PROJECT NARRATIVE
&
STORMWATER REPORT

For the Proposed:

BRIDGE STREET LANDING

Located At:
5 Arlington Street
Dracut, Massachusetts 01826

Prepared On:
December 18, 2024

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Prepared For:
Town of Dracut
Planning Board Submission

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INTRODUCTION

Solli Engineering (Solli) has prepared this Project Narrative & Stormwater Report (Report) to provide an analysis of the zoning regulations, stormwater management, utility design and coordination, soil erosion and sediment control measures, and subsurface conditions for the proposed Bridge Street Landing, a commercial redevelopment, located at 5 Arlington Street in Dracut, Massachusetts (Site). The proposed redevelopment has been designed in compliance with the Town of Dracut Zoning Bylaws, the Town of Dracut Stormwater Management General Bylaw, the Massachusetts Stormwater Handbook, updated February 2008, as well as all other applicable state and federal requirements and regulations.

EXISTING CONDITIONS

PROJECT SITE

SITE LOCATION

The "Project Site" (Site), located on the corner of Arlington Street and Bridge Street (5 Arlington Street), consists of a single 1.62± acre parcel within the Business 3 (B-3) Zoning District of the Town of Dracut, Massachusetts. The Site is bound by Arlington Street to the north, commercially developed property to the east, residential properties to the south, and Bridge Street to the west. The property of 5 Arlington Street is improved with a Wendy's fast-food restaurant and associated parking and utility improvements. The existing Wendy's utilizes one-way circulation with the Site's entrance off Bridge Street to the west of the building (35 feet east of the Arlington and Bridge Streets intersection), and the Site's exit to Bridge Street to the east of the building (125 feet east of the Arlington and Bridge Streets intersection). The property also has an existing curb cut off Bridge Street approximately 200 feet south of the Arlington and Bridge Streets intersection.

For more information regarding the existing site location and site access refer to Appendix A, Figure 1 - Site Location and Appendix D, Existing Conditions Plan.

SITE CHARACTERISTICS

The Site is improved with paved parking areas, drive aisles, pole mounted light fixtures, subsurface utilities, and landscape islands to support the existing Wendy's fast-food restaurant. The Site currently drains towards the south and a majority of the stormwater runoff is captured by the Bridge Street conveyance system, with elevations within the Site ranging from approximately 160' to 139'.

According to soil survey mapping, obtained from the Natural Resource Conservation Service (NRCS), the Site is located within an area of "Woodbridge Fine Sandy Loam". This designated soil group has a specified hydrologic soil rating of "C/D". For more information regarding the surface soil conditions of the Site, refer to Appendix A, Figure 2 - Soil Survey Map.

In October 2023, Solli's MassDEP certified soil evaluator performed two excavations in the southern portion of the Site to evaluate the soil conditions of the Site. During the exploration, it was observed the Site had been substantially filled at some point to depths of 58-inches below ground surface. Beneath the fill were layers of sandy loam, loamy sand, and sand soil types. The excavations were performed to depths of 144-inches and no water, bedrock, or redoximorphic features were observed. The observed soils were indicative of "A" soil types with high permeability. For more information regarding the observed soils, refer to the Grading & Drainage Plan (Sheet 2.21) within the Permitting Plan Set submitted in conjunction with this Report.

REGULATED AREAS

FEMA FLOODPLAIN

According to FEMA Flood Insurance Rate Map, Map Number 25017C0141E, effective date 06/04/2010, the Site is located within an area of minimal flood hazard, also known as Zone X, which indicates areas outside of the 0.2% annual flood chance: also known as the 500-year floodplain. For more information regarding the FEMA floodplains refer to Appendix A, Figure 3 - FEMA Flood Map.

WELLHEAD PROTECTION AREA

According to online mapping provided from the Massachusetts Department of Environmental Protection (MassDEP) ArcGIS Wellhead Protection areas, the Site is not located within a Zone I or II Wellhead Protection Area. For more information, refer to Appendix A, Figure 4 – Wellhead Protection Map.

ESTIMATED HABITAT OF RARE WILDLIFE

The redevelopment is proposed on the Site of an existing Wendy's development and a former residential property. According to online mapping provided by the 15th Edition Natural Heritage Atlas, dated August 1, 2021, no portion of the Site is within an estimated habitat of rare wildlife or within proximity to one.

ZONING ASSESSMENT

As shown in the Town of Dracut, Massachusetts' Zoning Map (Dated November 1, 2021), the Site is located within the Business 3 (B-3) Zoning District. The Site also lies within the Dracut Center Neighborhood Overlay District (DCNOD). The Site is bound by similarly zoned properties to the east, west, and a majority of the south, with portions of the Site being bound by residentially zoned properties to the north and south.

DIMENSIONAL REQUIREMENTS

All developments within the B-3 Zoning District are required to comply with the dimensional requirements set forth in Section 4.4 Table of Standard Dimensional Requirements in the Town of Dracut Zoning Bylaws. The B-3 Zoning District dimensional requirements are provided below:

Table 1: Zoning District Dimensional Requirements

Zoning District	Min. Lot Area	Min. Lot Frontage	Min. Lot Width	Min. Front Yard	Min. Side Yard	Min. Rear Yard	Max. Building Height
Underlying Zone: B-3	30,000 sf	150 ft	20 ft	50 ft	30 ft	20 ft	3 Stories / 40 ft

PARKING REGULATIONS

According to Section 6.1.6 – Table of Off-Street Parking Requirements, of the Town of Dracut Zoning Bylaws, the existing Wendy's fast-food restaurant is under parked in accordance with the Town's parking requirements but complies with industry parking rates (ITE Average Rate).

Table 2: Existing Parking Summary

Existing Development	GFA	Town Parking Requirement	Town Required Parking	ITE Parking Requirements	ITE Required Parking	Existing Spaces
Wendy's	3,150± sf	1 Space / 50 sf of GFA	63 Spaces	9.18 Spaces / 1,000 sf of GFA	29 Spaces	34 Spaces
		Total	63 Spaces	-	29 Spaces	34 Spaces

*The Institute of Transportation Engineers (ITE) Parking Generation Manual, 5th edition, states utilizing an average parking rate a fast-food use requires 9.18 spaces per 1,000 sf of GFA.

PROPOSED CONDITIONS

PROJECT DESCRIPTION

The Applicant, Twin Coast Properties, LLC, is proposing to construct Bridge Street Landing, a commercial redevelopment consisting of a new stand-alone 2,245± square-foot Wendy's Restaurant with a drive-through and interior seating. The redevelopment also proposes a new stand-alone 2,410± square-foot coffee shop with a drive-through and both interior and exterior seating. The construction will include various site improvements including associated parking, drives, drainage, utilities, landscaping, and lighting features to support the proposed use.

SITE ACCESS / EGRESS

The redevelopment proposes a 36-foot-wide driveway off Arlington Street (approximately 135 feet northeast of the signalized intersection). The driveway is proposed with a 16-foot-wide entrance lane and two (2) 10-foot-wide turning egress lanes. The site will primarily consist of one-way circulation around the two buildings for drive-through operations: the one-way circulation lanes vary in width from 20' to 10'. The drive-throughs will be equipped with a vehicular clearance bar, pre-order menu board, digital order screen with canopy, and a menu board. Painted traffic arrows, stop bars, crosswalks, and traffic signage are proposed throughout the site to improve traffic flow and vehicular safety.

PARKING, LOADING & OPERATIONS

The project proposes the construction of a 2,245± square-foot, slab on grade, Wendy's Restaurant and a 2,410± square-foot, slab on grade, coffee shop. Both developments will utilize drive-throughs that will be equipped with a vehicular clearance bar, pre-order menu board, digital order screen with canopy, and a menu board. The existing Wendy's Restaurant is proposed to relocate into the new building. The project also proposes the construction of a 400± square foot concrete patio outside of the coffee shop, a ten (10) vehicle drive-through queue (Wendy's Restaurant), a eleven (11) vehicle drive-through queue (Coffee Shop), and a dumpster pad with a chain link fence enclosure. The Site has been designed with 85' x 10' loading area adjacent to the by-pass lane.

Deliveries for the Site will be made during off-peak hours and will utilize the designated loading area to park, load, and unload merchandise. Merchandise will be off-loaded via hand trucks and brought into the buildings via at-grade rear access doors. The Site has been designed to accommodate the turning movements of Dracut Fire Department's largest apparatus. Refer to Figure TT-1 and TT-2, located in Appendix A for more information.

The redevelopment proposes a total of forty-three (42) parking spaces (18' x 9') including two (2) ADA accessible parking spaces. The two (2) ADA spaces have been designed in accordance with the US Access Board Accessibility Standards and the spaces are proposed to be a width of 8-feet with an 8-foot-wide associated loading aisle. In addition to the vehicular parking spaces, the redevelopment includes the installation of four (4) bicycle racks which will provide a total of eight (8) bicycle parking spaces. All proposed spaces have been designed to provide efficient and adequate access to the building's main entrances. Refer to Table 3 below for more information regarding the proposed parking summary.

Table 3: Proposed Parking Summary

Proposed Summary						
Proposed Development	GFA	Town Parking Requirement	Town Required Parking	ITE Parking Requirement*	ITE Required Parking	Proposed
Wendy's	2,245± SF	1 Space / 50 SF of GFA	45	9.18 Spaces / 1,000 SF of GFA	42	42 / 8**
Coffee Shop	2,410± SF	1 Space / 50 SF of GFA	48	8.70 Spaces / 1,000 SF of GFA		
		Total	93	-	42 Spaces	42 Spaces

*Proposed parking rates were taken from the Institute of Transportation Engineers (ITE) Parking Generation Manual, 5th edition, utilizing the average industry rate per 1,000 SF of GFA while also considering sample size and standard deviation.
**The development proposes eight (8) bicycle parking spaces in addition to the forty-two (42) vehicle parking spaces.
For more information regarding the proposed site work and improvements associated with the redevelopment refer to the Site Layout Plan (Sheet 2.11) located within the Permitting Plan Set, submitted in conjunction with this Report.

STORMWATER MANAGEMENT

The redevelopment of the Site proposes an increase to the overall impervious area of approximately 17,337± square feet, compared to existing conditions. To properly manage the Site's stormwater runoff, the Site has been designed with a surface infiltration basin. The proposed stormwater conveyance system consists of series of off-line catch basins with 4-foot sumps and hooded outlets, manholes, water quality unit, and said stormwater basin. The on-site hydraulic system has been analyzed for the 25-year storm event without surcharging the proposed structure's rim/grate.

The surface basin has been designed to attenuate and infiltrate the stormwater runoff from the entire development Site and has been adequately sized to store the water quality volume (1-inch) of the Site. The proposed stormwater management system has been designed in accordance with the Town of Dracut Stormwater Management General Bylaw and the State's Stormwater Handbook. Refer to the "Stormwater Management & Soil Erosion Control" section of this Report for more details regarding the proposed best management practices and drainage features being implemented as part of this project.

SITE UTILITIES

WATER

The water provider in this location is the Dracut Water Supply District (DWSD). The project proposes to tap the existing 6-inch water main within Bridge Street. The project is proposed to be serviced via two (2) 2-inch domestic service pipes that will connect directly into each proposed building. Two (2) service boxes will be located off of Bridge Street within the property boundaries to allow for service to each connection. The proposed water service layout and design is to be reviewed and approved by the DWSD prior to construction. The tap and installation shall be performed in accordance with the DWSD standards and specifications.

The buildings are proposed to be 2,245 square feet and 2,410 square feet, and are not proposed with an automated sprinkler system. Massachusetts General Laws require any building totaling more than 7,500 gross square feet is required to have an automatic sprinkler system. The Site is within proximity to two (2) existing fire hydrants, one is located to the northeast of the Site along Arlington Street, and the other is located to the south of the Site at the corner of Elise Avenue and Bridge Street. Both hydrants are located within 500 feet of the Site.

For more information pertaining to the proposed utility layout refer to the Site Utility Plan (Sheet 2.51) within the Permitting Plan Set, submitted in conjunction with this Report.

SANITARY

The sanitary service provider in this location is the Town of Dracut Sewer Department. The redevelopment proposes to discharge the Site's sanitary into an existing manhole located within Bridge Street. This location has been identified as the primary discharge location to accommodate the development due to the elevations of the existing inverts.

Each building has been designed with two sanitary laterals; a kitchen waste lateral that will be conveyed through a grease tank and a domestic lateral. Down gradient of the grease traps, the sewer services will combine and be conveyed out to the municipal sewer main.

The proposed sanitary layout and design is to be reviewed and approved by the Town of Dracut Sewer Commission prior to construction. The connection and installation shall be performed in accordance with the Town of Dracut Sewer Department standards and specifications.

In accordance with rates taken from the Massachusetts Department of Environmental Protection 310 CMR 15.000, the proposed project is expected to generate approximately 2,440 gallons per day of domestic effluent and each grease trap has been sized with greater capacity than required. Tenant specifications require grease traps of 1,500 gallons (coffee shop) and 2,000 gallons (Wendy's).

Table 4: Sewer Flow Design

Type of Establishment	Total Square Footage / Seats	Unit	Gallons Per Day Per Unit	Total Gallons Per Day
Coffee Shop	2,410 SF / 62 Seats	1 Seat	20 GPD	1,240 GPD
Wendy's Restaurant (Fast-Food)	2,245 SF / 60 Seats	1 Seat	20 GPD	1,200 GPD
			Total	2,440 GPD

Table 5: Grease Trap Flow Design

Type of Establishment	Total Square Footage / Seats	Unit	Gallons Per Day Per Unit	Total Gallons Per Day	Recommended Grease Trap Size
Coffee Shop (Fast-Food)	2,410 SF / 62 Seats	1 Seat	15 GPD	930 GPD	1,500 Gallons*
Wendy's Restaurant (Fast-Food)	2,245 SF / 60 Seats			900 GPD	2,000 Gallons*

*Proposed grease traps have been sized in accordance with tenant specifications.

For more information pertaining to the proposed utility layout refer to the Site Utility Plan within the Permitting Plan Set, submitted in conjunction with this Report.

ELECTRIC / CABLE / TELECOMMUNICATIONS

The electric provider in this location is National Grid Electric. The existing Wendy's Restaurant has a pad mounted transformer in the northeast corner of the Site. It is assumed this transformer will need upgrades to accommodate the electrical loads of the development. The project proposes to maintain the transformer location but upgrades to the transformer as required by National Grid. Secondary electrical service to the building will be provided from the transformer to each respective building by underground conduit. Prior to construction the Site general contractor will coordinate with the utility provider to confirm the preliminary design and service connection, if any upgrades to the existing service are required the civil engineer of record will be contacted.

The existing Wendy's Restaurant has cable and telecommunications connections via overhead wires from an existing utility pole located in the northeast corner of the Site. These connections will be removed with the demolition of the existing Wendy's Restaurant. At this time, it is assumed the development will be constructed with underground conduit for cable and telecommunications. The cable and telecommunications service will tie into each building at the location of the electrical meter. Prior to construction, detailed conduit plans will be designed in accordance with utility providers standards and requirements following approvals from the Town of Dracut.

For more information pertaining to the proposed utility layout refer to the Site Utility Plan within the Permitting Plan Set, submitted in conjunction with this Report.

SITE LANDSCAPING & LIGHTING

A comprehensive Landscape Plan has been provided. The proposed landscaping improvements include a variety of native species containing trees, shrubs, ground cover, and seed mixes. The landscaping plan has been designed to provide vegetative screening surrounding the dumpster enclosures and provide as much shade within the proposed parking areas as possible. The landscape plan has been designed in compliance with the landscape regulations within the Town of Dracut Zoning Bylaws.

The proposed Lighting Plan is comprised of pole mounted light fixtures, wall-mounted building lights, and canopy lights. The proposed wall-mounted building lights and canopy lights are consistent with prototypical light fixtures for a Wendy's Restaurant and coffee shop. All fixtures are proposed to be LED and meet "dark sky" principles. The Lighting Plan has been designed to ensure the Site has adequate light levels within parking areas, sidewalks, pedestrian areas, and in the area of the drive-through.

For more information pertaining to the landscape and lighting for the Site refer to the Landscape Plan and Lighting Plan within the Permitting Plan Set, submitted in conjunction with this Report.

STORMWATER MANAGEMENT & SOIL EROSION CONTROL

The Stormwater Management & Soil Erosion Control section of this Report has been designed for the proposed Redevelopment located at 5 Arlington Street in Dracut, Massachusetts. This section is intended to be in compliance with the Massachusetts Stormwater Handbook, updated February 2008, and the Town of Dracut Stormwater Management General Bylaw. The project was designed to meet the stormwater management standards and best management practices defined in the Massachusetts Stormwater Handbook, while taking prevailing site conditions and practical considerations into account.

METHODOLOGY

Stormwater runoff analysis, for both existing and proposed conditions, was performed using the software package HydroCAD. This software uses a computer implementation of the SCS / NRCS – TR-55 methodology to compute volumes and rates of runoff. The watershed area, rainfall depths and intensity, curve number, and time of concentration are factors that influence the computed results.

Rainfall depths for the site were used for calculating the volumes and rates of runoff for this project. The depths were taken from the NOAA Atlas documents (Latitude: 42.6689º, Longitude: -71.3028º) and the rainfall values are listed in Table 6 below.

Table 6: Rainfall Data

Return Period (Storm Event)	24-hr Rainfall Depth (inches)
2-Year	3.13
10-Year	4.89
25-Year	5.98
50-Year	6.79
100-Year	7.67

HydroCAD automatically computes the rainfall intensity from its own IDF curves when the rainfall intensity data is provided. This information was taken from the NOAA Atlas documents (Latitude: 42.6689º, Longitude: -71.3028º) and the rainfall values are listed in Table 7 below.

Table 7: IDF Table

Intermediate Intensity Values (in/hr)				
Return Period (Storm Event)	**5-Minute**	**15-Minute**	**30-Minute**	**60-Minute**
2-Year	4.51	2.50	1.72	1.10
10-Year	6.66	3.70	2.54	1.62
25-Year	7.99	4.44	3.05	1.94
50-Year	9.00	5.00	3.44	2.19
100-Year	10.1	5.59	3.84	2.44

SCS / NRCS uses the runoff curve number (CN) method to estimate runoff from storm rainfall. The major factors that determine CN are the watershed's soil and cover conditions, cover type, treatment, and hydrologic condition. The higher percentage of impervious cover within a watershed will result in a higher curve number. A composite curve number was calculated for each analyzed watershed. Refer to Appendix C for the calculations used in determining the existing and proposed curve numbers, for the individual drainage areas.

The time of concentration is the time it takes for runoff to travel from the hydraulically most distant point of the watershed to a point of interest within the watershed. The time of concentration is calculated by adding the travel times of sheet flow, shallow concentrated flow, and open channel flow, or some combination of these depending on the watershed and its features. Refer to Appendix C for the calculations used in determining the existing and proposed time of concentrations, for the individual drainage areas.

STANDARD 1: DISCHARGE PROTECTION

No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

The project does not propose any new outfalls that discharge any untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth. All stormwater runoff is proposed to be conveyed through a water quality unit prior to being discharged to the proposed infiltration basin. The proposed infiltration basin has been designed with a riprap emergency spillway that will discharge stormwater in the more severe storm events (25-year, 50-year, and 100-year storm events). The spillway is proposed with 6-inch riprap that will dissipate runoff velocities and allow discharging stormwater to evenly disperse offsite. The proposed stormwater management systems have been designed to reduce the peak flow of runoff from the Site in the 2-, 10-, 25-, 50- and 100-year storm events, refer to *Standard 2: Attenuation* for more information on the proposed measures.

STANDARD 2: ATTENUATION

Stormwater management systems shall be designed so that the post-development peak discharge rates do not exceed pre-development peak discharge rates.

EXISTING CONDITIONS

The Site currently drains from north to south with a portion of the Site draining towards the Bridge Street drainage system and the remaining portion of the Site draining off-site towards the properties to the southeast. The Site has areas of steep slopes (3:1 or greater) and has existing elevations within the area of interest ranging from approximately 160' to 139'. The existing Wendy's property has the one stormwater structure within the Site and this catch basin is supposed to capture a majority of the 5 Arlington Street property and convey the discharge towards the Bridge Street conveyance system. The existing structure is silted up with sediment and debris from poor maintenance and this structure does not currently function as originally intended.

Approximately 1.941 acres of the Site and surrounding areas were analyzed for stormwater management purposes. The areas analyzed contain the contributing areas directly impacted by the proposed redevelopment. Based on existing drainage patterns, the 1.941-acre area was divided into two (2) contributing drainage areas, labeled Existing Drainage Area 1 (EDA-1) and Existing Drainage Area 2 (EDA-2).

EDA-1 has a contributing drainage area of approximately 1.651 acres and was divided into three (3) sub-drainage areas, labeled Existing Drainage Area 1A (EDA-1A), Existing Drainage Area 1B1 (EDA-1B1) and Existing Drainage Area 1B2 (EDA-1B2). EDA-1A has a contributing drainage area of 0.64 acres and the area is collected primarily by the on-site catch basin located in the corner of the existing Wendy's Site.

EDA-1B has a contributing drainage area of 1.011 acres and was divided to analyze the contributing areas from the Site versus the right-of-way to the Bridge Street gutter line. EDA-1B1 primarily consists of natural ground cover while EDA-1B2 encompasses the rights-of-way of Arlington Street and Bridge Street. All runoff from EDA-1B is collected by existing downgradient stormwater infrastructure within Bridge Street. Both EDA-1A and EDA-1B eventually discharge off-site towards the Bridge Street conveyance system.

EDA-2 has a contributing drainage area of 0.29 acres and stormwater runoff sheet flows southerly towards the properties to the southeast. EDA-2 has no associated stormwater management or discharge protection.

Table 8: Existing Drainage Areas

Drainage Area Label	Drainage Area	Curve Number	Time of Concentration
Existing Drainage Area 1 (EDA-1)	**1.651 AC**	-	-
Existing Drainage Area 1A (EDA-1A)	0.64 AC	94	6.0 Mins.
Existing Drainage Area 1B1 (EDA-1B1)	0.691 AC	75	6.1 Mins.
Existing Drainage Area 1B2 (EDA-1B2)	0.32 AC	97	6.0 Mins.
Existing Drainage Area 2 (EDA-2)	**0.29 AC**	70	9.1 Mins.
Total	**1.941 AC**	-	-

For more information regarding the existing drainage conditions of the Site refer to the Existing Drainage Area Map (EDA) within Appendix D of this Report.

PROPOSED CONDITIONS

The Site, in existing conditions, contains limited stormwater management structures and no stormwater management system. The redevelopment proposes to collect runoff from a majority of the Site to treat and attenuate the runoff. The overflow from the proposed stormwater infiltration basin and other surrounding areas of the redevelopment are proposed to mimic existing drainage patterns. Based on the grading of the redevelopment, the 1.95-acre area was divided into two (2) contributing drainage areas, labeled Proposed Drainage Area 1 (PDA-1) and Proposed Drainage Area 2 (PDA-2).

PDA-1 has a contributing drainage area of approximately 1.915 acres and was divided into two (2) sub-drainage areas, labeled Proposed Drainage Area 1A (PDA-1A) and Proposed Drainage Area 1B (PDA-1B). PDA-1A has a contributing drainage area of 1.480 acres and is proposed to capture a majority of the redevelopment (parking areas, drive aisles, roof). The runoff from PDA-1A is proposed to be conveyed to the stormwater infiltration basin. PDA-1B has a contributing drainage area of 0.435 acres and is proposed to capture a majority of the exterior landscape areas surrounding the proposed infiltration basin in the southwest corner of the Site and mainly areas within the Arlington Street and Bridge Street rights-of-way. The runoff from PDA-1B is proposed to sheet flow off site mimicking existing drainage patterns. Stormwater runoff is captured by existing infrastructure within Bridge Street. The discharge from PDA-1A and PDA-1B is discharged or collected by the Bridge Street conveyance system, mimicking existing conditions.

PDA-2 has a contributing drainage area of approximately 0.026 acres. Similar to existing conditions, the runoff from PDA-2 sheet flows southerly towards the properties to the southeast.

Table 9: Proposed Drainage Areas

Drainage Area Label	Drainage Area	Curve Number	Time of Concentration
Proposed Drainage Area 1 (PDA-1)	**1.915 AC**	-	-
Proposed Drainage Area 1A (PDA-1A)	1.480 AC	90	6.0 Mins.
Proposed Drainage Area 1B (PDA-1B)	0.435 AC	91	6.0 Mins.
Proposed Drainage Area 2 (PDA-2)	**0.026 AC**	74	6.0 Mins.
Total	**1.941 AC**	-	-

For more information regarding the proposed drainage conditions of the Site refer to the Proposed Drainage Area Map (PDA) within Appendix D of this Report.

