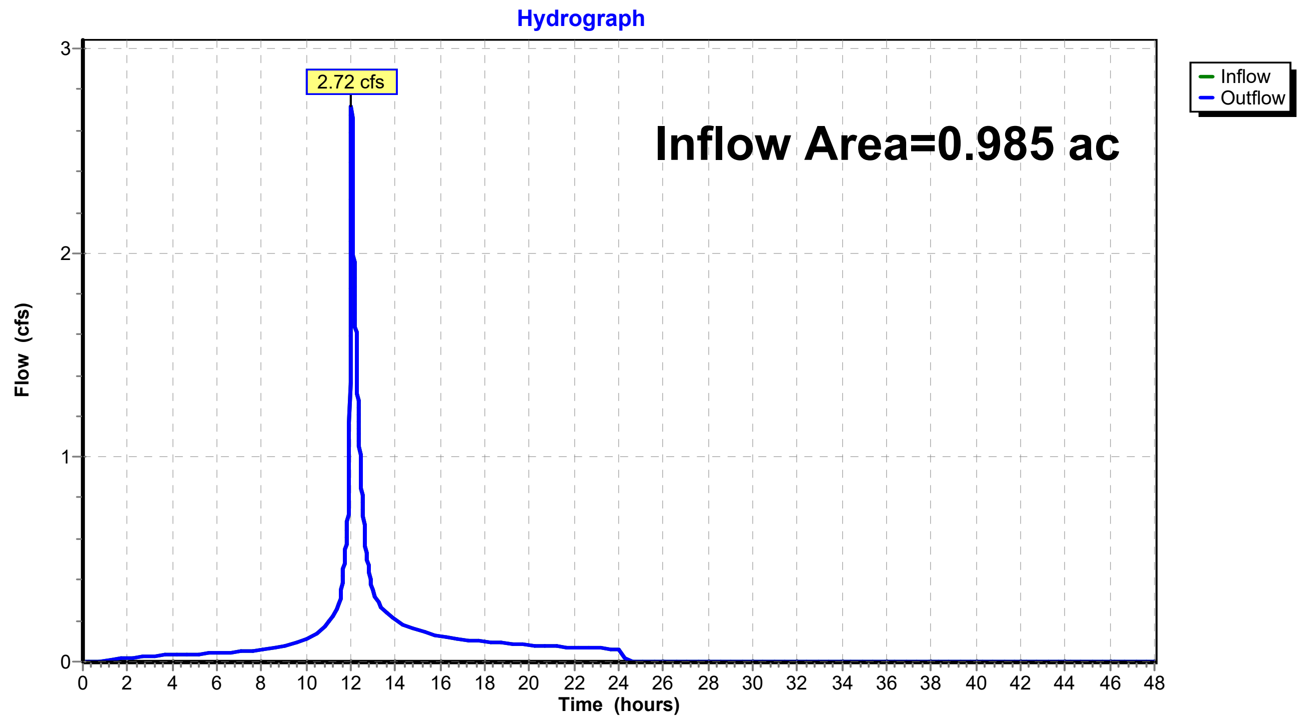


Summary for Reach DP-3: Street Catch Basin - Front of Site

Inflow Area = 0.985 ac, 59.29% Impervious, Inflow Depth = 3.35" for 10-yr event
Inflow = 2.72 cfs @ 12.04 hrs, Volume= 0.275 af
Outflow = 2.72 cfs @ 12.04 hrs, Volume= 0.275 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

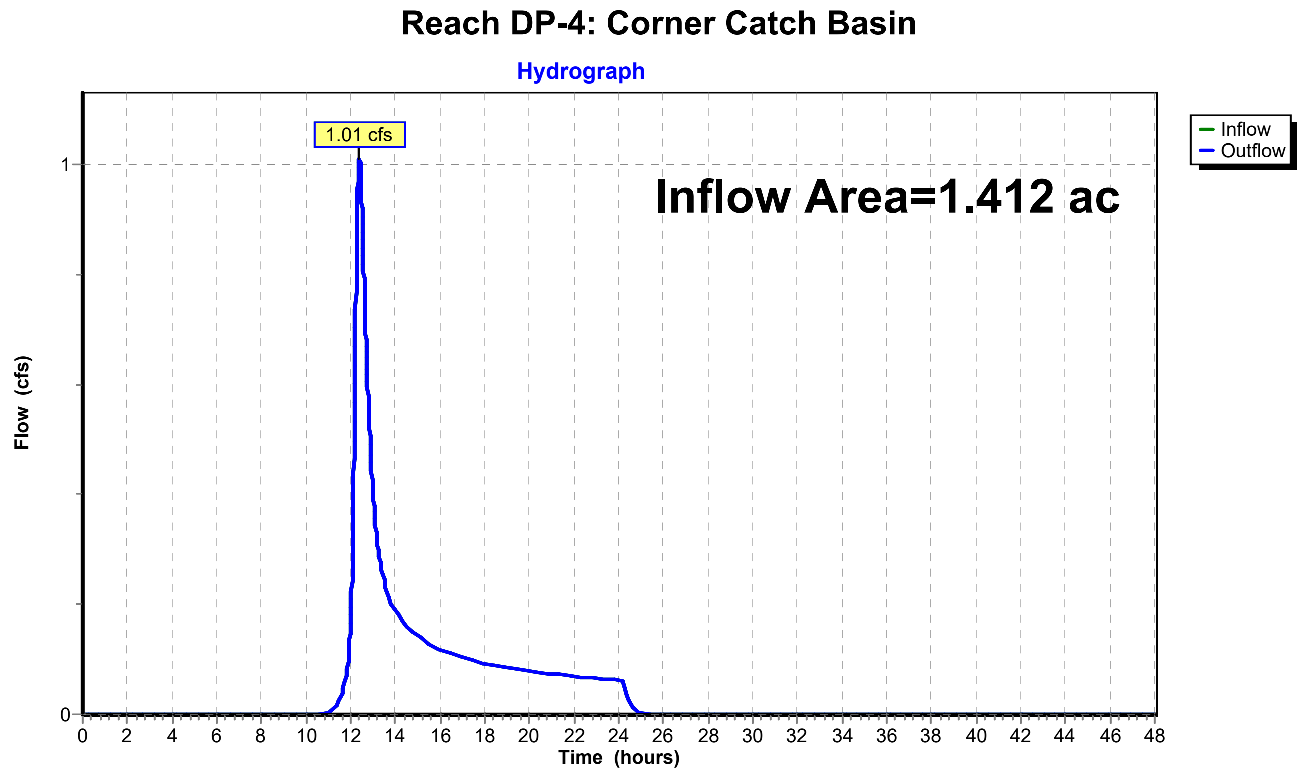
Reach DP-3: Street Catch Basin - Front of Site



Summary for Reach DP-4: Corner Catch Basin

Inflow Area = 1.412 ac, 0.00% Impervious, Inflow Depth = 1.36" for 10-yr event
Inflow = 1.01 cfs @ 12.40 hrs, Volume= 0.160 af
Outflow = 1.01 cfs @ 12.40 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-5 : Northwood Drive System

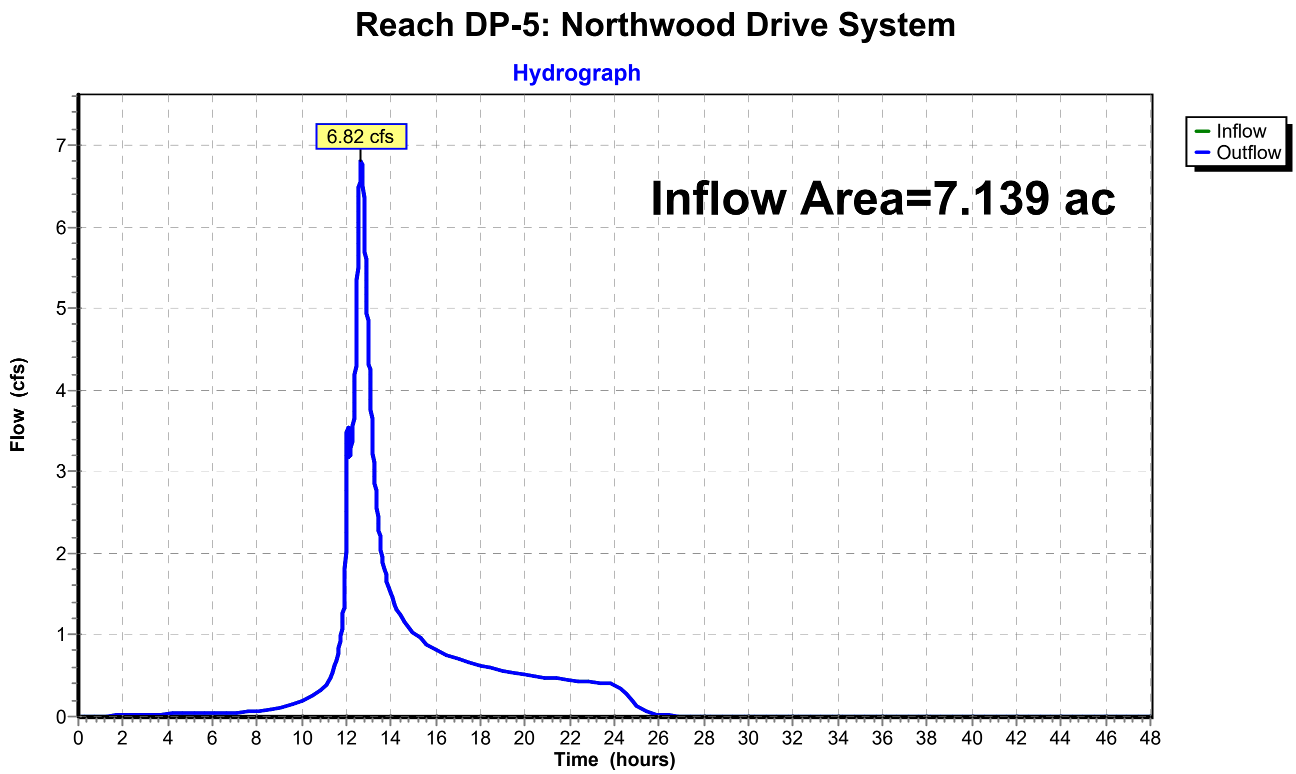
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs



Summary for Reach DP-5: Northwood Drive System

Inflow Area =	7.139 ac,	17.86% Impervious,	Inflow Depth = 2.18"	for 10-yr event	
Inflow =	6.82 cfs @	12.66 hrs,	Volume=	1.295 af	
Outflow =	6.82 cfs @	12.66 hrs,	Volume=	1.295 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs



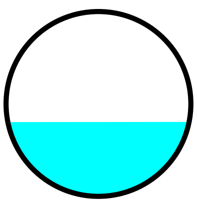
Summary for Reach IDP-1: Culvert

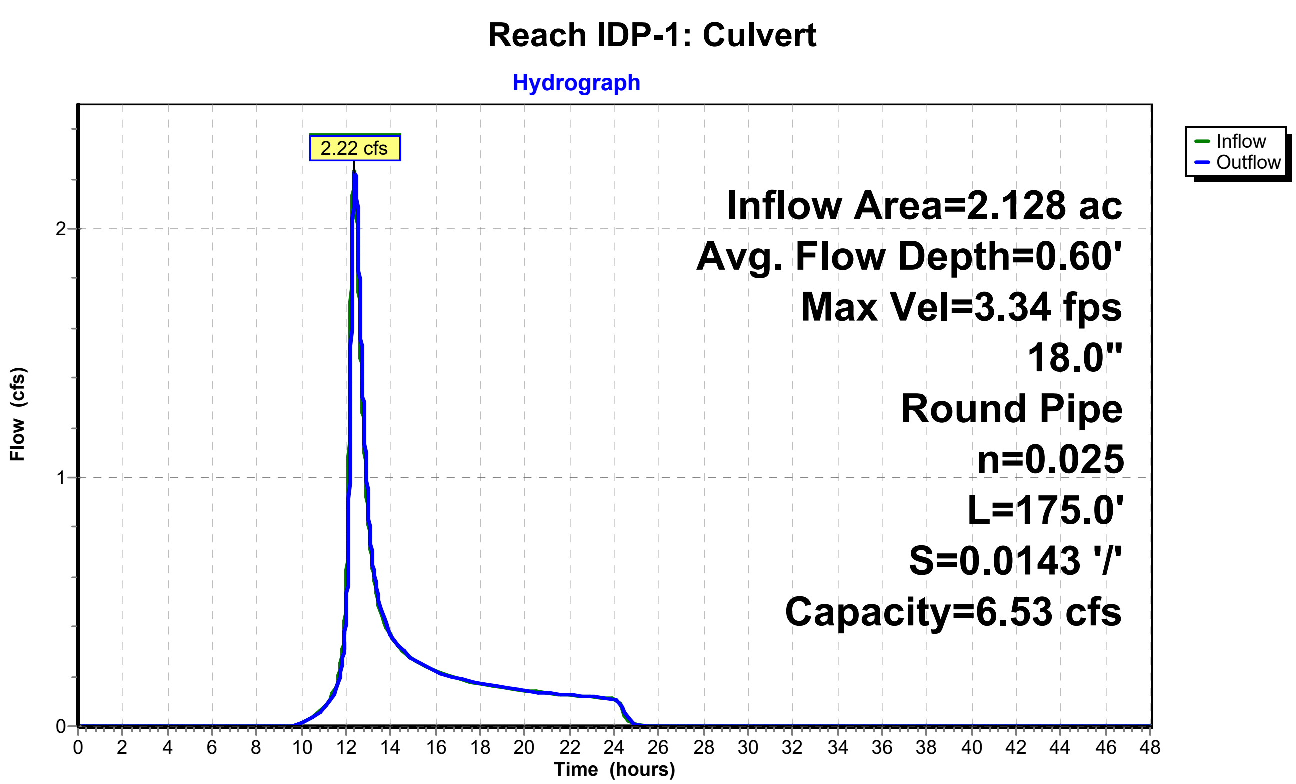
Inflow Area = 2.128 ac, 11.08% Impervious, Inflow Depth = 1.87" for 10-yr event
Inflow = 2.23 cfs @ 12.37 hrs, Volume= 0.332 af
Outflow = 2.22 cfs @ 12.40 hrs, Volume= 0.332 af, Atten= 0%, Lag= 1.7 min
Routed to Reach DP-2 : South Wetland

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.34 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.52 fps, Avg. Travel Time= 1.9 min

Peak Storage= 116 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.60' , Surface Width= 1.47'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.53 cfs

18.0" Round Pipe
n= 0.025 Corrugated metal
Length= 175.0' Slope= 0.0143 '/'
Inlet Invert= 128.00', Outlet Invert= 125.50'





Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EDA-100: Site North Runoff Area=92,700 sf 11.08% Impervious Runoff Depth=2.75"
Flow Length=360' Tc=30.5 min CN=67 Runoff=3.37 cfs 0.488 af

Subcatchment EDA-200: Building Runoff Area=17,850 sf 100.00% Impervious Runoff Depth=6.05"
Tc=6.0 min CN=98 Runoff=2.83 cfs 0.207 af

Subcatchment EDA-300: Site West Runoff Area=89,800 sf 21.99% Impervious Runoff Depth=3.73"
Flow Length=213' Tc=22.2 min CN=77 Runoff=5.39 cfs 0.641 af

Subcatchment EDA-400: Site South Central Runoff Area=24,025 sf 0.21% Impervious Runoff Depth=2.11"
Flow Length=337' Tc=31.1 min CN=60 Runoff=0.63 cfs 0.097 af

Subcatchment EDA-500: Southeast Site Runoff Area=61,525 sf 0.00% Impervious Runoff Depth=2.11"
Flow Length=360' Tc=29.6 min CN=60 Runoff=1.67 cfs 0.249 af

Subcatchment EDA-600: Front Parking Runoff Area=25,075 sf 30.31% Impervious Runoff Depth=3.23"
Flow Length=78' Tc=18.9 min CN=72 Runoff=1.41 cfs 0.155 af

Reach C-1: Southwest channel Avg. Flow Depth=0.67' Max Vel=0.99 fps Inflow=8.11 cfs 1.129 af
n=0.070 L=312.0' S=0.0064 '/' Capacity=81.72 cfs Outflow=7.76 cfs 1.129 af

Reach C-2: South Abutter Channel Avg. Flow Depth=0.39' Max Vel=1.44 fps Inflow=8.31 cfs 1.226 af
n=0.050 L=250.0' S=0.0140 '/' Capacity=62.53 cfs Outflow=8.21 cfs 1.226 af

Reach DP-2: South Wetland Avg. Flow Depth=0.48' Max Vel=0.61 fps Inflow=8.28 cfs 1.129 af
n=0.070 L=130.0' S=0.0038 '/' Capacity=40.17 cfs Outflow=8.11 cfs 1.129 af

Reach DP-3: Street Catch Basin - Front of Site Inflow=3.47 cfs 0.362 af
Outflow=3.47 cfs 0.362 af

Reach DP-4: Corner Catch Basin Inflow=1.67 cfs 0.249 af
Outflow=1.67 cfs 0.249 af

Reach DP-5: Northwood Drive System Inflow=10.22 cfs 1.837 af
Outflow=10.22 cfs 1.837 af

Reach IDP-1: Culvert Avg. Flow Depth=0.76' Max Vel=3.72 fps Inflow=3.37 cfs 0.488 af
18.0" Round Pipe n=0.025 L=175.0' S=0.0143 '/' Capacity=6.53 cfs Outflow=3.36 cfs 0.488 af

Total Runoff Area = 7.139 ac Runoff Volume = 1.837 af Average Runoff Depth = 3.09"
82.14% Pervious = 5.864 ac 17.86% Impervious = 1.275 ac

Summary for Subcatchment EDA-100: Site North

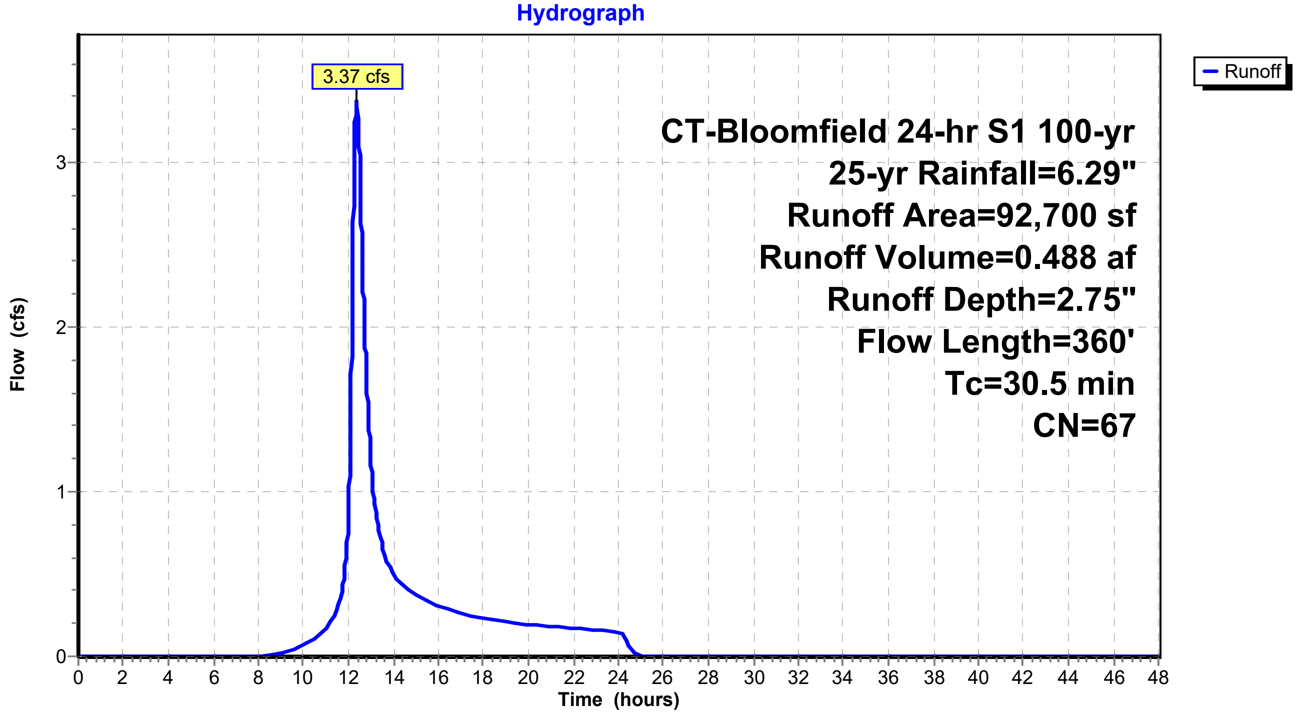
Runoff = 3.37 cfs @ 12.37 hrs, Volume= 0.488 af, Depth= 2.75"
Routed to Reach IDP-1 : Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
1,425	39	>75% Grass cover, Good, HSG A
4,850	61	>75% Grass cover, Good, HSG B
7,250	36	Woods, Fair, HSG A
51,275	60	Woods, Fair, HSG B
10,275	98	Paved parking, HSG A
5,625	96	Gravel surface, HSG B
12,000	79	Woods, Fair, HSG D
92,700	67	Weighted Average
82,425		88.92% Pervious Area
10,275		11.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4	100	0.0180	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
8.1	260	0.0115	0.54		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
30.5	360	Total			

Subcatchment EDA-100: Site North



Summary for Subcatchment EDA-200: Building

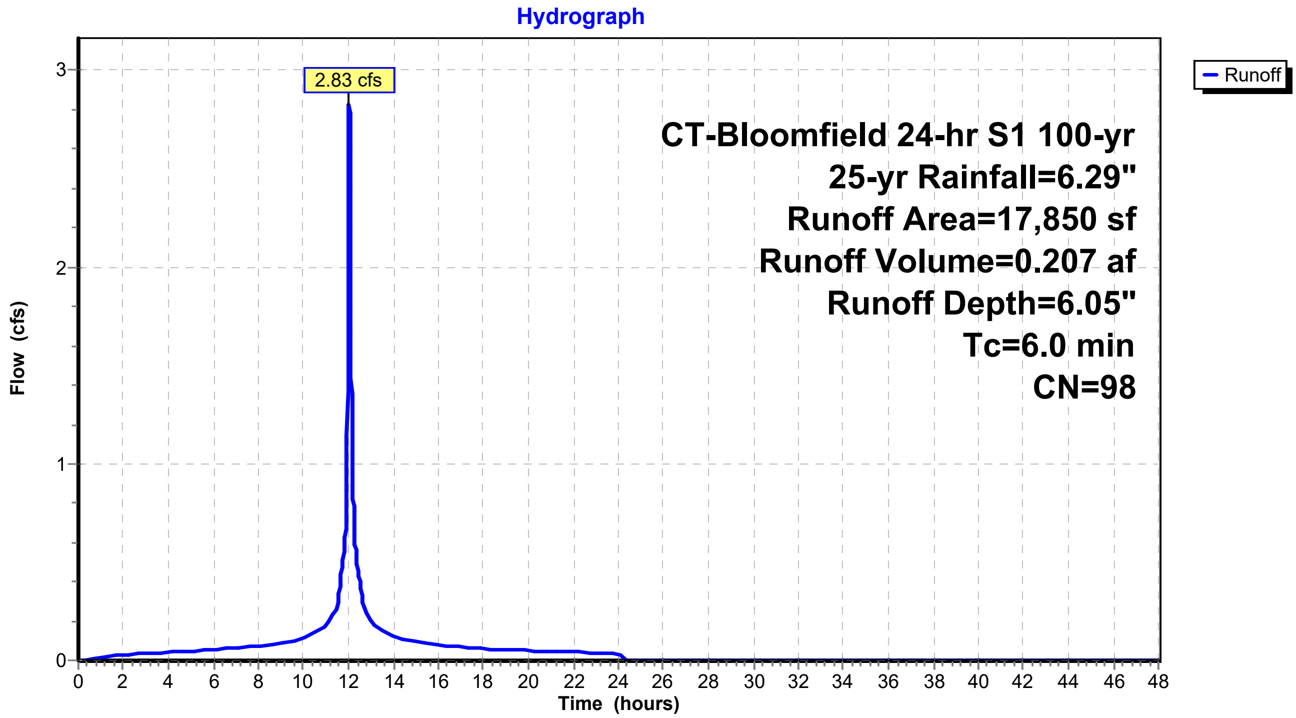
Runoff = 2.83 cfs @ 12.04 hrs, Volume= 0.207 af, Depth= 6.05"
Routed to Reach DP-3 : Street Catch Basin - Front of Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
17,850	98	Roofs, HSG A
17,850		100.00% Impervious Area

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

Subcatchment EDA-200: Building



Summary for Subcatchment EDA-300: Site West

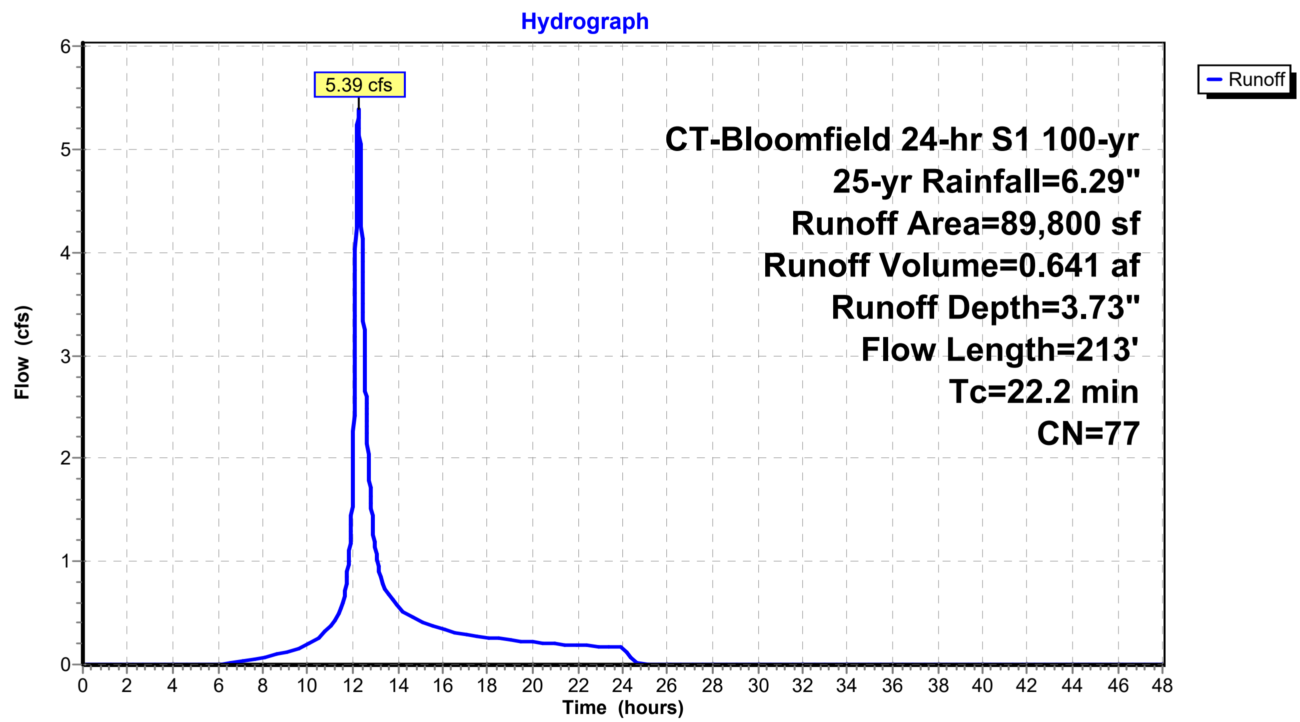
Runoff = 5.39 cfs @ 12.26 hrs, Volume= 0.641 af, Depth= 3.73"
Routed to Reach DP-2 : South Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
6,800	61	>75% Grass cover, Good, HSG B
29,550	60	Woods, Fair, HSG B
19,750	98	Paved parking, HSG A
6,450	96	Gravel surface, HSG B
27,250	79	Woods, Fair, HSG D
89,800	77	Weighted Average
70,050		78.01% Pervious Area
19,750		21.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
2.5	113	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.2	213	Total			

Subcatchment EDA-300: Site West



Summary for Subcatchment EDA-400: Site South Central

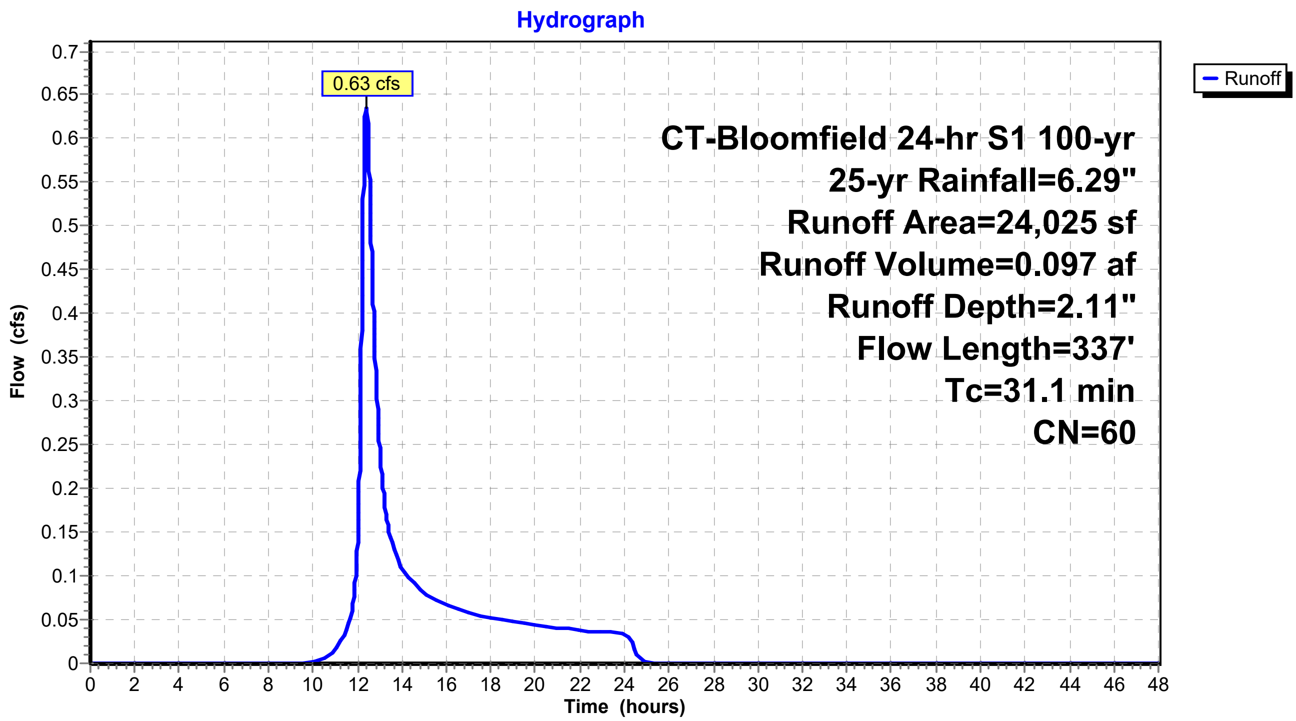
Runoff = 0.63 cfs @ 12.40 hrs, Volume= 0.097 af, Depth= 2.11"
Routed to Reach C-2 : South Abutter Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
1,575	61	>75% Grass cover, Good, HSG B
22,400	60	Woods, Fair, HSG B
50	98	Paved parking, HSG A
24,025	60	Weighted Average
23,975		99.79% Pervious Area
50		0.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	100	0.0150	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
7.0	237	0.0126	0.56		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
31.1	337	Total			

Subcatchment EDA-400: Site South Central



Summary for Subcatchment EDA-500: Southeast Site

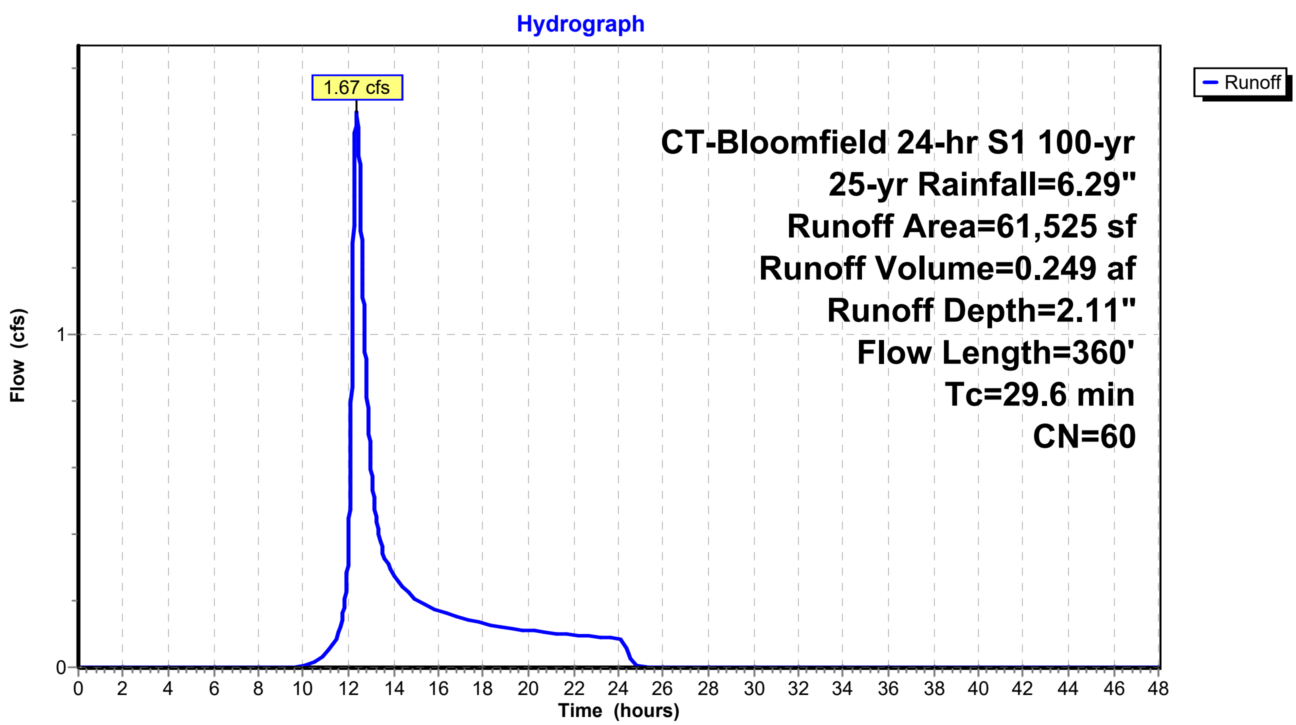
Runoff = 1.67 cfs @ 12.37 hrs, Volume= 0.249 af, Depth= 2.11"
Routed to Reach DP-4 : Corner Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
6,675	61	>75% Grass cover, Good, HSG B
54,850	60	Woods, Fair, HSG B
61,525	60	Weighted Average
61,525		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.5	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
8.1	260	0.0115	0.54		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
29.6	360	Total			

Subcatchment EDA-500: Southeast Site



Summary for Subcatchment EDA-600: Front Parking Area

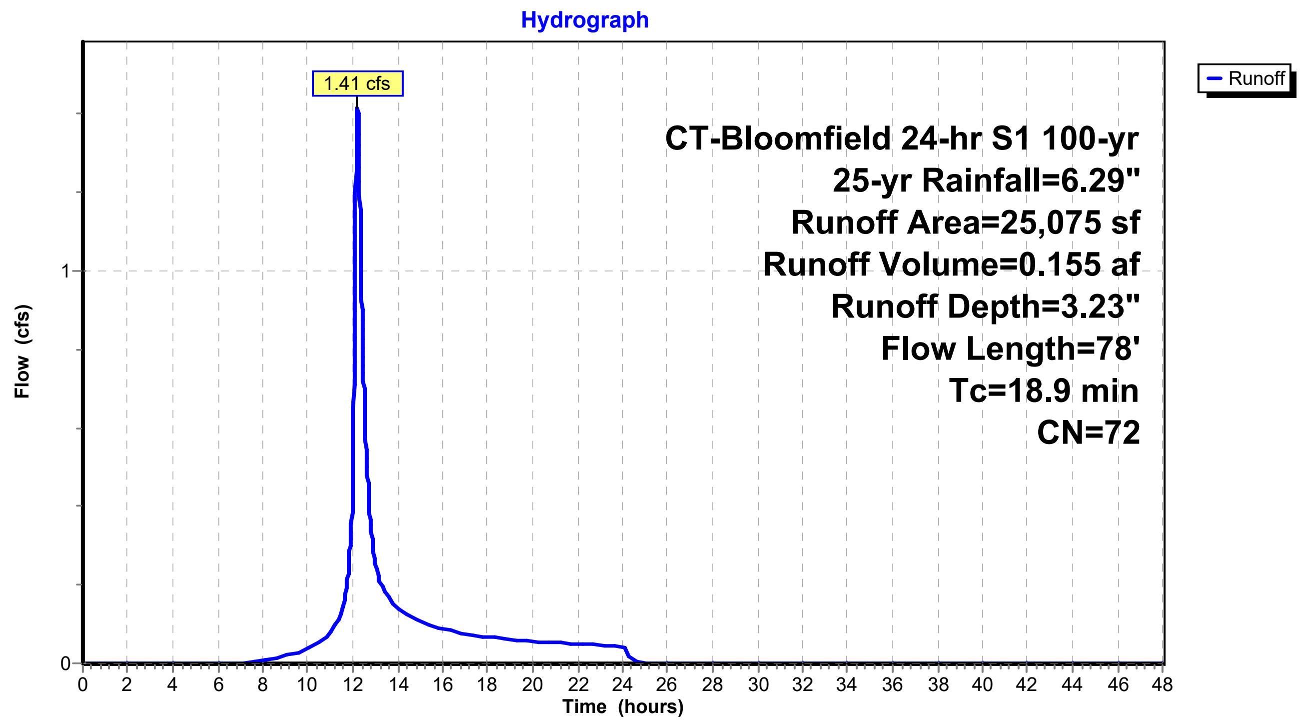
Runoff = 1.41 cfs @ 12.21 hrs, Volume= 0.155 af, Depth= 3.23"
Routed to Reach DP-3 : Street Catch Basin - Front of Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
15,750	61	>75% Grass cover, Good, HSG B
1,725	60	Woods, Fair, HSG B
7,600	98	Paved parking, HSG B
25,075	72	Weighted Average
17,475		69.69% Pervious Area
7,600		30.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	30	0.0083	0.04		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
7.2	48	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.19"
18.9	78	Total			

Subcatchment EDA-600: Front Parking Area



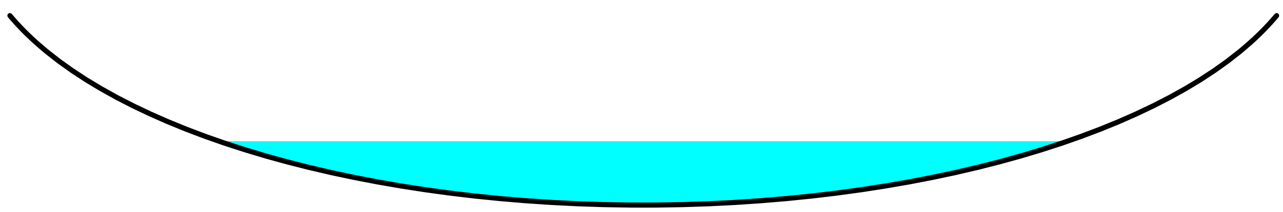
Summary for Reach C-1: Southwest channel

Inflow Area = 4.190 ac, 16.45% Impervious, Inflow Depth = 3.23" for 25-yr event
Inflow = 8.11 cfs @ 12.40 hrs, Volume= 1.129 af
Outflow = 7.76 cfs @ 12.55 hrs, Volume= 1.129 af, Atten= 4%, Lag= 9.4 min
Routed to Reach C-2 : South Abutter Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.99 fps, Min. Travel Time= 5.2 min
Avg. Velocity = 0.32 fps, Avg. Travel Time= 16.2 min

Peak Storage= 2,437 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.67' , Surface Width= 17.41'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 81.72 cfs

30.00' x 2.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 312.0' Slope= 0.0064 '/'
Inlet Invert= 125.00', Outlet Invert= 123.00'



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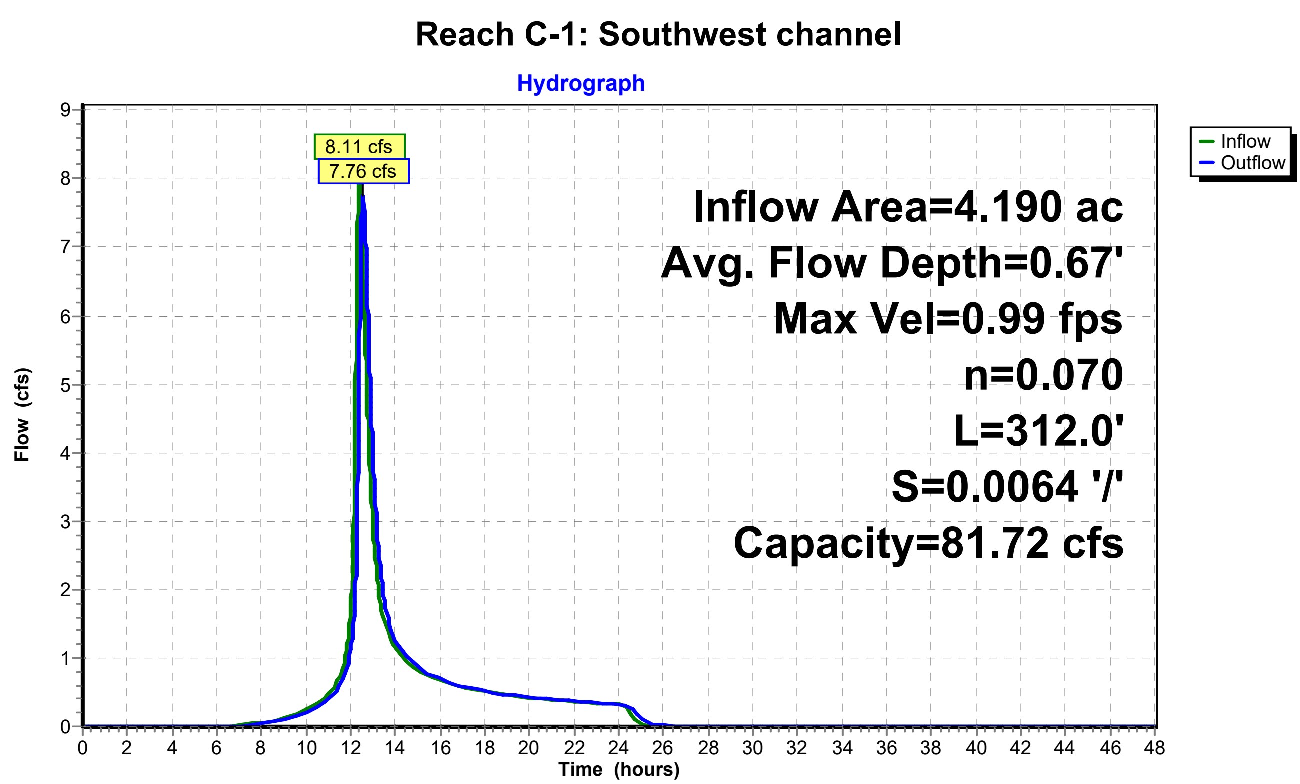


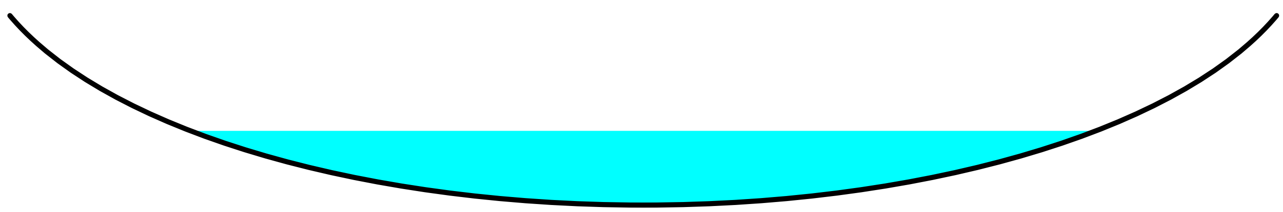
Summary for Reach C-2: South Abutter Channel

Inflow Area = 4.741 ac, 14.56% Impervious, Inflow Depth = 3.10" for 25-yr event
Inflow = 8.31 cfs @ 12.55 hrs, Volume= 1.226 af
Outflow = 8.21 cfs @ 12.63 hrs, Volume= 1.226 af, Atten= 1%, Lag= 5.1 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.44 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 0.46 fps, Avg. Travel Time= 9.1 min

Peak Storage= 1,429 cf @ 12.59 hrs
Average Depth at Peak Storage= 0.39' , Surface Width= 21.90'
Bank-Full Depth= 1.00' Flow Area= 23.3 sf, Capacity= 62.53 cfs

35.00' x 1.00' deep Parabolic Channel, n= 0.050 Sluggish weedy reaches w/pools
Length= 250.0' Slope= 0.0140 '/'
Inlet Invert= 124.00', Outlet Invert= 120.50'



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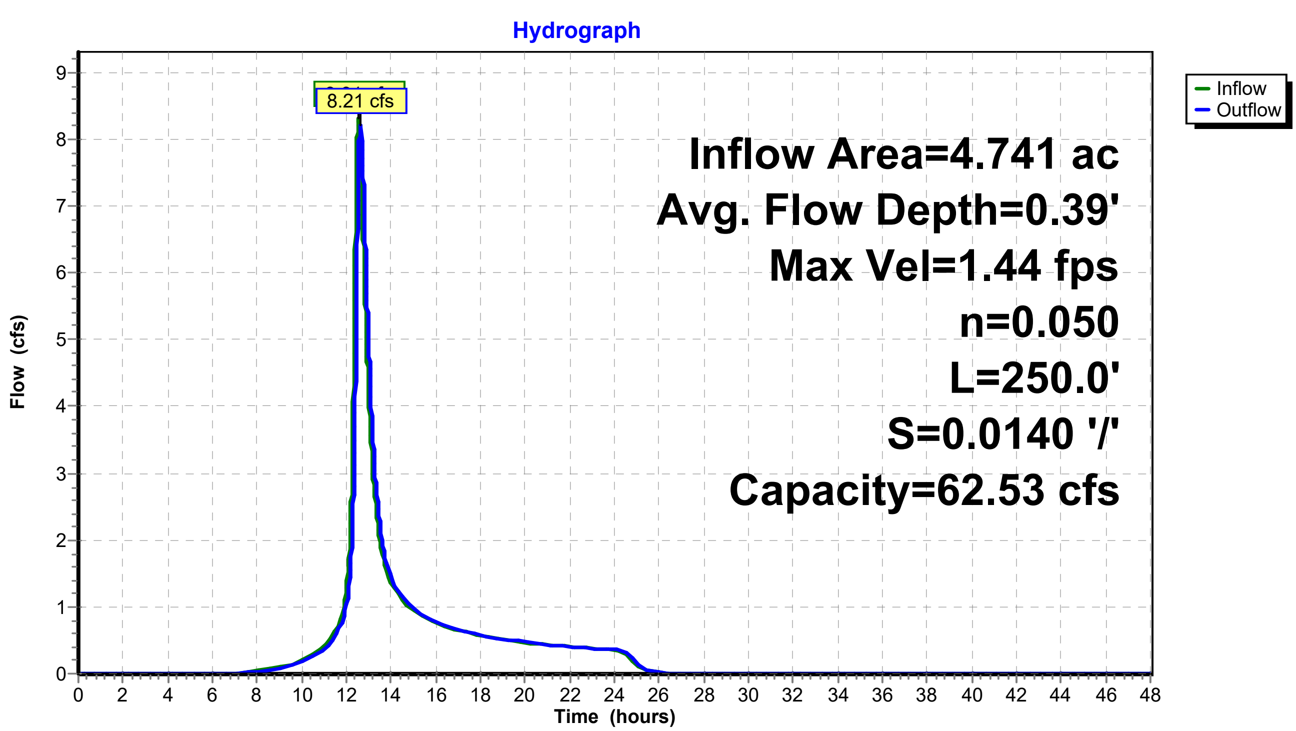
Reach C-2: South Abutter Channel



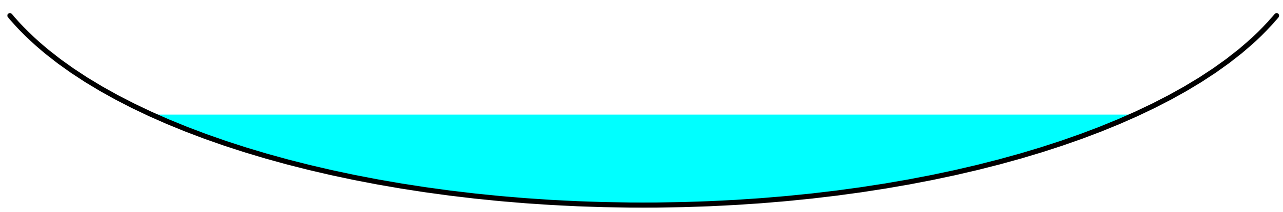
Summary for Reach DP-2: South Wetland

Inflow Area = 4.190 ac, 16.45% Impervious, Inflow Depth = 3.23" for 25-yr event
Inflow = 8.28 cfs @ 12.30 hrs, Volume= 1.129 af
Outflow = 8.11 cfs @ 12.40 hrs, Volume= 1.129 af, Atten= 2%, Lag= 6.1 min
Routed to Reach C-1 : Southwest channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.61 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 0.20 fps, Avg. Travel Time= 10.7 min

Peak Storage= 1,718 cf @ 12.34 hrs
Average Depth at Peak Storage= 0.48' , Surface Width= 41.48'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 40.17 cfs

60.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 130.0' Slope= 0.0038 '/'
Inlet Invert= 125.50', Outlet Invert= 125.00'



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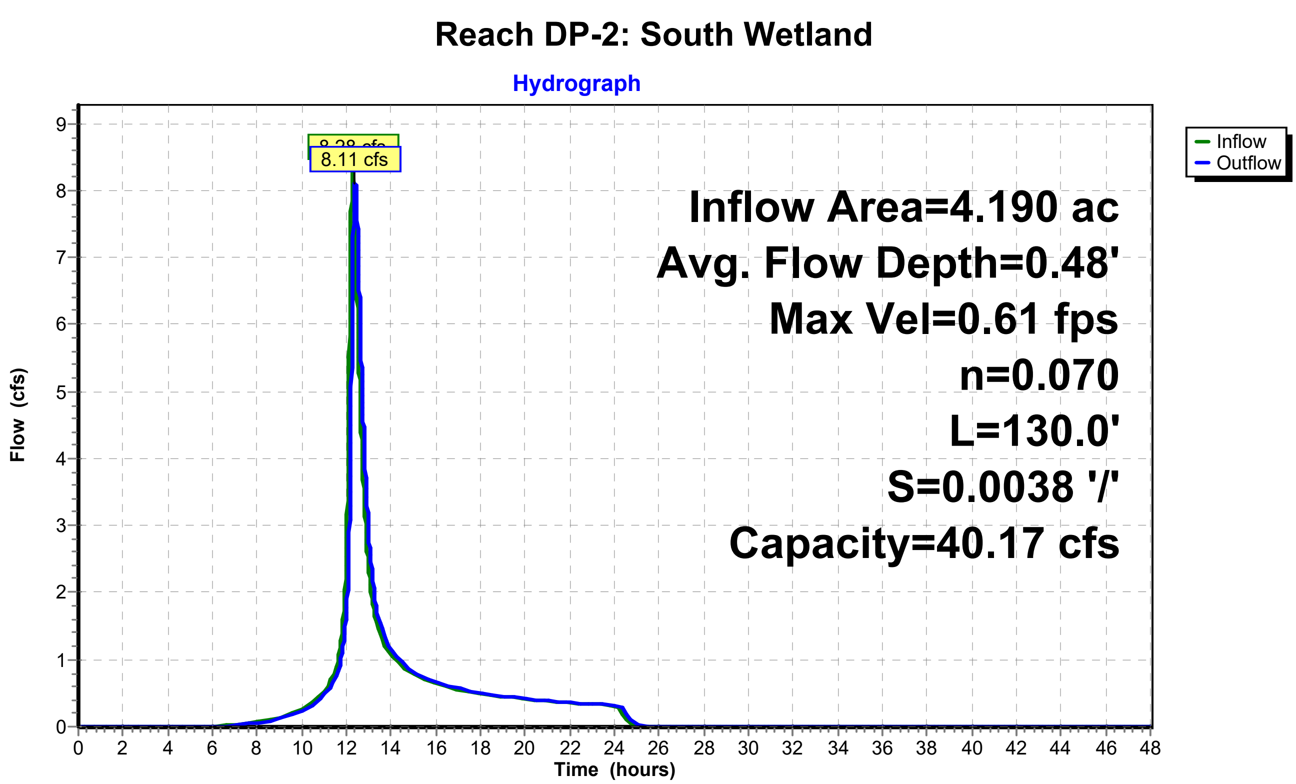
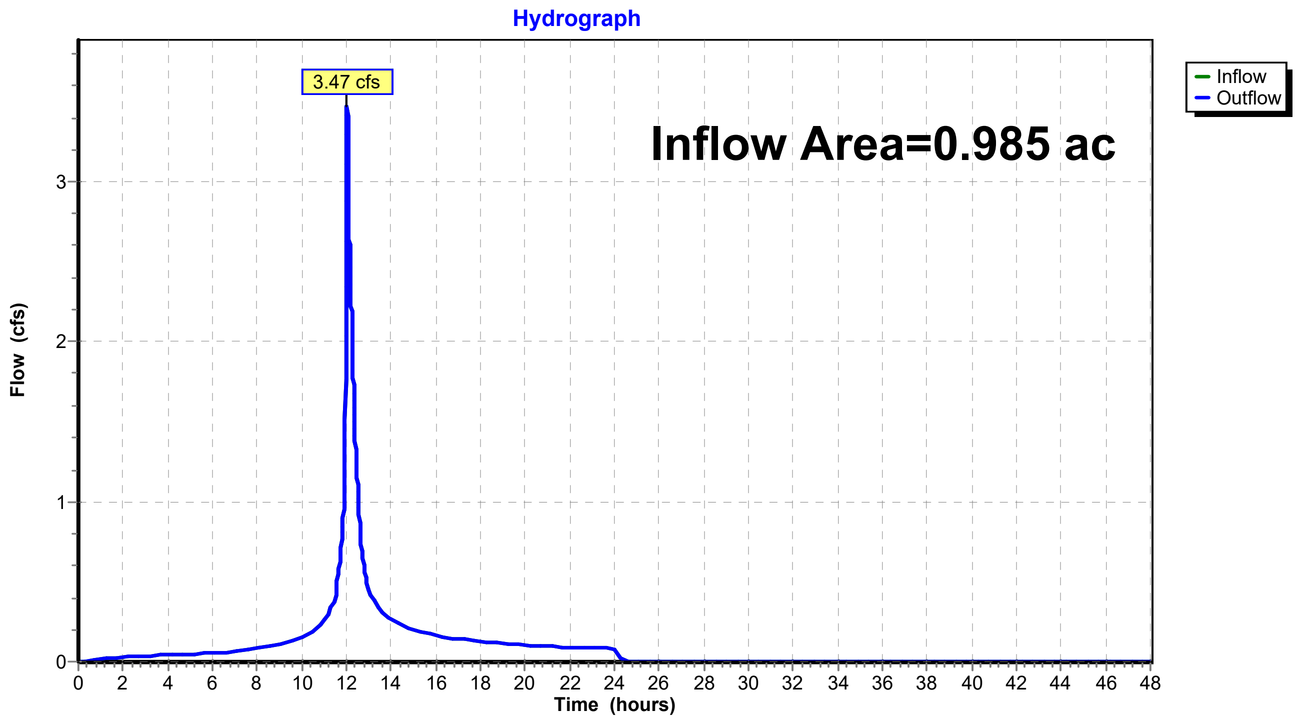


Summary for Reach DP-3: Street Catch Basin - Front of Site

Inflow Area = 0.985 ac, 59.29% Impervious, Inflow Depth = 4.40" for 25-yr event
Inflow = 3.47 cfs @ 12.04 hrs, Volume= 0.362 af
Outflow = 3.47 cfs @ 12.04 hrs, Volume= 0.362 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-3: Street Catch Basin - Front of Site

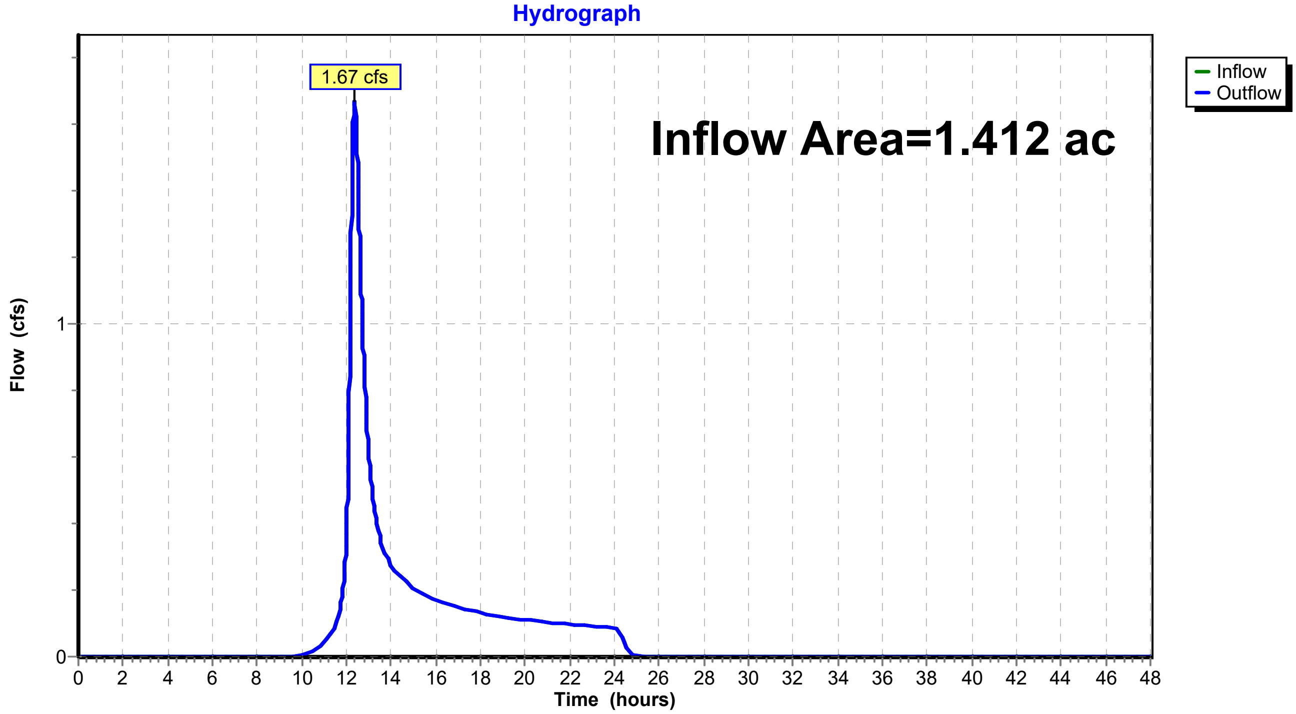


Summary for Reach DP-4: Corner Catch Basin

Inflow Area = 1.412 ac, 0.00% Impervious, Inflow Depth = 2.11" for 25-yr event
Inflow = 1.67 cfs @ 12.37 hrs, Volume= 0.249 af
Outflow = 1.67 cfs @ 12.37 hrs, Volume= 0.249 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-4: Corner Catch Basin

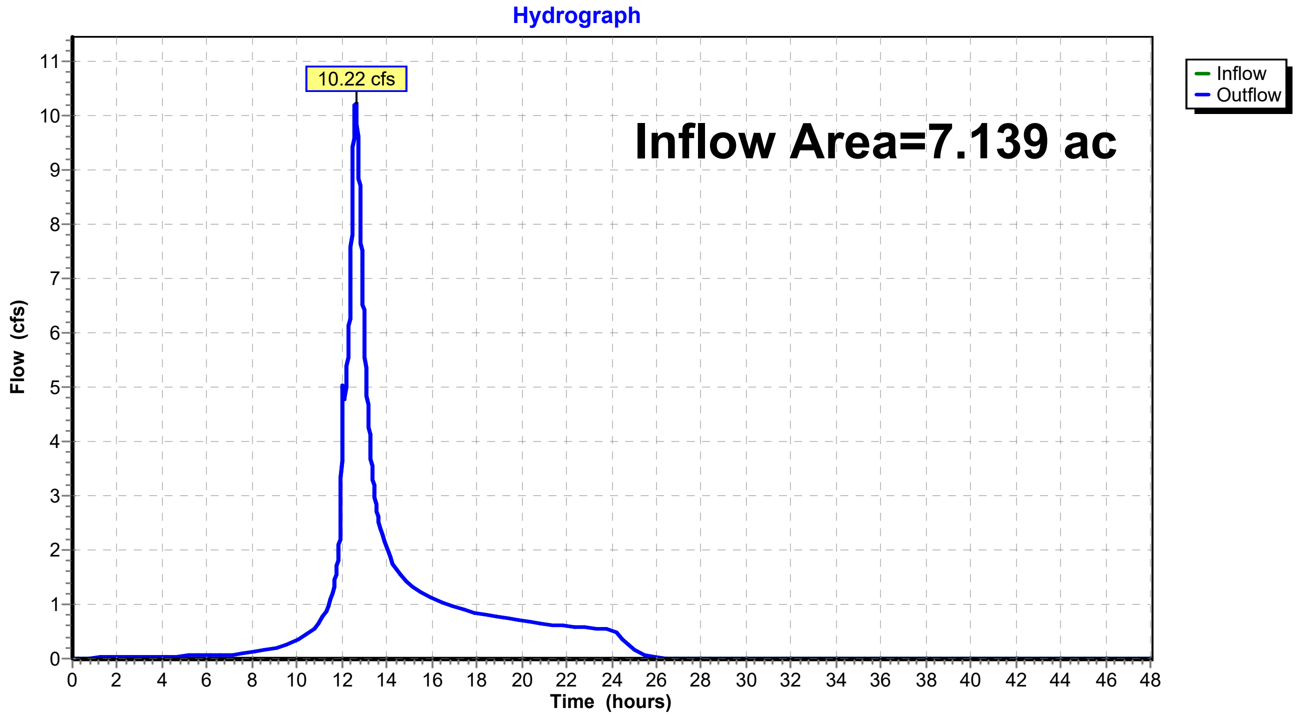


Summary for Reach DP-5: Northwood Drive System

Inflow Area =	7.139 ac,	17.86% Impervious,	Inflow Depth = 3.09"	for 25-yr event	
Inflow =	10.22 cfs @	12.61 hrs,	Volume=	1.837 af	
Outflow =	10.22 cfs @	12.61 hrs,	Volume=	1.837 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-5: Northwood Drive System



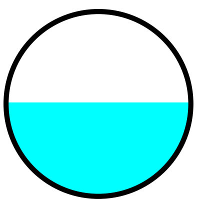
Summary for Reach IDP-1: Culvert

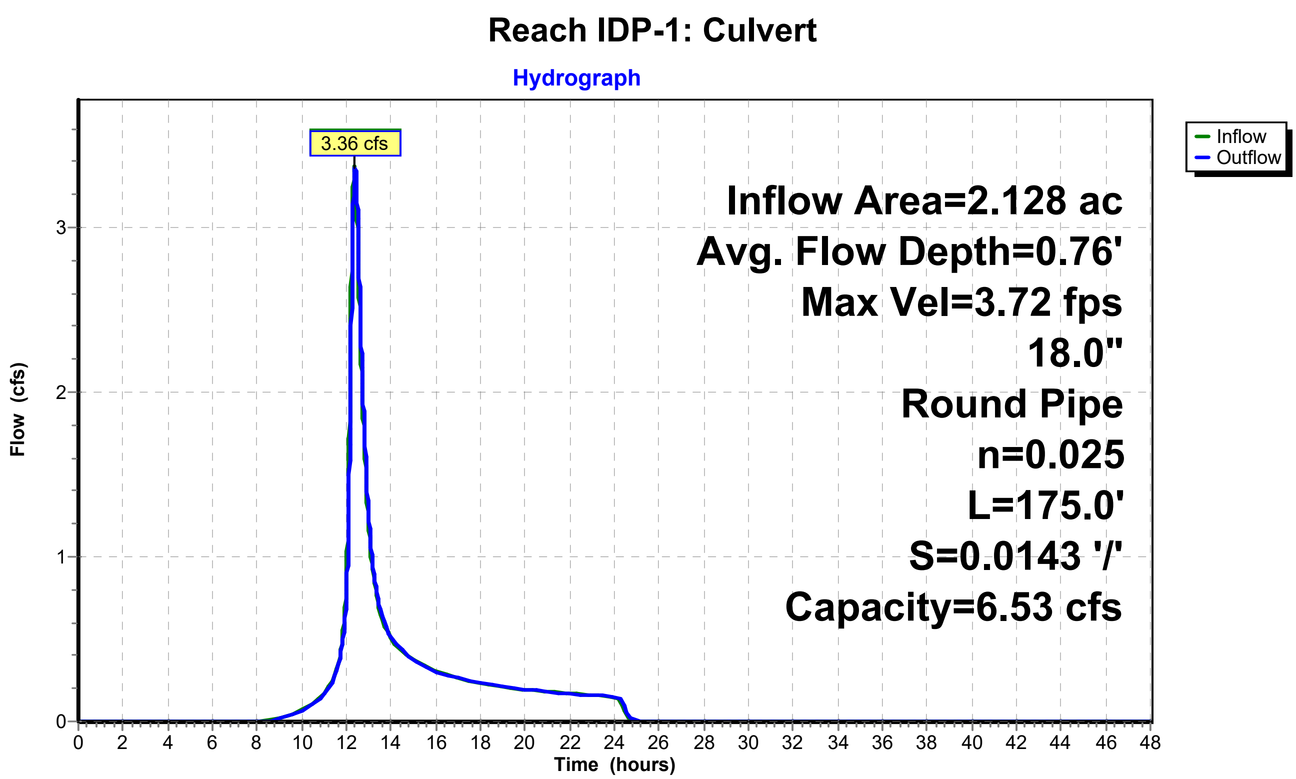
Inflow Area = 2.128 ac, 11.08% Impervious, Inflow Depth = 2.75" for 25-yr event
Inflow = 3.37 cfs @ 12.37 hrs, Volume= 0.488 af
Outflow = 3.36 cfs @ 12.39 hrs, Volume= 0.488 af, Atten= 0%, Lag= 1.4 min
Routed to Reach DP-2 : South Wetland

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.72 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.65 fps, Avg. Travel Time= 1.8 min

Peak Storage= 158 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.76' , Surface Width= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.53 cfs

18.0" Round Pipe
n= 0.025 Corrugated metal
Length= 175.0' Slope= 0.0143 '/'
Inlet Invert= 128.00', Outlet Invert= 125.50'





Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EDA-100: Site North Runoff Area=92,700 sf 11.08% Impervious Runoff Depth=4.22"
Flow Length=360' Tc=30.5 min CN=67 Runoff=5.25 cfs 0.749 af

Subcatchment EDA-200: Building Runoff Area=17,850 sf 100.00% Impervious Runoff Depth=7.88"
Tc=6.0 min CN=98 Runoff=3.65 cfs 0.269 af

Subcatchment EDA-300: Site West Runoff Area=89,800 sf 21.99% Impervious Runoff Depth=5.38"
Flow Length=213' Tc=22.2 min CN=77 Runoff=7.74 cfs 0.925 af

Subcatchment EDA-400: Site South Central Runoff Area=24,025 sf 0.21% Impervious Runoff Depth=3.42"
Flow Length=337' Tc=31.1 min CN=60 Runoff=1.07 cfs 0.157 af

Subcatchment EDA-500: Southeast Site Runoff Area=61,525 sf 0.00% Impervious Runoff Depth=3.42"
Flow Length=360' Tc=29.6 min CN=60 Runoff=2.82 cfs 0.403 af

Subcatchment EDA-600: Front Parking Runoff Area=25,075 sf 30.31% Impervious Runoff Depth=4.80"
Flow Length=78' Tc=18.9 min CN=72 Runoff=2.11 cfs 0.230 af

Reach C-1: Southwest channel Avg. Flow Depth=0.81' Max Vel=1.13 fps Inflow=12.13 cfs 1.674 af
n=0.070 L=312.0' S=0.0064 '/' Capacity=81.72 cfs Outflow=11.71 cfs 1.674 af

Reach C-2: South Abutter Channel Avg. Flow Depth=0.48' Max Vel=1.64 fps Inflow=12.66 cfs 1.831 af
n=0.050 L=250.0' S=0.0140 '/' Capacity=62.53 cfs Outflow=12.54 cfs 1.831 af

Reach DP-2: South Wetland Avg. Flow Depth=0.58' Max Vel=0.69 fps Inflow=12.32 cfs 1.674 af
n=0.070 L=130.0' S=0.0038 '/' Capacity=40.17 cfs Outflow=12.13 cfs 1.674 af

Reach DP-3: Street Catch Basin - Front of Site Inflow=4.65 cfs 0.499 af
Outflow=4.65 cfs 0.499 af

Reach DP-4: Corner Catch Basin Inflow=2.82 cfs 0.403 af
Outflow=2.82 cfs 0.403 af

Reach DP-5: Northwood Drive System Inflow=15.94 cfs 2.733 af
Outflow=15.94 cfs 2.733 af

Reach IDP-1: Culvert Avg. Flow Depth=1.02' Max Vel=4.11 fps Inflow=5.25 cfs 0.749 af
18.0" Round Pipe n=0.025 L=175.0' S=0.0143 '/' Capacity=6.53 cfs Outflow=5.24 cfs 0.749 af

Total Runoff Area = 7.139 ac Runoff Volume = 2.733 af Average Runoff Depth = 4.59"
82.14% Pervious = 5.864 ac 17.86% Impervious = 1.275 ac

Summary for Subcatchment EDA-100: Site North

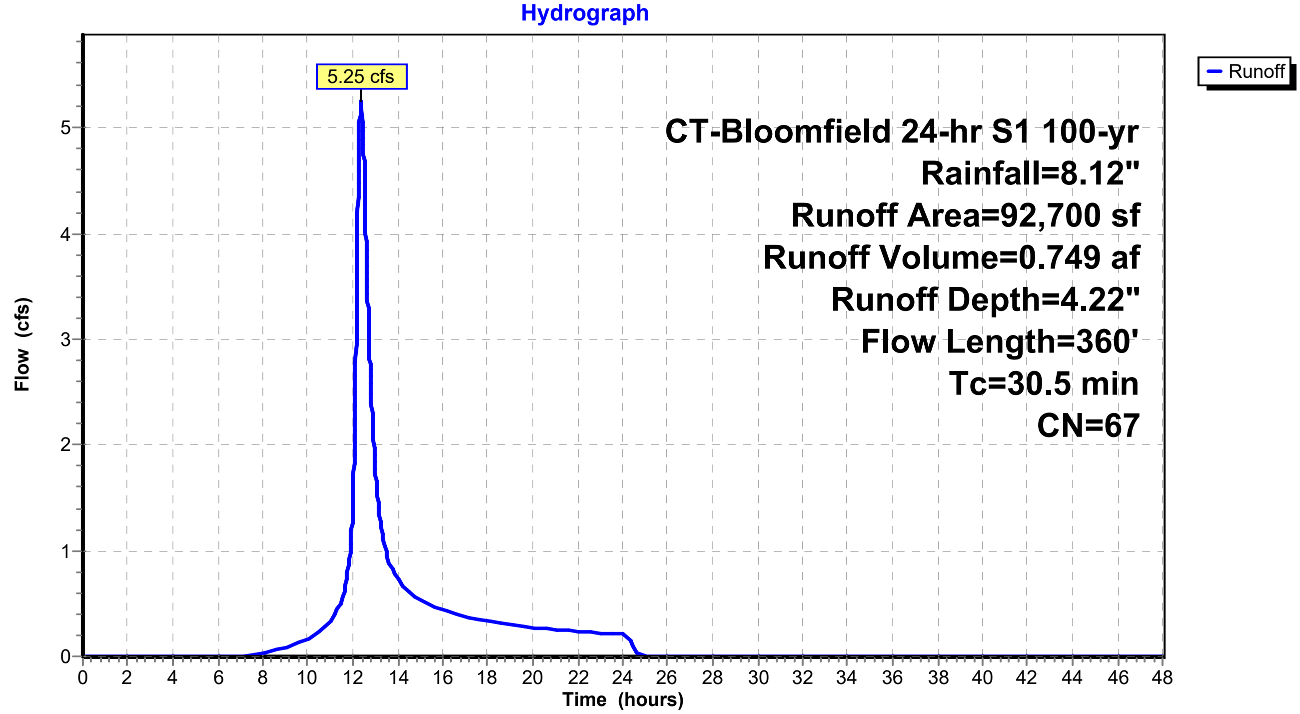
Runoff = 5.25 cfs @ 12.37 hrs, Volume= 0.749 af, Depth= 4.22"
Routed to Reach IDP-1 : Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr Rainfall=8.12"

Area (sf)	CN	Description
1,425	39	>75% Grass cover, Good, HSG A
4,850	61	>75% Grass cover, Good, HSG B
7,250	36	Woods, Fair, HSG A
51,275	60	Woods, Fair, HSG B
10,275	98	Paved parking, HSG A
5,625	96	Gravel surface, HSG B
12,000	79	Woods, Fair, HSG D
92,700	67	Weighted Average
82,425		88.92% Pervious Area
10,275		11.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4	100	0.0180	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
8.1	260	0.0115	0.54		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
30.5	360	Total			

Subcatchment EDA-100: Site North



Summary for Subcatchment EDA-200: Building

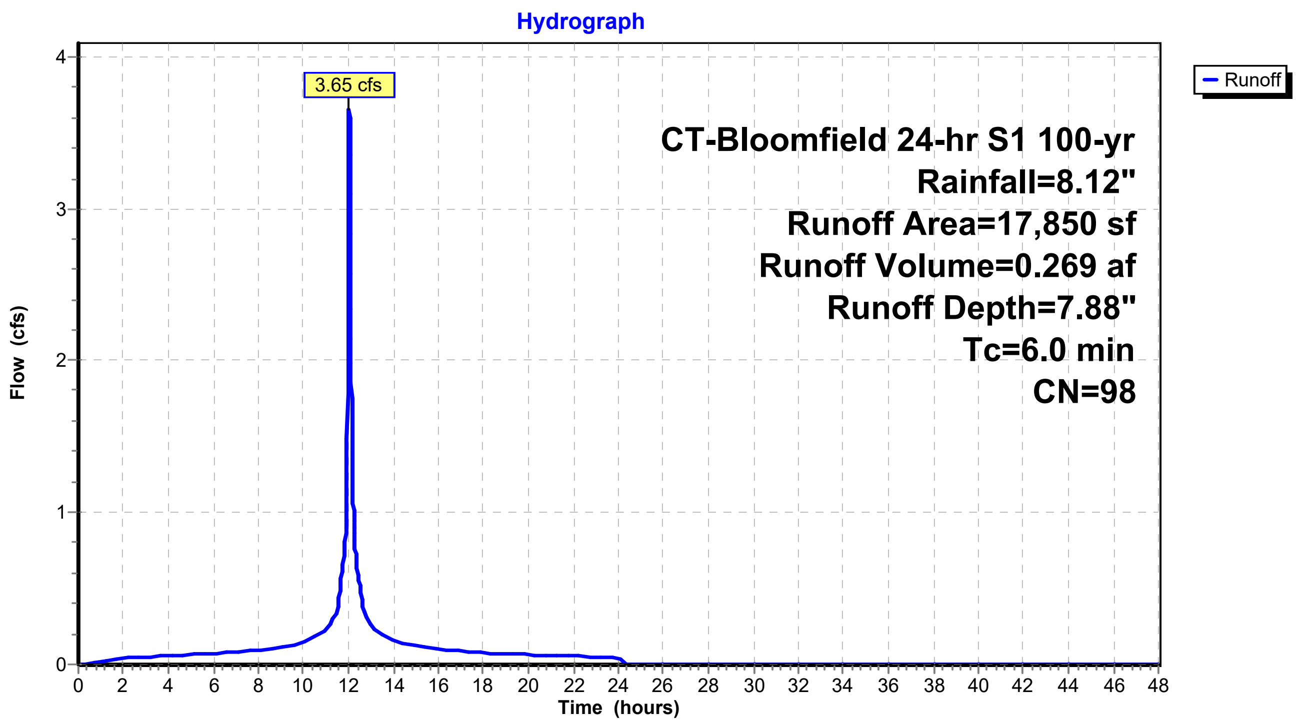
Runoff = 3.65 cfs @ 12.04 hrs, Volume= 0.269 af, Depth= 7.88"
Routed to Reach DP-3 : Street Catch Basin - Front of Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr Rainfall=8.12"

Area (sf)	CN	Description
17,850	98	Roofs, HSG A
17,850		100.00% Impervious Area

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

Subcatchment EDA-200: Building



Summary for Subcatchment EDA-300: Site West

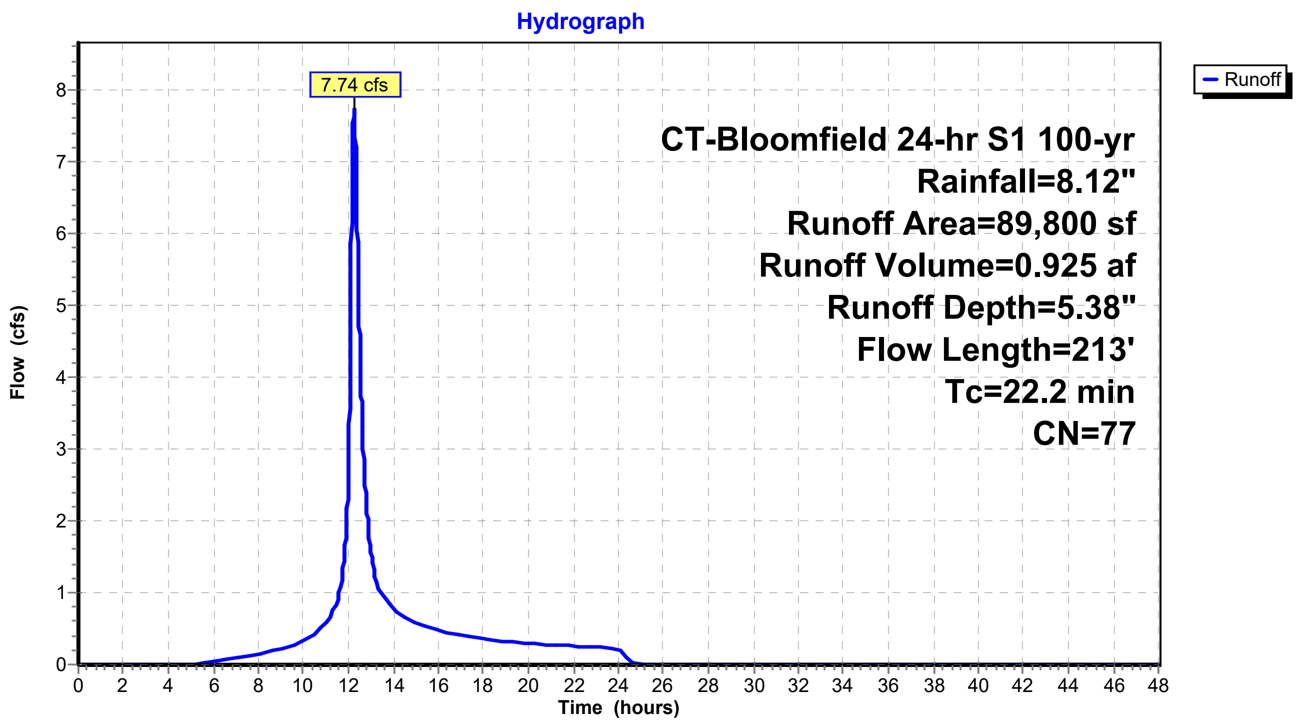
Runoff = 7.74 cfs @ 12.26 hrs, Volume= 0.925 af, Depth= 5.38"
Routed to Reach DP-2 : South Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr Rainfall=8.12"

Area (sf)	CN	Description
6,800	61	>75% Grass cover, Good, HSG B
29,550	60	Woods, Fair, HSG B
19,750	98	Paved parking, HSG A
6,450	96	Gravel surface, HSG B
27,250	79	Woods, Fair, HSG D
89,800	77	Weighted Average
70,050		78.01% Pervious Area
19,750		21.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
2.5	113	0.0220	0.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.2	213	Total			

Subcatchment EDA-300: Site West



Summary for Subcatchment EDA-400: Site South Central

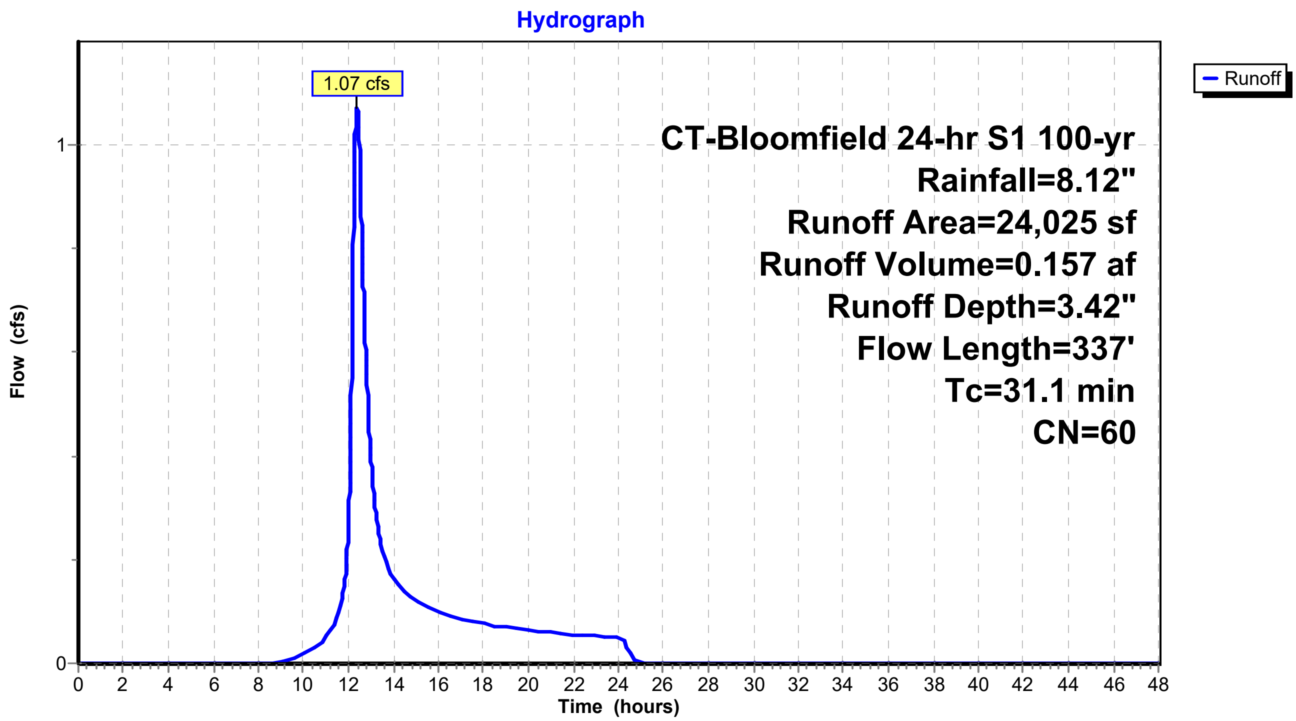
Runoff = 1.07 cfs @ 12.40 hrs, Volume= 0.157 af, Depth= 3.42"
Routed to Reach C-2 : South Abutter Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr Rainfall=8.12"

Area (sf)	CN	Description
1,575	61	>75% Grass cover, Good, HSG B
22,400	60	Woods, Fair, HSG B
50	98	Paved parking, HSG A
24,025	60	Weighted Average
23,975		99.79% Pervious Area
50		0.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	100	0.0150	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
7.0	237	0.0126	0.56		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
31.1	337	Total			

Subcatchment EDA-400: Site South Central



Summary for Subcatchment EDA-500: Southeast Site

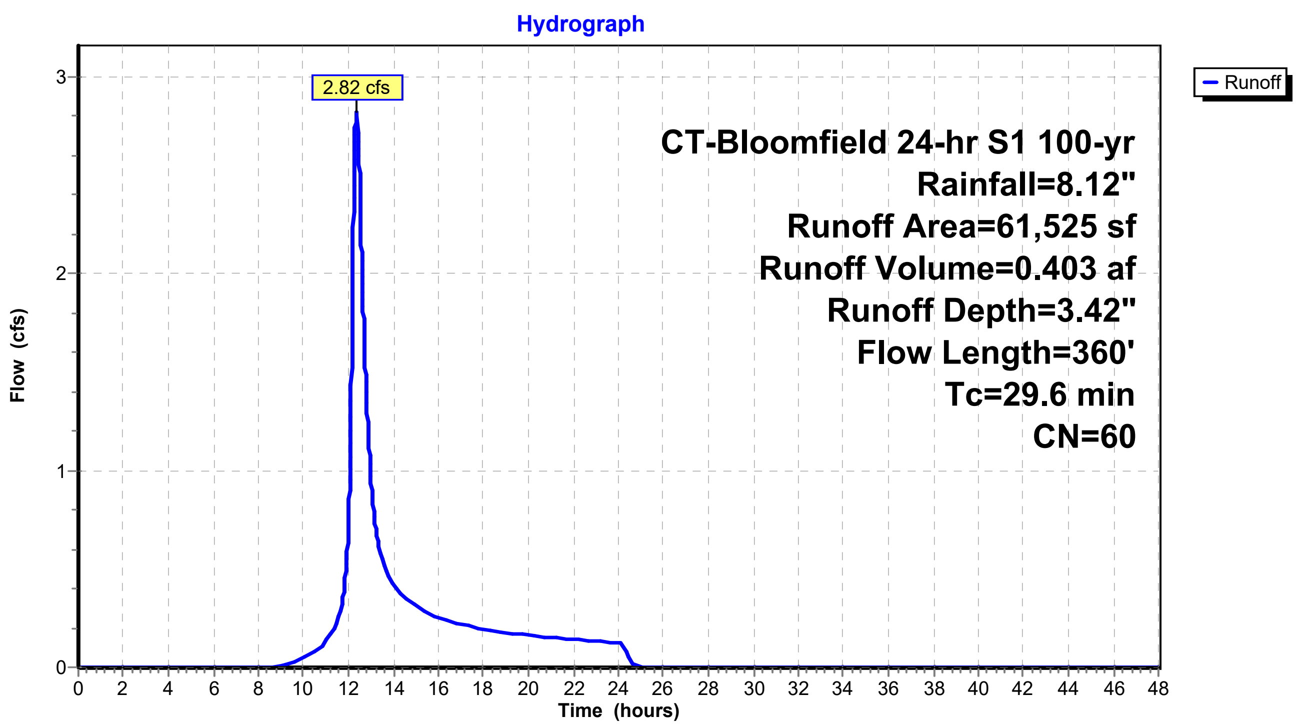
Runoff = 2.82 cfs @ 12.36 hrs, Volume= 0.403 af, Depth= 3.42"
Routed to Reach DP-4 : Corner Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr Rainfall=8.12"

Area (sf)	CN	Description
6,675	61	>75% Grass cover, Good, HSG B
54,850	60	Woods, Fair, HSG B
61,525	60	Weighted Average
61,525		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.5	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
8.1	260	0.0115	0.54		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
29.6	360	Total			

Subcatchment EDA-500: Southeast Site



Summary for Subcatchment EDA-600: Front Parking Area

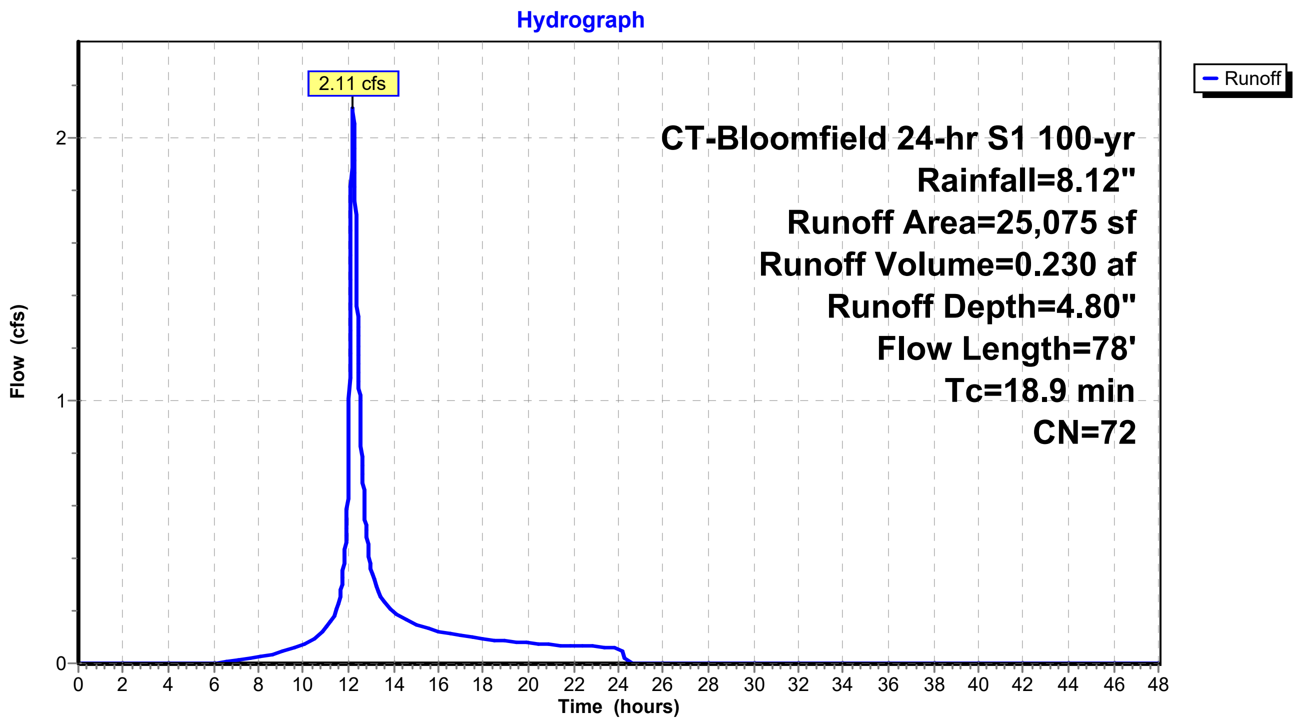
Runoff = 2.11 cfs @ 12.20 hrs, Volume= 0.230 af, Depth= 4.80"
Routed to Reach DP-3 : Street Catch Basin - Front of Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-Bloomfield 24-hr S1 100-yr Rainfall=8.12"

Area (sf)	CN	Description
15,750	61	>75% Grass cover, Good, HSG B
1,725	60	Woods, Fair, HSG B
7,600	98	Paved parking, HSG B
25,075	72	Weighted Average
17,475		69.69% Pervious Area
7,600		30.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	30	0.0083	0.04		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
7.2	48	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.19"
18.9	78	Total			

Subcatchment EDA-600: Front Parking Area



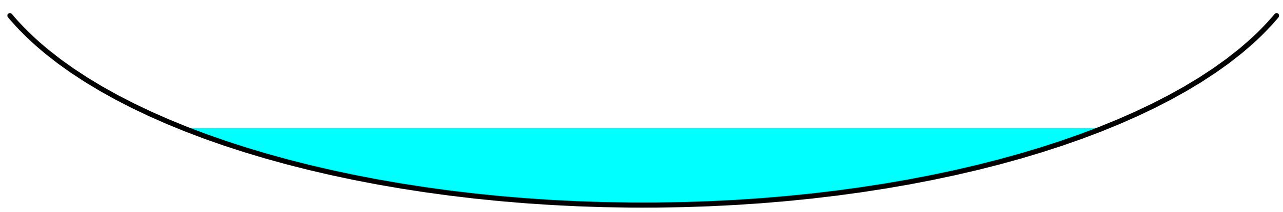
Summary for Reach C-1: Southwest channel

Inflow Area = 4.190 ac, 16.45% Impervious, Inflow Depth = 4.79" for 100-yr event
Inflow = 12.13 cfs @ 12.38 hrs, Volume= 1.674 af
Outflow = 11.71 cfs @ 12.52 hrs, Volume= 1.674 af, Atten= 3%, Lag= 8.2 min
Routed to Reach C-2 : South Abutter Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.13 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 0.36 fps, Avg. Travel Time= 14.6 min

Peak Storage= 3,241 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.81' , Surface Width= 19.14'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 81.72 cfs

30.00' x 2.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 312.0' Slope= 0.0064 '/'
Inlet Invert= 125.00', Outlet Invert= 123.00'



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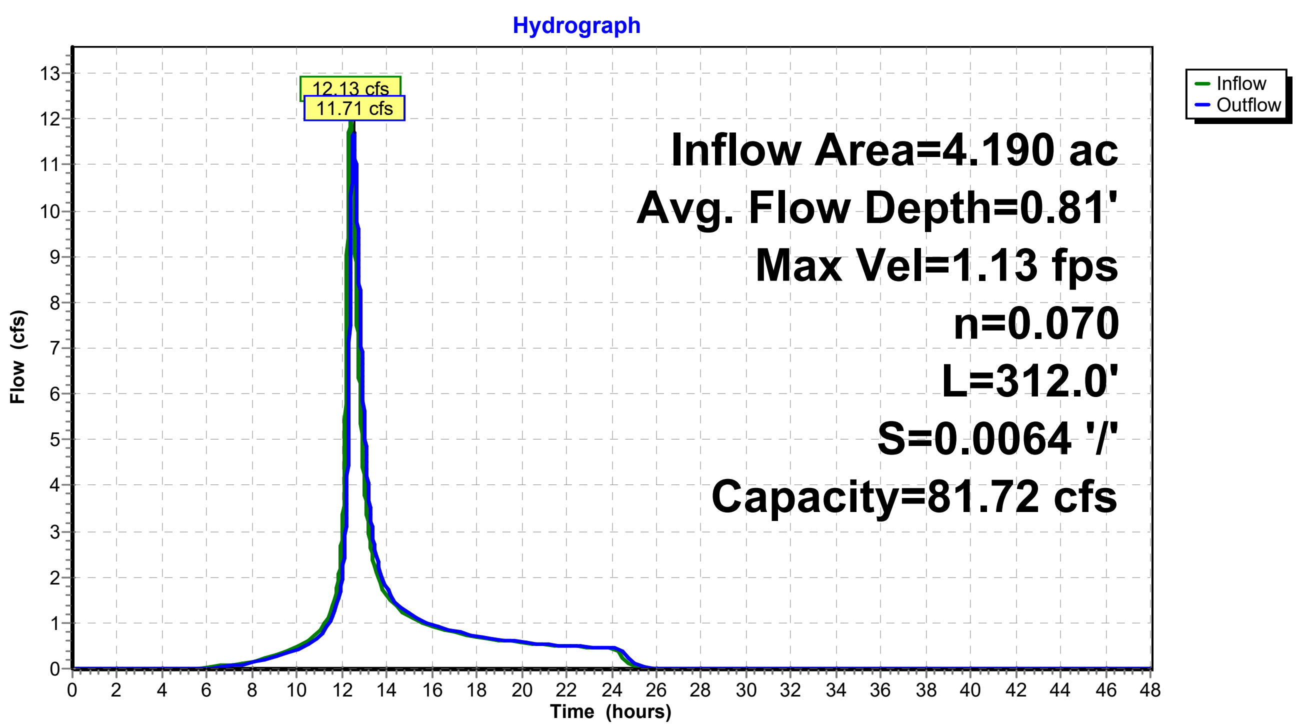
Reach C-1: Southwest channel



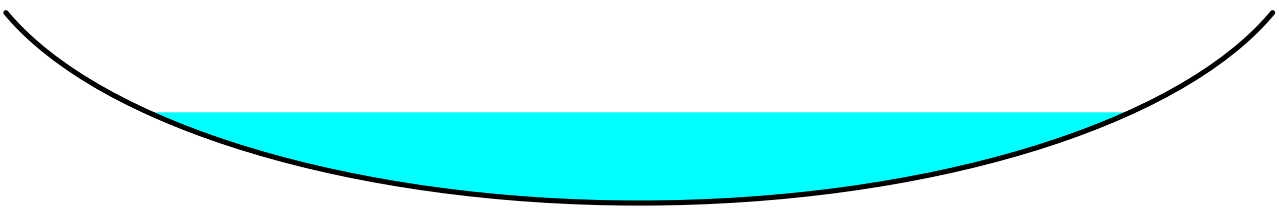
Summary for Reach C-2: South Abutter Channel

Inflow Area = 4.741 ac, 14.56% Impervious, Inflow Depth = 4.63" for 100-yr event
Inflow = 12.66 cfs @ 12.51 hrs, Volume= 1.831 af
Outflow = 12.54 cfs @ 12.59 hrs, Volume= 1.831 af, Atten= 1%, Lag= 4.5 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.64 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 0.51 fps, Avg. Travel Time= 8.2 min

Peak Storage= 1,917 cf @ 12.55 hrs
Average Depth at Peak Storage= 0.48' , Surface Width= 24.15'
Bank-Full Depth= 1.00' Flow Area= 23.3 sf, Capacity= 62.53 cfs

35.00' x 1.00' deep Parabolic Channel, n= 0.050 Sluggish weedy reaches w/pools
Length= 250.0' Slope= 0.0140 '/'
Inlet Invert= 124.00', Outlet Invert= 120.50'



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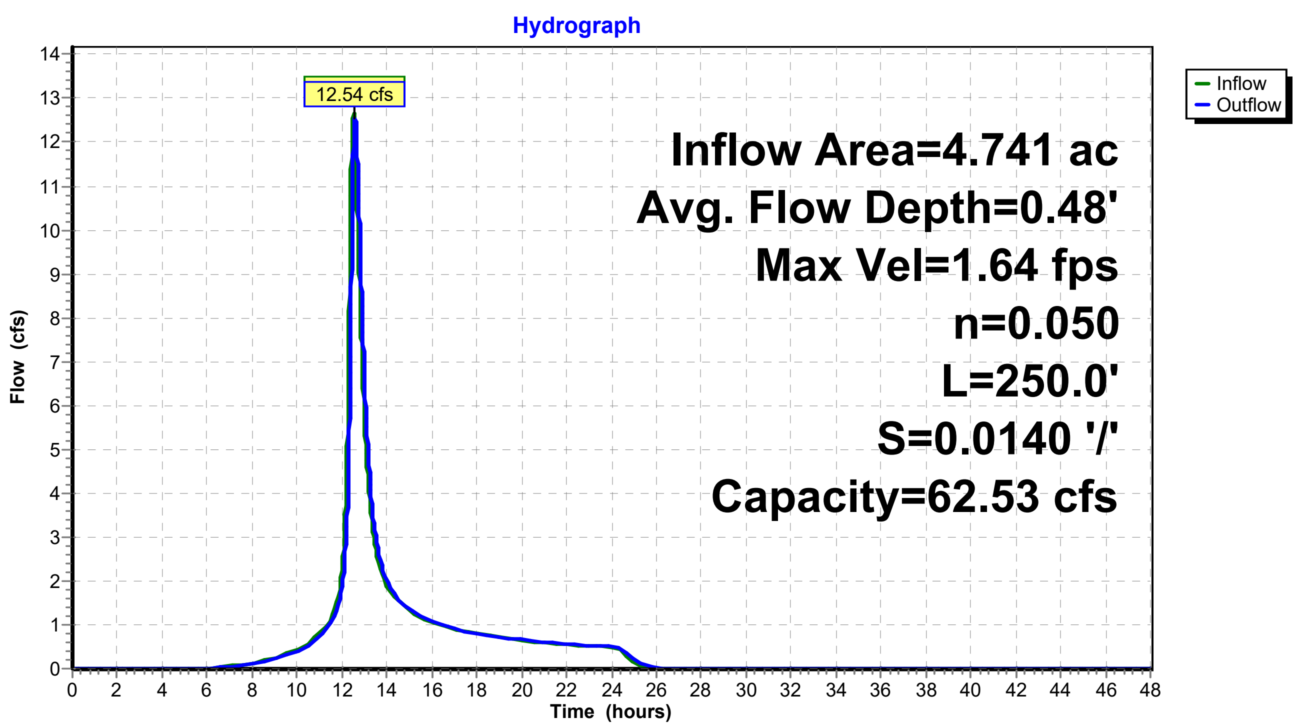
Reach C-2: South Abutter Channel



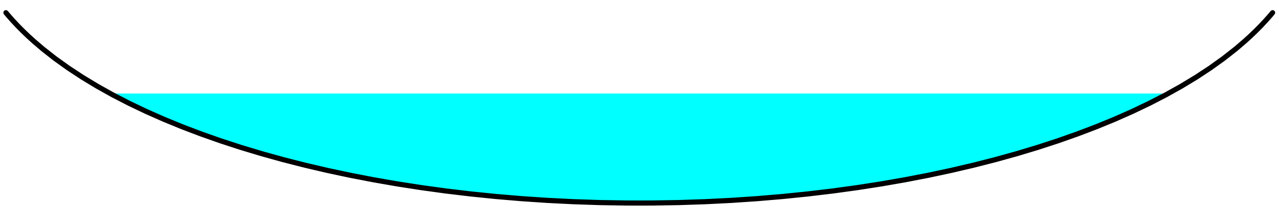
Summary for Reach DP-2: South Wetland

Inflow Area = 4.190 ac, 16.45% Impervious, Inflow Depth = 4.79" for 100-yr event
Inflow = 12.32 cfs @ 12.29 hrs, Volume= 1.674 af
Outflow = 12.13 cfs @ 12.38 hrs, Volume= 1.674 af, Atten= 2%, Lag= 5.4 min
Routed to Reach C-1 : Southwest channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.69 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 0.22 fps, Avg. Travel Time= 9.7 min

Peak Storage= 2,269 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.58' , Surface Width= 45.51'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 40.17 cfs

60.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 130.0' Slope= 0.0038 '/'
Inlet Invert= 125.50', Outlet Invert= 125.00'



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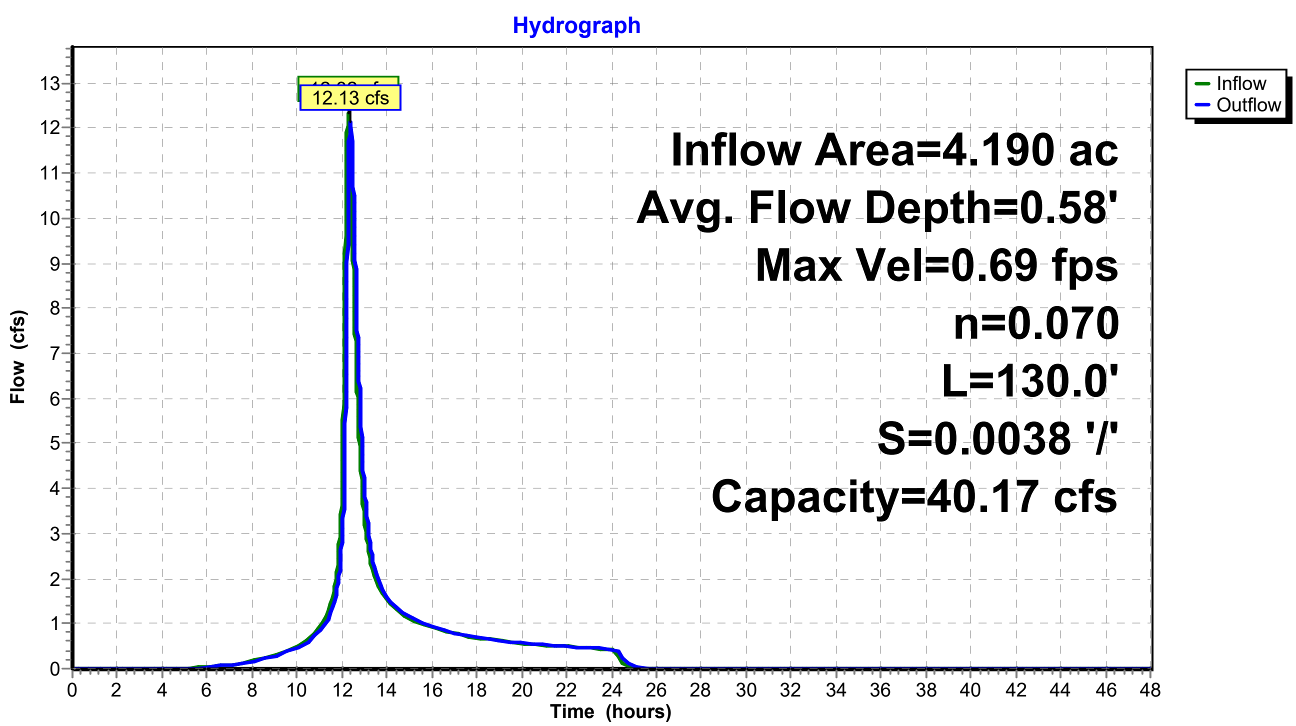
Reach DP-2: South Wetland

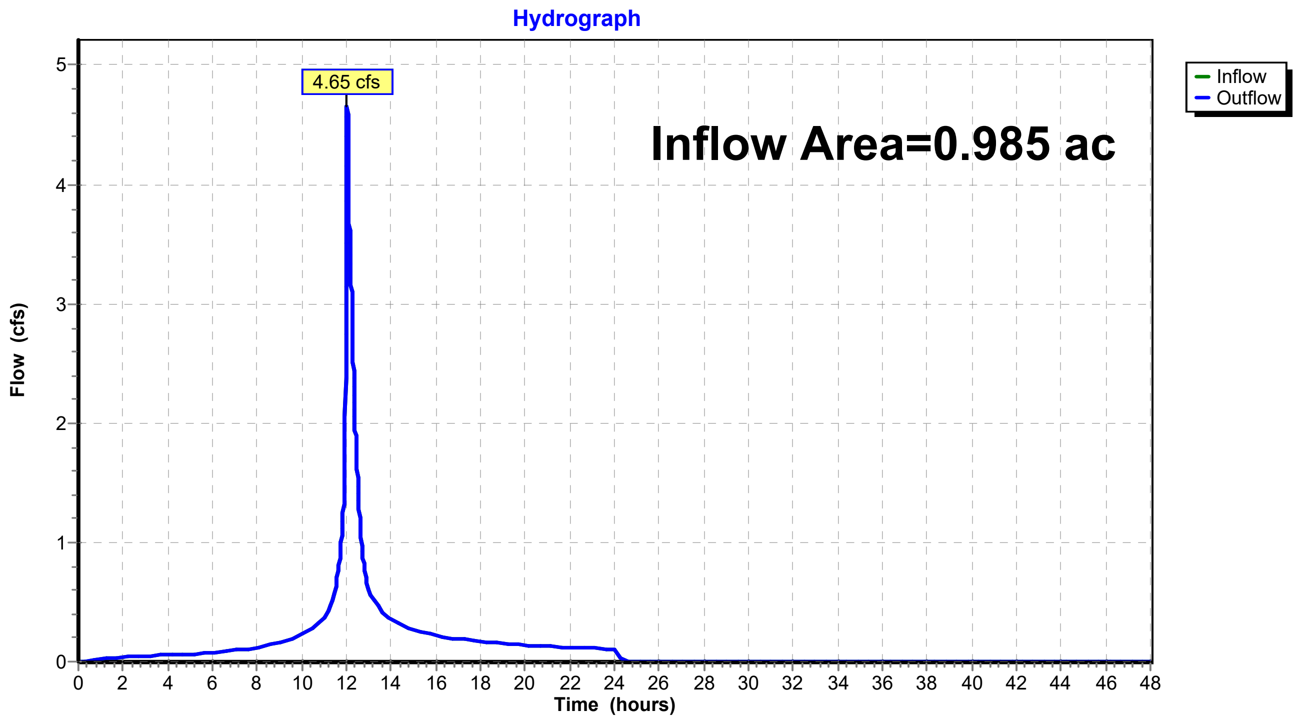


Summary for Reach DP-3: Street Catch Basin - Front of Site

Inflow Area = 0.985 ac, 59.29% Impervious, Inflow Depth = 6.08" for 100-yr event
Inflow = 4.65 cfs @ 12.04 hrs, Volume= 0.499 af
Outflow = 4.65 cfs @ 12.04 hrs, Volume= 0.499 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

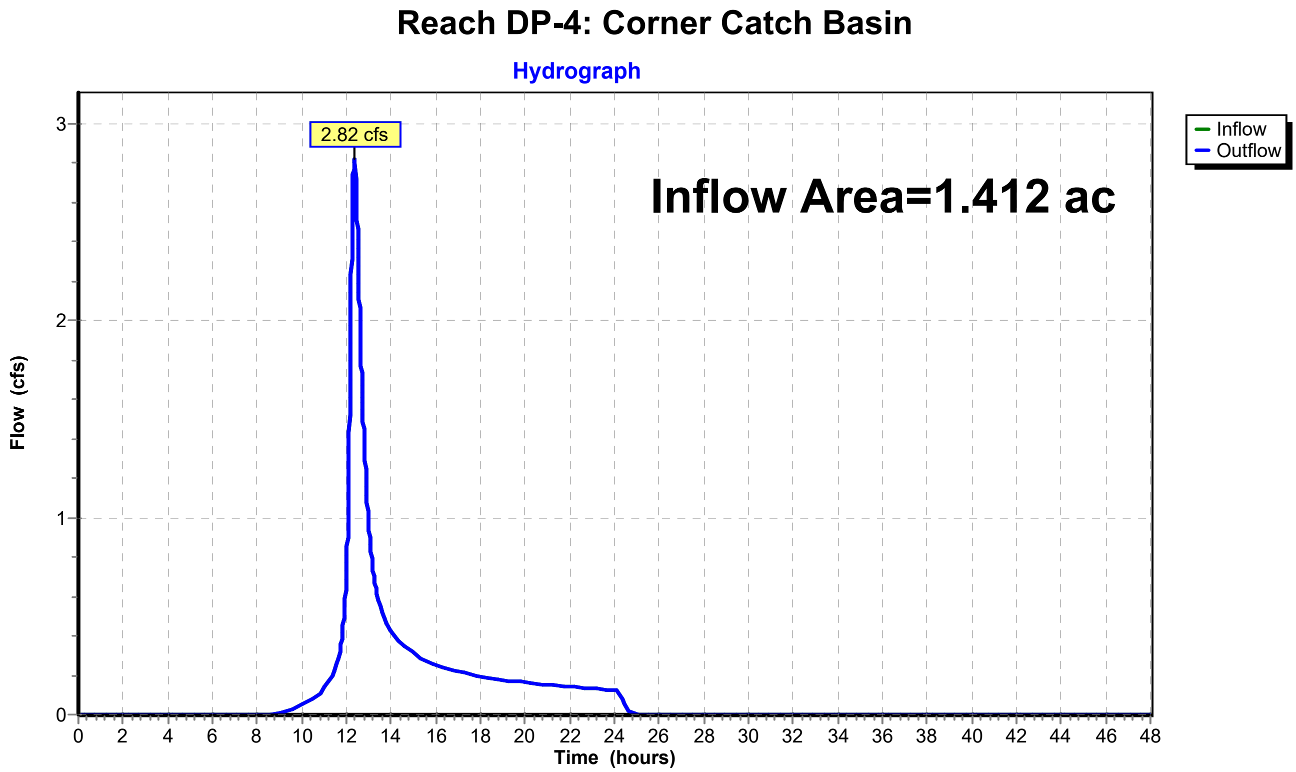
Reach DP-3: Street Catch Basin - Front of Site



Summary for Reach DP-4: Corner Catch Basin

Inflow Area = 1.412 ac, 0.00% Impervious, Inflow Depth = 3.42" for 100-yr event
Inflow = 2.82 cfs @ 12.36 hrs, Volume= 0.403 af
Outflow = 2.82 cfs @ 12.36 hrs, Volume= 0.403 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

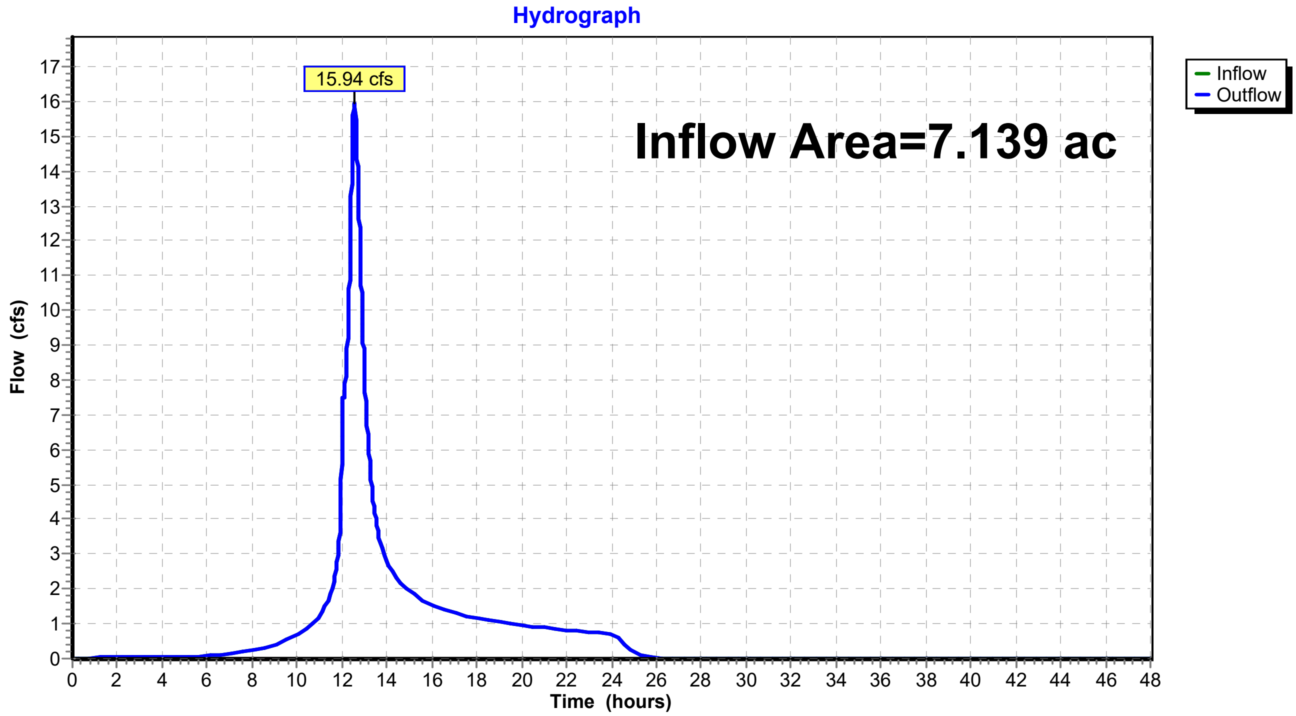


Summary for Reach DP-5: Northwood Drive System

Inflow Area = 7.139 ac, 17.86% Impervious, Inflow Depth = 4.59" for 100-yr event
Inflow = 15.94 cfs @ 12.56 hrs, Volume= 2.733 af
Outflow = 15.94 cfs @ 12.56 hrs, Volume= 2.733 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-5: Northwood Drive System



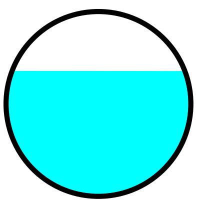
Summary for Reach IDP-1: Culvert

Inflow Area = 2.128 ac, 11.08% Impervious, Inflow Depth = 4.22" for 100-yr event
Inflow = 5.25 cfs @ 12.37 hrs, Volume= 0.749 af
Outflow = 5.24 cfs @ 12.39 hrs, Volume= 0.749 af, Atten= 0%, Lag= 1.2 min
Routed to Reach DP-2 : South Wetland

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.11 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.81 fps, Avg. Travel Time= 1.6 min

Peak Storage= 223 cf @ 12.38 hrs
Average Depth at Peak Storage= 1.02' , Surface Width= 1.40'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.53 cfs

18.0" Round Pipe
n= 0.025 Corrugated metal
Length= 175.0' Slope= 0.0143 '/'
Inlet Invert= 128.00', Outlet Invert= 125.50'



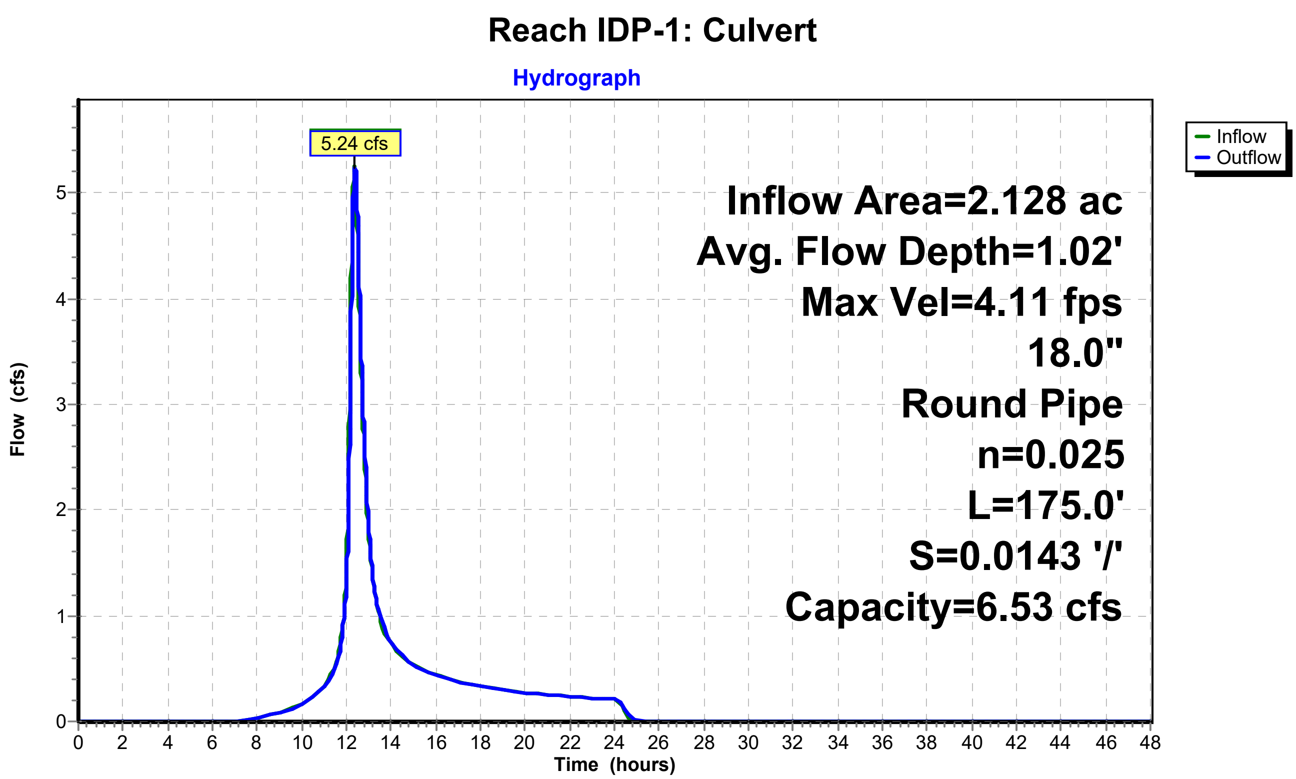
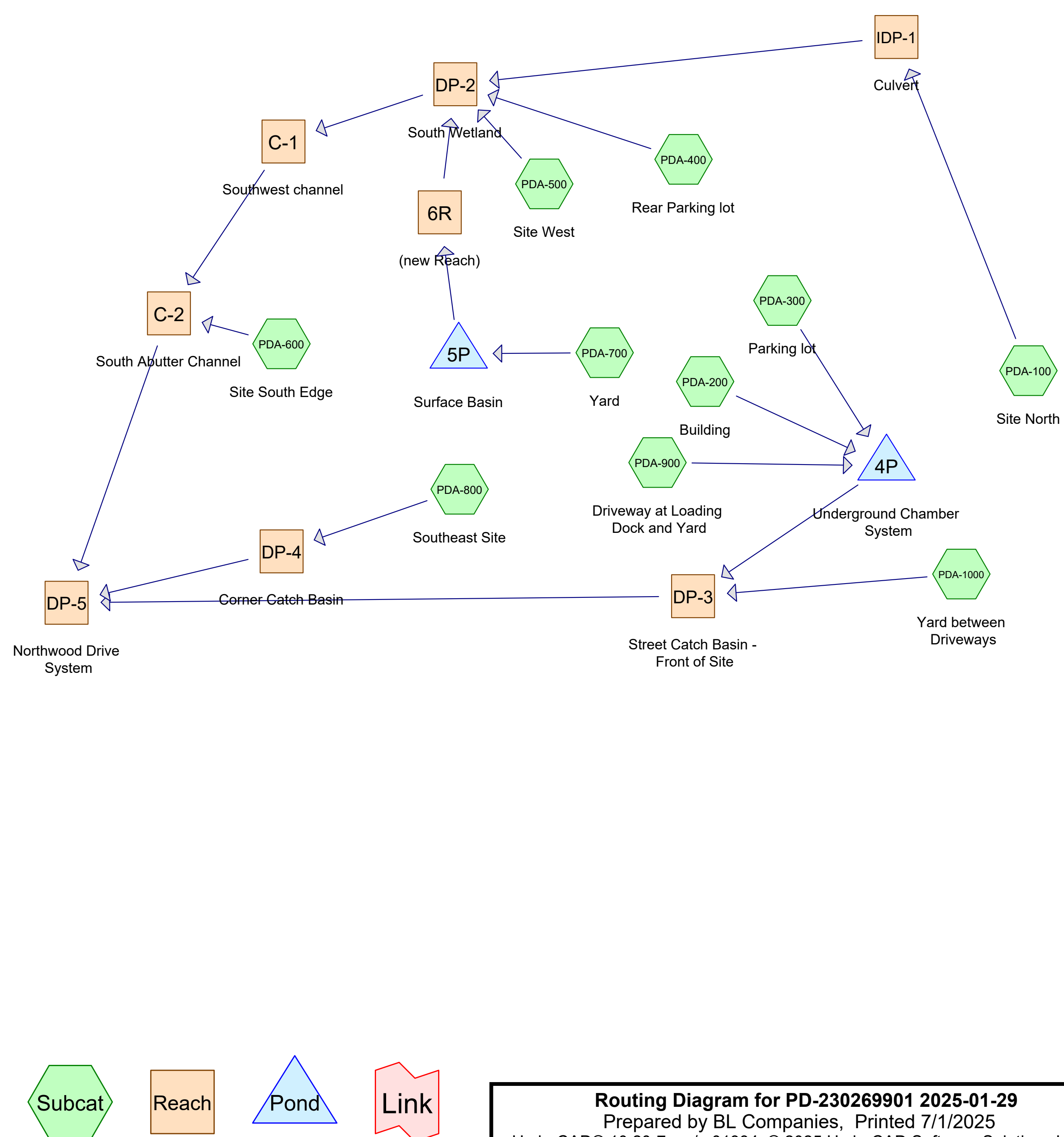


TABLE OF CONTENTS

APPENDIX D

POST-DEVELOPMENT HYDROLOGIC ANALYSIS



Routing Diagram for PD-230269901 2025-01-29
Prepared by BL Companies, Printed 7/1/2025
HydroCAD® 10.20-7a s/n 01334 © 2025 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	CT-Bloomfield 24-hr S1	100-yr	Default	24.00	1	3.19	2
2	10-yr	CT-Bloomfield 24-hr S1	100-yr	Default	24.00	1	5.10	2
3	25-yr	CT-Bloomfield 24-hr S1	100-yr	Default	24.00	1	6.29	2
4	100-yr	CT-Bloomfield 24-hr S1	100-yr	Default	24.00	1	8.12	2

Time span=0.00-75.00 hrs, dt=0.05 hrs, 1501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PDA-100: Site North Runoff Area=88,000 sf 3.01% Impervious Runoff Depth=0.48"
Flow Length=360' Tc=30.5 min CN=62 Runoff=0.35 cfs 0.080 af

Subcatchment PDA-1000: Yard between Runoff Area=4,275 sf 29.24% Impervious Runoff Depth=0.92"
Tc=6.0 min CN=72 Runoff=0.10 cfs 0.008 af

Subcatchment PDA-200: Building Runoff Area=17,850 sf 100.00% Impervious Runoff Depth=2.96"
Tc=6.0 min CN=98 Runoff=1.36 cfs 0.101 af

Subcatchment PDA-300: Parking lot Runoff Area=21,400 sf 89.25% Impervious Runoff Depth=2.53"
Tc=6.0 min CN=94 Runoff=1.49 cfs 0.104 af

Subcatchment PDA-400: Rear Parking lot Runoff Area=18,850 sf 98.94% Impervious Runoff Depth=2.96"
Tc=6.0 min CN=98 Runoff=1.43 cfs 0.107 af

Subcatchment PDA-500: Site West Runoff Area=65,775 sf 0.00% Impervious Runoff Depth=0.73"
Flow Length=140' Tc=23.7 min CN=68 Runoff=0.61 cfs 0.092 af

Subcatchment PDA-600: Site South Edge Runoff Area=9,200 sf 0.00% Impervious Runoff Depth=0.44"
Flow Length=75' Slope=0.0667 '/' Tc=10.6 min CN=61 Runoff=0.05 cfs 0.008 af

Subcatchment PDA-700: Yard Runoff Area=56,625 sf 76.07% Impervious Runoff Depth=2.25"
Tc=6.0 min CN=91 Runoff=3.59 cfs 0.244 af

Subcatchment PDA-800: Southeast Site Runoff Area=12,825 sf 0.00% Impervious Runoff Depth=0.44"
Flow Length=295' Tc=23.5 min CN=61 Runoff=0.05 cfs 0.011 af

Subcatchment PDA-900: Driveway at Runoff Area=8,550 sf 37.43% Impervious Runoff Depth=1.09"
Tc=6.0 min CN=75 Runoff=0.25 cfs 0.018 af

Reach 6R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=200.0' S=0.0112 '/' Capacity=118.74 cfs Outflow=0.00 cfs 0.000 af

Reach C-1: Southwest channel Avg. Flow Depth=0.28' Max Vel=0.55 fps Inflow=1.25 cfs 0.278 af
n=0.070 L=312.0' S=0.0064 '/' Capacity=81.72 cfs Outflow=1.12 cfs 0.278 af

Reach C-2: South Abutter Channel Avg. Flow Depth=0.16' Max Vel=0.78 fps Inflow=1.14 cfs 0.286 af
n=0.050 L=250.0' S=0.0140 '/' Capacity=62.53 cfs Outflow=1.13 cfs 0.286 af

Reach DP-2: South Wetland Avg. Flow Depth=0.20' Max Vel=0.34 fps Inflow=1.59 cfs 0.278 af
n=0.070 L=130.0' S=0.0038 '/' Capacity=40.17 cfs Outflow=1.25 cfs 0.278 af

Reach DP-3: Street Catch Basin - Front of Site Inflow=0.18 cfs 0.208 af
Outflow=0.18 cfs 0.208 af

Reach DP-4: Corner Catch Basin Inflow=0.05 cfs 0.011 af
Outflow=0.05 cfs 0.011 af

Reach DP-5: Northwood Drive System Inflow=1.28 cfs 0.505 af
Outflow=1.28 cfs 0.505 af

Reach IDP-1: Culvert Avg. Flow Depth=0.24' Max Vel=1.97 fps Inflow=0.35 cfs 0.080 af
18.0" Round Pipe n=0.025 L=175.0' S=0.0143 '/' Capacity=6.53 cfs Outflow=0.35 cfs 0.080 af

Pond 4P: Underground Chamber System Peak Elev=125.37' Storage=0.140 af Inflow=3.10 cfs 0.223 af
Outflow=0.11 cfs 0.200 af

Pond 5P: Surface Basin Peak Elev=126.58' Storage=4,436 cf Inflow=3.59 cfs 0.244 af
Discarded=0.18 cfs 0.244 af Primary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.244 af

Total Runoff Area = 6.964 ac Runoff Volume = 0.771 af Average Runoff Depth = 1.33"
65.13% Pervious = 4.536 ac 34.87% Impervious = 2.428 ac

Summary for Subcatchment PDA-100: Site North

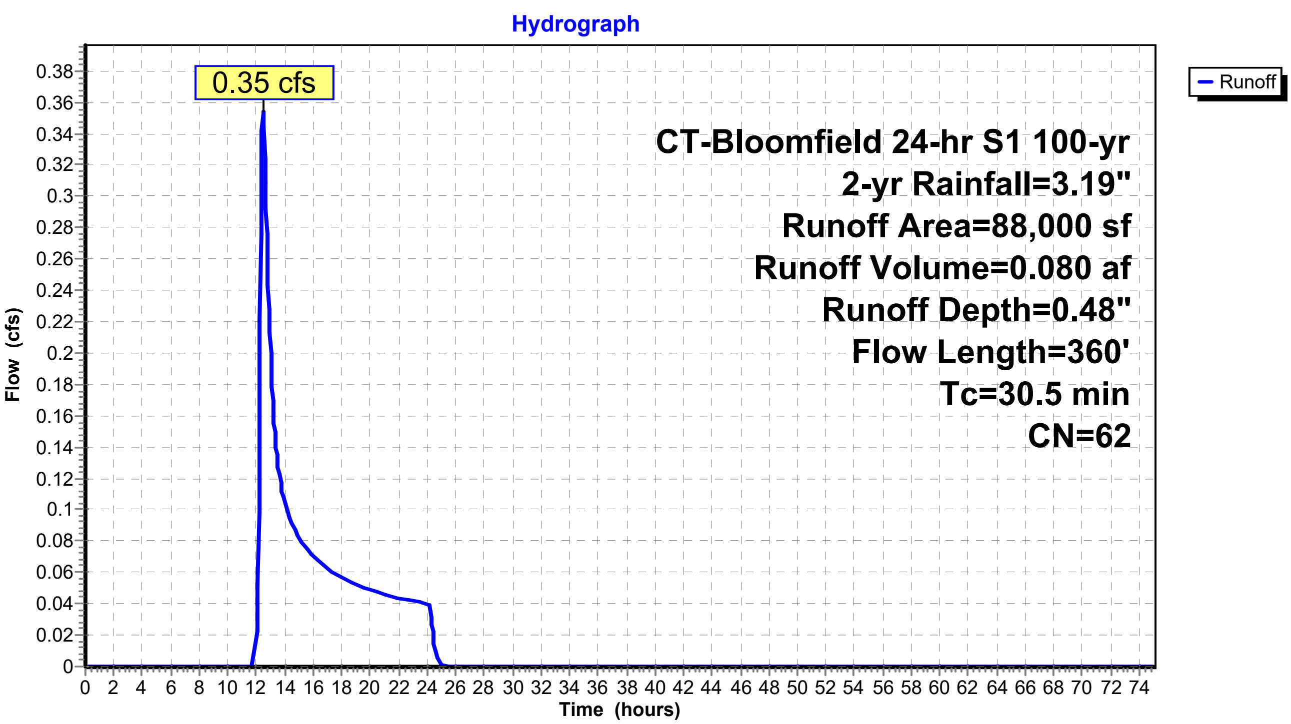
Runoff = 0.35 cfs @ 12.47 hrs, Volume= 0.080 af, Depth= 0.48"
Routed to Reach IDP-1 : Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 2-yr Rainfall=3.19"

Area (sf)	CN	Description
475	39	>75% Grass cover, Good, HSG A
14,975	61	>75% Grass cover, Good, HSG B
7,250	36	Woods, Fair, HSG A
50,550	60	Woods, Fair, HSG B
2,650	98	Paved parking, HSG A
12,100	79	Woods, Fair, HSG D
88,000	62	Weighted Average
85,350		96.99% Pervious Area
2,650		3.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4	100	0.0180	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
8.1	260	0.0115	0.54		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
30.5	360	Total			

Subcatchment PDA-100: Site North



Summary for Subcatchment PDA-1000: Yard between Driveways

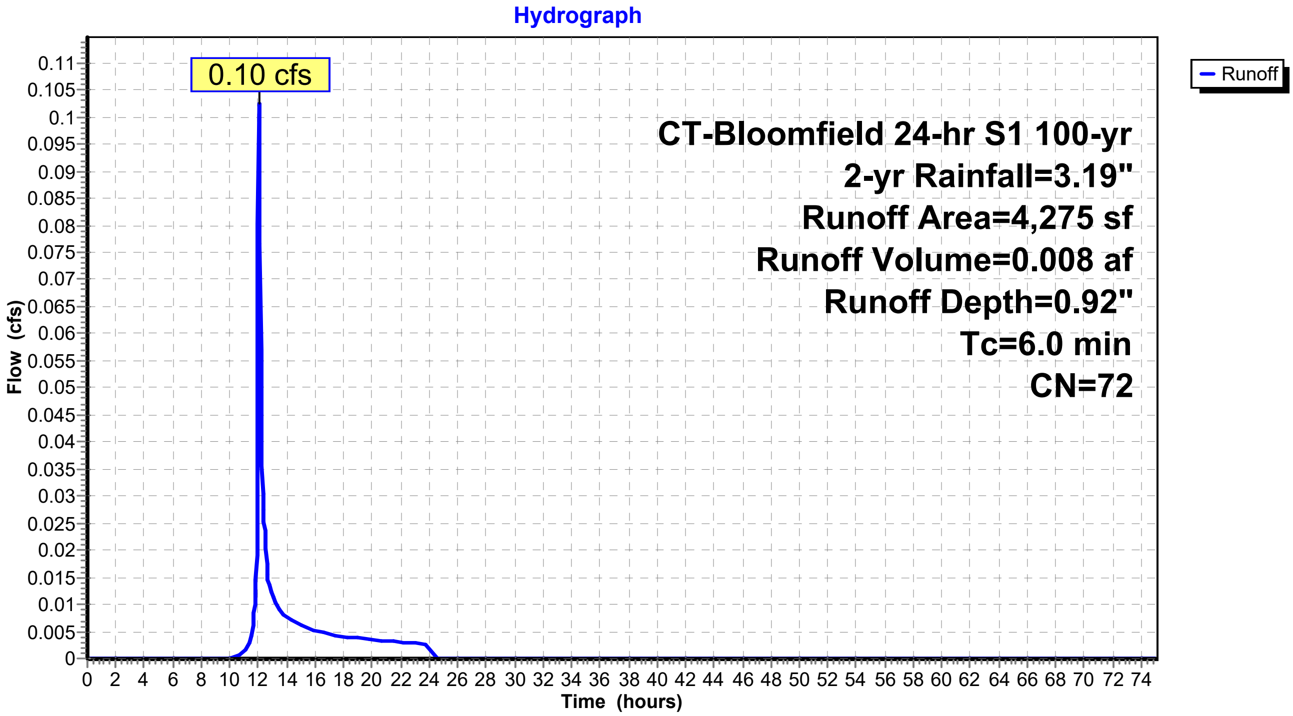
Runoff = 0.10 cfs @ 12.05 hrs, Volume= 0.008 af, Depth= 0.92"
Routed to Reach DP-3 : Street Catch Basin - Front of Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 2-yr Rainfall=3.19"

Area (sf)	CN	Description
3,025	61	>75% Grass cover, Good, HSG B
1,250	98	Paved parking, HSG B
4,275	72	Weighted Average
3,025		70.76% Pervious Area
1,250		29.24% Impervious Area

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

Subcatchment PDA-1000: Yard between Driveways



Summary for Subcatchment PDA-200: Building

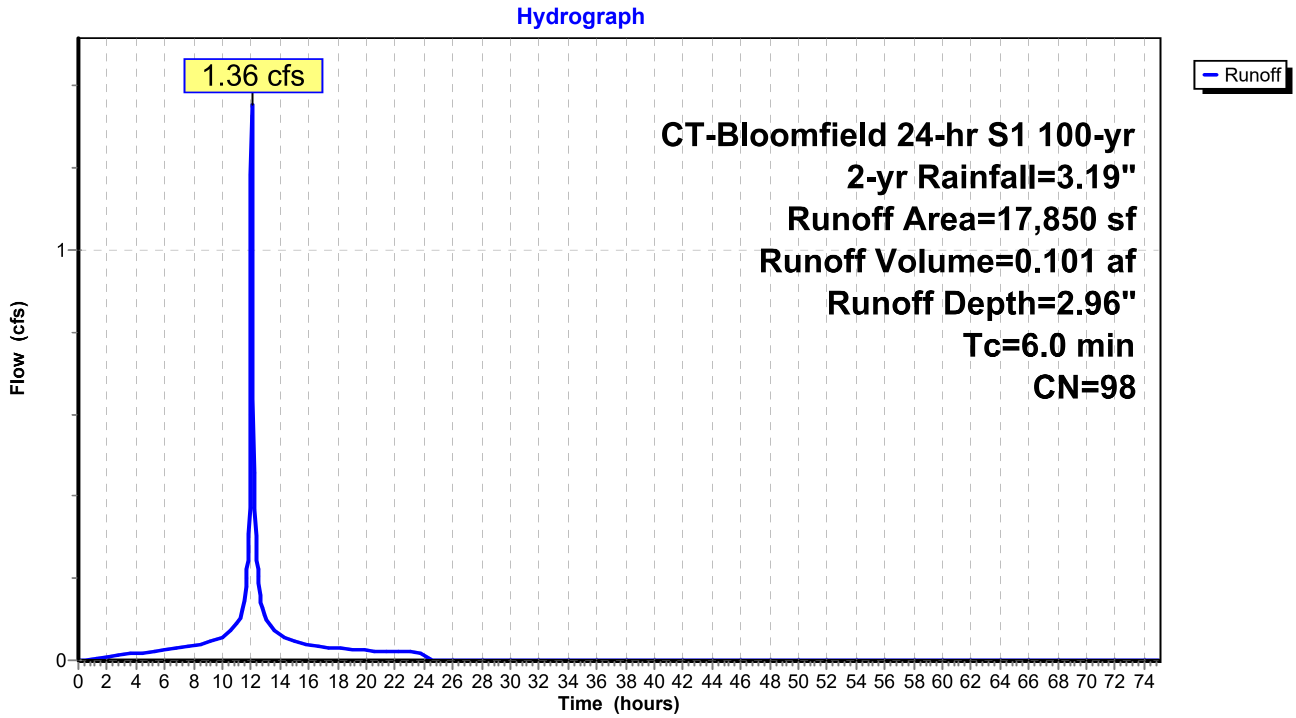
Runoff = 1.36 cfs @ 12.04 hrs, Volume= 0.101 af, Depth= 2.96"
Routed to Pond 4P : Underground Chamber System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 2-yr Rainfall=3.19"

Area (sf)	CN	Description
17,850	98	Roofs, HSG A
17,850		100.00% Impervious Area

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

Subcatchment PDA-200: Building



Summary for Subcatchment PDA-300: Parking lot

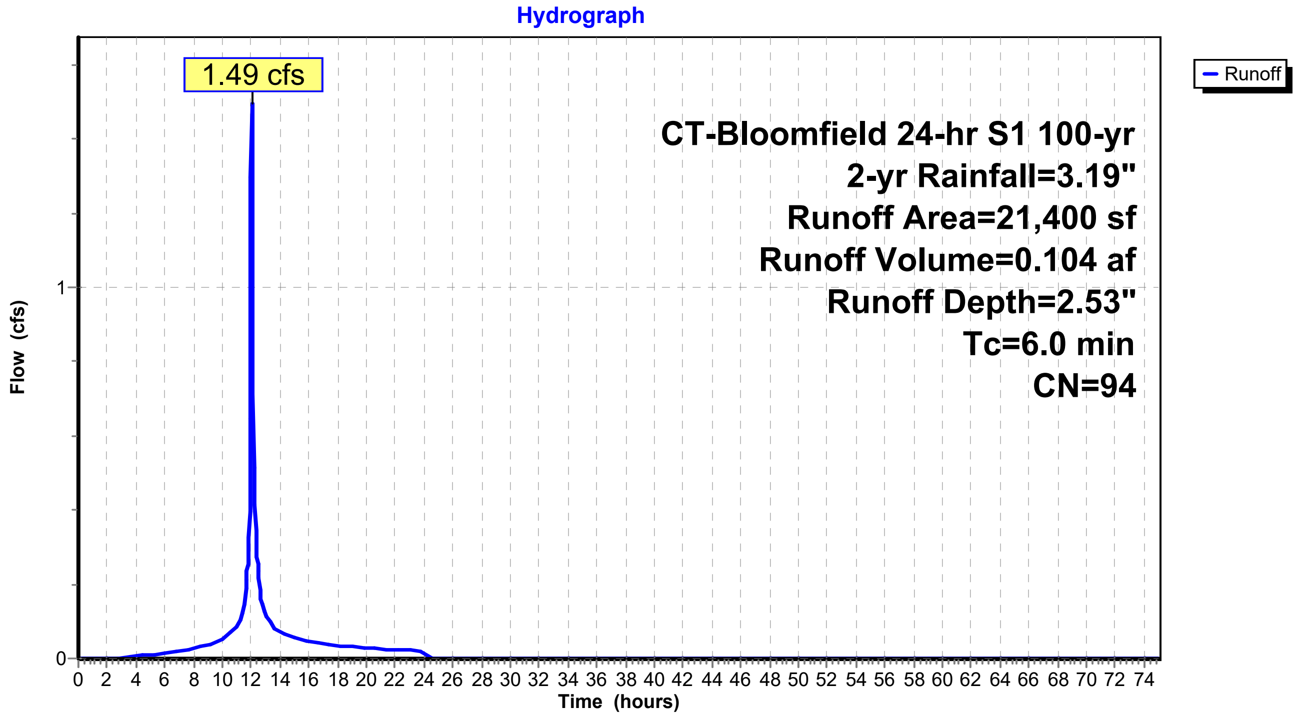
Runoff = 1.49 cfs @ 12.04 hrs, Volume= 0.104 af, Depth= 2.53"
Routed to Pond 4P : Underground Chamber System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 2-yr Rainfall=3.19"

Area (sf)	CN	Description
2,300	61	>75% Grass cover, Good, HSG B
19,100	98	Paved parking, HSG B
21,400	94	Weighted Average
2,300		10.75% Pervious Area
19,100		89.25% Impervious Area

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

Subcatchment PDA-300: Parking lot



Summary for Subcatchment PDA-400: Rear Parking lot

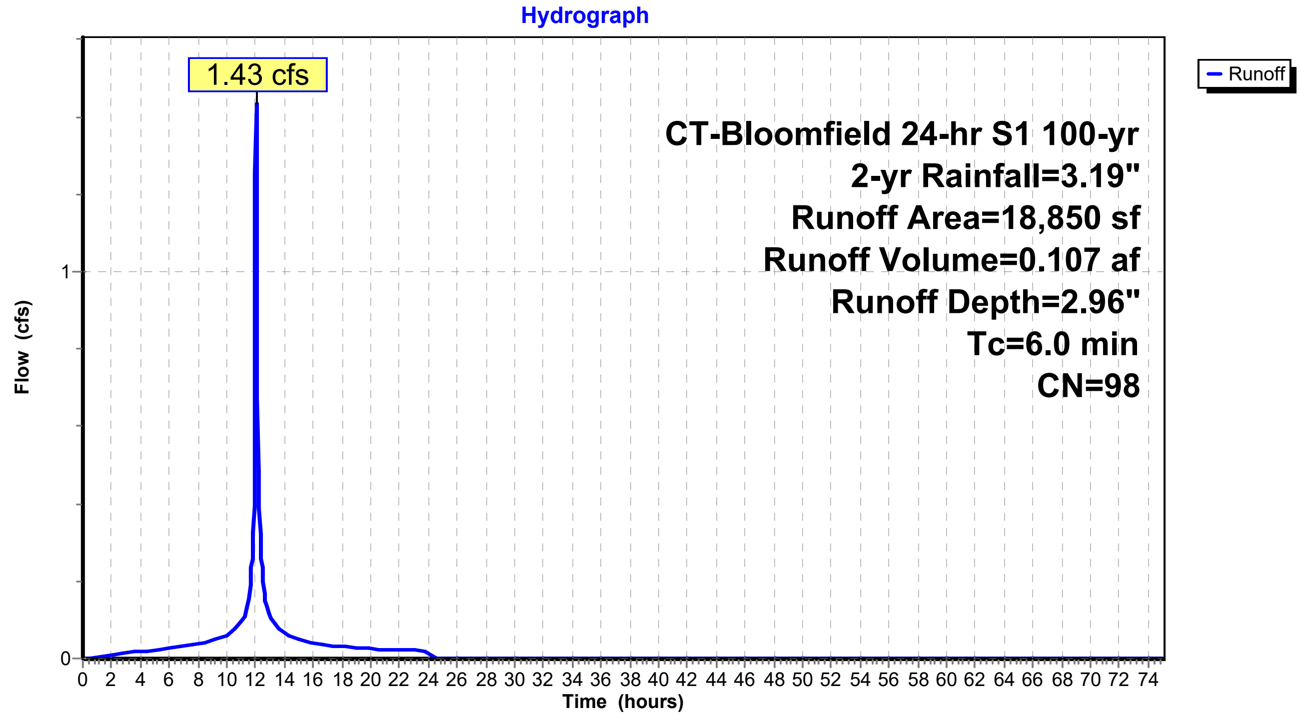
Runoff = 1.43 cfs @ 12.04 hrs, Volume= 0.107 af, Depth= 2.96"
Routed to Reach DP-2 : South Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 2-yr Rainfall=3.19"

Area (sf)	CN	Description
200	61	>75% Grass cover, Good, HSG B
18,650	98	Paved parking, HSG B
18,850	98	Weighted Average
200		1.06% Pervious Area
18,650		98.94% Impervious Area

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

Subcatchment PDA-400: Rear Parking lot



Summary for Subcatchment PDA-500: Site West

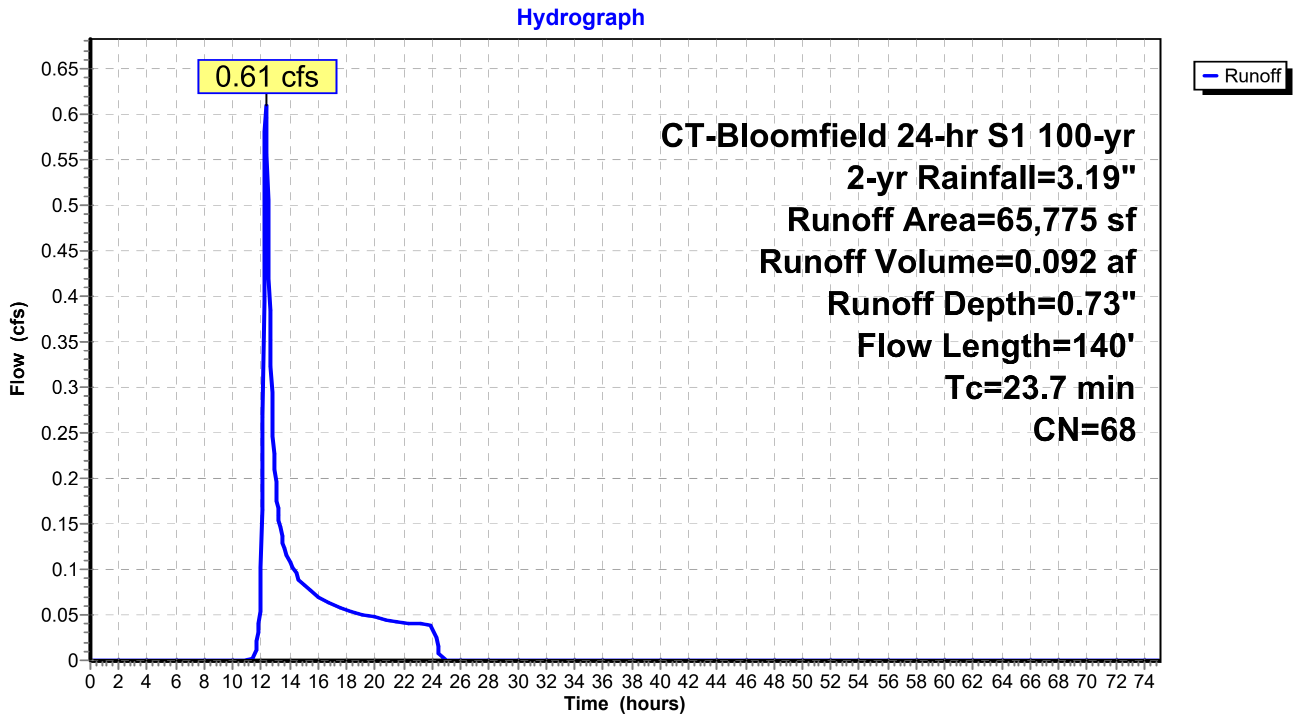
Runoff = 0.61 cfs @ 12.31 hrs, Volume= 0.092 af, Depth= 0.73"
Routed to Reach DP-2 : South Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 2-yr Rainfall=3.19"

Area (sf)	CN	Description
13,475	61	>75% Grass cover, Good, HSG B
25,350	60	Woods, Fair, HSG B
26,950	79	Woods, Fair, HSG D
65,775	68	Weighted Average
65,775		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	20	0.3330	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.19"
22.8	120	0.0250	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
23.7	140	Total			