The redevelopment of the Site proposes an increase to the overall impervious area of the property by approximately 17,337± square feet, compared to existing conditions. To manage the increase in impervious area, the Site has been designed with a surface infiltration basin. The proposed stormwater management system will attenuate and infiltrate the stormwater runoff associated with the Site and provide a reduction in peak flow rates compared to existing conditions in the 2-, 10-, 25-, 50- and 100-year storm events. Refer to Table 10 and Table 11 for the peak flow comparison between existing and proposed hydrologic conditions.

Table 10: Peak Flow Reduction Table

Peak Flow (cfs)			
Storm Event	**Total Drainage Areas**		**Percent Reduction in Peak Flow**
	EDA	**PDA**	
2-Year	3.73	1.22	67.2%
10-Year	6.89	6.25	9.3%
25-Year	8.93	7.38	17..4%
50-Year	10.47	7.84	25.1%
100-Year	12.15	8.66	28.7%

Table 11: Design Point Comparison Table

Peak Flow (cfs)		
Storm Event	**Total Drainage Areas**	
	EDA-1 / PDA-1	**EDA-2 / PDA-2**
2-Year	3.55 / **1.21**	0.21 / **0.03**
10-Year	6.37 / **6.19**	0.58 / **0.06**
25-Year	8.17 / **7.29**	0.85 / **0.09**
50-Year	9.52 / **7.73**	1.05 / **0.11**
100-Year	10.99 / **8.56**	1.28 / **0.13**

The stormwater basin is designed as a four-foot-deep basin that will provide a total storage volume of 14,134± cubic feet and a total recharge volume of 4,031± cubic feet. For more information pertaining to the proposed stormwater management system refer to the Grading and Drainage Plan (Sheet 2.21) within the Permitting Plan Set, submitted in conjunction with this Report.

STANDARD 3: RECHARGE

At a minimum, the annual recharge from post-development site shall be approximately the same as the annual recharge from pre-development conditions based on soil type. This is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

According to soil survey mapping, obtained from the Natural Resource Conservation Service (NRCS), the Site is located within an area of "Woodbridge Fine Sandy Loam". This designated soil group has a specified hydrologic soil rating of "C/D". For more information regarding the surface soil conditions of the Site, refer to Appendix A, Figure 2 - Soil Survey Map.

In October 2023, Solli's MassDEP certified soil evaluator performed two excavations in the southern portion of the Site to evaluate the soil conditions. During the exploration, it was observed the Site had been substantially filled at some point to depths of 58-inches below ground surface. Beneath the fill were layers of sandy loam, loamy sand, and sand soil types. The excavations were performed to depths of 144-inches and no water, bedrock, or redoximorphic features were observed. The observed soils were indicative of "A" soil types with high permeability. The stormwater analysis was performed utilizing a 2.41 inches / hour infiltration rate consistent with loamy sand soils in accordance with the 1982 Rawl's Rates.

The redevelopment of the Site proposes approximately 44,498± square feet of impervious surfaces. The basin is designed with an outlet control structure with grate top and an emergency spillway (10-foot-wide spillway) that will discharge runoff during more severe storm events (50-year, & 100-year storm events).

Table 12: Stormwater Infiltration Basin

Storm Event	Max. Elevation (ft)	Max. Storage (cf)	Peak Discharge (cfs)	Freeboard (ft)
2-yr	144.85	4,539	0.87	2.15
10-yr	145.12	5,481	4.56	1.88
25-yr	145.32	6,269	5.02	1.68
50-yr	145.49	6,941	5.16	1.51
100-yr	145.63	7,522	6.40	1.37

As previously mentioned, the stormwater infiltration basin will provide a total storage volume of 14,134± cubic feet and a total recharge volume of 4,031± cubic feet. The recharge volume is the capacity beneath the mid-flow outlet allowing the stormwater to recharge back into the ground. See below for the required recharge volume calculations. For more information regarding the subsurface stormwater system refer to the Hydrograph Reporting within Appendix C of this Report

Total Impervious Area of the Site = 44,498 ± square feet
Total Impervious Area Conveyed to Basin = 44,498± square feet

Required Recharge Volume Calculations

$$R_v = F * A_{Imp}$$

$$R_v = Required\ Minimum\ Recharge\ Volume\ (cf)$$

$$F = Target\ Depth\ Factor\ (in)$$

$$A_{Imp} = Area\ of\ Impervious\ Surfaces\ to\ Stormwater\ System\ (sf)$$

$$2{,}224.90\ cf = \frac{0.6 - inch}{12"} * 44{,}498\ sf$$

The infiltration basin provides storage capacity greater than the required recharge volume. In accordance with Standard 3 of the Massachusetts Stormwater Handbook the proposed subsurface stormwater system is designed to satisfy the required recharge volume. Based upon the calculations below the proposed system will have a drawdown time of 8.20 hours; 8.20 hours is below the required 72 hours.

Drawdown Calculations

$$Time_{Drawdown} = \frac{R_v}{K * A_b}$$

$$Time_{Drawdown} = Drawdown\ Time\ (hours)$$

$$K = Infiltration\ Rate\ \left(\frac{inches}{hour}\right)$$

$$A_b = Area\ of\ Bottom\ of\ System$$

$$8.54\ hours = \frac{4{,}031\ cf}{2.41\ \left(\frac{in}{hr}\right) * \frac{1'}{12"} * 2{,}350\ sf}$$

8.54 hours<72 hours

STANDARD 4: WATER QUALITY

The proposed development has been designed with stormwater treatment that incorporates structural best-management practices designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS).

In accordance with the MassDEP Stormwater Handbook the stormwater infiltration basin is required to provide a water quality treatment volume (WQV) greater than 3,708± cubic feet (refer to calculation below). The stormwater infiltration basin proposes a recharge volume of 4,031± cubic feet, exceeding the required WQV.

Water Quality Treatment Volume

$$V_{WQ} = \frac{1 - inch}{12\ \frac{inches}{foot}} * \left(A_{IMP} * 43{,}560 \frac{sf}{acre}\right)$$

$$V_{WQ} = Required\ Water\ Quality\ Volume\ (cubic\ feet)$$

$$D_{WQ} = Water\ Quality\ Depth\ (1 - inch)$$

$$A_{IMP} = Impervious\ Area\ (in\ acres)$$

$$3{,}708 \pm cf = \frac{1 - inch}{12\ \frac{inches}{foot}} * \left(1.021 * 43{,}560 \frac{sf}{acre}\right)$$

In an effort to improve the quality of stormwater discharge associated with the proposed parking area and driveways, the project has been designed with catch basins with 4-foot-deep sumps and hooded outlets, and a Contech hydrodynamic separator upgradient of the stormwater infiltration basin. A hydrodynamic separator uses swirl concentration and continuous deflective separation to screen, separate and trap trash, debris, sediment, and oil and grease from stormwater runoff. The hydrodynamic separator will capture and retain 100% of floatables; effectively removing sediment. The unit is designed to **have a projected net annual load removal efficiency of 88.0% based on the Water Quality Flow. The Contech CDS units have been certified up to 50% TSS Removal from multiple third-party agencies. MassDEP TSS removal worksheet has been provided in Appendix C predicting a total TSS removal of 92.5%, due to the proposed treatment train (deep sump catch basins, water quality unit, and infiltration basin).** The hydrodynamic separators have been sized based on the 1" water quality flow. For more information regarding the TSS removal calculations refer to Appendix C, Drainage Calculations, TSS Removal Calculations.

All proposed stormwater best management practices will require maintenance throughout the lifetime of the measure. An Operation & Maintenance Plan has been prepared for this project and has been submitted in conjunction with this Report as required by the Massachusetts Stormwater Handbook and Stormwater Standards.

STANDARD 5: POLLUTION PREVENTION

For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to maximum extent practical.

The proposed Bridge Street Landing is a commercial redevelopment. The proposed uses are not considered higher potential pollutant load uses, such as auto fueling facility, exterior fleet storage areas, exterior vehicle service and equipment cleaning areas, marinas and boatyards, parking lots with high-intensity-use, confined disposal facilities and disposal sites. The proposed uses **DO NOT** contain higher potential pollutant loads included in industrial facilities such as manufacturing, landfills, recycling facilities, steam electric plants, transportation facilities, treatment works, and light industrial activities.

STANDARD 6: ZONE II / WELLHEAD PROTECTION AREA

Stormwater discharge within the Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or to any other critical area required the use of specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook.

According to the State of Massachusetts' online GIS mapping, the Site is **NOT** located within the Zone I, Zone II or Interim Wellhead Protection area of a public water supply watershed.

STANDARD 7: REDEVELOPMENT PROJECT

A redevelopment project is required to meet the following Stormwater Management Standards only to maximum extent practical: Standard 2, Standard 3, Standard 4, Standard 5, and Standard 6.

The redevelopment of the Site proposes a decrease in impervious area compared to existing conditions of the Site. This project does qualify as a "Redevelopment Project" and has been designed to meet Standard 2, Standard 3, Standard 4, Standard 5, and Standard 6.

STANDARD 8: SOIL EROSION & SEDIMENT CONTROL
A plan to control construction-related impacts, including erosion, sedimentation, and other pollutant source during construction and land disturbance activities shall be developed and implemented.

The proposed plans for soil erosion and sediment control prepared for this project have been developed in accordance with the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, prepared by the Department of Environmental Protection, Bureau of Resource Protection.

The soil erosion and sediment control practices that will be implemented during the construction of this project include geotextile silt fences, a construction entrance, dust control measures, silt socks, and inlet protection for drainage inlets.

For more information pertaining to the proposed soil erosion and sediment control practices refer to the SEC Plans within the Permitting Plan Set, submitted in conjunction with this Report

STANDARD 9: LONG-TERM OPERATION & MAINTENANCE PLAN
A Long-Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.

An Operation & Maintenance Plan has been prepared for this project and has been submitted in conjunction with this Report, located in Appendix E.

STANDARD 10: ILLICIT DISCHARGES
All illicit discharges to the stormwater management system are prohibited.

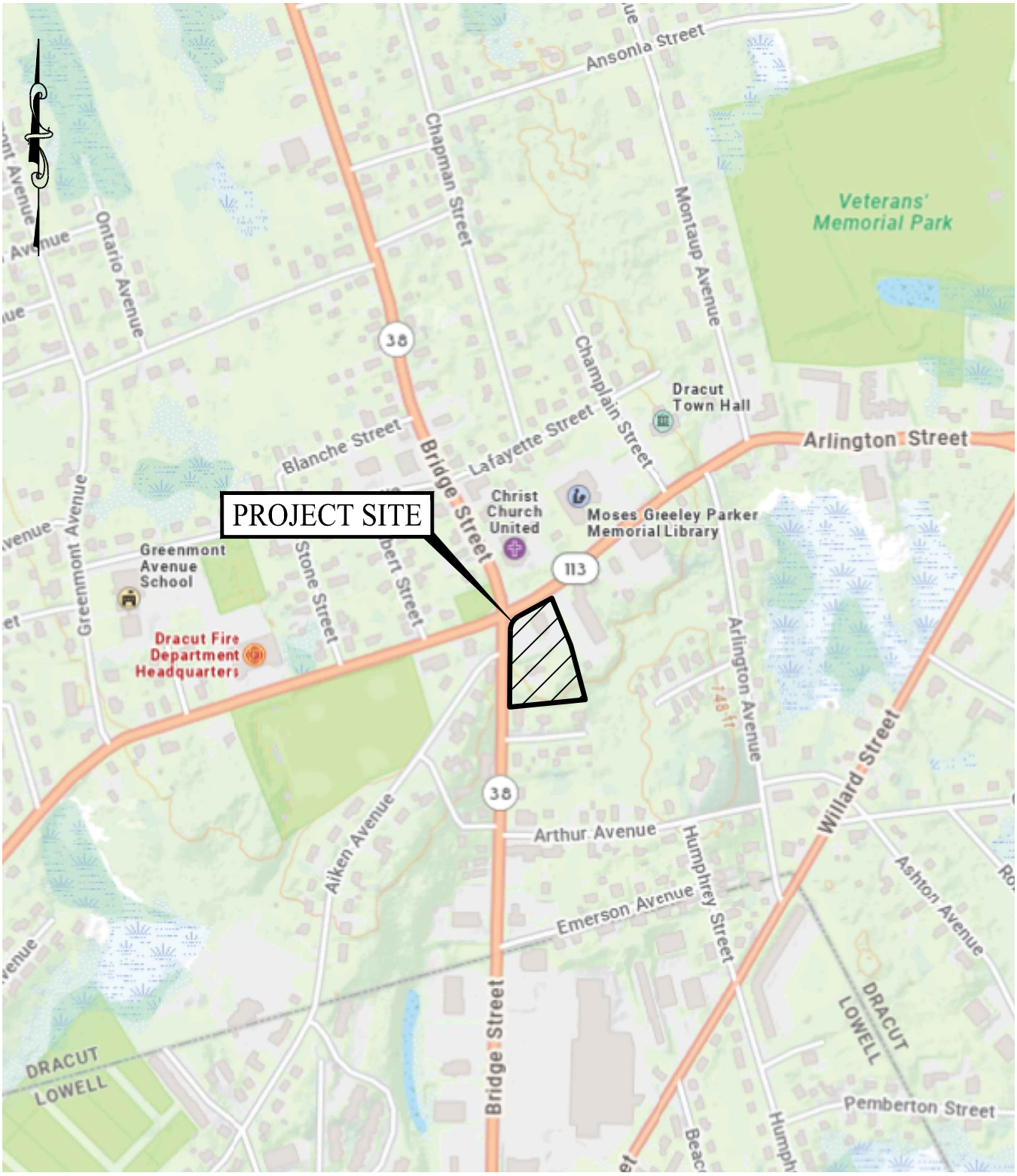
Based upon record research, mapping and site walks performed by both the surveyor of record (Northeast Survey Consultants) and Solli, this site has no observed illicit discharges. The proposed redevelopment will **NOT** produce illicit discharges, such as wastewater discharges and discharges of stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease. Refer to Appendix B, Supporting Documents, Illicit Discharge Statement for more information.

APPENDICES

Appendix A – Figures
Appendix B – Supporting Documents
Appendix C – Stormwater Calculations
Appendix D – Detailed Design Plans
Appendix E – Long-Term Operation & Maintenance

Appendix A – Figures

Figure 1 – Site Location Map
Figure 2 – Soil Survey Map
Figure 3 – FEMA Flood Map
Figure 4 – Wellhead Protection Map
Figure 5 – Snow Storage Map
TT-1 – Fire Truck Turning Figure
TT-2 – Fire Truck Turning Figure
TT-3 – Delivery Vehicle (WB-50) Turning Figure
TT-4 – Delivery Vehicle (WB-50) Turning Figure



NOTE: BASE MAP INFORMATION TAKEN FROM MAPS.MASSGIS.DIGITAL.MASS.GOV/MASSMAPPER

500 0 250 500

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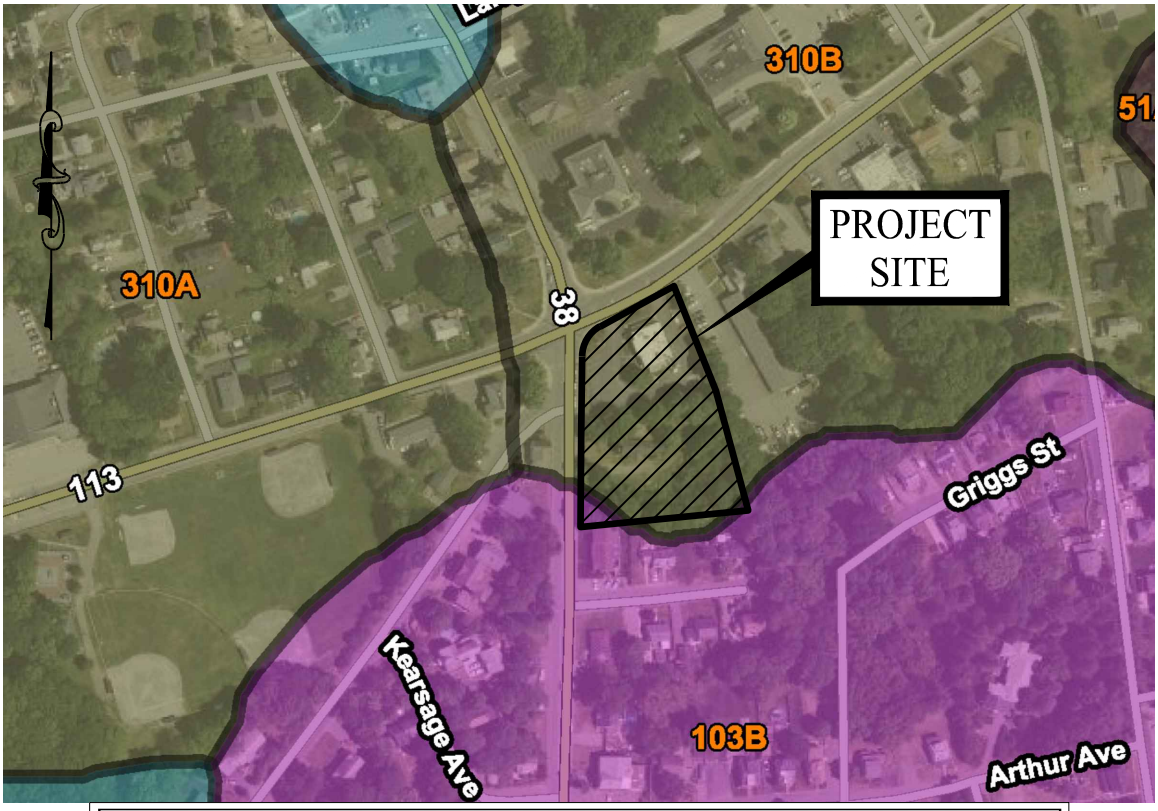
SITE LOCATION MAP

5 ARLINGTON STREET &
1327 BRIDGE STREET
DRACUT, MASSACHUSETTS

Project #:	22203701
Plan Date:	06/06/23
Scale:	1" = 500'
Figure:	1



Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
51A	Swansea muck, 0 to 1 percent slopes	B/D	0.4	0.4%
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	D	1.5	1.6%
73B	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	D	0.2	0.2%
103B	Charlton-Hollis-Rock outcrop complex, 3 to 8 percent slopes	A	27.6	29.7%
103C	Charlton-Hollis-Rock outcrop complex, 8 to 15 percent slopes	B	0.2	0.2%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	C	5.6	6.0%
307B	Paxton fine sandy loam, 0 to 8 percent slopes, extremely stony	C	3.2	3.4%
310A	Woodbridge fine sandy loam, 0 to 3 percent slopes	C/D	24.5	26.4%
310B	Woodbridge fine sandy loam, 3 to 8 percent slopes	C/D	29.7	32.0%

NOTE: BASE MAP RESOURCES TAKEN FROM THE NATURAL RESOURCES CONSERVATION SERVICE, URL: https://websoilsurvey.sc.egov.usda.gov

300 0 150 300

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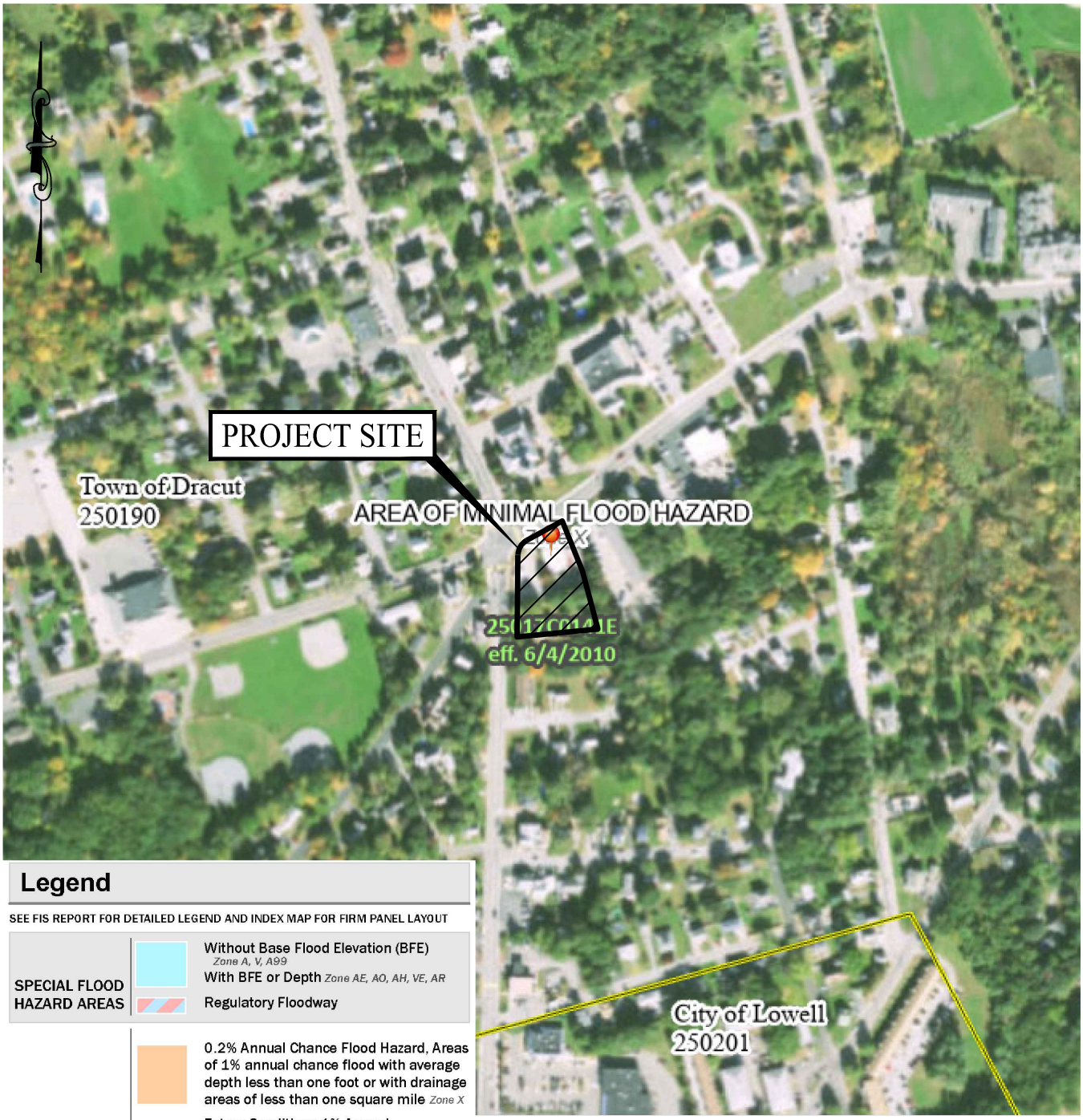
SOIL SURVEY MAP

5 ARLINGTON STREET &
1327 BRIDGE STREET
DRACUT, MASSACHUSETTS

Project #:	22203701
Plan Date:	06/06/23
Scale:	1" = 300'
Figure:	2



NOTE: BASE MAP INFORMATION TAKEN FROM FEMA FLOOD INSURANCE RATE MAP, MAP NUMBER 25017C0141E, EFFECTIVE 06/04/2010.