Subcatchment PDA-500: Site West



Summary for Subcatchment PDA-600: Site South Edge

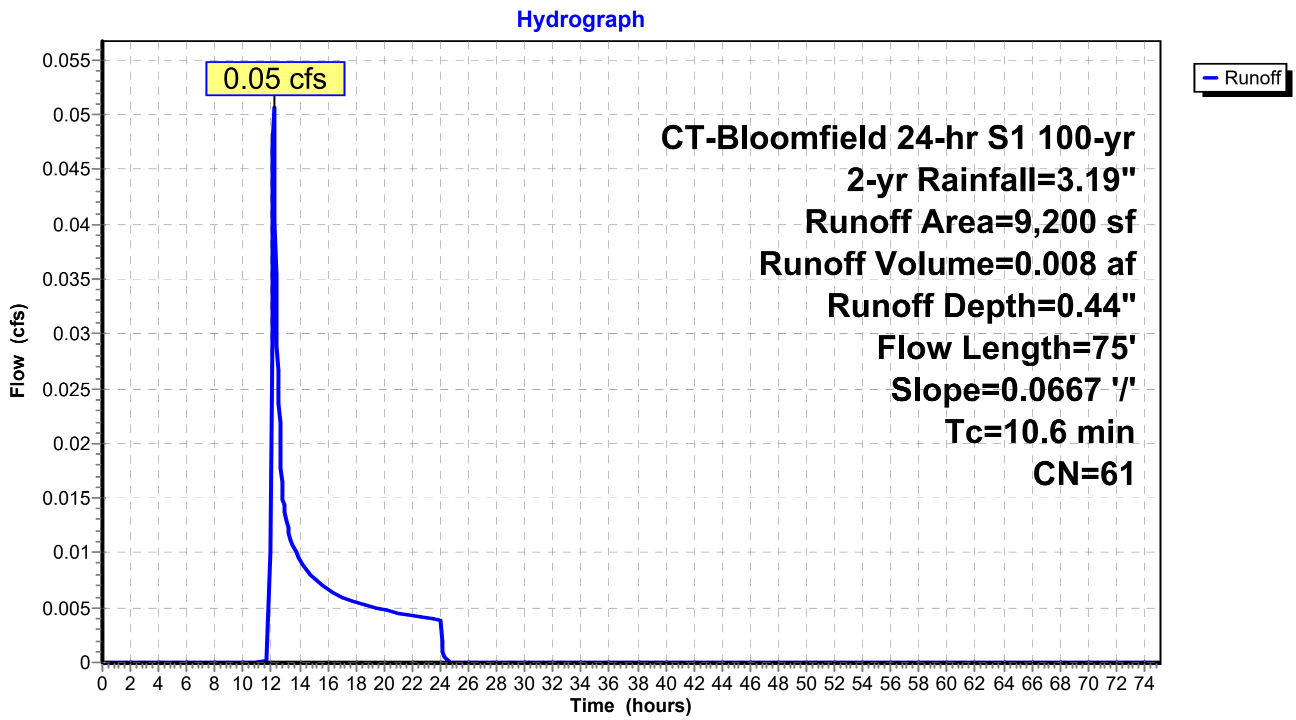
Runoff = 0.05 cfs @ 12.15 hrs, Volume= 0.008 af, Depth= 0.44"
Routed to Reach C-2 : South Abutter Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 2-yr Rainfall=3.19"

Area (sf)	CN	Description
9,200	61	>75% Grass cover, Good, HSG B
9,200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	75	0.0667	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"

Subcatchment PDA-600: Site South Edge



Summary for Subcatchment PDA-700: Yard

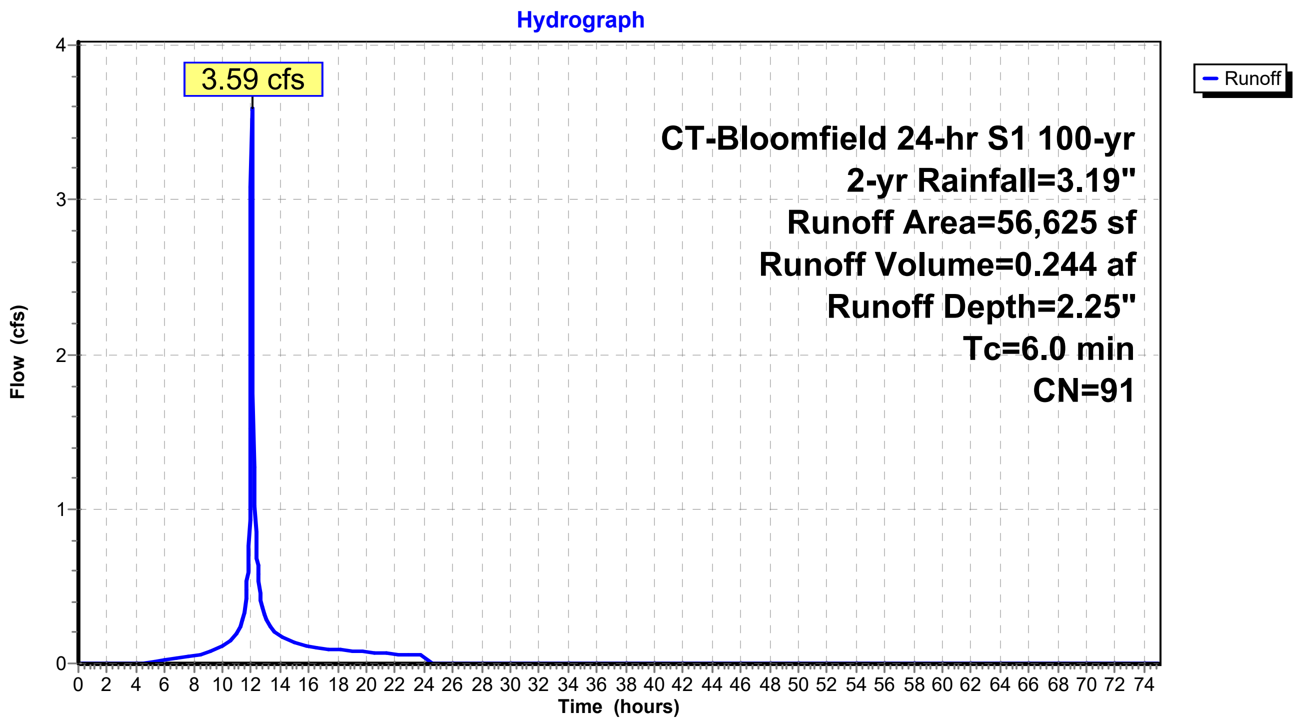
Runoff = 3.59 cfs @ 12.04 hrs, Volume= 0.244 af, Depth= 2.25"
Routed to Pond 5P : Surface Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 2-yr Rainfall=3.19"

Area (sf)	CN	Description
13,550	69	50-75% Grass cover, Fair, HSG B
43,075	98	Paved parking, HSG B
56,625	91	Weighted Average
13,550		23.93% Pervious Area
43,075		76.07% Impervious Area

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

Subcatchment PDA-700: Yard



Summary for Subcatchment PDA-800: Southeast Site

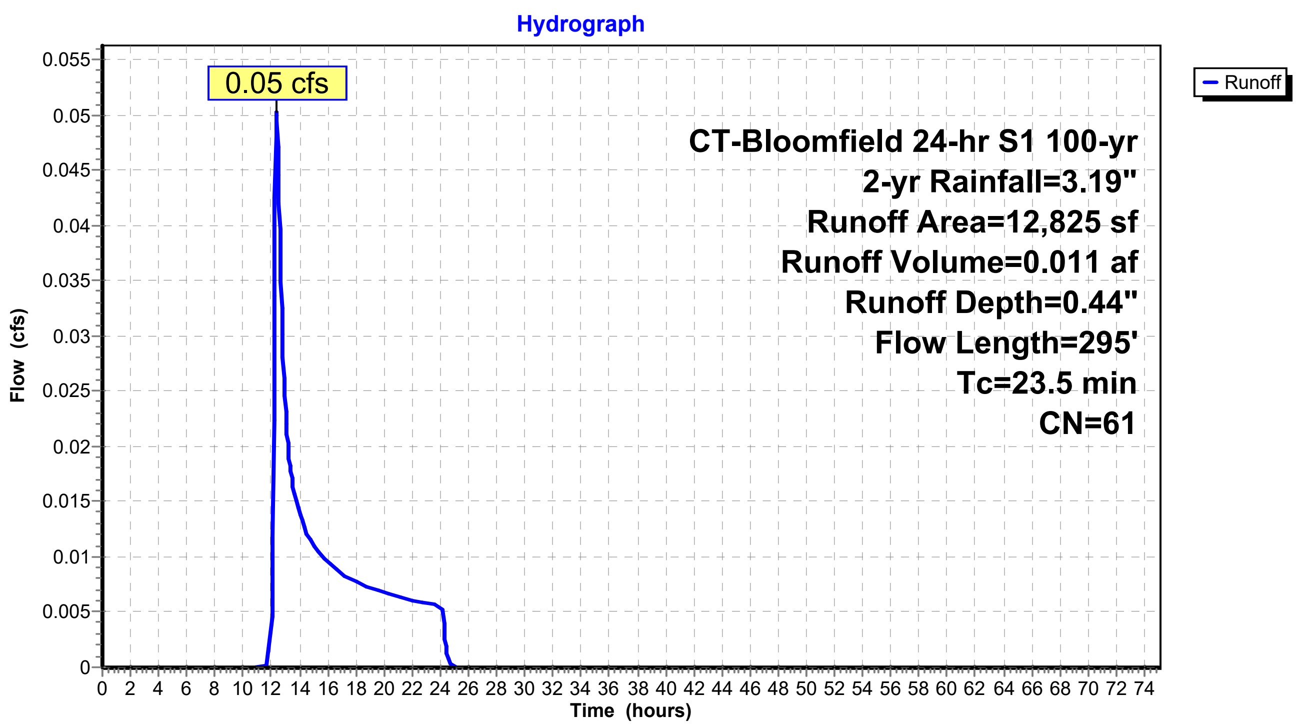
Runoff = 0.05 cfs @ 12.36 hrs, Volume= 0.011 af, Depth= 0.44"
Routed to Reach DP-4 : Corner Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 2-yr Rainfall=3.19"

Area (sf)	CN	Description
8,375	61	>75% Grass cover, Good, HSG B
4,450	60	Woods, Fair, HSG B
12,825	61	Weighted Average
12,825		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.3	100	0.0300	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
5.2	195	0.0154	0.62		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.5	295	Total			

Subcatchment PDA-800: Southeast Site



Summary for Subcatchment PDA-900: Driveway at Loading Dock and Yard

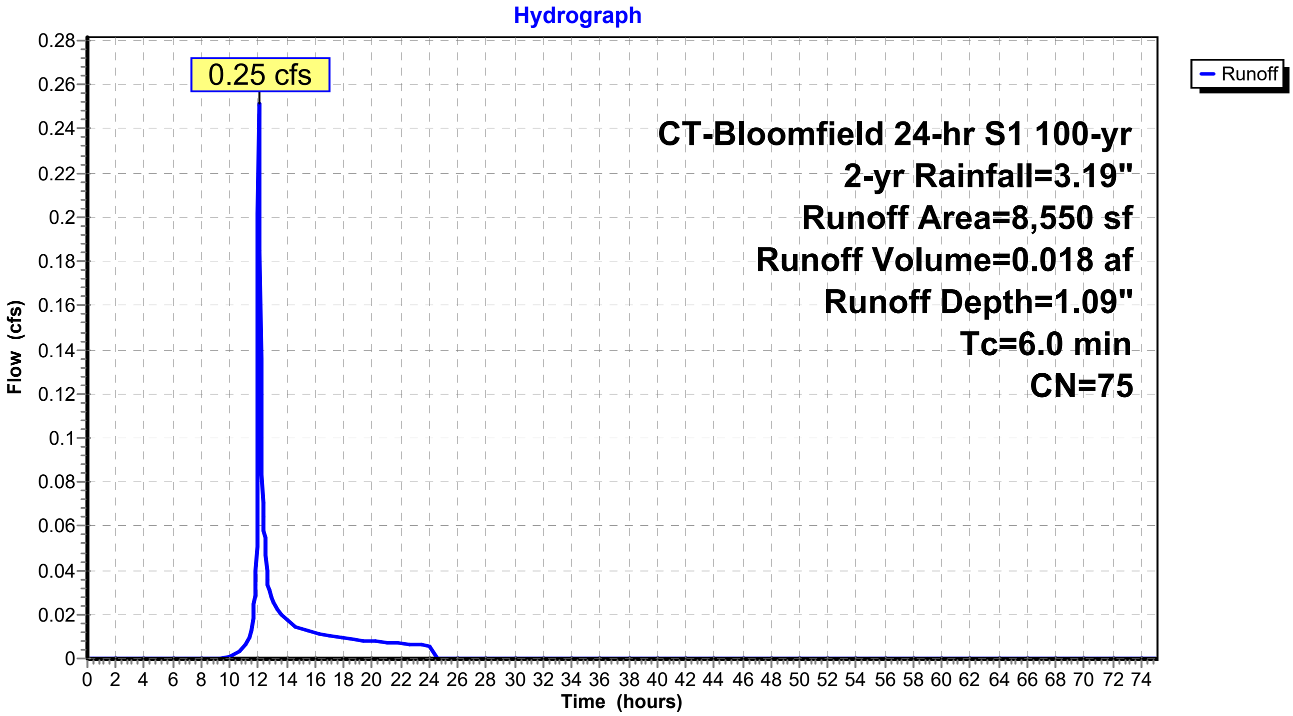
Runoff = 0.25 cfs @ 12.05 hrs, Volume= 0.018 af, Depth= 1.09"
Routed to Pond 4P : Underground Chamber System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 2-yr Rainfall=3.19"

Area (sf)	CN	Description
5,350	61	>75% Grass cover, Good, HSG B
3,200	98	Paved parking, HSG B
8,550	75	Weighted Average
5,350		62.57% Pervious Area
3,200		37.43% Impervious Area

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

Subcatchment PDA-900: Driveway at Loading Dock and Yard



Summary for Reach 6R: (new Reach)

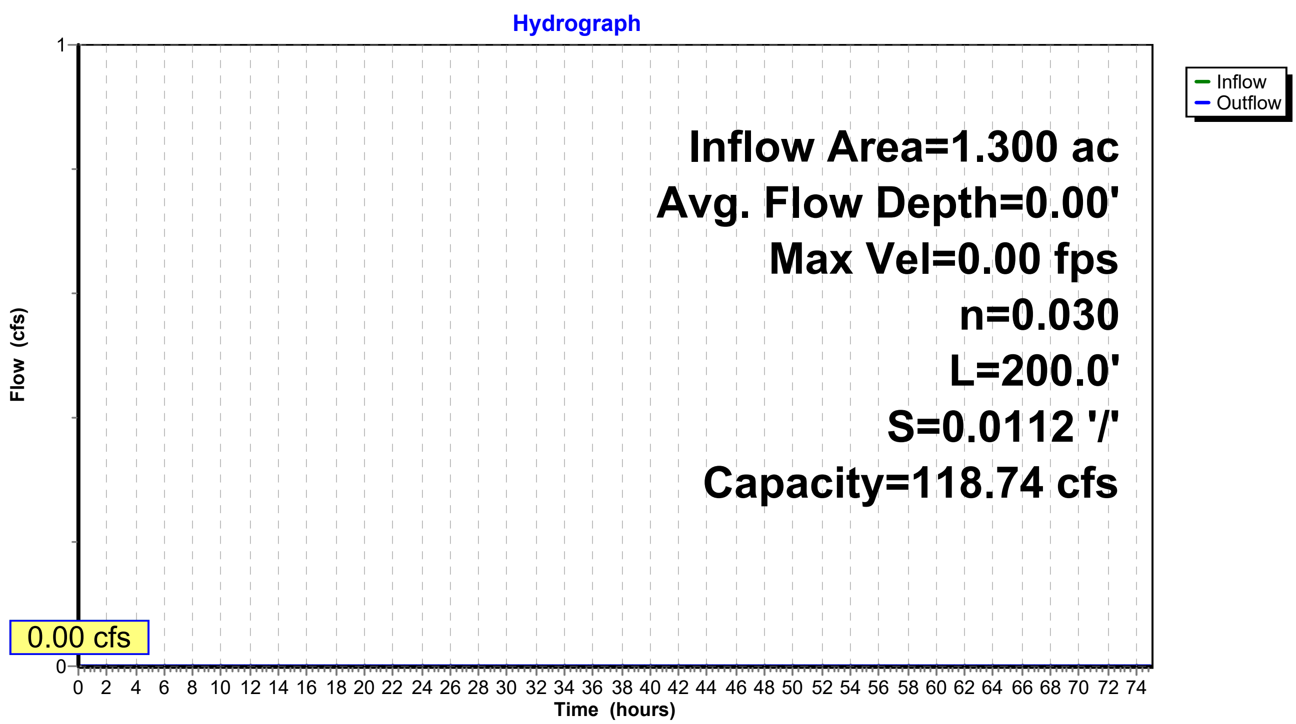
Inflow Area = 1.300 ac, 76.07% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-2 : South Wetland

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 118.74 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 200.0' Slope= 0.0112 '/'
Inlet Invert= 128.25', Outlet Invert= 126.00'

Reach 6R: (new Reach)



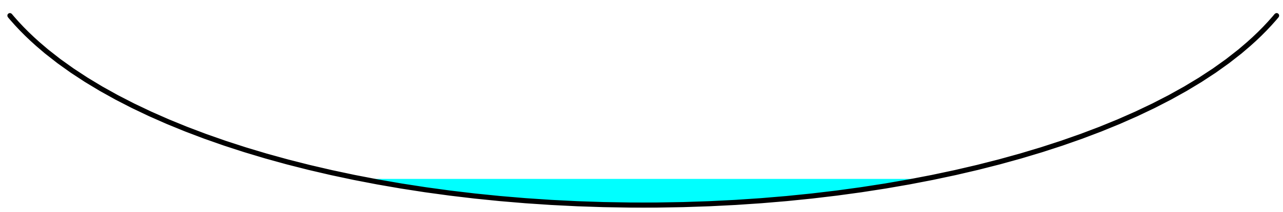
Summary for Reach C-1: Southwest channel

Inflow Area = 5.263 ac, 28.08% Impervious, Inflow Depth = 0.63" for 2-yr event
Inflow = 1.25 cfs @ 12.22 hrs, Volume= 0.278 af
Outflow = 1.12 cfs @ 12.71 hrs, Volume= 0.278 af, Atten= 10%, Lag= 29.3 min
Routed to Reach C-2 : South Abutter Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.55 fps, Min. Travel Time= 9.5 min
Avg. Velocity = 0.22 fps, Avg. Travel Time= 24.0 min

Peak Storage= 639 cf @ 12.55 hrs
Average Depth at Peak Storage= 0.28' , Surface Width= 11.14'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 81.72 cfs

30.00' x 2.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 312.0' Slope= 0.0064 '/'
Inlet Invert= 125.00', Outlet Invert= 123.00'



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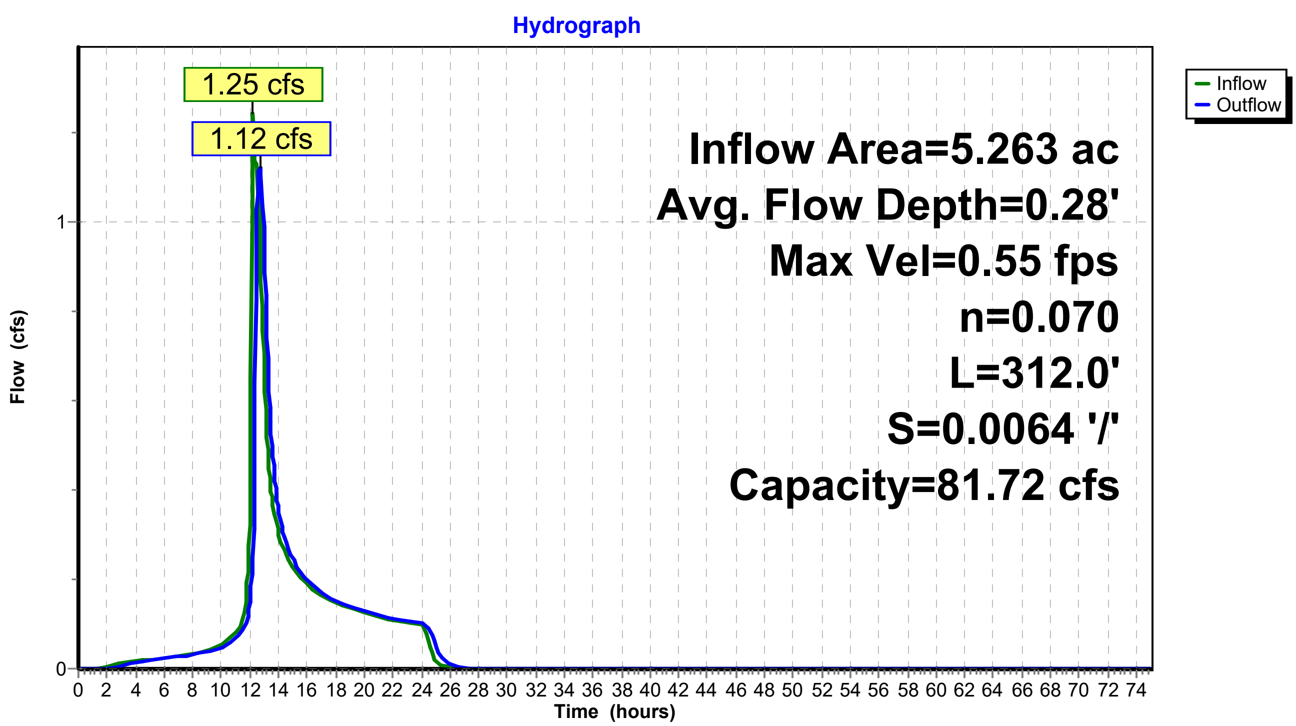
Reach C-1: Southwest channel



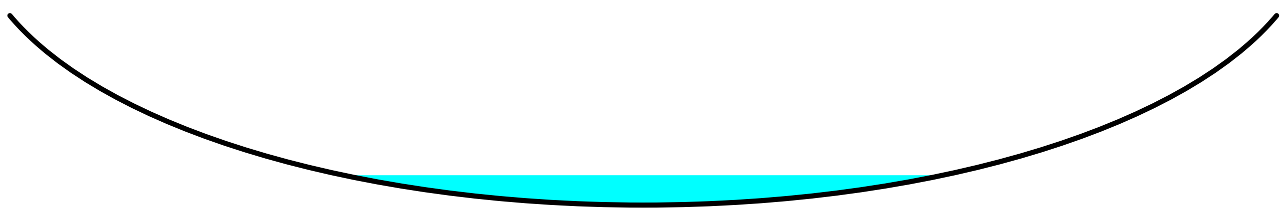
Summary for Reach C-2: South Abutter Channel

Inflow Area = 5.474 ac, 27.00% Impervious, Inflow Depth = 0.63" for 2-yr event
Inflow = 1.14 cfs @ 12.71 hrs, Volume= 0.286 af
Outflow = 1.13 cfs @ 12.86 hrs, Volume= 0.286 af, Atten= 1%, Lag= 9.1 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.78 fps, Min. Travel Time= 5.3 min
Avg. Velocity = 0.30 fps, Avg. Travel Time= 13.7 min

Peak Storage= 362 cf @ 12.77 hrs
Average Depth at Peak Storage= 0.16' , Surface Width= 13.86'
Bank-Full Depth= 1.00' Flow Area= 23.3 sf, Capacity= 62.53 cfs

35.00' x 1.00' deep Parabolic Channel, n= 0.050 Sluggish weedy reaches w/pools
Length= 250.0' Slope= 0.0140 '/'
Inlet Invert= 124.00', Outlet Invert= 120.50'



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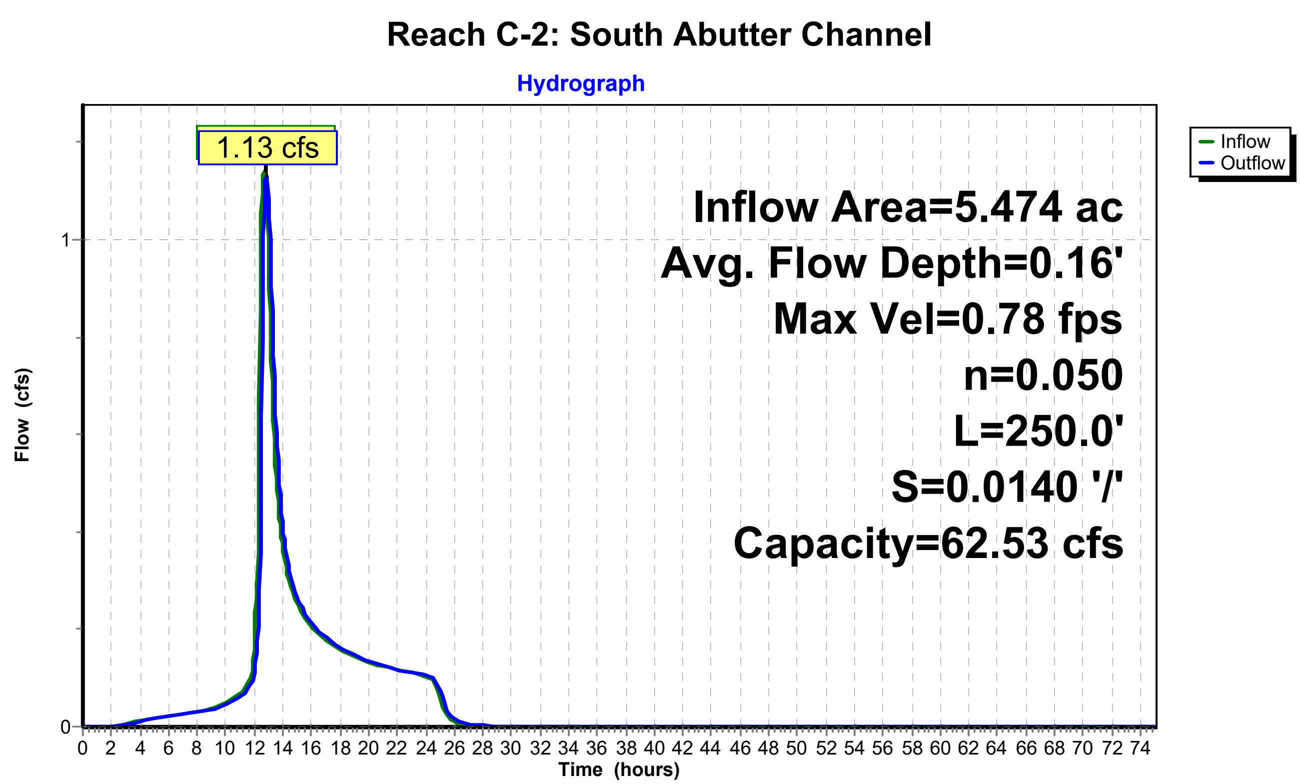


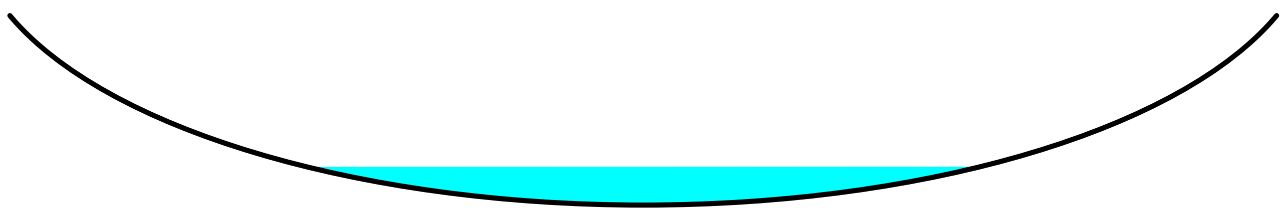
Summary for Reach DP-2: South Wetland

Inflow Area = 5.263 ac, 28.08% Impervious, Inflow Depth = 0.63" for 2-yr event
Inflow = 1.59 cfs @ 12.05 hrs, Volume= 0.278 af
Outflow = 1.25 cfs @ 12.22 hrs, Volume= 0.278 af, Atten= 22%, Lag= 10.7 min
Routed to Reach C-1 : Southwest channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.34 fps, Min. Travel Time= 6.3 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 16.2 min

Peak Storage= 472 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.20' , Surface Width= 26.96'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 40.17 cfs

60.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 130.0' Slope= 0.0038 '/'
Inlet Invert= 125.50', Outlet Invert= 125.00'



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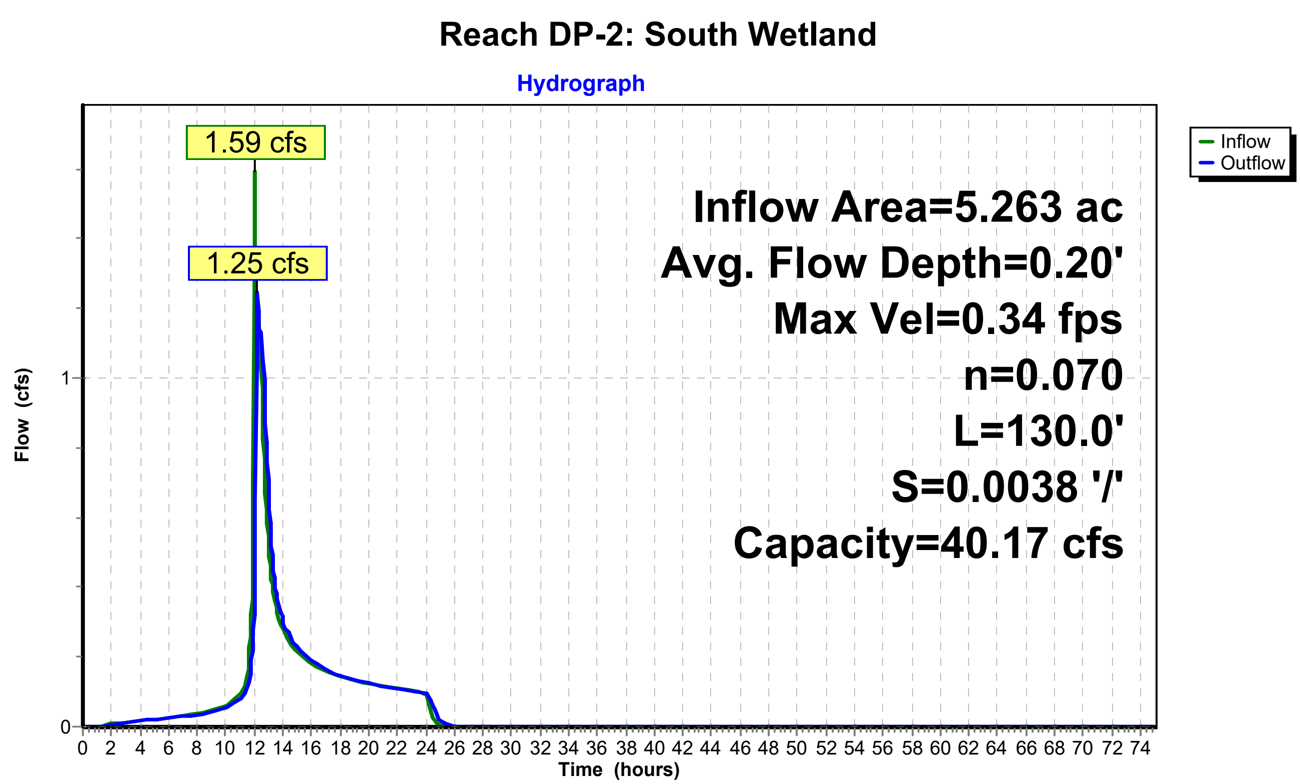
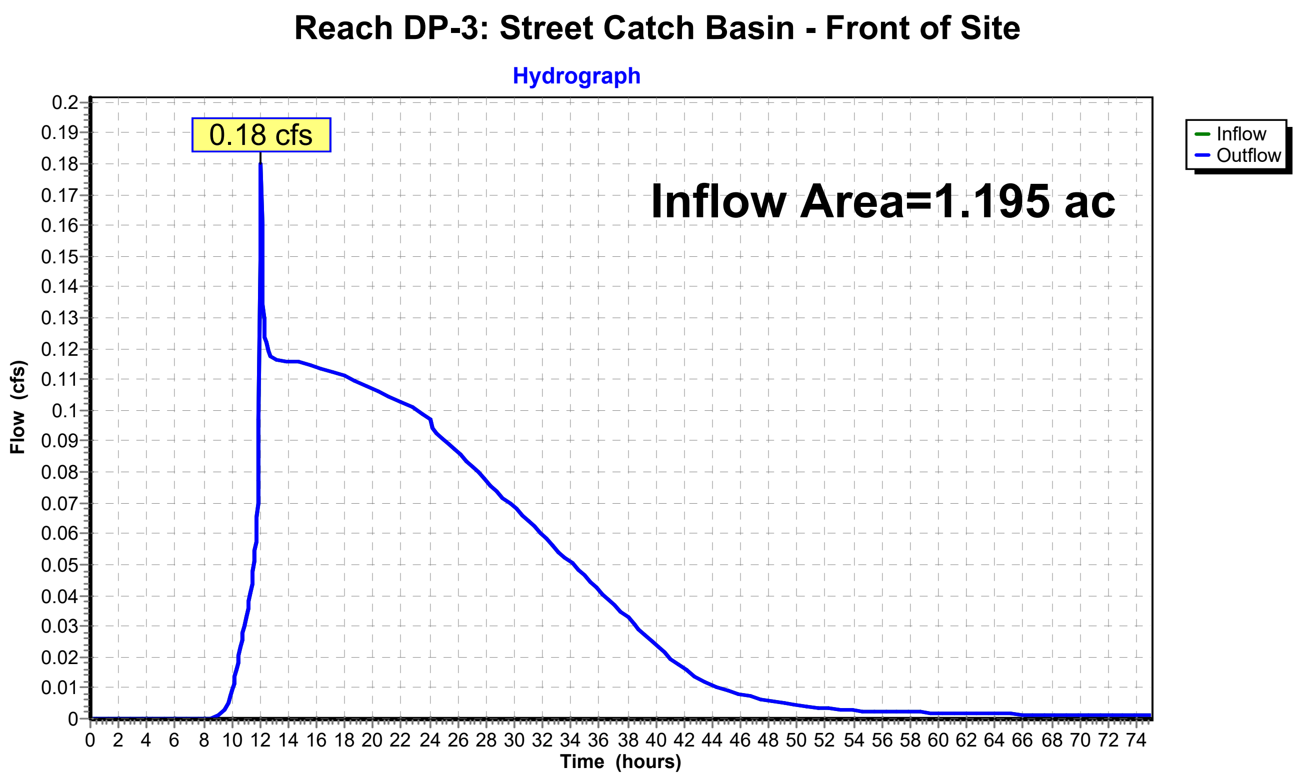


Summary for Reach DP-3: Street Catch Basin - Front of Site

Inflow Area = 1.195 ac, 79.50% Impervious, Inflow Depth > 2.08" for 2-yr event
Inflow = 0.18 cfs @ 12.06 hrs, Volume= 0.208 af
Outflow = 0.18 cfs @ 12.06 hrs, Volume= 0.208 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-5 : Northwood Drive System

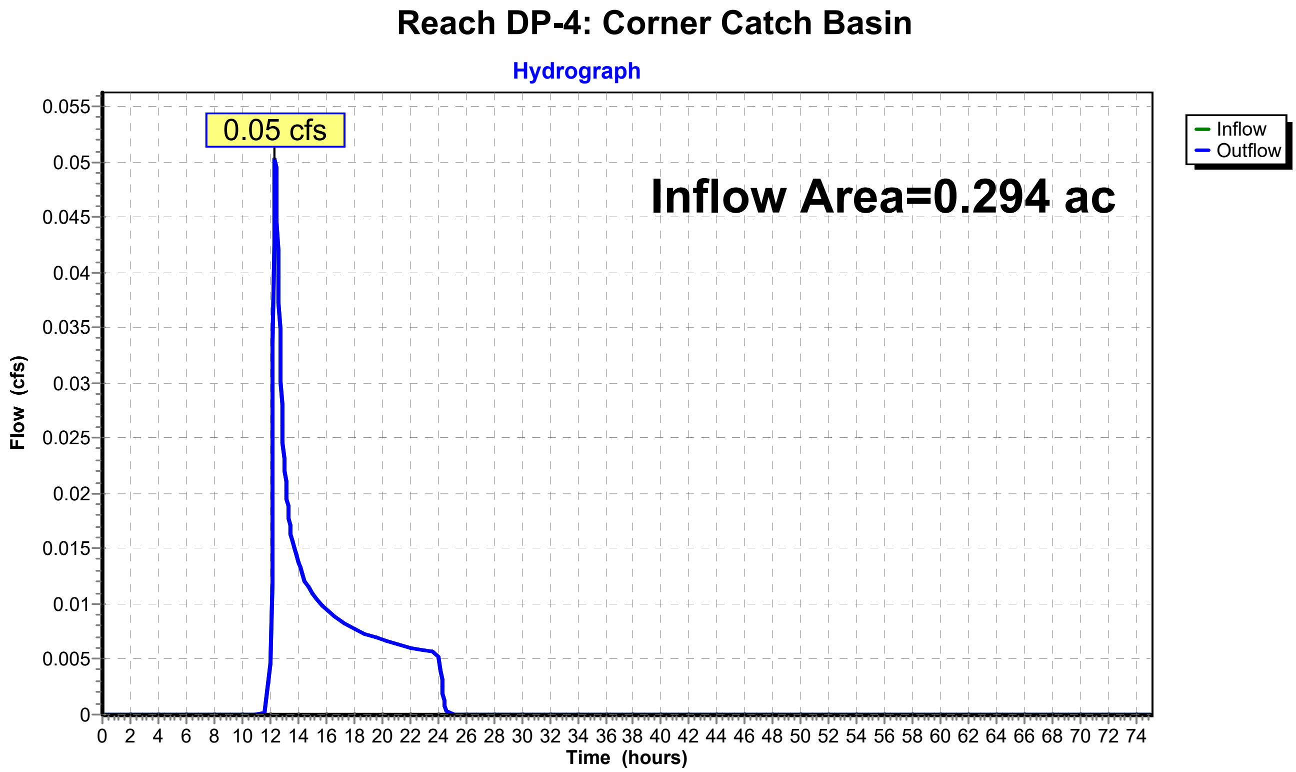
Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs



Summary for Reach DP-4: Corner Catch Basin

Inflow Area = 0.294 ac, 0.00% Impervious, Inflow Depth = 0.44" for 2-yr event
Inflow = 0.05 cfs @ 12.36 hrs, Volume= 0.011 af
Outflow = 0.05 cfs @ 12.36 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs

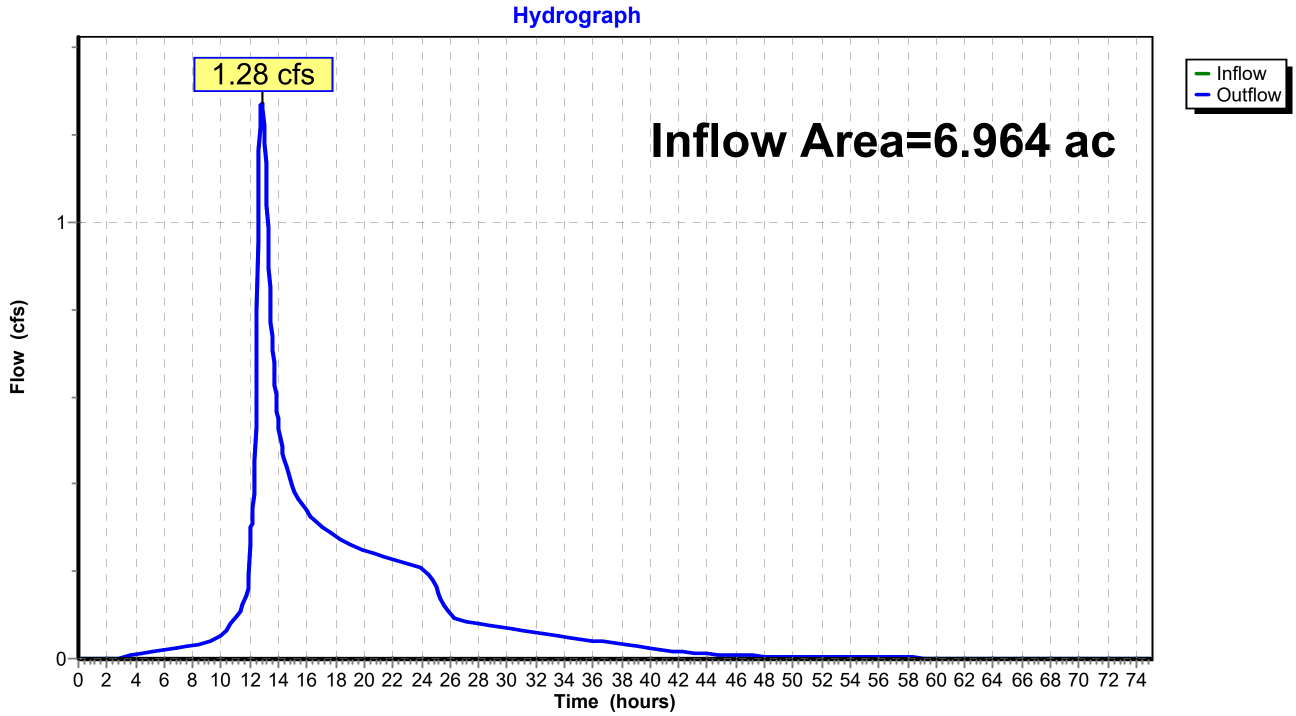


Summary for Reach DP-5: Northwood Drive System

Inflow Area = 6.964 ac, 34.87% Impervious, Inflow Depth > 0.87" for 2-yr event
Inflow = 1.28 cfs @ 12.85 hrs, Volume= 0.505 af
Outflow = 1.28 cfs @ 12.85 hrs, Volume= 0.505 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs

Reach DP-5: Northwood Drive System



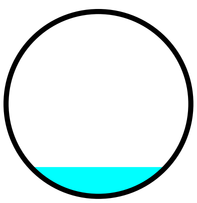
Summary for Reach IDP-1: Culvert

Inflow Area = 2.020 ac, 3.01% Impervious, Inflow Depth = 0.48" for 2-yr event
Inflow = 0.35 cfs @ 12.47 hrs, Volume= 0.080 af
Outflow = 0.35 cfs @ 12.51 hrs, Volume= 0.080 af, Atten= 1%, Lag= 2.7 min
Routed to Reach DP-2 : South Wetland

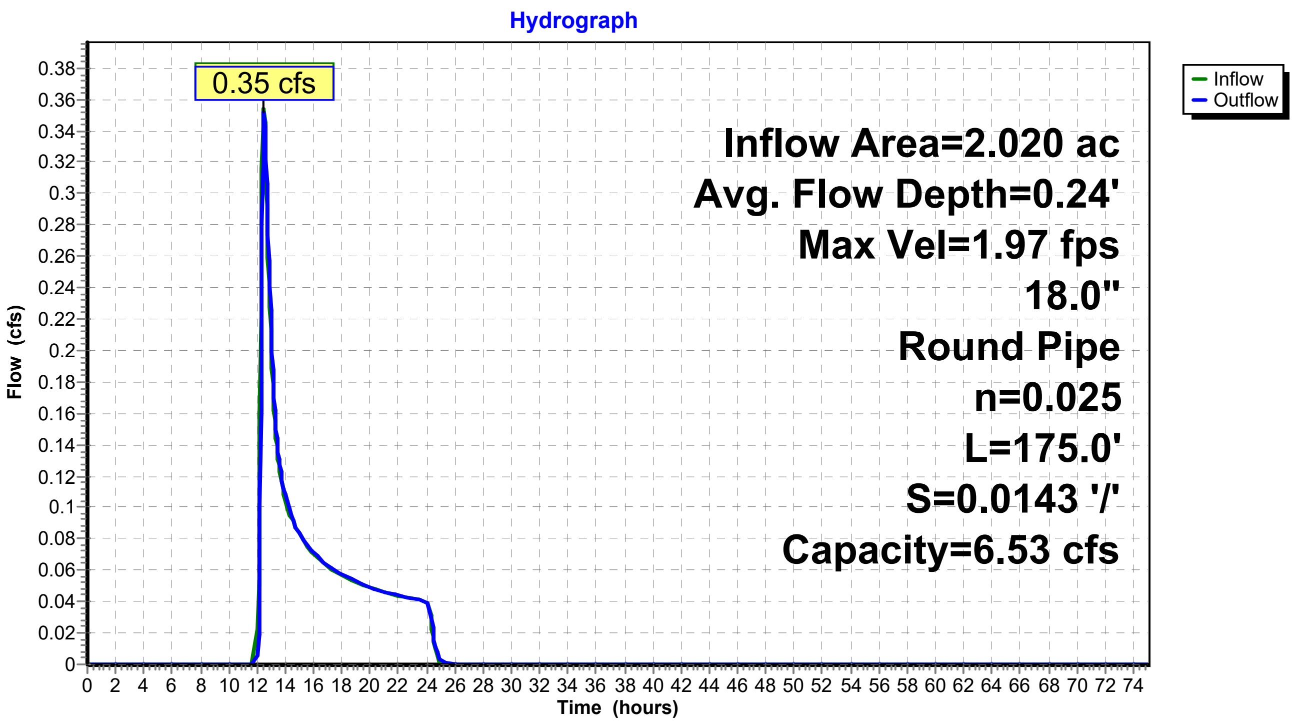
Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.97 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 1.12 fps, Avg. Travel Time= 2.6 min

Peak Storage= 31 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 1.09'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.53 cfs

18.0" Round Pipe
n= 0.025 Corrugated metal
Length= 175.0' Slope= 0.0143 '/'
Inlet Invert= 128.00', Outlet Invert= 125.50'



Reach IDP-1: Culvert



Summary for Pond 4P: Underground Chamber System

Inflow Area = 1.097 ac, 84.00% Impervious, Inflow Depth = 2.43" for 2-yr event
Inflow = 3.10 cfs @ 12.04 hrs, Volume= 0.223 af
Outflow = 0.11 cfs @ 15.24 hrs, Volume= 0.200 af, Atten= 96%, Lag= 192.1 min
Primary = 0.11 cfs @ 15.24 hrs, Volume= 0.200 af
Routed to Reach DP-3 : Street Catch Basin - Front of Site

Routing by Stor-Ind method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Peak Elev= 125.37' @ 15.24 hrs Surf.Area= 0.122 ac Storage= 0.140 af

Plug-Flow detention time= 741.8 min calculated for 0.200 af (90% of inflow)
Center-of-Mass det. time= 687.6 min (1,475.6 - 788.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	124.00'	0.134 af	**44.25'W x 120.42'L x 4.75'H Field A** 0.581 af Overall - 0.246 af Embedded = 0.335 af x 40.0% Voids
#2A	124.00'	0.246 af	**ADS_StormTech MC-3500 d +Cap** x 96 Inside #1 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 96 Chambers in 6 Rows Cap Storage= 14.9 cf x 2 x 6 rows = 178.8 cf
		0.380 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	124.00'	**12.0" Round Culvert** L= 200.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 124.00' / 123.00' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	126.75'	**4.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Device 1	124.20'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.11 cfs @ 15.24 hrs HW=125.37' (Free Discharge)
└─**1=Culvert** (Passes 0.11 cfs of 2.82 cfs potential flow)
  ├─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 0.11 cfs @ 5.01 fps)

Pond 4P: Underground Chamber System - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
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
Cap Storage= 14.9 cf x 2 x 6 rows = 178.8 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

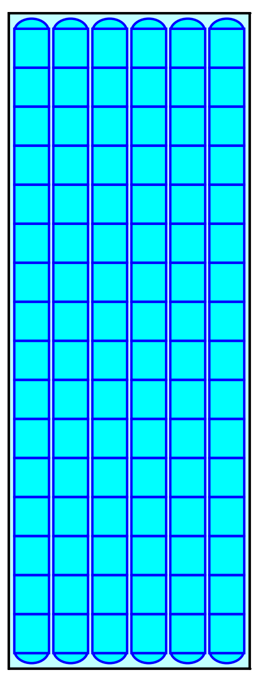
16 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 118.42' Row Length +12.0" End Stone x 2 = 120.42' Base Length
6 Rows x 77.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 44.25' Base Width
45.0" Chamber Height + 12.0" Stone Cover = 4.75' Field Height

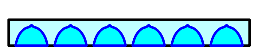
96 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 6 Rows = 10,734.2 cf Chamber Storage

25,310.8 cf Field - 10,734.2 cf Chambers = 14,576.6 cf Stone x 40.0% Voids = 5,830.6 cf Stone Storage

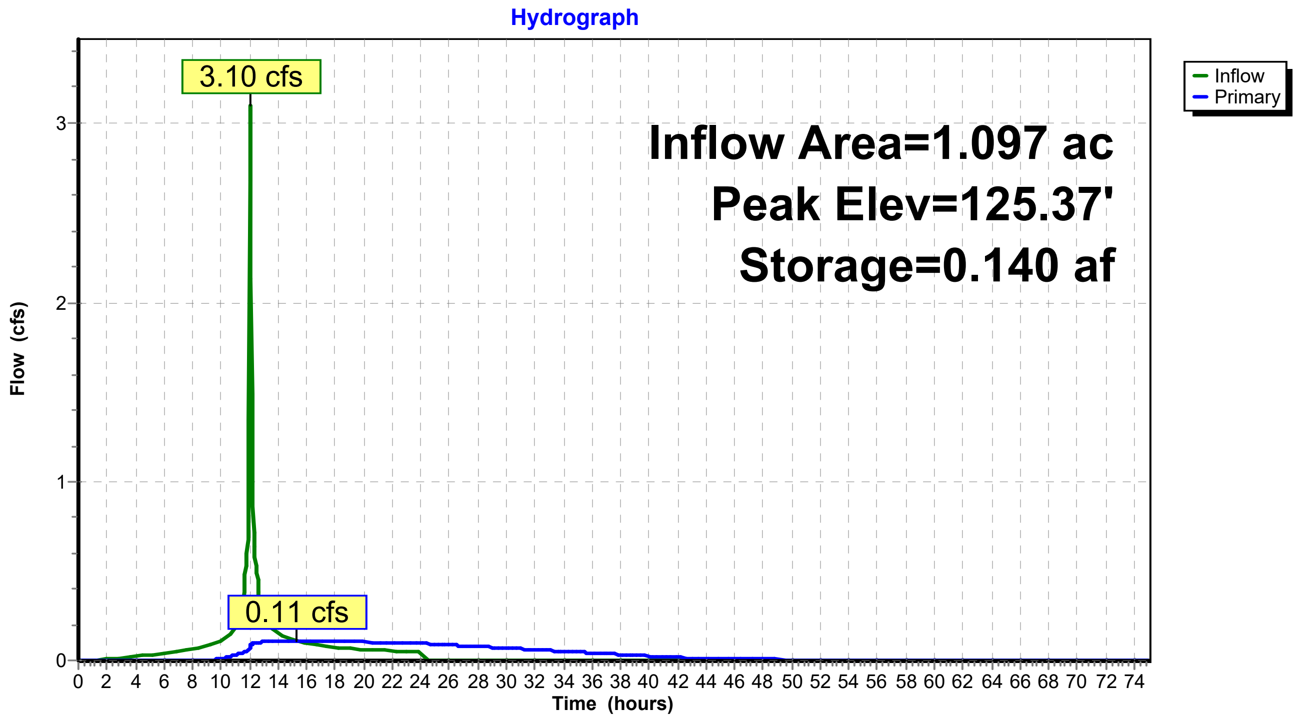
Chamber Storage + Stone Storage = 16,564.8 cf = 0.380 af
Overall Storage Efficiency = 65.4%
Overall System Size = 120.42' x 44.25' x 4.75'

96 Chambers
937.4 cy Field
539.9 cy Stone





Pond 4P: Underground Chamber System



Summary for Pond 5P: Surface Basin

Inflow Area = 1.300 ac, 76.07% Impervious, Inflow Depth = 2.25" for 2-yr event
Inflow = 3.59 cfs @ 12.04 hrs, Volume= 0.244 af
Outflow = 0.18 cfs @ 14.02 hrs, Volume= 0.244 af, Atten= 95%, Lag= 118.9 min
Discarded = 0.18 cfs @ 14.02 hrs, Volume= 0.244 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 6R : (new Reach)

Routing by Stor-Ind method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Peak Elev= 126.58' @ 14.02 hrs Surf.Area= 8,020 sf Storage= 4,436 cf

Plug-Flow detention time= 240.3 min calculated for 0.243 af (100% of inflow)
Center-of-Mass det. time= 240.3 min (1,058.5 - 818.2)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	27,705 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

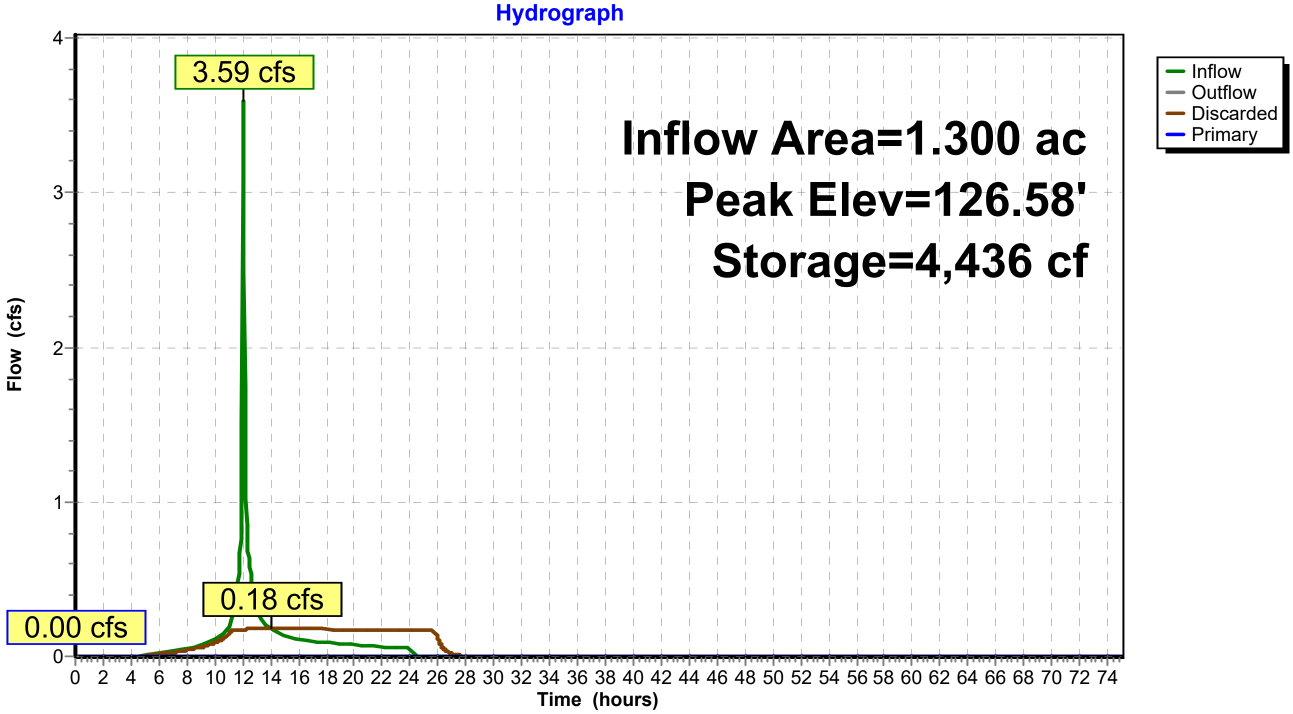
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
126.00	7,405	0	0
127.00	8,475	7,940	7,940
128.00	10,160	9,318	17,258
129.00	10,735	10,448	27,705

Device	Routing	Invert	Outlet Devices
#1	Discarded	126.00'	**0.960 in/hr Exfiltration over Surface area**
#2	Primary	128.25'	**Channel/Reach** using Reach 6R: (new Reach)

Discarded OutFlow Max=0.18 cfs @ 14.02 hrs HW=126.58' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.00' (Free Discharge)
└─**2=Channel/Reach** (Controls 0.00 cfs)

Pond 5P: Surface Basin



Time span=0.00-75.00 hrs, dt=0.05 hrs, 1501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PDA-100: Site North Runoff Area=88,000 sf 3.01% Impervious Runoff Depth=1.50"
Flow Length=360' Tc=30.5 min CN=62 Runoff=1.60 cfs 0.253 af

Subcatchment PDA-1000: Yard between Runoff Area=4,275 sf 29.24% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=72 Runoff=0.27 cfs 0.019 af

Subcatchment PDA-200: Building Runoff Area=17,850 sf 100.00% Impervious Runoff Depth=4.86"
Tc=6.0 min CN=98 Runoff=2.19 cfs 0.166 af

Subcatchment PDA-300: Parking lot Runoff Area=21,400 sf 89.25% Impervious Runoff Depth=4.41"
Tc=6.0 min CN=94 Runoff=2.52 cfs 0.180 af

Subcatchment PDA-400: Rear Parking lot Runoff Area=18,850 sf 98.94% Impervious Runoff Depth=4.86"
Tc=6.0 min CN=98 Runoff=2.31 cfs 0.175 af

Subcatchment PDA-500: Site West Runoff Area=65,775 sf 0.00% Impervious Runoff Depth=1.95"
Flow Length=140' Tc=23.7 min CN=68 Runoff=1.91 cfs 0.246 af

Subcatchment PDA-600: Site South Edge Runoff Area=9,200 sf 0.00% Impervious Runoff Depth=1.43"
Flow Length=75' Slope=0.0667 '/' Tc=10.6 min CN=61 Runoff=0.27 cfs 0.025 af

Subcatchment PDA-700: Yard Runoff Area=56,625 sf 76.07% Impervious Runoff Depth=4.08"
Tc=6.0 min CN=91 Runoff=6.35 cfs 0.442 af

Subcatchment PDA-800: Southeast Site Runoff Area=12,825 sf 0.00% Impervious Runoff Depth=1.43"
Flow Length=295' Tc=23.5 min CN=61 Runoff=0.25 cfs 0.035 af

Subcatchment PDA-900: Driveway at Runoff Area=8,550 sf 37.43% Impervious Runoff Depth=2.53"
Tc=6.0 min CN=75 Runoff=0.62 cfs 0.041 af

Reach 6R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=200.0' S=0.0112 '/' Capacity=118.74 cfs Outflow=0.00 cfs 0.000 af

Reach C-1: Southwest channel Avg. Flow Depth=0.47' Max Vel=0.79 fps Inflow=3.74 cfs 0.673 af
n=0.070 L=312.0' S=0.0064 '/' Capacity=81.72 cfs Outflow=3.61 cfs 0.673 af

Reach C-2: South Abutter Channel Avg. Flow Depth=0.27' Max Vel=1.12 fps Inflow=3.68 cfs 0.699 af
n=0.050 L=250.0' S=0.0140 '/' Capacity=62.53 cfs Outflow=3.63 cfs 0.699 af

Reach DP-2: South Wetland Avg. Flow Depth=0.33' Max Vel=0.48 fps Inflow=3.82 cfs 0.673 af
n=0.070 L=130.0' S=0.0038 '/' Capacity=40.17 cfs Outflow=3.74 cfs 0.673 af

Reach DP-3: Street Catch Basin - Front of Site Inflow=0.39 cfs 0.383 af
Outflow=0.39 cfs 0.383 af

Reach DP-4: Corner Catch Basin Inflow=0.25 cfs 0.035 af
Outflow=0.25 cfs 0.035 af

Reach DP-5: Northwood Drive System Inflow=3.93 cfs 1.117 af
Outflow=3.93 cfs 1.117 af

Reach IDP-1: Culvert Avg. Flow Depth=0.51' Max Vel=3.05 fps Inflow=1.60 cfs 0.253 af
18.0" Round Pipe n=0.025 L=175.0' S=0.0143 '/' Capacity=6.53 cfs Outflow=1.59 cfs 0.253 af

Pond 4P: Underground Chamber System Peak Elev=126.55' Storage=0.249 af Inflow=5.32 cfs 0.388 af
Outflow=0.16 cfs 0.364 af

Pond 5P: Surface Basin Peak Elev=127.21' Storage=9,747 cf Inflow=6.35 cfs 0.442 af
Discarded=0.20 cfs 0.442 af Primary=0.00 cfs 0.000 af Outflow=0.20 cfs 0.442 af

Total Runoff Area = 6.964 ac Runoff Volume = 1.582 af Average Runoff Depth = 2.73"
65.13% Pervious = 4.536 ac 34.87% Impervious = 2.428 ac

Summary for Subcatchment PDA-100: Site North

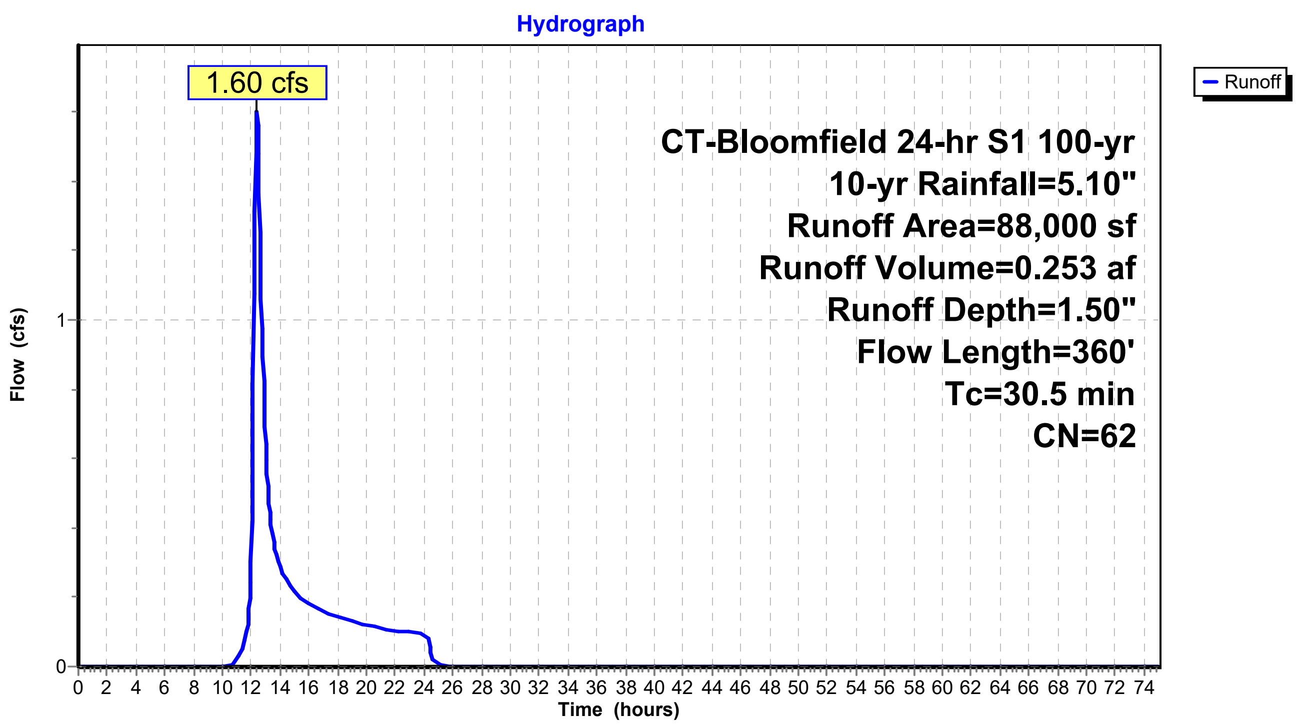
Runoff = 1.60 cfs @ 12.39 hrs, Volume= 0.253 af, Depth= 1.50"
Routed to Reach IDP-1 : Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 10-yr Rainfall=5.10"

Area (sf)	CN	Description
475	39	>75% Grass cover, Good, HSG A
14,975	61	>75% Grass cover, Good, HSG B
7,250	36	Woods, Fair, HSG A
50,550	60	Woods, Fair, HSG B
2,650	98	Paved parking, HSG A
12,100	79	Woods, Fair, HSG D
88,000	62	Weighted Average
85,350		96.99% Pervious Area
2,650		3.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4	100	0.0180	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
8.1	260	0.0115	0.54		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
30.5	360	Total			

Subcatchment PDA-100: Site North



Summary for Subcatchment PDA-1000: Yard between Driveways

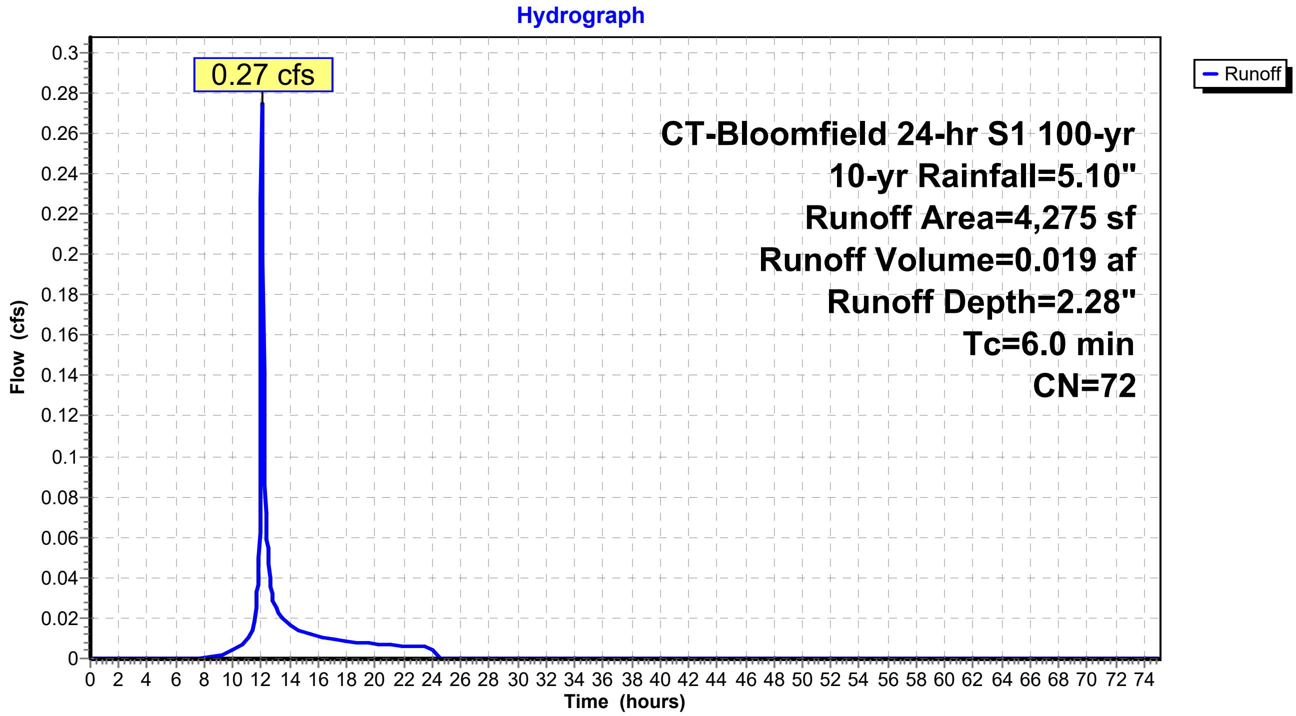
Runoff = 0.27 cfs @ 12.04 hrs, Volume= 0.019 af, Depth= 2.28"
Routed to Reach DP-3 : Street Catch Basin - Front of Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 10-yr Rainfall=5.10"

Area (sf)	CN	Description
3,025	61	>75% Grass cover, Good, HSG B
1,250	98	Paved parking, HSG B
4,275	72	Weighted Average
3,025		70.76% Pervious Area
1,250		29.24% Impervious Area

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

Subcatchment PDA-1000: Yard between Driveways



Summary for Subcatchment PDA-200: Building

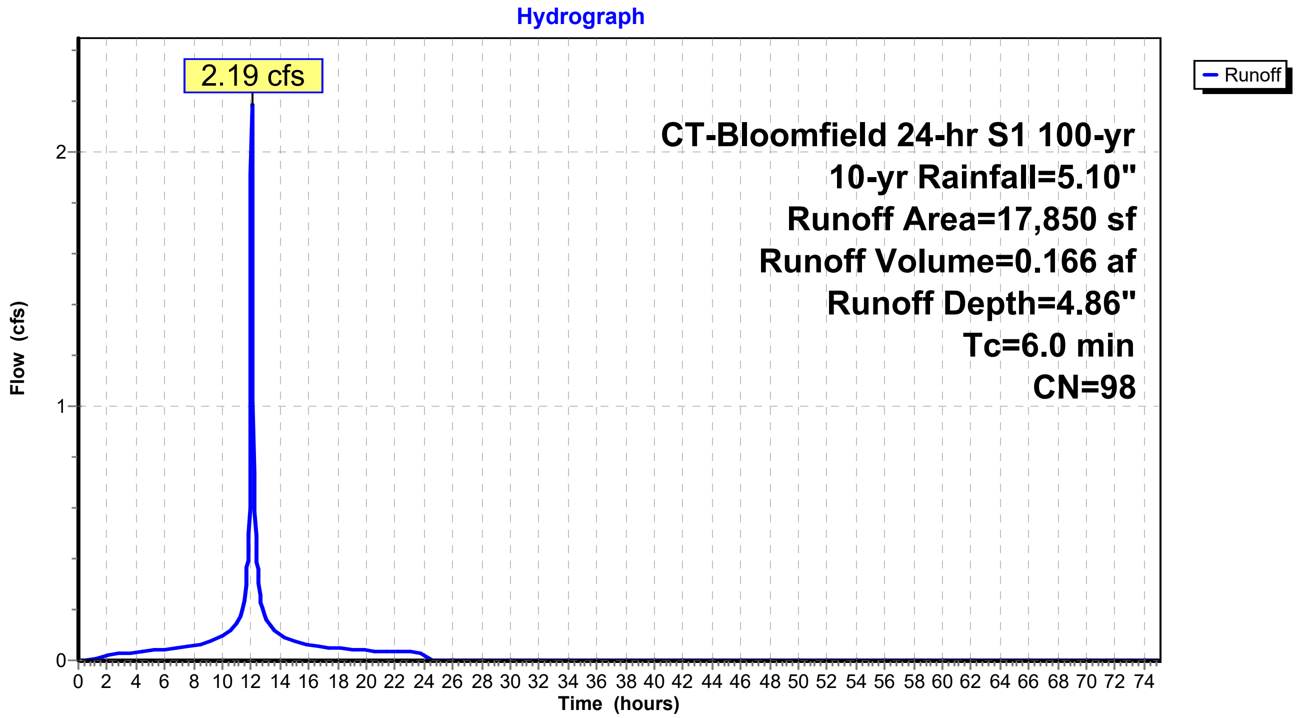
Runoff = 2.19 cfs @ 12.04 hrs, Volume= 0.166 af, Depth= 4.86"
Routed to Pond 4P : Underground Chamber System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 10-yr Rainfall=5.10"

Area (sf)	CN	Description
17,850	98	Roofs, HSG A
17,850		100.00% Impervious Area

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

Subcatchment PDA-200: Building



Summary for Subcatchment PDA-300: Parking lot

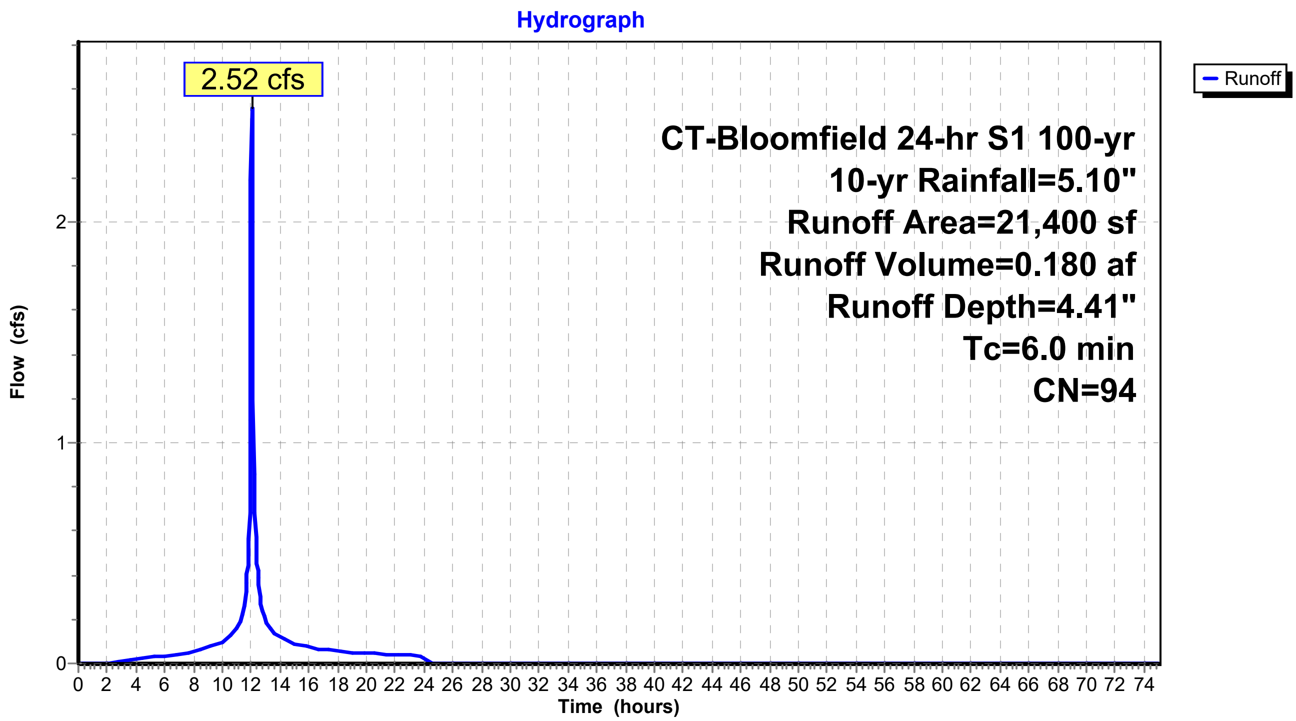
Runoff = 2.52 cfs @ 12.04 hrs, Volume= 0.180 af, Depth= 4.41"
Routed to Pond 4P : Underground Chamber System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 10-yr Rainfall=5.10"

Area (sf)	CN	Description
2,300	61	>75% Grass cover, Good, HSG B
19,100	98	Paved parking, HSG B
21,400	94	Weighted Average
2,300		10.75% Pervious Area
19,100		89.25% Impervious Area

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

Subcatchment PDA-300: Parking lot



Summary for Subcatchment PDA-400: Rear Parking lot

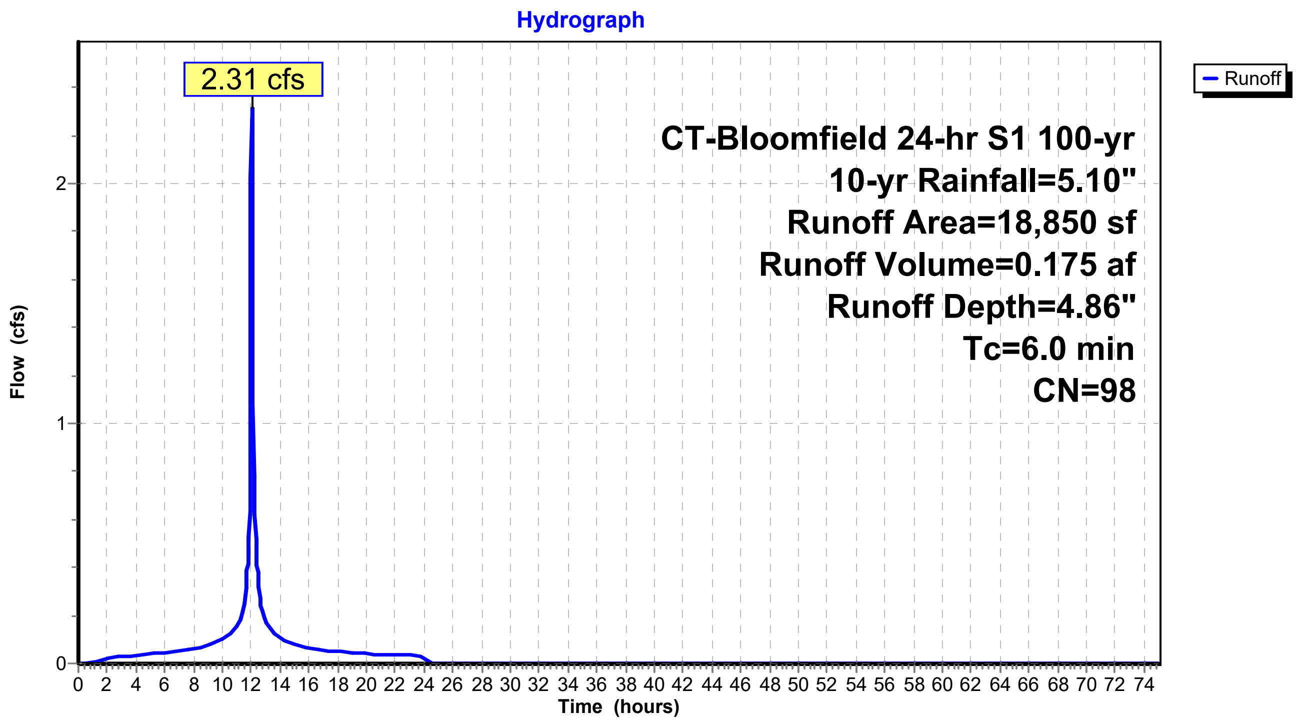
Runoff = 2.31 cfs @ 12.04 hrs, Volume= 0.175 af, Depth= 4.86"
Routed to Reach DP-2 : South Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 10-yr Rainfall=5.10"

Area (sf)	CN	Description
200	61	>75% Grass cover, Good, HSG B
18,650	98	Paved parking, HSG B
18,850	98	Weighted Average
200		1.06% Pervious Area
18,650		98.94% Impervious Area

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

Subcatchment PDA-400: Rear Parking lot



Summary for Subcatchment PDA-500: Site West

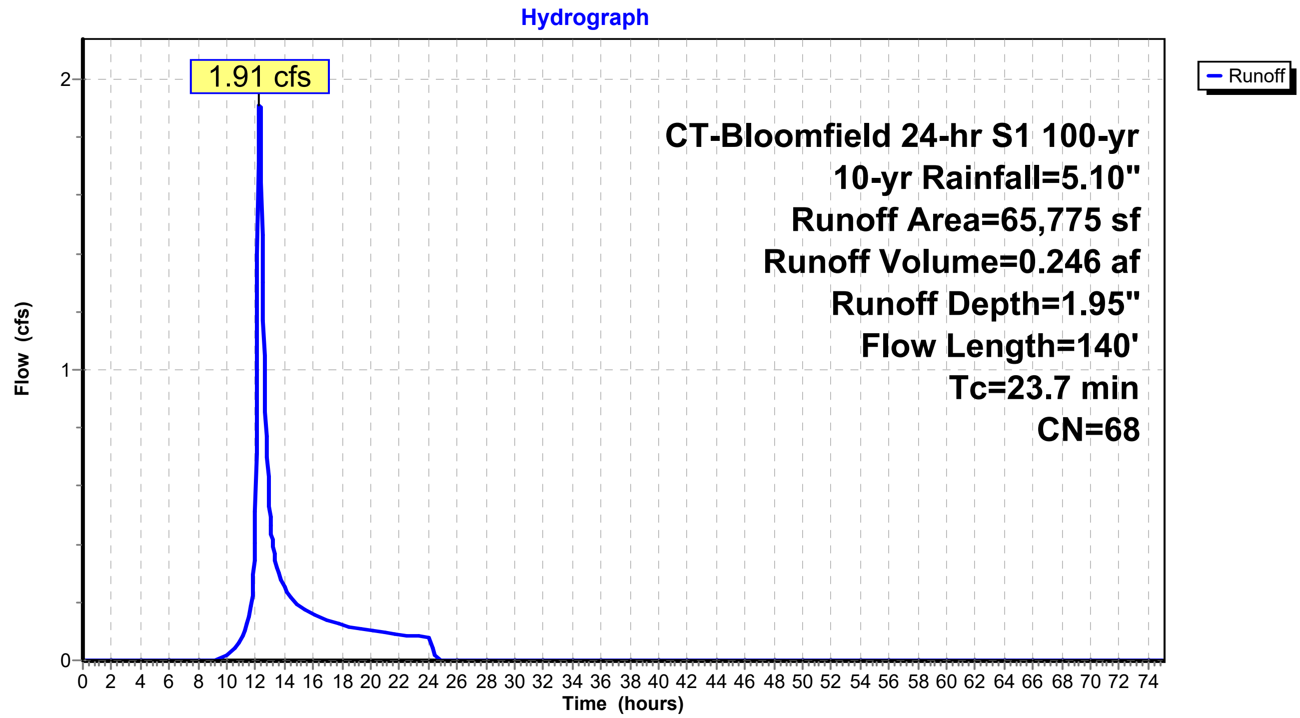
Runoff = 1.91 cfs @ 12.29 hrs, Volume= 0.246 af, Depth= 1.95"
Routed to Reach DP-2 : South Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 10-yr Rainfall=5.10"

Area (sf)	CN	Description
13,475	61	>75% Grass cover, Good, HSG B
25,350	60	Woods, Fair, HSG B
26,950	79	Woods, Fair, HSG D
65,775	68	Weighted Average
65,775		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	20	0.3330	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.19"
22.8	120	0.0250	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
23.7	140	Total			

Subcatchment PDA-500: Site West



Summary for Subcatchment PDA-600: Site South Edge

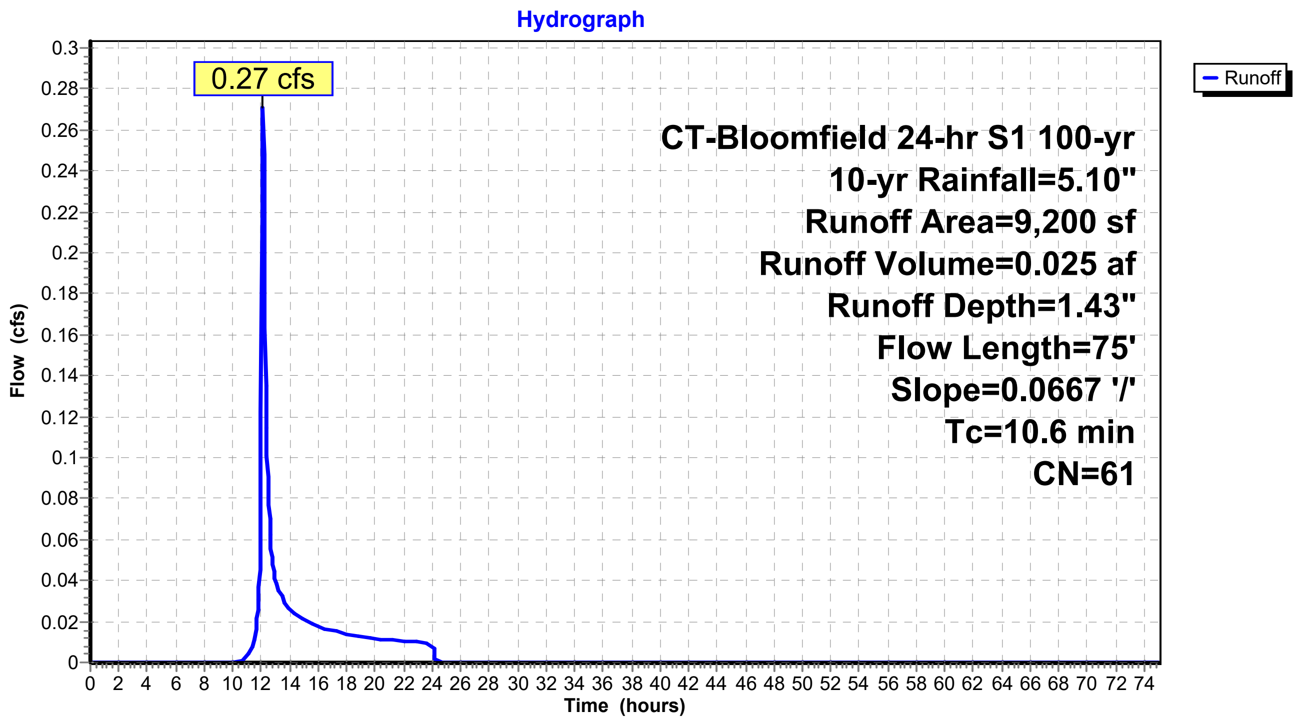
Runoff = 0.27 cfs @ 12.11 hrs, Volume= 0.025 af, Depth= 1.43"
Routed to Reach C-2 : South Abutter Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 10-yr Rainfall=5.10"

Area (sf)	CN	Description
9,200	61	>75% Grass cover, Good, HSG B
9,200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	75	0.0667	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"

Subcatchment PDA-600: Site South Edge



Summary for Subcatchment PDA-700: Yard

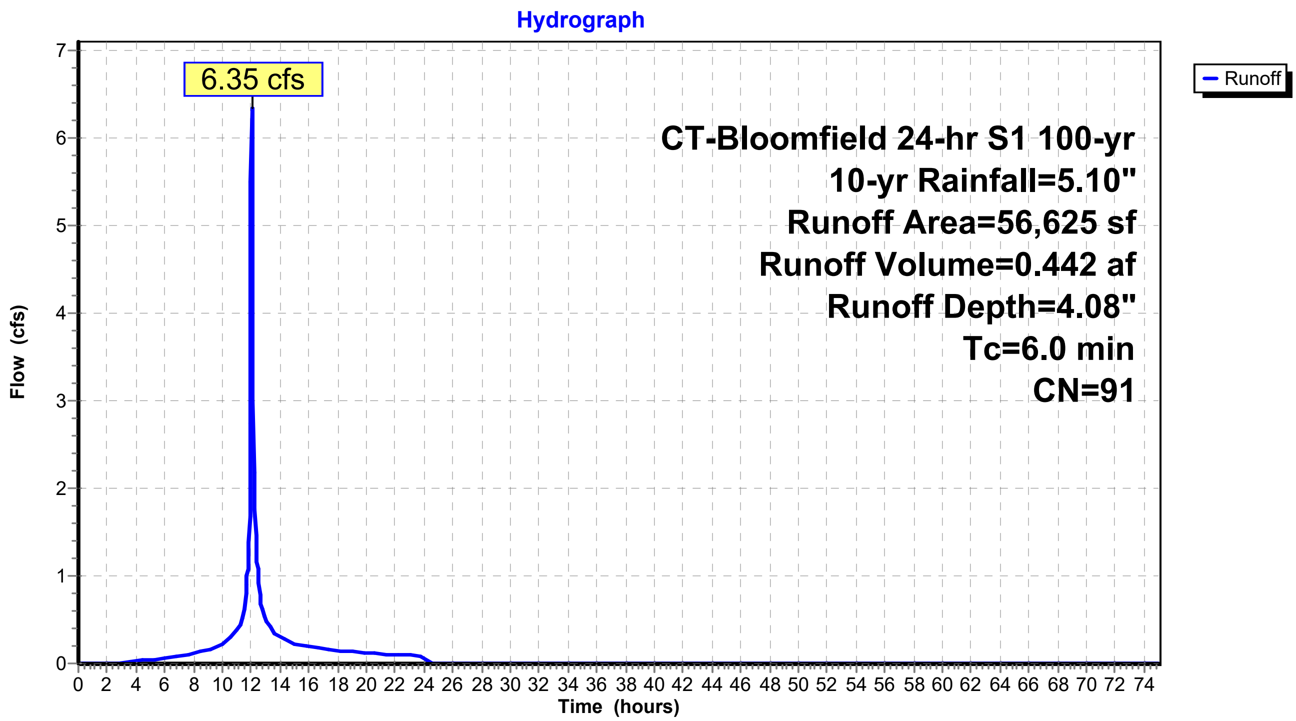
Runoff = 6.35 cfs @ 12.04 hrs, Volume= 0.442 af, Depth= 4.08"
Routed to Pond 5P : Surface Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 10-yr Rainfall=5.10"

Area (sf)	CN	Description
13,550	69	50-75% Grass cover, Fair, HSG B
43,075	98	Paved parking, HSG B
56,625	91	Weighted Average
13,550		23.93% Pervious Area
43,075		76.07% Impervious Area

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

Subcatchment PDA-700: Yard



Summary for Subcatchment PDA-800: Southeast Site

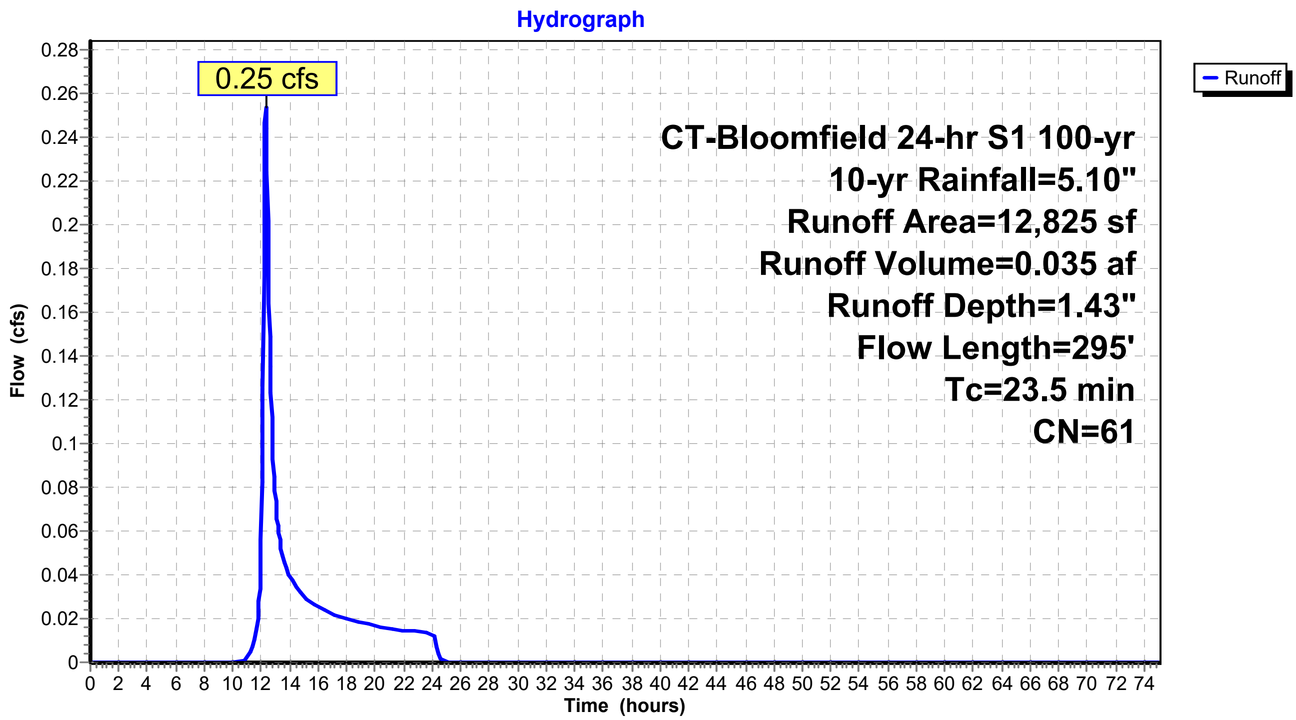
Runoff = 0.25 cfs @ 12.30 hrs, Volume= 0.035 af, Depth= 1.43"
Routed to Reach DP-4 : Corner Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 10-yr Rainfall=5.10"

Area (sf)	CN	Description
8,375	61	>75% Grass cover, Good, HSG B
4,450	60	Woods, Fair, HSG B
12,825	61	Weighted Average
12,825		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.3	100	0.0300	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
5.2	195	0.0154	0.62		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.5	295	Total			

Subcatchment PDA-800: Southeast Site



Summary for Subcatchment PDA-900: Driveway at Loading Dock and Yard

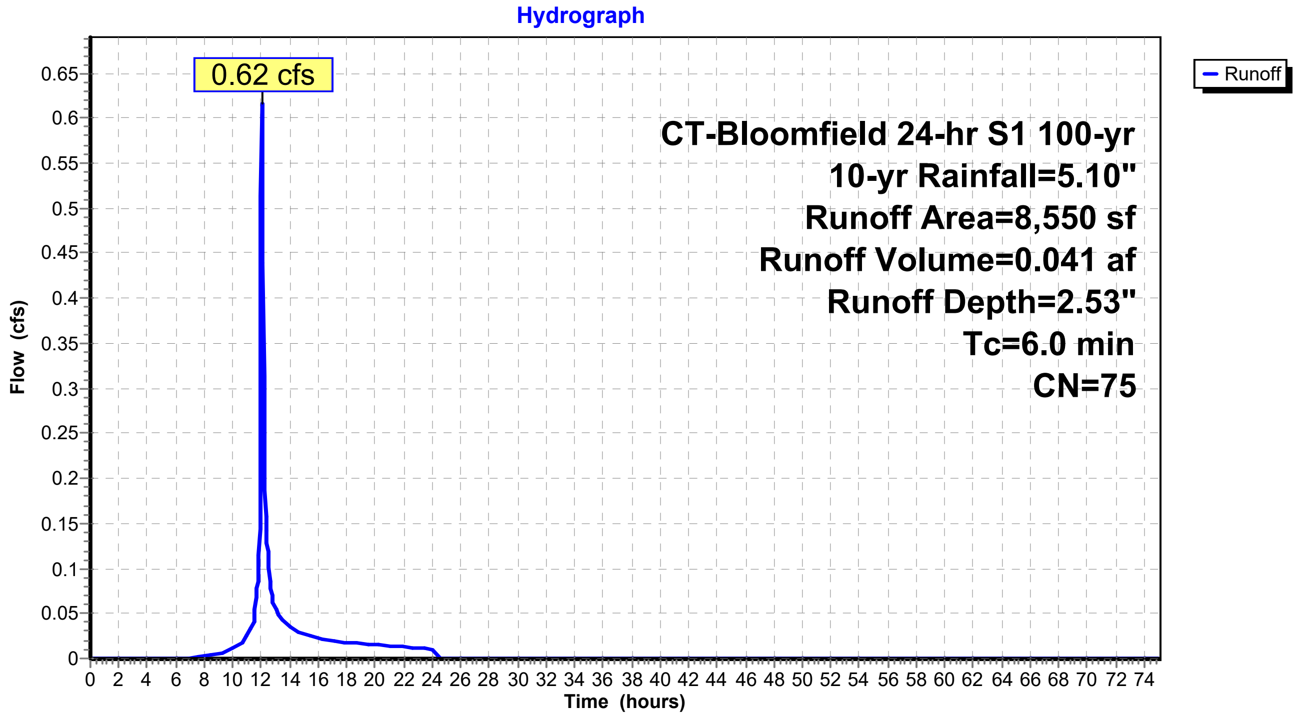
Runoff = 0.62 cfs @ 12.04 hrs, Volume= 0.041 af, Depth= 2.53"
Routed to Pond 4P : Underground Chamber System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 10-yr Rainfall=5.10"

Area (sf)	CN	Description
5,350	61	>75% Grass cover, Good, HSG B
3,200	98	Paved parking, HSG B
8,550	75	Weighted Average
5,350		62.57% Pervious Area
3,200		37.43% Impervious Area

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

Subcatchment PDA-900: Driveway at Loading Dock and Yard



Summary for Reach 6R: (new Reach)

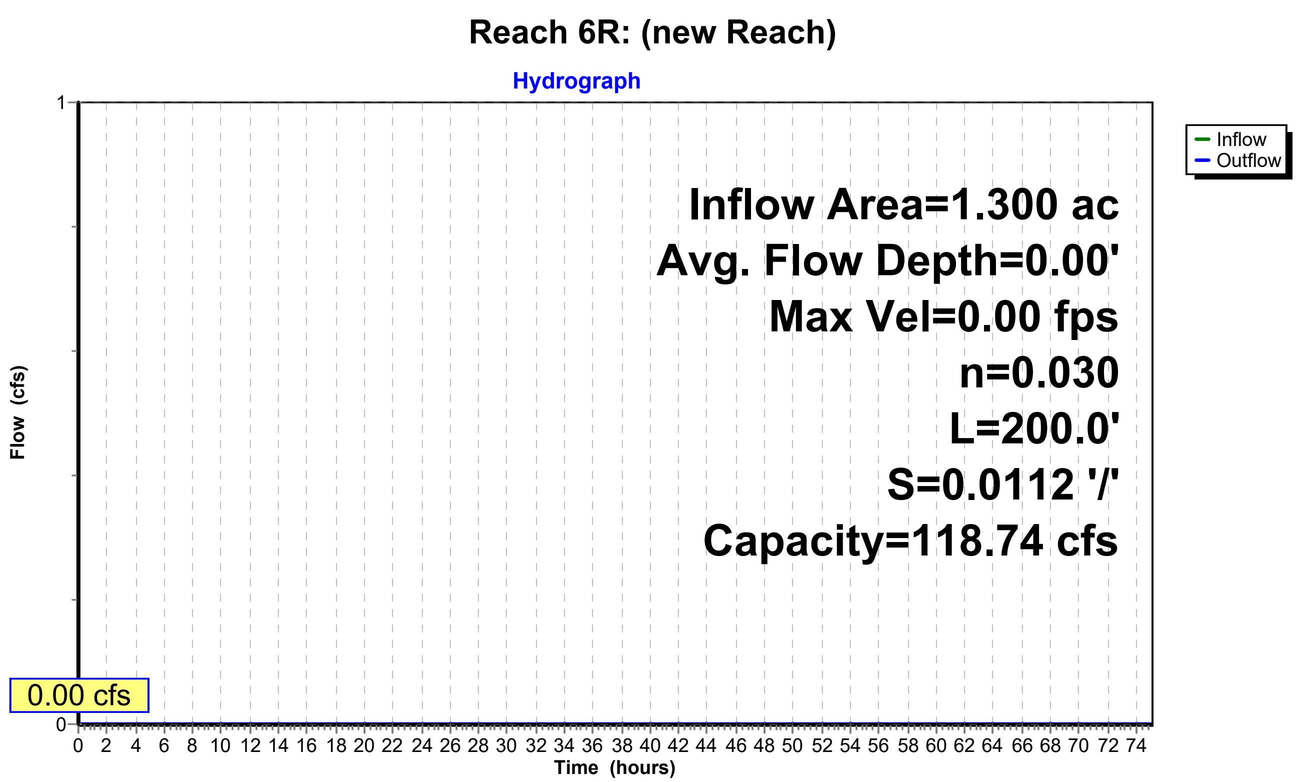
Inflow Area = 1.300 ac, 76.07% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-2 : South Wetland

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 118.74 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 200.0' Slope= 0.0112 '/'
Inlet Invert= 128.25', Outlet Invert= 126.00'

‡



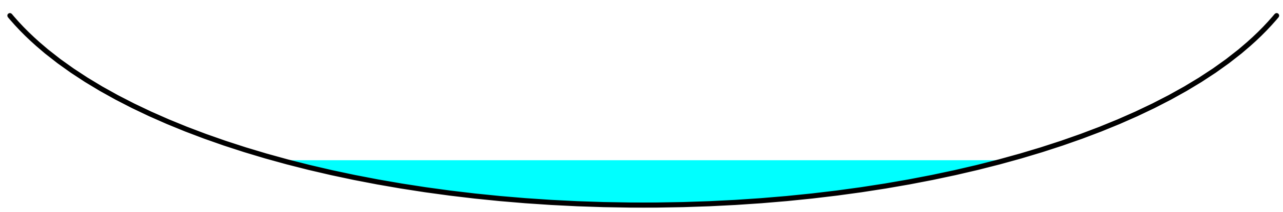
Summary for Reach C-1: Southwest channel

Inflow Area = 5.263 ac, 28.08% Impervious, Inflow Depth = 1.54" for 10-yr event
Inflow = 3.74 cfs @ 12.45 hrs, Volume= 0.673 af
Outflow = 3.61 cfs @ 12.63 hrs, Volume= 0.673 af, Atten= 3%, Lag= 11.0 min
Routed to Reach C-2 : South Abutter Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.79 fps, Min. Travel Time= 6.6 min
Avg. Velocity = 0.27 fps, Avg. Travel Time= 19.5 min

Peak Storage= 1,437 cf @ 12.52 hrs
Average Depth at Peak Storage= 0.47' , Surface Width= 14.59'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 81.72 cfs

30.00' x 2.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 312.0' Slope= 0.0064 '/'
Inlet Invert= 125.00', Outlet Invert= 123.00'



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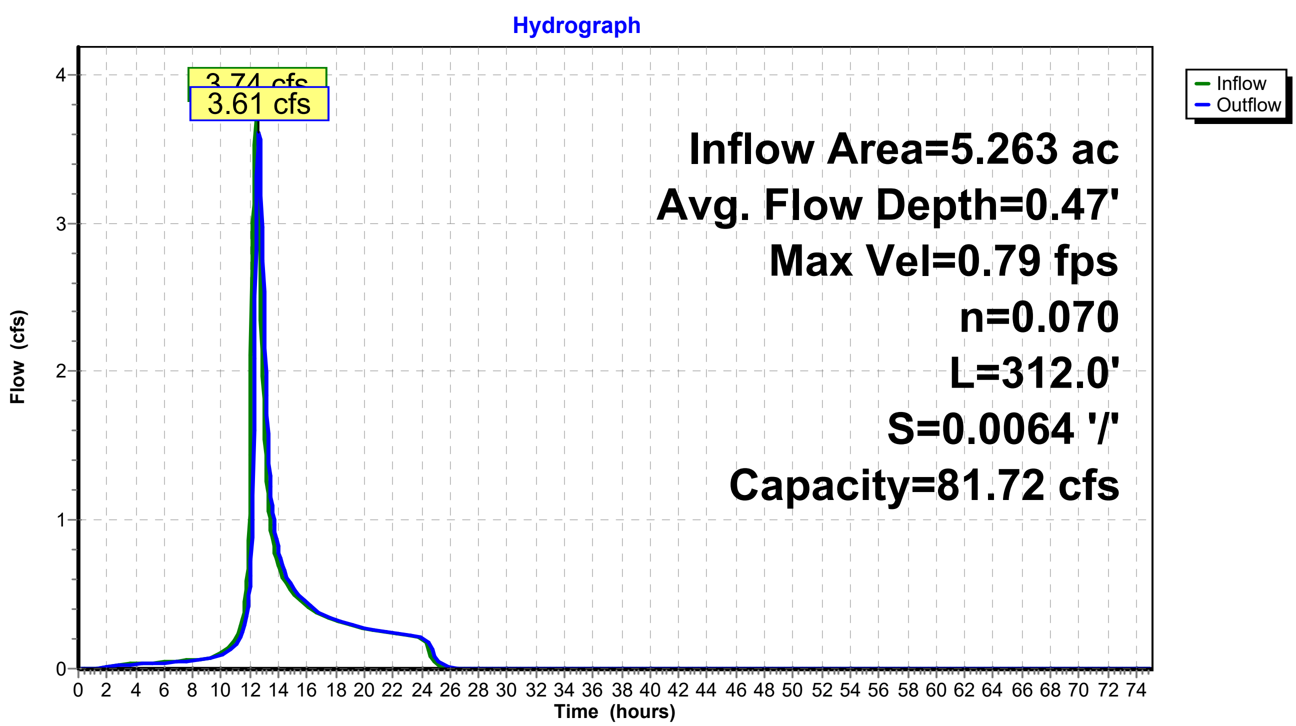
Reach C-1: Southwest channel



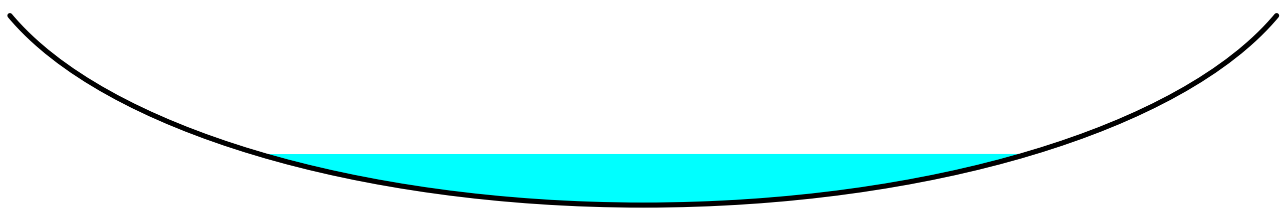
Summary for Reach C-2: South Abutter Channel

Inflow Area = 5.474 ac, 27.00% Impervious, Inflow Depth = 1.53" for 10-yr event
Inflow = 3.68 cfs @ 12.62 hrs, Volume= 0.699 af
Outflow = 3.63 cfs @ 12.73 hrs, Volume= 0.699 af, Atten= 1%, Lag= 6.4 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.12 fps, Min. Travel Time= 3.7 min
Avg. Velocity = 0.38 fps, Avg. Travel Time= 11.1 min

Peak Storage= 815 cf @ 12.67 hrs
Average Depth at Peak Storage= 0.27' , Surface Width= 18.16'
Bank-Full Depth= 1.00' Flow Area= 23.3 sf, Capacity= 62.53 cfs

35.00' x 1.00' deep Parabolic Channel, n= 0.050 Sluggish weedy reaches w/pools
Length= 250.0' Slope= 0.0140 '/'
Inlet Invert= 124.00', Outlet Invert= 120.50'



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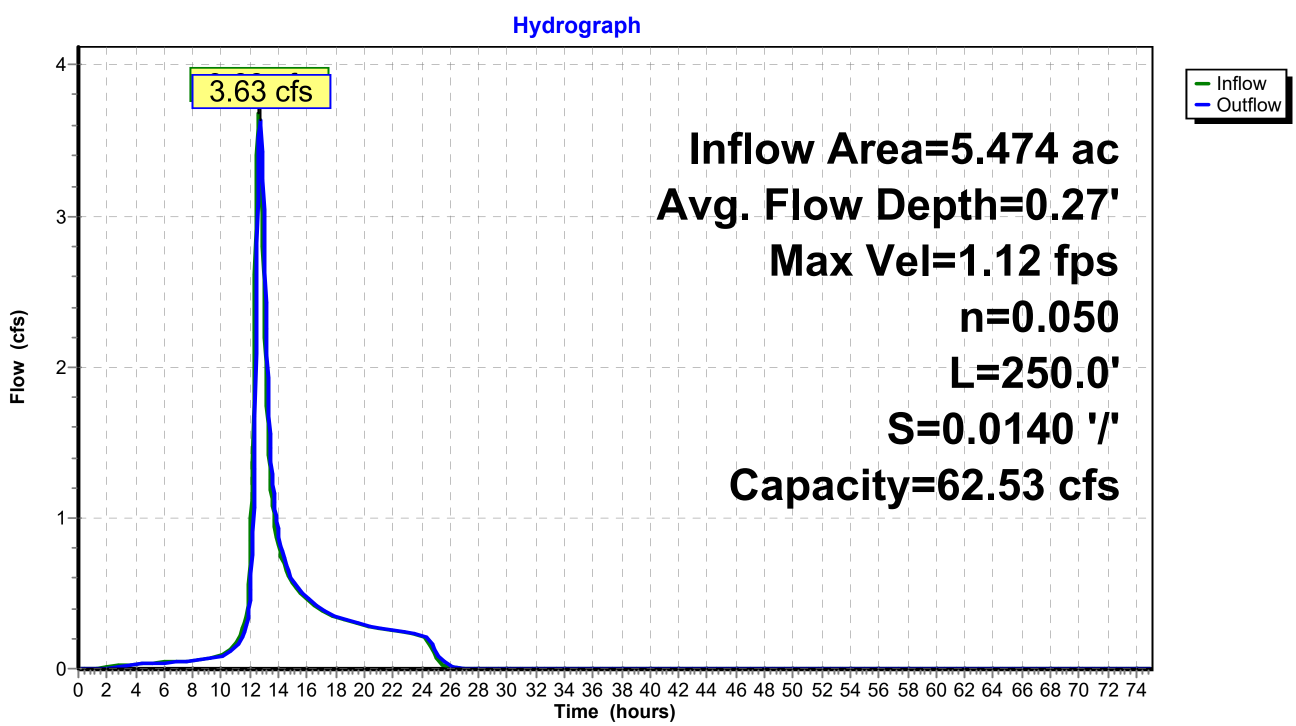
Reach C-2: South Abutter Channel



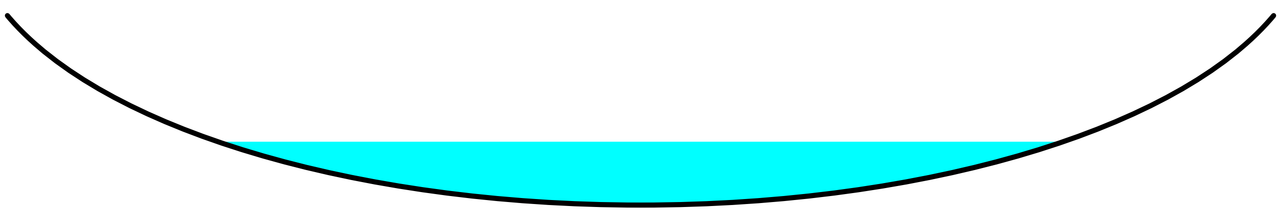
Summary for Reach DP-2: South Wetland

Inflow Area = 5.263 ac, 28.08% Impervious, Inflow Depth = 1.54" for 10-yr event
Inflow = 3.82 cfs @ 12.32 hrs, Volume= 0.673 af
Outflow = 3.74 cfs @ 12.45 hrs, Volume= 0.673 af, Atten= 2%, Lag= 7.5 min
Routed to Reach C-1 : Southwest channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.48 fps, Min. Travel Time= 4.5 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 13.1 min

Peak Storage= 1,007 cf @ 12.37 hrs
Average Depth at Peak Storage= 0.33' , Surface Width= 34.72'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 40.17 cfs

60.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 130.0' Slope= 0.0038 '/'
Inlet Invert= 125.50', Outlet Invert= 125.00'



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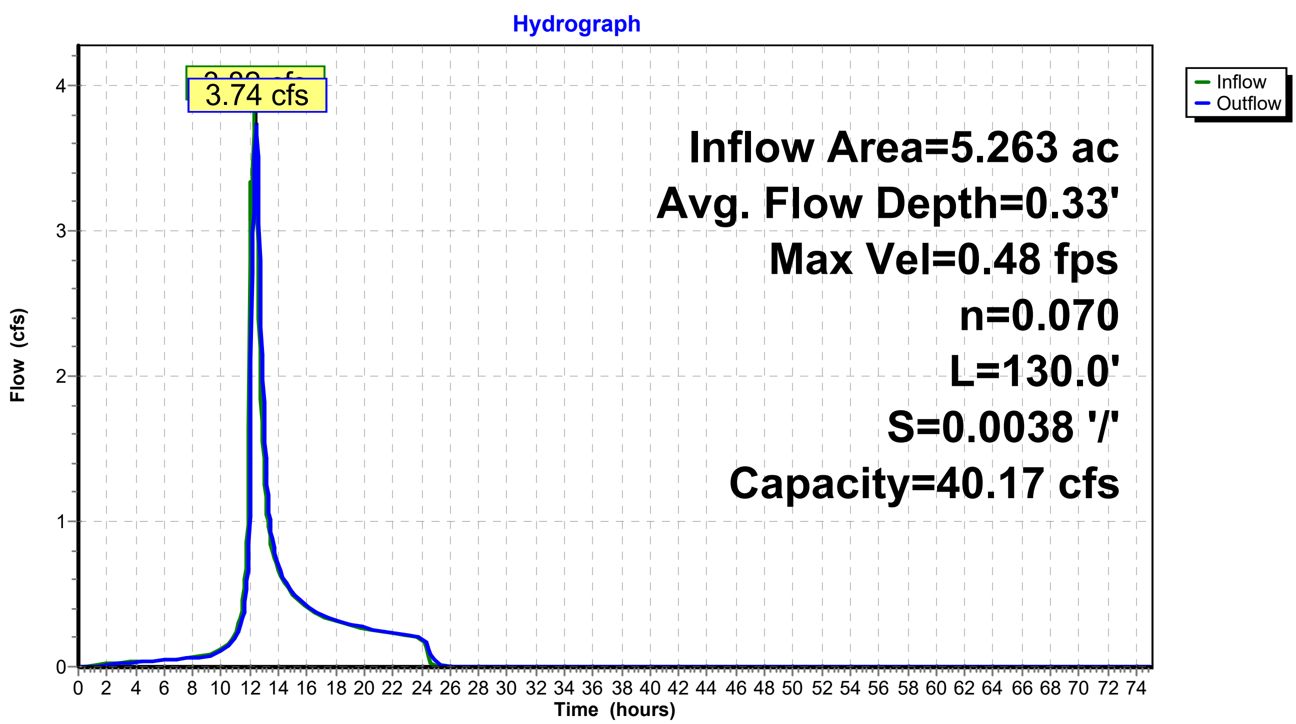
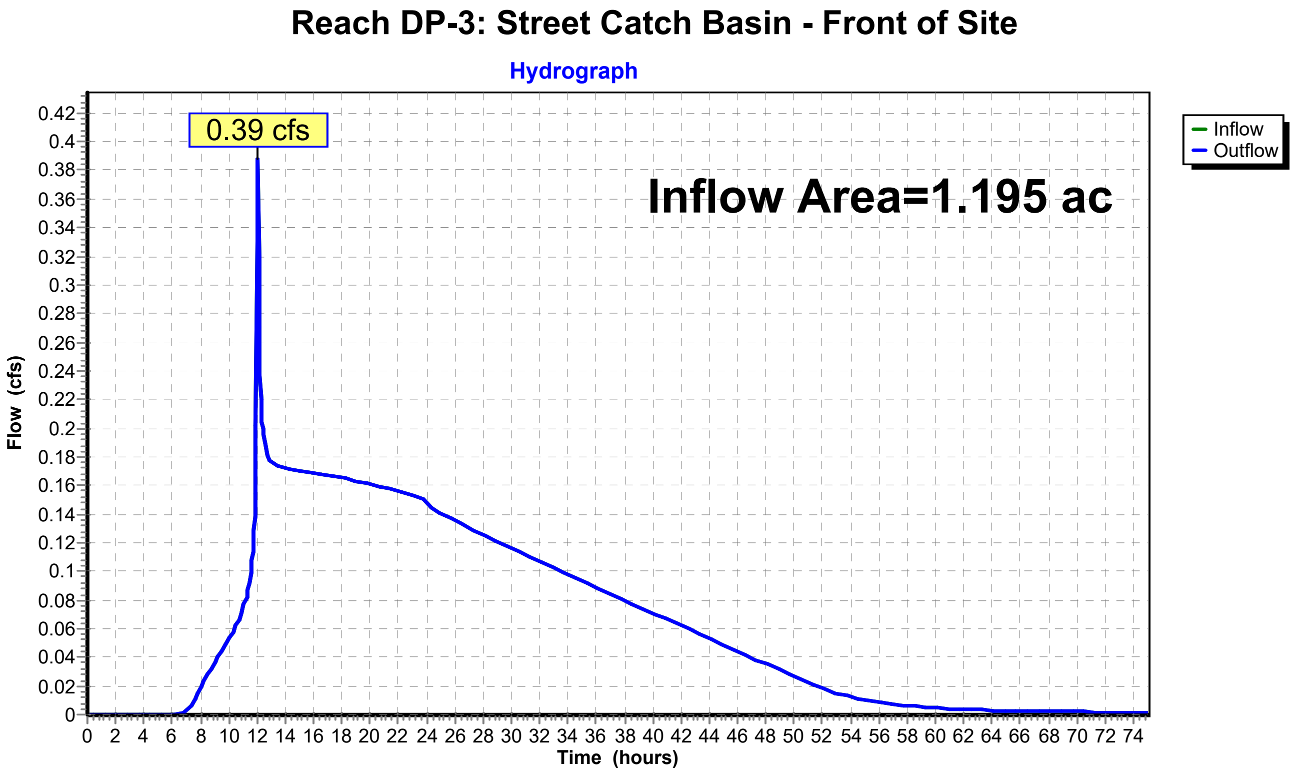
Reach DP-2: South Wetland



Summary for Reach DP-3: Street Catch Basin - Front of Site

Inflow Area = 1.195 ac, 79.50% Impervious, Inflow Depth > 3.84" for 10-yr event
Inflow = 0.39 cfs @ 12.05 hrs, Volume= 0.383 af
Outflow = 0.39 cfs @ 12.05 hrs, Volume= 0.383 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs

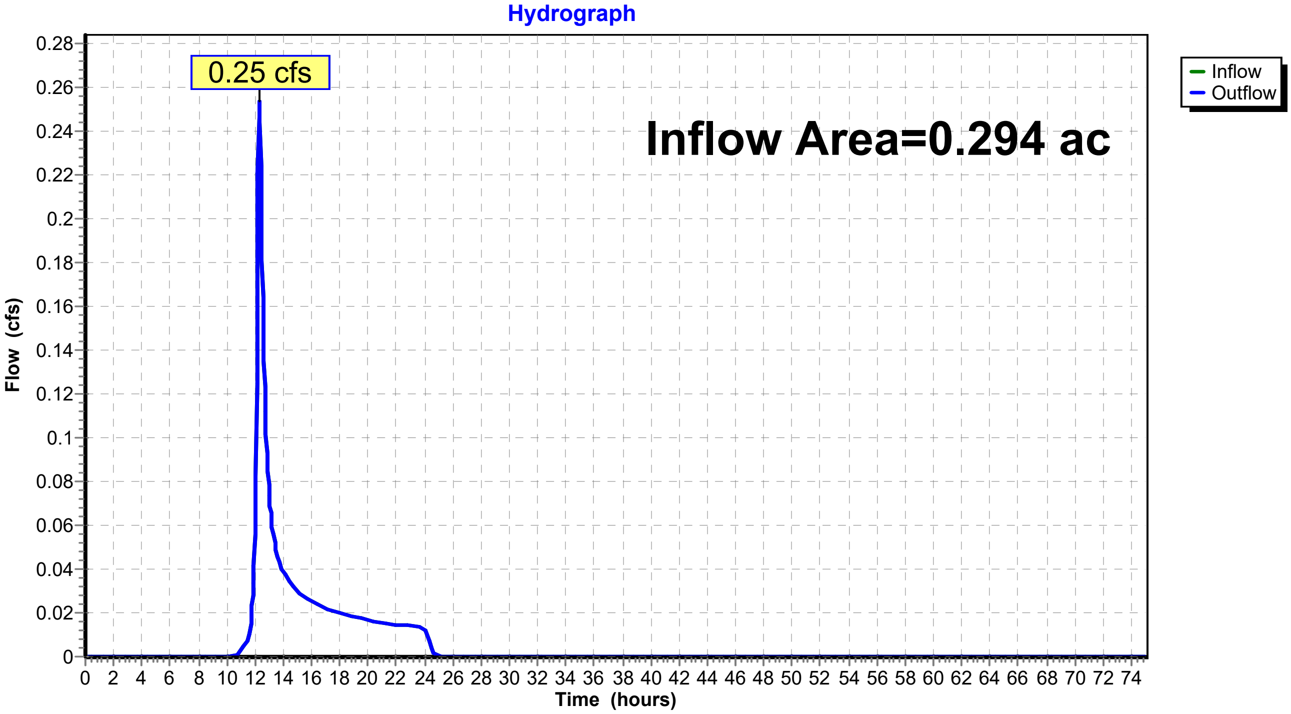


Summary for Reach DP-4: Corner Catch Basin

Inflow Area = 0.294 ac, 0.00% Impervious, Inflow Depth = 1.43" for 10-yr event
Inflow = 0.25 cfs @ 12.30 hrs, Volume= 0.035 af
Outflow = 0.25 cfs @ 12.30 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs

Reach DP-4: Corner Catch Basin

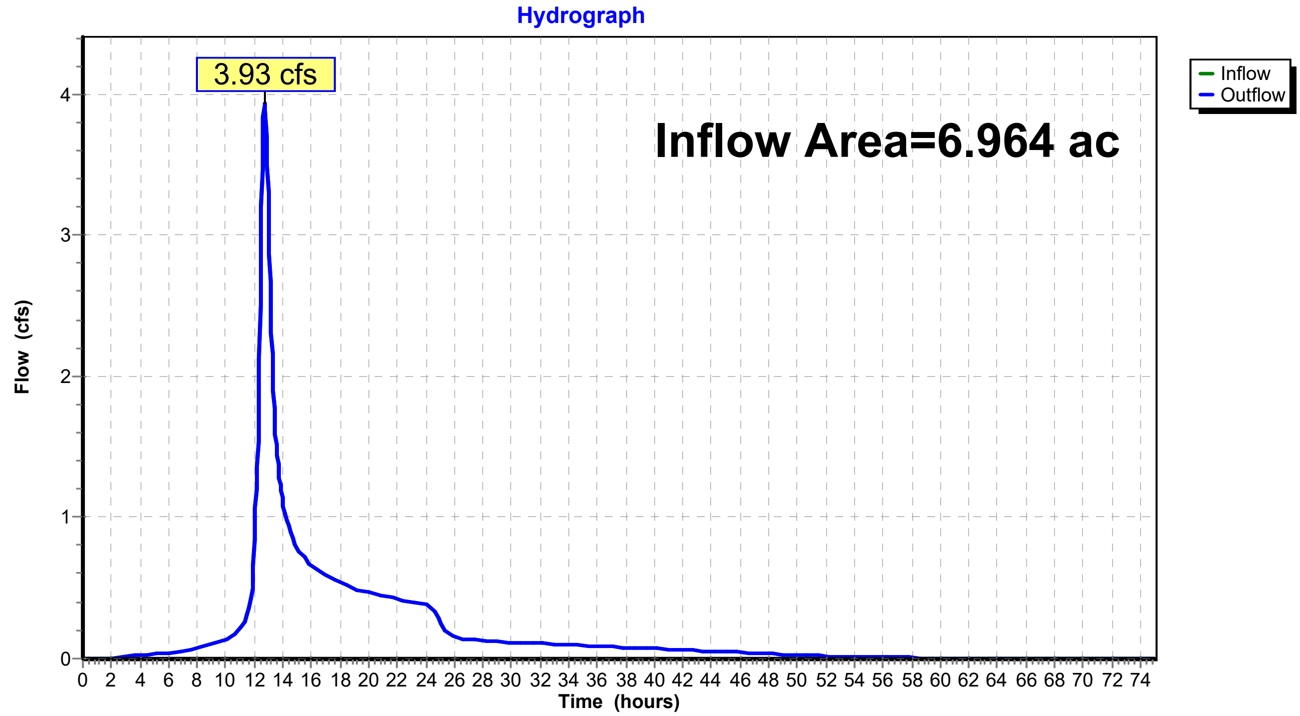


Summary for Reach DP-5: Northwood Drive System

Inflow Area =	6.964 ac,	34.87% Impervious,	Inflow Depth > 1.92"	for 10-yr event
Inflow =	3.93 cfs @	12.72 hrs, Volume=	1.117 af	
Outflow =	3.93 cfs @	12.72 hrs, Volume=	1.117 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs

Reach DP-5: Northwood Drive System



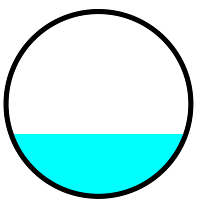
Summary for Reach IDP-1: Culvert

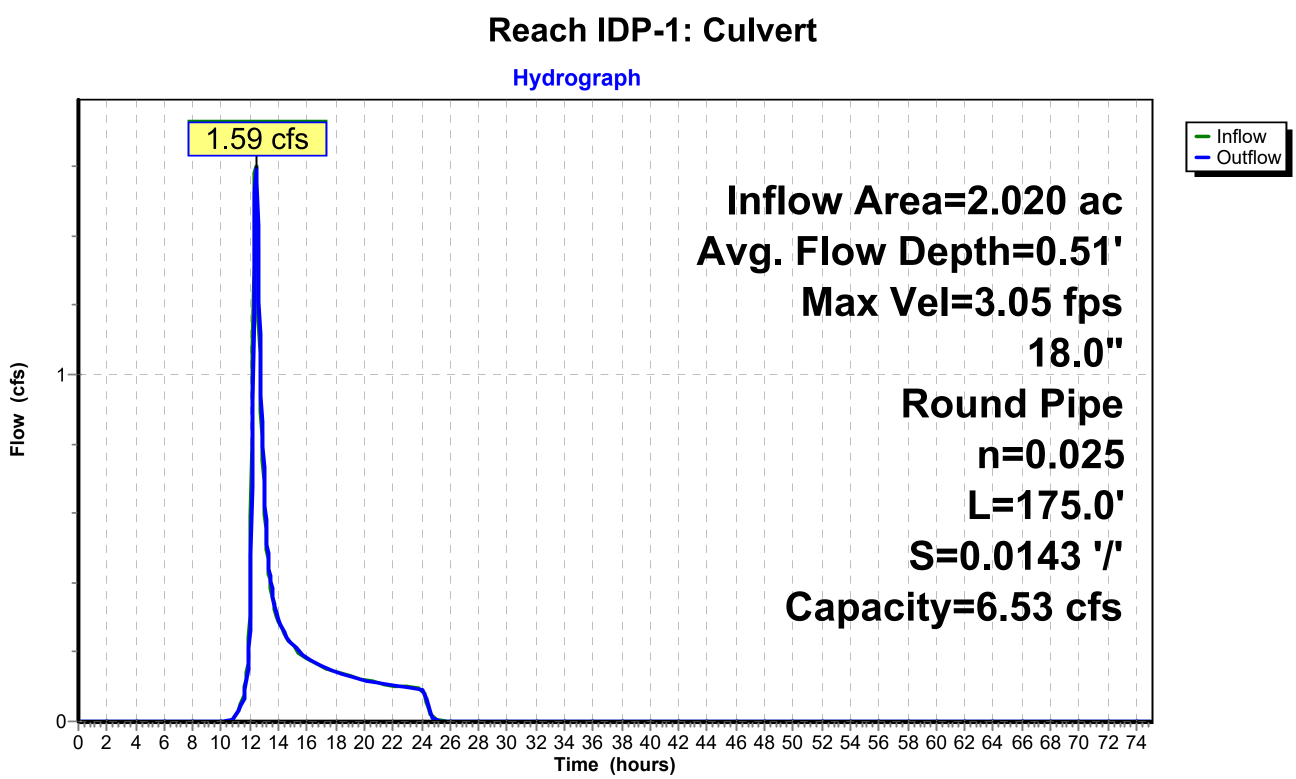
Inflow Area = 2.020 ac, 3.01% Impervious, Inflow Depth = 1.50" for 10-yr event
Inflow = 1.60 cfs @ 12.39 hrs, Volume= 0.253 af
Outflow = 1.59 cfs @ 12.42 hrs, Volume= 0.253 af, Atten= 0%, Lag= 1.7 min
Routed to Reach DP-2 : South Wetland

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.05 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.45 fps, Avg. Travel Time= 2.0 min

Peak Storage= 92 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.51' , Surface Width= 1.42'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.53 cfs

18.0" Round Pipe
n= 0.025 Corrugated metal
Length= 175.0' Slope= 0.0143 '/'
Inlet Invert= 128.00', Outlet Invert= 125.50'





Summary for Pond 4P: Underground Chamber System

Inflow Area = 1.097 ac, 84.00% Impervious, Inflow Depth = 4.24" for 10-yr event
Inflow = 5.32 cfs @ 12.04 hrs, Volume= 0.388 af
Outflow = 0.16 cfs @ 16.02 hrs, Volume= 0.364 af, Atten= 97%, Lag= 239.0 min
Primary = 0.16 cfs @ 16.02 hrs, Volume= 0.364 af
Routed to Reach DP-3 : Street Catch Basin - Front of Site

Routing by Stor-Ind method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Peak Elev= 126.55' @ 16.02 hrs Surf.Area= 0.122 ac Storage= 0.249 af

Plug-Flow detention time= 881.7 min calculated for 0.364 af (94% of inflow)
Center-of-Mass det. time= 845.3 min (1,620.3 - 775.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	124.00'	0.134 af	**44.25'W x 120.42'L x 4.75'H Field A** 0.581 af Overall - 0.246 af Embedded = 0.335 af x 40.0% Voids
#2A	124.00'	0.246 af	**ADS_StormTech MC-3500 d +Cap** x 96 Inside #1 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 96 Chambers in 6 Rows Cap Storage= 14.9 cf x 2 x 6 rows = 178.8 cf
		0.380 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	124.00'	**12.0" Round Culvert** L= 200.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 124.00' / 123.00' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	126.75'	**4.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Device 1	124.20'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.16 cfs @ 16.02 hrs HW=126.55' (Free Discharge)
└─**1=Culvert** (Passes 0.16 cfs of 3.85 cfs potential flow)
  ├─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 0.16 cfs @ 7.25 fps)

Pond 4P: Underground Chamber System - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
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
Cap Storage= 14.9 cf x 2 x 6 rows = 178.8 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

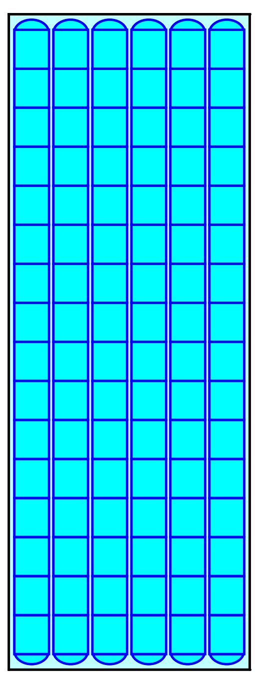
16 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 118.42' Row Length +12.0" End Stone x 2 = 120.42' Base Length
6 Rows x 77.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 44.25' Base Width
45.0" Chamber Height + 12.0" Stone Cover = 4.75' Field Height

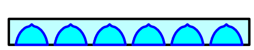
96 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 6 Rows = 10,734.2 cf Chamber Storage

25,310.8 cf Field - 10,734.2 cf Chambers = 14,576.6 cf Stone x 40.0% Voids = 5,830.6 cf Stone Storage

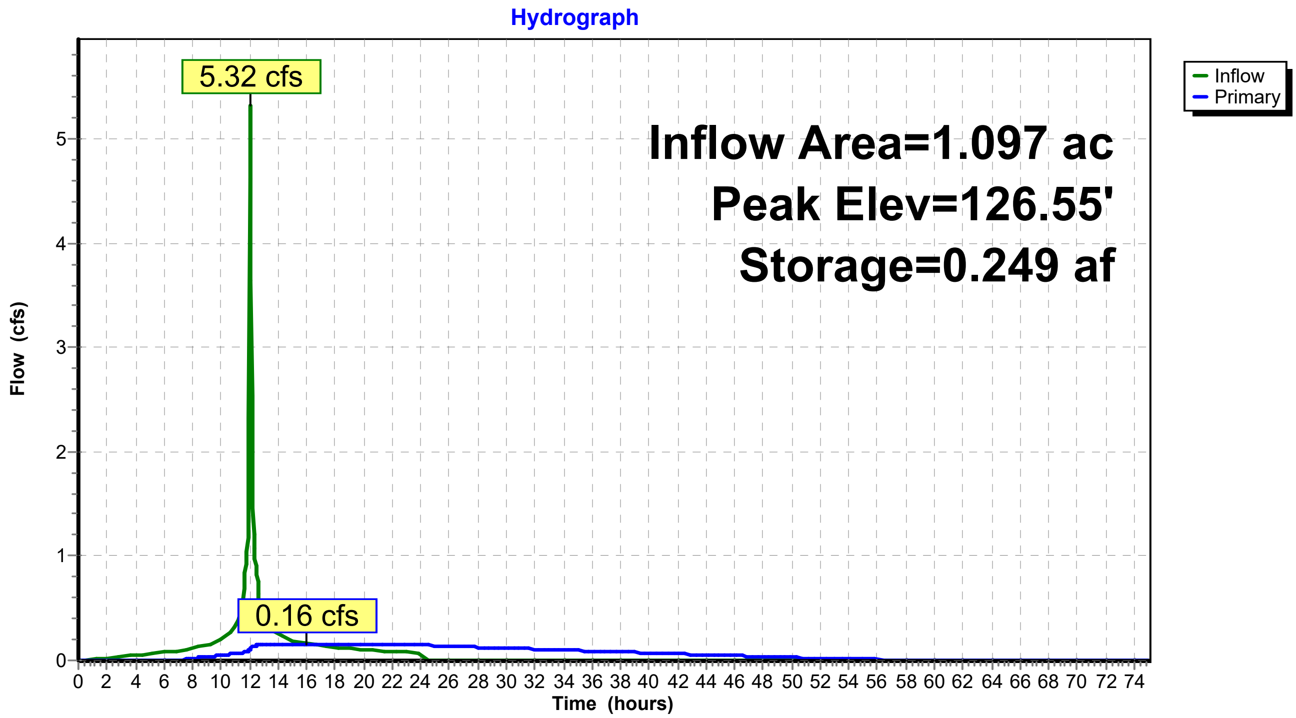
Chamber Storage + Stone Storage = 16,564.8 cf = 0.380 af
Overall Storage Efficiency = 65.4%
Overall System Size = 120.42' x 44.25' x 4.75'

96 Chambers
937.4 cy Field
539.9 cy Stone





Pond 4P: Underground Chamber System



Summary for Pond 5P: Surface Basin

Inflow Area = 1.300 ac, 76.07% Impervious, Inflow Depth = 4.08" for 10-yr event
Inflow = 6.35 cfs @ 12.04 hrs, Volume= 0.442 af
Outflow = 0.20 cfs @ 15.83 hrs, Volume= 0.442 af, Atten= 97%, Lag= 227.4 min
Discarded = 0.20 cfs @ 15.83 hrs, Volume= 0.442 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 6R : (new Reach)

Routing by Stor-Ind method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Peak Elev= 127.21' @ 15.83 hrs Surf.Area= 8,827 sf Storage= 9,747 cf

Plug-Flow detention time= 495.2 min calculated for 0.442 af (100% of inflow)
Center-of-Mass det. time= 495.5 min (1,292.2 - 796.7)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	27,705 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

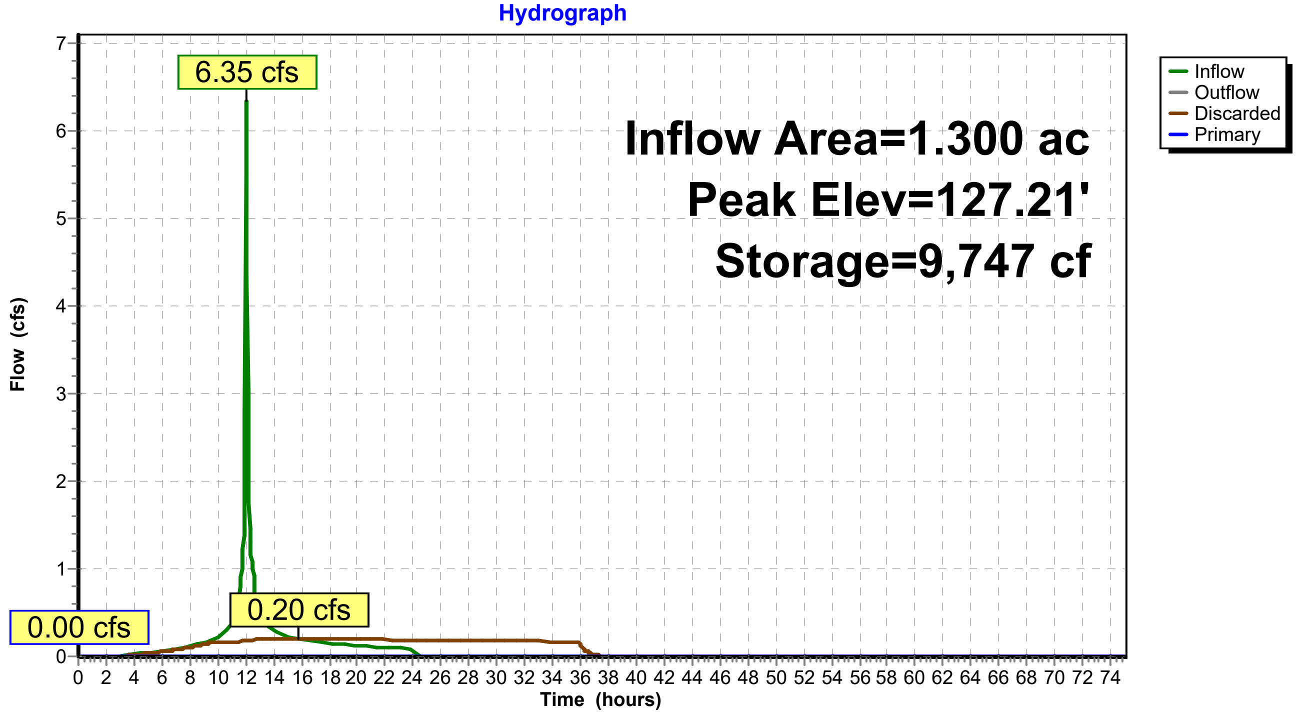
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
126.00	7,405	0	0
127.00	8,475	7,940	7,940
128.00	10,160	9,318	17,258
129.00	10,735	10,448	27,705

Device	Routing	Invert	Outlet Devices
#1	Discarded	126.00'	**0.960 in/hr Exfiltration over Surface area**
#2	Primary	128.25'	**Channel/Reach** using Reach 6R: (new Reach)

Discarded OutFlow Max=0.20 cfs @ 15.83 hrs HW=127.21' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.00' (Free Discharge)
└─**2=Channel/Reach** (Controls 0.00 cfs)

Pond 5P: Surface Basin



Time span=0.00-75.00 hrs, dt=0.05 hrs, 1501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PDA-100: Site North Runoff Area=88,000 sf 3.01% Impervious Runoff Depth=2.29"
Flow Length=360' Tc=30.5 min CN=62 Runoff=2.57 cfs 0.386 af

Subcatchment PDA-1000: Yard between Runoff Area=4,275 sf 29.24% Impervious Runoff Depth=3.23"
Tc=6.0 min CN=72 Runoff=0.39 cfs 0.026 af

Subcatchment PDA-200: Building Runoff Area=17,850 sf 100.00% Impervious Runoff Depth=6.05"
Tc=6.0 min CN=98 Runoff=2.70 cfs 0.207 af

Subcatchment PDA-300: Parking lot Runoff Area=21,400 sf 89.25% Impervious Runoff Depth=5.58"
Tc=6.0 min CN=94 Runoff=3.15 cfs 0.229 af

Subcatchment PDA-400: Rear Parking lot Runoff Area=18,850 sf 98.94% Impervious Runoff Depth=6.05"
Tc=6.0 min CN=98 Runoff=2.86 cfs 0.218 af

Subcatchment PDA-500: Site West Runoff Area=65,775 sf 0.00% Impervious Runoff Depth=2.85"
Flow Length=140' Tc=23.7 min CN=68 Runoff=2.85 cfs 0.358 af

Subcatchment PDA-600: Site South Edge Runoff Area=9,200 sf 0.00% Impervious Runoff Depth=2.20"
Flow Length=75' Slope=0.0667 '/' Tc=10.6 min CN=61 Runoff=0.44 cfs 0.039 af

Subcatchment PDA-700: Yard Runoff Area=56,625 sf 76.07% Impervious Runoff Depth=5.24"
Tc=6.0 min CN=91 Runoff=8.05 cfs 0.568 af

Subcatchment PDA-800: Southeast Site Runoff Area=12,825 sf 0.00% Impervious Runoff Depth=2.20"
Flow Length=295' Tc=23.5 min CN=61 Runoff=0.41 cfs 0.054 af

Subcatchment PDA-900: Driveway at Runoff Area=8,550 sf 37.43% Impervious Runoff Depth=3.53"
Tc=6.0 min CN=75 Runoff=0.86 cfs 0.058 af

Reach 6R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=200.0' S=0.0112 '/' Capacity=118.74 cfs Outflow=0.00 cfs 0.000 af

Reach C-1: Southwest channel Avg. Flow Depth=0.57' Max Vel=0.89 fps Inflow=5.68 cfs 0.962 af
n=0.070 L=312.0' S=0.0064 '/' Capacity=81.72 cfs Outflow=5.51 cfs 0.962 af

Reach C-2: South Abutter Channel Avg. Flow Depth=0.33' Max Vel=1.27 fps Inflow=5.62 cfs 1.001 af
n=0.050 L=250.0' S=0.0140 '/' Capacity=62.53 cfs Outflow=5.57 cfs 1.001 af

Reach DP-2: South Wetland Avg. Flow Depth=0.41' Max Vel=0.55 fps Inflow=5.80 cfs 0.962 af
n=0.070 L=130.0' S=0.0038 '/' Capacity=40.17 cfs Outflow=5.68 cfs 0.962 af

Reach DP-3: Street Catch Basin - Front of Site Inflow=0.71 cfs 0.496 af
Outflow=0.71 cfs 0.496 af

Reach DP-4: Corner Catch Basin Inflow=0.41 cfs 0.054 af
Outflow=0.41 cfs 0.054 af

Reach DP-5: Northwood Drive System Inflow=6.47 cfs 1.550 af
Outflow=6.47 cfs 1.550 af

Reach IDP-1: Culvert Avg. Flow Depth=0.65' Max Vel=3.47 fps Inflow=2.57 cfs 0.386 af
18.0" Round Pipe n=0.025 L=175.0' S=0.0143 '/' Capacity=6.53 cfs Outflow=2.56 cfs 0.386 af

Pond 4P: Underground Chamber System Peak Elev=126.88' Storage=0.276 af Inflow=6.72 cfs 0.493 af
Outflow=0.66 cfs 0.469 af

Pond 5P: Surface Basin Peak Elev=127.62' Storage=13,484 cf Inflow=8.05 cfs 0.568 af
Discarded=0.21 cfs 0.568 af Primary=0.00 cfs 0.000 af Outflow=0.21 cfs 0.568 af

Total Runoff Area = 6.964 ac Runoff Volume = 2.142 af Average Runoff Depth = 3.69"
65.13% Pervious = 4.536 ac 34.87% Impervious = 2.428 ac

Summary for Subcatchment PDA-100: Site North

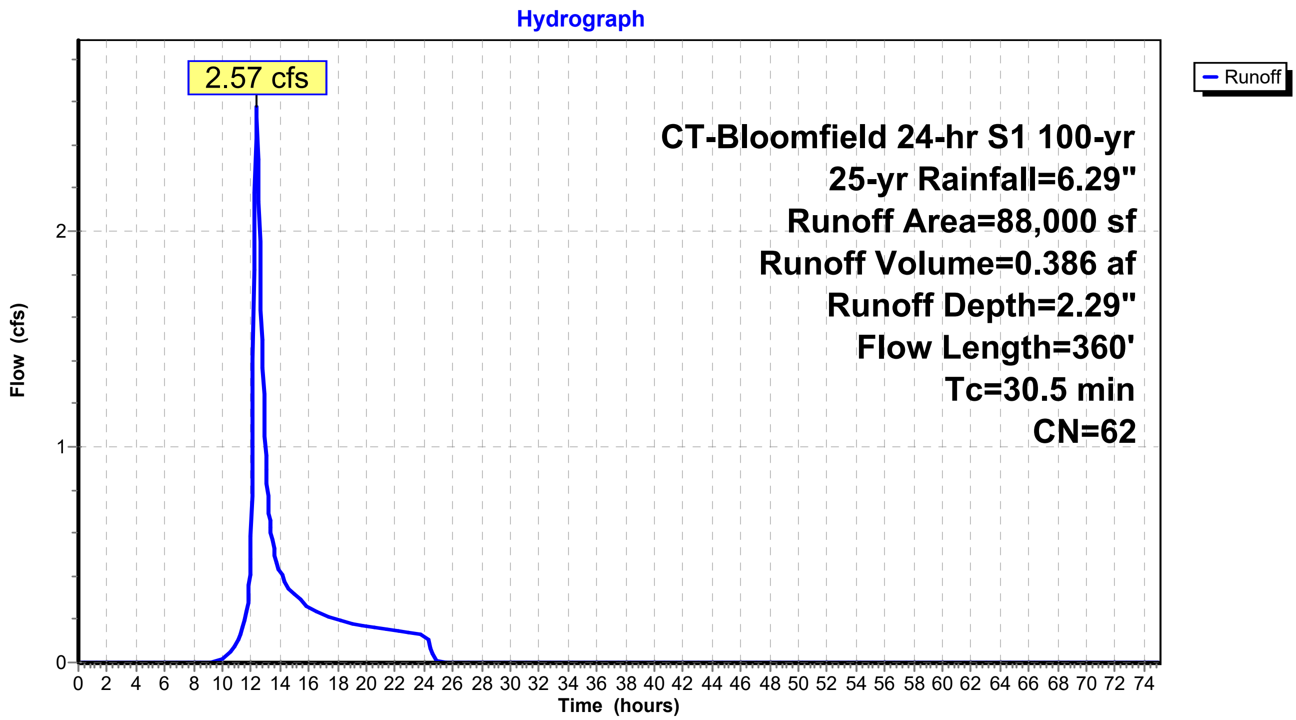
Runoff = 2.57 cfs @ 12.38 hrs, Volume= 0.386 af, Depth= 2.29"
Routed to Reach IDP-1 : Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
475	39	>75% Grass cover, Good, HSG A
14,975	61	>75% Grass cover, Good, HSG B
7,250	36	Woods, Fair, HSG A
50,550	60	Woods, Fair, HSG B
2,650	98	Paved parking, HSG A
12,100	79	Woods, Fair, HSG D
88,000	62	Weighted Average
85,350		96.99% Pervious Area
2,650		3.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4	100	0.0180	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
8.1	260	0.0115	0.54		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
30.5	360	Total			

Subcatchment PDA-100: Site North



Summary for Subcatchment PDA-1000: Yard between Driveways

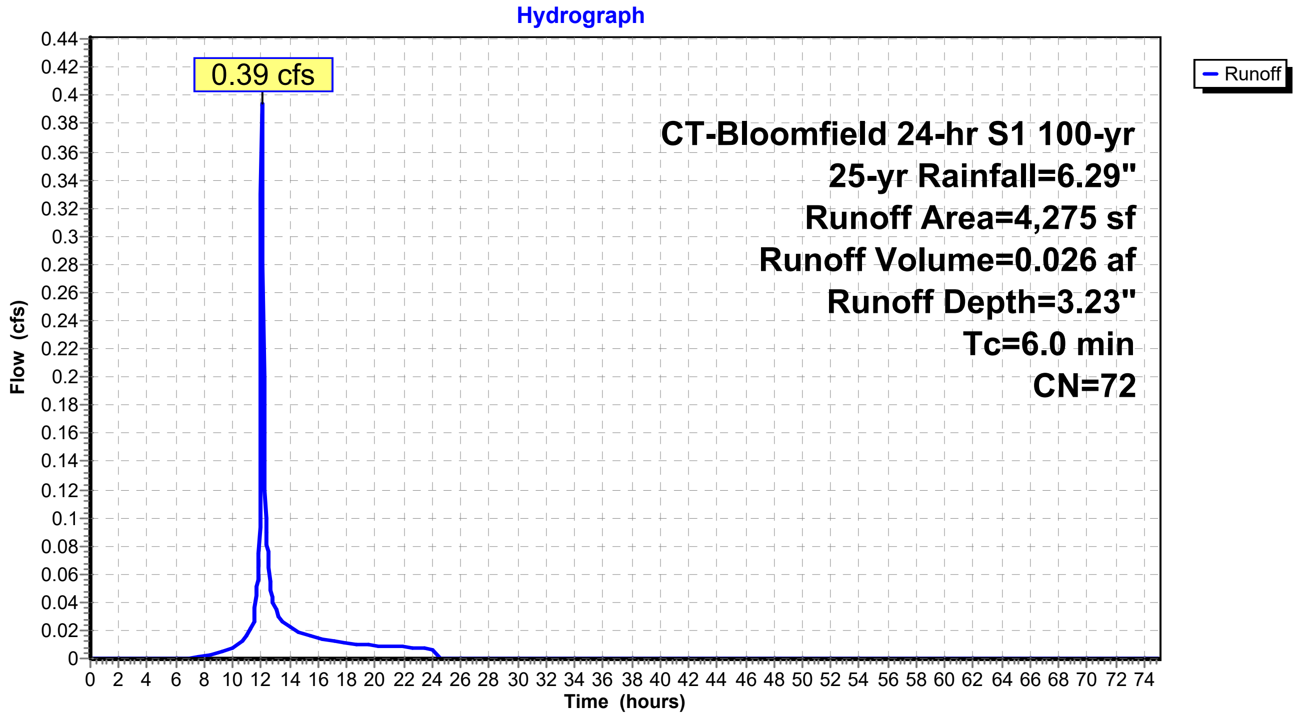
Runoff = 0.39 cfs @ 12.04 hrs, Volume= 0.026 af, Depth= 3.23"
Routed to Reach DP-3 : Street Catch Basin - Front of Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
3,025	61	>75% Grass cover, Good, HSG B
1,250	98	Paved parking, HSG B
4,275	72	Weighted Average
3,025		70.76% Pervious Area
1,250		29.24% Impervious Area