500 0 250 500

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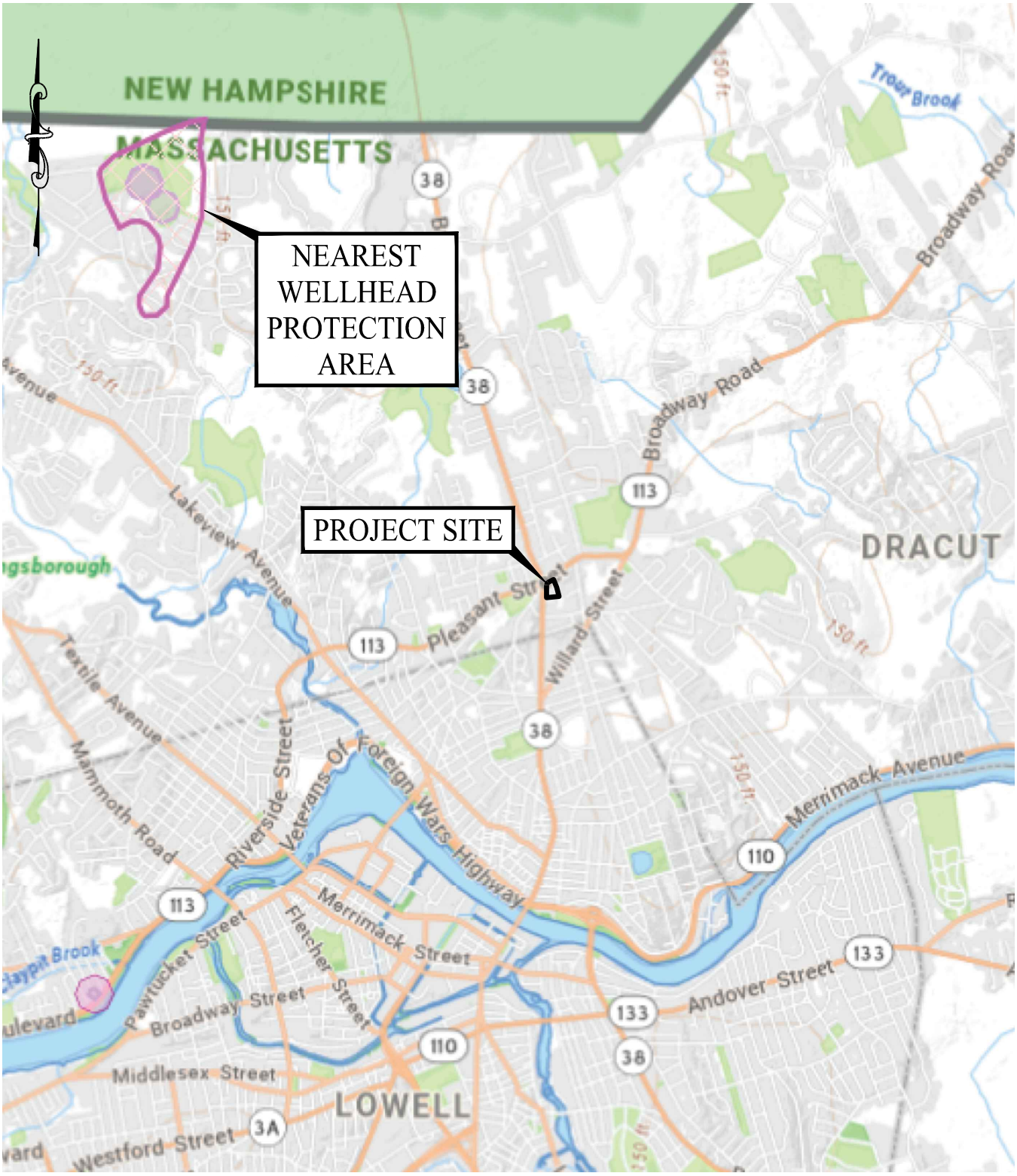
FEMA FLOOD MAP

5 ARLINGTON STREET &
1327 BRIDGE STREET
DRACUT, MASSACHUSETTS

Project #:	22203701
Plan Date:	06/06/23
Scale:	1" = 500'
Figure:	3



NOTE: BASE MAP INFORMATION TAKEN FROM MAPS.MASSGIS.DIGITAL.MASS.GOV/MASSMAPPER

3,000 0 1,500 3,000

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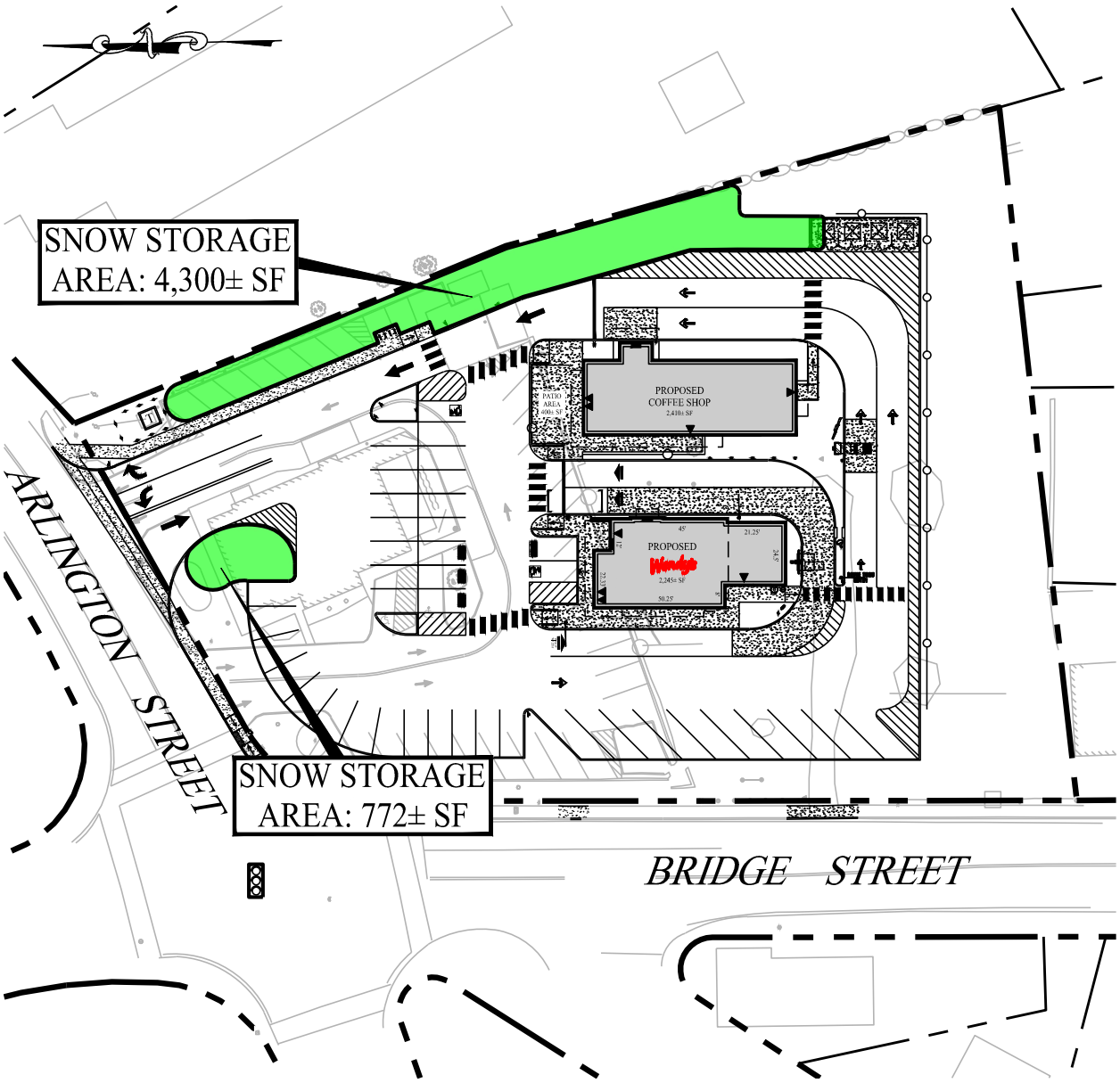
WELLHEAD PROTECTION MAP

5 ARLINGTON STREET &
1327 BRIDGE STREET
DRACUT, MASSACHUSETTS

Project #:	22203701
Plan Date:	06/06/23
Scale:	1" = 3,000'
Figure:	4



NOTES:

- THE PROJECT PROPOSES 43,097± SF OF IMPERVIOUS SURFACES (EXCLUDING BUILDING ROOF AREA).
- THE PLAN DEPICTS5,072± SF OF SNOW STORAGE AREAS (121,750± CF OF SNOW VOLUME CAPACITY ASSUMING 5:1 COMPACTION AND STORAGE AREAS 5 FEET IN HEIGHT.
- PROPOSED STORAGE AREAS CAN ACCOMMODATE GREATER THAN A 36" SNOWFALL. ADDITIONAL LANDSCAPED AREAS ON-SITE MAY BE UTILIZED AS SNOW STORAGE AREAS DURING HEAVY SNOW FALL PERIODS. ALL SNOW STORAGE MUST AVOID FENCES, TREES AND SHRUBS, AND ON TOP OF DRAINAGE STRUCTURES.

60 0 30 60

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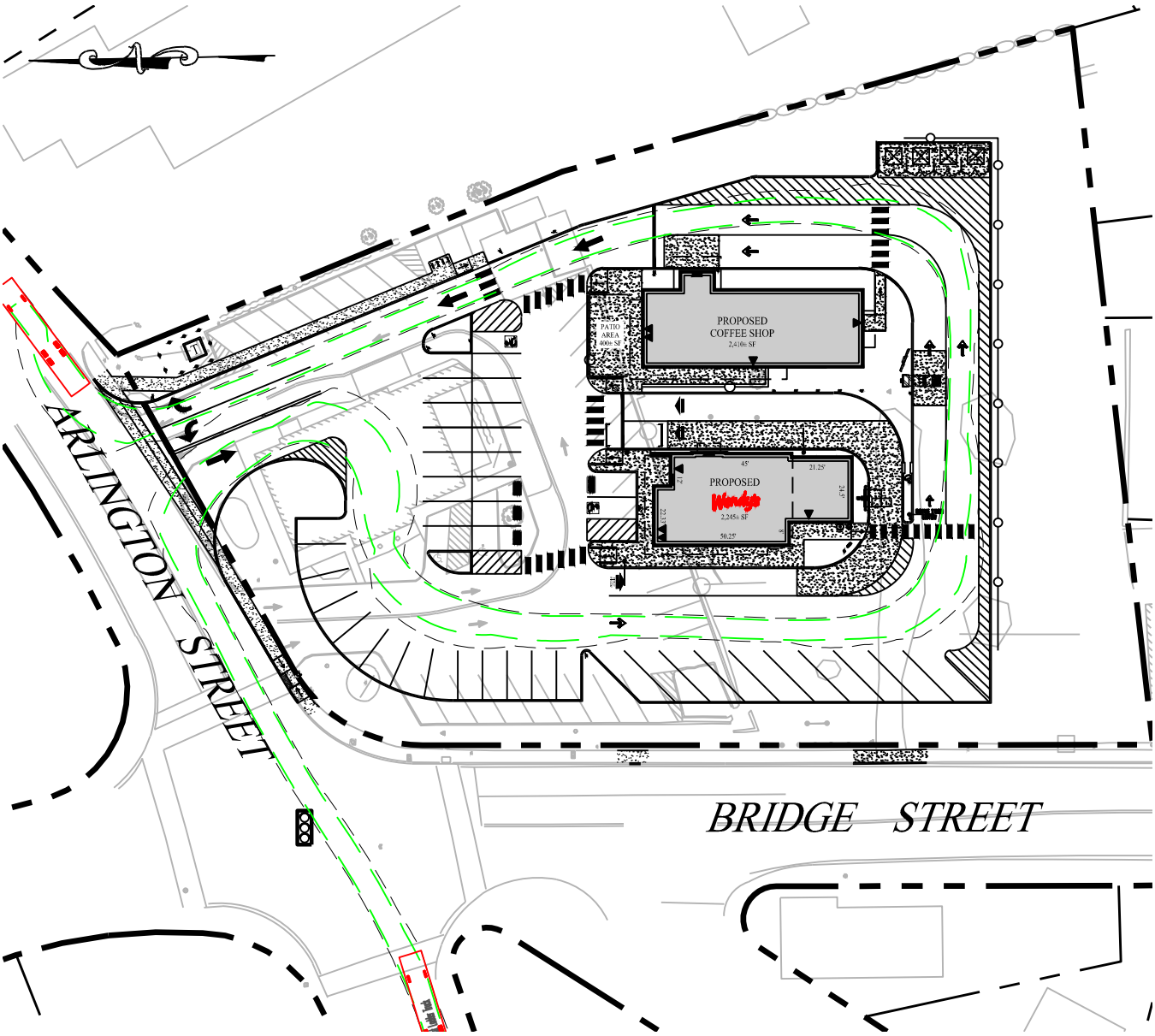
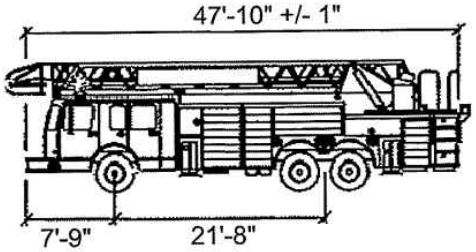
SNOW STORAGE MAP

BRIDGE STREET LANDING
5 ARLINGTON STREET
DRACUT, MASSACHUSETTS

Project #:	22203701
Plan Date:	03/27/25
Scale:	1" = 60'
Figure:	5





3 AXLE LADDER TRUCK

feet

Width	: 8'-4"
Track	: 6'-11"
Steering Angle	: 45°

60 0 30 60

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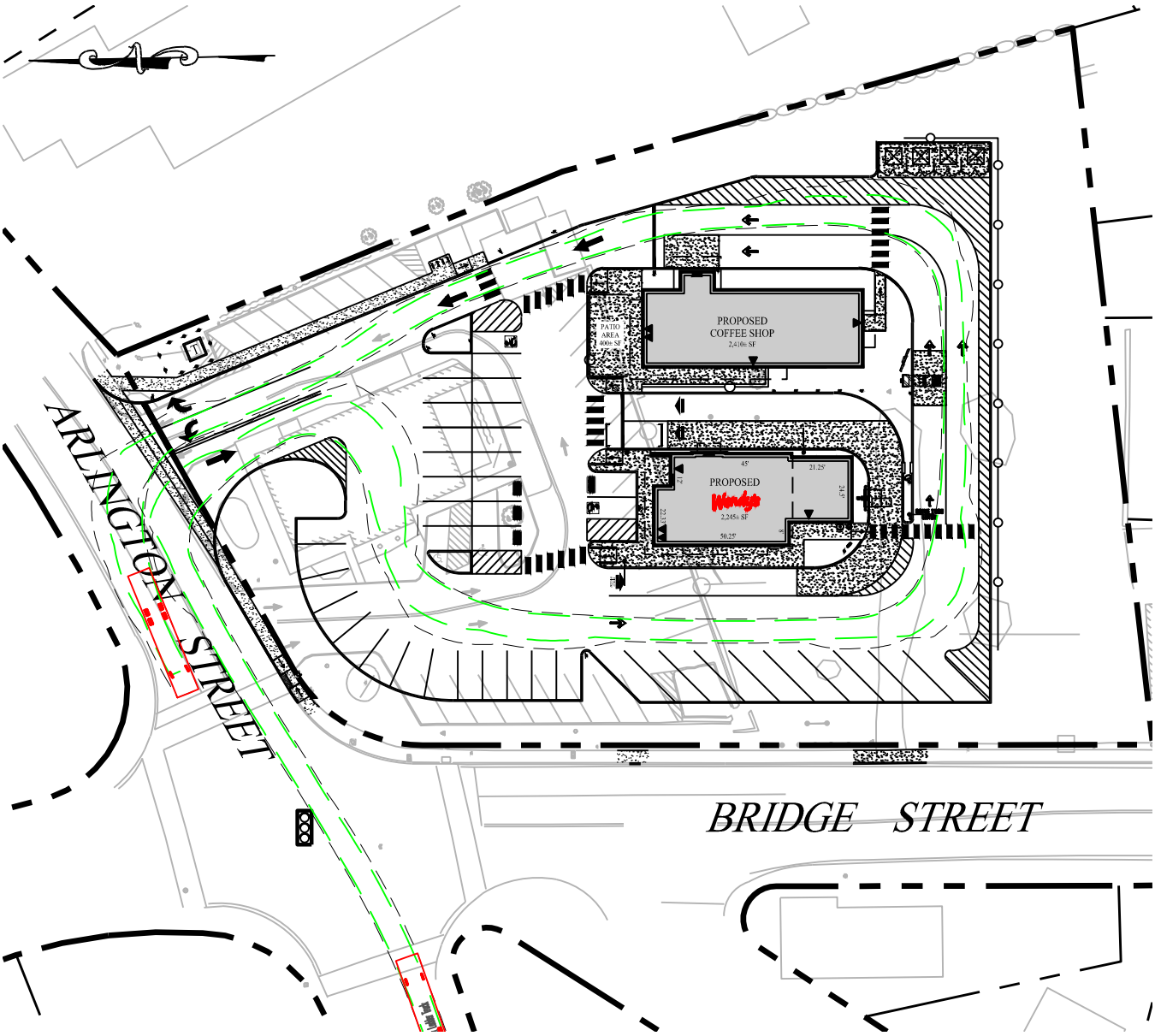
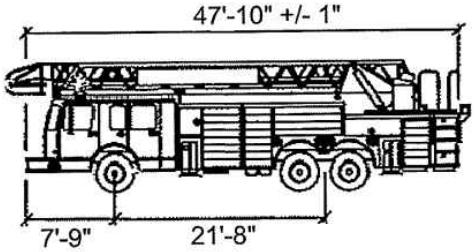
FIRE TRUCK TURNING FIGURE

BRIDGE STREET LANDING
5 ARLINGTON STREET
DRACUT, MASSACHUSETTS

Project #:	22203701
Plan Date:	03/27/25
Scale:	1" = 60'
Figure:	TT-1





3 AXLE LADDER TRUCK

feet

Width	: 8'-4"
Track	: 6'-11"
Steering Angle	: 45°

60 0 30 60

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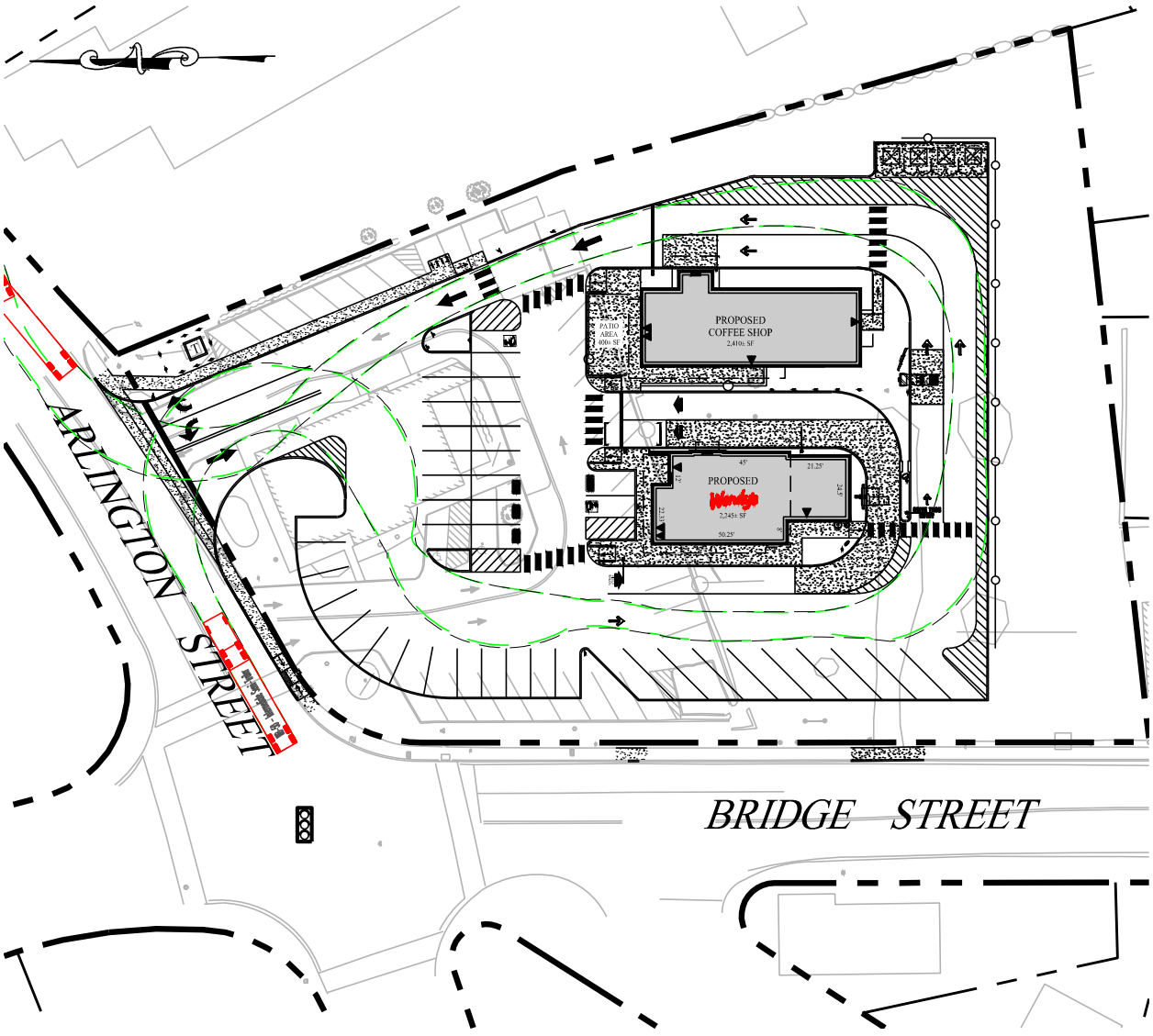
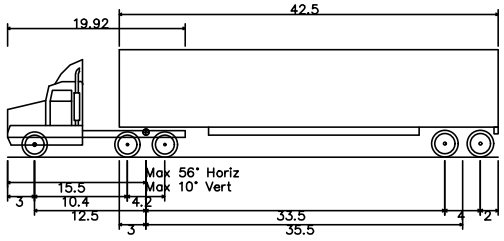
FIRE TRUCK TURNING FIGURE

BRIDGE STREET LANDING
5 ARLINGTON STREET
DRACUT, MASSACHUSETTS

Project #:	22203701
Plan Date:	03/27/25
Scale:	1" = 60'
Figure:	TT-2





WB-50 – Intermediate Semi-Trailer	
Overall Length	55.000ft
Overall Width	8.500ft
Overall Body Height	12.052ft
Min Body Ground Clearance	1.334ft
Max Track Width	8.500ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	17.90°

60 0 30 60

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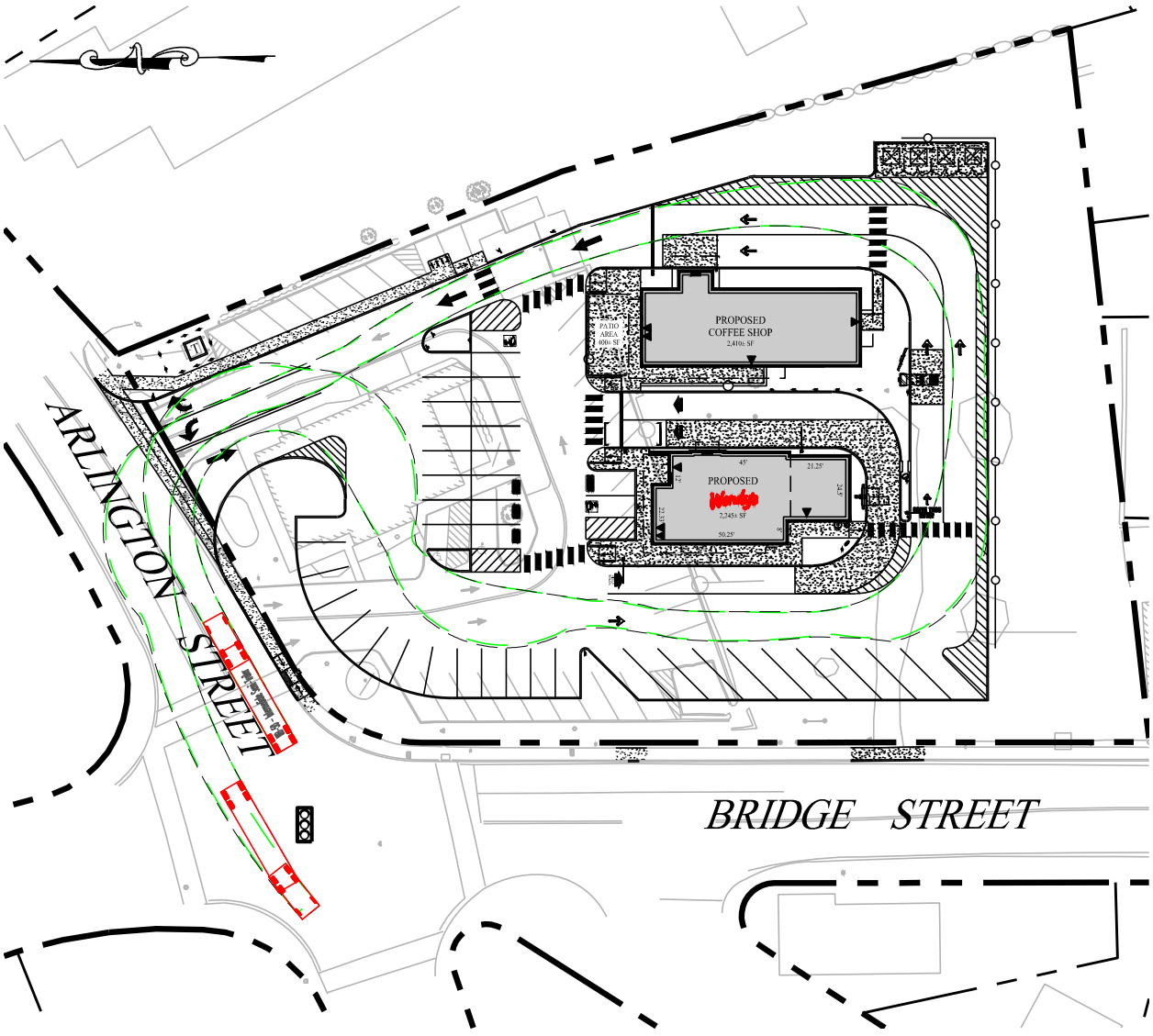
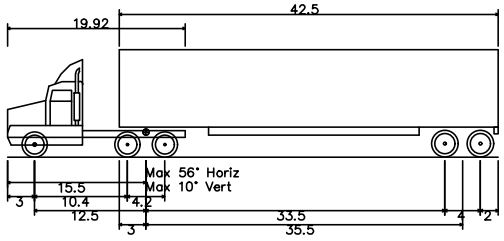
DELIVERY VEHICLE (WB-50) TURNING FIGURE