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

Subcatchment PDA-1000: Yard between Driveways



Summary for Subcatchment PDA-200: Building

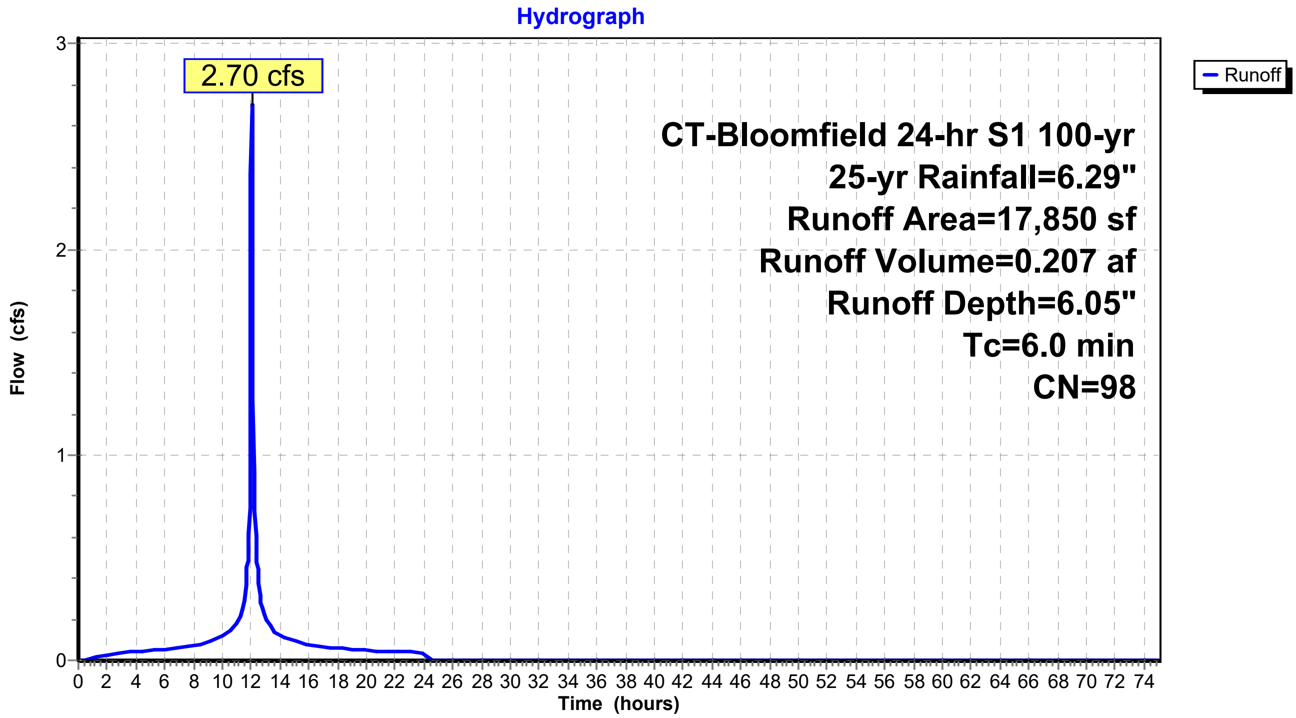
Runoff = 2.70 cfs @ 12.04 hrs, Volume= 0.207 af, Depth= 6.05"
Routed to Pond 4P : Underground Chamber System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
17,850	98	Roofs, HSG A
17,850		100.00% Impervious Area

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

Subcatchment PDA-200: Building



Summary for Subcatchment PDA-300: Parking lot

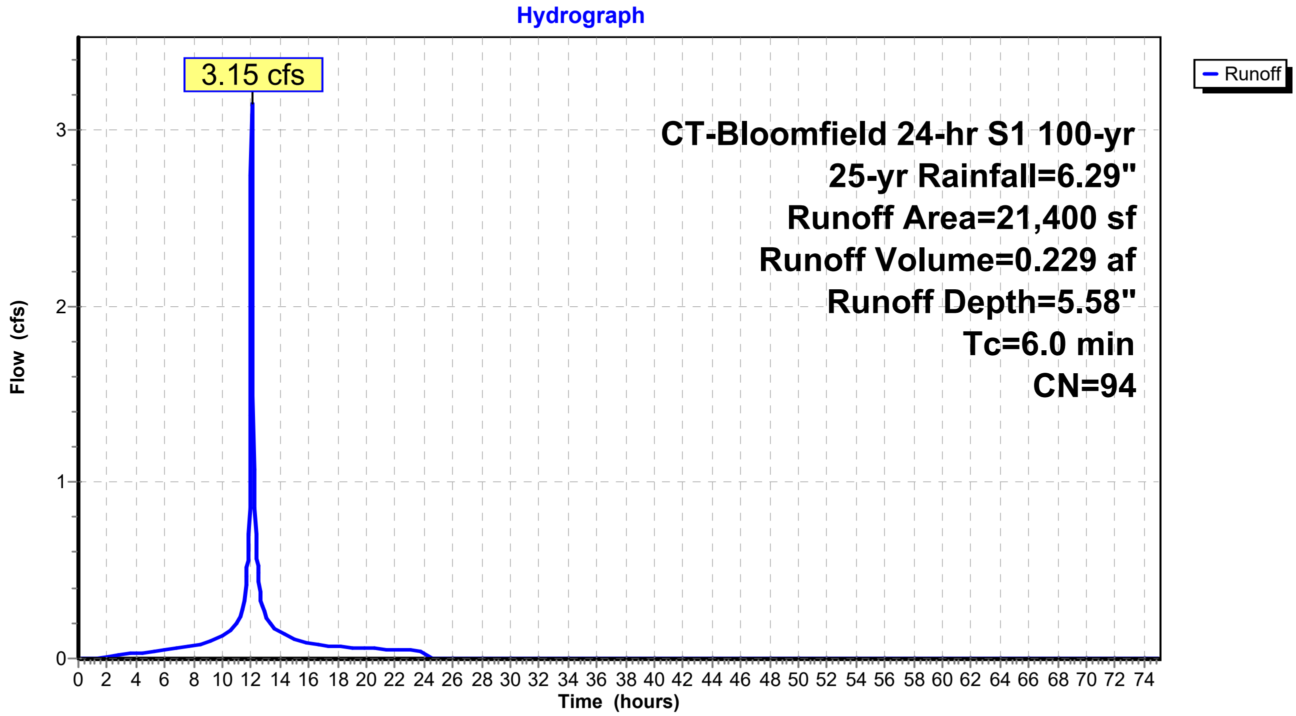
Runoff = 3.15 cfs @ 12.04 hrs, Volume= 0.229 af, Depth= 5.58"
Routed to Pond 4P : Underground Chamber System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
2,300	61	>75% Grass cover, Good, HSG B
19,100	98	Paved parking, HSG B
21,400	94	Weighted Average
2,300		10.75% Pervious Area
19,100		89.25% Impervious Area

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

Subcatchment PDA-300: Parking lot



Summary for Subcatchment PDA-400: Rear Parking lot

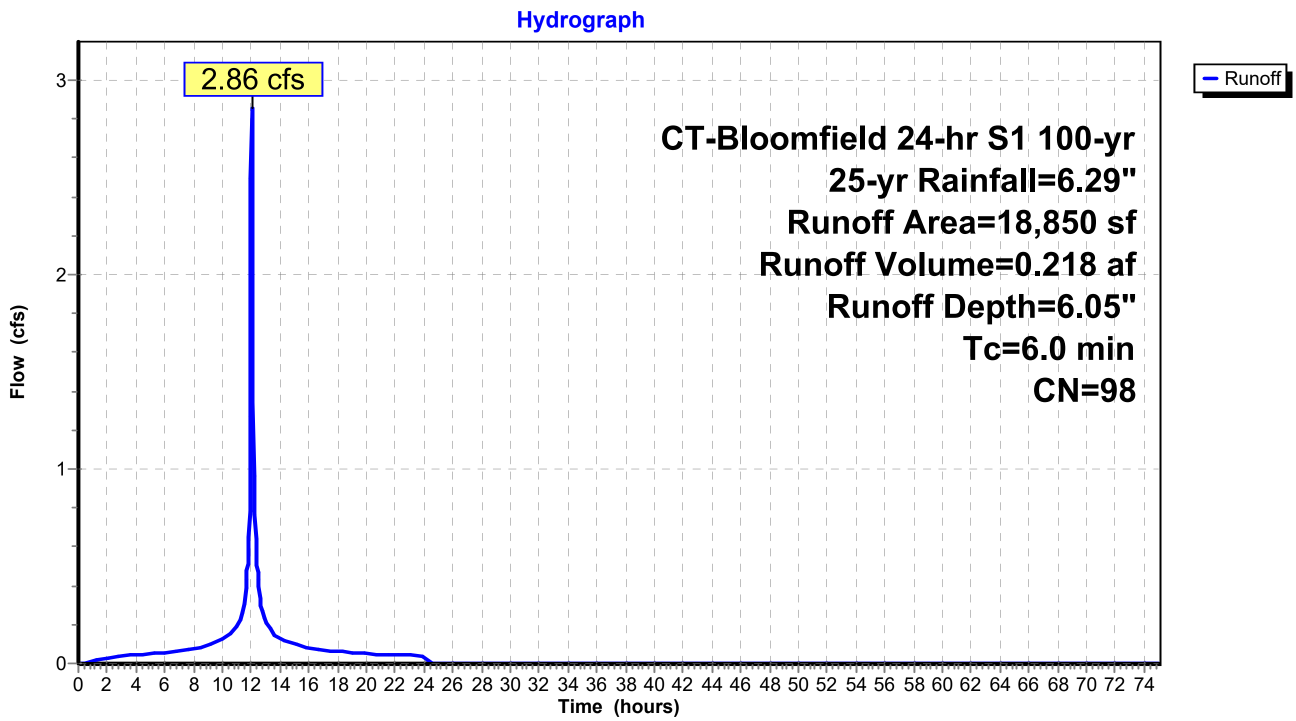
Runoff = 2.86 cfs @ 12.04 hrs, Volume= 0.218 af, Depth= 6.05"
Routed to Reach DP-2 : South Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
200	61	>75% Grass cover, Good, HSG B
18,650	98	Paved parking, HSG B
18,850	98	Weighted Average
200		1.06% Pervious Area
18,650		98.94% Impervious Area

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

Subcatchment PDA-400: Rear Parking lot



Summary for Subcatchment PDA-500: Site West

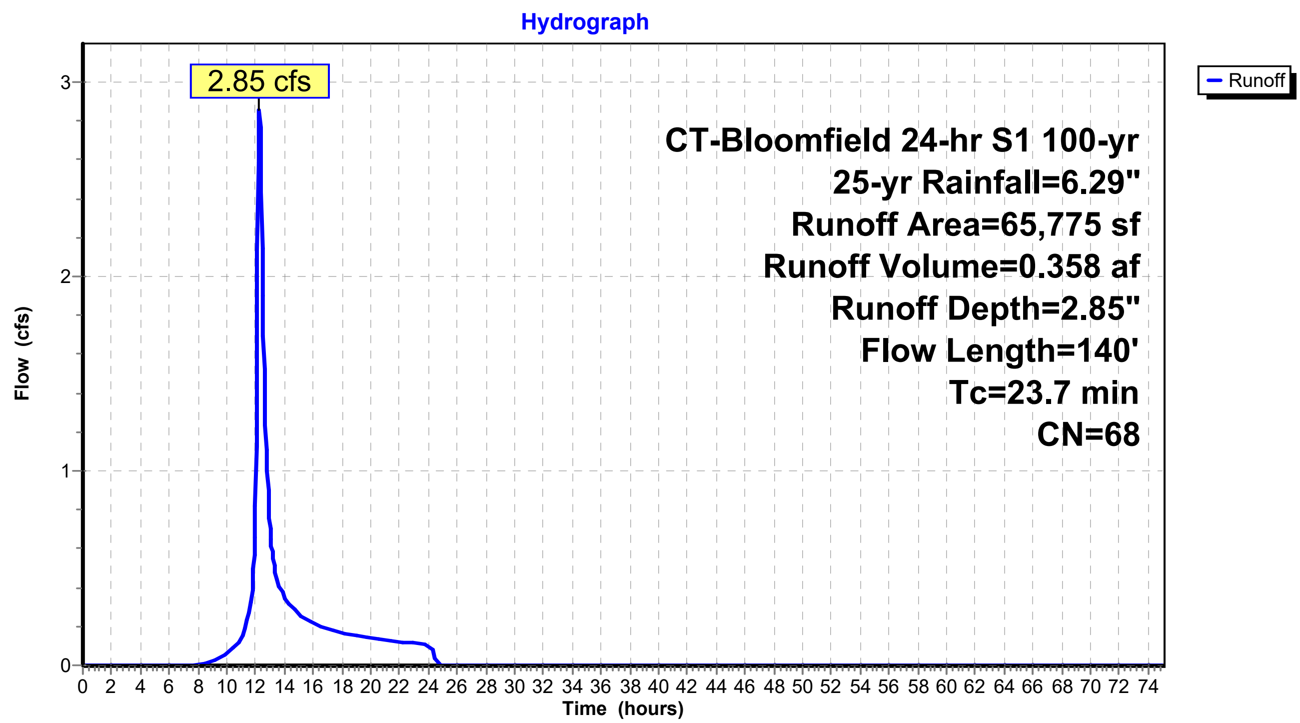
Runoff = 2.85 cfs @ 12.28 hrs, Volume= 0.358 af, Depth= 2.85"
Routed to Reach DP-2 : South Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
13,475	61	>75% Grass cover, Good, HSG B
25,350	60	Woods, Fair, HSG B
26,950	79	Woods, Fair, HSG D
65,775	68	Weighted Average
65,775		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	20	0.3330	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.19"
22.8	120	0.0250	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
23.7	140	Total			

Subcatchment PDA-500: Site West



Summary for Subcatchment PDA-600: Site South Edge

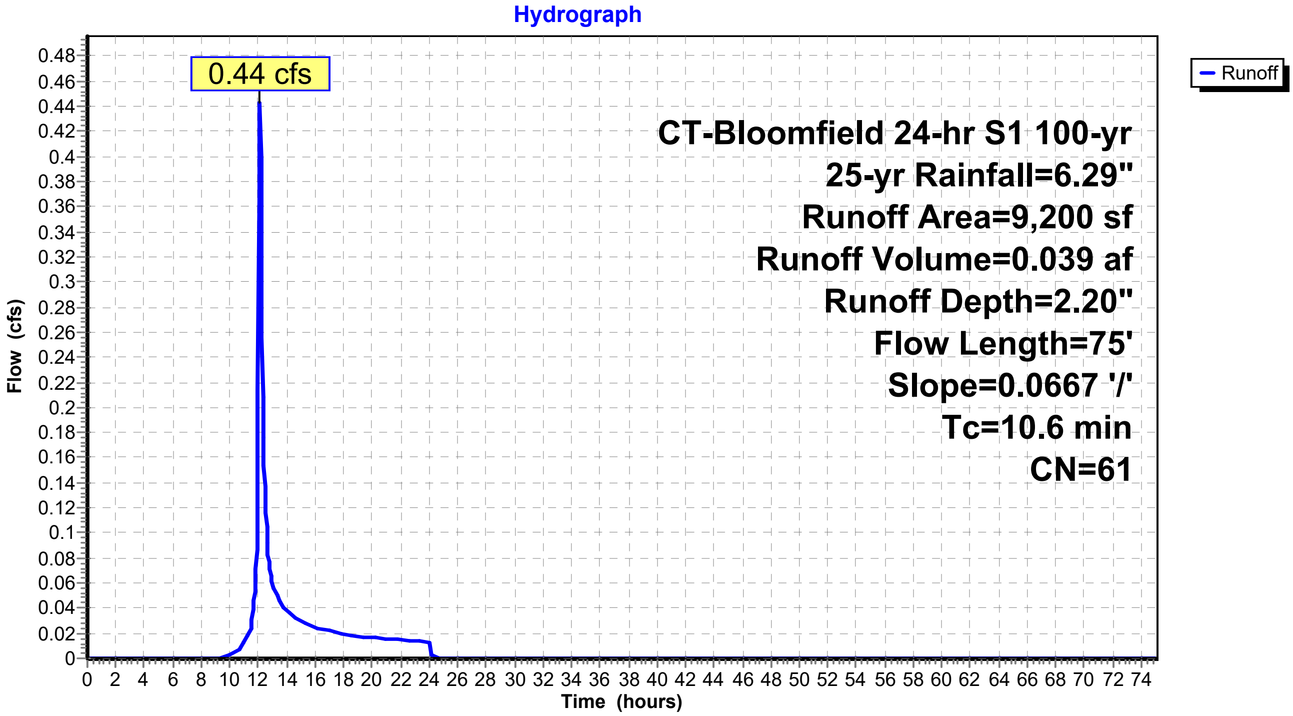
Runoff = 0.44 cfs @ 12.11 hrs, Volume= 0.039 af, Depth= 2.20"
Routed to Reach C-2 : South Abutter Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
9,200	61	>75% Grass cover, Good, HSG B
9,200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	75	0.0667	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"

Subcatchment PDA-600: Site South Edge



Summary for Subcatchment PDA-700: Yard

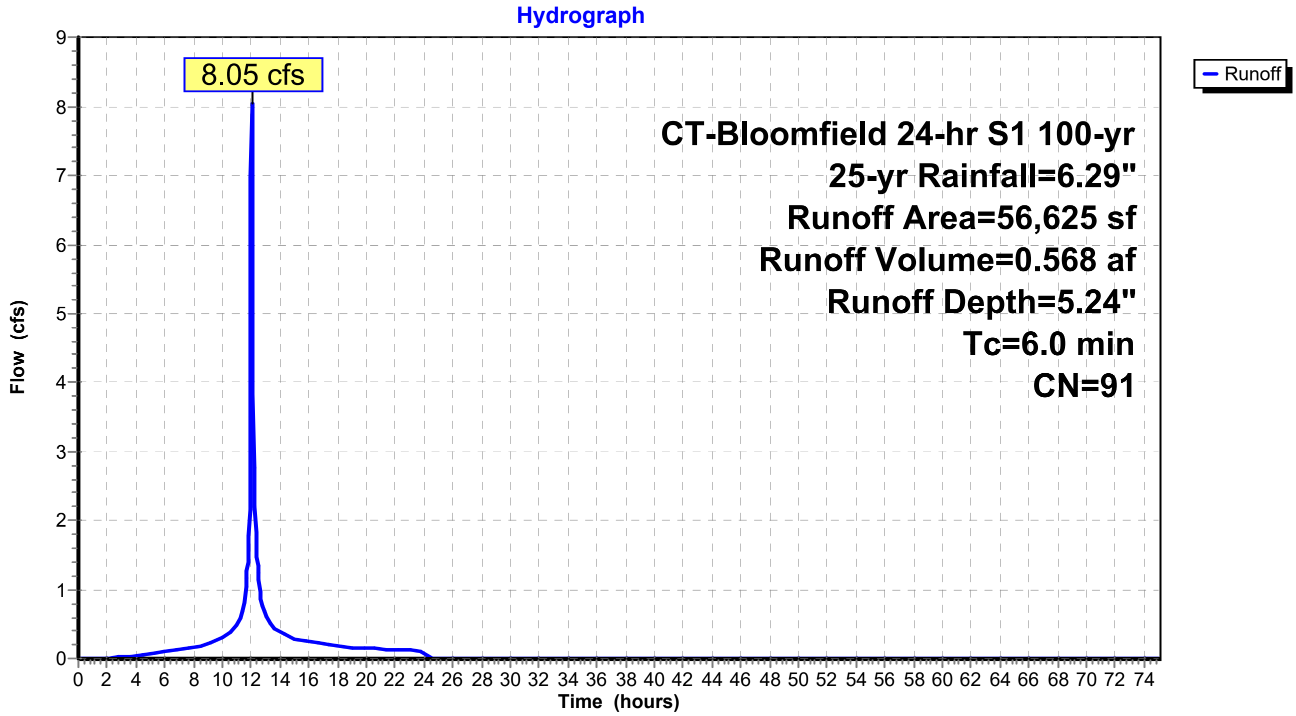
Runoff = 8.05 cfs @ 12.04 hrs, Volume= 0.568 af, Depth= 5.24"
Routed to Pond 5P : Surface Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
13,550	69	50-75% Grass cover, Fair, HSG B
43,075	98	Paved parking, HSG B
56,625	91	Weighted Average
13,550		23.93% Pervious Area
43,075		76.07% Impervious Area

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

Subcatchment PDA-700: Yard



Summary for Subcatchment PDA-800: Southeast Site

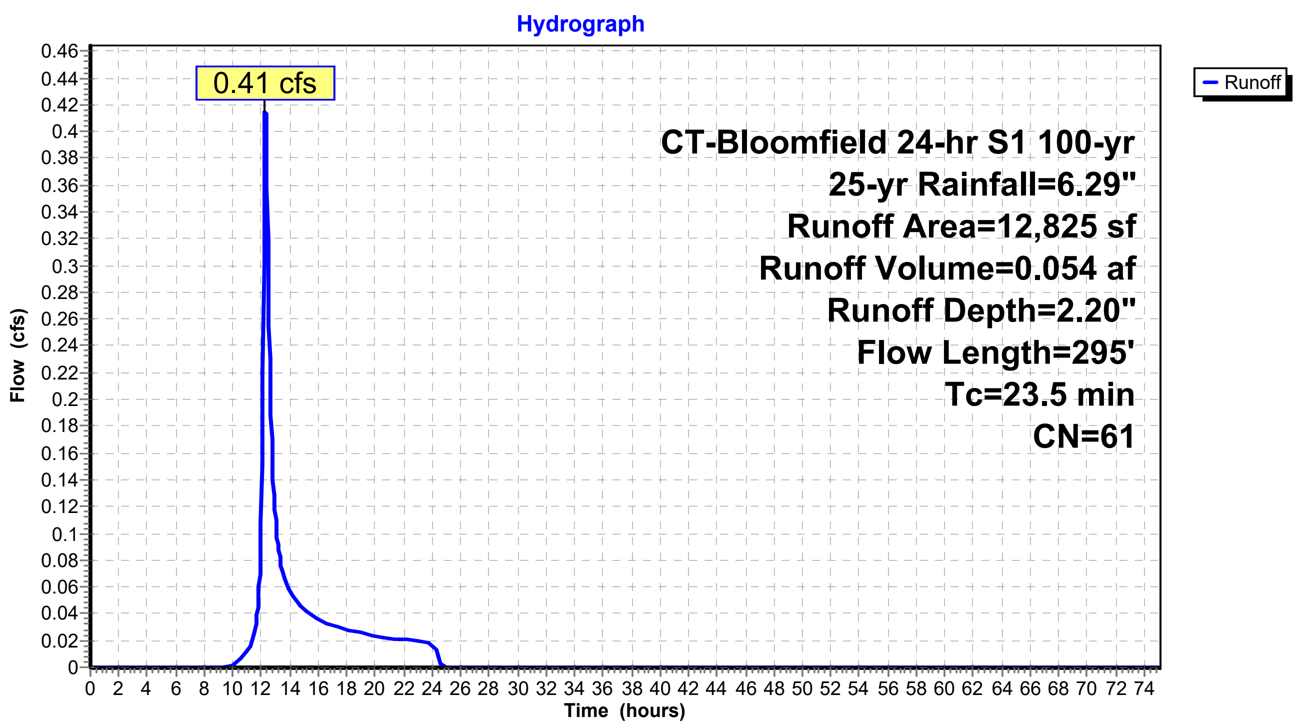
Runoff = 0.41 cfs @ 12.29 hrs, Volume= 0.054 af, Depth= 2.20"
Routed to Reach DP-4 : Corner Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
8,375	61	>75% Grass cover, Good, HSG B
4,450	60	Woods, Fair, HSG B
12,825	61	Weighted Average
12,825		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.3	100	0.0300	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
5.2	195	0.0154	0.62		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.5	295	Total			

Subcatchment PDA-800: Southeast Site



Summary for Subcatchment PDA-900: Driveway at Loading Dock and Yard

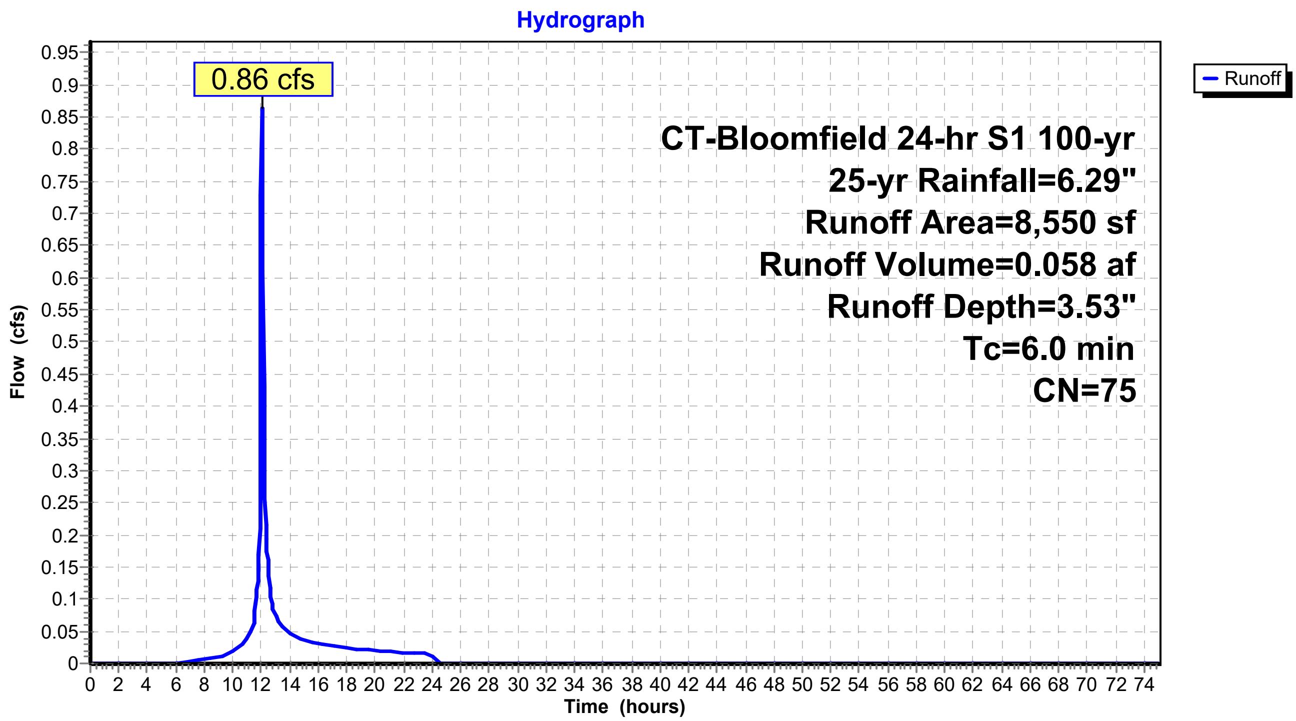
Runoff = 0.86 cfs @ 12.04 hrs, Volume= 0.058 af, Depth= 3.53"
Routed to Pond 4P : Underground Chamber System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
5,350	61	>75% Grass cover, Good, HSG B
3,200	98	Paved parking, HSG B
8,550	75	Weighted Average
5,350		62.57% Pervious Area
3,200		37.43% Impervious Area

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

Subcatchment PDA-900: Driveway at Loading Dock and Yard



Summary for Reach 6R: (new Reach)

Inflow Area = 1.300 ac, 76.07% Impervious, Inflow Depth = 0.00" for 25-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-2 : South Wetland

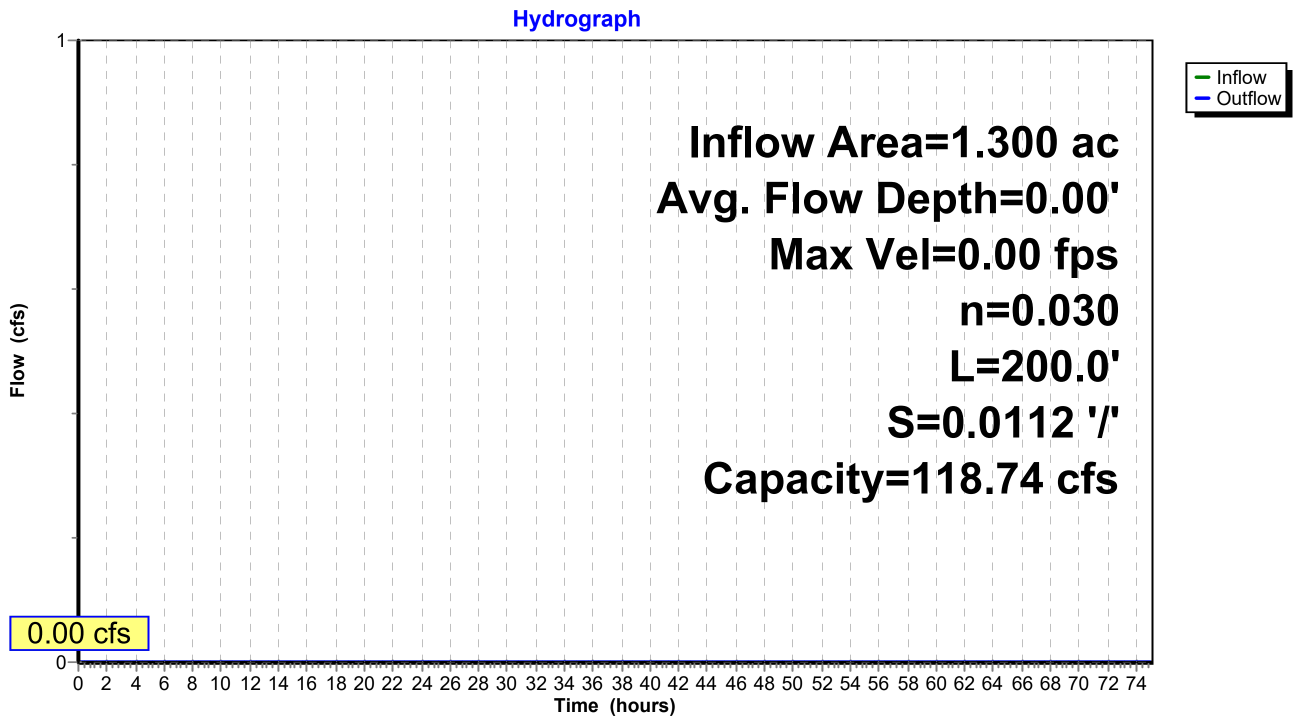
Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 118.74 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 200.0' Slope= 0.0112 '/'
Inlet Invert= 128.25', Outlet Invert= 126.00'

‡

Reach 6R: (new Reach)



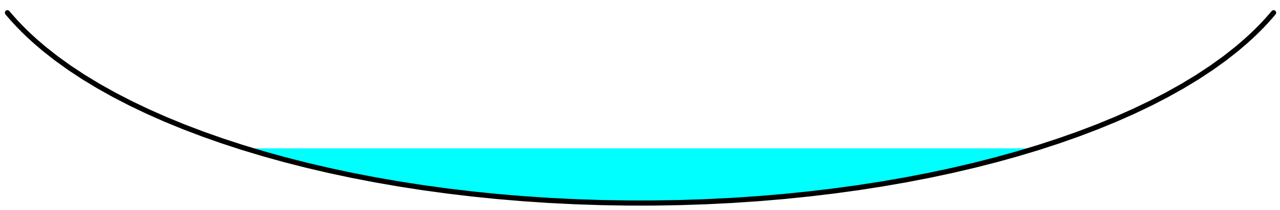
Summary for Reach C-1: Southwest channel

Inflow Area = 5.263 ac, 28.08% Impervious, Inflow Depth = 2.19" for 25-yr event
Inflow = 5.68 cfs @ 12.43 hrs, Volume= 0.962 af
Outflow = 5.51 cfs @ 12.59 hrs, Volume= 0.962 af, Atten= 3%, Lag= 9.8 min
Routed to Reach C-2 : South Abutter Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.89 fps, Min. Travel Time= 5.8 min
Avg. Velocity = 0.29 fps, Avg. Travel Time= 17.8 min

Peak Storage= 1,924 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.57' , Surface Width= 16.09'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 81.72 cfs

30.00' x 2.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 312.0' Slope= 0.0064 '/'
Inlet Invert= 125.00', Outlet Invert= 123.00'



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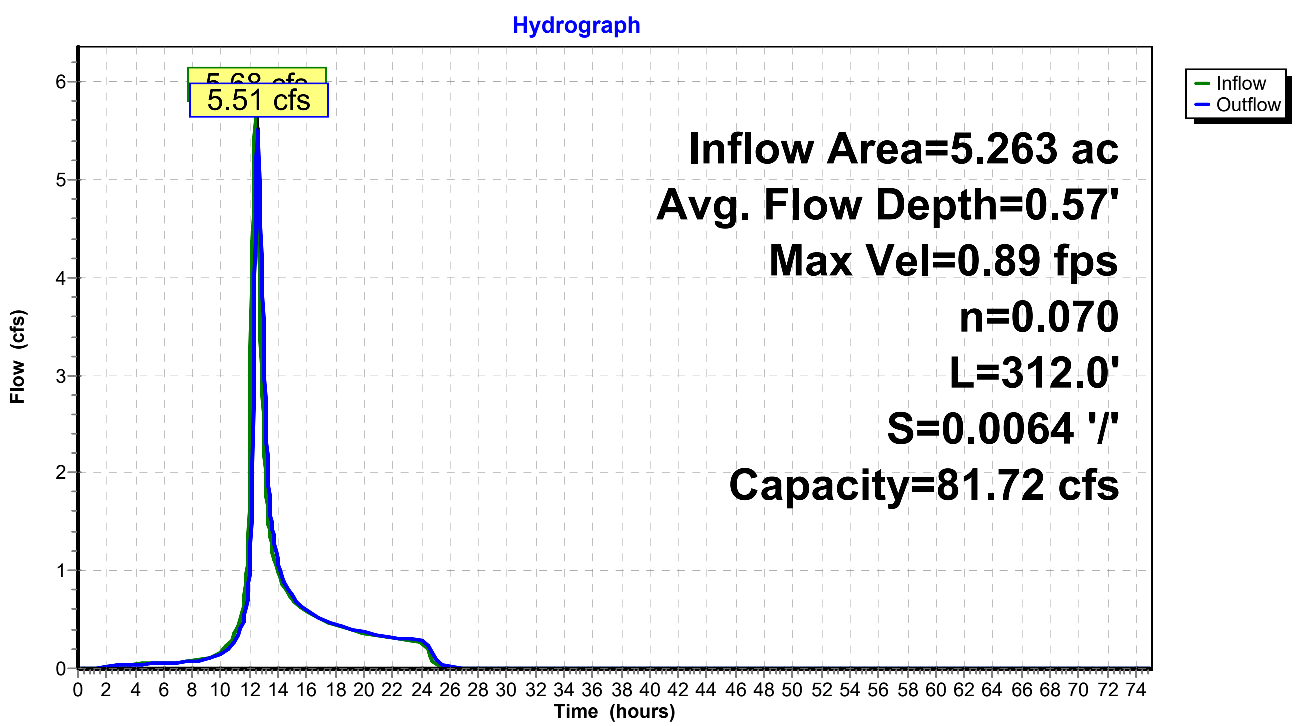
Reach C-1: Southwest channel



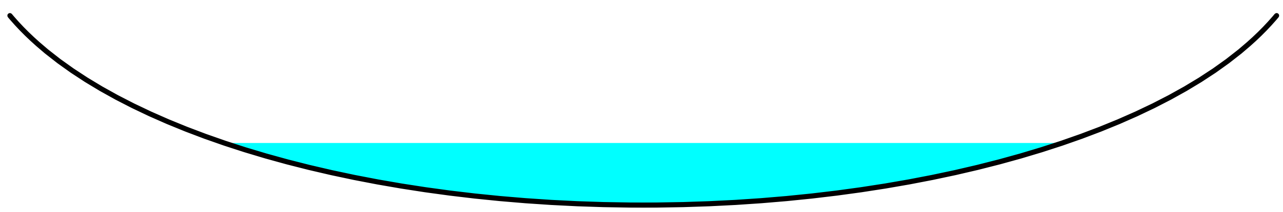
Summary for Reach C-2: South Abutter Channel

Inflow Area = 5.474 ac, 27.00% Impervious, Inflow Depth = 2.19" for 25-yr event
Inflow = 5.62 cfs @ 12.59 hrs, Volume= 1.001 af
Outflow = 5.57 cfs @ 12.68 hrs, Volume= 1.001 af, Atten= 1%, Lag= 5.6 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.27 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 0.41 fps, Avg. Travel Time= 10.1 min

Peak Storage= 1,093 cf @ 12.63 hrs
Average Depth at Peak Storage= 0.33' , Surface Width= 20.03'
Bank-Full Depth= 1.00' Flow Area= 23.3 sf, Capacity= 62.53 cfs

35.00' x 1.00' deep Parabolic Channel, n= 0.050 Sluggish weedy reaches w/pools
Length= 250.0' Slope= 0.0140 '/'
Inlet Invert= 124.00', Outlet Invert= 120.50'



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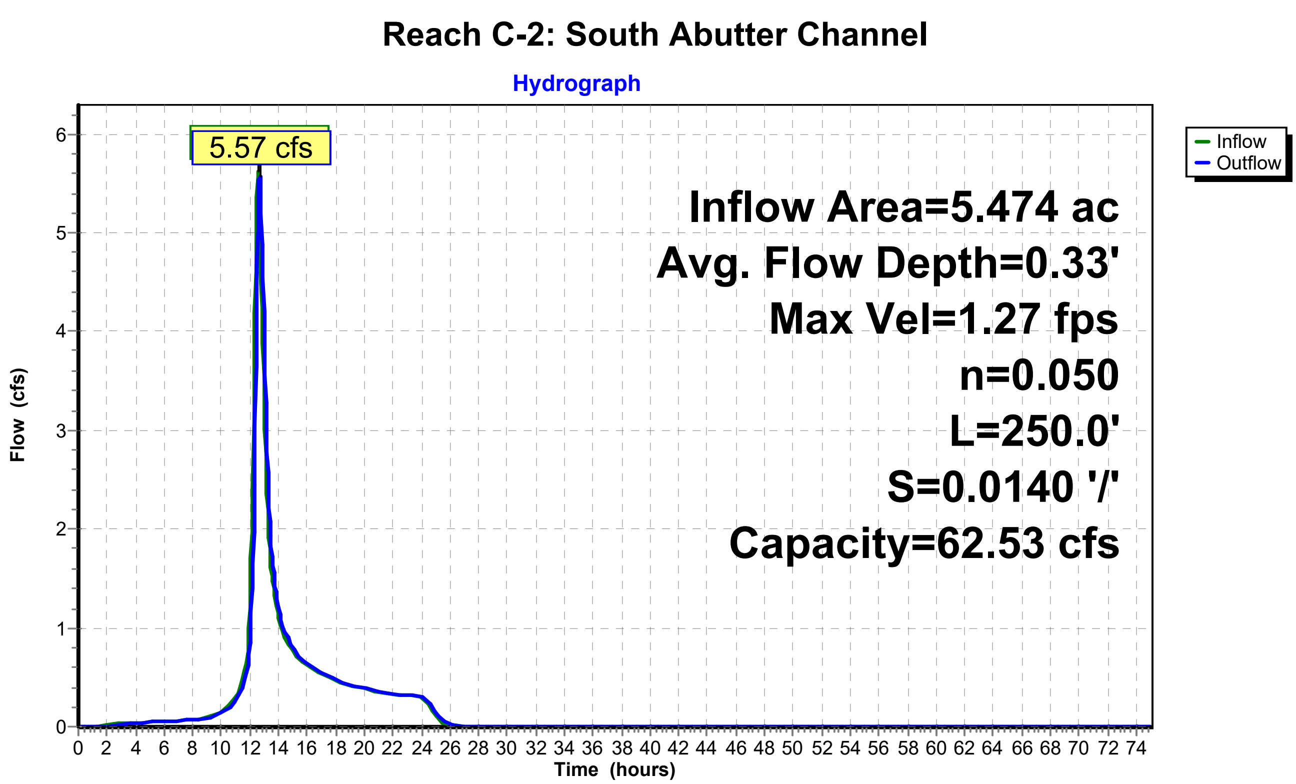


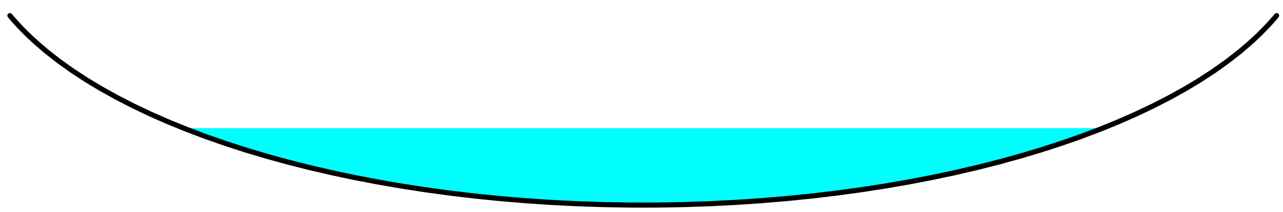
Summary for Reach DP-2: South Wetland

Inflow Area = 5.263 ac, 28.08% Impervious, Inflow Depth = 2.19" for 25-yr event
Inflow = 5.80 cfs @ 12.32 hrs, Volume= 0.962 af
Outflow = 5.68 cfs @ 12.43 hrs, Volume= 0.962 af, Atten= 2%, Lag= 6.7 min
Routed to Reach C-1 : Southwest channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.55 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.18 fps, Avg. Travel Time= 11.9 min

Peak Storage= 1,346 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.41' , Surface Width= 38.24'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 40.17 cfs

60.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 130.0' Slope= 0.0038 '/'
Inlet Invert= 125.50', Outlet Invert= 125.00'



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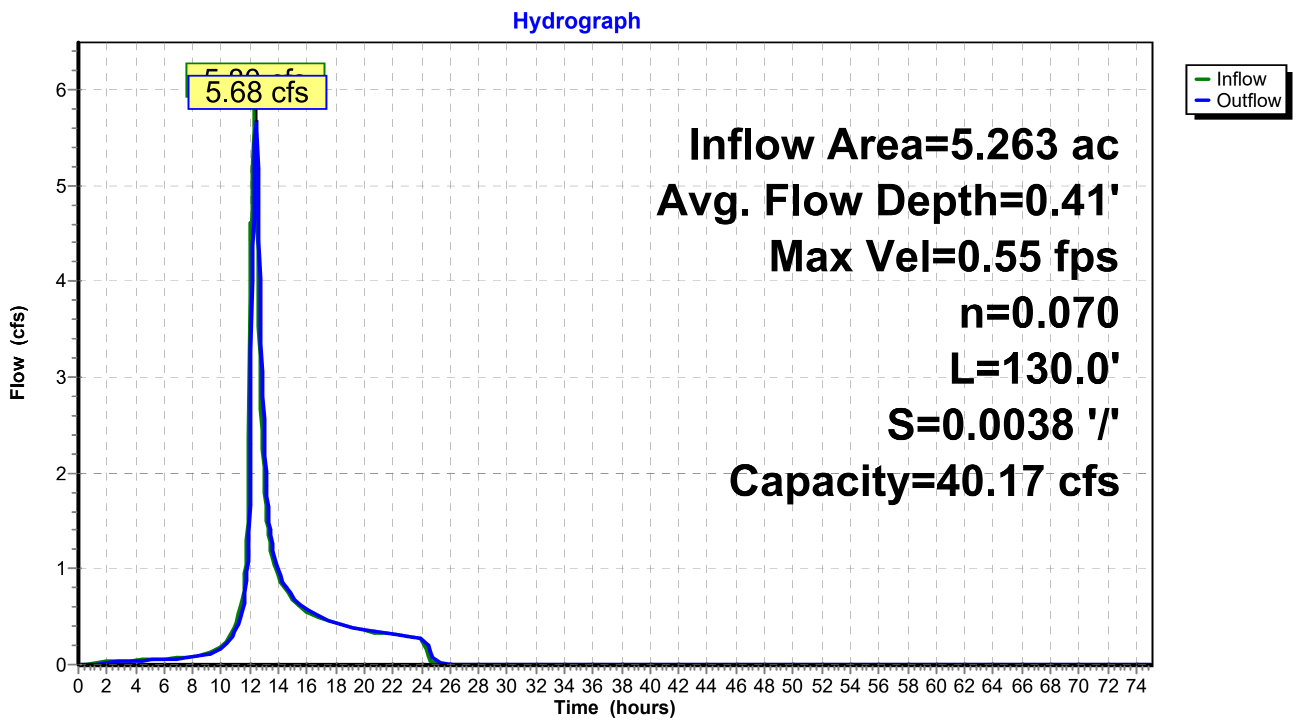
Reach DP-2: South Wetland

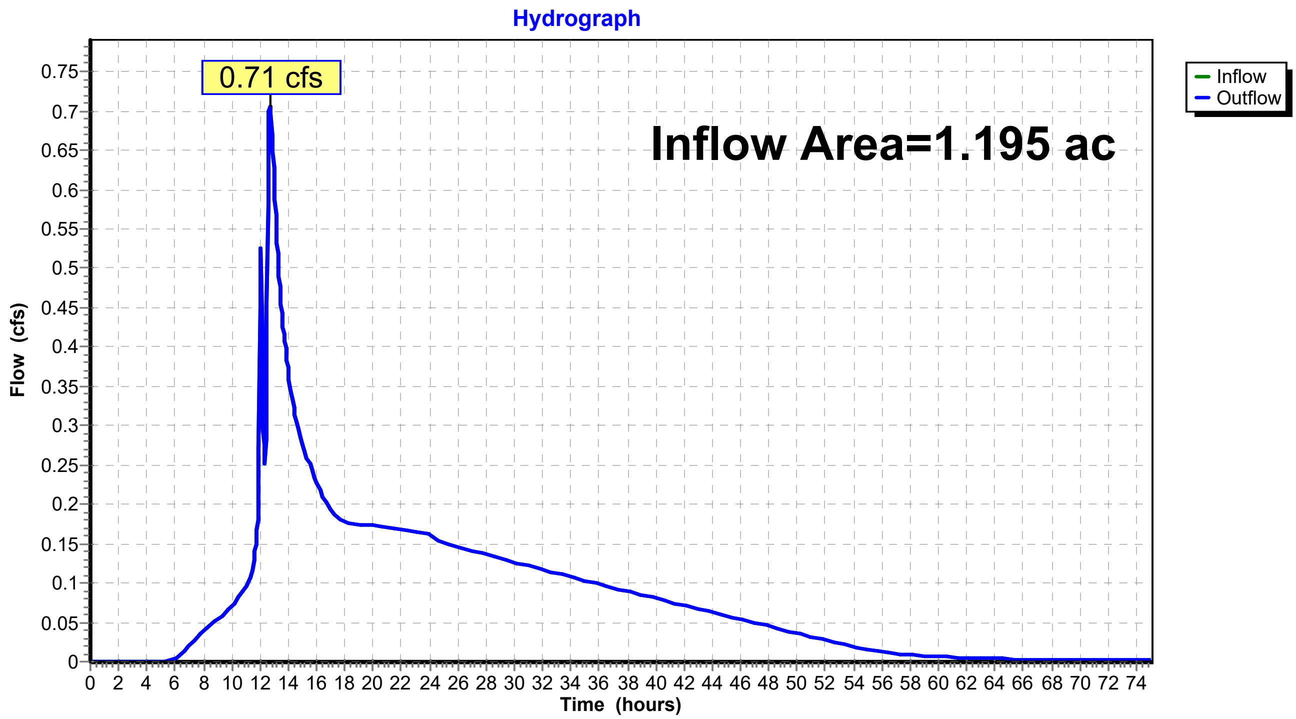


Summary for Reach DP-3: Street Catch Basin - Front of Site

Inflow Area = 1.195 ac, 79.50% Impervious, Inflow Depth > 4.98" for 25-yr event
Inflow = 0.71 cfs @ 12.70 hrs, Volume= 0.496 af
Outflow = 0.71 cfs @ 12.70 hrs, Volume= 0.496 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs

Reach DP-3: Street Catch Basin - Front of Site

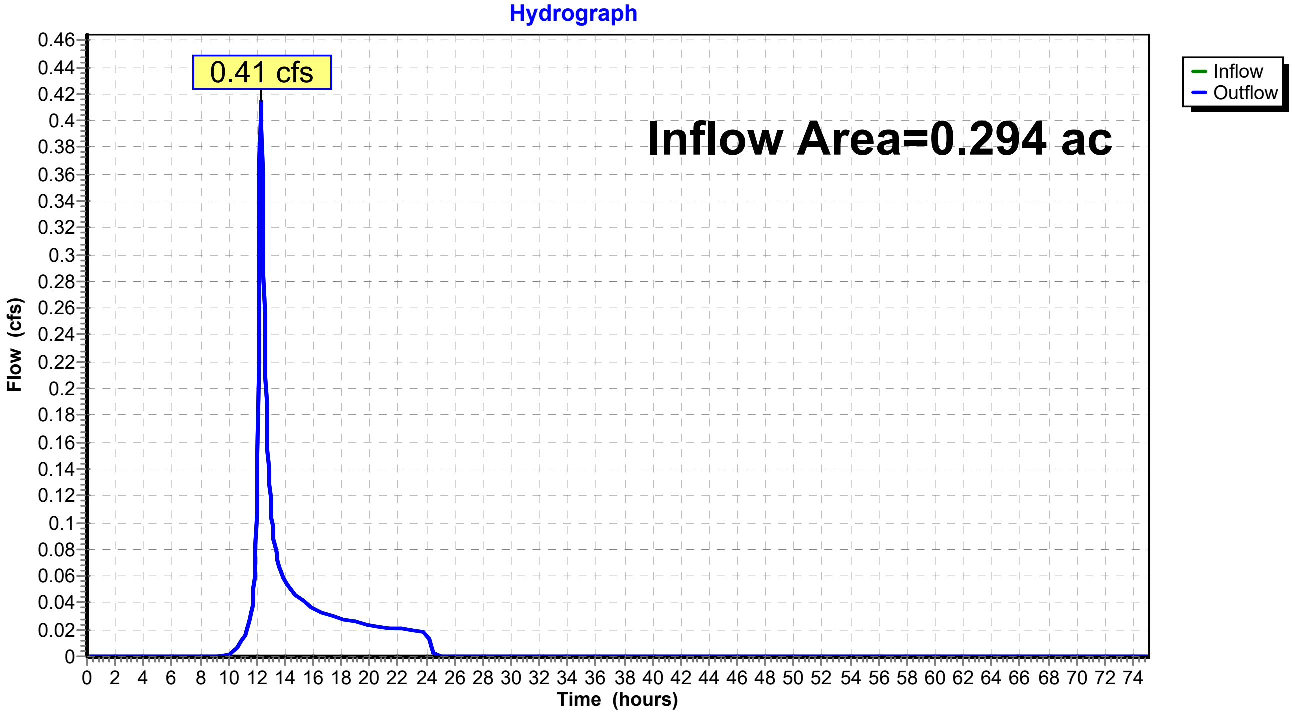


Summary for Reach DP-4: Corner Catch Basin

Inflow Area = 0.294 ac, 0.00% Impervious, Inflow Depth = 2.20" for 25-yr event
Inflow = 0.41 cfs @ 12.29 hrs, Volume= 0.054 af
Outflow = 0.41 cfs @ 12.29 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs

Reach DP-4: Corner Catch Basin

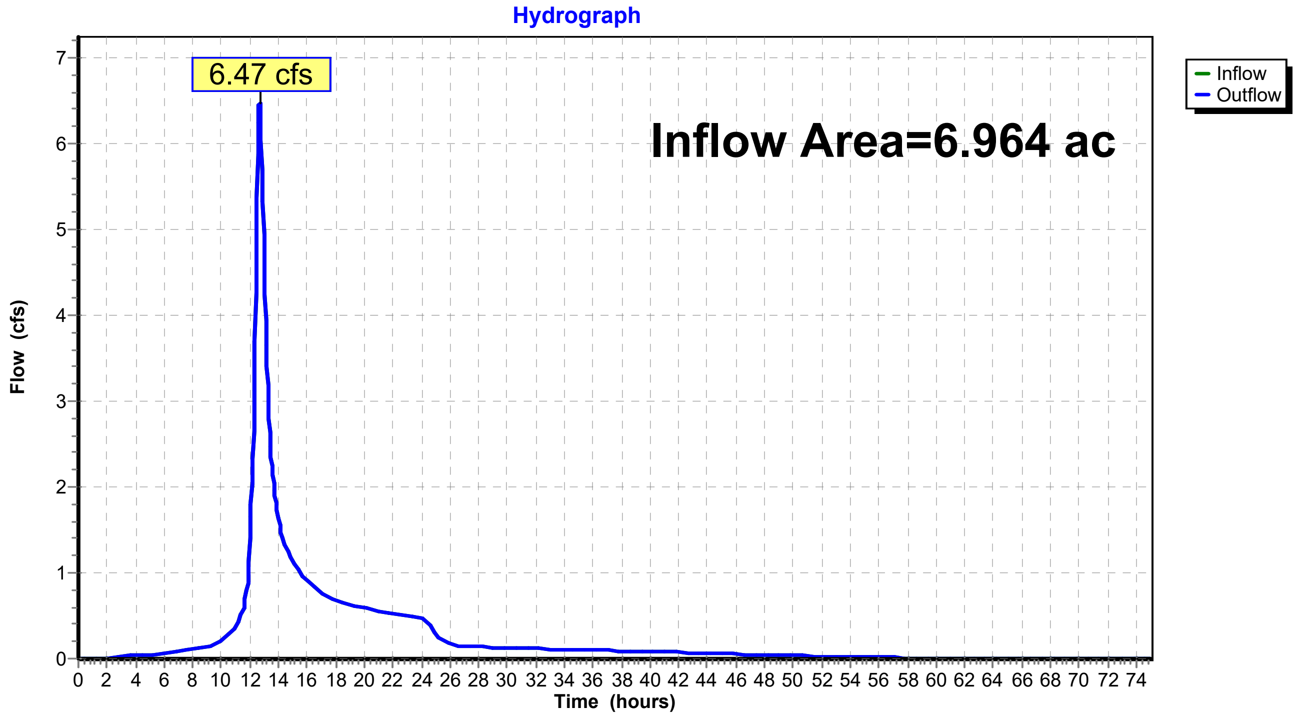


Summary for Reach DP-5: Northwood Drive System

Inflow Area =	6.964 ac,	34.87% Impervious,	Inflow Depth > 2.67"	for 25-yr event	
Inflow =	6.47 cfs @	12.68 hrs,	Volume=	1.550 af	
Outflow =	6.47 cfs @	12.68 hrs,	Volume=	1.550 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs

Reach DP-5: Northwood Drive System



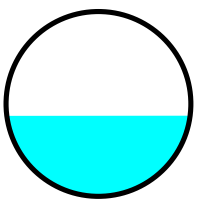
Summary for Reach IDP-1: Culvert

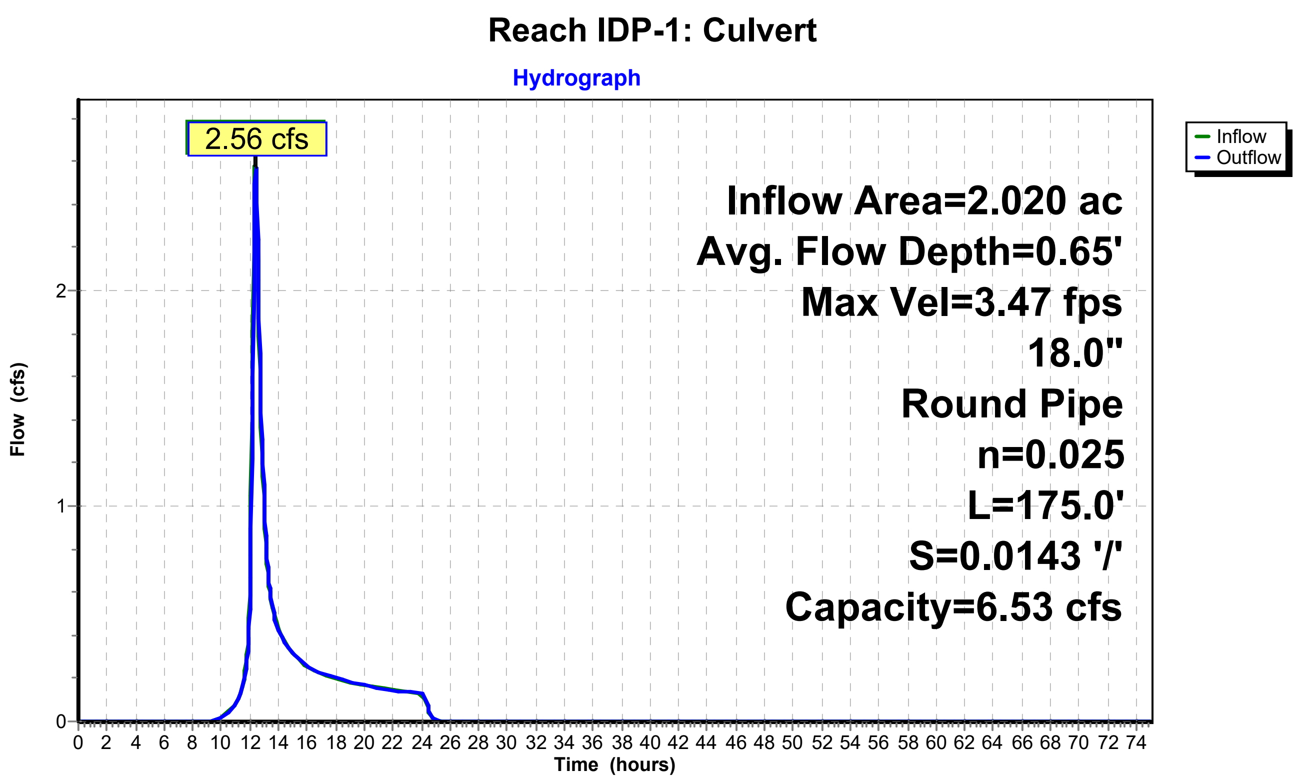
Inflow Area = 2.020 ac, 3.01% Impervious, Inflow Depth = 2.29" for 25-yr event
Inflow = 2.57 cfs @ 12.38 hrs, Volume= 0.386 af
Outflow = 2.56 cfs @ 12.41 hrs, Volume= 0.386 af, Atten= 0%, Lag= 1.6 min
Routed to Reach DP-2 : South Wetland

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.47 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.59 fps, Avg. Travel Time= 1.8 min

Peak Storage= 130 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.65' , Surface Width= 1.49'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.53 cfs

18.0" Round Pipe
n= 0.025 Corrugated metal
Length= 175.0' Slope= 0.0143 '/'
Inlet Invert= 128.00', Outlet Invert= 125.50'





Summary for Pond 4P: Underground Chamber System

Inflow Area = 1.097 ac, 84.00% Impervious, Inflow Depth = 5.39" for 25-yr event
Inflow = 6.72 cfs @ 12.04 hrs, Volume= 0.493 af
Outflow = 0.66 cfs @ 12.71 hrs, Volume= 0.469 af, Atten= 90%, Lag= 40.3 min
Primary = 0.66 cfs @ 12.71 hrs, Volume= 0.469 af
Routed to Reach DP-3 : Street Catch Basin - Front of Site

Routing by Stor-Ind method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Peak Elev= 126.88' @ 12.71 hrs Surf.Area= 0.122 ac Storage= 0.276 af

Plug-Flow detention time= 792.1 min calculated for 0.469 af (95% of inflow)
Center-of-Mass det. time= 762.3 min (1,532.1 - 769.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	124.00'	0.134 af	**44.25'W x 120.42'L x 4.75'H Field A** 0.581 af Overall - 0.246 af Embedded = 0.335 af x 40.0% Voids
#2A	124.00'	0.246 af	**ADS_StormTech MC-3500 d +Cap** x 96 Inside #1 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 96 Chambers in 6 Rows Cap Storage= 14.9 cf x 2 x 6 rows = 178.8 cf
		0.380 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	124.00'	**12.0" Round Culvert** L= 200.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 124.00' / 123.00' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	126.75'	**4.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Device 1	124.20'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.65 cfs @ 12.71 hrs HW=126.88' (Free Discharge)
└─**1=Culvert** (Passes 0.65 cfs of 4.08 cfs potential flow)
  ├─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.48 cfs @ 0.96 fps)
  └─**3=Orifice/Grate** (Orifice Controls 0.17 cfs @ 7.75 fps)

Pond 4P: Underground Chamber System - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
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
Cap Storage= 14.9 cf x 2 x 6 rows = 178.8 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

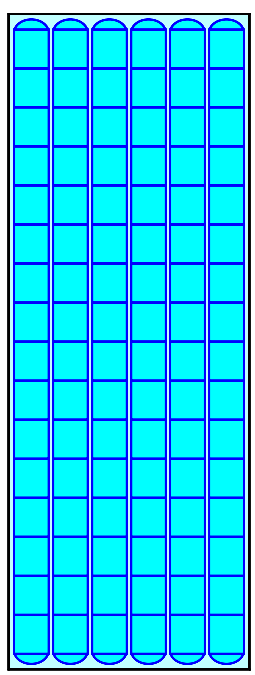
16 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 118.42' Row Length +12.0" End Stone x 2 = 120.42' Base Length
6 Rows x 77.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 44.25' Base Width
45.0" Chamber Height + 12.0" Stone Cover = 4.75' Field Height

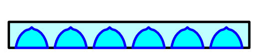
96 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 6 Rows = 10,734.2 cf Chamber Storage

25,310.8 cf Field - 10,734.2 cf Chambers = 14,576.6 cf Stone x 40.0% Voids = 5,830.6 cf Stone Storage

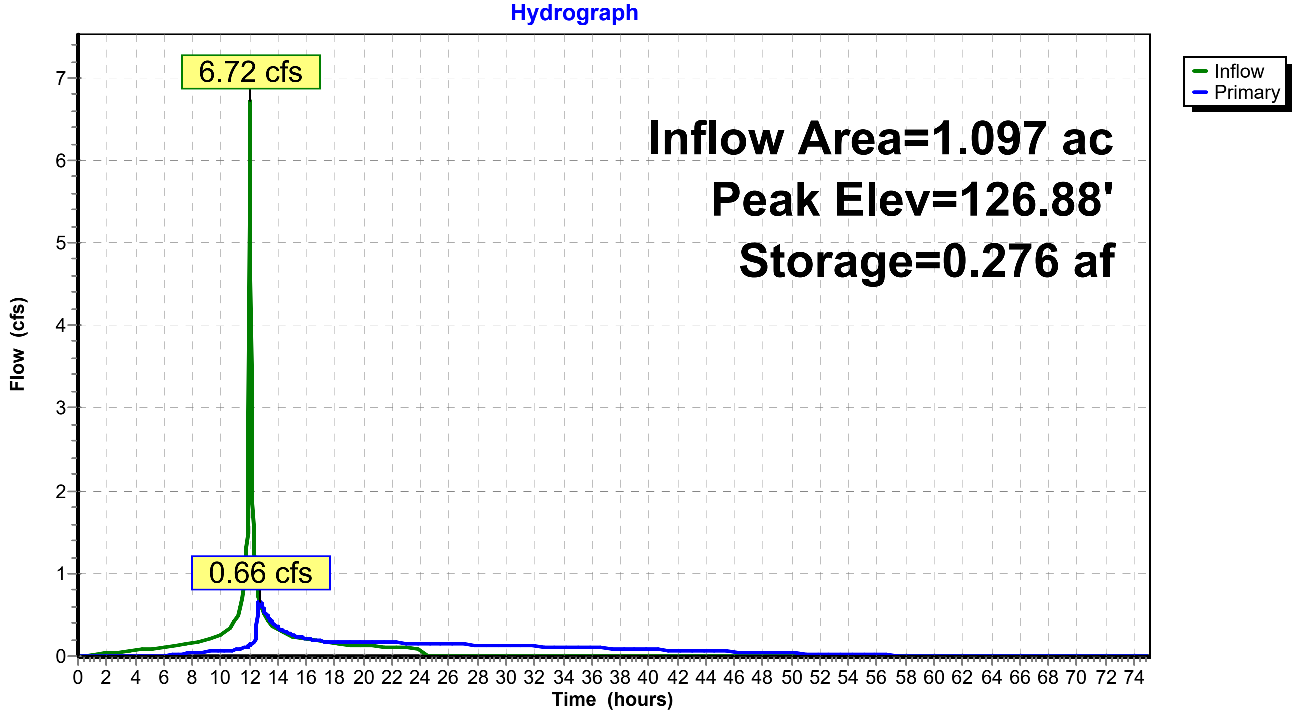
Chamber Storage + Stone Storage = 16,564.8 cf = 0.380 af
Overall Storage Efficiency = 65.4%
Overall System Size = 120.42' x 44.25' x 4.75'

96 Chambers
937.4 cy Field
539.9 cy Stone





Pond 4P: Underground Chamber System



Summary for Pond 5P: Surface Basin

Inflow Area = 1.300 ac, 76.07% Impervious, Inflow Depth = 5.24" for 25-yr event
Inflow = 8.05 cfs @ 12.04 hrs, Volume= 0.568 af
Outflow = 0.21 cfs @ 16.78 hrs, Volume= 0.568 af, Atten= 97%, Lag= 284.2 min
Discarded = 0.21 cfs @ 16.78 hrs, Volume= 0.568 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 6R : (new Reach)

Routing by Stor-Ind method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Peak Elev= 127.62' @ 16.78 hrs Surf.Area= 9,514 sf Storage= 13,484 cf

Plug-Flow detention time= 639.3 min calculated for 0.567 af (100% of inflow)
Center-of-Mass det. time= 639.7 min (1,427.9 - 788.2)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	27,705 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

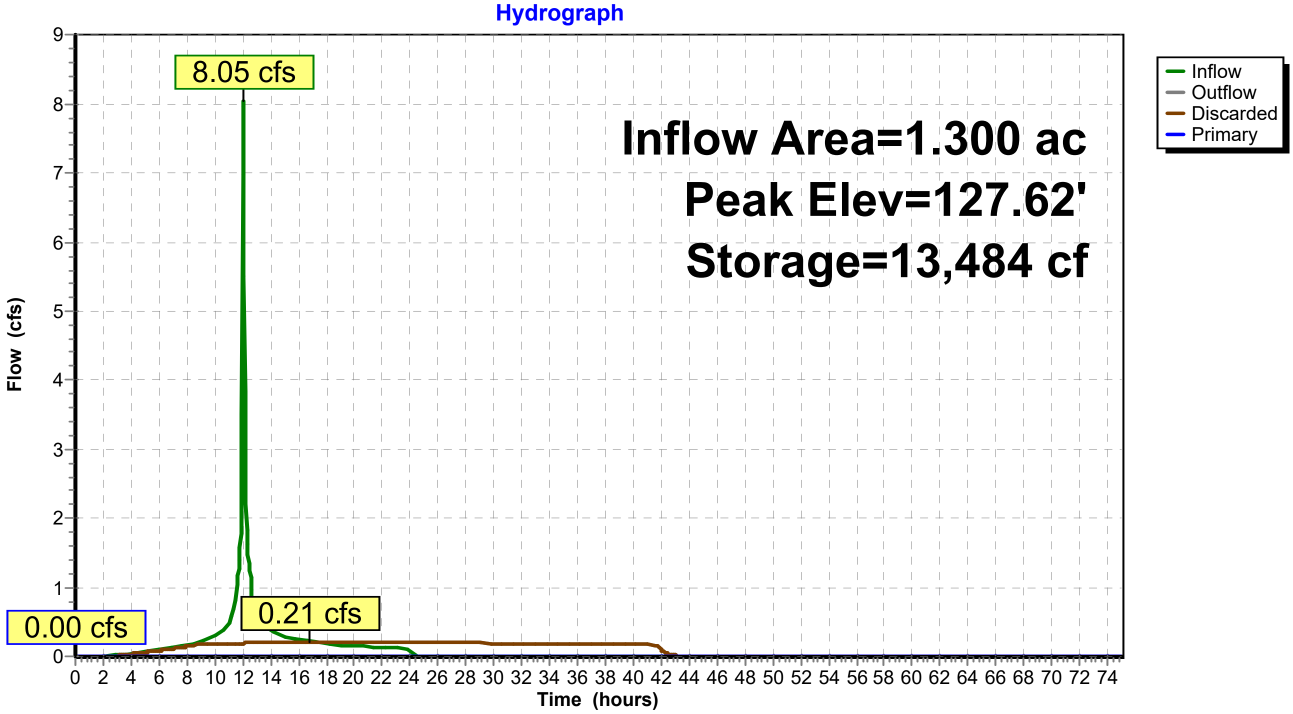
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
126.00	7,405	0	0
127.00	8,475	7,940	7,940
128.00	10,160	9,318	17,258
129.00	10,735	10,448	27,705

Device	Routing	Invert	Outlet Devices
#1	Discarded	126.00'	**0.960 in/hr Exfiltration over Surface area**
#2	Primary	128.25'	**Channel/Reach** using Reach 6R: (new Reach)

Discarded OutFlow Max=0.21 cfs @ 16.78 hrs HW=127.62' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.00' (Free Discharge)
└─**2=Channel/Reach** (Controls 0.00 cfs)

Pond 5P: Surface Basin



Time span=0.00-75.00 hrs, dt=0.05 hrs, 1501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PDA-100: Site North Runoff Area=88,000 sf 3.01% Impervious Runoff Depth=3.65"
Flow Length=360' Tc=30.5 min CN=62 Runoff=4.24 cfs 0.614 af

Subcatchment PDA-1000: Yard between Runoff Area=4,275 sf 29.24% Impervious Runoff Depth=4.80"
Tc=6.0 min CN=72 Runoff=0.59 cfs 0.039 af

Subcatchment PDA-200: Building Runoff Area=17,850 sf 100.00% Impervious Runoff Depth=7.88"
Tc=6.0 min CN=98 Runoff=3.50 cfs 0.269 af

Subcatchment PDA-300: Parking lot Runoff Area=21,400 sf 89.25% Impervious Runoff Depth=7.40"
Tc=6.0 min CN=94 Runoff=4.12 cfs 0.303 af

Subcatchment PDA-400: Rear Parking lot Runoff Area=18,850 sf 98.94% Impervious Runoff Depth=7.88"
Tc=6.0 min CN=98 Runoff=3.69 cfs 0.284 af

Subcatchment PDA-500: Site West Runoff Area=65,775 sf 0.00% Impervious Runoff Depth=4.34"
Flow Length=140' Tc=23.7 min CN=68 Runoff=4.41 cfs 0.546 af

Subcatchment PDA-600: Site South Edge Runoff Area=9,200 sf 0.00% Impervious Runoff Depth=3.54"
Flow Length=75' Slope=0.0667 '/' Tc=10.6 min CN=61 Runoff=0.74 cfs 0.062 af

Subcatchment PDA-700: Yard Runoff Area=56,625 sf 76.07% Impervious Runoff Depth=7.04"
Tc=6.0 min CN=91 Runoff=10.64 cfs 0.763 af

Subcatchment PDA-800: Southeast Site Runoff Area=12,825 sf 0.00% Impervious Runoff Depth=3.54"
Flow Length=295' Tc=23.5 min CN=61 Runoff=0.69 cfs 0.087 af

Subcatchment PDA-900: Driveway at Runoff Area=8,550 sf 37.43% Impervious Runoff Depth=5.15"
Tc=6.0 min CN=75 Runoff=1.26 cfs 0.084 af

Reach 6R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=200.0' S=0.0112 '/' Capacity=118.74 cfs Outflow=0.00 cfs 0.000 af

Reach C-1: Southwest channel Avg. Flow Depth=0.71' Max Vel=1.03 fps Inflow=8.95 cfs 1.444 af
n=0.070 L=312.0' S=0.0064 '/' Capacity=81.72 cfs Outflow=8.70 cfs 1.444 af

Reach C-2: South Abutter Channel Avg. Flow Depth=0.40' Max Vel=1.47 fps Inflow=8.87 cfs 1.506 af
n=0.050 L=250.0' S=0.0140 '/' Capacity=62.53 cfs Outflow=8.80 cfs 1.506 af

Reach DP-2: South Wetland Avg. Flow Depth=0.50' Max Vel=0.63 fps Inflow=9.09 cfs 1.444 af
n=0.070 L=130.0' S=0.0038 '/' Capacity=40.17 cfs Outflow=8.95 cfs 1.444 af

Reach DP-3: Street Catch Basin - Front of Site Inflow=3.53 cfs 0.672 af
Outflow=3.53 cfs 0.672 af

Reach DP-4: Corner Catch Basin Inflow=0.69 cfs 0.087 af
Outflow=0.69 cfs 0.087 af

Reach DP-5: Northwood Drive System Inflow=10.59 cfs 2.265 af
Outflow=10.59 cfs 2.265 af

Reach IDP-1: Culvert Avg. Flow Depth=0.88' Max Vel=3.93 fps Inflow=4.24 cfs 0.614 af
18.0" Round Pipe n=0.025 L=175.0' S=0.0143 '/' Capacity=6.53 cfs Outflow=4.22 cfs 0.614 af

Pond 4P: Underground Chamber System Peak Elev=127.19' Storage=0.299 af Inflow=8.87 cfs 0.656 af
Outflow=3.31 cfs 0.632 af

Pond 5P: Surface Basin Peak Elev=128.25' Storage=19,777 cf Inflow=10.64 cfs 0.763 af
Discarded=0.23 cfs 0.763 af Primary=0.00 cfs 0.000 af Outflow=0.23 cfs 0.763 af

Total Runoff Area = 6.964 ac Runoff Volume = 3.052 af Average Runoff Depth = 5.26"
65.13% Pervious = 4.536 ac 34.87% Impervious = 2.428 ac

Summary for Subcatchment PDA-100: Site North

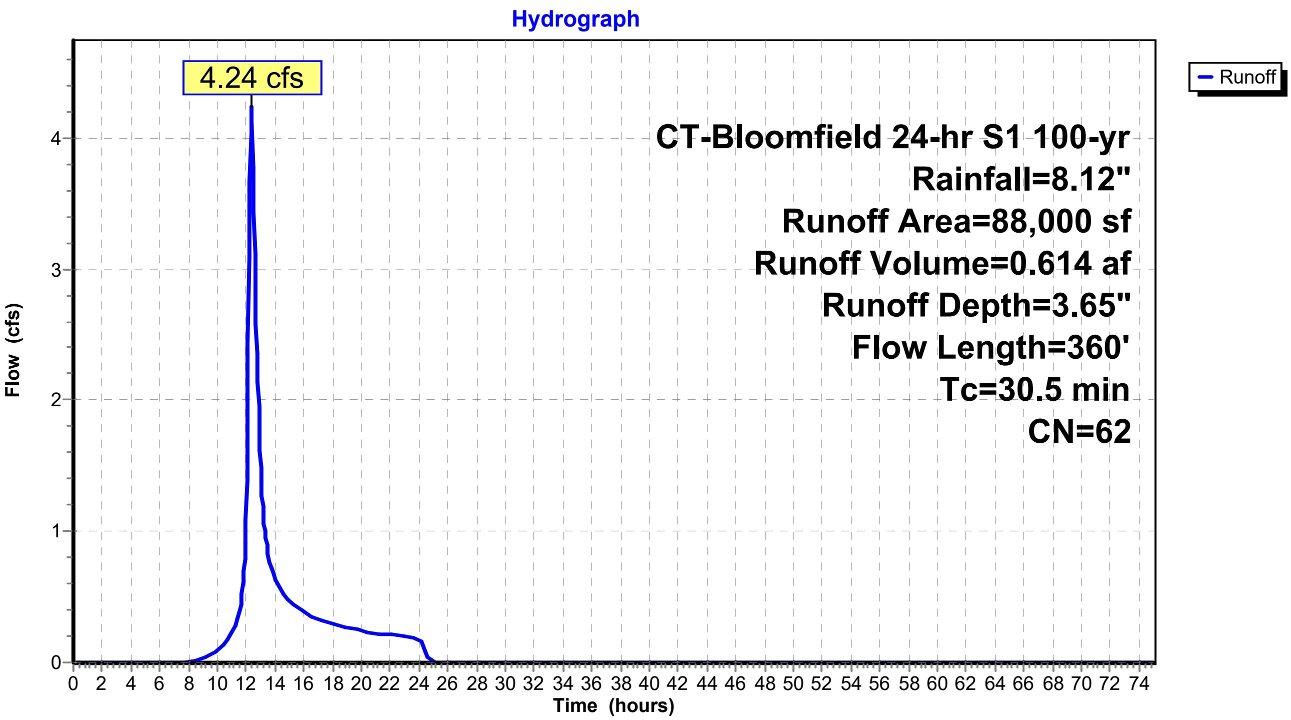
Runoff = 4.24 cfs @ 12.37 hrs, Volume= 0.614 af, Depth= 3.65"
Routed to Reach IDP-1 : Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr Rainfall=8.12"

Area (sf)	CN	Description
475	39	>75% Grass cover, Good, HSG A
14,975	61	>75% Grass cover, Good, HSG B
7,250	36	Woods, Fair, HSG A
50,550	60	Woods, Fair, HSG B
2,650	98	Paved parking, HSG A
12,100	79	Woods, Fair, HSG D
88,000	62	Weighted Average
85,350		96.99% Pervious Area
2,650		3.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4	100	0.0180	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
8.1	260	0.0115	0.54		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
30.5	360	Total			

Subcatchment PDA-100: Site North



Summary for Subcatchment PDA-1000: Yard between Driveways

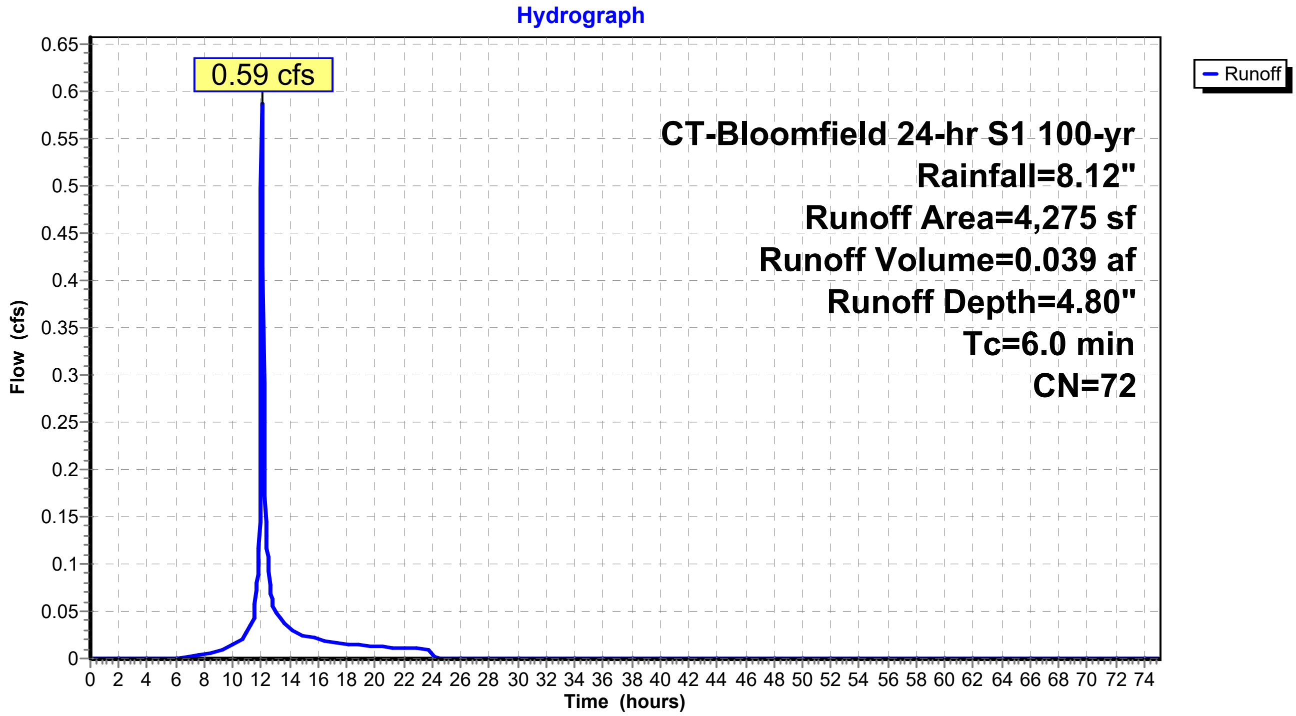
Runoff = 0.59 cfs @ 12.04 hrs, Volume= 0.039 af, Depth= 4.80"
Routed to Reach DP-3 : Street Catch Basin - Front of Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr Rainfall=8.12"

Area (sf)	CN	Description
3,025	61	>75% Grass cover, Good, HSG B
1,250	98	Paved parking, HSG B
4,275	72	Weighted Average
3,025		70.76% Pervious Area
1,250		29.24% Impervious Area

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

Subcatchment PDA-1000: Yard between Driveways



Summary for Subcatchment PDA-200: Building

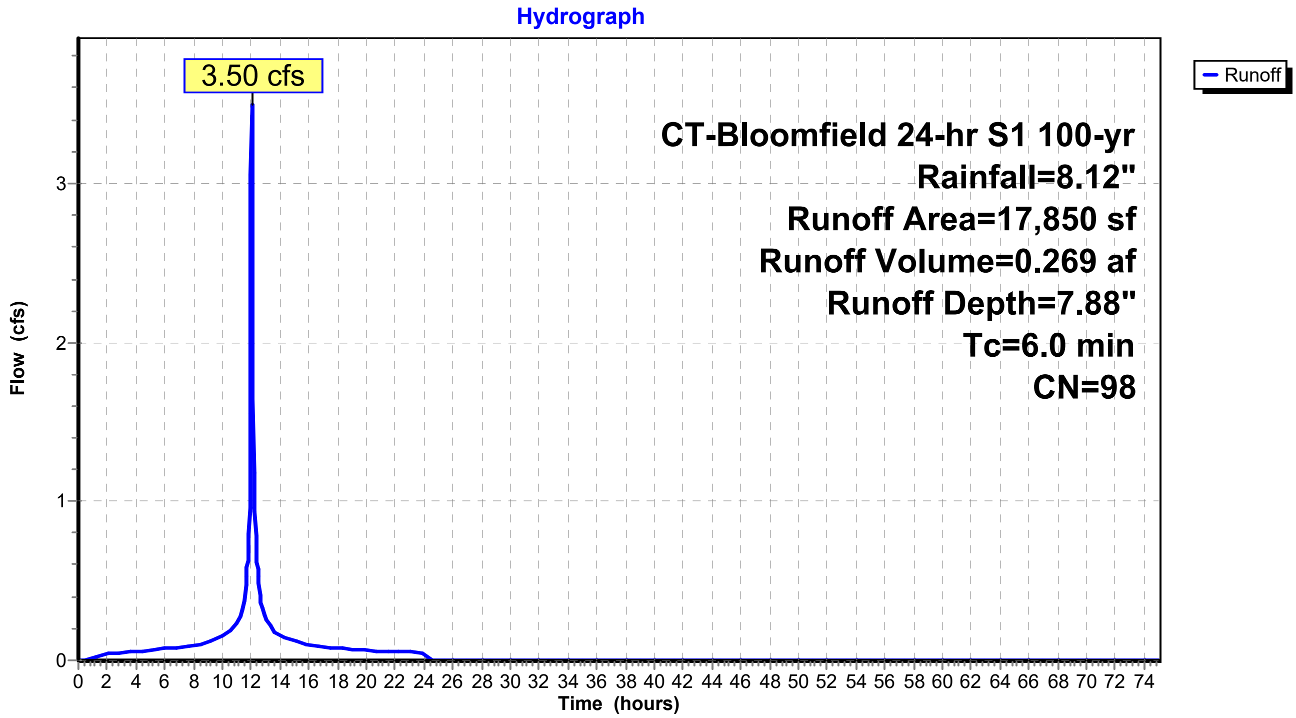
Runoff = 3.50 cfs @ 12.04 hrs, Volume= 0.269 af, Depth= 7.88"
Routed to Pond 4P : Underground Chamber System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr Rainfall=8.12"

Area (sf)	CN	Description
17,850	98	Roofs, HSG A
17,850		100.00% Impervious Area

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

Subcatchment PDA-200: Building



Summary for Subcatchment PDA-300: Parking lot

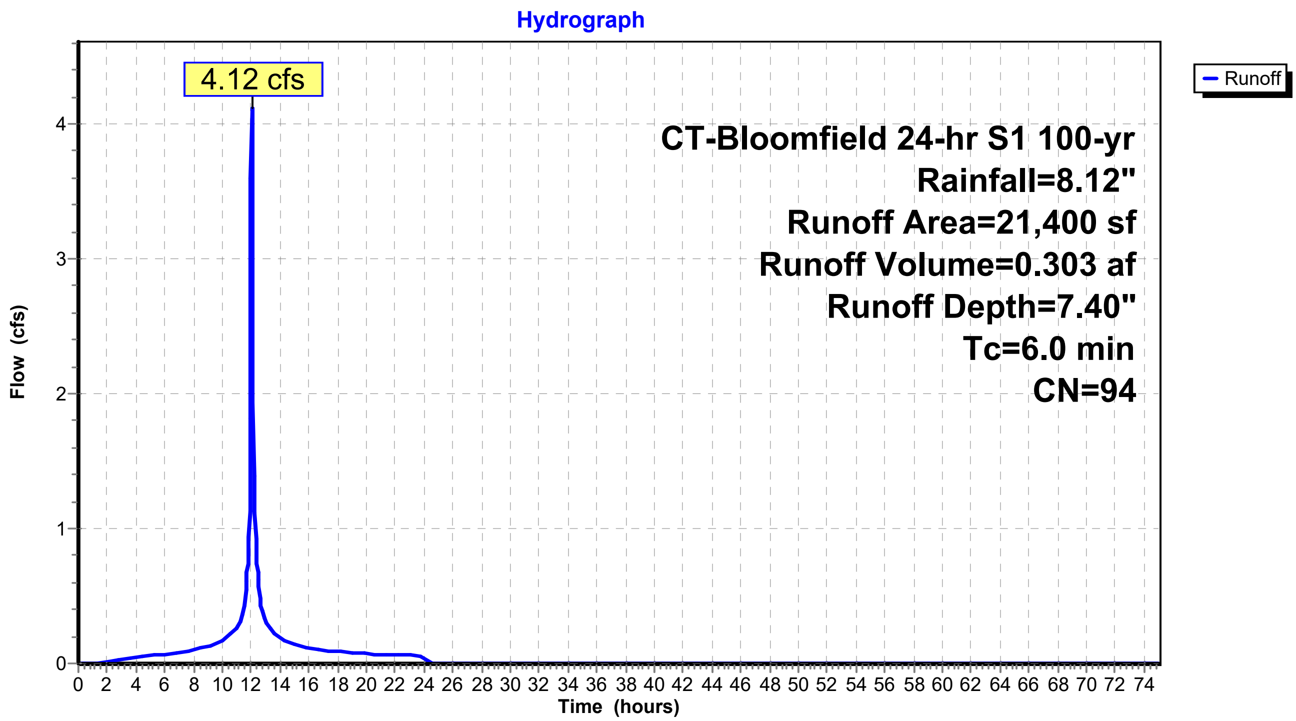
Runoff = 4.12 cfs @ 12.04 hrs, Volume= 0.303 af, Depth= 7.40"
Routed to Pond 4P : Underground Chamber System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr Rainfall=8.12"

Area (sf)	CN	Description
2,300	61	>75% Grass cover, Good, HSG B
19,100	98	Paved parking, HSG B
21,400	94	Weighted Average
2,300		10.75% Pervious Area
19,100		89.25% Impervious Area

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

Subcatchment PDA-300: Parking lot



Summary for Subcatchment PDA-400: Rear Parking lot

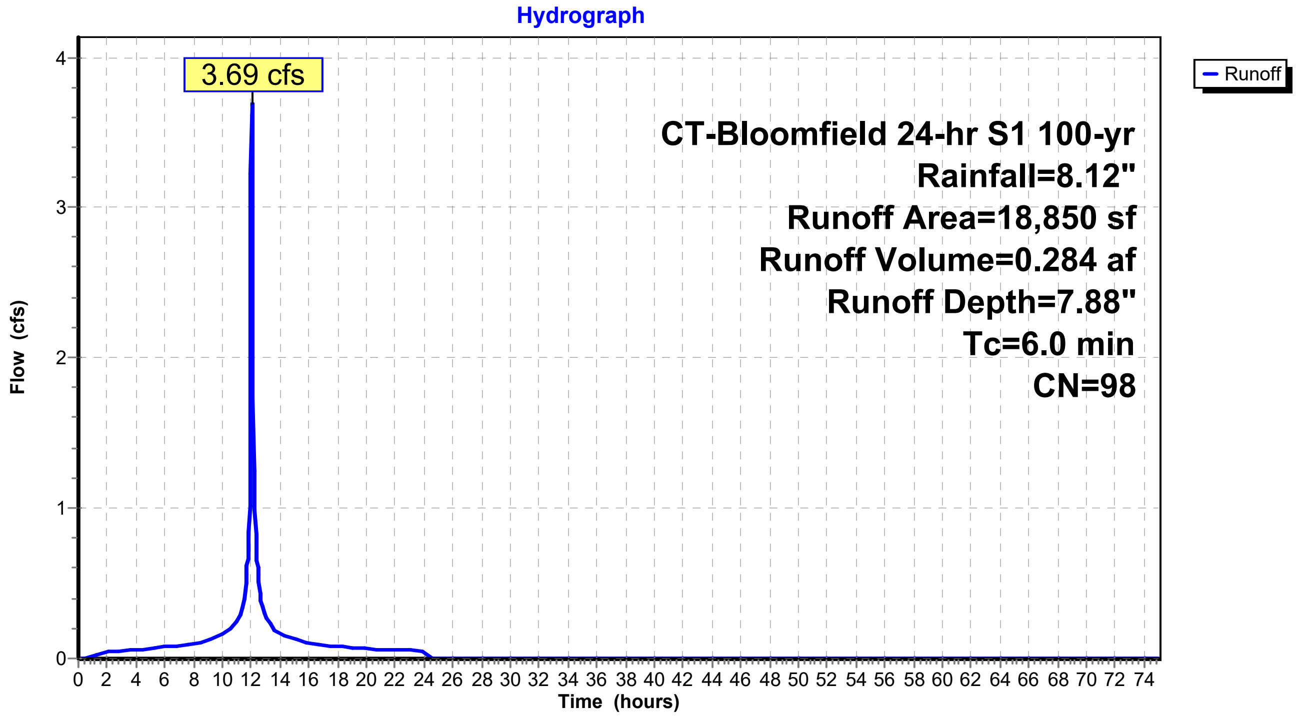
Runoff = 3.69 cfs @ 12.04 hrs, Volume= 0.284 af, Depth= 7.88"
Routed to Reach DP-2 : South Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr Rainfall=8.12"

Area (sf)	CN	Description
200	61	>75% Grass cover, Good, HSG B
18,650	98	Paved parking, HSG B
18,850	98	Weighted Average
200		1.06% Pervious Area
18,650		98.94% Impervious Area

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

Subcatchment PDA-400: Rear Parking lot



Summary for Subcatchment PDA-500: Site West

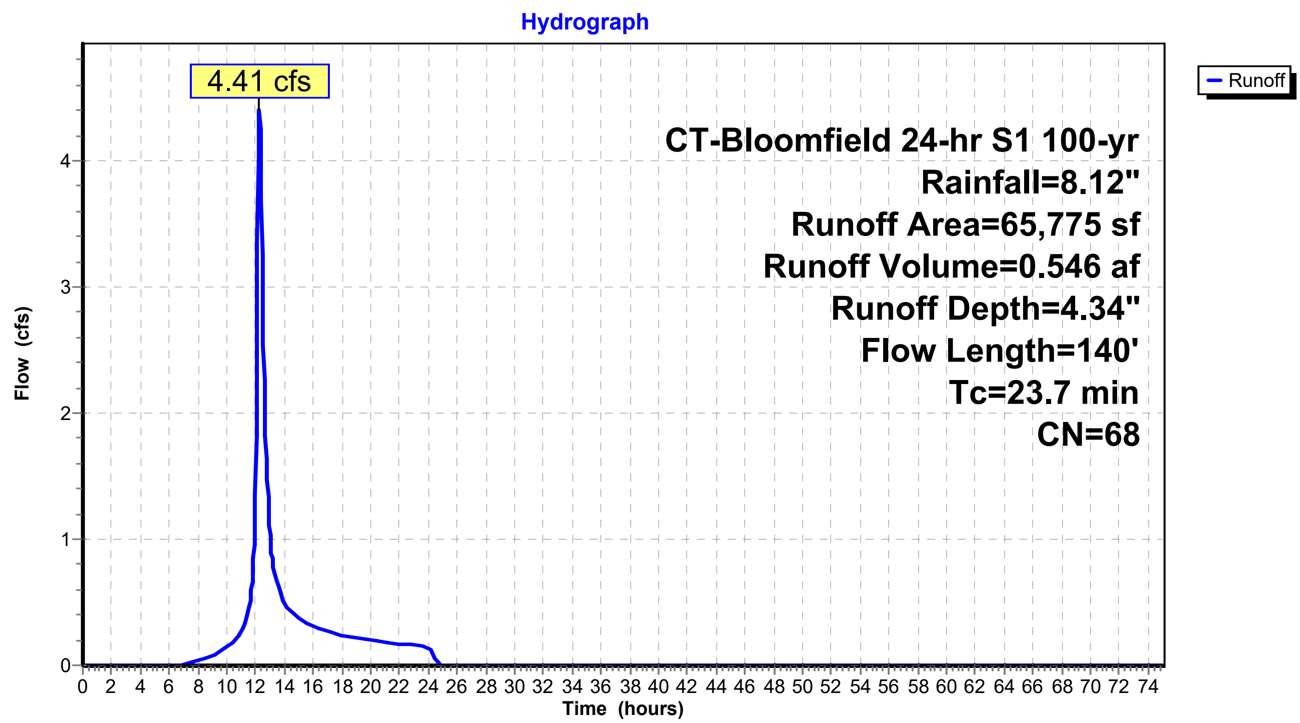
Runoff = 4.41 cfs @ 12.28 hrs, Volume= 0.546 af, Depth= 4.34"
Routed to Reach DP-2 : South Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr Rainfall=8.12"

Area (sf)	CN	Description
13,475	61	>75% Grass cover, Good, HSG B
25,350	60	Woods, Fair, HSG B
26,950	79	Woods, Fair, HSG D
65,775	68	Weighted Average
65,775		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	20	0.3330	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.19"
22.8	120	0.0250	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
23.7	140	Total			

Subcatchment PDA-500: Site West



Summary for Subcatchment PDA-600: Site South Edge

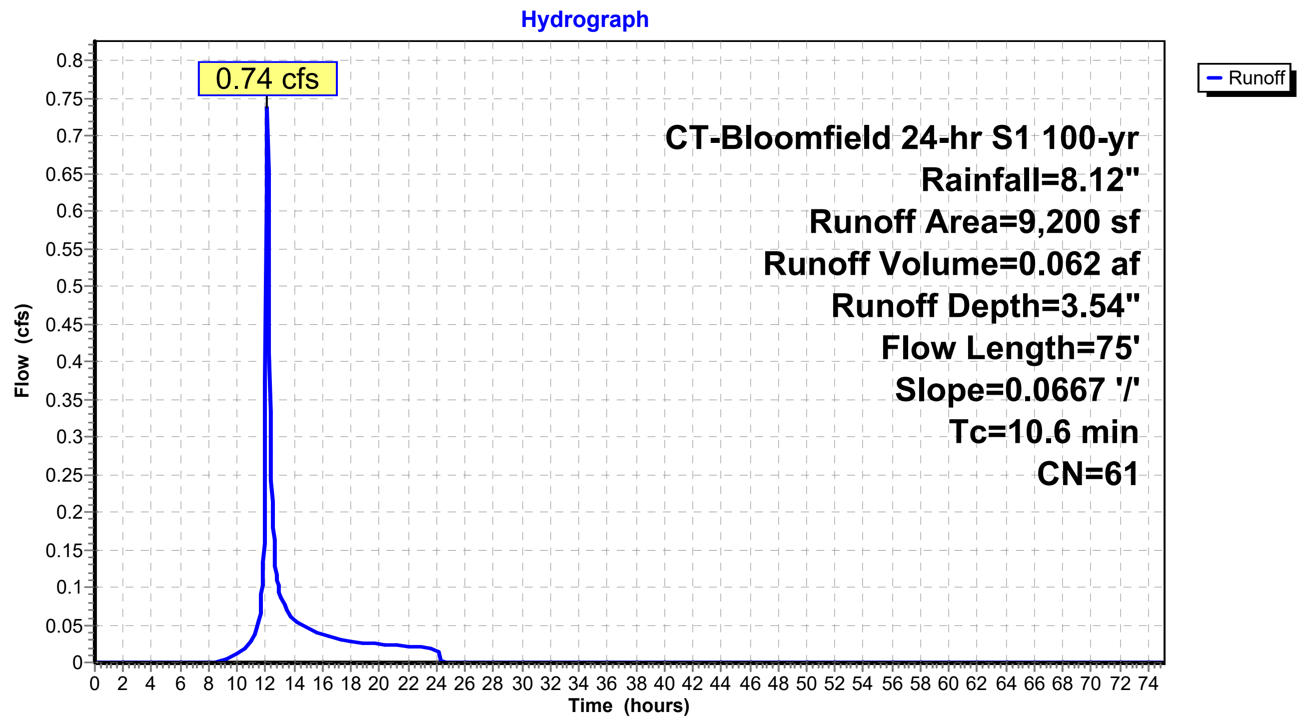
Runoff = 0.74 cfs @ 12.10 hrs, Volume= 0.062 af, Depth= 3.54"
Routed to Reach C-2 : South Abutter Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr Rainfall=8.12"

Area (sf)	CN	Description
9,200	61	>75% Grass cover, Good, HSG B
9,200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	75	0.0667	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"

Subcatchment PDA-600: Site South Edge



Summary for Subcatchment PDA-700: Yard

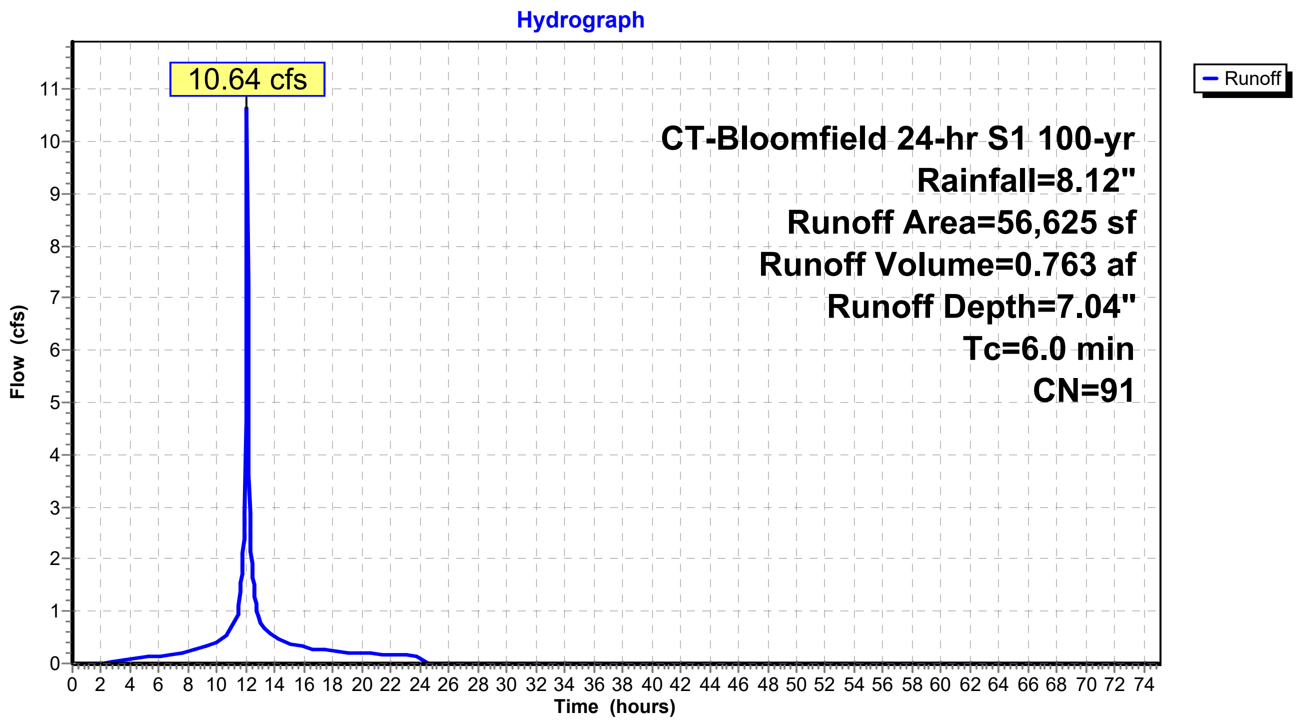
Runoff = 10.64 cfs @ 12.04 hrs, Volume= 0.763 af, Depth= 7.04"
Routed to Pond 5P : Surface Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr Rainfall=8.12"

Area (sf)	CN	Description
13,550	69	50-75% Grass cover, Fair, HSG B
43,075	98	Paved parking, HSG B
56,625	91	Weighted Average
13,550		23.93% Pervious Area
43,075		76.07% Impervious Area

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

Subcatchment PDA-700: Yard



Summary for Subcatchment PDA-800: Southeast Site

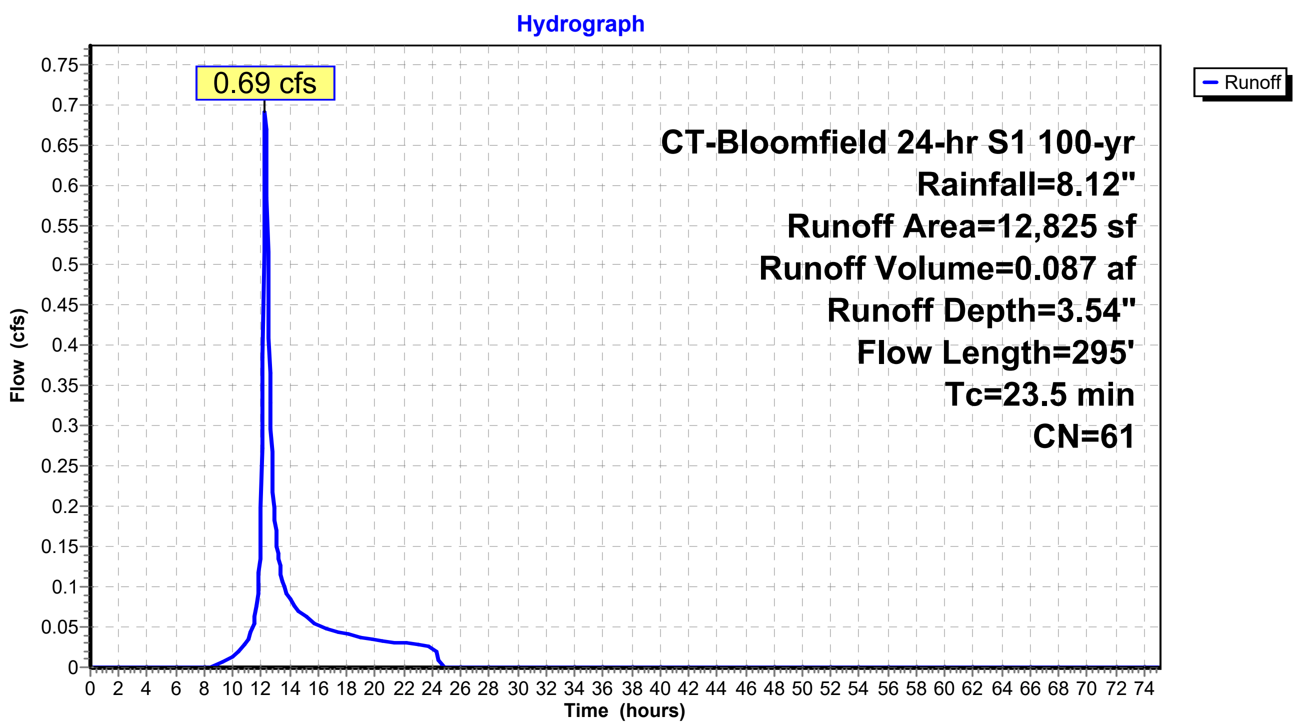
Runoff = 0.69 cfs @ 12.28 hrs, Volume= 0.087 af, Depth= 3.54"
Routed to Reach DP-4 : Corner Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr Rainfall=8.12"

Area (sf)	CN	Description
8,375	61	>75% Grass cover, Good, HSG B
4,450	60	Woods, Fair, HSG B
12,825	61	Weighted Average
12,825		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.3	100	0.0300	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.19"
5.2	195	0.0154	0.62		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.5	295	Total			

Subcatchment PDA-800: Southeast Site



Summary for Subcatchment PDA-900: Driveway at Loading Dock and Yard

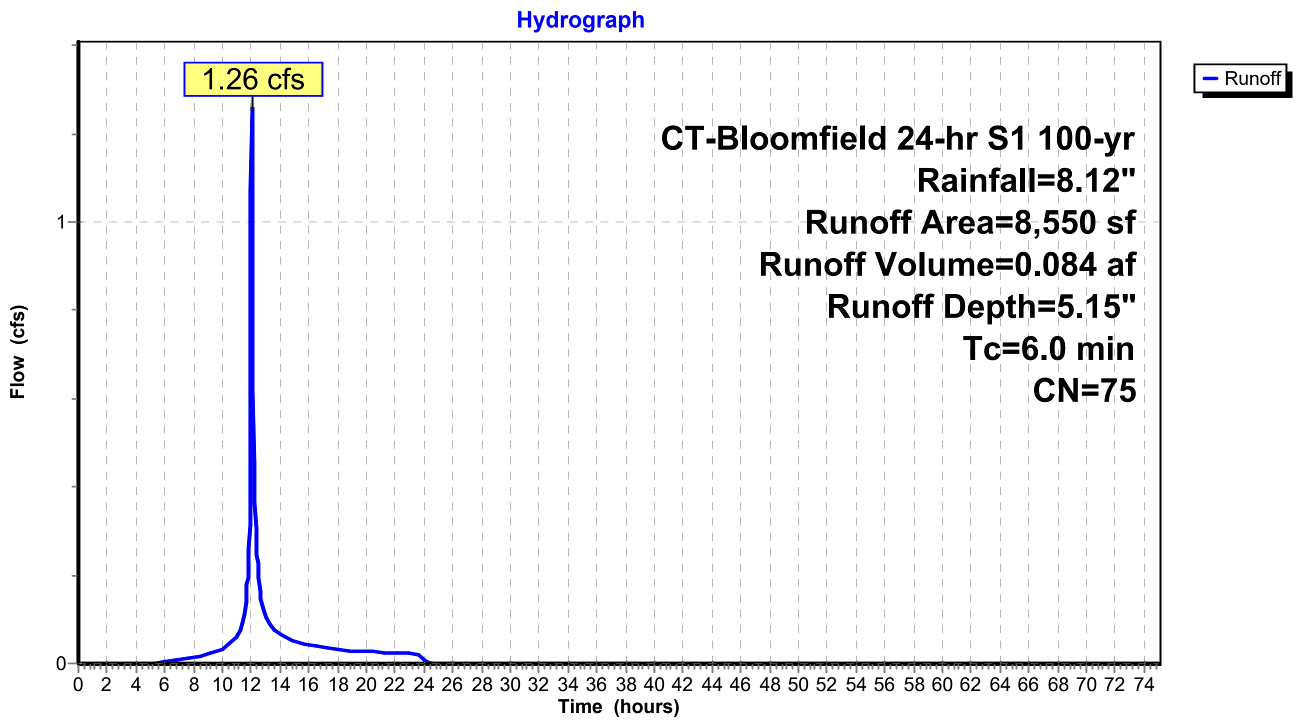
Runoff = 1.26 cfs @ 12.04 hrs, Volume= 0.084 af, Depth= 5.15"
Routed to Pond 4P : Underground Chamber System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
CT-Bloomfield 24-hr S1 100-yr Rainfall=8.12"

Area (sf)	CN	Description
5,350	61	>75% Grass cover, Good, HSG B
3,200	98	Paved parking, HSG B
8,550	75	Weighted Average
5,350		62.57% Pervious Area
3,200		37.43% Impervious Area

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

Subcatchment PDA-900: Driveway at Loading Dock and Yard



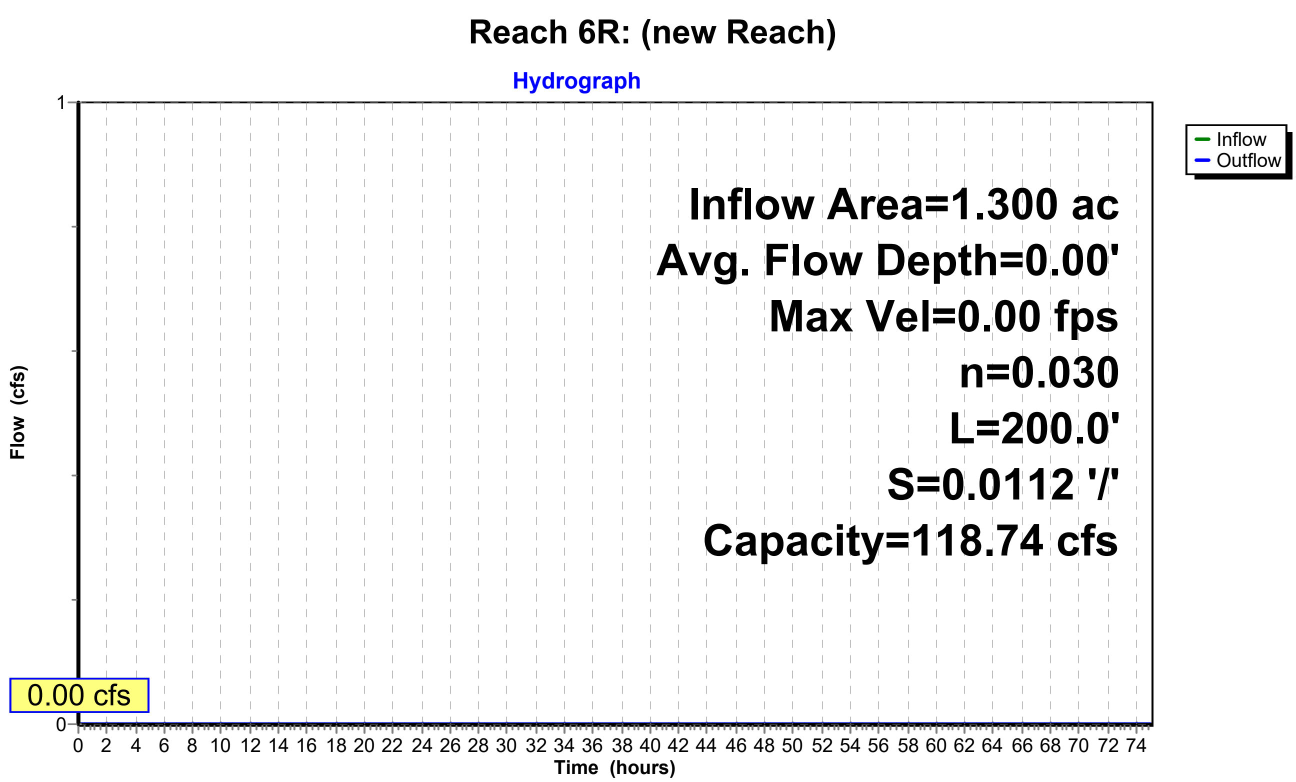
Summary for Reach 6R: (new Reach)

Inflow Area = 1.300 ac, 76.07% Impervious, Inflow Depth = 0.00" for 100-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-2 : South Wetland

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 118.74 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 200.0' Slope= 0.0112 '/'
Inlet Invert= 128.25', Outlet Invert= 126.00'



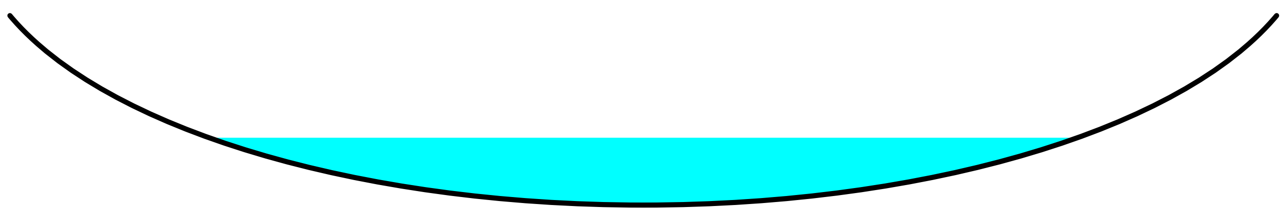
Summary for Reach C-1: Southwest channel

Inflow Area = 5.263 ac, 28.08% Impervious, Inflow Depth = 3.29" for 100-yr event
Inflow = 8.95 cfs @ 12.41 hrs, Volume= 1.444 af
Outflow = 8.70 cfs @ 12.56 hrs, Volume= 1.444 af, Atten= 3%, Lag= 8.6 min
Routed to Reach C-2 : South Abutter Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.03 fps, Min. Travel Time= 5.1 min
Avg. Velocity = 0.33 fps, Avg. Travel Time= 16.0 min

Peak Storage= 2,644 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.71' , Surface Width= 17.88'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 81.72 cfs

30.00' x 2.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 312.0' Slope= 0.0064 '/'
Inlet Invert= 125.00', Outlet Invert= 123.00'



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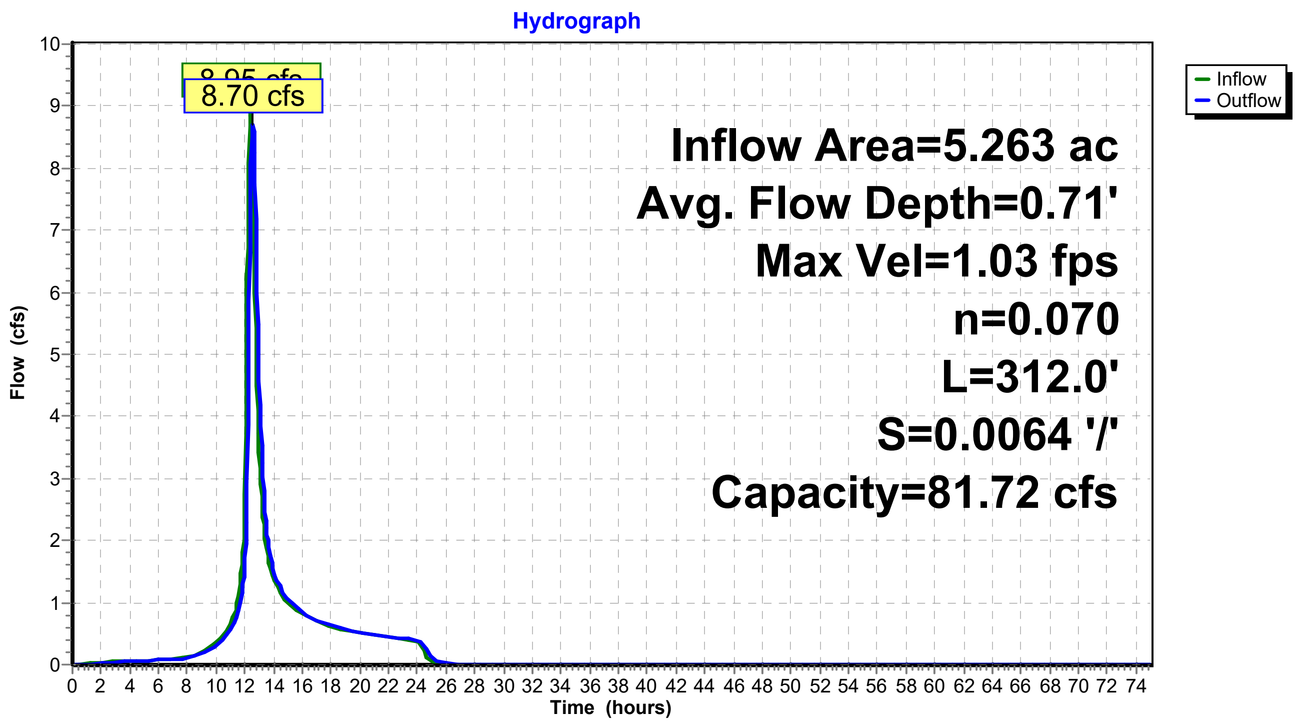
Reach C-1: Southwest channel



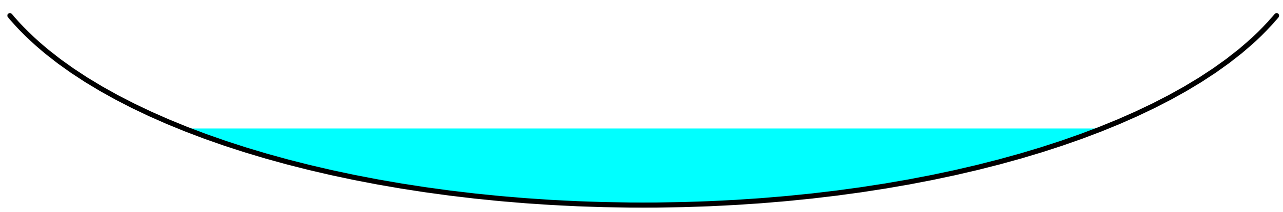
Summary for Reach C-2: South Abutter Channel

Inflow Area = 5.474 ac, 27.00% Impervious, Inflow Depth = 3.30" for 100-yr event
Inflow = 8.87 cfs @ 12.55 hrs, Volume= 1.506 af
Outflow = 8.80 cfs @ 12.63 hrs, Volume= 1.506 af, Atten= 1%, Lag= 4.9 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.47 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 0.46 fps, Avg. Travel Time= 9.0 min

Peak Storage= 1,501 cf @ 12.59 hrs
Average Depth at Peak Storage= 0.40' , Surface Width= 22.26'
Bank-Full Depth= 1.00' Flow Area= 23.3 sf, Capacity= 62.53 cfs

35.00' x 1.00' deep Parabolic Channel, n= 0.050 Sluggish weedy reaches w/pools
Length= 250.0' Slope= 0.0140 '/'
Inlet Invert= 124.00', Outlet Invert= 120.50'



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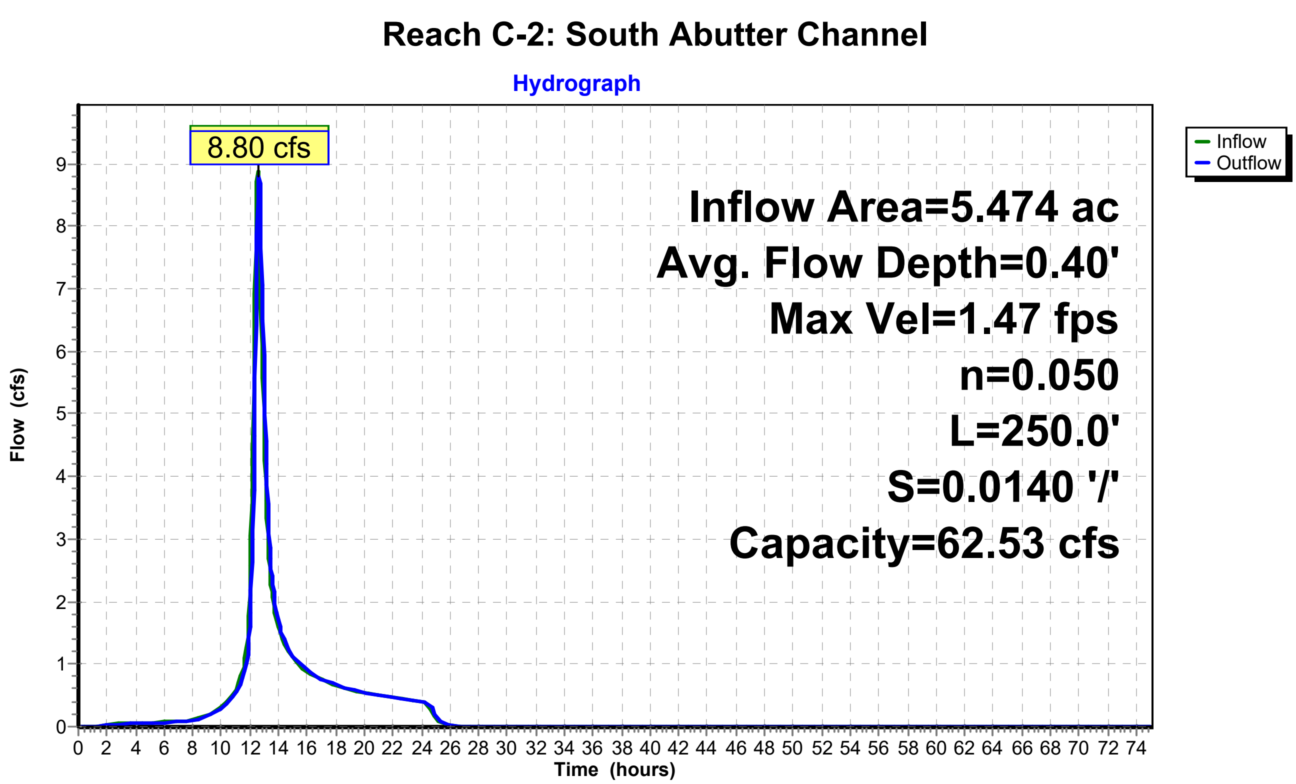


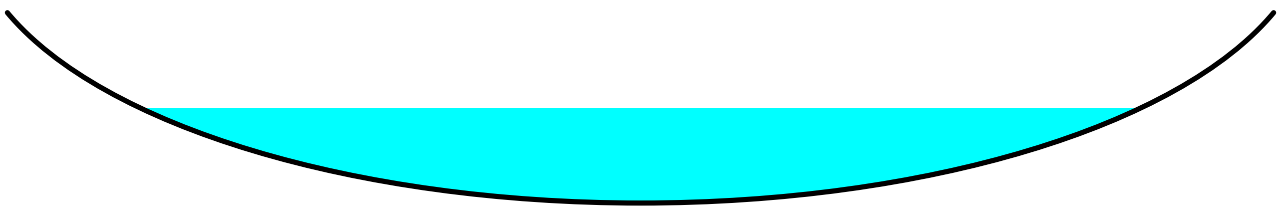
Summary for Reach DP-2: South Wetland

Inflow Area = 5.263 ac, 28.08% Impervious, Inflow Depth = 3.29" for 100-yr event
Inflow = 9.09 cfs @ 12.31 hrs, Volume= 1.444 af
Outflow = 8.95 cfs @ 12.41 hrs, Volume= 1.444 af, Atten= 2%, Lag= 5.8 min
Routed to Reach C-1 : Southwest channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.63 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 0.20 fps, Avg. Travel Time= 10.6 min

Peak Storage= 1,842 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.50' , Surface Width= 42.45'
Bank-Full Depth= 1.00' Flow Area= 40.0 sf, Capacity= 40.17 cfs

60.00' x 1.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 130.0' Slope= 0.0038 '/'
Inlet Invert= 125.50', Outlet Invert= 125.00'



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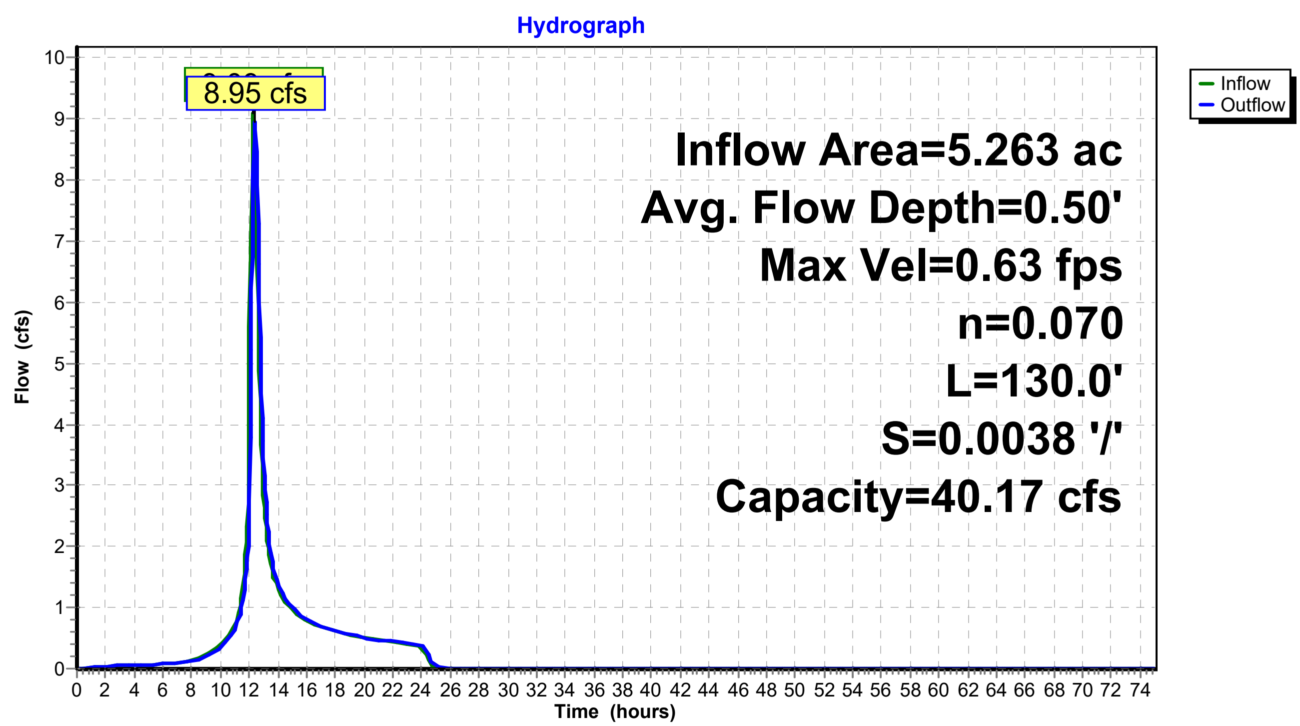
Reach DP-2: South Wetland

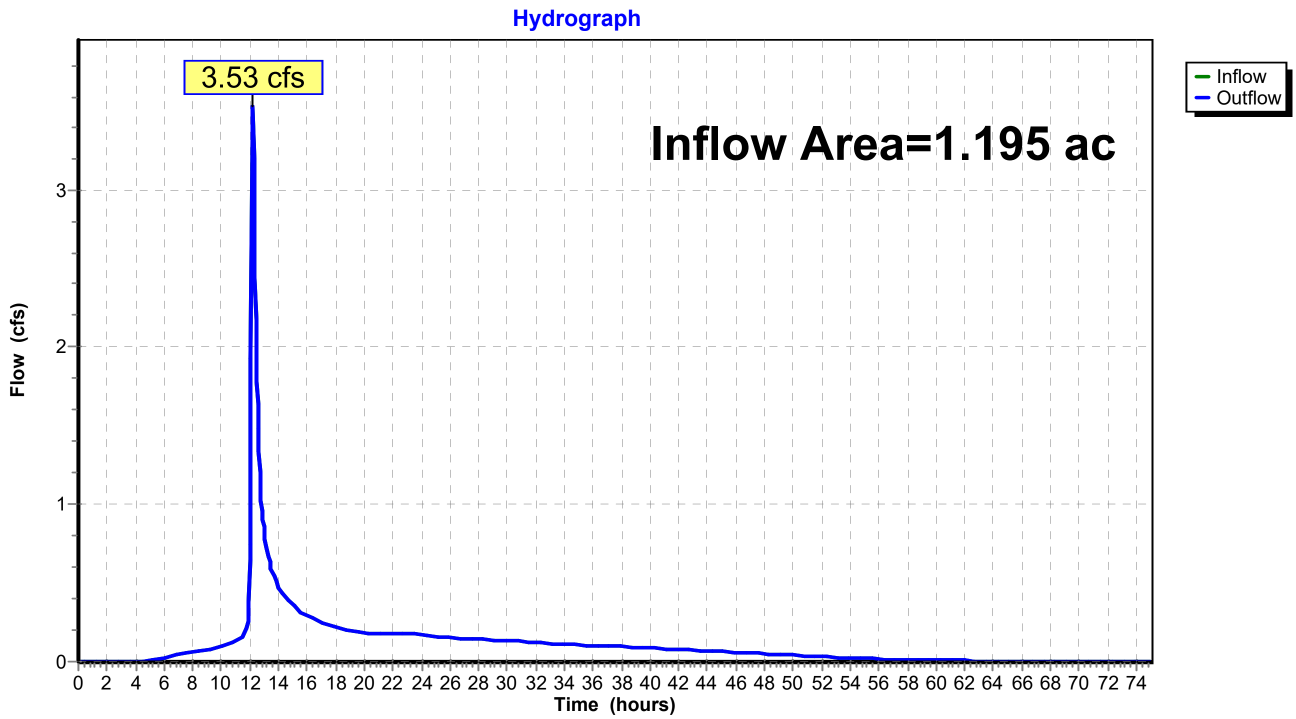


Summary for Reach DP-3: Street Catch Basin - Front of Site

Inflow Area = 1.195 ac, 79.50% Impervious, Inflow Depth > 6.74" for 100-yr event
Inflow = 3.53 cfs @ 12.19 hrs, Volume= 0.672 af
Outflow = 3.53 cfs @ 12.19 hrs, Volume= 0.672 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs

Reach DP-3: Street Catch Basin - Front of Site

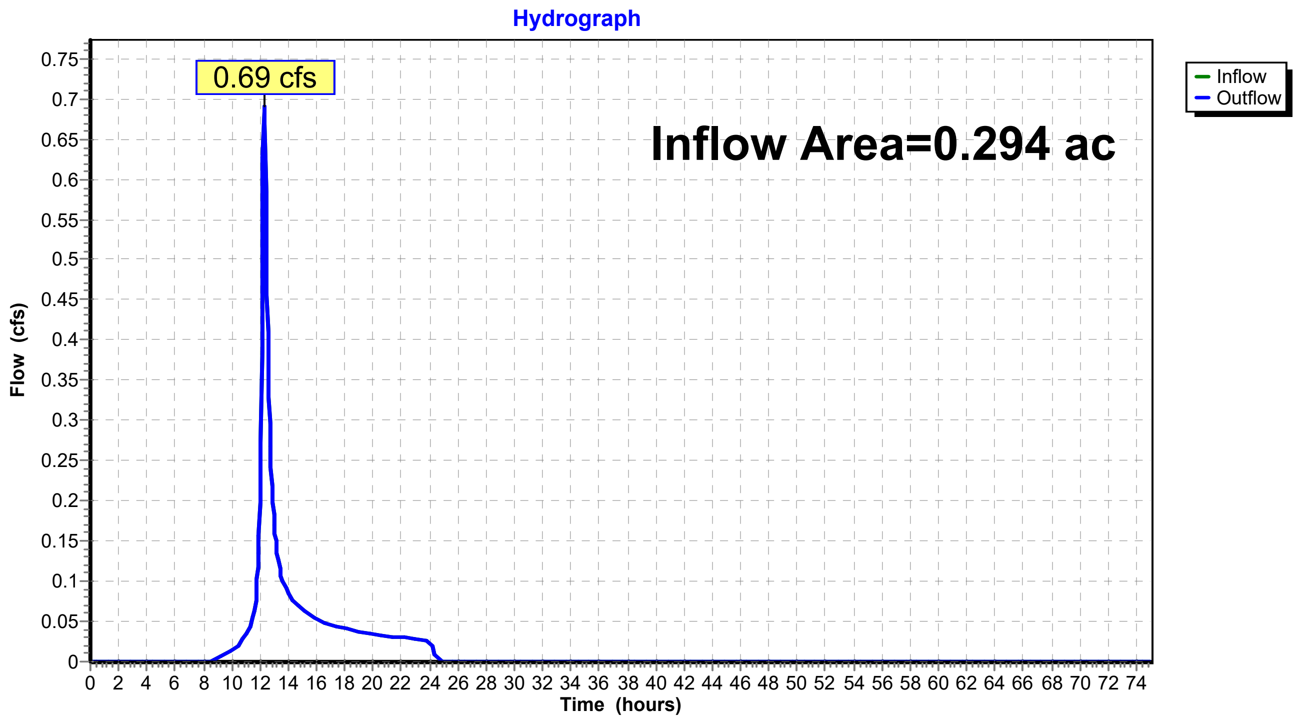


Summary for Reach DP-4: Corner Catch Basin

Inflow Area = 0.294 ac, 0.00% Impervious, Inflow Depth = 3.54" for 100-yr event
Inflow = 0.69 cfs @ 12.28 hrs, Volume= 0.087 af
Outflow = 0.69 cfs @ 12.28 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-5 : Northwood Drive System

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs

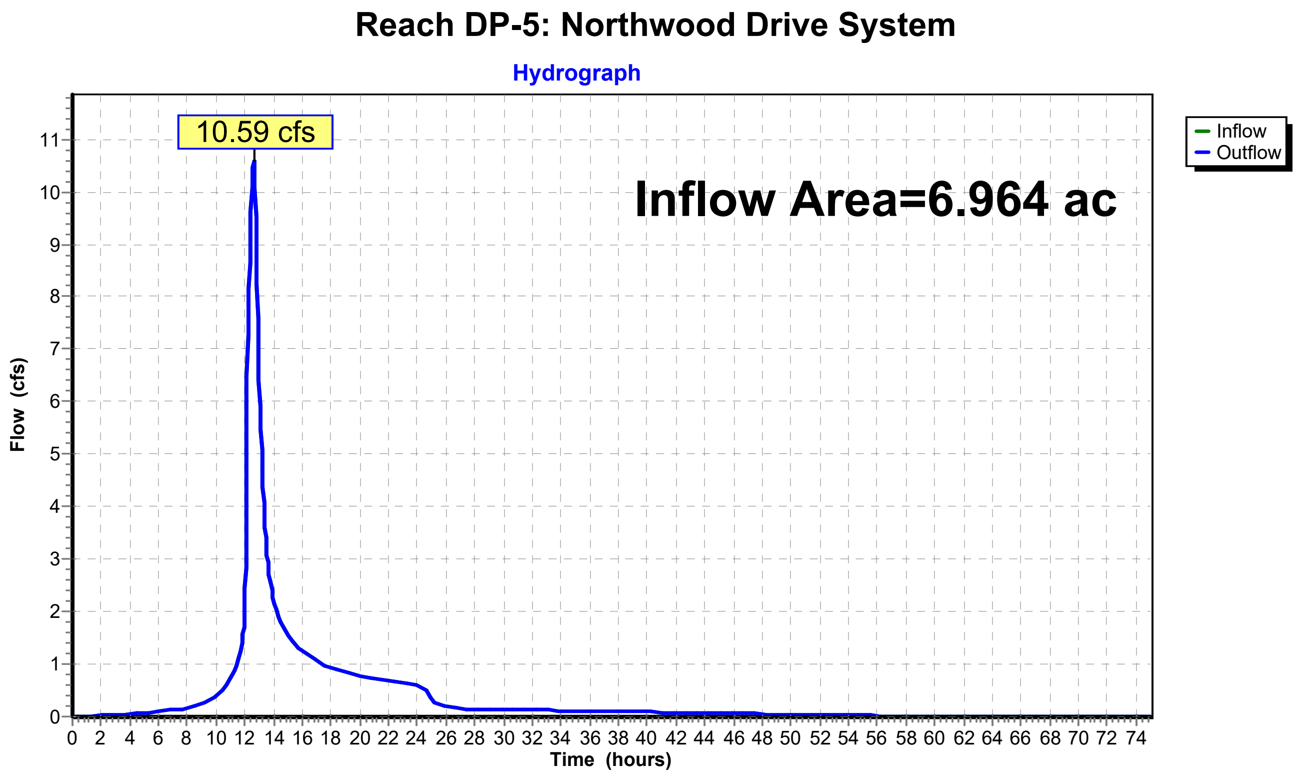
Reach DP-4: Corner Catch Basin



Summary for Reach DP-5: Northwood Drive System

Inflow Area =	6.964 ac,	34.87% Impervious,	Inflow Depth > 3.90"	for 100-yr event
Inflow =	10.59 cfs @	12.60 hrs, Volume=	2.265 af	
Outflow =	10.59 cfs @	12.60 hrs, Volume=	2.265 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs



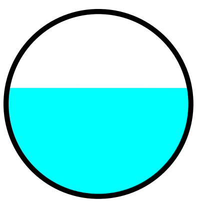
Summary for Reach IDP-1: Culvert

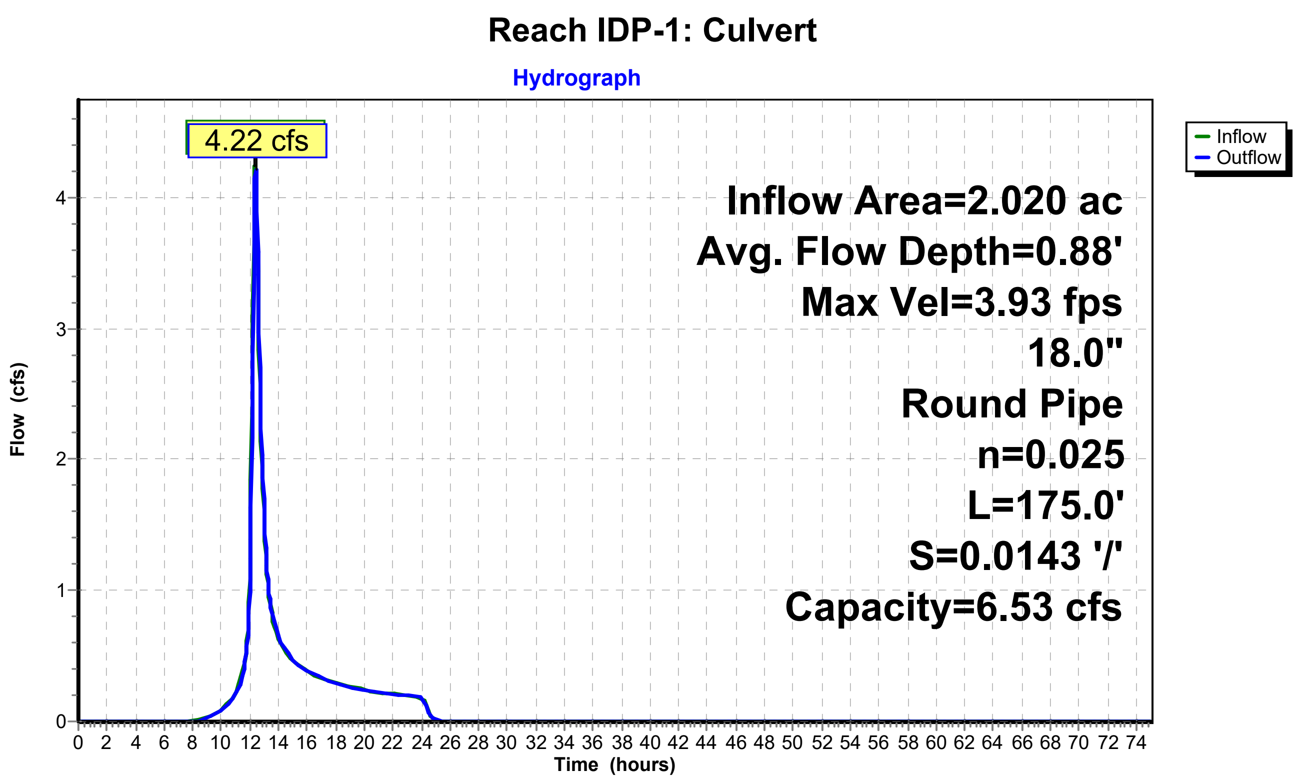
Inflow Area = 2.020 ac, 3.01% Impervious, Inflow Depth = 3.65" for 100-yr event
Inflow = 4.24 cfs @ 12.37 hrs, Volume= 0.614 af
Outflow = 4.22 cfs @ 12.40 hrs, Volume= 0.614 af, Atten= 1%, Lag= 1.5 min
Routed to Reach DP-2 : South Wetland

Routing by Stor-Ind+Trans method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.93 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.75 fps, Avg. Travel Time= 1.7 min

Peak Storage= 188 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.88' , Surface Width= 1.48'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.53 cfs

18.0" Round Pipe
n= 0.025 Corrugated metal
Length= 175.0' Slope= 0.0143 '/'
Inlet Invert= 128.00', Outlet Invert= 125.50'





Summary for Pond 4P: Underground Chamber System

Inflow Area = 1.097 ac, 84.00% Impervious, Inflow Depth = 7.18" for 100-yr event
Inflow = 8.87 cfs @ 12.04 hrs, Volume= 0.656 af
Outflow = 3.31 cfs @ 12.20 hrs, Volume= 0.632 af, Atten= 63%, Lag= 9.6 min
Primary = 3.31 cfs @ 12.20 hrs, Volume= 0.632 af
Routed to Reach DP-3 : Street Catch Basin - Front of Site

Routing by Stor-Ind method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Peak Elev= 127.19' @ 12.20 hrs Surf.Area= 0.122 ac Storage= 0.299 af

Plug-Flow detention time= 634.3 min calculated for 0.632 af (96% of inflow)
Center-of-Mass det. time= 611.1 min (1,375.0 - 763.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	124.00'	0.134 af	**44.25'W x 120.42'L x 4.75'H Field A** 0.581 af Overall - 0.246 af Embedded = 0.335 af x 40.0% Voids
#2A	124.00'	0.246 af	**ADS_StormTech MC-3500 d +Cap** x 96 Inside #1 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 96 Chambers in 6 Rows Cap Storage= 14.9 cf x 2 x 6 rows = 178.8 cf
		0.380 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	124.00'	**12.0" Round Culvert** L= 200.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 124.00' / 123.00' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	126.75'	**4.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Device 1	124.20'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.31 cfs @ 12.20 hrs HW=127.19' (Free Discharge)
└─**1=Culvert** (Passes 3.31 cfs of 4.30 cfs potential flow)
  ├─**2=Broad-Crested Rectangular Weir** (Weir Controls 3.13 cfs @ 1.80 fps)
  └─**3=Orifice/Grate** (Orifice Controls 0.18 cfs @ 8.20 fps)

Pond 4P: Underground Chamber System - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
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
Cap Storage= 14.9 cf x 2 x 6 rows = 178.8 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

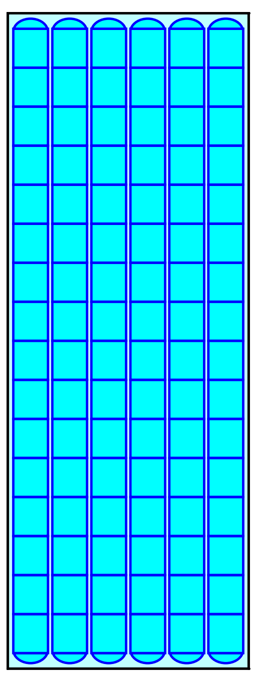
16 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 118.42' Row Length +12.0" End Stone x 2 = 120.42' Base Length
6 Rows x 77.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 44.25' Base Width
45.0" Chamber Height + 12.0" Stone Cover = 4.75' Field Height

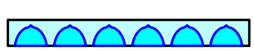
96 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 6 Rows = 10,734.2 cf Chamber Storage

25,310.8 cf Field - 10,734.2 cf Chambers = 14,576.6 cf Stone x 40.0% Voids = 5,830.6 cf Stone Storage

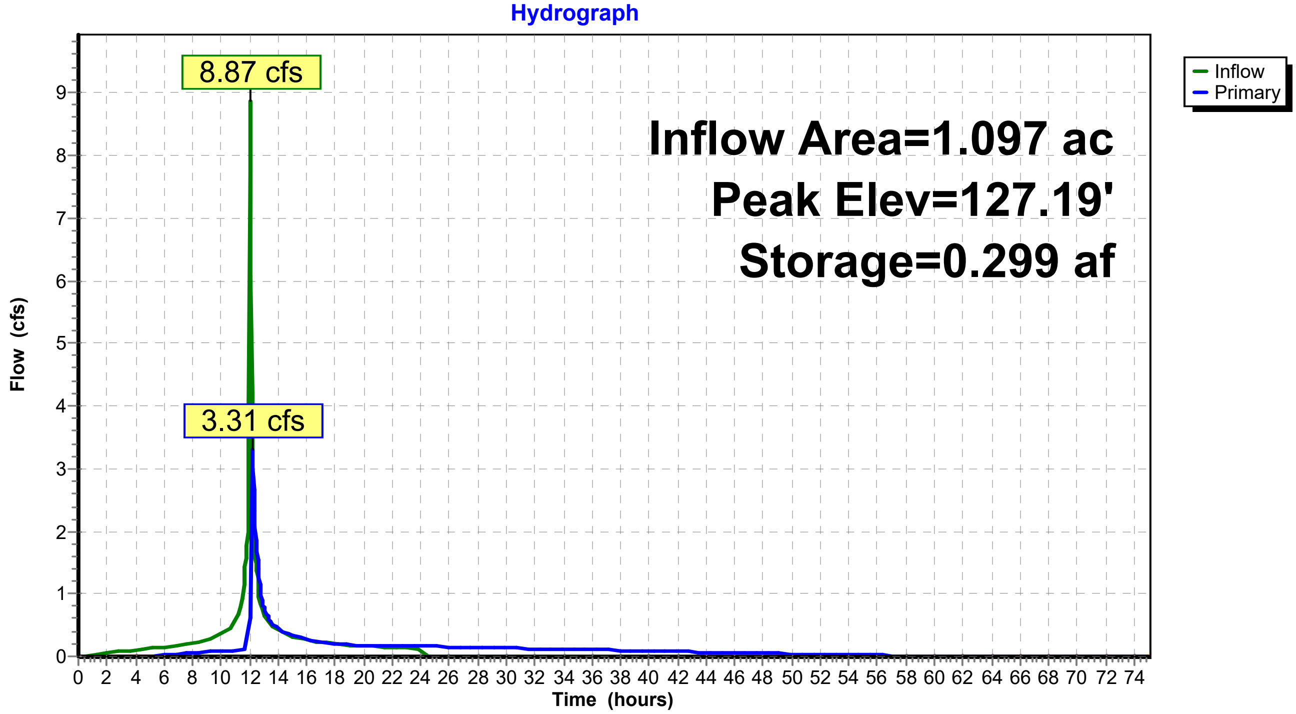
Chamber Storage + Stone Storage = 16,564.8 cf = 0.380 af
Overall Storage Efficiency = 65.4%
Overall System Size = 120.42' x 44.25' x 4.75'

96 Chambers
937.4 cy Field
539.9 cy Stone





Pond 4P: Underground Chamber System



Summary for Pond 5P: Surface Basin

Inflow Area = 1.300 ac, 76.07% Impervious, Inflow Depth = 7.04" for 100-yr event
Inflow = 10.64 cfs @ 12.04 hrs, Volume= 0.763 af
Outflow = 0.23 cfs @ 18.31 hrs, Volume= 0.763 af, Atten= 98%, Lag= 376.5 min
Discarded = 0.23 cfs @ 18.31 hrs, Volume= 0.763 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 6R : (new Reach)

Routing by Stor-Ind method, Time Span= 0.00-75.00 hrs, dt= 0.05 hrs
Peak Elev= 128.25' @ 18.31 hrs Surf.Area= 10,302 sf Storage= 19,777 cf

Plug-Flow detention time= 859.1 min calculated for 0.762 af (100% of inflow)
Center-of-Mass det. time= 859.7 min (1,638.5 - 778.8)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	27,705 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

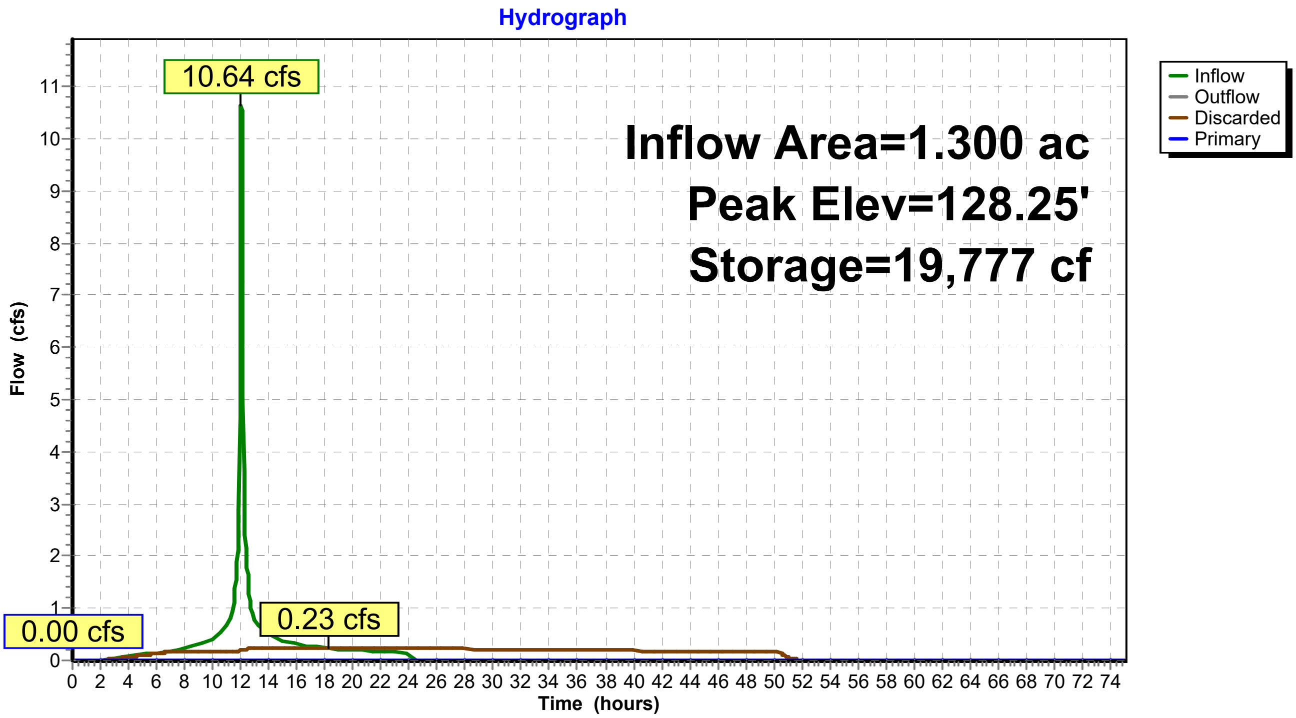
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
126.00	7,405	0	0
127.00	8,475	7,940	7,940
128.00	10,160	9,318	17,258
129.00	10,735	10,448	27,705

Device	Routing	Invert	Outlet Devices
#1	Discarded	126.00'	**0.960 in/hr Exfiltration over Surface area**
#2	Primary	128.25'	**Channel/Reach** using Reach 6R: (new Reach)

Discarded OutFlow Max=0.23 cfs @ 18.31 hrs HW=128.25' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=126.00' (Free Discharge)
└─**2=Channel/Reach** (Controls 0.00 cfs)