BRIDGE STREET LANDING
5 ARLINGTON STREET
DRACUT, MASSACHUSETTS

Project #:	22203701
Plan Date:	03/27/25
Scale:	1" = 60'
Figure:	TT-3





WB–50 – Intermediate Semi–Trailer

Overall Length	55.000ft
Overall Width	8.500ft
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Max Track Width	8.500ft
Lock–to–lock time	6.00s
Max Steering Angle (Virtual)	17.90°

60 0 30 60

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T: (781) 352-8491 | F: (203) 880-9695

DELIVERY VEHICLE (WB-50) TURNING FIGURE

BRIDGE STREET LANDING
5 ARLINGTON STREET
DRACUT, MASSACHUSETTS

Project #:	22203701
Plan Date:	03/27/25
Scale:	1" = 60'
Figure:	TT-4

Appendix B – Supporting Documents

Property Record Card

Recorded Property Deed

ITE Parking Generation Data

Illicit Discharge Statement

5 ARLINGTON ST

Location	5 ARLINGTON ST	**Mblu**	50/ / 224/ /
Acct#	00257600	**Owner**	TWIN COAST PROPERTIES LLC
Assessment	$826,800	**PID**	7685
Building Count	1		

Current Value

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$579,200	$247,600	$826,800

Owner of Record

Owner	TWIN COAST PROPERTIES LLC	**Sale Price**	$800,000
Co-Owner		**Certificate**	
Address	23 STILES RD SUITE 219 SALEM, NH 03079	**Book & Page**	10084/0002
		Sale Date	04/16/1999
		Instrument	00

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
TWIN COAST PROPERTIES LLC	$800,000		10084/0002	00	04/16/1999
WENDY'S OLD FASHIONED	$618,428		8278/0032	1B	10/29/1996
DRACUT COMPANY	$595,000		02375/0696		07/25/1979

Building Information

Building 1 : Section 1

Year Built:	1980
Living Area:	3,429
Building Percent Good:	76
Replacement Cost Less Depreciation:	$544,300

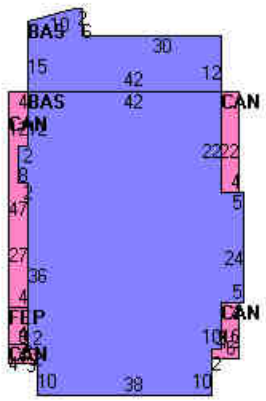
Building Attributes	
Field	**Description**

Style:	Fast Food Rest
Model	Commercial
Grade	Excellent
Stories:	1
Occupancy	1.00
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Floor 1	Ceram Clay Til
Interior Floor 2	Carpet
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Central
Struct Class	
Bldg Use	RETAIL < 10,000 SF
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	3250
Heat/AC	HEAT/AC PKGS
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	SUS-CEIL & WL
Rooms/Prtns	AVERAGE
Wall Height	9.00
% Comn Wall	0.00

Building Photo

(https://images.vgsi.com/photos/DracutMAPhotos//\00\00\32\94.jpg)

Building Layout



(https://images.vgsi.com/photos/DracutMAPhotos//Sketches/7685_7471.jp

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	3,429	3,429
CAN	Canopy	334	0
FEP	Porch, Enclosed, Finished	32	0
		3,795	3,429

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
DUW1	DRIVE-UP WINDW	2.00 UNITS	$9,100	1
CLR2	FREEZER TEMPS	72.00 S.F.	$1,500	1
CLR1	COOLER	144.00 S.F.	$2,200	1
CLR2	FREEZER TEMPS	112.00 S.F.	$2,400	1

Land

Land Use

Use Code	3260
Description	RESTAURANT/CLUB
Zone	B3
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Sqr Feet)	30475
Frontage	0
Depth	0
Assessed Value	$247,600

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SGN3	W/INT LIGHTS			56.00 S.F.&HGT	$2,200	1
LT7	W/TRIPLE LIGHT			4.00 UNITS	$4,000	1
PAV1	PAVING-ASPHALT			17870.00 S.F.	$11,200	1
LT6	W/DOUBLE LIGHT			1.00 UNITS	$800	1
SGN3	W/INT LIGHTS			14.00 S.F.&HGT	$500	1
FN3	FENCE-6' CHAIN			210.00 L.F.	$900	1
FN1	FENCE-4' CHAIN			32.00 L.F.	$100	1

Valuation History

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$579,200	$247,600	$826,800
2021	$579,200	$225,000	$804,200
2020	$579,200	$218,300	$797,500

1327 BRIDGE ST

Location	1327 BRIDGE ST	**Mblu**	50/ / 225/ /
Acct#	00182122	**Owner**	FAS HOLDINGS, LLC
Assessment	$312,200	**PID**	7686
Building Count	1		

Current Value

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$164,800	$147,400	$312,200

Owner of Record

Owner	FAS HOLDINGS, LLC	**Sale Price**	$550,000
Co-Owner		**Certificate**	
Address	23 STILES RD, SUITE 219 SALEM, NH 03079	**Book & Page**	31978/0289
		Sale Date	04/04/2018
		Instrument	1O

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
FAS HOLDINGS, LLC	$550,000		31978/0289	1O	04/04/2018
MAYALL GRETCHEN	$125,000		11406/0019	1O	03/02/2001
COBURN ELLA R	$1		1983/0568		10/22/1971

Building Information

Building 1 : Section 1

Year Built:	1885
Living Area:	1,922
Building Percent Good:	45
Replacement Cost Less Depreciation:	$164,800

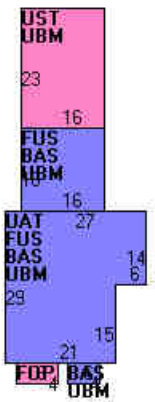
Building Attributes	
Field	**Description**

Style:	Conventional
Model	Residential
Grade:	Average
Stories:	2 Stories
Occupancy	1
Exterior Wall 1	Clapboard
Exterior Wall 2	
Roof Structure:	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Plastered
Interior Wall 2	
Interior Flr 1	Pine/Soft Wood
Interior Flr 2	
Heat Fuel	Gas
Heat Type:	Hot Water
AC Type:	None
Total Bedrooms:	3 Bedrooms
Total Bthrms:	1
Total Half Baths:	1
Total Xtra Fixtrs:	
Total Rooms:	6
Bath Style:	Average
Kitchen Style:	Average
Num Kitchens	01
Cndtn	
Num Park	
Fireplaces	
Fndtn Cndtn	
Basement	

Building Photo

(https://images.vgsi.com/photos/DracutMAPhotos//\00\01\88\13.jpg)

Building Layout



(https://images.vgsi.com/photos/DracutMAPhotos//Sketches/7686_7472.jp

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	973	973
FUS	Upper Story, Finished	949	949
FOP	Porch, Open, Finished	32	0
UAT	Attic, Unfinished	693	0
UBM	Basement, Unfinished	1,341	0
UST	Utility, Storage, Unfinished	368	0
		4,356	1,922

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	1010
Description	SINGLE FAMILY
Zone	B3
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Sqr Feet)	41287
Frontage	0
Depth	0
Assessed Value	$147,400

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$164,800	$147,400	$312,200
2021	$150,200	$133,800	$284,000
2020	$147,300	$129,800	$277,100

1pg

LIMITED WARRANTY DEED

This indenture made the 10th day of March, 1999, by **WENDY'S OLD FASHIONED HAMBURGERS OF NEW YORK, INC.**, an Ohio corporation, 4288 West Dublin-Granville Road, Dublin, Ohio 43017, hereinafter referred to as **"Grantor"**, to **TWIN COAST PROPERTIES, L.L.C.**, a New Hampshire limited liability company, whose address is 604 Daniel Webster Highway, Suite 205, Merrimak, New Hampshire 03054, hereinafter referred to as **"Grantee"**.

Witnesseth: That Grantor, for and in consideration of the sum of Eight Hundred Thousand and no/100 Dollars ($800,000.00) and other good and valuable consideration in hand paid by Grantee, the receipt and sufficiency of which is hereby acknowledged, grants, bargains, sells and conveys to Grantee, its successors and assigns, all that certain real estate situated in the City of Dracut, County of Middlesex, State of Massachusetts, to-wit:

See **Exhibit A** attached hereto and made a part hereof.
Commonly known as 5 Arlington Street, Dracut, MA
Tax Parcel ID No. M50-B224

Being the real estate transferred to Grantor from Dracut Company, by deed recorded October 29, 1996, in Book 08278, Page 032, Middlesex Registry of Deeds, North District, Middlesex County, Massachusetts.

Grantor warrants the title only against the claim of every person claiming by, through or under Grantor, but not otherwise and subject to: zoning ordinances, legal highways, restrictions, reservations, conditions and easements of record; matters of survey; real property taxes and assessments for the current year; and the Right of First Refusal recorded of even date herewith.

Grantor conveys the real estate and Grantee accepts for itself and its successors, assigns, heirs and representatives such conveyance subject to the restriction that the real estate and the improvements located thereon shall for a period of twenty (20) years following recordation of this Deed or so long as the Franchise Agreement between Grantor and Grantee has not been terminated by Grantor, whichever period is longer, be used exclusively for the operation of a Wendy's Old Fashioned Hamburgers Restaurant.

Grantor does not warrant either expressly or impliedly the conditions or fitness of the real estate conveyed hereunder, any such warranty being hereby expressly negated. Grantee by acceptance hereof acknowledges that he has made a complete inspection of the real estate and is in all respects satisfied therewith and accepts the same "as is".

Witness the following signatures of the duly authorized officers of Grantor.

WITNESSES:

Print Name: [redacted]

Print Name: MICHELE L. CANTRELL

Print Name: _____

Print Name: _____

WENDY'S OLD FASHIONED HAMBURGERS OF NEW YORK, INC.

By: Gordon F. Teter

Title: GORDON F. TETER Chairman CEO

By: _____

Title: _____

Legal Dept. _____

LOWELL
DEEDS REG 14
MIDDLE NORTH
04/16/99 10:49AM 01
000001 #1734
FEE $3648.00
CASH $3648.00

(acknowledgement appears on the following page)

B 1 0 0 0 4 P 0 0 4

STATE OF OHIO
COUNTY OF FRANKLIN, SS:

The undersigned, a Notary Public in and for the above state and county, hereby certifies that on the 1st day of March, 1999, before me personally appeared GORDON F. TETER Chairman CEO and _____, the _____ and _____ respectively, of **WENDY'S OLD FASHIONED HAMBURGERS OF NEW YORK, INC.**, an Ohio corporation, who are known to me as the persons and officers described in and who executed the foregoing instrument on behalf of said corporation, and who acknowledge that they held the positions or titles set forth in the instrument and certificate, that they signed the instrument on behalf of the corporation by proper authority, and that the instrument was the act of the corporation for the purposes therein stated.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal on the day and year last aforesaid.

Geri M. Petrovsky
Notary Public

(SEAL)

GERI M. PETROVSKY
NOTARY PUBLIC, STATE OF OHIO
MY COMMISSION EXPIRES DEC. 12, 2000

This instrument prepared by:
Stephen L. Harper, Attorney at Law
Wendy's International, Inc.
4288 W. Dublin-Granville Road
P. O. Box 256
Dublin, Ohio 43017

EXHIBIT A

A certain parcel of land shown as Lot 1 on a plan recorded with Middlesex North District Registry of Deeds, Book 127, Page 132, and entitled "Plan of Land in Dracut, Masschusetts," dated October 31, 1978, prepared by John Callahan Associates of Andover, Massachusetts, said parcel being located at the southeasterly corner of the intersection of Bridge Street and Arlington Street in the Town of Dracut, County of Middlesex, Commonwealth of Massachusetts, and being more particularly described as follows:

Beginning at the northeasterly most corner of said parcel at an iron pipe, said pipe being on the southerly right of way of Arlington Street and being easterly 163.48 feet from the intersection of Bridge Street and said Arlington Street; thence

From said pipe South 09° 03' 01" East a distance of 176.13 feet to an iron pipe set at the intersection of a stone wall; thence

South 84° 07' 49" West a distance of 222.09 feet to a point, said point being on the easterly right of way of Bridge Street; thence

Along the easterly right of way of said Bridge Street North 13° 22' 00" East a distance of 124.31 feet to the beginning of a curve at the intersection of said Bridge Street and Arlington Street; thence

Along said curve concave to the northwest having a central angle of 60° 40' 00" and a radius of 54 feet, a distance of 57.18 feet to a point in the southerly right of way of Arlington Street; thence

Along said southerly right of way of Arlington Street North 74° 02' 00" East a distance of 131.88 feet to the point of beginning.

Middlesex North Registry of Deeds

Electronically Recorded Document

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Recording Information

Document Number	: 13249
Document Type	: DEED
Recorded Date	: April 04, 2018
Recorded Time	: 01:59:15 PM
Recorded Book and Page	: 31978 / 289
Number of Pages(including cover sheet)	: 4
Receipt Number	: 806709
Recording Fee (including excise)	: $2,633.00

****
MASSACHUSETTS EXCISE TAX
Middlesex North ROD #14 001
Date: 04/04/2018 01:59 PM
Ctrl# 076724 09888 Doc# 00013249
Fee: $2,508.00 cons: $550,000.00
****

Middlesex North Registry of Deeds
Richard P. Howe Jr., Register
360 Gorham Street
Lowell, Massachusetts 01852
978/322-9000
www.lowelldeeds.com

1327 Bridge Street, Dracut, MA 01826

QUITCLAIM DEED

I, **Gretchen Mayall,** married to David Mayall, of 1327 Bridge Street, Dracut, Middlesex County, Massachusetts

for consideration paid, and in full consideration of **Five Hundred Fifty Thousand ($550,000.00) Dollars**

grant to **FAS Holdings, LLC**, a Massachusetts limited liability company, with an address of 23 Stiles Road, Suite 219, Salem, NH 03079,

with **Quitclaim Covenants**

The land in Dracut, Middlesex County, Massachusetts, with the buildings thereon, situated on the easterly side of the road leading from Central Bridge in Lowell to the Yellow Meeting House in Dracut, said road being now known as Bridge Street, and said premises being located about one hundred (100) yards southerly from said Meeting House, bounded and described as follows:

Beginning at the northwesterly corner of the premises at said Street at land formerly of one Hall, now of one Morris, and thence running North 85° East by said Morris land two hundred twenty-five (225) feet, more or less, to an angle in the wall at land formerly of one Tibbette; thence South 2° East by the wall and said Tibbetts' land and land formerly of one Emerson four hundred twenty-nine (429) feet, more or less, to an angle in the wall; thence North 87° West by the wall and said Emerson land three hundred

thirty (330) feet, more or less, to said Bridge Street; thence northerly along said Street four hundred two (402) feet, more or less, to the point of beginning.

Containing two (2) acres, one hundred eight rods, more or less.

Excepting and excluding from the above described premises so much thereof as was conveyed by deed from Esther A. Coburn and Ella R. Coburn to Israel J. Daigle and G. Helen Daigle dated May 20, 1950, recorded with Middlesex North District Registry of Deeds, Book 1140, Page 482.

Being the premises conveyed to me by deed dated March 1, 2001 and recorded with said Registry, Book 11406, Page 19.

The Grantor and her spouse, David Mayall, hereby certify that the within premises is not homestead property of either of them under the pains and penalties of perjury and that no other person(s), either individually or as trustee, is entitled to claim homestead rights to the within premises.

1327 Bridge Street, Dracut, MA 01826

Witness my hand and seal this 4th day of April, 2018.

Gretchen Mayall

David Mayall

STATE OF NEW HAMPSHIRE

ROCKINGHAM, SS. APRIL 4, 2018

Then personally appeared the above named Gretchen Mayall and David Mayall and acknowledged the execution of the foregoing instrument to be their free act and deed, before me

Notary Public: Leeann Turner Brooks
My Commission Expires: 11/18/2020

LEEANN TURNER BROOKS
Notary Public - New Hampshire
My Commission Expires November 18, 2020

5 ARLINGTON ST

Location	5 ARLINGTON ST	**Mblu**	50/ / 224/ /
Acct#	00257600	**Owner**	TWIN COAST PROPERTIES LLC
Assessment	$955,100	**PID**	7685
Building Count	1		

Current Value

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$618,300	$336,800	$955,100

Owner of Record

Owner	TWIN COAST PROPERTIES LLC	**Sale Price**	$800,000
Co-Owner		**Certificate**	
Address	23 STILES RD SUITE 219 SALEM, NH 03079	**Book & Page**	10084/0002
		Sale Date	04/16/1999
		Instrument	00

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
TWIN COAST PROPERTIES LLC	$800,000		10084/0002	00	04/16/1999
WENDY'S OLD FASHIONED	$618,428		8278/0032	1B	10/29/1996
DRACUT COMPANY	$595,000		02375/0696		07/25/1979

Building Information

Building 1 : Section 1

Year Built: 1980
Living Area: 3,429
Building Percent Good: 76
Replacement Cost Less Depreciation: $583,400

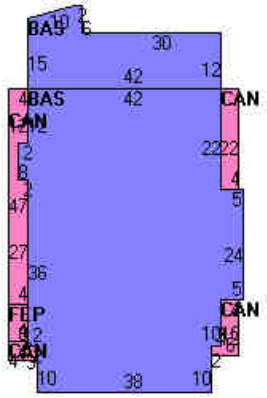
Building Attributes	
Field	**Description**
Style:	Fast Food Rest

Model	Commercial
Grade	Excellent
Stories:	1
Occupancy	1.00
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Floor 1	Ceram Clay Til
Interior Floor 2	Carpet
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Central
Struct Class	
Bldg Use	RETAIL < 10,000 SF
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	3250
Heat/AC	HEAT/AC PKGS
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	SUS-CEIL & WL
Rooms/Prtns	AVERAGE
Wall Height	9.00
% Comn Wall	0.00

Building Photo

(https://images.vgsi.com/photos/DracutMAPhotos//\00\00\32\94.jpg)

Building Layout



(https://images.vgsi.com/photos/DracutMAPhotos//Sketches/7685_7471.jp

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	3,429	3,429
CAN	Canopy	334	0
FEP	Porch, Enclosed, Finished	32	0
		3,795	3,429

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
DUW1	DRIVE-UP WINDW	2.00 UNITS	$9,100	1
CLR2	FREEZER TEMPS	72.00 S.F.	$1,500	1
CLR1	COOLER	144.00 S.F.	$2,200	1
CLR2	FREEZER TEMPS	112.00 S.F.	$2,400	1

Land

Land Use

Use Code	3260
Description	RESTAURANT/CLUB
Zone	B3
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Sqr Feet)	70480
Frontage	0
Depth	0
Assessed Value	$336,800

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SGN3	W/INT LIGHTS			56.00 S.F.&HGT	$2,200	1
LT7	W/TRIPLE LIGHT			4.00 UNITS	$4,000	1
PAV1	PAVING-ASPHALT			17870.00 S.F.	$11,200	1
LT6	W/DOUBLE LIGHT			1.00 UNITS	$800	1
SGN3	W/INT LIGHTS			14.00 S.F.&HGT	$500	1
FN3	FENCE-6' CHAIN			210.00 L.F.	$900	1
FN1	FENCE-4' CHAIN			32.00 L.F.	$100	1

Valuation History

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2024	$618,300	$336,800	$955,100
2023	$610,500	$272,400	$882,900
2022	$579,200	$247,600	$826,800

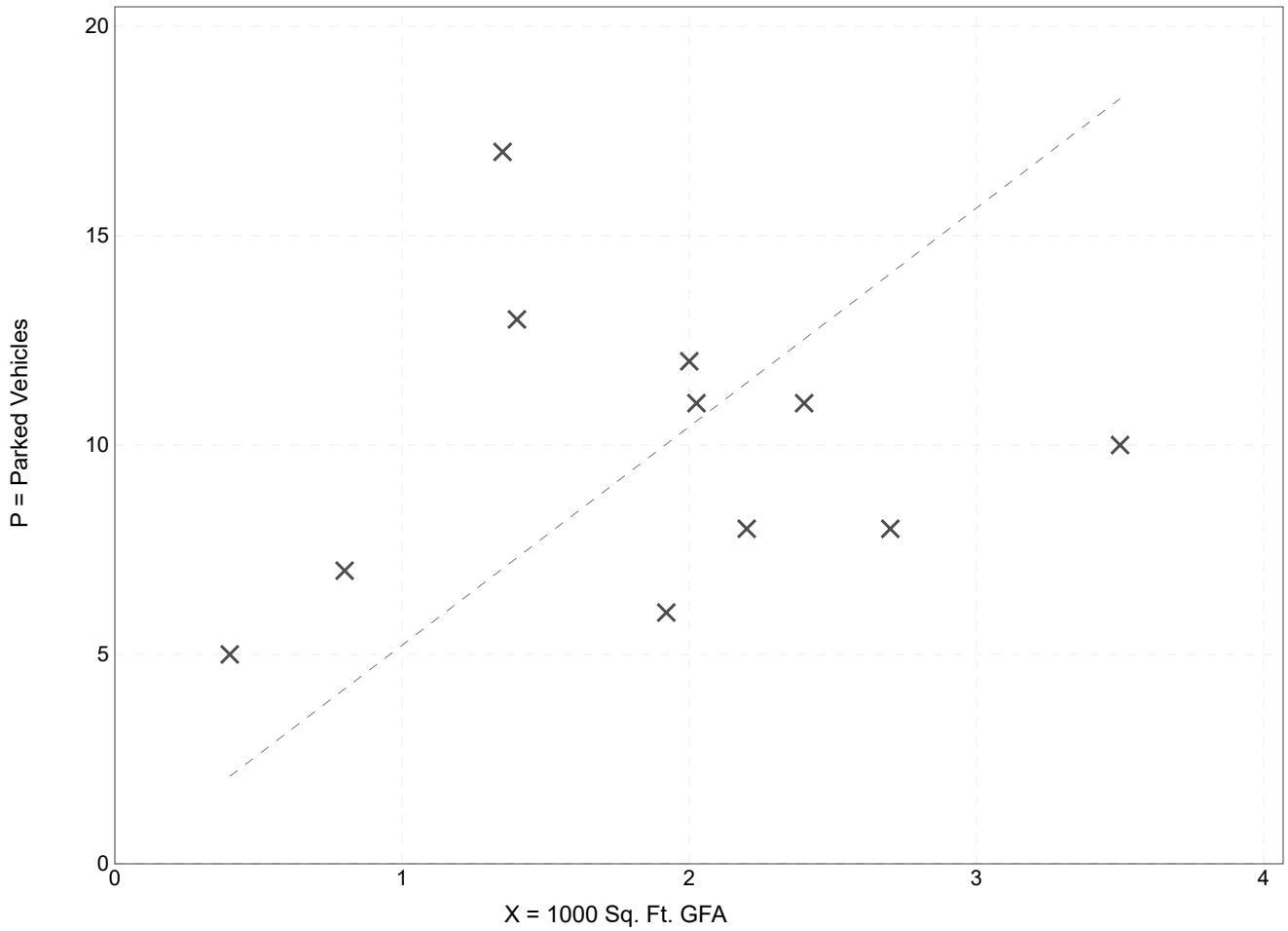
Coffee/Donut Shop with Drive-Through Window
(937)

Peak Period Parking Demand vs: **1000 Sq. Ft. GFA**
On a: **Weekday (Monday - Friday)**
Setting/Location: **General Urban/Suburban**
Peak Period of Parking Demand: **8:00 - 10:00 a.m.**
Number of Studies: 11
Avg. 1000 Sq. Ft. GFA: 1.8

Peak Period Parking Demand per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
5.22	2.86 - 12.59	3.62 / 12.52	***	3.07 (59%)