Pond 5P: Surface Basin



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APPENDIX E

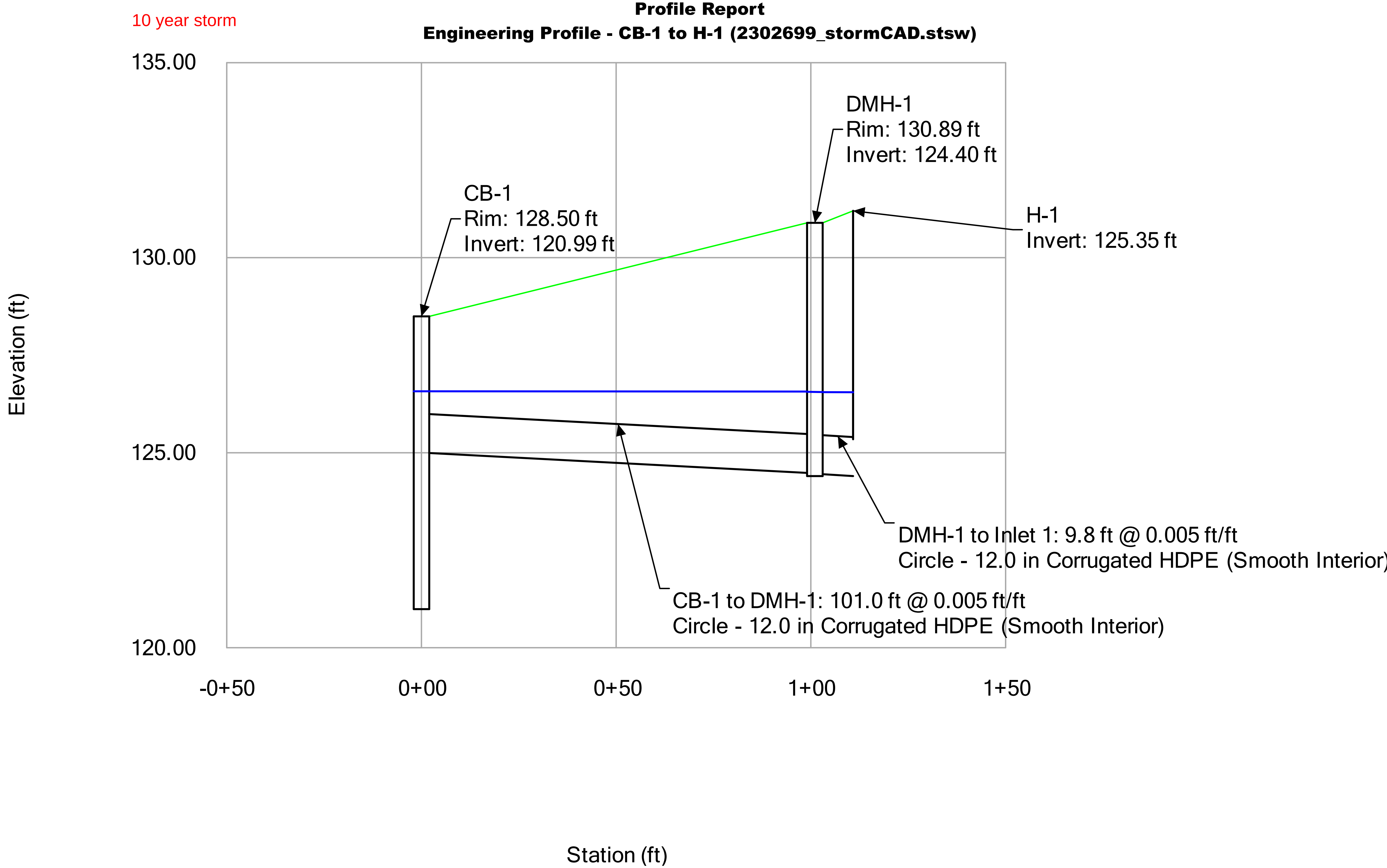
CONVEYANCE MODELING RESULTS

PROPOSED ONSITE

FlexTable: Conduit Table

Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Manning's n	Flow (cfs)	Velocity (ft/s)	Capacity (Full Flow) (cfs)	Flow / Capacity (Design) (%)	Cover (Start) (ft)	Cover (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Material
OCS to EXCB-4	OCS	O-1	124.00	122.90	217.4	0.005	12.0	0.012	0.16	1.91	2.75	5.8	6.57	3.67	124.16	123.06	Corrugated HDPE (Smooth Interior)
CB-3 to DMH-2	CB-3	DMH-2	126.00	125.50	93.5	0.005	12.0	0.012	0.77	3.06	2.82	27.4	1.86	5.50	126.59	126.57	Corrugated HDPE (Smooth Interior)
DMH-2 to Inlet 2	DMH-2	H-2	125.40	125.30	9.0	0.011	12.0	0.012	0.77	0.98	4.07	19.0	5.60	5.40	126.55	126.55	Corrugated HDPE (Smooth Interior)
CB-1 to DMH-1	CB-1	DMH-1	124.99	124.48	101.0	0.005	12.0	0.012	0.26	0.33	2.74	9.3	2.51	5.41	126.57	126.57	Corrugated HDPE (Smooth Interior)
DMH-1 to Inlet 1	DMH-1	H-1	124.45	124.40	9.8	0.005	12.0	0.012	0.66	0.85	2.76	24.1	5.44	5.80	126.55	126.55	Corrugated HDPE (Smooth Interior)
CB-2 to DMH-1	CB-2	DMH-1	126.77	126.53	46.8	0.005	12.0	0.012	0.42	2.54	2.76	15.1	2.50	3.36	127.04	126.79	Corrugated HDPE (Smooth Interior)

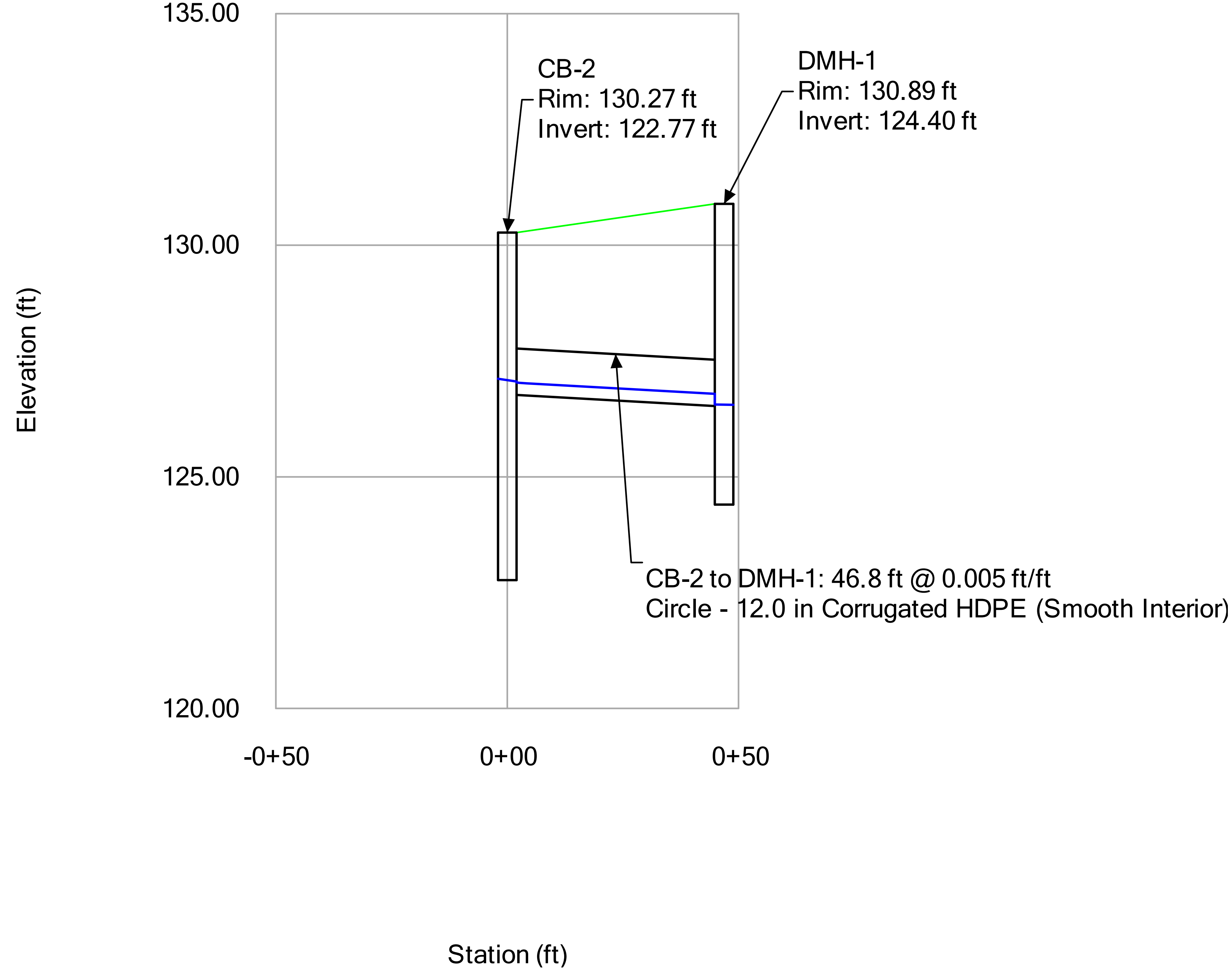
Profile Report
Engineering Profile - CB-1 to H-1 (2302699_stormCAD.stsw)



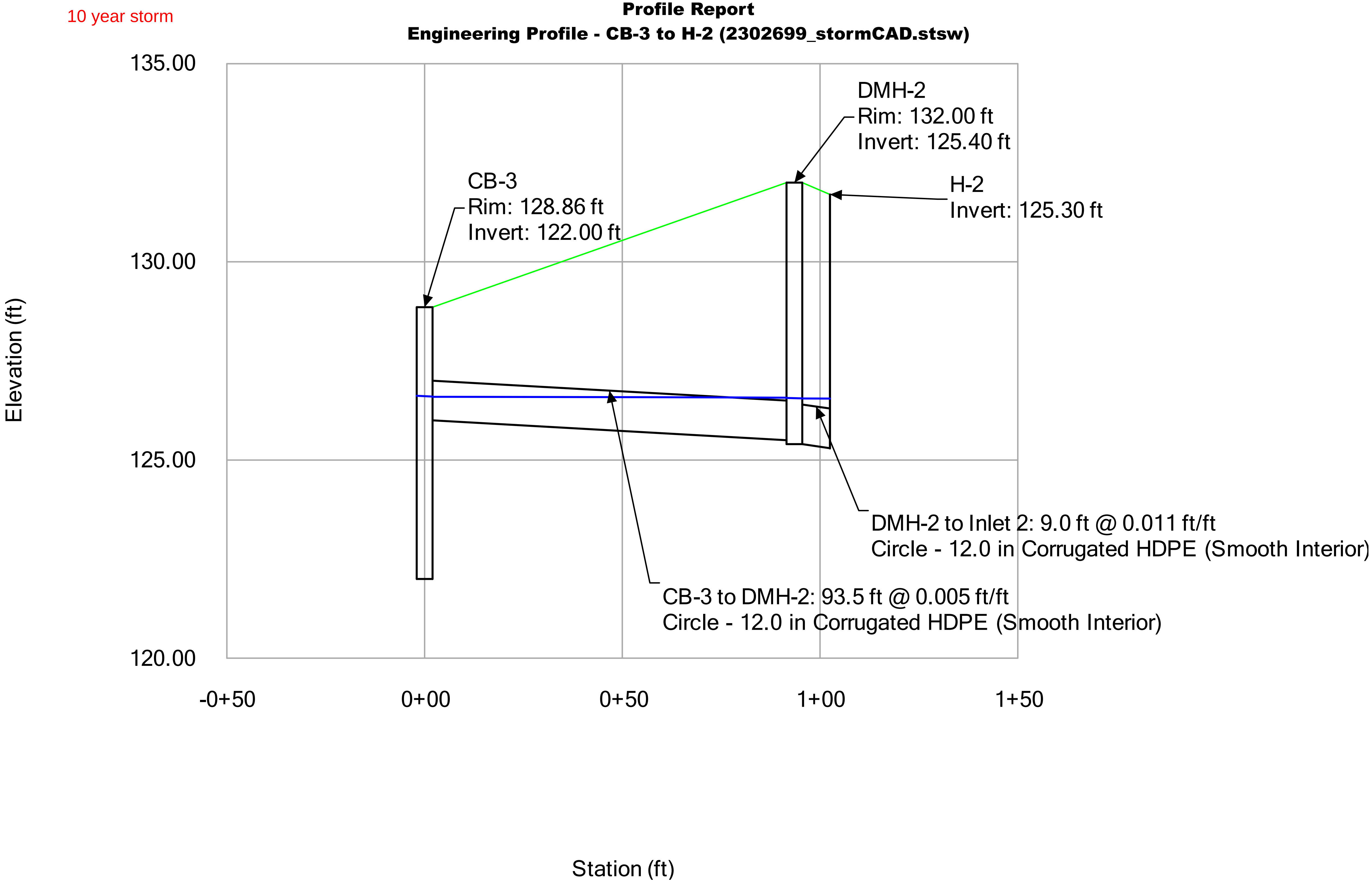
10 year storm

Profile Report

Engineering Profile - CB-2 to DMH-1 (2302699_stormCAD.stsw)



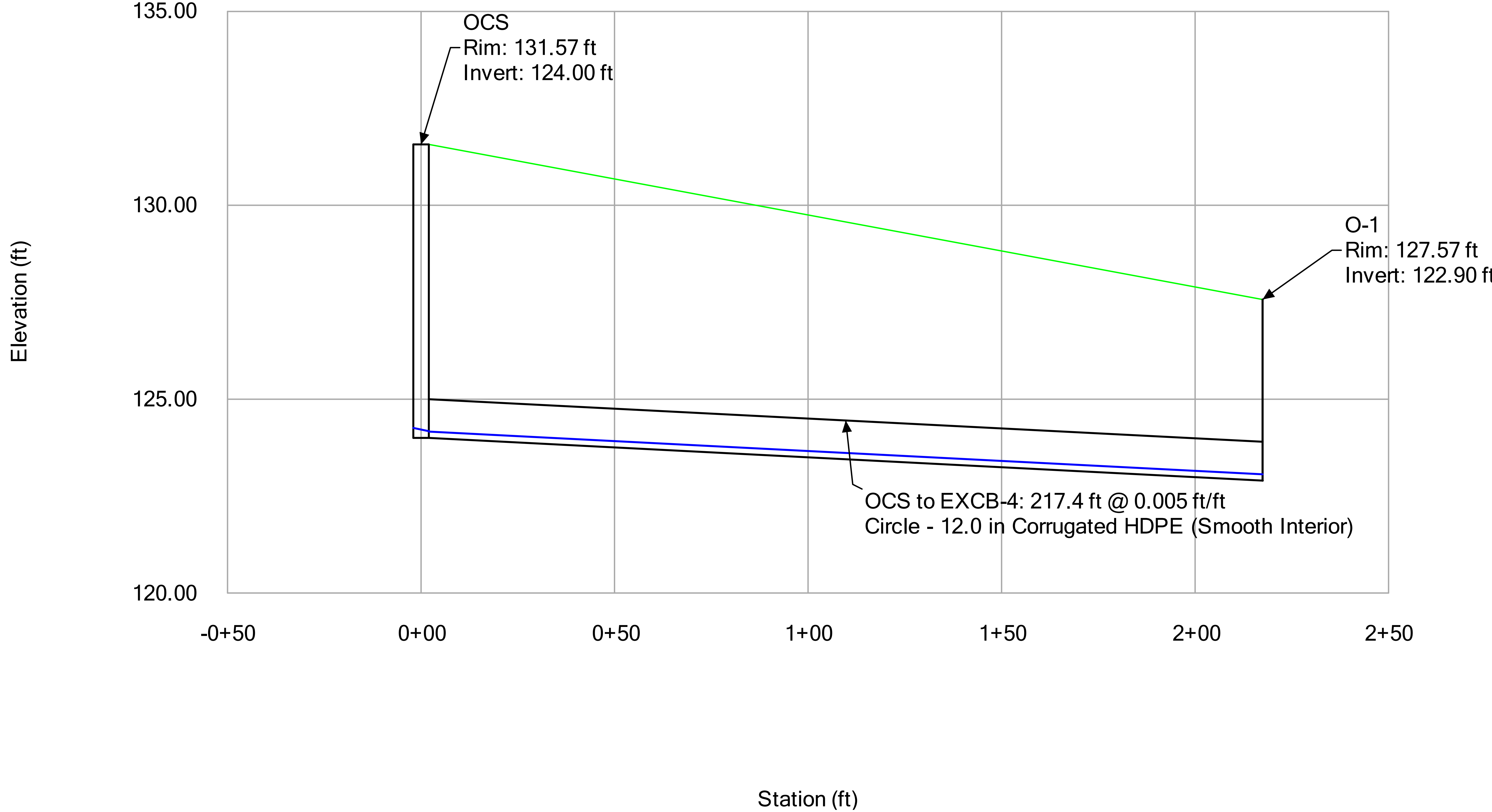
Profile Report
Engineering Profile - CB-3 to H-2 (2302699_stormCAD.stsw)



10 year storm

Profile Report

Engineering Profile - OCS to O-1 (2302699_stormCAD.stsw)



APPENDIX E

CONVEYANCE MODELING RESULTS

EXISTING OFFSITE

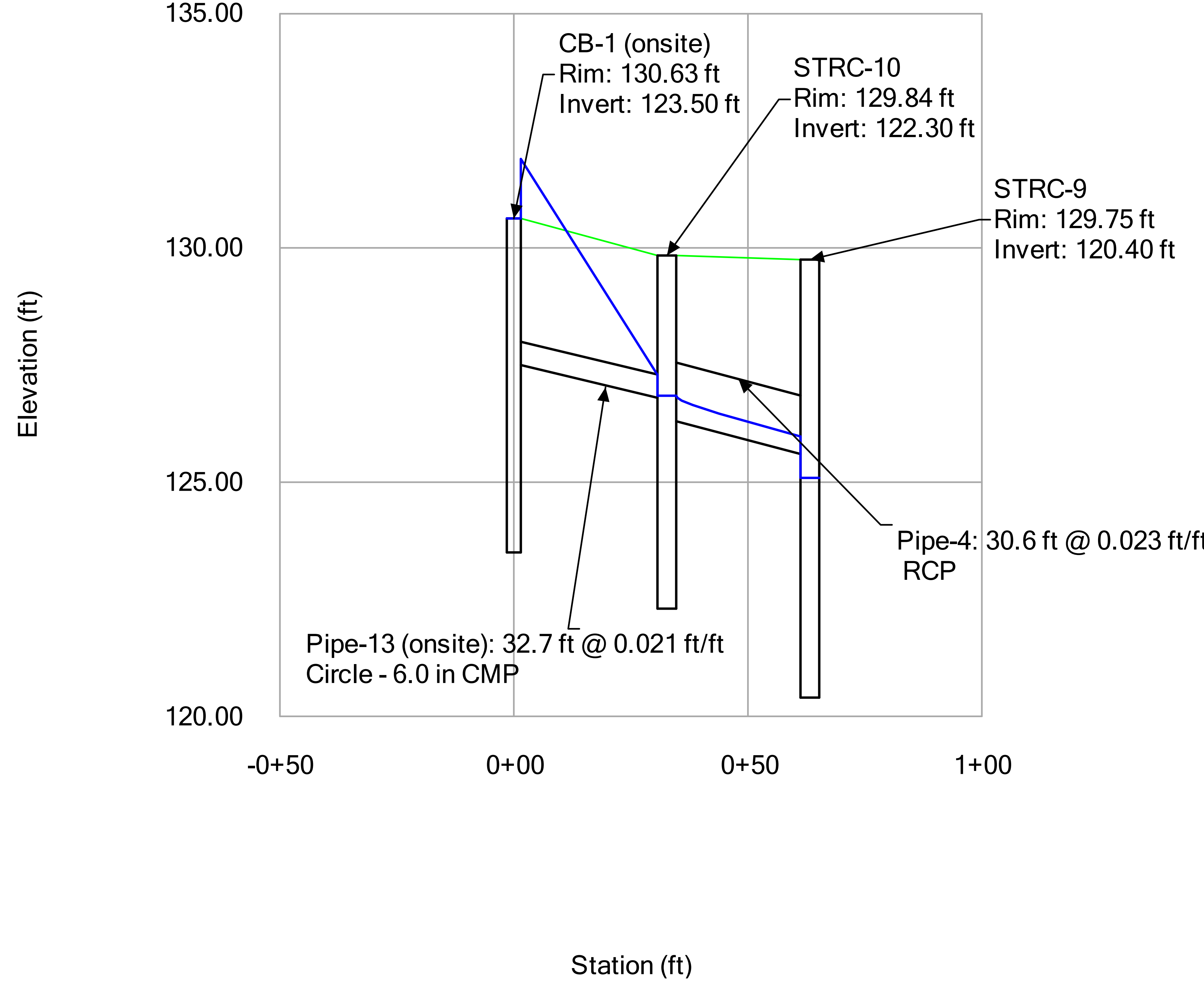
FlexTable: Conduit Table

Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Manning's n	Flow (cfs)	Velocity (ft/s)	Capacity (Full Flow) (cfs)	Flow / Capacity (Design) (%)	Cover (Start) (ft)	Cover (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
Pipe-1	STRC-6	STRC-7	132.20	129.75	129.2	0.019	15.0	0.013	0.35	3.52	8.90	4.0	2.64	3.48	132.43	129.92
Pipe-2	STRC-7	STRC-8	129.75	125.80	206.9	0.019	15.0	0.013	0.35	3.53	8.92	3.9	3.48	3.11	129.98	125.97
Pipe-3	STRC-8	STRC-9	125.80	125.20	31.3	0.019	15.0	0.013	0.35	3.53	8.95	3.9	3.11	3.30	126.03	125.37
Pipe-4	STRC-10	STRC-9	126.30	125.60	30.6	0.023	15.0	0.013	1.86	6.14	9.77	19.1	2.29	2.90	126.84	125.97
Pipe-5	STRC-9	STRC-11	124.40	123.50	117.5	0.008	15.0	0.013	2.96	4.66	5.65	52.3	4.10	2.82	125.09	124.14
Pipe-6	STRC-11	STRC-12	122.70	119.20	271.3	0.013	12.0	0.013	3.68	5.84	4.05	91.0	3.87	3.14	123.52	119.95
Pipe-7	STRC-13	STRC-12	120.60	120.00	28.3	0.021	12.0	0.013	0.19	3.13	5.19	3.6	2.17	2.34	120.78	120.13
Pipe-8	STRC-12	STRC-14	119.00	118.50	79.9	0.006	18.0	0.013	4.48	4.79	8.31	53.9	2.84	2.21	119.81	119.37
Pipe-9	STRC-14	STRC-15	118.30	116.80	167.1	0.009	18.0	0.013	7.62	6.21	9.95	76.6	2.41	2.21	119.37	117.78
Pipe-11	STRC-15	STRC-17	116.20	116.30	25.6	-0.004	18.0	0.013	8.81	4.99	6.57	134.2	2.81	3.96	117.81	117.45
Pipe-12	STRC-17	STRC-18 (FES)	116.00	114.90	173.3	0.006	18.0	0.013	8.81	5.36	8.37	105.3	4.26	-1.50	117.31	116.05
Pipe-10	STRC-16	STRC-15	117.00	116.80	124.8	0.002	15.0	0.013	0.87	1.90	2.59	33.5	1.71	2.46	117.83	117.81
Pipe-13 (onsite)	CB-1 (onsite)	STRC-10	127.50	126.80		0.021	6.0	0.024	1.14	5.81	0.44	256.5	2.63	2.54	131.90	127.28
Pipe-14 (onsite)	CB-2 (onsite)	STRC-11	126.40	123.80		0.053	8.0	0.024	3.41	9.77	1.50	227.0	1.02	3.10	137.87	124.46

10 year storm

Profile Report

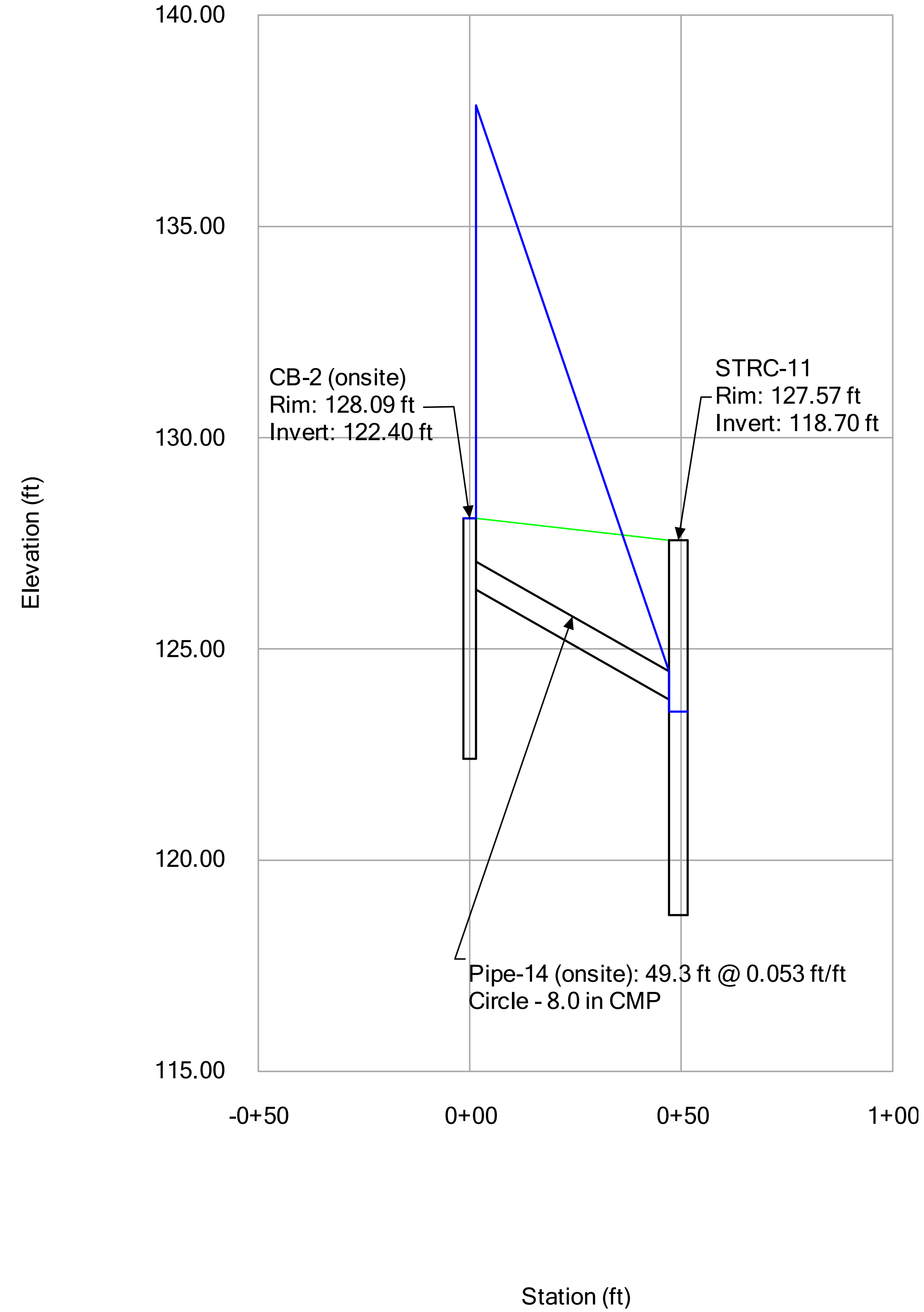
Engineering Profile - CB-1 (onsite) to STRC-9 (2302699_stormCAD offsite existing.stsw)



10 year storm

Profile Report

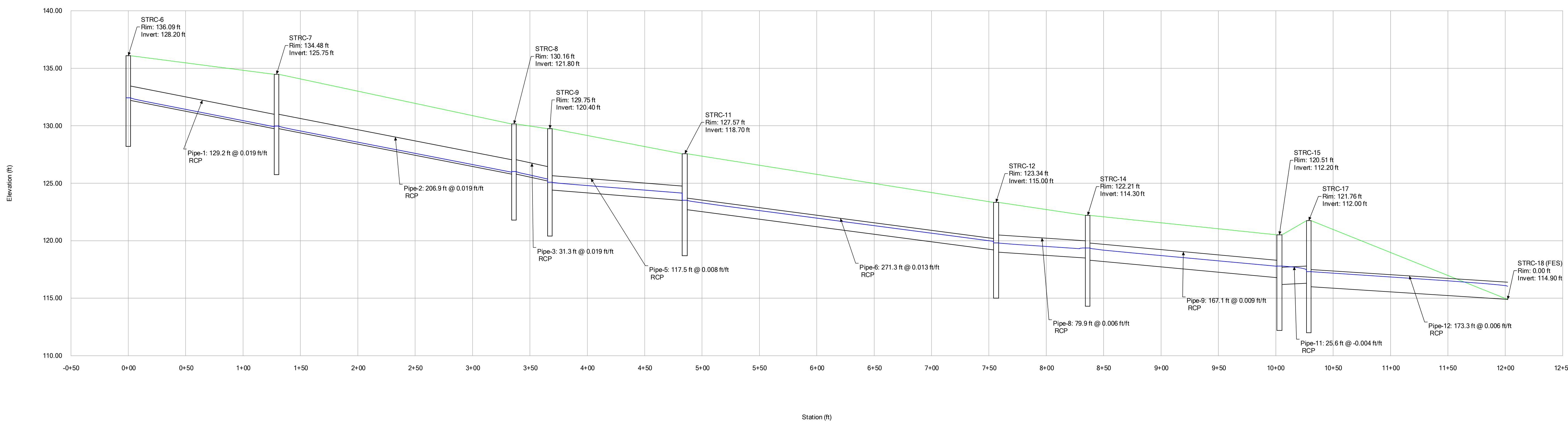
Engineering Profile - CB-2 (onsite) to STRC-11 (2302699_stormCAD offsite existing.stsw)



10 year storm

Profile Report

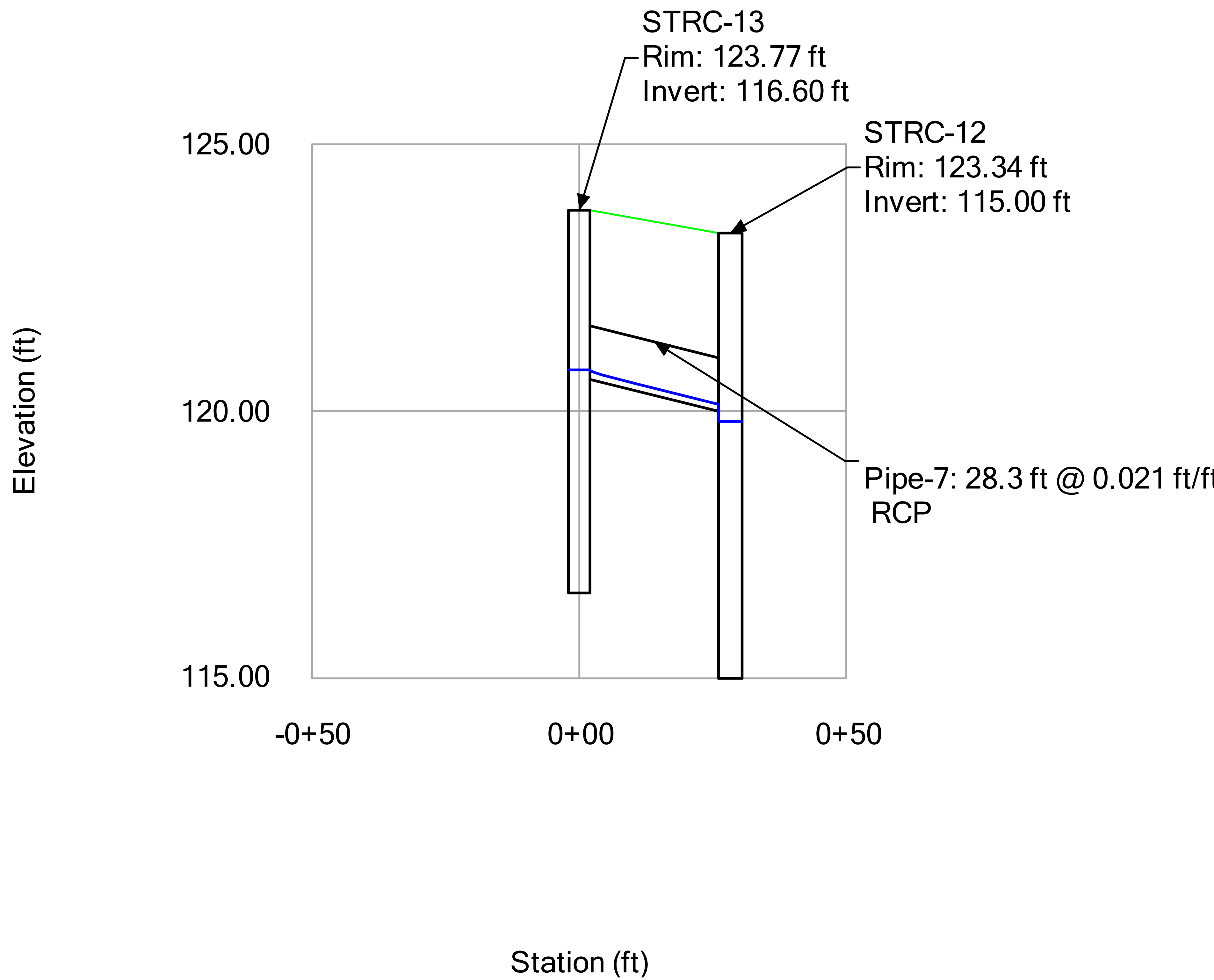
Engineering Profile - STRC-6 to STRC-18 (FES) (2302699_stormCAD offsite existing.stsw)



10 year storm

Profile Report

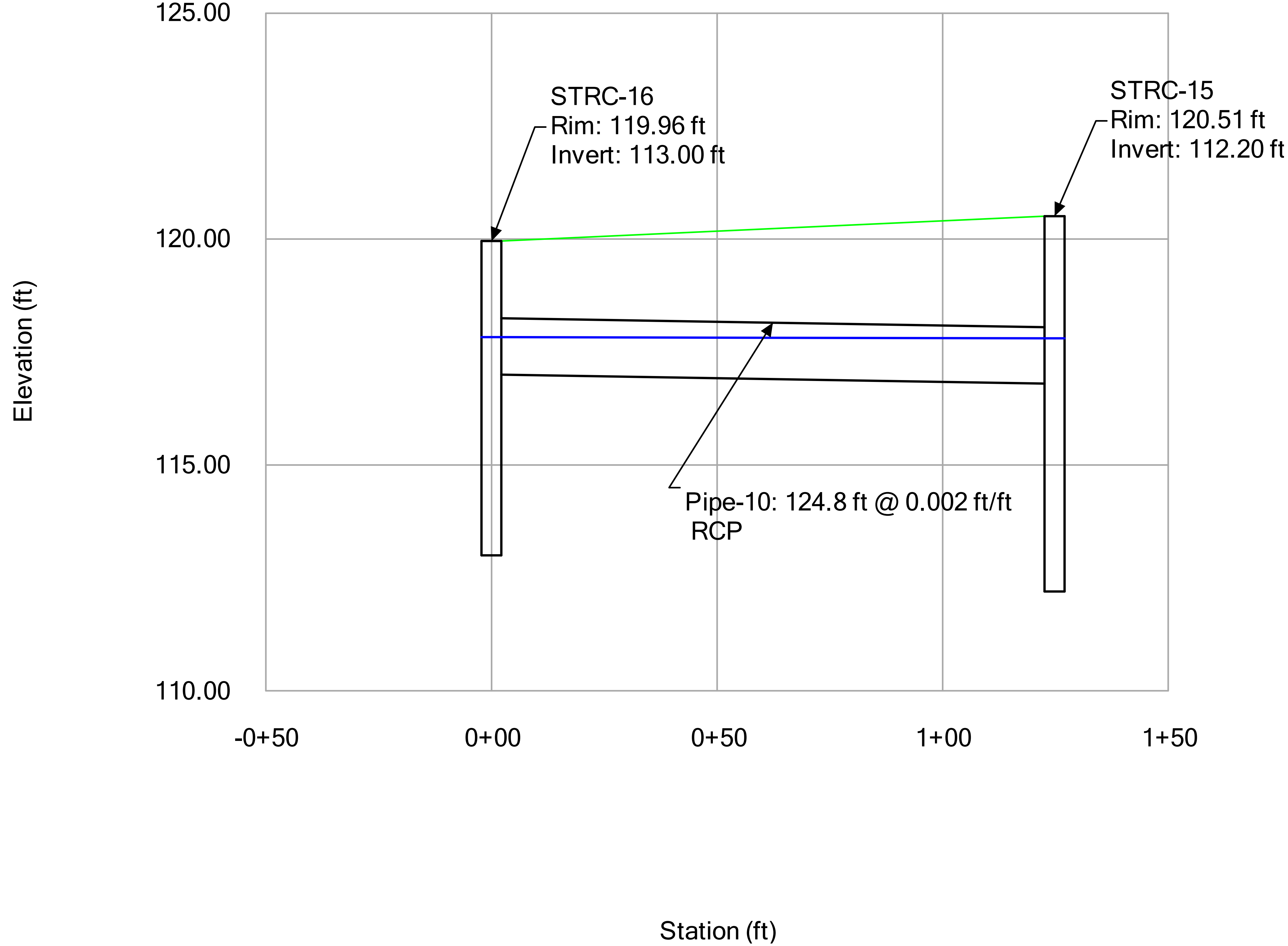
Engineering Profile - STRC-13 to STRC-12 (2302699_stormCAD offsite existing.stsw)



10 year storm

Profile Report

Engineering Profile - STRC-16 to STRC-15 (2302699_stormCAD offsite existing.stsw)



APPENDIX E

CONVEYANCE MODELING RESULTS

PROPOSED OFFSITE

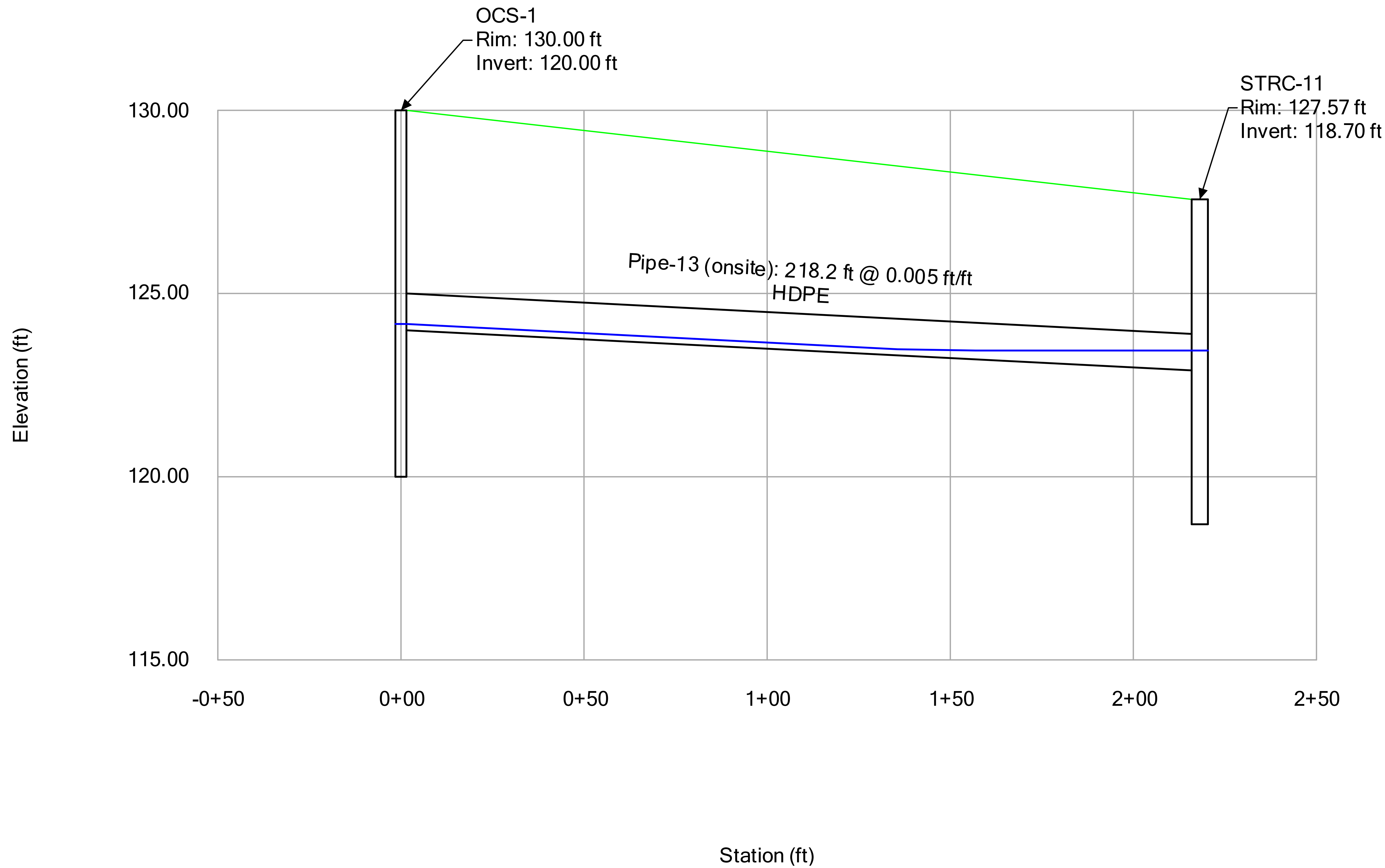
FlexTable: Conduit Table

Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Manning's n	Flow (cfs)	Velocity (ft/s)	Capacity (Full Flow) (cfs)	Flow / Capacity (Design) (%)	Cover (Start) (ft)	Cover (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
Pipe-13 (onsite)	OCS-1	STRC-11	124.00	122.90	218.2	0.005	12.0	0.013	0.16	1.80	2.53	6.3	5.00	3.67	124.17	123.44
Pipe-1	STRC-6	STRC-7	132.20	129.75	129.2	0.019	15.0	0.013	0.35	3.52	8.90	4.0	2.64	3.48	132.43	129.92
Pipe-2	STRC-7	STRC-8	129.75	125.80	206.9	0.019	15.0	0.013	0.35	3.53	8.92	3.9	3.48	3.11	129.98	125.97
Pipe-3	STRC-8	STRC-9	125.80	125.20	31.3	0.019	15.0	0.013	0.35	3.53	8.95	3.9	3.11	3.30	126.03	125.37
Pipe-4	STRC-10	STRC-9	126.30	125.60	30.6	0.023	15.0	0.013	1.06	5.22	9.77	10.8	2.29	2.90	126.71	125.88
Pipe-5	STRC-9	STRC-11	124.40	123.50	117.5	0.008	15.0	0.013	2.80	4.60	5.65	49.5	4.10	2.82	125.07	124.12
Pipe-6	STRC-11	STRC-12	122.70	119.20	271.3	0.013	12.0	0.013	3.00	5.64	4.05	74.2	3.87	3.14	123.44	119.84
Pipe-7	STRC-13	STRC-12	120.60	120.00	28.3	0.021	12.0	0.013	0.19	3.13	5.19	3.6	2.17	2.34	120.78	120.13
Pipe-8	STRC-12	STRC-14	119.00	118.50	79.9	0.006	18.0	0.013	3.34	4.45	8.31	40.2	2.84	2.21	119.70	119.24
Pipe-9	STRC-14	STRC-15	118.30	116.80	167.1	0.009	18.0	0.013	5.90	5.87	9.95	59.3	2.41	2.21	119.24	117.63
Pipe-11	STRC-15	STRC-17	116.20	116.30	25.6	-0.004	18.0	0.013	7.15	4.05	6.57	108.8	2.81	3.96	117.66	117.34
Pipe-12	STRC-17	STRC-18 (FES)	116.00	114.90	173.3	0.006	18.0	0.013	7.14	5.32	8.37	85.4	4.26	-1.50	117.07	115.94
Pipe-10	STRC-16	STRC-15	117.00	116.80	124.8	0.002	15.0	0.013	0.87	1.90	2.59	33.5	1.71	2.46	117.70	117.66

10 year storm

Profile Report

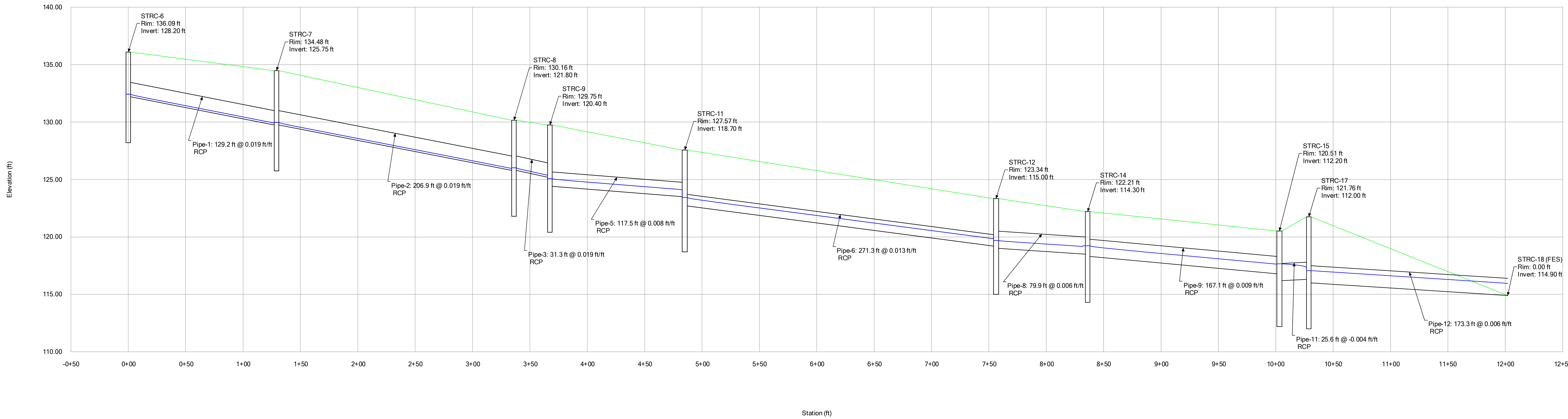
Engineering Profile - OCS-1 to STRC-11 (2302699_stormCAD offsite proposed.stsw)



10 year storm

Profile Report

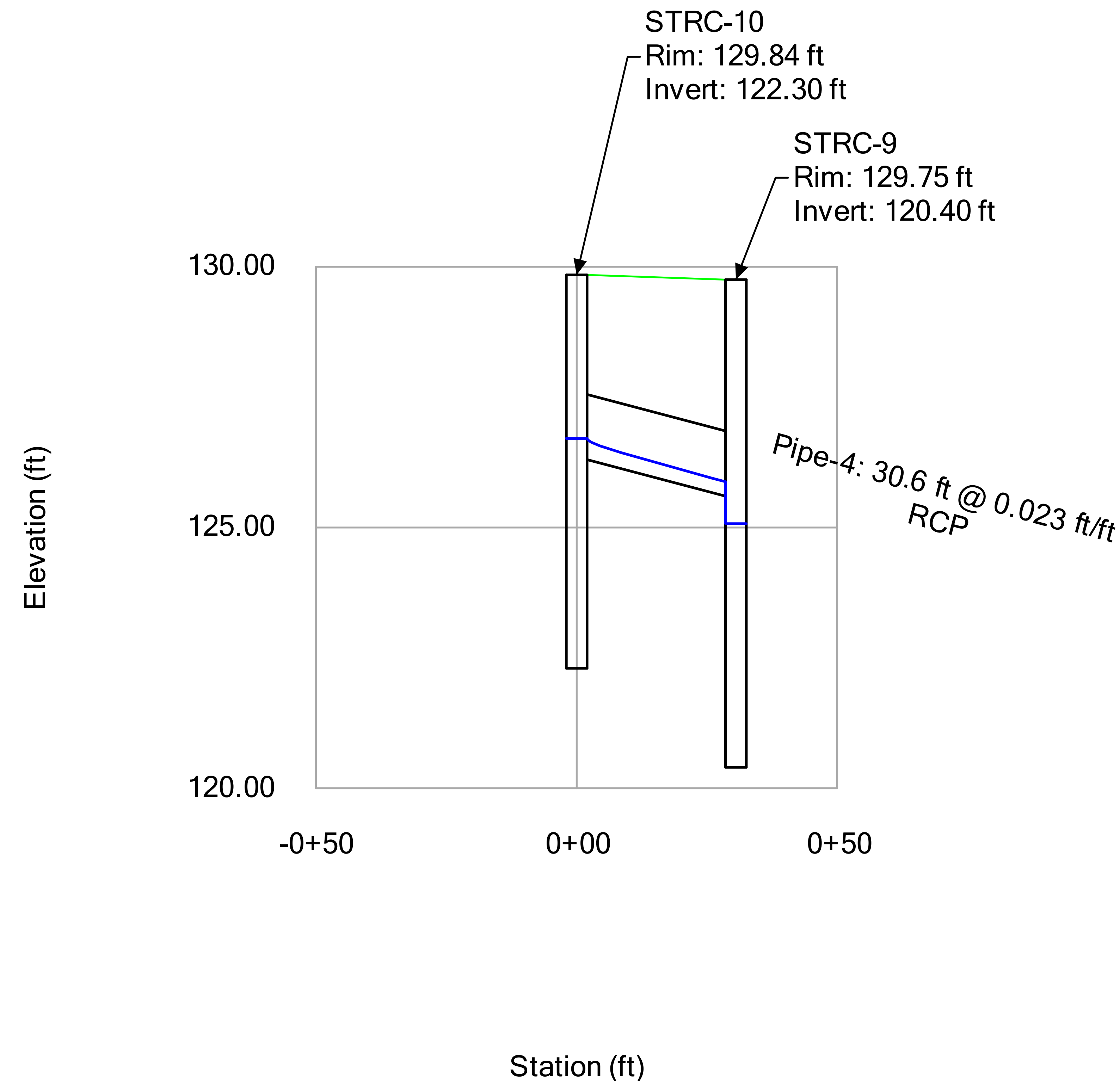
Engineering Profile - STRC-6 to STRC-18 (FES) (2302699_stormCAD offsite proposed.stsw)



10 year storm

Profile Report

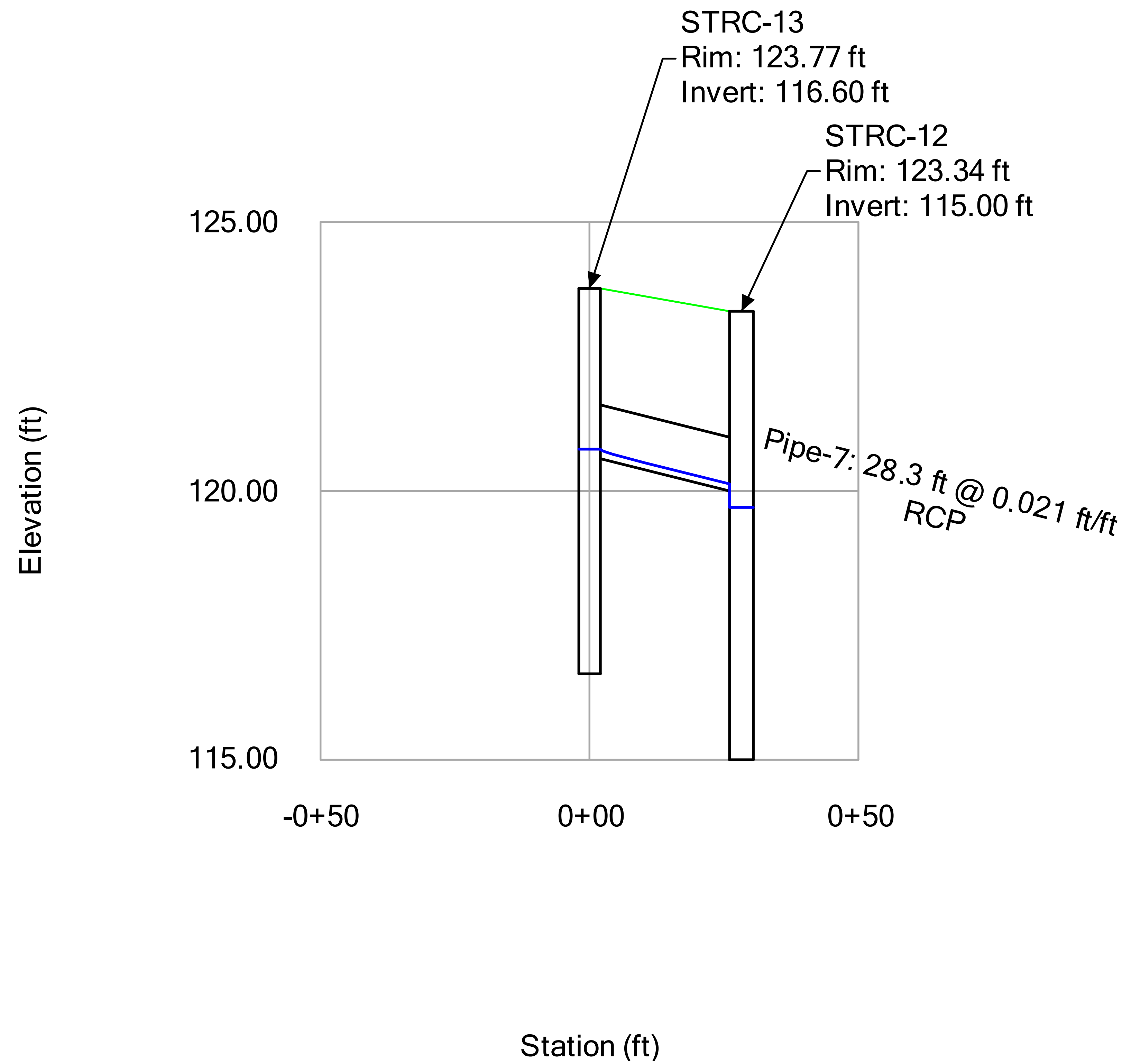
Engineering Profile - STRC-10 to STRC-9 (2302699_stormCAD offsite proposed.stsw)



10 year storm

Profile Report

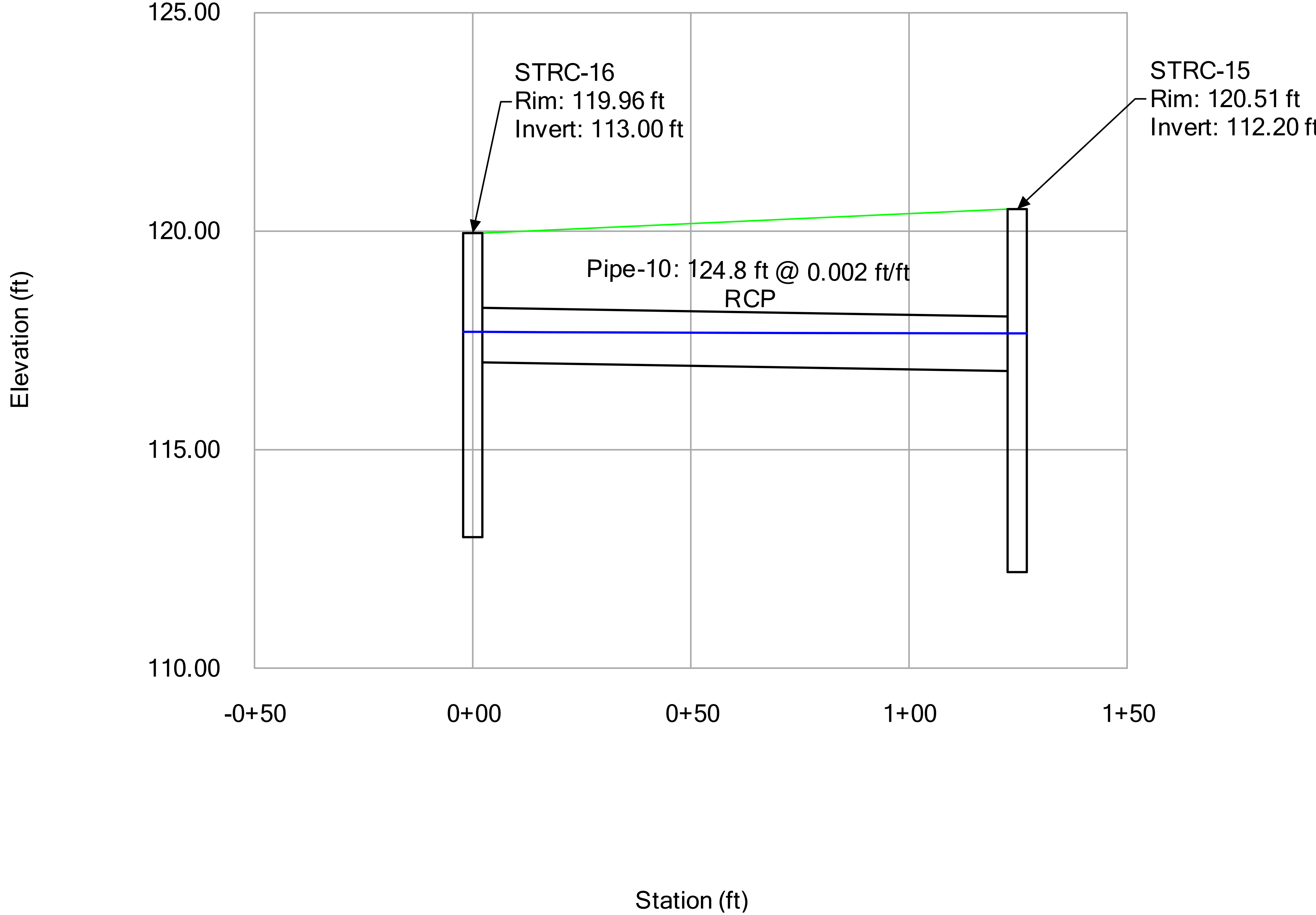
Engineering Profile - STRC-13 to STRC-12 (2302699_stormCAD offsite proposed.stsw)



10 year storm

Profile Report

Engineering Profile - STRC-16 to STRC-15 (2302699_stormCAD offsite proposed.stsw)



APPENDIX F

WATER QUALITY CALCULATIONS

Water Quality Calculations

Standard 1 - Determine Water Quality Volume

From CT 2024 Stormwater Quality Manual:

$$WQV = \frac{(1.3")(R)(A)}{12}$$

$$R = 0.05 + 0.009(I)$$

WQV = water quality volume (ft^3)
R = volumetric runoff coefficient
I = post- development impervious area (percent) after application of non-structural LID site planning and design strategies and before application of structural stormwater BMPs
A = post-development total drainage area of site or design point (square feet)

Area ID	Drainage Area	Total Area		Impervious Area		Impervious Cover	Volumetric Runoff Coefficient	Water Quality Volume (WQV) Required	Water Quality Volume Provided
		ac	ft^2	ac	ft^2	%	R	ft^3	ft^3
	PDA-100	2.020	88,000	0.061	2,650	3.02	0.077	734	20,729
	PDA-200	0.410	17,850	0.410	17,850	100.00	0.950	1,837	
	PDA-300	0.491	21,400	0.438	19,100	89.21	0.853	1,978	
	PDA-400	0.433	18,850	0.428	18,650	98.85	0.940	1,920	
	PDA-500	1.510	65,775	0.000	0	0.00	0.050	356	
	PDA-600	0.211	9,200	0.000	0	0.00	0.050	50	
	PDA-700	1.300	56,625	1.008	43,900	77.54	0.748	4,589	
	PDA-800	0.699	30,450	0.000	0	0.00	0.050	165	
	PDA-900	0.196	8,550	0.073	3,200	37.24	0.385	357	
	PDA-1000	0.098	4,275	0.029	1,250	29.59	0.316	146	

Notes: The provided Water Quality Volumes for the Underground Detention Systems were derived from the Stage Volume tables in HydroCAD as the volume below the first orifice elevation for each system.

Groundwater Recharge Volume Calculations

Groundwater Recharge Volume

From CT 2004 Stormwater Quality Manual:

$$GVR = \frac{(D)(A)(I)}{12}$$

GRV Groundwater Recharge Volume (ac-ft)
D = Depth of Runoff to be Recharged (table 7-4)
A = site area in acres
I = impervious cover (decimal)

Area ID	Total Site Area (AC)	Site Area by NRCS Hydrologic Soil Group				Impervious Cover by NRCS Hydrologic Soil Group				Site Imperviousness (Decimal) by NRCS Hydrologic Soil Group				GRV Required		Potential Recharge Pond Volumes Proposed	
	A									I							
		A	B	C	D	A	B	C	D	A	B	C	D	(ac-ft)	(cu ft)	(ac-ft)	(cu ft)
Project Site	6.62	0.15	6.47	0.00	0.00	0.00	2.39	0.00	0.00	0.00	0.36	0.00	0.00	0.049	2,120	0.476	20,729

Table from 2004 Connecticut Stormwater Quality Manual

Table 7-4
Groundwater Recharge Depth

NRCS Hydrologic Soil Group	Average Annual Recharge	Groundwater Recharge Depth (D)
A	18 inches/year	0.4 inches
B	12 inches/year	0.25 inches
C	6 inches/year	0.10 inches
D	3 inches/year	0 inches (waived)

Source: MADEP, 1997.
NRCS – Natural Resources Conservation Service

NRCS Hydrologic Soil	Groundwater Recharge
A	0.40
B	0.25
C	0.10
D	0.00

Stage-Area-Storage for Pond 5P: Surface Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
126.00	7,405	0
126.05	7,458	372
126.10	7,512	746
126.15	7,566	1,123
126.20	7,619	1,502
126.25	7,673	1,885
126.30	7,726	2,270
126.35	7,779	2,657
126.40	7,833	3,048
126.45	7,887	3,441
126.50	7,940	3,836
126.55	7,993	4,235
126.60	8,047	4,636
126.65	8,101	5,039
126.70	8,154	5,446
126.75	8,208	5,855
126.80	8,261	6,266
126.85	8,314	6,681
126.90	8,368	7,098
126.95	8,422	7,518
127.00	8,475	7,940
127.05	8,559	8,366
127.10	8,643	8,796
127.15	8,728	9,230
127.20	8,812	9,669
127.25	8,896	10,111
127.30	8,980	10,558
127.35	9,065	11,009
127.40	9,149	11,465
127.45	9,233	11,924
127.50	9,318	12,388
127.55	9,402	12,856
127.60	9,486	13,328
127.65	9,570	13,805
127.70	9,655	14,285
127.75	9,739	14,770
127.80	9,823	15,259
127.85	9,907	15,752
127.90	9,992	16,250
127.95	10,076	16,752
128.00	10,160	17,258
128.05	10,189	17,766
128.10	10,217	18,276
128.15	10,246	18,788
128.20	10,275	19,301
$\boxed{128.25}$	$\boxed{10,304}$	$\boxed{19,815}$
128.30	10,333	20,331
128.35	10,361	20,849
128.40	10,390	21,368
128.45	10,419	21,888
128.50	10,448	22,409
128.55	10,476	22,932
128.60	10,505	23,457
128.65	10,534	23,983
128.70	10,562	24,510
128.75	10,591	25,039
128.80	10,620	25,570
128.85	10,649	26,101
128.90	10,678	26,634
128.95	10,706	27,169
129.00	**10,735**	**27,705**
129.05	10,735	27,705
129.10	10,735	27,705
129.15	10,735	27,705
129.20	10,735	27,705
129.25	10,735	27,705
129.30	10,735	27,705
129.35	10,735	27,705
129.40	10,735	27,705
129.45	10,735	27,705
129.50	10,735	27,705
129.55	10,735	27,705
129.60	10,735	27,705
129.65	10,735	27,705
129.70	10,735	27,705
129.75	10,735	27,705
129.80	10,735	27,705
129.85	10,735	27,705
129.90	10,735	27,705
129.95	10,735	27,705
130.00	10,735	27,705
130.05	10,735	27,705
130.10	10,735	27,705
130.15	10,735	27,705
130.20	10,735	27,705
130.25	10,735	27,705

EMERGENCY OVERFLOW ENGAGED

Stage-Area-Storage for Pond 4P: Underground Chamber System

first orifice

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
124.00	0.000	126.65	0.258
124.05	0.005	126.70	0.262
124.10	0.011	126.75	0.266
124.15	0.016	126.80	0.270
124.20	0.021	126.85	0.274
124.25	0.026	126.90	0.278
124.30	0.031	126.95	0.282
124.35	0.037	127.00	0.285
124.40	0.042	127.05	0.289
124.45	0.047	127.10	0.293
124.50	0.052	127.15	0.296
124.55	0.057	127.20	0.300
124.60	0.063	127.25	0.303
124.65	0.068	127.30	0.307
124.70	0.073	127.35	0.310
124.75	0.078	127.40	0.313
124.80	0.083	127.45	0.316
124.85	0.088	127.50	0.318
124.90	0.093	127.55	0.321
124.95	0.098	127.60	0.324
125.00	0.103	127.65	0.326
125.05	0.108	127.70	0.329
125.10	0.113	127.75	0.331
125.15	0.118	127.80	0.334
125.20	0.123	127.85	0.336
125.25	0.128	127.90	0.339
125.30	0.133	127.95	0.341
125.35	0.138	128.00	0.344
125.40	0.143	128.05	0.346
125.45	0.148	128.10	0.348
125.50	0.153	128.15	0.351
125.55	0.158	128.20	0.353
125.60	0.163	128.25	0.356
125.65	0.167	128.30	0.358
125.70	0.172	128.35	0.361
125.75	0.177	128.40	0.363
125.80	0.182	128.45	0.366
125.85	0.186	128.50	0.368
125.90	0.191	128.55	0.370
125.95	0.196	128.60	0.373
126.00	0.200	128.65	0.375
126.05	0.205	128.70	0.378
126.10	0.210	128.75	**0.380**
126.15	0.214		
126.20	0.219		
126.25	0.223		
126.30	0.228		
126.35	0.232		
126.40	0.236		
126.45	0.241		
126.50	0.245		
126.55	0.249		
126.60	0.253		

Best Management Practice (BMP) Treatment Train Efficiency Worksheet

Prepared for:
Burns Constrction Contractor's Yard
5 Northwood Drive
Bloomfield, CT

Prepared by:
BL Companies
100 Constitution Plaza, 10th Floor
Hartford, Connecticut

Date prepared:
February 4, 2025

Overall Site Treatment Train Efficiency

Et=[1-(1-E1)(1-E2)(1-E3)(1-E4)(1-E?)]*100

BMP	BMP Description	Type pf Treatment	Efficiency Rate %
E1	Grassed Swale	pretreatment	0
E2	Infiltration Surface Basin	primary	100

Overall Treatment Train Efficiency (Et)= 100 % Total Suspended Solids (TSS) Removal

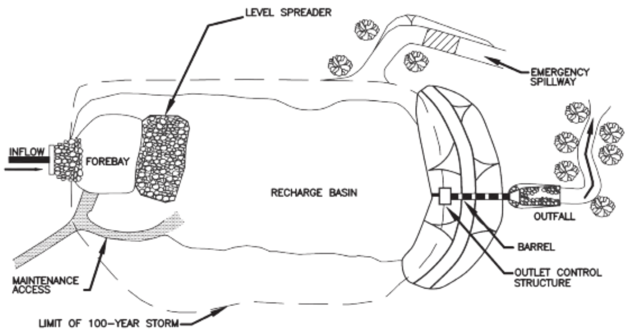
* 80% require per CT DEP
** Manufacturers claim 80% TSS removal
*** Schueler 1996 & EPA 1993
**** University of New Hampshire

Infiltration Basin Factsheet

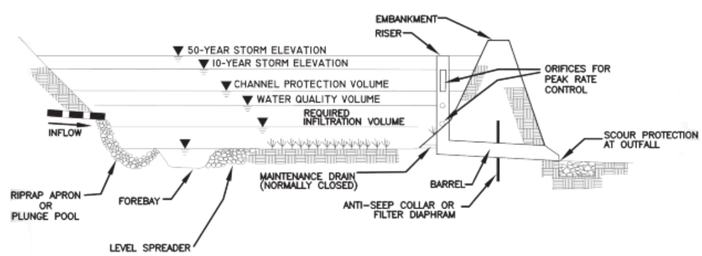
Infiltration Basin represents a practice that provides temporary surface storage of runoff (e.g. ponding) for subsequent infiltration into the ground. Appropriate practices for use of the surface infiltration performance estimates include infiltration basins, infiltration swales (not conveyance swales), rain gardens, and bio-retention systems that rely on infiltration and provide the majority of storage capacity through surface-ponding. If an infiltration system includes both surface storage through ponding and a lesser storage volume within the void spaces of a coarse filter media, then the physical storage volume capacity used to determine the long-term cumulative phosphorus removal efficiency from the infiltration basin performance curves would be equal to the sum of the surface storage volume and the void space storage volume. General design specifications for infiltration basin systems are provided in the most recent version of *The New Hampshire Stormwater Manual, Volume 2: Post-Construction Best Management Practices Selection and Design*.