Data Plot and Equation



Fitted Curve Equation: *

R^2= *

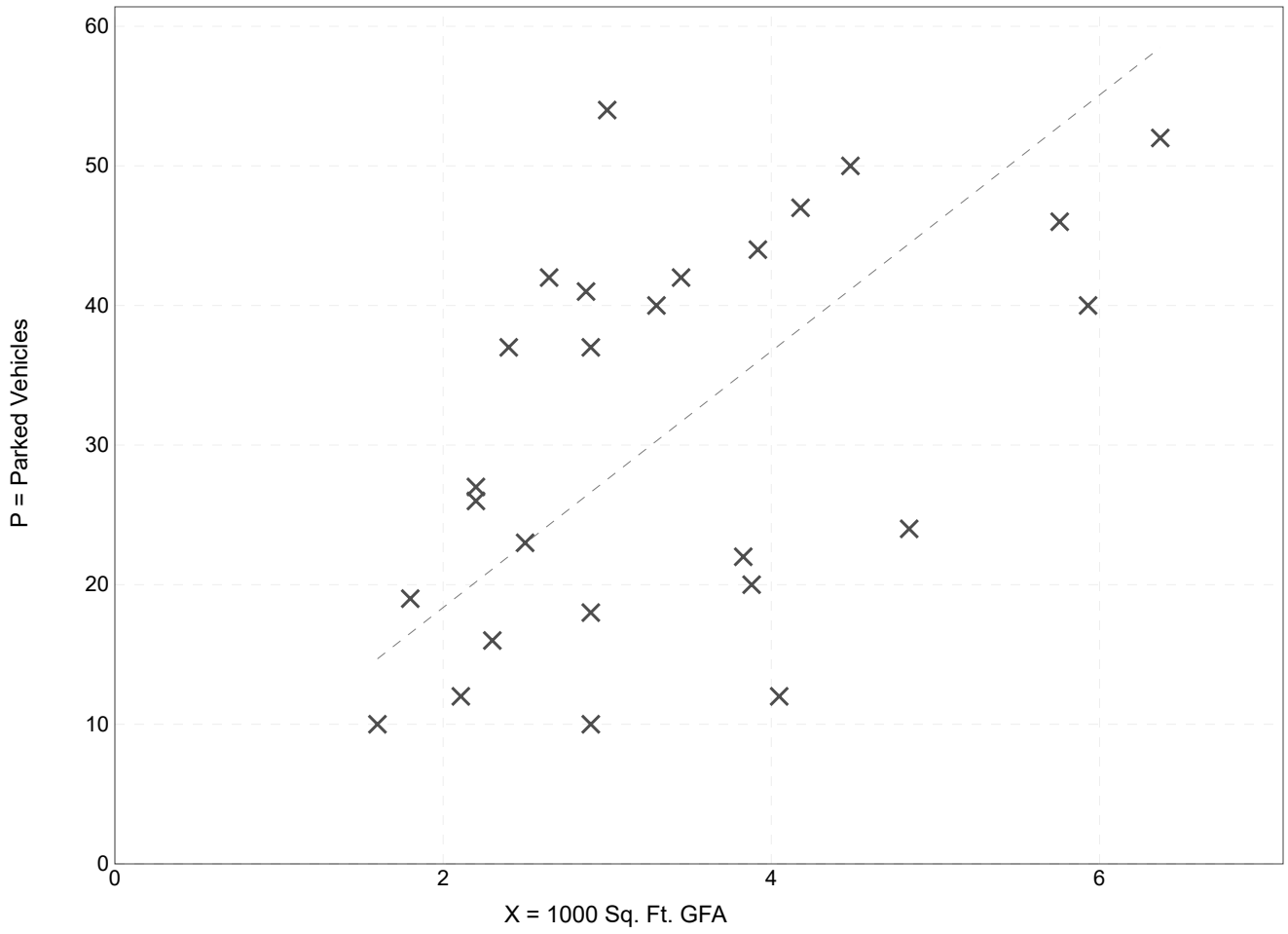
Fast-Food Restaurant with Drive-Through Window
(934)

Peak Period Parking Demand vs:	**1000 Sq. Ft. GFA**
On a:	**Saturday**
Setting/Location:	**General Urban/Suburban**
Peak Period of Parking Demand:	**12:00 - 2:00 p.m.**
Number of Studies:	26
Avg. 1000 Sq. Ft. GFA:	3.4

Peak Period Parking Demand per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
9.18	2.96 - 18.00	6.70 / 14.20	7.69 - 10.67	3.88 (42%)

Data Plot and Equation



Fitted Curve Equation: *

R^2= *

SOLLI ENGINEERING

ILLICIT DISCHARGE STATEMENT

Project: **Proposed Bridge Street Landing**
5 Arlington Street
Dracut, Massachusetts
Project No.: 22203701

This statement is provided in accordance with the provisions of the Massachusetts Stormwater Handbook Standard 10 and Massachusetts Stormwater Standards.

- All existing and proposed stormwater management systems contain no connection to the Site's wastewater sewer system or to any other non-stormwater collection system.
- Existing groundwater collection systems on the Site are not connected to the Site's wastewater sewer system or to any other non-stormwater collection system.
- The facility's proposed Operation & Maintenance Plan is designed to prevent any discharge of non-stormwater to the drainage system.
- No known existing illicit discharges are on-site, in the event an illicit discharge is encountered or identified during or after construction, they will be immediately disconnected.
- The proposed modifications and development will NOT produce any illicit discharges, such as wastewater discharges and discharges of stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease.

Solli Engineering, LLC

Kevin Solli, PE, PTOE
Principal / Owner

Appendix C – Stormwater Calculations

Hydrology Calculations (2-, 10-, 25-, 50-, 100-year storm events)

NOAA Atlas Precipitation Data

Watershed Model Schematic

HydroCAD Reporting – Existing & Proposed Conditions

Runoff Coefficient Calculations

Hydraulic Calculations (25-year storm event)

Storm Sewer Model Schematic & Reporting

Hydraulic Profiles

Best Management Practices

TSS Removal Worksheets

Water Quality Unit TSS Removal, Sizing & Details

NOAA Atlas 14, Volume 10, Version 3
Location name: Dracut, Massachusetts, USA*
Latitude: 42.6689°, Longitude: -71.3028°
Elevation: m/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	**0.316** (0.252-0.393)	**0.376** (0.299-0.468)	**0.474** (0.377-0.592)	**0.555** (0.437-0.696)	**0.666** (0.506-0.870)	**0.750** (0.558-0.999)	**0.838** (0.602-1.15)	**0.936** (0.635-1.32)	**1.07** (0.698-1.56)	**1.19** (0.752-1.76)
10-min	**0.448** (0.357-0.557)	**0.532** (0.424-0.663)	**0.670** (0.532-0.837)	**0.786** (0.619-0.986)	**0.944** (0.717-1.23)	**1.06** (0.789-1.41)	**1.19** (0.853-1.64)	**1.33** (0.899-1.86)	**1.52** (0.989-2.21)	**1.68** (1.07-2.49)
15-min	**0.527** (0.420-0.655)	**0.626** (0.499-0.780)	**0.789** (0.626-0.984)	**0.924** (0.729-1.16)	**1.11** (0.844-1.45)	**1.25** (0.928-1.66)	**1.40** (1.00-1.92)	**1.56** (1.06-2.19)	**1.79** (1.16-2.60)	**1.98** (1.25-2.93)
30-min	**0.723** (0.577-0.900)	**0.860** (0.685-1.07)	**1.08** (0.860-1.35)	**1.27** (1.00-1.59)	**1.53** (1.16-1.99)	**1.72** (1.28-2.29)	**1.92** (1.38-2.64)	**2.14** (1.45-3.01)	**2.46** (1.60-3.58)	**2.72** (1.72-4.02)
60-min	**0.920** (0.734-1.14)	**1.10** (0.872-1.36)	**1.38** (1.10-1.72)	**1.62** (1.27-2.03)	**1.94** (1.48-2.54)	**2.19** (1.62-2.91)	**2.44** (1.75-3.36)	**2.73** (1.85-3.84)	**3.13** (2.04-4.55)	**3.46** (2.19-5.12)
2-hr	**1.17** (0.935-1.44)	**1.41** (1.13-1.74)	**1.80** (1.44-2.23)	**2.12** (1.69-2.65)	**2.57** (1.97-3.35)	**2.90** (2.18-3.87)	**3.26** (2.38-4.52)	**3.70** (2.51-5.17)	**4.36** (2.84-6.30)	**4.93** (3.13-7.25)
3-hr	**1.34** (1.08-1.65)	**1.62** (1.31-2.00)	**2.09** (1.68-2.58)	**2.48** (1.97-3.08)	**3.01** (2.32-3.92)	**3.40** (2.57-4.53)	**3.83** (2.81-5.32)	**4.36** (2.97-6.09)	**5.20** (3.39-7.49)	**5.93** (3.77-8.68)
6-hr	**1.70** (1.38-2.08)	**2.07** (1.68-2.54)	**2.68** (2.17-3.30)	**3.19** (2.56-3.94)	**3.88** (3.01-5.03)	**4.39** (3.34-5.83)	**4.96** (3.67-6.86)	**5.66** (3.87-7.85)	**6.78** (4.44-9.70)	**7.76** (4.95-11.3)
12-hr	**2.14** (1.75-2.61)	**2.61** (2.13-3.18)	**3.38** (2.75-4.13)	**4.02** (3.25-4.94)	**4.90** (3.83-6.31)	**5.55** (4.24-7.31)	**6.26** (4.64-8.58)	**7.14** (4.90-9.83)	**8.50** (5.58-12.1)	**9.68** (6.20-14.0)
24-hr	**2.55** (2.10-3.08)	**3.13** (2.58-3.79)	**4.09** (3.35-4.97)	**4.89** (3.98-5.96)	**5.98** (4.70-7.65)	**6.79** (5.22-8.88)	**7.67** (5.72-10.5)	**8.76** (6.04-12.0)	**10.5** (6.89-14.8)	**11.9** (7.65-17.1)
2-day	**2.87** (2.38-3.45)	**3.58** (2.97-4.30)	**4.74** (3.91-5.71)	**5.69** (4.67-6.90)	**7.01** (5.55-8.93)	**7.98** (6.18-10.4)	**9.05** (6.80-12.3)	**10.4** (7.20-14.2)	**12.5** (8.28-17.6)	**14.4** (9.26-20.6)
3-day	**3.15** (2.62-3.76)	**3.90** (3.25-4.67)	**5.14** (4.26-6.17)	**6.16** (5.07-7.44)	**7.57** (6.02-9.61)	**8.61** (6.69-11.2)	**9.75** (7.35-13.2)	**11.2** (7.77-15.2)	**13.5** (8.93-18.9)	**15.5** (9.98-22.0)
4-day	**3.41** (2.85-4.07)	**4.19** (3.50-5.00)	**5.46** (4.54-6.55)	**6.52** (5.39-7.85)	**7.98** (6.35-10.1)	**9.05** (7.04-11.7)	**10.2** (7.72-13.8)	**11.7** (8.14-15.8)	**14.0** (9.32-19.6)	**16.1** (10.4-22.8)
7-day	**4.13** (3.48-4.91)	**4.95** (4.16-5.88)	**6.28** (5.26-7.49)	**7.38** (6.14-8.85)	**8.90** (7.12-11.2)	**10.0** (7.83-12.9)	**11.2** (8.50-15.0)	**12.8** (8.91-17.2)	**15.1** (10.1-21.0)	**17.2** (11.1-24.2)
10-day	**4.80** (4.06-5.68)	**5.64** (4.76-6.68)	**7.02** (5.89-8.34)	**8.15** (6.80-9.74)	**9.72** (7.80-12.1)	**10.9** (8.51-13.9)	**12.1** (9.17-16.1)	**13.7** (9.57-18.3)	**16.0** (10.7-22.1)	**17.9** (11.6-25.2)
20-day	**6.74** (5.74-7.92)	**7.66** (6.51-9.01)	**9.17** (7.77-10.8)	**10.4** (8.76-12.4)	**12.2** (9.79-15.0)	**13.5** (10.5-16.9)	**14.8** (11.1-19.2)	**16.3** (11.5-21.7)	**18.4** (12.4-25.2)	**20.1** (13.1-28.1)
30-day	**8.35** (7.14-9.78)	**9.35** (7.98-11.0)	**11.0** (9.33-12.9)	**12.3** (10.4-14.6)	**14.2** (11.4-17.3)	**15.6** (12.2-19.4)	**17.1** (12.8-21.8)	**18.5** (13.1-24.5)	**20.5** (13.8-28.0)	**22.0** (14.3-30.6)
45-day	**10.4** (8.92-12.1)	**11.5** (9.84-13.4)	**13.2** (11.3-15.5)	**14.7** (12.5-17.3)	**16.7** (13.5-20.3)	**18.3** (14.4-22.6)	**19.8** (14.8-25.1)	**21.3** (15.1-28.0)	**23.1** (15.6-31.5)	**24.5** (16.0-33.9)
60-day	**12.1** (10.4-14.1)	**13.3** (11.4-15.5)	**15.2** (13.0-17.7)	**16.7** (14.2-19.6)	**18.9** (15.3-22.8)	**20.5** (16.2-25.2)	**22.2** (16.6-27.9)	**23.6** (16.8-31.0)	**25.4** (17.2-34.5)	**26.7** (17.4-36.9)

[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.

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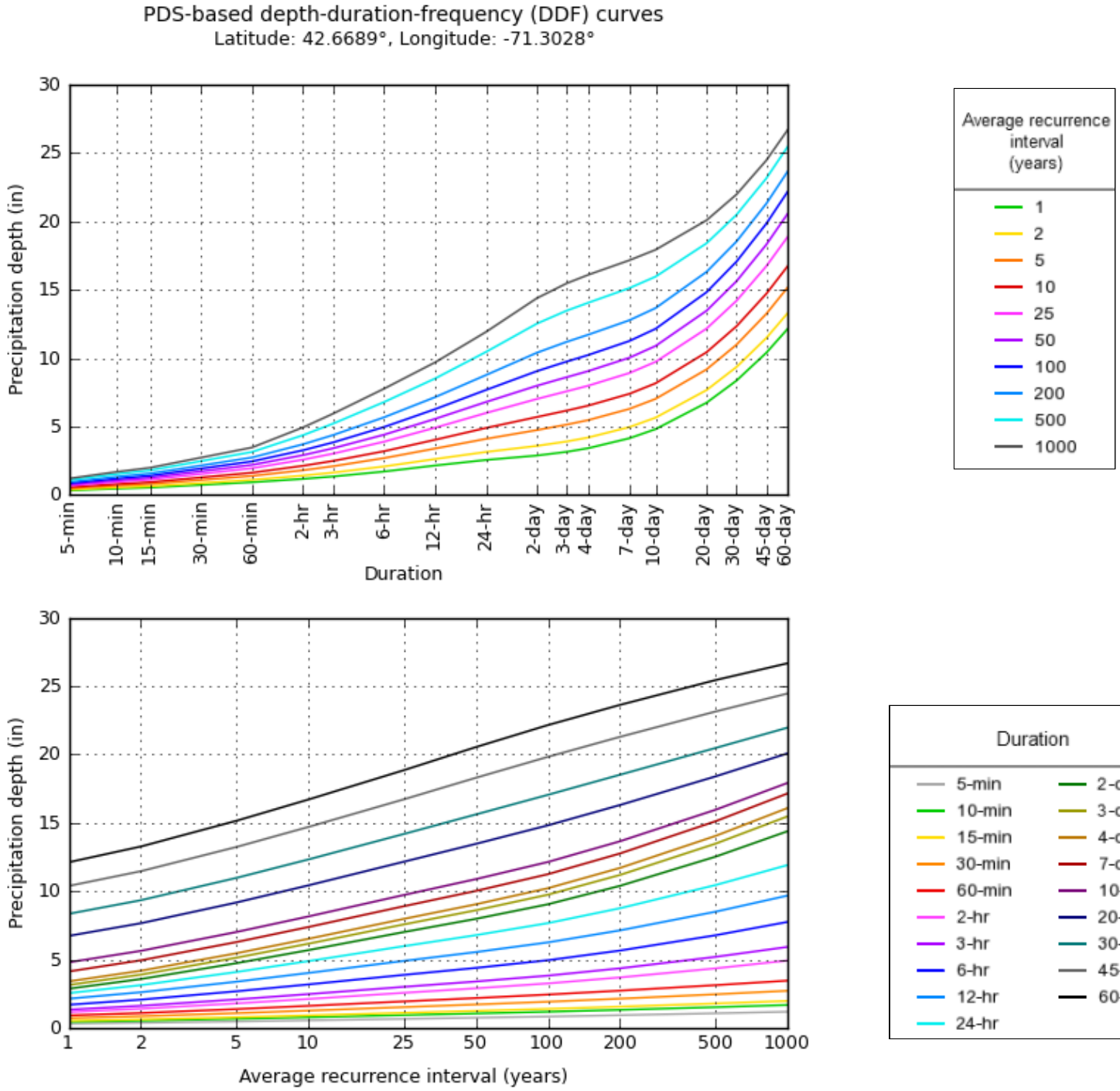
PF graphical



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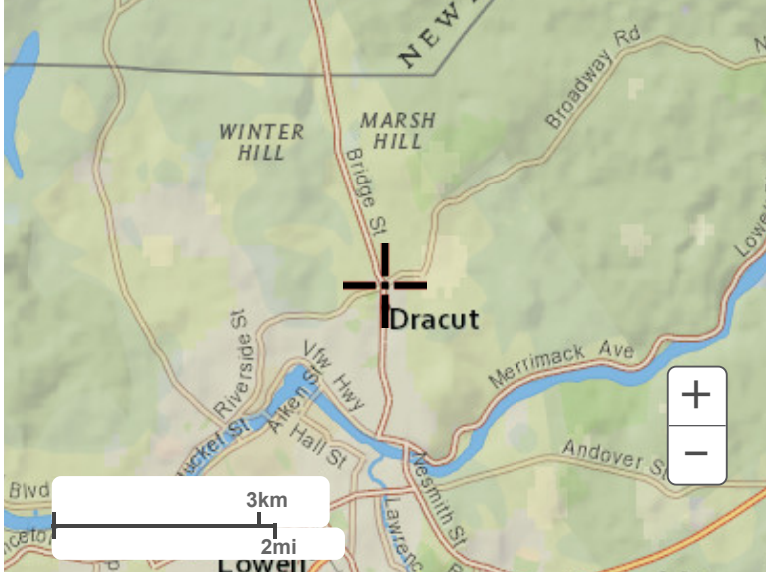
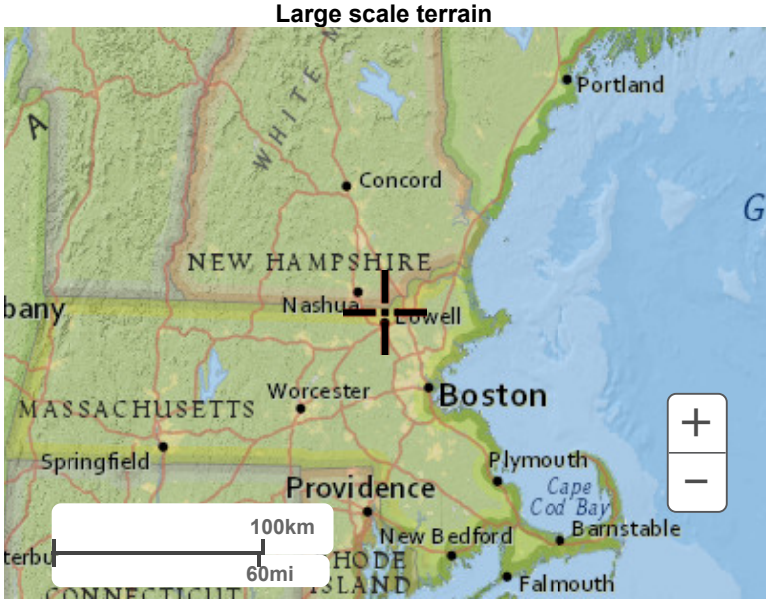
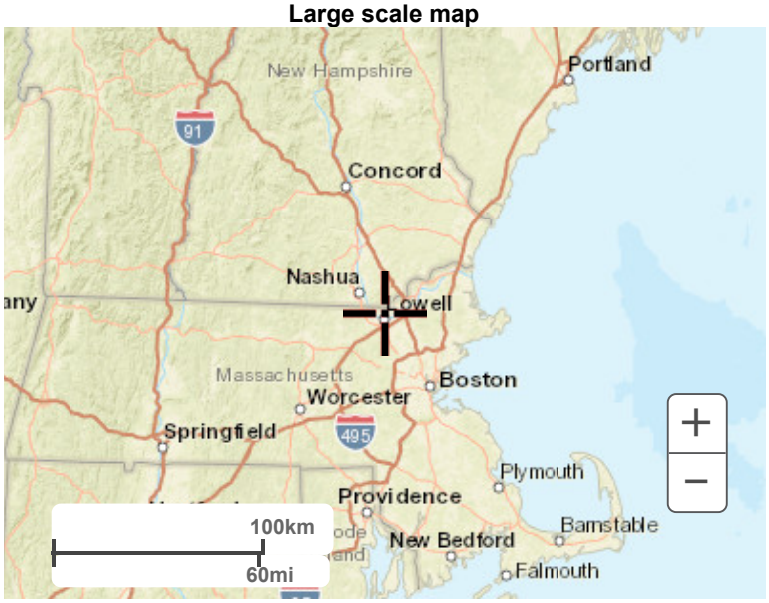
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

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Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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NOAA Atlas 14, Volume 10, Version 3
Location name: Dracut, Massachusetts, USA*
Latitude: 42.6689°, Longitude: -71.3028°
Elevation: m/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/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**3.79** (3.02-4.72)	**4.51** (3.59-5.62)	**5.69** (4.52-7.10)	**6.66** (5.24-8.35)	**7.99** (6.07-10.4)	**9.00** (6.70-12.0)	**10.1** (7.22-13.8)	**11.2** (7.62-15.8)	**12.9** (8.38-18.7)	**14.2** (9.02-21.1)
10-min	**2.69** (2.14-3.34)	**3.19** (2.54-3.98)	**4.02** (3.19-5.02)	**4.72** (3.71-5.92)	**5.66** (4.30-7.39)	**6.38** (4.73-8.48)	**7.12** (5.12-9.81)	**7.95** (5.39-11.2)	**9.13** (5.93-13.3)	**10.1** (6.39-14.9)
15-min	**2.11** (1.68-2.62)	**2.50** (2.00-3.12)	**3.16** (2.50-3.94)	**3.70** (2.92-4.64)	**4.44** (3.38-5.80)	**5.00** (3.71-6.66)	**5.59** (4.01-7.69)	**6.24** (4.23-8.78)	**7.16** (4.66-10.4)	**7.92** (5.01-11.7)
30-min	**1.45** (1.15-1.80)	**1.72** (1.37-2.14)	**2.17** (1.72-2.71)	**2.54** (2.00-3.19)	**3.05** (2.32-3.98)	**3.44** (2.55-4.58)	**3.84** (2.76-5.29)	**4.29** (2.91-6.03)	**4.92** (3.20-7.15)	**5.44** (3.44-8.05)
60-min	**0.920** (0.734-1.14)	**1.10** (0.872-1.36)	**1.38** (1.10-1.72)	**1.62** (1.27-2.03)	**1.94** (1.48-2.54)	**2.19** (1.62-2.91)	**2.44** (1.75-3.36)	**2.73** (1.85-3.84)	**3.13** (2.04-4.55)	**3.46** (2.19-5.12)
2-hr	**0.582** (0.468-0.720)	**0.702** (0.564-0.869)	**0.898** (0.718-1.12)	**1.06** (0.842-1.32)	**1.29** (0.986-1.68)	**1.45** (1.09-1.93)	**1.63** (1.19-2.26)	**1.85** (1.26-2.59)	**2.18** (1.42-3.15)	**2.47** (1.57-3.63)
3-hr	**0.445** (0.359-0.548)	**0.540** (0.435-0.666)	**0.695** (0.558-0.860)	**0.824** (0.657-1.02)	**1.00** (0.773-1.31)	**1.13** (0.855-1.51)	**1.27** (0.937-1.77)	**1.45** (0.990-2.03)	**1.73** (1.13-2.49)	**1.97** (1.25-2.89)
6-hr	**0.284** (0.230-0.347)	**0.346** (0.281-0.424)	**0.448** (0.362-0.550)	**0.532** (0.427-0.657)	**0.648** (0.503-0.840)	**0.734** (0.558-0.973)	**0.827** (0.612-1.15)	**0.946** (0.647-1.31)	**1.13** (0.741-1.62)	**1.30** (0.826-1.89)
12-hr	**0.178** (0.145-0.216)	**0.217** (0.177-0.264)	**0.281** (0.229-0.343)	**0.334** (0.270-0.410)	**0.407** (0.318-0.524)	**0.461** (0.352-0.606)	**0.520** (0.385-0.712)	**0.592** (0.407-0.816)	**0.706** (0.463-1.00)	**0.804** (0.514-1.16)
24-hr	**0.106** (0.088-0.128)	**0.131** (0.108-0.158)	**0.171** (0.140-0.207)	**0.204** (0.166-0.248)	**0.249** (0.196-0.319)	**0.283** (0.217-0.370)	**0.320** (0.238-0.435)	**0.365** (0.252-0.500)	**0.435** (0.287-0.615)	**0.496** (0.319-0.714)
2-day	**0.060** (0.050-0.072)	**0.075** (0.062-0.090)	**0.099** (0.081-0.119)	**0.119** (0.097-0.144)	**0.146** (0.116-0.186)	**0.166** (0.129-0.217)	**0.188** (0.142-0.256)	**0.217** (0.150-0.295)	**0.261** (0.173-0.366)	**0.300** (0.193-0.428)
3-day	**0.044** (0.036-0.052)	**0.054** (0.045-0.065)	**0.071** (0.059-0.086)	**0.086** (0.070-0.103)	**0.105** (0.084-0.133)	**0.120** (0.093-0.155)	**0.135** (0.102-0.184)	**0.155** (0.108-0.211)	**0.187** (0.124-0.262)	**0.215** (0.139-0.306)
4-day	**0.035** (0.030-0.042)	**0.044** (0.036-0.052)	**0.057** (0.047-0.068)	**0.068** (0.056-0.082)	**0.083** (0.066-0.105)	**0.094** (0.073-0.122)	**0.106** (0.080-0.144)	**0.122** (0.085-0.165)	**0.146** (0.097-0.204)	**0.168** (0.108-0.238)
7-day	**0.025** (0.021-0.029)	**0.029** (0.025-0.035)	**0.037** (0.031-0.045)	**0.044** (0.037-0.053)	**0.053** (0.042-0.066)	**0.060** (0.047-0.077)	**0.067** (0.051-0.089)	**0.076** (0.053-0.102)	**0.090** (0.060-0.125)	**0.102** (0.066-0.144)
10-day	**0.020** (0.017-0.024)	**0.024** (0.020-0.028)	**0.029** (0.025-0.035)	**0.034** (0.028-0.041)	**0.041** (0.032-0.051)	**0.045** (0.035-0.058)	**0.051** (0.038-0.067)	**0.057** (0.040-0.076)	**0.066** (0.044-0.092)	**0.075** (0.048-0.105)
20-day	**0.014** (0.012-0.016)	**0.016** (0.014-0.019)	**0.019** (0.016-0.023)	**0.022** (0.018-0.026)	**0.025** (0.020-0.031)	**0.028** (0.022-0.035)	**0.031** (0.023-0.040)	**0.034** (0.024-0.045)	**0.038** (0.026-0.053)	**0.042** (0.027-0.059)
30-day	**0.012** (0.010-0.014)	**0.013** (0.011-0.015)	**0.015** (0.013-0.018)	**0.017** (0.014-0.020)	**0.020** (0.016-0.024)	**0.022** (0.017-0.027)	**0.024** (0.018-0.030)	**0.026** (0.018-0.034)	**0.028** (0.019-0.039)	**0.030** (0.020-0.042)
45-day	**0.010** (0.008-0.011)	**0.011** (0.009-0.012)	**0.012** (0.010-0.014)	**0.014** (0.012-0.016)	**0.015** (0.013-0.019)	**0.017** (0.013-0.021)	**0.018** (0.014-0.023)	**0.020** (0.014-0.026)	**0.021** (0.014-0.029)	**0.023** (0.015-0.031)
60-day	**0.008** (0.007-0.010)	**0.009** (0.008-0.011)	**0.011** (0.009-0.012)	**0.012** (0.010-0.014)	**0.013** (0.011-0.016)	**0.014** (0.011-0.018)	**0.015** (0.012-0.019)	**0.016** (0.012-0.022)	**0.018** (0.012-0.024)	**0.019** (0.012-0.026)

[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.

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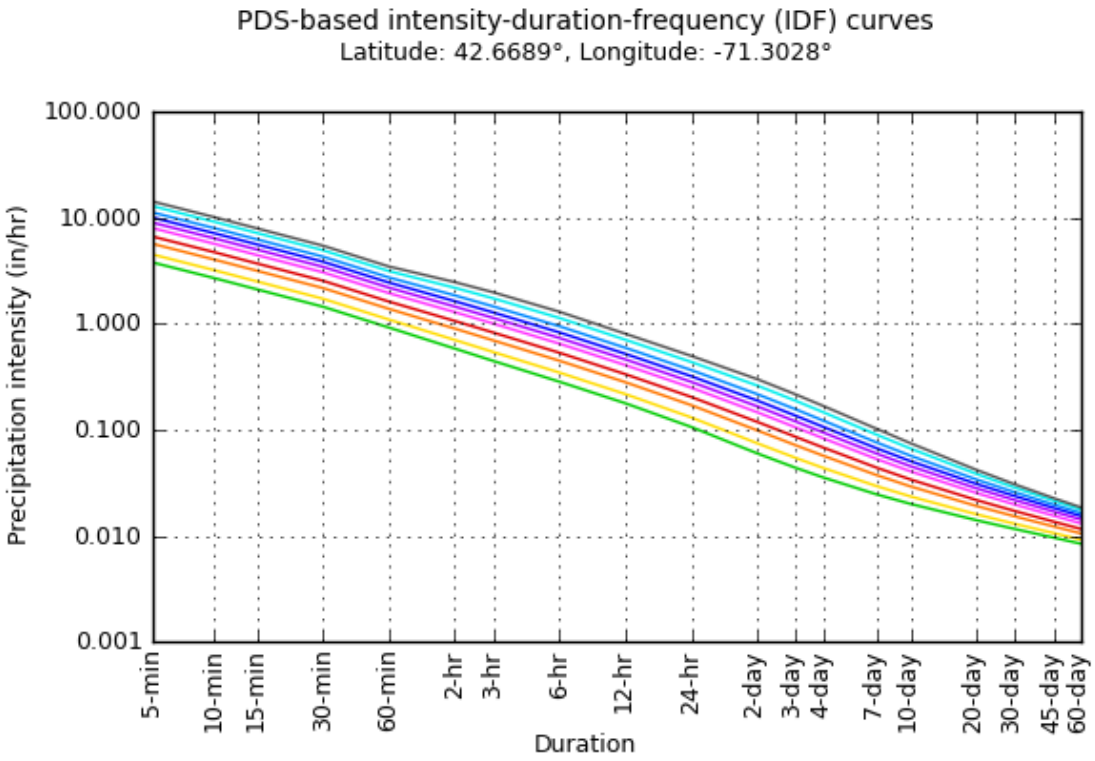
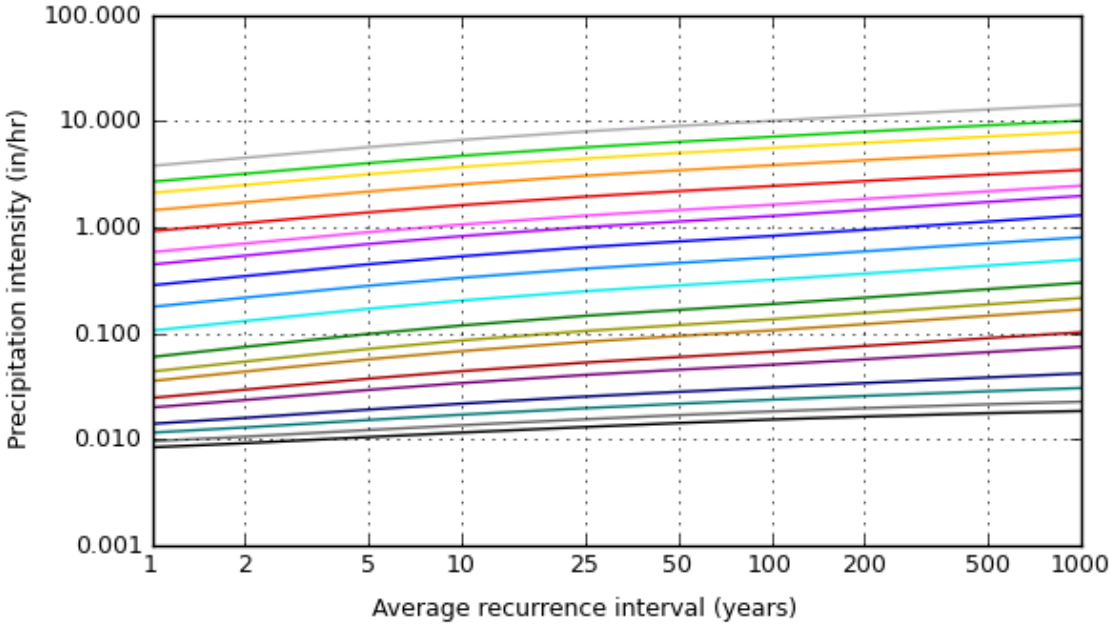
PF graphical





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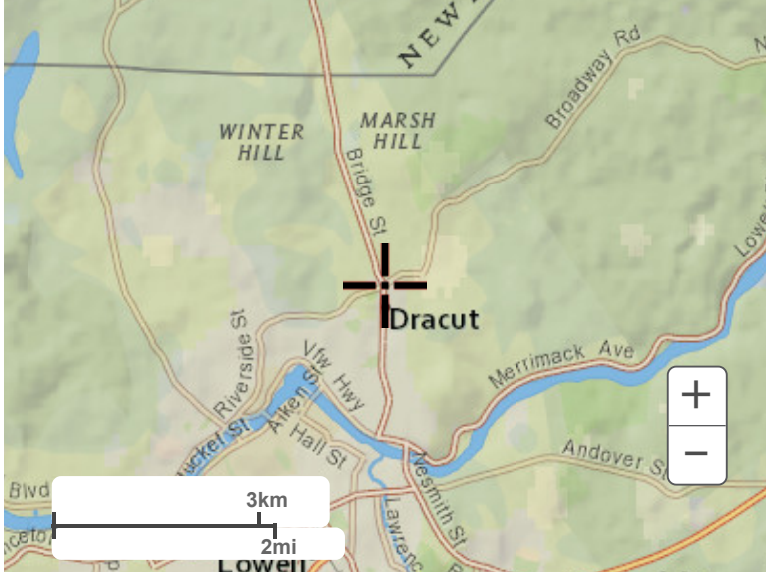
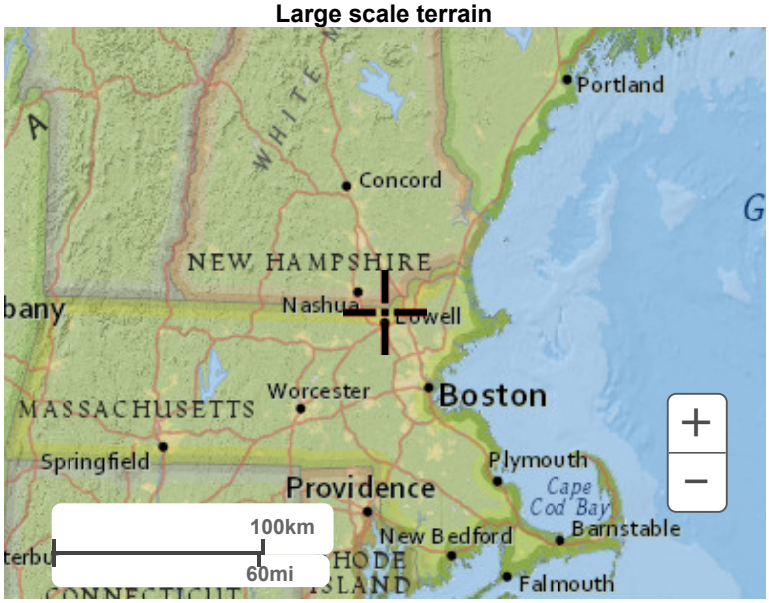
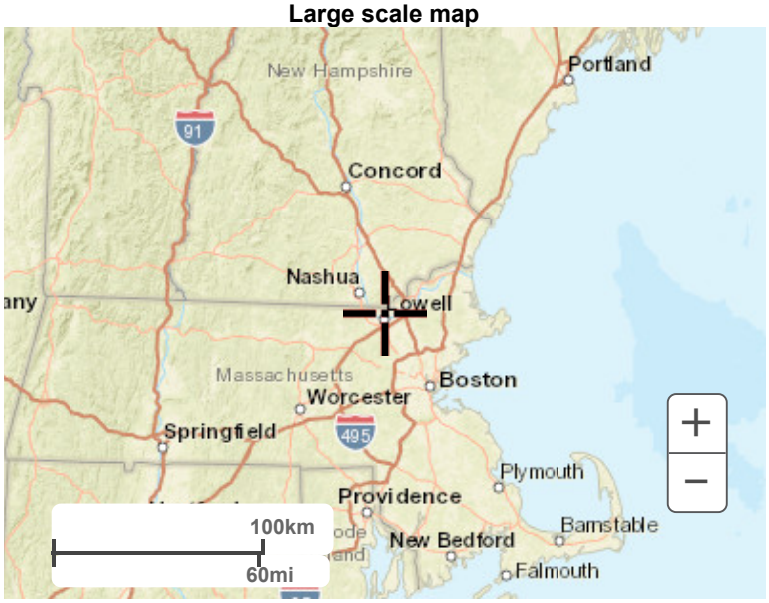
Small scale terrain



Large scale terrain



Large scale map



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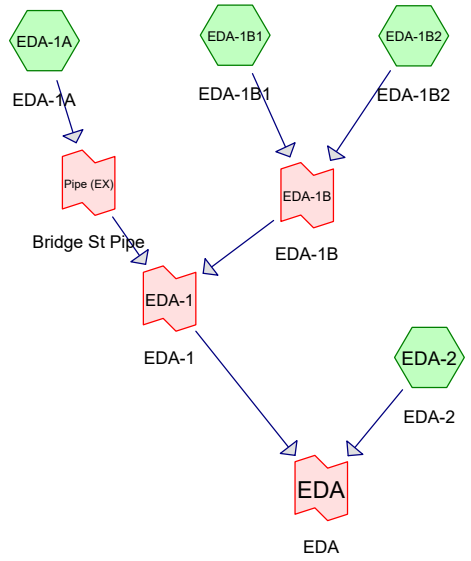
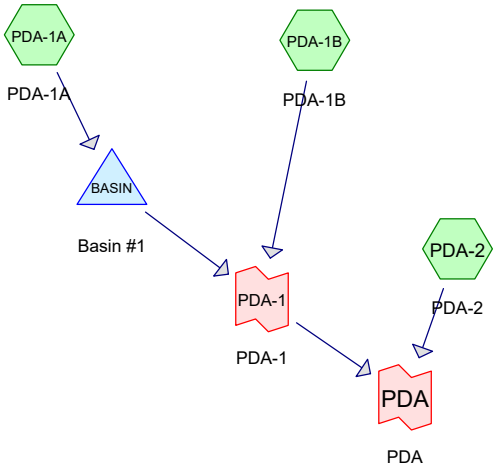
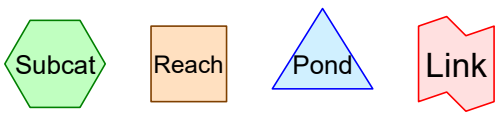






Routing Diagram for Dracut MA - Revised 5
Prepared by Solli Engineering, Printed 4/2/2025

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type III 24-hr		Default	24.00	1	3.13	2
2	10-yr	Type III 24-hr		Default	24.00	1	4.89	2
3	25-yr	Type III 24-hr		Default	24.00	1	5.98	2
4	50-yr	Type III 24-hr		Default	24.00	1	6.79	2
5	100-yr	Type III 24-hr		Default	24.00	1	7.67	2

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment EDA-1A: EDA-1A Runoff Area=0.640 ac 84.38% Impervious Runoff Depth>2.47"
Tc=6.0 min CN=94 Runoff=1.78 cfs 0.132 af

Subcatchment EDA-1B1: EDA-1B1 Runoff Area=0.691 ac 10.13% Impervious Runoff Depth>1.05"
Flow Length=150' Tc=6.1 min CN=75 Runoff=0.81 cfs 0.060 af

Subcatchment EDA-1B2: EDA-1B2 Runoff Area=0.320 ac 93.75% Impervious Runoff Depth>2.78"
Tc=6.0 min CN=97 Runoff=0.96 cfs 0.074 af

Subcatchment EDA-2: EDA-2 Runoff Area=0.290 ac 0.00% Impervious Runoff Depth>0.79"
Flow Length=150' Tc=9.1 min CN=70 Runoff=0.21 cfs 0.019 af

Subcatchment PDA-1A: PDA-1A Runoff Area=1.480 ac 67.57% Impervious Runoff Depth>2.10"
Tc=6.0 min CN=90 Runoff=3.61 cfs 0.259 af

Subcatchment PDA-1B: PDA-1B Runoff Area=0.435 ac 70.80% Impervious Runoff Depth>2.19"
Tc=6.0 min CN=91 Runoff=1.10 cfs 0.079 af

Subcatchment PDA-2: PDA-2 Runoff Area=0.024 ac 0.00% Impervious Runoff Depth>0.99"
Tc=6.0 min CN=74 Runoff=0.03 cfs 0.002 af

Pond BASIN: Basin #1 Peak Elev=144.85' Storage=4,539 cf Inflow=3.61 cfs 0.259 af
Discarded=0.22 cfs 0.204 af Primary=0.87 cfs 0.034 af Outflow=1.09 cfs 0.238 af

Link EDA: EDA Inflow=3.72 cfs 0.285 af
Primary=3.72 cfs 0.285 af

Link EDA-1: EDA-1 Inflow=3.54 cfs 0.266 af
Primary=3.54 cfs 0.266 af

Link EDA-1B: EDA-1B Inflow=1.76 cfs 0.134 af
Primary=1.76 cfs 0.134 af

Link PDA: PDA Inflow=1.22 cfs 0.115 af
Primary=1.22 cfs 0.115 af

Link PDA-1: PDA-1 Inflow=1.21 cfs 0.113 af
Primary=1.21 cfs 0.113 af

Link Pipe (EX): Bridge St Pipe Inflow=1.78 cfs 0.132 af
Primary=1.78 cfs 0.132 af

Summary for Subcatchment EDA-1A: EDA-1A

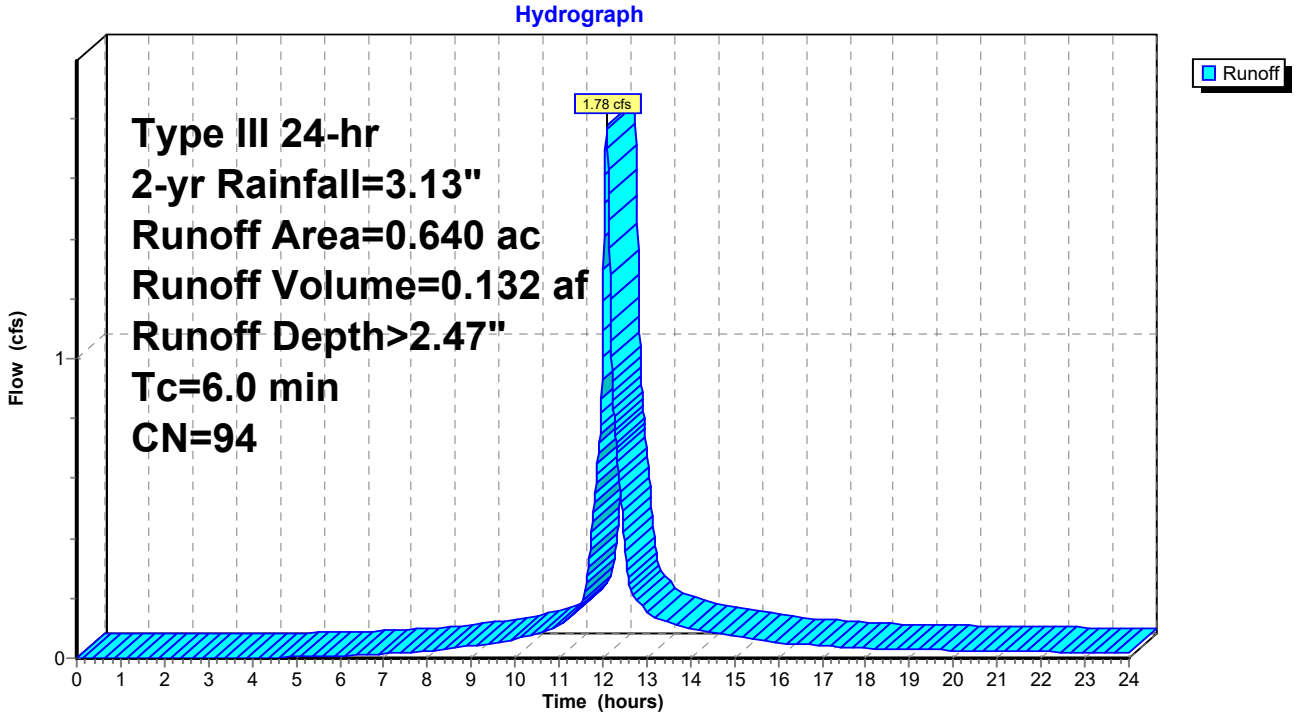
Runoff = 1.78 cfs @ 12.08 hrs, Volume= 0.132 af, Depth> 2.47"
Routed to Link Pipe (EX) : Bridge St Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.13"

Area (ac)	CN	Description
0.540	98	Paved parking, HSG C
0.100	74	>75% Grass cover, Good, HSG C
0.640	94	Weighted Average
0.100		15.63% Pervious Area
0.540		84.38% Impervious Area

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

Subcatchment EDA-1A: EDA-1A



Summary for Subcatchment EDA-1B1: EDA-1B1

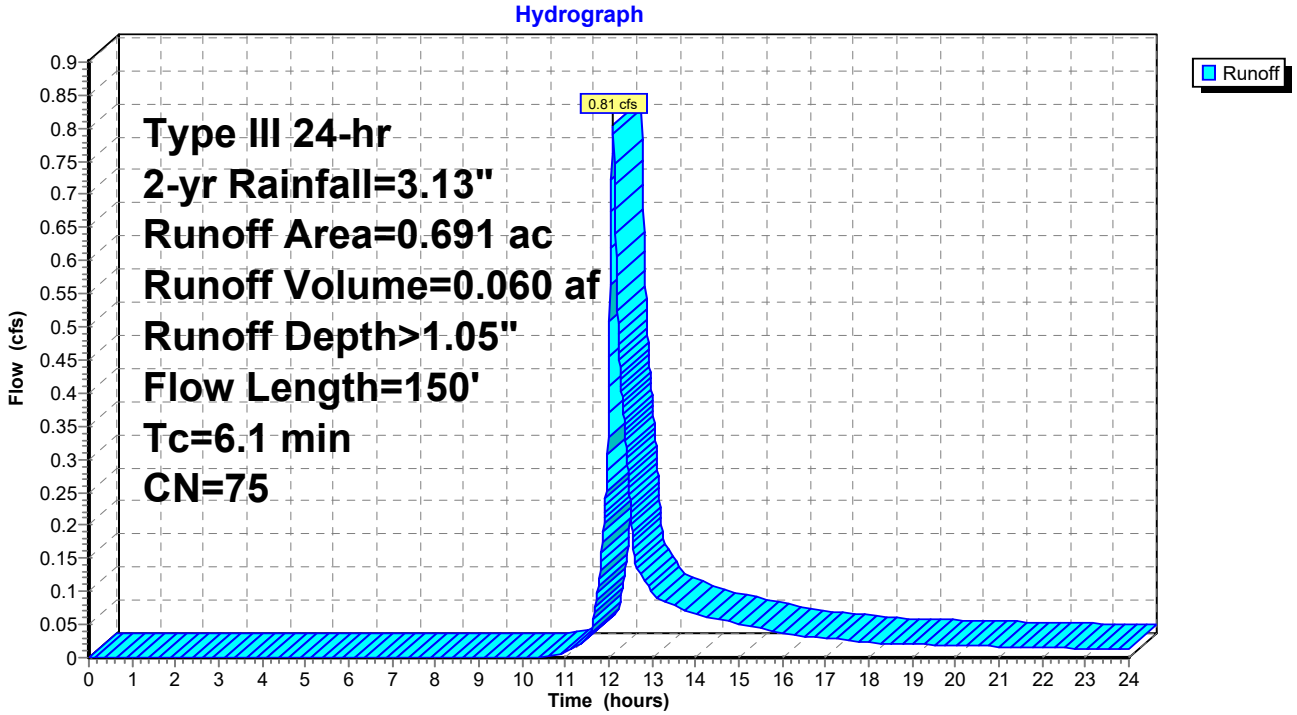
Runoff = 0.81 cfs @ 12.10 hrs, Volume= 0.060 af, Depth> 1.05"
Routed to Link EDA-1B : EDA-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.13"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG C
0.240	70	Woods, Good, HSG C
0.381	74	>75% Grass cover, Good, HSG C
0.691	75	Weighted Average
0.621		89.87% Pervious Area
0.070		10.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.13"
0.4	100	0.0660	4.14		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
6.1	150	Total			