Sample Design

Plan View



Profile View



Examples images from the *New Hampshire Stormwater Manual, Volume 2,* p. 90

Pollutant Export Rate by Land Use[1]

Source Category by Land Use	Land Surface Cover	P Load Export Rate[1] (lbs./acre/year)	N Load Export Rate[2] (lbs./acre/year)
Commercial (COM) and Industrial (IND)	Directly connected impervious	1.78	15
Multi-Family (MFR) and High-Density Residential (HDR)	Directly connected impervious	2.32	14.1
Medium-Density Residential (MDR)	Directly connected impervious	1.96	14.1
Low-Density Residential (LDR) - "Rural"	Directly connected impervious	1.52	14.1

[1] From NH Small MS4 General Permit, Appendix F

General Equations

Physical Storage Capacity: Depth of Runoff * Drainage Area
Cost: Physical Storage Capacity * Cost Index * Adjustment Factor[1]
Yearly Pollutant Removal: Pollutant Load Export Rate * Drainage Area * Efficiency

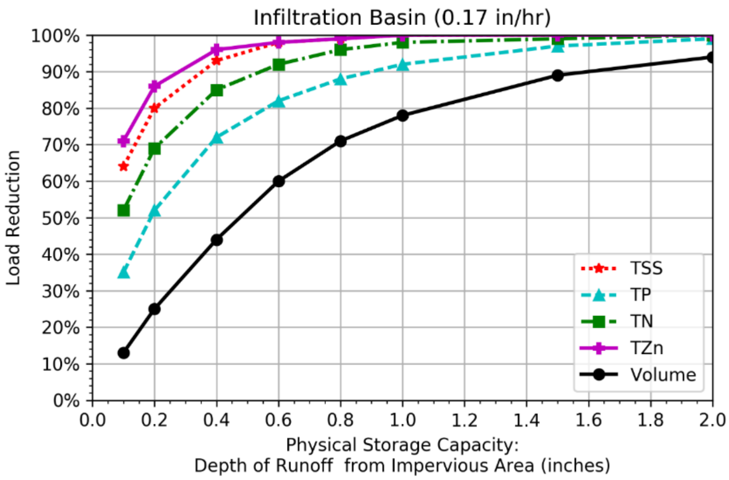
Cost (2024)[1,2]

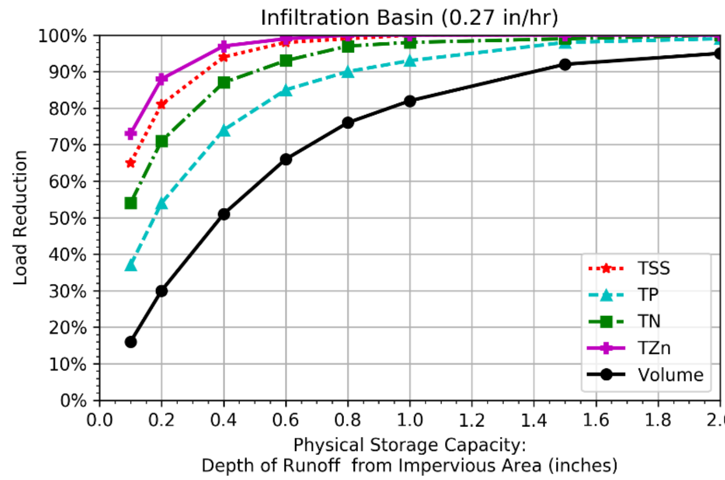
	Materials and Installation Cost ($/ft^3)	Design Cost ($/ft^3)	Total Cost ($/ft^3)
Rural	5.09	2.74	7.83
Mixed	10.17	5.48	15.65
Urban	15.26	8.22	23.48

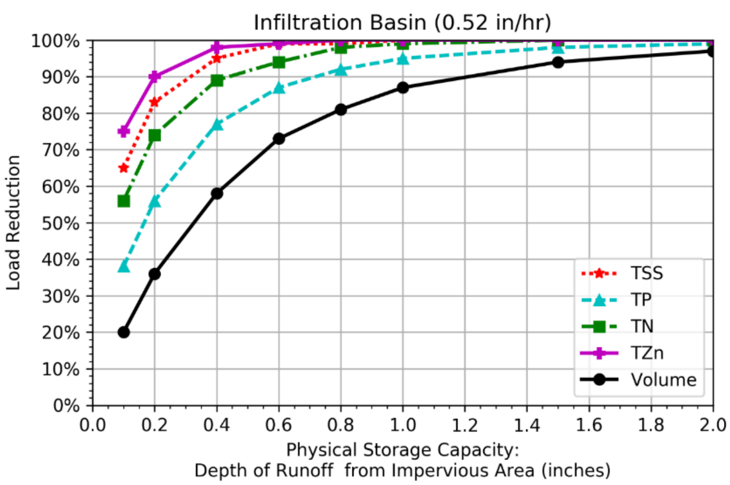
[1] EPA Memorandum "Methodology for developing cost estimates for Opti-Tool." February 20, 2016
[2] Converted from 2010 to 2024 dollars using U.S. Department of Labor (USDOL). (2012). Bureau of Labor Statistics consumer price index inflation calculator. http://www.bls.gov/data/inflation_calculator.htm

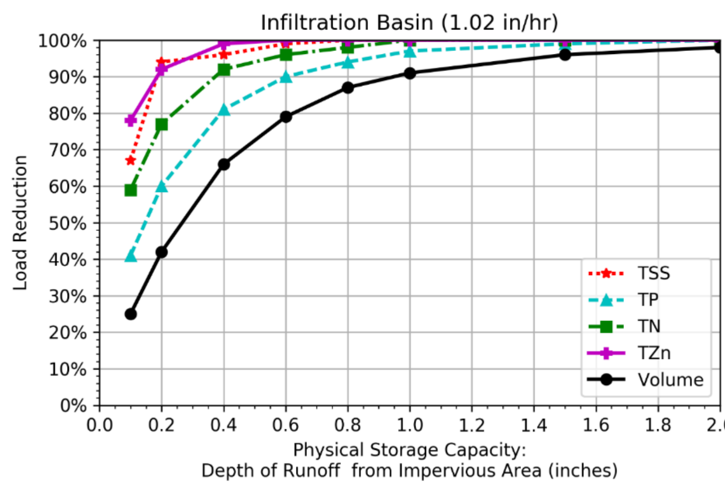
Prepared By:
University of New Hampshire
Stormwater Center
Durham, NH
www.unh.edu/unhsc
May 2024

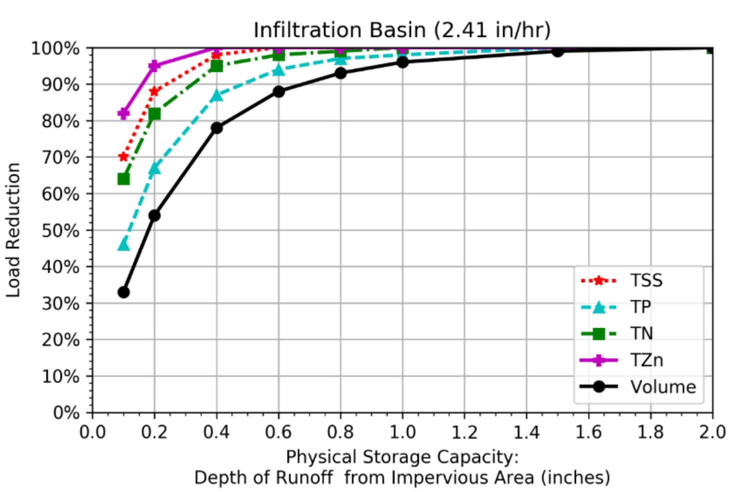
BMP Performance Curves for Soil Infiltration Rate: Infiltration Basin

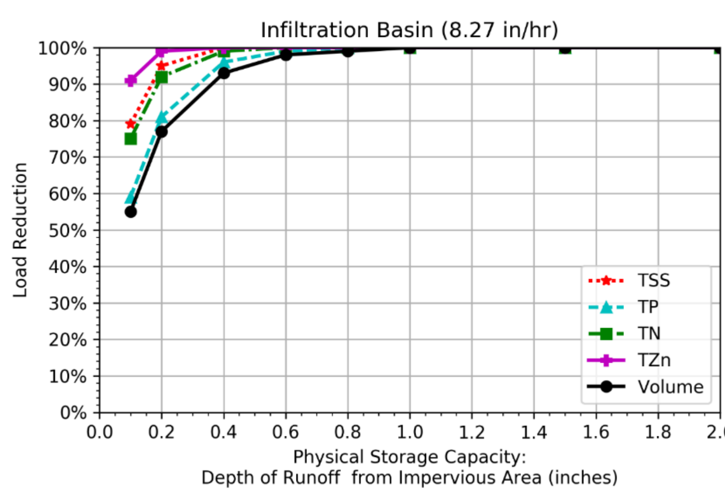












BMP Performance Tables for Soil Infiltration Rate: Infiltration Basin

		Cumulative Load Reduction				
Infiltration Rate (in/hr)	Depth of Runoff from Impervious Area (inches)	TSS	Phosphorus	Nitrogen	Zinc	Runoff Volume
0.17	0.1	64%	35%	52%	71%	13%
	0.2	80%	52%	69%	86%	25%
	0.4	93%	72%	85%	96%	44%
	0.6	98%	82%	92%	98%	60%
	0.8	99%	88%	96%	99%	71%
	1.0	100%	92%	98%	100%	78%
	1.5	100%	97%	99%	100%	89%
	2.0	100%	99%	100%	100%	94%
0.27	0.1	65%	37%	54%	73%	16%
	0.2	81%	54%	71%	88%	30%
	0.4	94%	74%	87%	97%	51%
	0.6	98%	85%	93%	99%	66%
	0.8	99%	90%	97%	100%	76%
	1.0	100%	93%	98%	100%	82%
	1.5	100%	98%	99%	100%	92%
	2.0	100%	99%	100%	100%	95%
0.52	0.1	65%	38%	56%	75%	20%
	0.2	83%	56%	74%	90%	36%
	0.4	95%	77%	89%	98%	58%
	0.6	99%	87%	94%	99%	73%
	0.8	99%	92%	98%	100%	81%
	1.0	100%	95%	99%	100%	87%
	1.5	100%	98%	100%	100%	94%
	2.0	100%	99%	100%	100%	97%

BMP Performance Tables for Soil Infiltration Rate: Infiltration Basin

infiltration:
0.955 in/hr

		Cumulative Load Reduction				
Infiltration Rate (in/hr)	Depth of Runoff from Impervious Area (inches)	TSS	Phosphorus	Nitrogen	Zinc	Runoff Volume
1.02	0.1	67%	41%	59%	78%	25%
	0.2	94%	60%	77%	92%	42%
	0.4	96%	81%	92%	99%	66%
	0.6	99%	90%	96%	100%	79%
	0.8	100%	94%	98%	100%	87%
	1.0	100%	97%	100%	100%	91%
	1.5	100%	99%	100%	100%	96%
	2.0	100%	100%	100%	100%	98%
2.41	0.1	70%	46%	64%	82%	33%
	0.2	88%	67%	82%	95%	54%
	0.4	98%	87%	95%	100%	78%
	0.6	100%	94%	98%	100%	88%
	0.8	100%	97%	99%	100%	93%
	1.0	100%	98%	100%	100%	96%
	1.5	100%	100%	100%	100%	99%
	2.0	100%	100%	100%	100%	100%
8.27	0.1	79%	59%	75%	91%	55%
	0.2	95%	81%	92%	99%	77%
	0.4	100%	96%	99%	100%	93%
	0.6	100%	99%	100%	100%	98%
	0.8	100%	100%	100%	100%	99%
	1.0	100%	100%	100%	100%	100%
	1.5	100%	100%	100%	100%	100%
	2.0	100%	100%	100%	100%	100%

Best Management Practice (BMP) Treatment Train Efficiency Worksheet

Prepared for:
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5 Northwood Drive
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Prepared by:
BL Companies
100 Constitution Plaza, 10th Floor
Hartford, Connecticut

Date prepared:
February 4, 2025

Overall Site Treatment Train Efficiency

Et=[1-(1-E1)(1-E2)(1-E3)(1-E4)(1-E?)]*100

BMP	BMP Description	Type pf Treatment	Efficiency Rate %
E1	ADS StormTech Isolator Row**	Primary	80

Overall Treatment Train Efficiency (Et)= 80 % Total Suspended Solids (TSS) Removal

* 80% require per CT DEP
** Manufacturers claim 80% TSS removal
*** Schueler 1996 & EPA 1993
**** University of New Hampshire

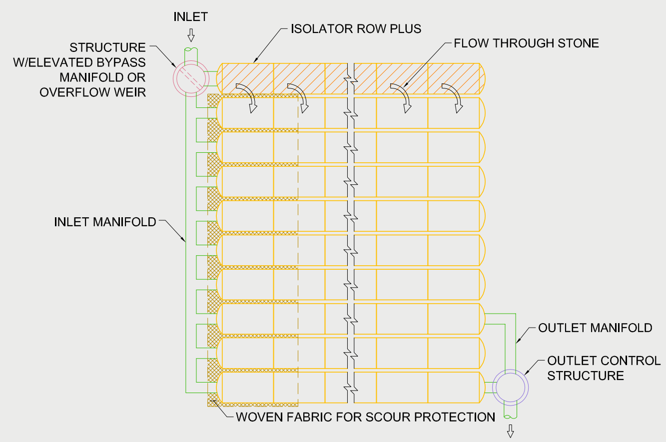
Isolator® Row Plus

The StormTech Isolator Row Plus is an enhancement to our proven water quality treatment system. This updated system is an NJCAT verified water quality treatment device that can be incorporated into any system layout.

Features

- Isolator Row Plus is now NJCAT verified. As a Manufactured Treatment Device it achieves over 80% TSS removal by filtration NJDEP Laboratory Protocol Assessment NJCAT Technology Verification.
- A patented Flamp™ (Flared End Ramp) provides a smooth transition from pipe invert to fabric bottom. The Flamp is attached to the inlet pipe inside the chamber end cap and improves chamber function over time by distributing sediment and debris that would otherwise collect at the inlet. It also serves to improve the fluid and solid flow back into the inlet pipe during maintenance and cleaning.
- Proprietary ADS Plus fabric maintains durability and sediment removal while allowing for higher water quality flow rates. A single layer of ADS Plus fabric is placed between the angular base stone and the Isolator Row Plus chambers.

Schematic of the StormTech Isolator Row Plus System



Technology Descriptions

The Isolator Row Plus is designed to capture the "first flush" runoff and offers the versatility to be sized on a volume or a flow basis. An upstream manhole not only provides access to the Isolator Row Plus but includes a high/low concept such that stormwater flow rates or volumes that exceed the capacity of the Isolator Row Plus bypass through a manifold to the other chambers. This is achieved with either an elevated bypass manifold or a high-flow weir. This creates a differential between the Isolator Row Plus row of chambers and the manifold to the rest of the system, thus allowing for settlement time in the Isolator Row Plus. After Stormwater flows through the Isolator Row Plus and into the rest of the StormTech chamber system it is either infiltrated into the soils below or passed at a controlled rate through an outlet manifold and outlet control structure.

Summary of Verified Claims[1]

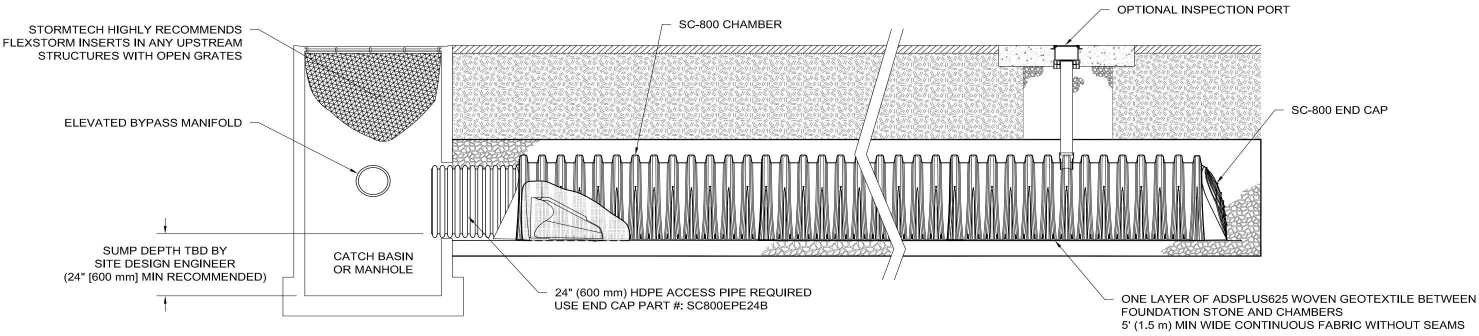
Treatment Rate (gpm/ft²)	4.1
Underlying Geotextile Layers	1
NJDEP Test Sediment	D50=75um
Mean Particle Concentration (mg/L)	200
TSS Removal Efficiency	>80%

[1] Verification testing of the StormTech SC-740 Isolator Row PLUS in accordance with NJDEP Laboratory protocol to access total suspended solids removal by filtration manufactured treatment device, 2013

ADS StormTech™

adspipe.com
800-821-6710

StormTech Isolator Row Plus (not to scale)



Maintenance

The Isolator Row Plus was designed to reduce the cost of periodic maintenance. By “isolating” sediment to just one row of the StormTech system, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout.

Maintenance is accomplished with the JetVac® process. The JetVac process utilizes a high-pressure water nozzle to propel itself down the Isolator Row Plus while scouring and suspending sediment. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency.

StormTech Isolator Row Plus

Chamber Model	Chamber Storage	Chamber Footprint	Treatment Rate
SC-160LP	15.0 cf (0.42 m^3)	11.45 sf (1.06 m^2)	0.11 cfs (3.11 L/s)
SC-310	31.0 cf (0.88 m^3)	17.7 sf (1.64 m^2)	0.16 cfs (4.53 L/s)
SC-740	74.9 cf (2.12 m^3)	27.8 sf (2.58 m^2)	0.26 cfs (7.36 L/s)
DC-780	78.4 cf (2.22 m^3)	27.8 sf (2.58 m^2)	0.26 cfs (7.36 L/s)
SC-800	81.0 cf (2.29 m^3)	27.3 sf (2.54 m^2)	0.25 cfs (7.1 L/s)
MC-3500	175.0 cf (4.96 m^3)	42.9 sf (3.99 m^2)	0.40 cfs (11.32 L/s)
MC-4500	162.6 cf (4.60 m^3)	30.1 sf (2.80 m^2)	0.28 cfs (7.93 L/s)
MC-7200	267.3 cf (7.57 m^3)	50.0 sf (4.65 m^2)	0.45 cfs (12.74 L/s)

Installation

Installation of the stormwater treatment unit(s) shall be preformed per manufacture’s installation instructions. Such instructions can be obtained by calling Advanced Drainage Systems Inc. at (800) 821-6710 or by logging on to adspipe.com.

adspipe.com
800-821-6710

APPENDIX G

OPERATIONS AND MAINTENANCE MANUAL

Stormwater System
Operations and Maintenance Plan

For the:

Proposed Contractor's Yard Development

Located at:
5 Northwood Drive
Bloomfield, Connecticut

Prepared for Submission to:
Town of Bloomfield, Connecticut

February 10, 2025

Prepared for:
Burns Construction, Inc.
300 Sperry Ave
Stratford, Connecticut

Prepared by:

BL Companies
Architecture
Engineering
Environmental
Land Surveying

BL Companies
100 Constitution Plaza, 10th Floor
Hartford, Connecticut 06103
Phone: (860) 249-2200
Fax: (860) 249-2400

BL Project Number: 2302699

Contents

General Overview

This Stormwater Operation and Maintenance Plan shall support the Special Permit Application submitted to the Town of Bloomfield by Burns Construction, Inc. for a proposed commercial contractor's yard development located on Northwood Drive. The purpose of this Plan is to establish the Operational and Maintenance requirements of the site during and after construction to comply with local and state requirements. The plan shall apply to the project site which has a total area of approximately 6.62 acres.

The proposed development will include a ± 40,500 SF contractor's yard to the south of the existing building and a parking lot expansion to the north of the building. Site improvements include new parking and circulation areas with associated site grading, stormwater management features, and landscaping. The total limits of disturbance necessary to complete the project measure approximately 4 acres.

The site is located in a FEMA Zone "X" (Un-shaded) per the FEMA Flood Insurance Rate Map (FIRM) for the town of Bloomfield, Connecticut dated 09/26/2008, community panel number 09003C0352F.

The proposed stormwater management system installed for the site complies with the Town of Bloomfield Zoning Regulations, the 2023 Connecticut Guidelines for Soil Erosion and Sediment Control, and the 2023 Connecticut Stormwater Quality Manual, latest editions.

The following Operations and Maintenance Plan, hereby referred to as Plan, was prepared specifically for the development located within the Town of Bloomfield, Connecticut. The Plan was developed to satisfy the requirements of the Connecticut Department of Energy and Environmental Protection's *2023 Connecticut Guidelines for Soil Erosion and Sediment Control.*

Purpose & Goals

The purpose of this Plan is to ensure that the stormwater management components are operated in accordance with all approvals and permits. The primary goal is to inform all property managers on how the system operates and what maintenance items are necessary to protect downstream wetlands and watercourses. The secondary goal is to provide a practical, efficient means of maintenance, planning, and record keeping, verifying permit compliance.

Responsible Parties

The Property Owner, and other parties as listed below, will be responsible for implementing the Plan for the subject property.

Company:	Burns Construction, Inc.
Business Address:	300 Sperry Ave, Stratford, CT

Maintenance inspections shall be performed by a qualified professional.

Some utilities located on the site will be owned and maintained by various utility companies in accordance with their standards. The property owner may maintain the service connections and shall coordinate with the corresponding utility provider.

List of Permits & Special Conditions

The project will receive several permits, which may contain special conditions that require compliance by the property owner and maintenance contractors. This permit may include the following:

- Town of Bloomfield –Special Permit Approval, Inland Wetlands Permit

Maintenance Logs and Checklists

The property owner shall keep a record of all maintenance procedures performed, date of inspection/ cleanings, etc. Copies of inspection reports and maintenance records shall be kept on-site and readily available at the request of local municipalities or state authorities.

Upon the request by the Town of Bloomfield, all documented inspections, reports, or other supporting information pertaining to this plan shall be provided to the town annually and submitted per their requirements. The responsible party shall contact the Town of Bloomfield for any pertinent information not specifically noted within this section.

Forms

The following forms shall be developed by the responsible party to record periodic maintenance and inspections. All inspection and maintenance forms prepared by the responsible party shall be kept on-site as part of the Stormwater Management Plan.

- Annual Checklist
- Quarterly Checklist
- Monthly Checklist

Employee Training

The property owner will have an employee-training program, with annual updates, to ensure that the qualified employees charged with maintaining the buildings and grounds do so in accordance with the approved permit conditions. All employees that have maintenance duties will be adequately informed of their responsibilities.

Spill Control

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and clean-up:

- Manufacturer's recommended methods for spill clean-up will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area on-site. Equipment and materials will include but not be limited to: absorbent

booms or mats, brooms, dust pans, mops, rags, gloves, goggles, sand, and plastic and metal trash containers specifically for this purpose.

- All spills will be cleaned immediately after discovery.
- The spill area will be kept well-ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with hazardous substance.
- Spills of toxic or hazardous material, regardless of size, will be reported to the appropriate State or local government agency.
- If a spill occurs, this plan will be adjusted to include measures to prevent this type of spill from reoccurring and how to clean the spill if there is another one. A description of the spill, the cause, and the remediation measures shall also be included.

A spill report shall be prepared by the property owner following each occurrence. The spill report shall present a description of the release, including quantity and type of material, date of spill, circumstances leading to the release, location of spill, response actions and personnel, documentation of notifications and corrective measures implemented to prevent reoccurrence.

The property owner shall identify an appropriately <u>qualified and trained</u> site employee involved with day-to-day site operations to be the spill prevention and clean-up coordinator. The name(s) of responsible spill personnel shall be posted on-site. Each employee shall be instructed that all spills are to be reported to the spill prevention and clean-up coordinator.

Stormwater Management System and Maintenance

<u>System Components</u>

The stormwater management system has several components that are shown on the Grading and Drainage Plan and perform various functions in capturing, routing, and treating stormwater runoff.

Surface Infiltration Basin

A surface infiltration basin is a basin that includes a sediment forebay with vegetation located at the bottom of the basin. This system is used to detain and infiltrate stormwater runoff for a period of time to delay and reduce the peak discharged rates for various design storms. The basin shall be inspected every six (6) months and in the months of April and October. It should be inspected to ensure that sediment does not accumulate so that stormwater runoff is not working properly. The basin should also be inspected after large rain storms to ensure that it is dewatering within 72 hours or less.

Underground Infiltration System

A subsurface detention system is a series of underground chambers or vaults that are used to detain stormwater runoff for a period of time to delay and reduce the peak discharged rates for various design storms. Although difficult to identify from the surface, many systems will have one manhole with a series of orifices called an outlet structure. The detention system is typically attached upstream of this structure. An employee can also identify an underground detention system by identifying inspection ports at the surface and removing the lid for the required routine inspections.

The subsurface detention system shall be inspected every six (6) months and in the months of April and October. Each of the inspection ports provided shall be opened and visually checked from the surface. Observation of grit inside of the detention system shall be noted and any deposits found to be 2 inches or more, as measured from the invert of pipe, shall be cleaned and removed. The underground detention system qualifies as a Confined Space under OSHA regulations, and any maintenance involving entry into the pipes should comply with OSHA Confined Space Entry Regulations. The chamber system will be visually inspected through the manholes. If deemed necessary, the chambers can be TV inspected.

Catch Basins and Manholes

The property owner is responsible for cleaning the catch basins and manholes on the property. A Connecticut Licensed hauler shall clean the sumps and dispose of removed sediment and debris legally. The road sand may be reused for winter sanding but may not be stored on-site. The owner shall contact the local municipality for all requirements related to disposal and reuse of sediment. As part of the hauling contract, the hauler shall notify the property owner in writing where the material is being disposed.

Each catch basin shall be inspected every four (4) months, with one (1) inspection occurring during the month of April. Any debris occurring within one foot from the bottom of each sump shall be removed by a Vacuum "Vactor" type, maintenance equipment.

During the inspection of each catch basin sump, the hoods (where provided) on each of the outlet pipes shall also be observed. In the event that a hood is damaged or off the hanger, it shall be reset or repaired.

Additional Site Maintenance

<u>Parking Lots</u>

Parking lots and sidewalks shall be swept as necessary by the property owner to removed trash and other debris. The property owner will sweep parking lots on the property in the spring to remove winter accumulations of road sand and is requirement to maintain the functionality of the required stormwater quality treatment.

<u>Landscaping</u>

The management company retained by the property owner shall maintain all landscaped areas. Typical landscaping maintenance shall consist of pruning, mulching, planting, mowing lawns, raking leaves, etc. Use of fertilizers and pesticides will be controlled and limited to minimal amounts necessary for healthy landscape maintenance and as approved by the town.

Established lawn areas shall be maintained at a typical height of 3-1/2". This will allow the grass to be maintained with minimal impact from weeds and/or pests. Topsoil, brush, leaves, clippings, woodchips, mulch, equipment, and other material shall be stored off site.

Outdoor Storage

There will be no outdoor storage of hazardous chemicals, de-icing agents, fertilizer, pesticides, or herbicides anywhere around the buildings.

De-icing and Snow Removal & Storage

The use of clean sand may be used to aid in traction. Snow shall be shoveled and plowed from sidewalk and parking areas within 24 hours of the storm's conclusion. Sand accumulation shall be removed from the site at the end of the winter season or appropriate time when seasonal snow has melted. Alternative de-icing methods not specified within this section shall be submitted to the Town of Bloomfield for approval prior to use.

Maintenance Schedule

MAINTENANCE SCHEDULE

During the First Year of Operation:		
Task:	Completion Date:	Manager's Initials:
JANUARY:		
Employee Training Program with Spill Program		
*Stormwater Basin Inspection		
*Catch Basin Inspection		
APRIL:		
* Subsurface Infiltration System Inspection		
*Stormwater Basin Inspection		
*Catch Basin Inspection		
Sweeping of Paved Surfaces and Dumpster Enclosure		
Shrub Fertilization		
Lawn Liming (if necessary)		
JULY:		
Sweeping of Paved Surfaces and Dumpster Enclosure		
AUGUST:		
*Catch Basin Inspection		
SEPTEMBER:		
*Subsurface Infiltration System Inspection		
Tree and Lawn Fertilization		
Sweeping of Paved Surfaces and Dumpster Enclosure		
OCTOBER:		
*Stormwater Basin Inspection		
DECEMBER:		
* Subsurface Infiltration System Inspection		
Sweeping of Paved Surfaces and Dumpster Enclosure		
*Stormwater Basin Inspection		
*Catch Basin Inspection		

*NOTE: Use appropriate worksheet found in this plan to conduct the inspection.

After the First Year of Operation:				
FOR YEAR____________________________				
Task:		Completion Date:	Manager's Initials:
JANUARY:			
Employee Training Program with Spill Program			
APRIL:			
*Subsurface Infiltration System Inspection			
Sweeping of Paved Surfaces and Dumpster Enclosure			
*Stormwater Basin Inspection			
*Catch Basin Inspection			
JUNE:			
Sweeping of Paved Surfaces and Dumpster Enclosure			
AUGUST:			
*Catch Basin Inspection			
SEPTEMBER:			
*Subsurface Infiltration System Inspection			
*Stormwater Basin Inspection			
Tree and Lawn Fertilization			
Sweeping of Paved Surfaces and Dumpster Enclosure			
DECEMBER:			
Sweeping of Paved Surfaces and Dumpster Enclosure			
*Catch Basin Inspection			

*NOTE: Use appropriate worksheet found in this plan to conduct the inspection.

Catch Basin Inspection Log

CATCH BASIN / HDS INSPECTION LOG

Name of Inspector: Date:

Catch Basin or HDS ID	Condition (circle one)		Debris above 1’ within sump? (If yes then catch basin is to be cleaned)		Date of Catch Basin/Cleaning (if debris is greater than 1’)		Condition of Hood (if applicable, remove trash/debris if necessary)	Comments:
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							

On-site Procedures for Inspection and Maintenance of Catch Basin Inserts

- Secure traffic and pedestrian traffic with cones, barrels, etc.
- Clean surface area around each catch basin.
- Remove grates and set aside
- Clean grates, remove litter and debris that may be trapped within the grate
- Visually inspect condition of outlet hood and remove trash and debris from hood if necessary.
- Remove by vactor hose the debris that has been trapped in the trough area. Dispose of in accordance with local, state and federal regulatory agency requirements. Most debris that is captured in the trough or sump area will fall into the non-hazardous waste category.
- Visually inspect and check the condition of the trough area.
- Replace grate and lockdown as needed.
- Un-secure traffic control area.
- Complete service report and submit to facility owner.

Subsurface Detention Inspection Log

SUBSURFACE STROWMATER DETENTION SYSTEM INSPECTION LOG

Name of Inspector:							Date:				[redacted]	
Basin ID	Overall condition of Inlet Pipe (circle one)			Condition of Facility (circle one)			Debris and Sediment Removed from Basin?[1]		Inlets and Outlets are Clear and Functioning?		Date of Cleaning Performed	Comments
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		

1 – Sediment deposits shall be removed from the subsurface detention basin when the deposited material reaches a height of 2” measured from the top of the stone bedding.

Surface Infiltration Basin Inspection Log

Regular Inspection and Maintenance Guidance for Infiltration Systems / Tree Filters

Maintenance of infiltration systems and tree filters can typically be performed as part of standard landscaping. Regular inspection and maintenance is critical to the effective operation of infiltration systems and tree filters to insure they remain clear of leaves and debris and free draining. This page provides guidance on maintenance activities that are typically required for these systems, along with the suggested frequency for each activity. Individual systems may have more, or less frequent maintenance needs depending on a variety of factors including but not limited to: the occurrence of large storm events, overly wet or dry periods, regional hydrologic conditions, and the upstream land use.

ACTIVITIES

The most common maintenance activity is the removal of sediment and organic debris from the system and bypass structures. Visual inspections are routine for system maintenance. This includes looking for standing water, accumulated leaves, holes in the soil media, signs of plant distress, and debris and sediment accumulation in the system. Vegetation coverage is integral to the performance of the system, including infiltration rate and nutrient uptake. Vegetation care is important to system productivity and health.

ACTIVITY	FREQUENCY
CLOGGING AND SYSTEM PERFORMANCE	
A record should be kept of the time to drain for the system completely after a storm event. The system should drain completely within 72 hours.	After every major storm in the first few months, then annually at minimum.
Check to insure the filter surface remains well draining after storm events. **Remedy**: If filter bed is clogged, draining poorly, or standing water covers more than 50% of the surface 48 hours after a precipitation event, then remove top few inches of discolored material. Till, or rake remaining material as needed.	
Check inlets and outlets for leaves and debris. **Remedy**: Rake in and around the system to clear it of debris. Also, clear the inlet and overflow if obstructed.	Quarterly initially, annually as a minimum thereafter.
Check for animal burrows and short-circuiting in the system. **Remedy:** Soil erosion from short circuiting or animal boroughs should be repaired when they occur. The holes should be filled and lightly compacted	
Inspect inlets and outlets to ensure good condition and no evidence of deterioration. Check to see if high-flow bypass is functioning. **Remedy:** Repair or replace any damaged structural parts, inlets, outlets, sidewalls.	
VEGETATION	
Check for robust vegetation coverage throughout the system and dead or dying plants. **Remedy:** Vegetation should cover > 75% of the system and should be cared for as needed.	Annually or as needed

Last Revised 02/2017

CHECKLIST FOR INSPECTION OF INFILTRATION SYSTEM / TREE FILTERS		
Location: Inspector: Date: Time: Site Conditions: Days Since Last Rain Event:		
Inspection Items	**Satisfactory (S) or Unsatisfactory (U)**	**Comments/Corrective Action**
1. Initial Inspection After Planting and Mulching		
Plants are stable, roots not exposed	**S U**	
Surface is at design level, no evidence of preferential flow/shoving	**S U**	
Inlet and outlet/bypass are functional	**S U**	
2. Debris Cleanup (1 time/year minimum, Spring/Fall)		
Litter, leaves, and dead vegetation removed from the system	**S U**	
Prune/mow vegetation	**S U**	
3. Standing Water (1 time/year and/or after large storm events)		
No evidence of standing water after 72 hours since rainfall	**S U**	
4. Vegetation Condition and Coverage		
Vegetation condition good with good coverage (typically > 75%)	**S U**	
5. Other Issues		
Note any additional issues not previously covered.	**S U**	
Corrective Action Needed		**Due Date**
1.		
2.		
3.		
Inspector Signature		**Date**

Last Revised 02/2017

APPENDIX H

NRCS SOILS REPORT

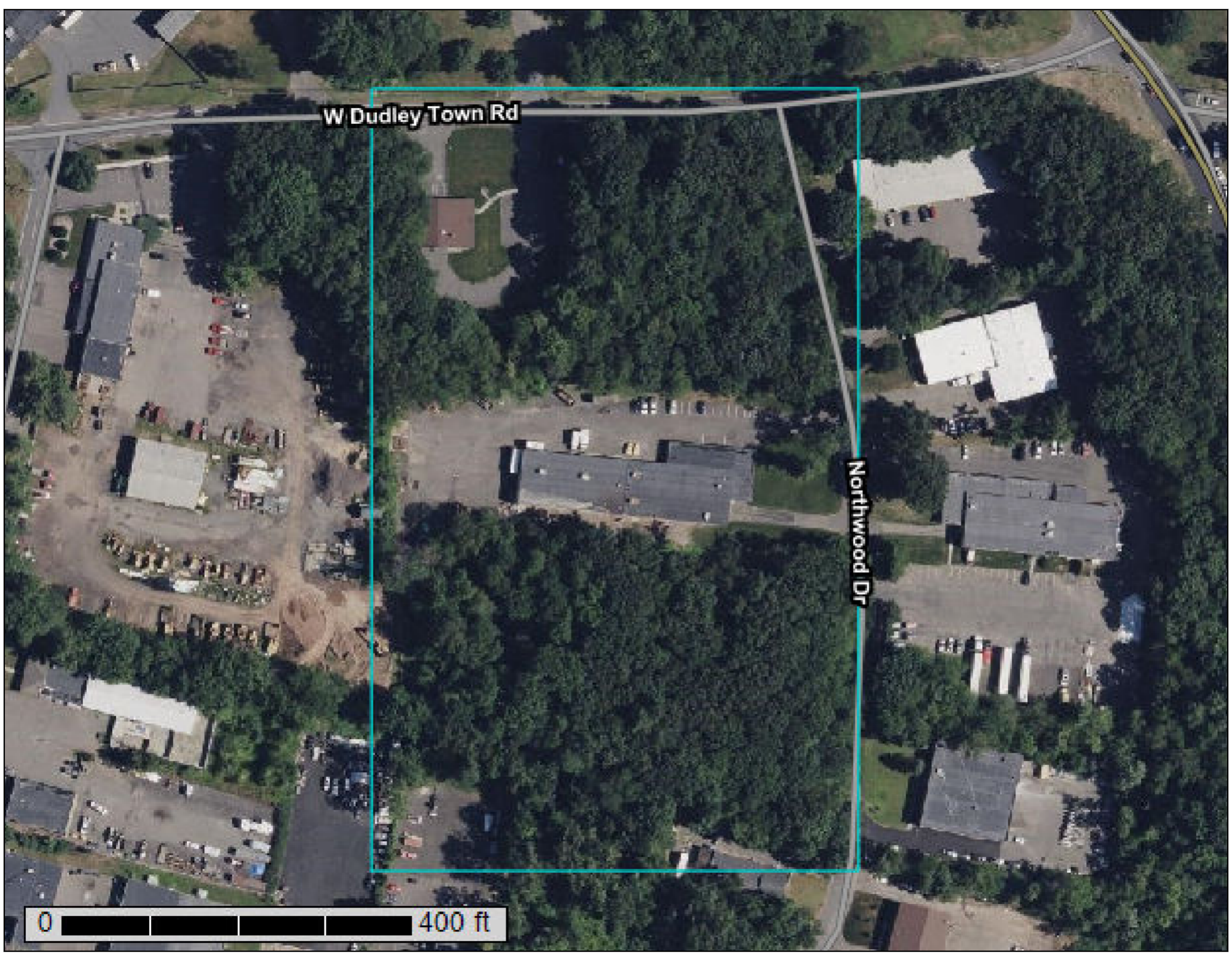
United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

State of Connecticut, Western Part



November 15, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

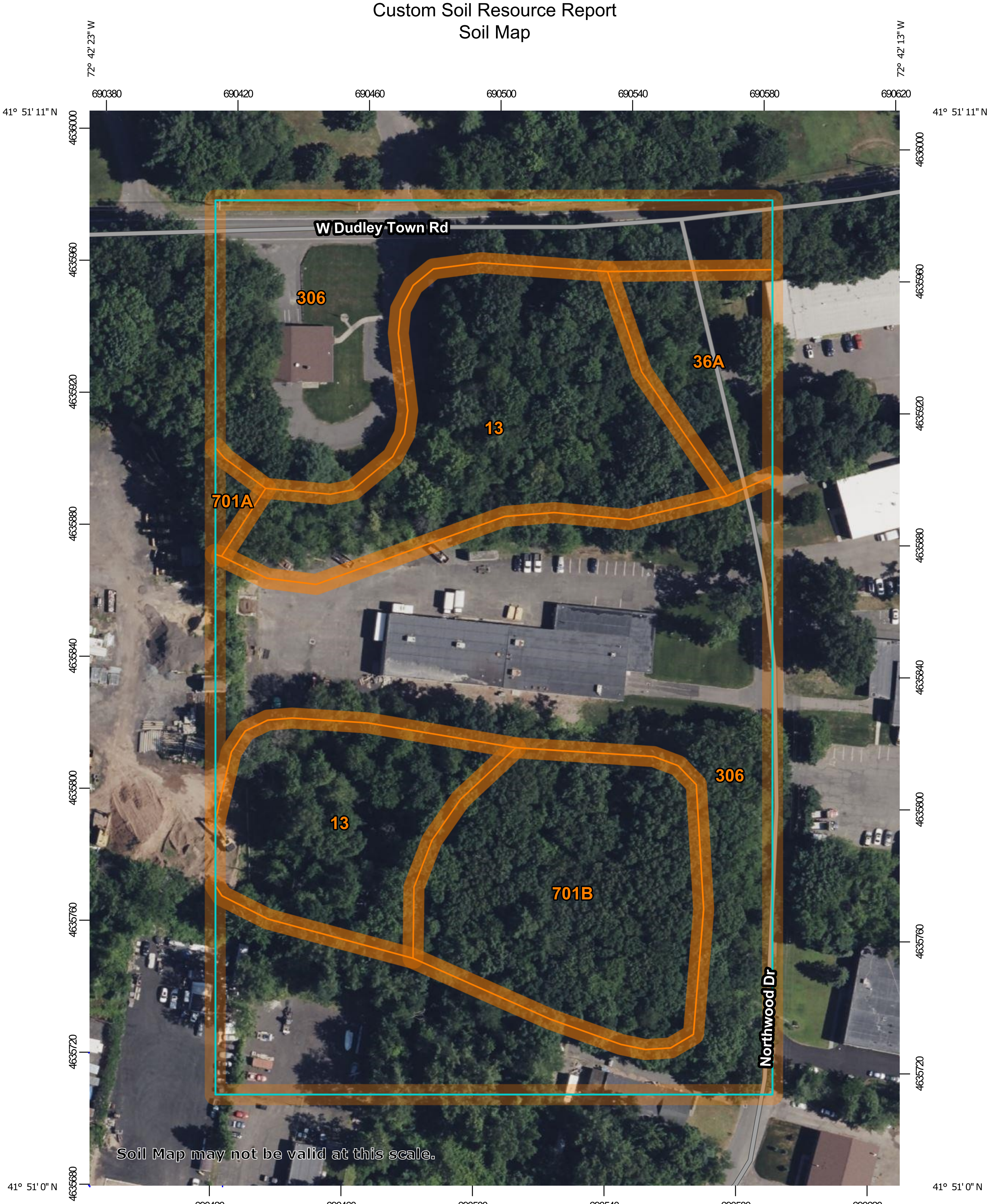
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map



Map Scale: 1:1,590 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 20, 40, 80, 120

Feet: 0, 50, 100, 200, 300

N

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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: State of Connecticut, Western Part
Survey Area Data: Version 2, Aug 30, 2024

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

Date(s) aerial images were photographed: Jun 14, 2022—Oct 6, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
13	Walpole sandy loam, 0 to 3 percent slopes	2.9	25.3%
36A	Windsor loamy sand, 0 to 3 percent slopes	0.6	5.1%
306	Udorthents-Urban land complex	6.3	55.2%
701A	Ninigret fine sandy loam, 0 to 3 percent slopes	0.1	0.6%
701B	Ninigret fine sandy loam, 3 to 8 percent slopes	1.6	13.9%
Totals for Area of Interest		**11.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

State of Connecticut, Western Part

13—Walpole sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svkl
Elevation: 0 to 1,350 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Walpole and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Walpole

Setting

Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy glaciofluvial deposits derived from igneous, metamorphic and sedimentary rock

Typical profile

Oe - 0 to 1 inches: mucky peat
A - 1 to 7 inches: sandy loam
Bg - 7 to 21 inches: sandy loam
BC - 21 to 25 inches: gravelly sandy loam
C - 25 to 65 inches: very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 4 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

Minor Components

Sudbury

Percent of map unit: 10 percent
Landform: Outwash plains
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Scarboro

Percent of map unit: 10 percent
Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F144AY031MA - Very Wet Outwash
Hydric soil rating: Yes

36A—Windsor loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svkg
Elevation: 0 to 990 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Windsor, loamy sand, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor, Loamy Sand

Setting

Landform: Outwash plains, dunes, deltas, outwash terraces
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

O - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand

C - 25 to 65 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Deerfield, loamy sand

Percent of map unit: 10 percent
Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hinckley, loamy sand

Percent of map unit: 5 percent
Landform: Outwash plains, eskers, kames, deltas
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

306—Udorthents-Urban land complex

Map Unit Setting

National map unit symbol: 9lmg
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 185 days

Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 50 percent
Urban land: 39 percent
Minor components: 11 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Parent material: Human-transported material

Typical profile

^A - 0 to 5 inches: loam
^C1 - 5 to 21 inches: gravelly loam
^C2 - 21 to 79 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Urban Land

Typical profile

M - 0 to 6 inches: cemented material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Minor Components

Udorthents, wet substratum

Percent of map unit: 9 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Landform: Hills
Down-slope shape: Convex
Across-slope shape: Convex

Hydric soil rating: No

701A—Ninigret fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2y07d
Elevation: 0 to 1,260 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Ninigret and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ninigret

Setting

Landform: Outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist and/or phyllite

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 16 inches: fine sandy loam
Bw2 - 16 to 26 inches: fine sandy loam
2C - 26 to 65 inches: loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 18 to 38 inches to strongly contrasting textural stratification
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 16 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F144AY026CT - Moist Silty Outwash
Hydric soil rating: No

Minor Components

Agawam

Percent of map unit: 5 percent
Landform: Outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Merrimac

Percent of map unit: 5 percent
Landform: Outwash terraces
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Tisbury

Percent of map unit: 3 percent
Landform: Outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F144AY026CT - Moist Silty Outwash
Hydric soil rating: No

Raypol

Percent of map unit: 2 percent
Landform: Drainageways
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

701B—Ninigret fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2y07f
Elevation: 0 to 1,260 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Ninigret and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ninigret

Setting

Landform: Kame terraces, outwash terraces, kames, moraines, outwash plains
Landform position (two-dimensional): Footslope, backslope, toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Convex, linear
Across-slope shape: Convex, concave
Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from gneiss, granite, schist, and/or phyllite

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 16 inches: fine sandy loam
Bw2 - 16 to 26 inches: fine sandy loam
2C - 26 to 65 inches: stratified loamy sand to loamy fine sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 18 to 38 inches to strongly contrasting textural stratification
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 16 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F144AY026CT - Moist Silty Outwash
Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 5 percent
Landform: Outwash plains, kames, eskers, moraines, outwash terraces
Landform position (two-dimensional): Backslope, footslope, shoulder, summit, toeslope
Landform position (three-dimensional): Side slope, crest, nose slope, head slope, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Agawam

Percent of map unit: 5 percent
Landform: Outwash terraces, outwash plains, kame terraces, kames, moraines
Landform position (two-dimensional): Backslope, shoulder, footslope, summit, toeslope
Landform position (three-dimensional): Side slope, crest, nose slope, head slope, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Tisbury

Percent of map unit: 3 percent
Landform: Outwash terraces, valley trains, outwash plains, deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Raypol

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

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United States Department of Agriculture

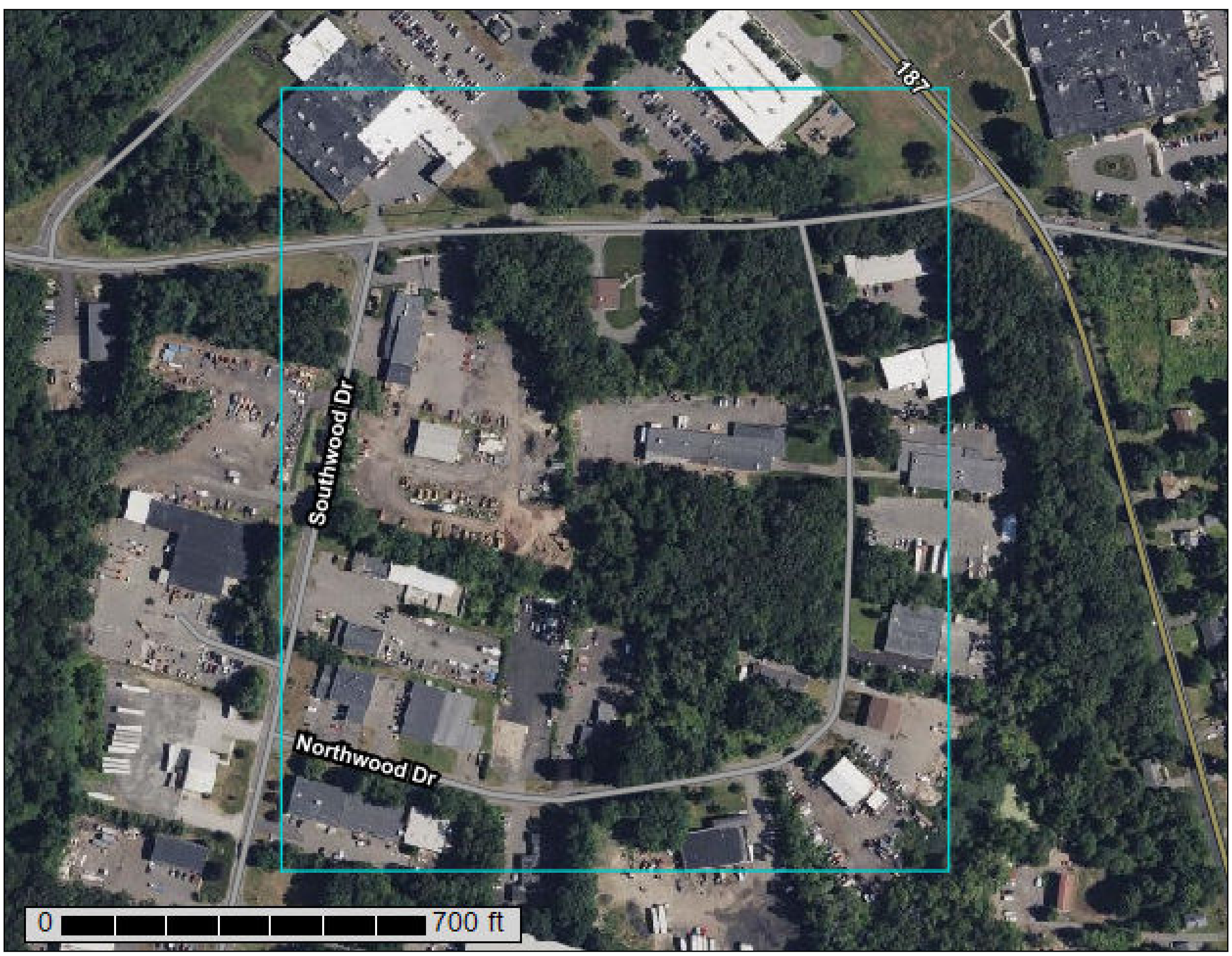
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

State of Connecticut, Western Part



January 13, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map

Map Scale: 1:3,030 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0, 40, 80, 160, 240

Feet: 0, 100, 200, 400, 600

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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: State of Connecticut, Western Part
Survey Area Data: Version 2, Aug 30, 2024

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

Date(s) aerial images were photographed: Jun 14, 2022—Oct 6, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
9	Scitico, Shaker, and Maybid soils, 0 to 3 percent slopes	0.5	1.0%
13	Walpole sandy loam, 0 to 3 percent slopes	2.9	6.5%
36A	Windsor loamy sand, 0 to 3 percent slopes	1.4	3.1%
306	Udorthents-Urban land complex	37.1	83.8%
701A	Ninigret fine sandy loam, 0 to 3 percent slopes	0.8	1.9%
701B	Ninigret fine sandy loam, 3 to 8 percent slopes	1.6	3.6%
Totals for Area of Interest		**44.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

State of Connecticut, Western Part

9—Scitico, Shaker, and Maybid soils, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9lrq
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 50 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Scitico and similar soils: 40 percent
Shaker and similar soils: 35 percent
Maybid and similar soils: 15 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scitico

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Clayey glaciolacustrine deposits

Typical profile

Ap - 0 to 8 inches: silt loam
Eg - 8 to 11 inches: silt loam
Bg1 - 11 to 18 inches: silty clay loam
Bg2 - 18 to 30 inches: silty clay loam
Bg3 - 30 to 38 inches: silty clay
Cg1 - 38 to 52 inches: silty clay loam
Cg2 - 52 to 65 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: D
Ecological site: F145XY004CT - Wet Lake Plain

Hydric soil rating: Yes

Description of Shaker

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy eolian deposits over clayey glaciolacustrine deposits

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
Ap - 2 to 6 inches: fine sandy loam
Bg - 6 to 20 inches: sandy loam
Bw - 20 to 30 inches: sandy loam
2C - 30 to 65 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F145XY004CT - Wet Lake Plain
Hydric soil rating: Yes

Description of Maybid

Setting

Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Clayey glaciolacustrine deposits

Typical profile

A - 0 to 9 inches: silt loam
Bg1 - 9 to 18 inches: silty clay loam
Bg2 - 18 to 26 inches: silty clay loam
Cg1 - 26 to 36 inches: silty clay loam
Cg2 - 36 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Ecological site: F145XY004CT - Wet Lake Plain
Hydric soil rating: Yes

Minor Components

Brancroft

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F145XY005MA - Moist Lake Plain
Hydric soil rating: No

Elmridge

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F145XY006CT - Semi-Rich Moist Lake Plain
Hydric soil rating: No

13—Walpole sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svkl
Elevation: 0 to 1,350 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Walpole and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Walpole

Setting

Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy glaciofluvial deposits derived from igneous, metamorphic and sedimentary rock

Typical profile

Oe - 0 to 1 inches: mucky peat
A - 1 to 7 inches: sandy loam
Bg - 7 to 21 inches: sandy loam
BC - 21 to 25 inches: gravelly sandy loam
C - 25 to 65 inches: very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 4 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

Minor Components

Sudbury

Percent of map unit: 10 percent
Landform: Outwash plains
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Scarboro

Percent of map unit: 10 percent
Landform: Depressions

Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F144AY031MA - Very Wet Outwash
Hydric soil rating: Yes

36A—Windsor loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svkg
Elevation: 0 to 990 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Windsor, loamy sand, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor, Loamy Sand

Setting

Landform: Outwash plains, dunes, deltas, outwash terraces
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

O - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Deerfield, loamy sand

Percent of map unit: 10 percent
Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hinckley, loamy sand

Percent of map unit: 5 percent
Landform: Outwash plains, eskers, kames, deltas
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

306—Udorthents-Urban land complex

Map Unit Setting

National map unit symbol: 9lmg
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 50 percent
Urban land: 39 percent
Minor components: 11 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Parent material: Human-transported material

Typical profile

^A - 0 to 5 inches: loam
^C1 - 5 to 21 inches: gravelly loam
^C2 - 21 to 79 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Urban Land

Typical profile

M - 0 to 6 inches: cemented material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Minor Components

Udorthents, wet substratum

Percent of map unit: 9 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Landform: Hills
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

701A—Ninigret fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2y07d
Elevation: 0 to 1,260 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Ninigret and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ninigret

Setting

Landform: Outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist and/or phyllite

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 16 inches: fine sandy loam
Bw2 - 16 to 26 inches: fine sandy loam
2C - 26 to 65 inches: loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 18 to 38 inches to strongly contrasting textural stratification
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 16 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: B/D
Ecological site: F144AY026CT - Moist Silty Outwash
Hydric soil rating: No

Minor Components

Agawam

Percent of map unit: 5 percent
Landform: Outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Merrimac

Percent of map unit: 5 percent
Landform: Outwash terraces
Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Tisbury

Percent of map unit: 3 percent
Landform: Outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F144AY026CT - Moist Silty Outwash
Hydric soil rating: No

Raypol

Percent of map unit: 2 percent
Landform: Drainageways
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

701B—Ninigret fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2y07f
Elevation: 0 to 1,260 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Ninigret and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ninigret

Setting

Landform: Kame terraces, outwash terraces, kames, moraines, outwash plains
Landform position (two-dimensional): Footslope, backslope, toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Convex, linear
Across-slope shape: Convex, concave
Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from gneiss, granite, schist, and/or phyllite

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 16 inches: fine sandy loam
Bw2 - 16 to 26 inches: fine sandy loam
2C - 26 to 65 inches: stratified loamy sand to loamy fine sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 18 to 38 inches to strongly contrasting textural stratification
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 16 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F144AY026CT - Moist Silty Outwash
Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 5 percent
Landform: Outwash plains, kames, eskers, moraines, outwash terraces
Landform position (two-dimensional): Backslope, footslope, shoulder, summit, toeslope
Landform position (three-dimensional): Side slope, crest, nose slope, head slope, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Agawam

Percent of map unit: 5 percent
Landform: Outwash terraces, outwash plains, kame terraces, kames, moraines
Landform position (two-dimensional): Backslope, shoulder, footslope, summit, toeslope
Landform position (three-dimensional): Side slope, crest, nose slope, head slope, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Tisbury

Percent of map unit: 3 percent
Landform: Outwash terraces, valley trains, outwash plains, deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Raypol

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

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.

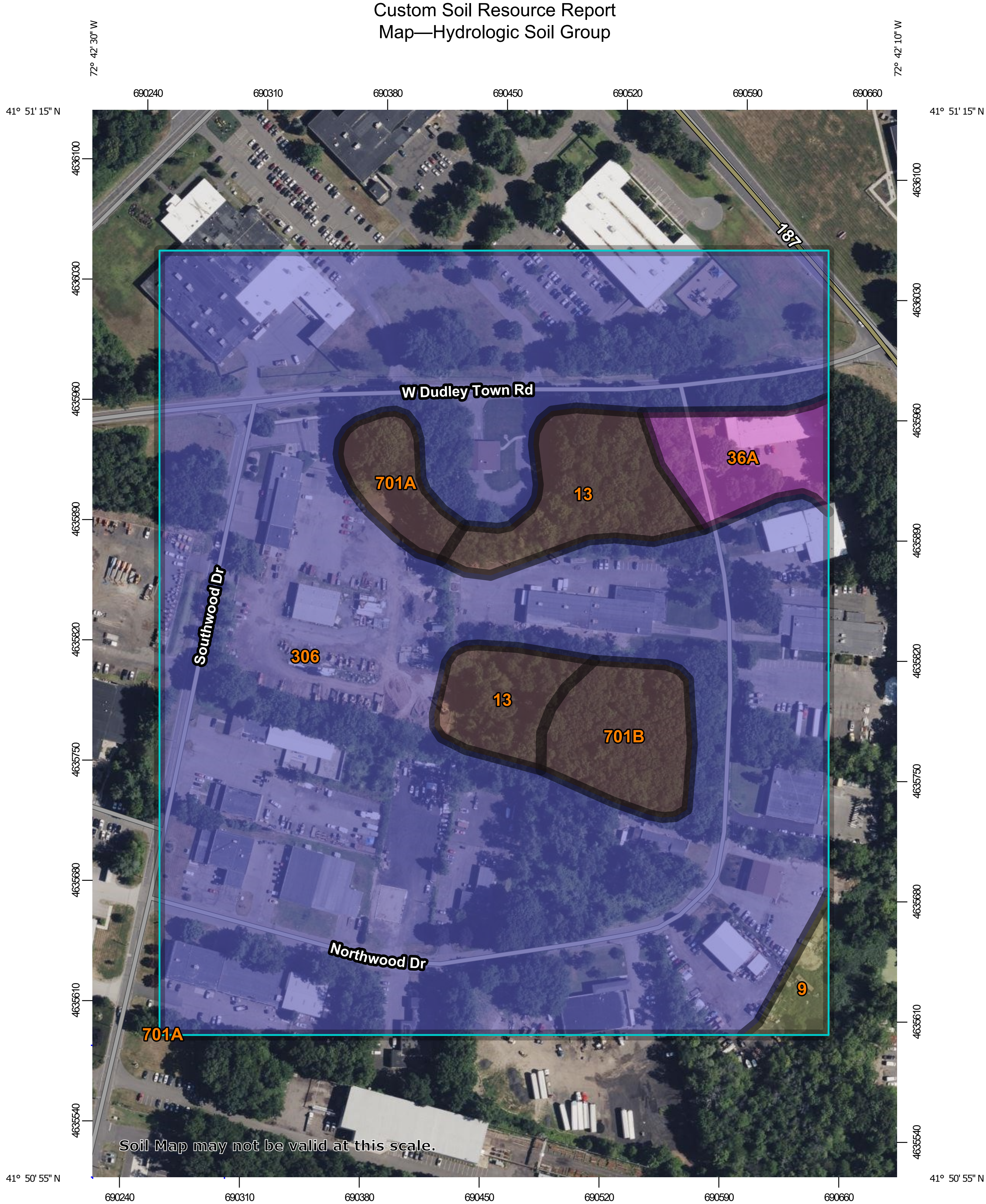
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

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.

Map—Hydrologic Soil Group



Map Scale: 1:3,030 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 40, 80, 160, 240

Feet: 0, 100, 200, 400, 600

N

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

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

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Web Soil Survey URL:
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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: State of Connecticut, Western Part
Survey Area Data: Version 2, Aug 30, 2024

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

Date(s) aerial images were photographed: Jun 14, 2022—Oct 6, 2022

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.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Scitico, Shaker, and Maybid soils, 0 to 3 percent slopes	C/D	0.5	1.0%
13	Walpole sandy loam, 0 to 3 percent slopes	B/D	2.9	6.5%
36A	Windsor loamy sand, 0 to 3 percent slopes	A	1.4	3.1%
306	Udorthents-Urban land complex	B	37.1	83.8%
701A	Ninigret fine sandy loam, 0 to 3 percent slopes	B/D	0.8	1.9%
701B	Ninigret fine sandy loam, 3 to 8 percent slopes	B/D	1.6	3.6%
Totals for Area of Interest			**44.2**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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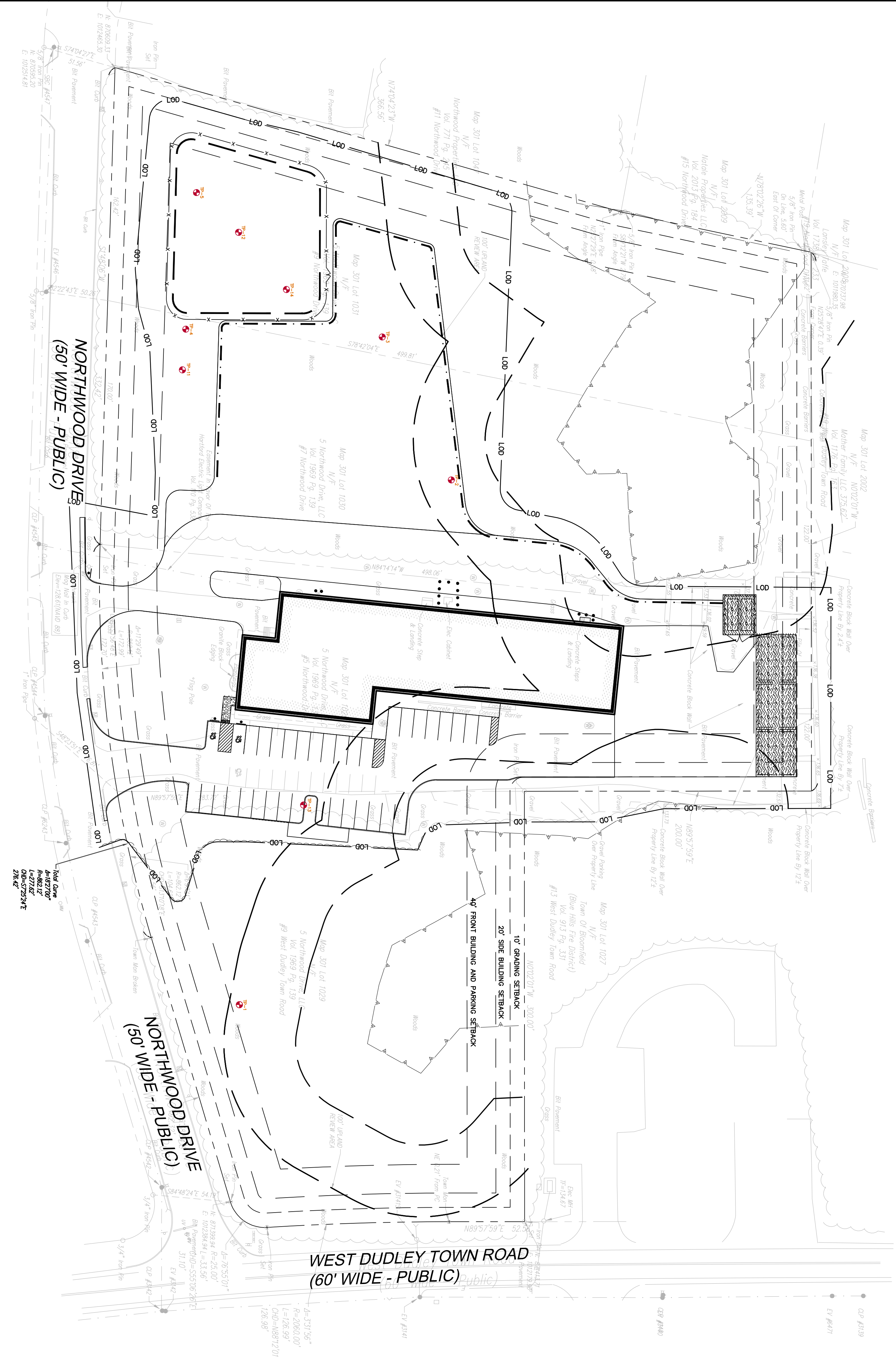
APPENDIX I

TEST PIT FIELD LOGS

7/2/2025, JMAIGA, G:\JOBS23\26\2302699\DWG\C2302699-10.DWG,C1,XX 24X36 40SC,



FOR PERMITTING PURPOSES ONLY
NOT RELEASED FOR CONSTRUCTION

GRAPHIC SCALE
0 20 40
SCALE IN FEET

Xref (s): ; XB2302699-00 ; XC2302699-10 ; XY230269902 ; XY230269901

REVISIONS		
No.	Date	Desc.
1	7/3/2025	RESPONSE TO TOWN COMMENTS

Designed J.N.B.
Drawn J.N.B.
Reviewed R.M.R.
Scale 1"=40'
Project No. 2302699
Date 2/10/2025
CAD File: C2302699-10

Title
TEST PIT LOCATION MAP

Sheet No.
EXH-3

PROPOSED CONTRACTOR YARD
5, 7, 9 NORTHWOOD DRIVE & 9 WEST DUDLEY ROAD
BLOOMFIELD, CONNECTICUT 06002

100 Constitution Plaza
10th Floor
Hartford, CT 06103
(860) 249-2200

BL Companies
Architecture
Engineering
Environmental
Land Surveying

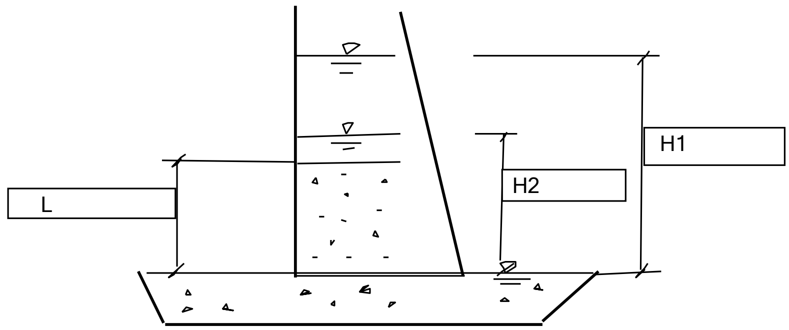
FALLING HEAD
PERMEABILITY TEST

PROJECT: Proposed Development | **PROJECT # 2302699** | **BY:**
DATE: 12/18/2024

TEST PIT # 1

SAMPLE LENGTH: **in.**
SAMPLE DEPTH: **20** **in. below grade**

presoak start:
presoak finish:



$$K = \frac{(H1 - H2) \times L}{t \times (H1 + H2)/2}$$

Same For All			*Calculated*			
Time (min.)	H1 (in.)	H2 (in.)	H1 - H2 (in)	Infil rate in/min	infil rate in/hr	ft/day
-		-	-	-	-	-
10.000	0.125		0.125	0.013	0.750	1.500
20.000	0.125		0.125	0.013	0.750	1.500
30.000	0.125		0.125	0.013	0.750	1.500
40.000	0.125		0.125	0.013	0.750	1.500
50.000	0.125		0.125	0.013	0.750	1.500

Average= 1.500 ft/day
or 0.75 in/hr

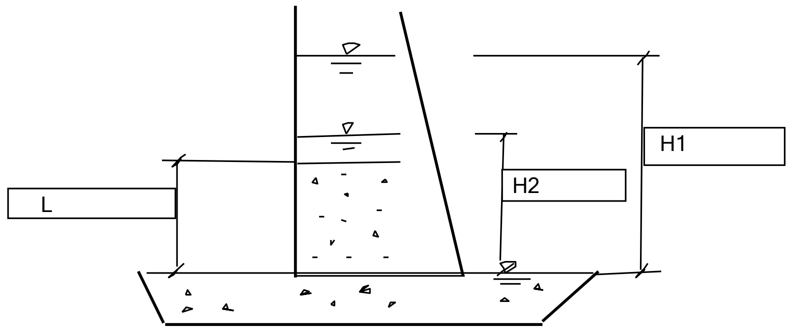
FALLING HEAD
PERMEABILITY TEST

PROJECT: Proposed Development | **PROJECT # 2302699** | **BY:**
DATE: 12/18/2024

TEST PIT # 4

SAMPLE LENGTH: **in.**
SAMPLE DEPTH: **22** **in. below grade**

presoak start:
presoak finish:



$$K = \frac{(H1 - H2) \times L}{t \times (H1 + H2)/2}$$

Same For All *Calculated*

Time (min.)	H1 (in.)	H2 (in.)	H1 - H2 (in)	infil rate in/min	infil rate in/hr	infil rate (ft./day)
-		-	-	-	-	-
5.000	0.000	0.250	0.250	0.050	3.000	6.000
10.000	0.250	0.438	0.188	0.038	2.250	4.500
15.000	0.438	0.750	0.313	0.063	3.750	7.500
20.000	0.750	0.750	0.000	0.000	0.000	0.000
25.000	0.750	0.875	0.125	0.025	1.500	3.000
30.000	0.875	1.000	0.125	0.025	1.500	3.000
35.000	1.000	1.188	0.188	0.038	2.250	4.500
40.000	1.188	1.250	0.063	0.013	0.750	1.500
45.000	1.250	1.375	0.125	0.025	1.500	3.000
50.000	1.375	1.500	0.125	0.025	1.500	3.000

Average= 3.600 ft/day
or 1.80 in/hr

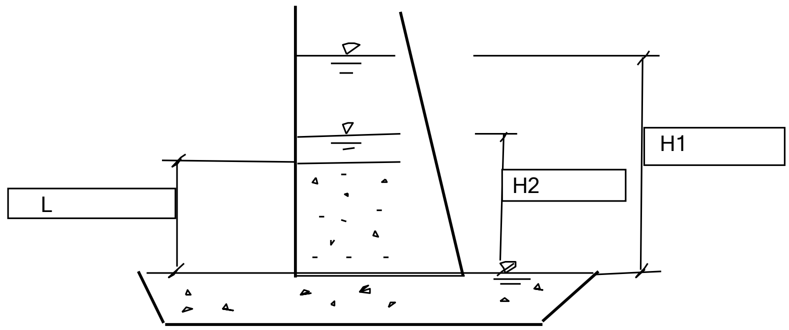
FALLING HEAD
PERMEABILITY TEST

PROJECT: Proposed Development | **PROJECT # 2302699** | **BY:**
DATE: 12/18/2024

TEST PIT # 5

SAMPLE LENGTH: **in.**
SAMPLE DEPTH: 21 in. below grade

presoak start:
presoak finish:



$$K = \frac{(H1 - H2) \times L}{t \times (H1 + H2)/2}$$

	Same For All		*Calculated*			
Time (min.)	H1 (in.)	H2 (in.)	H1 - H2 (in)	infil rate in/min	infil rate in/hr	infil rate (ft./day)
-		-	-	-	-	-
5.000	0.000	1.125	1.125	0.225	13.500	27.000
10.000	1.125	2.250	1.125	0.225	13.500	27.000
15.000	2.250	2.875	0.625	0.125	7.500	15.000
20.000	0.000	0.875	0.875	0.175	10.500	21.000
25.000	0.875	2.000	1.125	0.225	13.500	27.000
30.000	2.000	2.750	0.750	0.150	9.000	18.000
35.000						
40.000	0.000	0.500	0.500	0.100	6.000	12.000
45.000	0.500	1.125	0.625	0.125	7.500	15.000
50.000	1.125	1.563	0.438	0.088	5.250	10.500
55.000	1.563	2.500	0.938	0.188	11.250	22.500
60.000	2.500	2.750	0.250	0.050	3.000	6.000

Average= 18.273 ft/day
or 9.14 in/hr

Companies **Project Location: 5 Northwood Drive, Bloomfield, Connecticut**

Test Pit Name: TP-1
BL Project # 2302699
Date: 12/18/2024

TEST PIT FIELD LOG

PERSONNEL PRESENT	EXCAVATION EQUIPMENT				
XXXX - BL Companies	Contractor			Ground Surface Elevation	
	Operator			Datum	NAVD 88
	Make	Model		Temperature	
	Bucket Capacity	Reach		Weather	

Depth (in.)	**SOIL DESCRIPTION**				Excav. Effort	Cobble and Boulder Data	Remark No.
0 to 11	Layer A	Dark Brown	Fine Sand	Slightly moist	E	TR	1. was not
11 to 24	Layer C1	Orange/Tan	Fine Sand and Silt	Moist	E	TR	1. was
24 to 48	Layer C2	Gray/Brown	Silt and Sand	Moist to Wet	E	TR	2. was

Bottom of Test Pit at 52 inches below ground elevation

REMARKS:

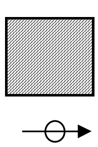
1. Mottling was/was not observed

2. Groundwater was/was not observed

3. Bedrock/Restrictive layer was/was not observed

depth to groundwater: 48"

TEST PIT PLAN



North

LEGEND

COBBLES AND BOULDERS

Size Range Classification	Letter Designation
3" - 12"	Cobble (C)
12" - 24	Small (S)
24" - 36"	Medium (M)
36" and Larger	Large (L)

PROPORTIONS USED (QUANTITATIVE TERMS)

TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

QUALITATIVE TERMS

OCCASIONAL
FEW
FREQUENT
NUMEROUS

EXCAVATION EFFORT

E - Easy
M - Moderate
D - Difficult

▼ 48" Observed Depth to Groundwater

BL Companies

Project Location: 5 Northwood Drive, Bloomfield, Connecticut

Test Pit Name: TP-2
BL Project # 2302699
Date: 12/18/2024

TEST PIT FIELD LOG

PERSONNEL PRESENT	EXCAVATION EQUIPMENT				
XXXX - BL Companies	Contractor			Ground Surface Elevation	
	Operator			Datum	NAVD 88
	Make	Model		Temperature	
	Bucket Capacity	Reach		Weather	

Depth (in.)	**SOIL DESCRIPTION**				Excav. Effort	Cobble and Boulder Data	Remark No.
0 to 12	Layer A	Dark Brown	Fine Sand	Slightly moist	E	TR	1. was not
12 to 22	Layer C1	Tan/brown	Fine Sand and Silt	Moist	E	TR	1. was
22 to 42	Layer C2	Gray/Brown	Silt and Sand	Moist to Wet	E	TR	2. was

Bottom of Test Pit at 42 inches below ground elevation

REMARKS:

1. Mottling was/was not observed

2. Groundwater was/was not observed

3. Bedrock/Restrictive layer was/was not observed

Depth to weeping: 3'
Depth to standing water: 42"

TEST PIT PLAN

North

LEGEND

COBBLES AND BOULDERS		**PROPORTIONS USED (QUANTITATIVE TERMS)**		**QUALITATIVE TERMS**	**EXCAVATION EFFORT**
Size Range Classification	Letter Designation				E - Easy
3" - 12"	Cobble (C)	TRACE (TR)	0-10%	OCCASIONAL	M - Moderate
12" - 24	Small (S)	LITTLE (LI)	10-20%	FEW	D - Difficult
24" - 36"	Medium (M)	SOME (SO)	20-35%	FREQUENT	
36" and Larger	Large (L)	AND	35-50%	NUMEROUS	

▼ 42" Observed Depth to Groundwater

355 Research Parkway Meriden, CT 06450 Tel.(203) 630-1406 Fax (203) 630-2615

Test Pit Name: TP-3
BL Project # 2302699
Date: 12/18/2024

Project Location: 5 Northwood Drive, Bloomfield, Connecticut

TEST PIT FIELD LOG

PERSONNEL PRESENT	EXCAVATION EQUIPMENT				
XXXX - BL Companies	Contractor			Ground Surface Elevation	
	Operator			Datum	NAVD 88
	Make		Model	Temperature	
	Bucket Capacity		Reach	Weather	

Depth (in.)	SOIL DESCRIPTION				Excav. Effort	Cobble and Boulder Data	Remark No.
0 to 12	Layer A	Dark Brown	Fine Sand	Slightly moist	E	TR	1. was not
12 to 22	Layer C1	Tan/brown	Fine Sand and Silt	Moist	E	TR	1. was
22 to 53	Layer C2	Gray/Brown	Silt and Sand	Moist to Wet	E	TR	2. was

Bottom of Test Pit at ____53____ inches below ground elevation

REMARKS:

1. Mottling was/was not observed

2. Groundwater was/was not observed

3. Bedrock/Restrictive layer was/was not observed

Depth to weeping: 35"
Depth to standing water: 48"

TEST PIT PLAN

North

LEGEND

COBBLES AND BOULDERS		PROPORTIONS USED (QUANTITATIVE TERMS)		QUALITATIVE TERMS	EXCAVATION EFFORT
Size Range Classification	Letter Designation				E - Easy
3" - 12"	Cobble (C)	TRACE (TR)	0-10%	OCCASIONAL	M - Moderate
12" - 24	Small (S)	LITTLE (LI)	10-20%	FEW	D - Difficult
24" - 36"	Medium (M)	SOME (SO)	20-35%	FREQUENT	
36" and Larger	Large (L)	AND	35-50%	NUMEROUS	

▼ 43" Observed Depth to Groundwater

355 Research Parkway Meriden, CT 06450 Tel.(203) 630-1406 Fax (203) 630-2615

Test Pit Name: TP-4
BL Project # 2302699
Date: 12/18/2024

BL Companies **Project Location: 5 Northwood Drive, Bloomfield, Connecticut**

TEST PIT FIELD LOG

PERSONNEL PRESENT	EXCAVATION EQUIPMENT	
XXXX - BL Companies	Contractor ___ Operator ___ Make ___ Model ___ Bucket Capacity ___ Reach ___	Ground Surface Elevation ___ Datum NAVD 88 Temperature ___ Weather ___

Depth (in.)	SOIL DESCRIPTION				Excav. Effort	Cobble and Boulder Data	Remark No.
0 to 7	Layer A	Dark Brown	Fine Sand	Slightly moist	E	TR	1. was not
7 to 17	Layer C1	Tan/brown	Fine Sand and Silt	Moist	E	TR	1. was
17 to 48	Layer C2	Gray/Brown	Silt and Sand	Moist to Wet	E	TR	2. was

Bottom of Test Pit at 48 inches below ground elevation

REMARKS:

1. Mottling was/was not observed
2. Groundwater was/was not observed
3. Bedrock/Restrictive layer was/was not observed

depth to weeping: 36"
estimated seasonal high groundwater: 26"

TEST PIT PLAN

North

LEGEND

COBBLES AND BOULDERS		PROPORTIONS USED (QUANTITATIVE TERMS)		QUALITATIVE TERMS	EXCAVATION EFFORT
Size Range Classification	Letter Designation				E - Easy
3" - 12"	Cobble (C)	TRACE (TR)	0-10%	OCCASIONAL	M - Moderate
12" - 24	Small (S)	LITTLE (LI)	10-20%	FEW	D - Difficult
24" - 36"	Medium (M)	SOME (SO)	20-35%	FREQUENT	
36" and Larger	Large (L)	AND	35-50%	NUMEROUS	▼ Observed Depth to Groundwater

Test Pit Name: TP-5
BL Project # 2302699
Date: 12/18/2024

BL Companies **Project Location: 5 Northwood Drive, Bloomfield, Connecticut**

TEST PIT FIELD LOG

PERSONNEL PRESENT	EXCAVATION EQUIPMENT	
XXXX - BL Companies	Contractor	Ground Surface Elevation
	Operator	Datum NAVD 88
	Make Model	Temperature
	Bucket Capacity Reach	Weather

Depth (in.)	SOIL DESCRIPTION				Excav. Effort	Cobble and Boulder Data	Remark No.
0 to 12	Layer A	Dark Brown	Fine Sand	Slightly moist	E	TR	1. was not
12 to 25	Layer C1	Orange/Tan	Fine Sand and Silt	Moist	E	TR	1. was
25 to 51	Layer C2	Gray/Brown	Silt and Sand	Moist to Wet	E	TR	2. was

Bottom of Test Pit at 51 inches below ground elevation

REMARKS:

1. Mottling was/was not observed

2. Groundwater was/was not observed

3. Bedrock/Restrictive layer was/was not observed

Depth to weeping: 40"
Depth to ESHGW: 36"
Depth to standing water: 43"

TEST PIT PLAN

North

LEGEND

COBBLES AND BOULDERS

Size Range Classification	Letter Designation
3" - 12"	Cobble (C)
12" - 24	Small (S)
24" - 36"	Medium (M)
36" and Larger	Large (L)

PROPORTIONS USED (QUANTITATIVE TERMS)

TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

QUALITATIVE TERMS

OCCASIONAL
FEW
FREQUENT
NUMEROUS

EXCAVATION EFFORT

E - Easy
M - Moderate
D - Difficult

▼ 43 Observed Depth to Groundwater