Subcatchment EDA-1B1: EDA-1B1



Summary for Subcatchment EDA-1B2: EDA-1B2

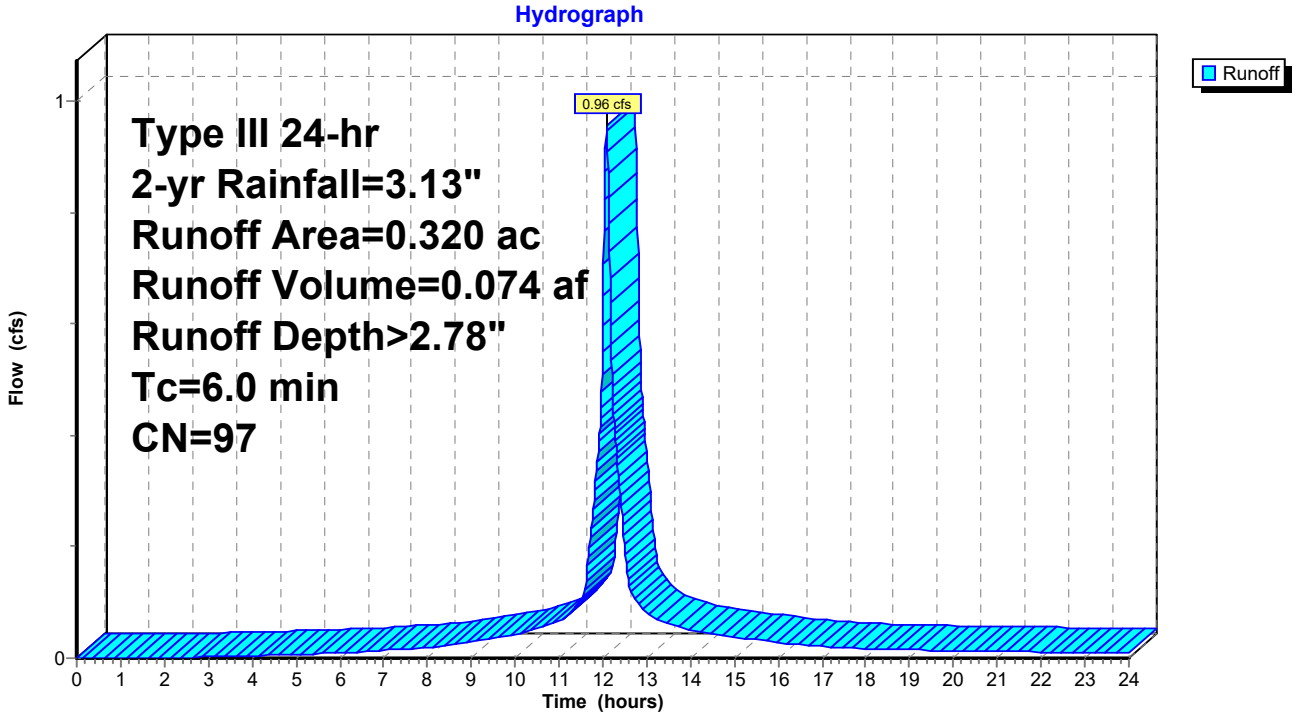
Runoff = 0.96 cfs @ 12.08 hrs, Volume= 0.074 af, Depth> 2.78"
Routed to Link EDA-1B : EDA-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.13"

Area (ac)	CN	Description
0.300	98	Paved parking, HSG C
0.020	74	>75% Grass cover, Good, HSG C
0.320	97	Weighted Average
0.020		6.25% Pervious Area
0.300		93.75% Impervious Area

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

Subcatchment EDA-1B2: EDA-1B2



Summary for Subcatchment EDA-2: EDA-2

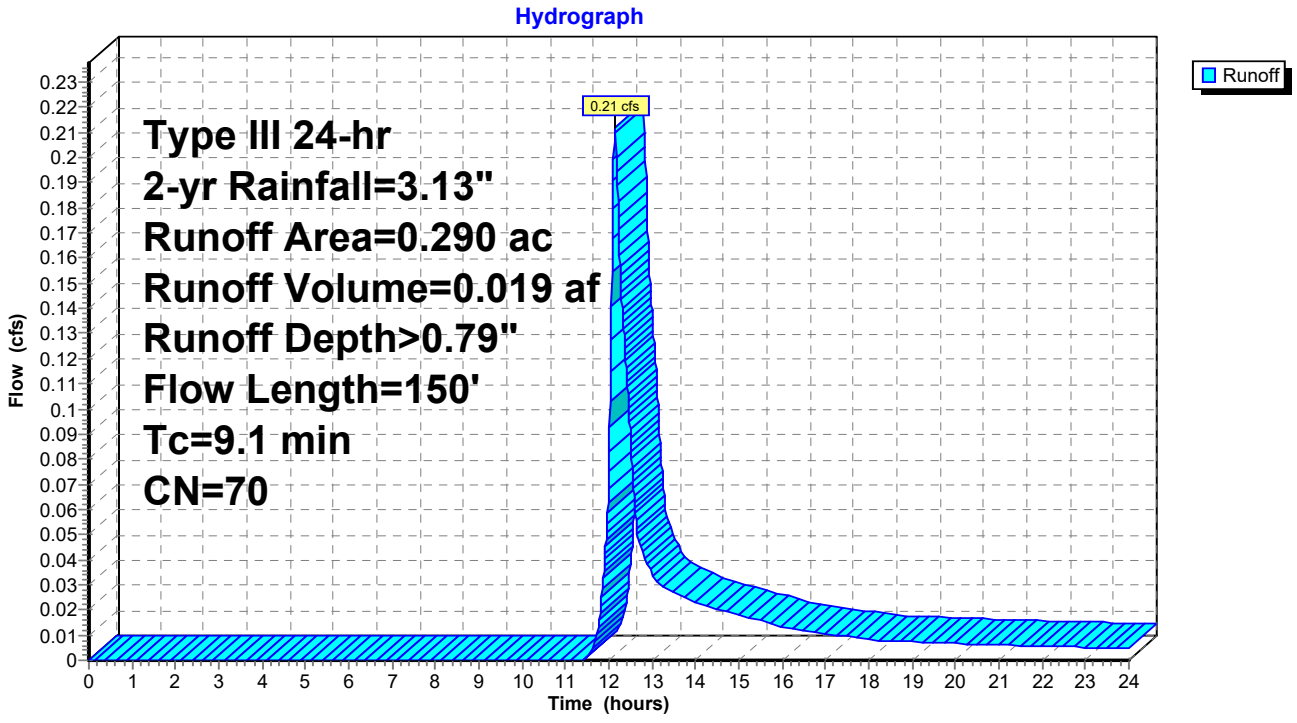
Runoff = 0.21 cfs @ 12.14 hrs, Volume= 0.019 af, Depth> 0.79"
Routed to Link EDA : EDA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.13"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG C
0.260	70	Woods, Good, HSG C
0.030	74	>75% Grass cover, Good, HSG C
0.290	70	Weighted Average
0.290		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0600	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.13"
1.1	100	0.0900	1.50		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
9.1	150	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment PDA-1A: PDA-1A

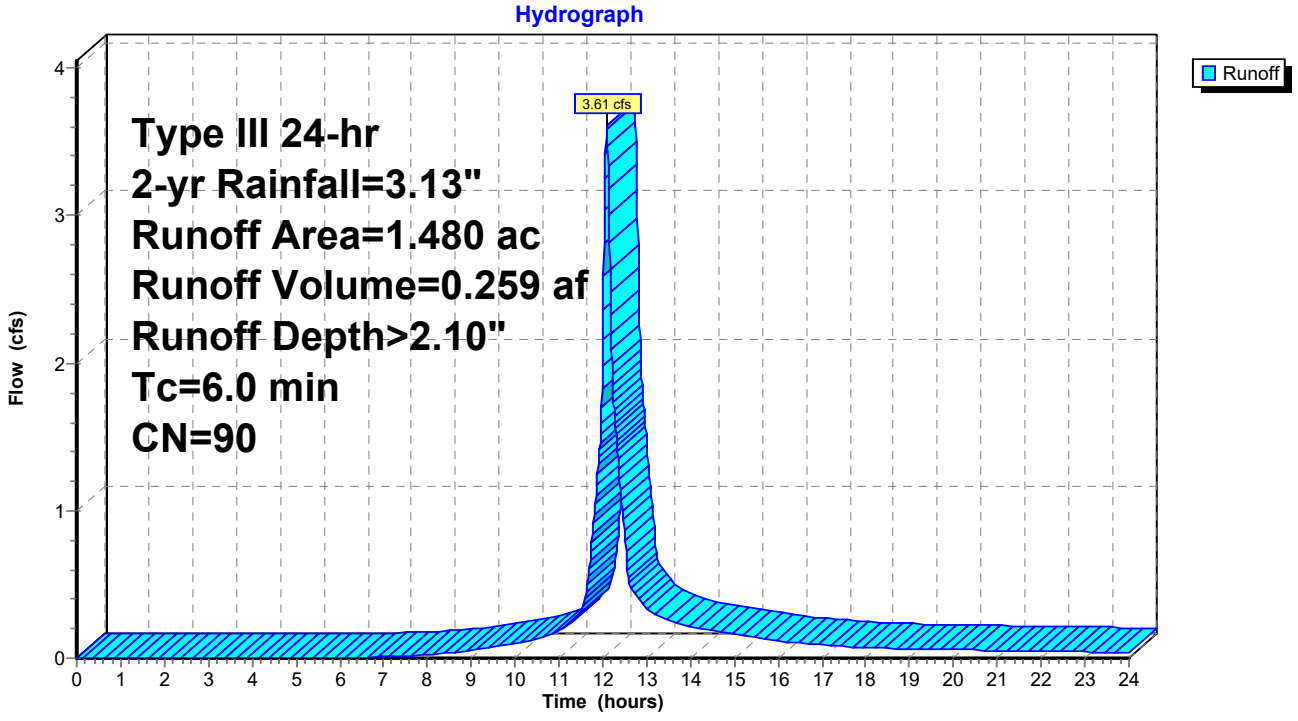
Runoff = 3.61 cfs @ 12.09 hrs, Volume= 0.259 af, Depth> 2.10"
Routed to Pond BASIN : Basin #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.13"

Area (ac)	CN	Description
1.000	98	Paved parking, HSG C
0.480	74	>75% Grass cover, Good, HSG C
1.480	90	Weighted Average
0.480		32.43% Pervious Area
1.000		67.57% Impervious Area

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

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

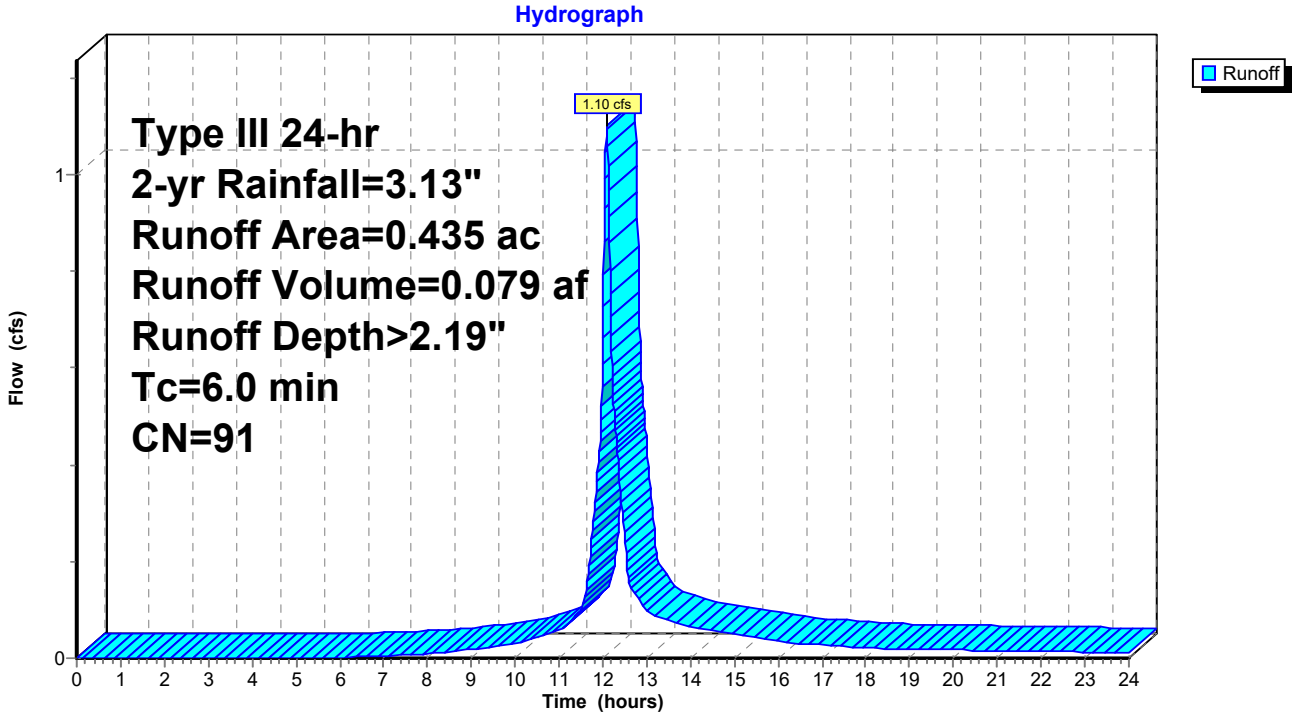
Runoff = 1.10 cfs @ 12.09 hrs, Volume= 0.079 af, Depth> 2.19"
Routed to Link PDA-1 : PDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.13"

Area (ac)	CN	Description
0.308	98	Paved parking, HSG C
0.127	74	>75% Grass cover, Good, HSG C
0.435	91	Weighted Average
0.127		29.20% Pervious Area
0.308		70.80% Impervious Area

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

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-2: PDA-2

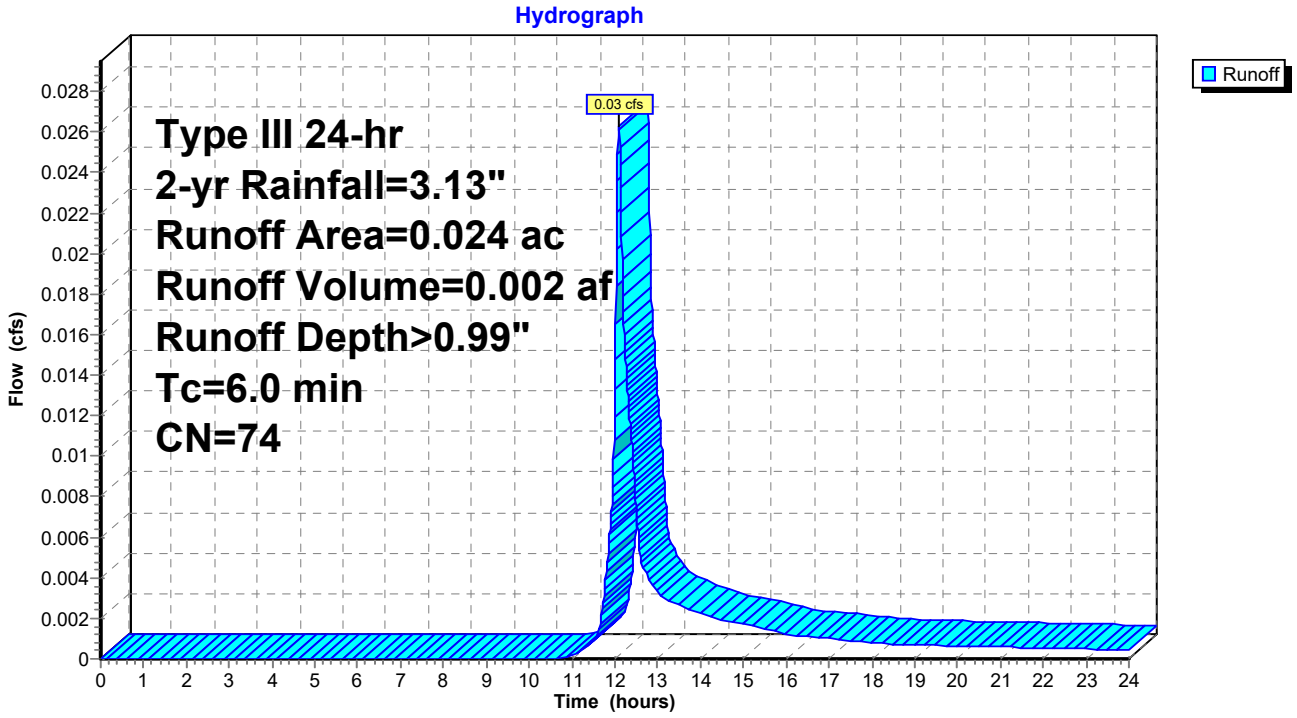
Runoff = 0.03 cfs @ 12.10 hrs, Volume= 0.002 af, Depth> 0.99"
Routed to Link PDA : PDA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.13"

Area (ac)	CN	Description
0.024	74	>75% Grass cover, Good, HSG C
0.024		100.00% Pervious Area

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

Subcatchment PDA-2: PDA-2



Summary for Pond BASIN: Basin #1

Inflow Area = 1.480 ac, 67.57% Impervious, Inflow Depth > 2.10" for 2-yr event
Inflow = 3.61 cfs @ 12.09 hrs, Volume= 0.259 af
Outflow = 1.09 cfs @ 12.42 hrs, Volume= 0.238 af, Atten= 70%, Lag= 20.0 min
Discarded = 0.22 cfs @ 12.42 hrs, Volume= 0.204 af
Primary = 0.87 cfs @ 12.42 hrs, Volume= 0.034 af
Routed to Link PDA-1 : PDA-1

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 144.85' @ 12.42 hrs Surf.Area= 3,418 sf Storage= 4,539 cf

Plug-Flow detention time= 193.4 min calculated for 0.238 af (92% of inflow)
Center-of-Mass det. time= 152.0 min (959.1 - 807.1)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	14,134 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

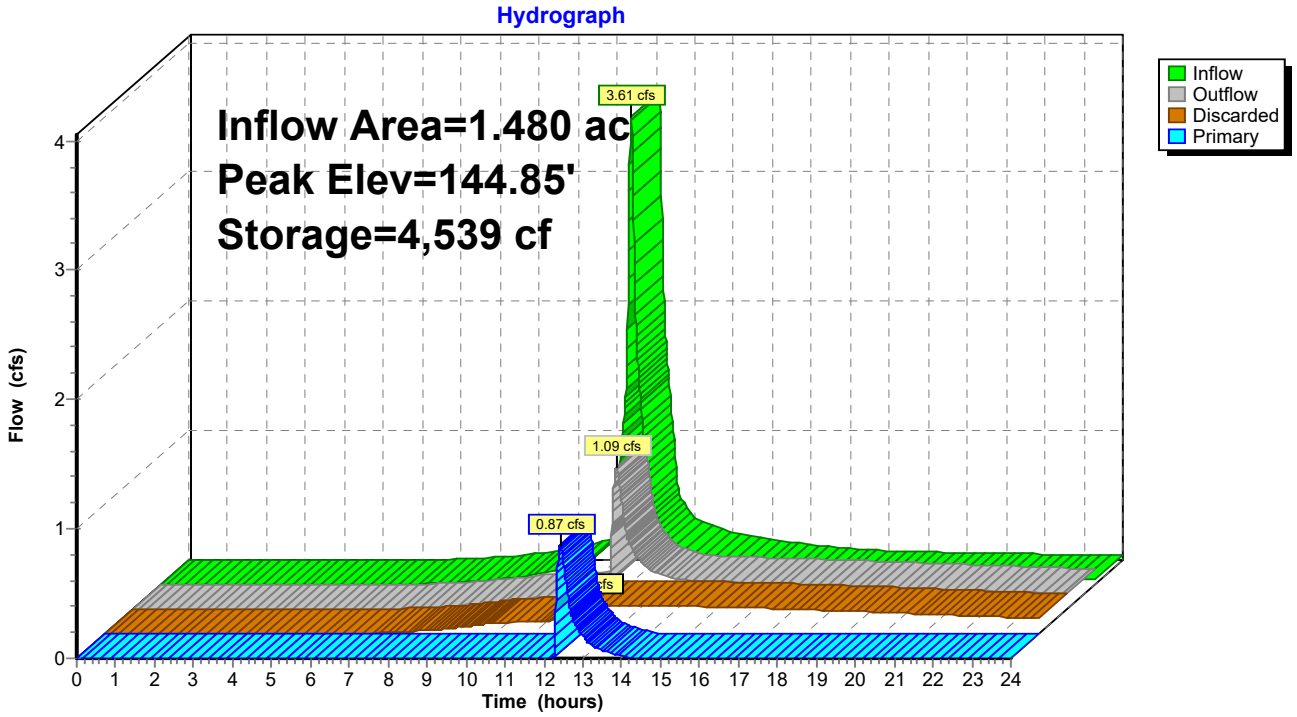
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
143.00	1,516	0	0	1,516
144.00	2,543	2,007	2,007	2,555
145.00	3,582	3,048	5,055	3,612
146.00	4,683	4,120	9,175	4,737
147.00	5,239	4,958	14,134	5,346

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	**2.410 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 135.00'
#2	Primary	142.00'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 142.00' / 141.05' S= 0.0594 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	144.75'	**2.5" x 2.5" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (39% open area) Limited to weir flow at low heads
#4	Primary	145.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.22 cfs @ 12.42 hrs HW=144.85' (Free Discharge)
└**1=Exfiltration** (Controls 0.22 cfs)

Primary OutFlow Max=0.86 cfs @ 12.42 hrs HW=144.85' (Free Discharge)
├**2=Culvert** (Passes 0.86 cfs of 4.58 cfs potential flow)
│└**3=Orifice/Grate** (Weir Controls 0.86 cfs @ 1.05 fps)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond BASIN: Basin #1



Stage-Discharge for Pond BASIN: Basin #1

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
143.00	0.00	0.00	0.00
143.05	0.09	0.09	0.00
143.10	0.09	0.09	0.00
143.15	0.09	0.09	0.00
143.20	0.10	0.10	0.00
143.25	0.10	0.10	0.00
143.30	0.10	0.10	0.00
143.35	0.11	0.11	0.00
143.40	0.11	0.11	0.00
143.45	0.11	0.11	0.00
143.50	0.12	0.12	0.00
143.55	0.12	0.12	0.00
143.60	0.13	0.13	0.00
143.65	0.13	0.13	0.00
143.70	0.13	0.13	0.00
143.75	0.14	0.14	0.00
143.80	0.14	0.14	0.00
143.85	0.14	0.14	0.00
143.90	0.15	0.15	0.00
143.95	0.15	0.15	0.00
144.00	0.16	0.16	0.00
144.05	0.16	0.16	0.00
144.10	0.16	0.16	0.00
144.15	0.17	0.17	0.00
144.20	0.17	0.17	0.00
144.25	0.17	0.17	0.00
144.30	0.18	0.18	0.00
144.35	0.18	0.18	0.00
144.40	0.19	0.19	0.00
144.45	0.19	0.19	0.00
144.50	0.19	0.19	0.00
144.55	0.20	0.20	0.00
144.60	0.20	0.20	0.00
144.65	0.21	0.21	0.00
144.70	0.21	0.21	0.00
144.75	0.21	0.21	0.00
144.80	0.51	0.22	0.29
144.85	1.05	0.22	0.83
144.90	1.75	0.23	1.52
144.95	2.57	0.23	2.34
145.00	3.51	0.24	3.27
145.05	4.36	0.24	4.12
145.10	4.69	0.24	4.45
145.15	5.01	0.25	4.76
145.20	5.16	0.25	4.91
145.25	5.21	0.26	4.95
145.30	5.26	0.26	5.00
145.35	5.31	0.27	5.04
145.40	5.35	0.27	5.08
145.45	5.40	0.27	5.13
145.50	5.45	0.28	5.17
145.55	5.76	0.28	5.48
145.60	6.29	0.29	6.01
145.65	6.97	0.29	6.68
145.70	7.76	0.30	7.46
145.75	8.69	0.30	8.39
145.80	9.74	0.31	9.43
145.85	10.90	0.31	10.59
145.90	12.17	0.32	11.85
145.95	13.59	0.32	13.27
146.00	15.12	0.32	14.80
146.05	16.77	0.33	16.44
146.10	18.54	0.33	18.21
146.15	20.16	0.33	19.83
146.20	21.83	0.34	21.50
146.25	23.56	0.34	23.22
146.30	25.34	0.34	25.00
146.35	27.21	0.35	26.86
146.40	29.13	0.35	28.78
146.45	31.10	0.35	30.75
146.50	33.13	0.36	32.77
146.55	35.18	0.36	34.82
146.60	37.27	0.36	36.91
146.65	39.41	0.37	39.04
146.70	41.59	0.37	41.22
146.75	43.77	0.37	43.40
146.80	45.99	0.38	45.62
146.85	48.25	0.38	47.87
146.90	50.54	0.38	50.16
146.95	52.95	0.39	52.57
147.00	**55.41**	**0.39**	**55.02**

Stage-Area-Storage for Pond BASIN: Basin #1

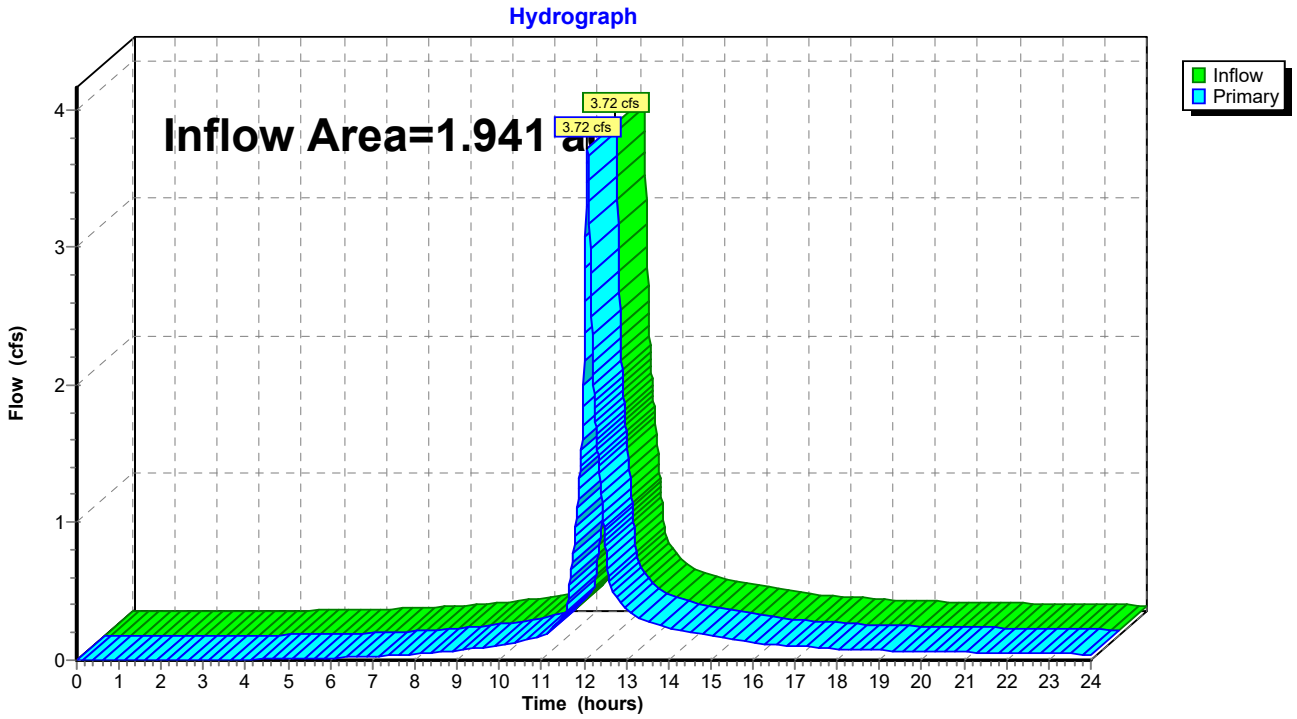
Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
143.00	1,516	1,516	0
143.10	1,607	1,608	156
143.20	1,700	1,702	321
143.30	1,796	1,800	496
143.40	1,895	1,900	681
143.50	1,996	2,002	875
143.60	2,101	2,107	1,080
143.70	2,207	2,215	1,296
143.80	2,316	2,326	1,522
143.90	2,428	2,439	1,759
144.00	2,543	2,555	2,007
144.10	2,639	2,653	2,267
144.20	2,737	2,752	2,535
144.30	2,836	2,853	2,814
144.40	2,937	2,956	3,103
144.50	3,040	3,061	3,401
144.60	3,145	3,168	3,711
144.70	3,252	3,276	4,031
144.80	3,360	3,386	4,361
144.90	3,470	3,499	4,703
145.00	3,582	3,612	5,055
145.10	3,685	3,718	5,419
145.20	3,790	3,825	5,792
145.30	3,897	3,934	6,177
145.40	4,005	4,044	6,572
145.50	4,114	4,156	6,978
145.60	4,225	4,269	7,395
145.70	4,337	4,384	7,823
145.80	4,451	4,500	8,262
145.90	4,566	4,617	8,713
146.00	4,683	4,737	9,175
146.10	4,737	4,796	9,646
146.20	4,792	4,856	10,123
146.30	4,847	4,916	10,605
146.40	4,902	4,976	11,092
146.50	4,957	5,037	11,585
146.60	5,013	5,098	12,084
146.70	5,069	5,160	12,588
146.80	5,125	5,221	13,097
146.90	5,182	5,284	13,613
147.00	**5,239**	**5,346**	**14,134**

Summary for Link EDA: EDA

Inflow Area = 1.941 ac, 46.88% Impervious, Inflow Depth > 1.76" for 2-yr event
Inflow = 3.72 cfs @ 12.09 hrs, Volume= 0.285 af
Primary = 3.72 cfs @ 12.09 hrs, Volume= 0.285 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EDA: EDA

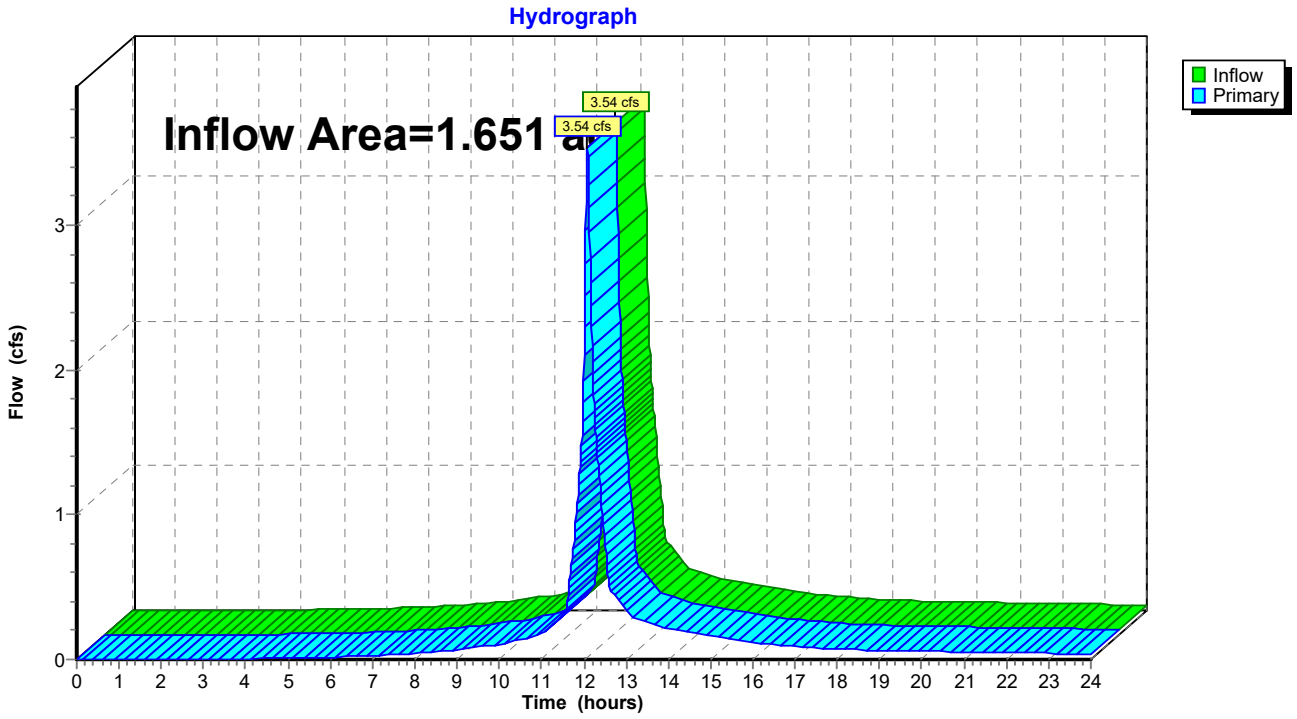


Summary for Link EDA-1: EDA-1

Inflow Area = 1.651 ac, 55.12% Impervious, Inflow Depth > 1.94" for 2-yr event
Inflow = 3.54 cfs @ 12.09 hrs, Volume= 0.266 af
Primary = 3.54 cfs @ 12.09 hrs, Volume= 0.266 af, Atten= 0%, Lag= 0.0 min
Routed to Link EDA : EDA

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EDA-1: EDA-1

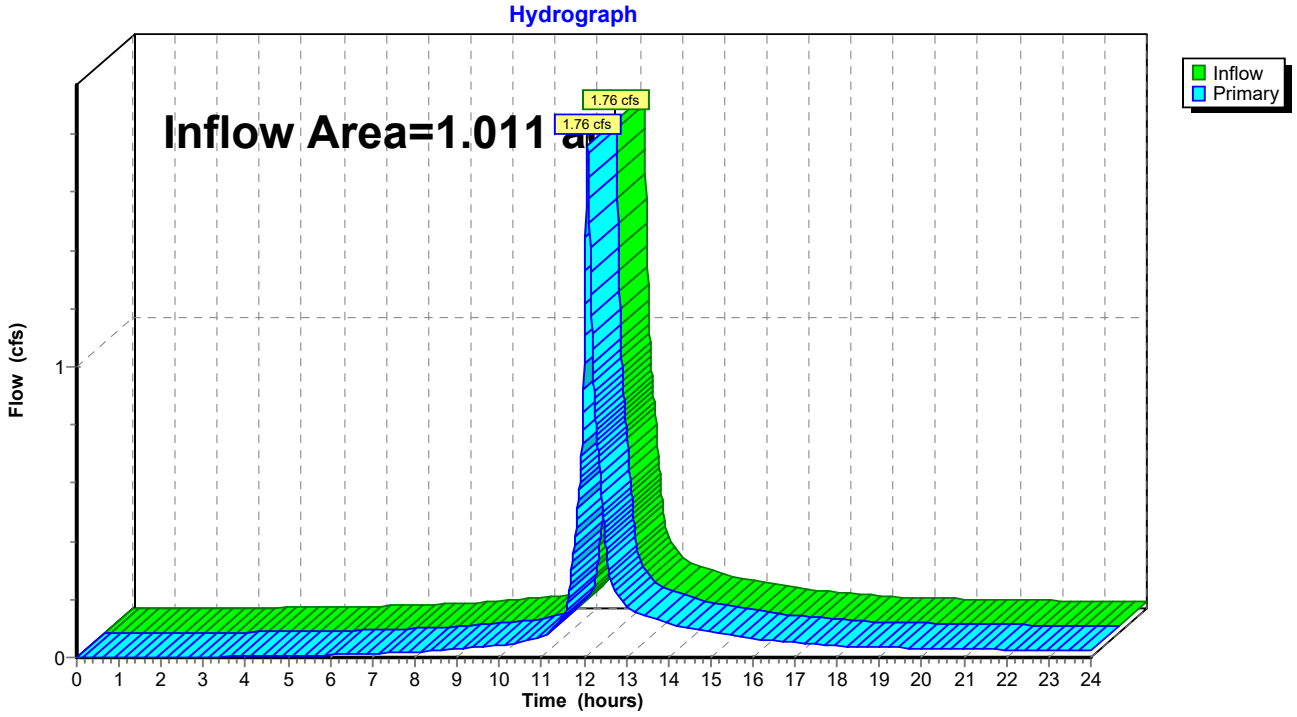


Summary for Link EDA-1B: EDA-1B

Inflow Area = 1.011 ac, 36.60% Impervious, Inflow Depth > 1.60" for 2-yr event
Inflow = 1.76 cfs @ 12.09 hrs, Volume= 0.134 af
Primary = 1.76 cfs @ 12.09 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.0 min
Routed to Link EDA-1 : EDA-1

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EDA-1B: EDA-1B

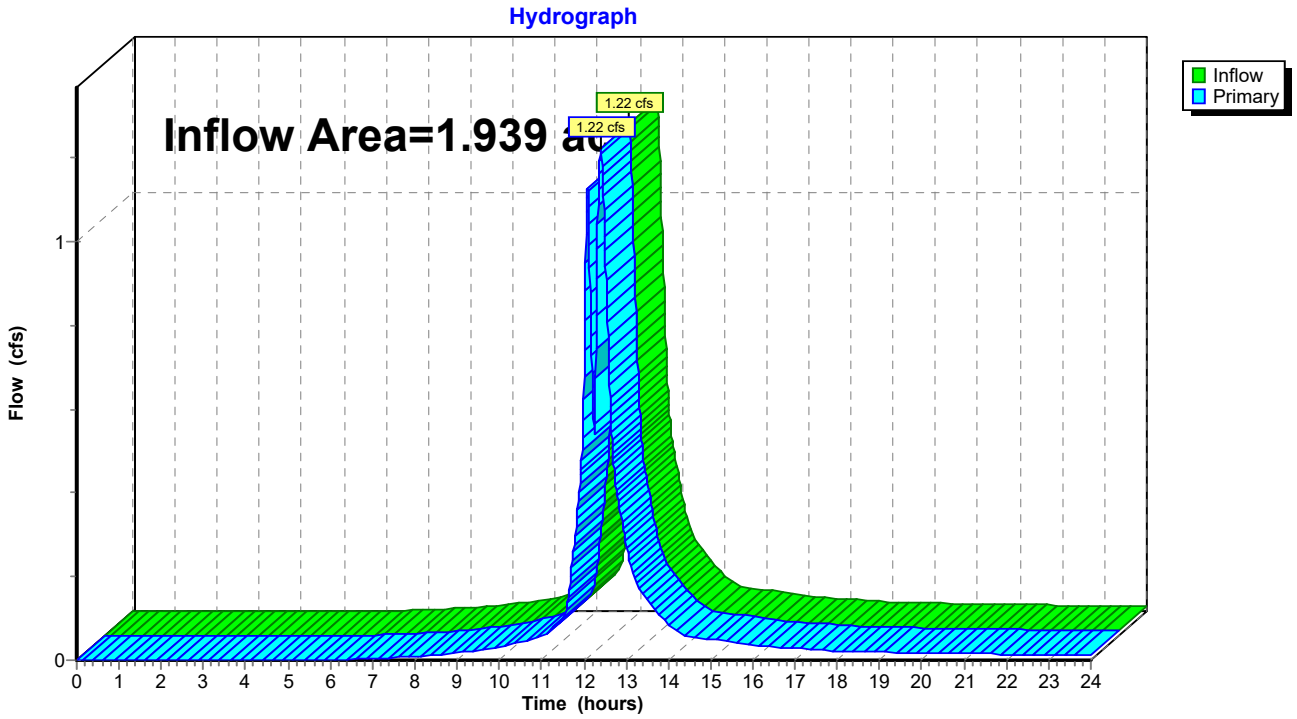


Summary for Link PDA: PDA

Inflow Area = 1.939 ac, 67.46% Impervious, Inflow Depth > 0.71" for 2-yr event
Inflow = 1.22 cfs @ 12.40 hrs, Volume= 0.115 af
Primary = 1.22 cfs @ 12.40 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link PDA: PDA

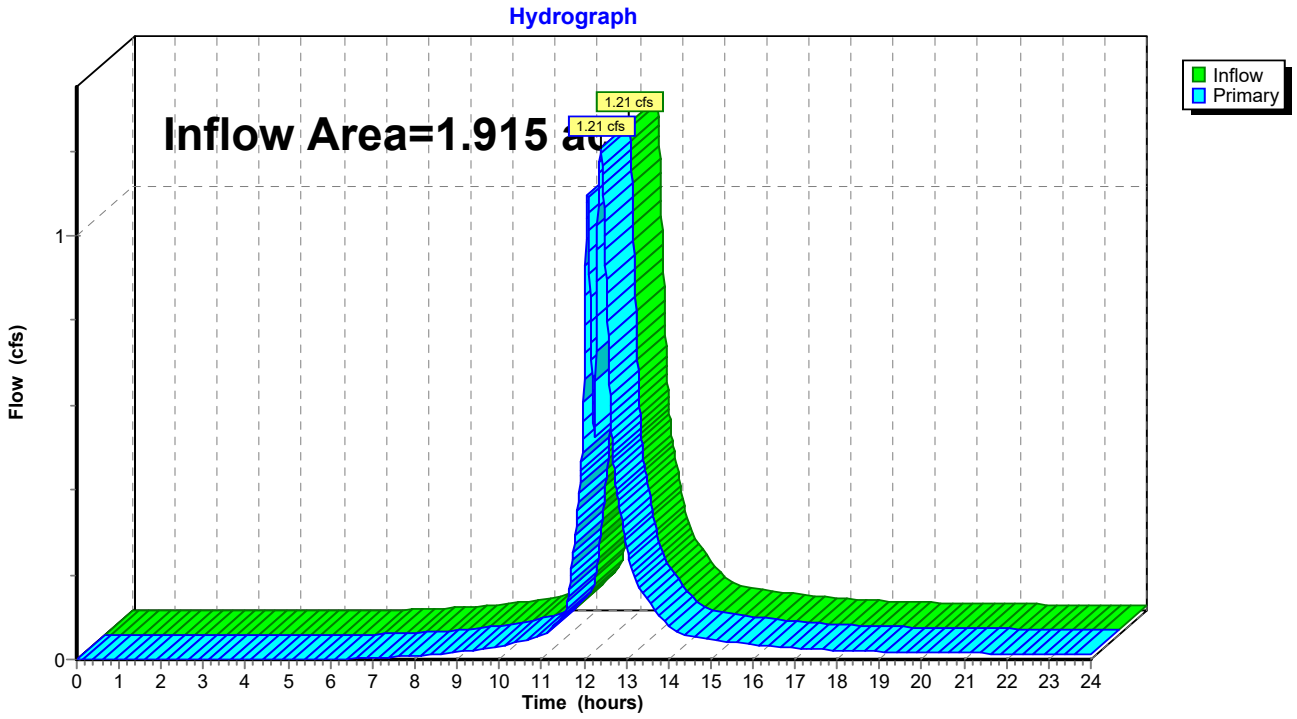


Summary for Link PDA-1: PDA-1

Inflow Area = 1.915 ac, 68.30% Impervious, Inflow Depth > 0.71" for 2-yr event
Inflow = 1.21 cfs @ 12.40 hrs, Volume= 0.113 af
Primary = 1.21 cfs @ 12.40 hrs, Volume= 0.113 af, Atten= 0%, Lag= 0.0 min
Routed to Link PDA : PDA

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link PDA-1: PDA-1

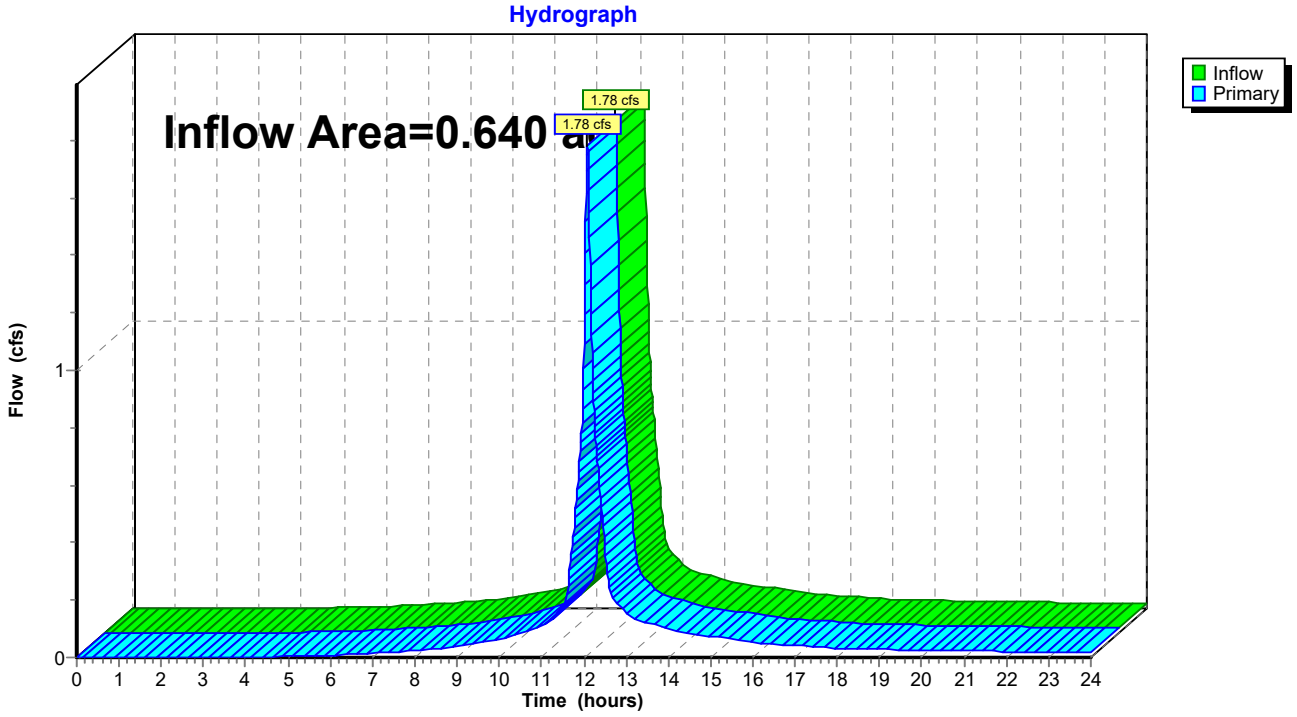


Summary for Link Pipe (EX): Bridge St Pipe

Inflow Area = 0.640 ac, 84.38% Impervious, Inflow Depth > 2.47" for 2-yr event
Inflow = 1.78 cfs @ 12.08 hrs, Volume= 0.132 af
Primary = 1.78 cfs @ 12.08 hrs, Volume= 0.132 af, Atten= 0%, Lag= 0.0 min
Routed to Link EDA-1 : EDA-1

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link Pipe (EX): Bridge St Pipe



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment EDA-1A: EDA-1A Runoff Area=0.640 ac 84.38% Impervious Runoff Depth>4.20"
Tc=6.0 min CN=94 Runoff=2.93 cfs 0.224 af

Subcatchment EDA-1B1: EDA-1B1 Runoff Area=0.691 ac 10.13% Impervious Runoff Depth>2.36"
Flow Length=150' Tc=6.1 min CN=75 Runoff=1.90 cfs 0.136 af

Subcatchment EDA-1B2: EDA-1B2 Runoff Area=0.320 ac 93.75% Impervious Runoff Depth>4.53"
Tc=6.0 min CN=97 Runoff=1.52 cfs 0.121 af

Subcatchment EDA-2: EDA-2 Runoff Area=0.290 ac 0.00% Impervious Runoff Depth>1.95"
Flow Length=150' Tc=9.1 min CN=70 Runoff=0.58 cfs 0.047 af

Subcatchment PDA-1A: PDA-1A Runoff Area=1.480 ac 67.57% Impervious Runoff Depth>3.77"
Tc=6.0 min CN=90 Runoff=6.32 cfs 0.465 af

Subcatchment PDA-1B: PDA-1B Runoff Area=0.435 ac 70.80% Impervious Runoff Depth>3.87"
Tc=6.0 min CN=91 Runoff=1.89 cfs 0.140 af

Subcatchment PDA-2: PDA-2 Runoff Area=0.024 ac 0.00% Impervious Runoff Depth>2.27"
Tc=6.0 min CN=74 Runoff=0.06 cfs 0.005 af

Pond BASIN: Basin #1 Peak Elev=145.12' Storage=5,481 cf Inflow=6.32 cfs 0.465 af
Discarded=0.25 cfs 0.239 af Primary=4.56 cfs 0.185 af Outflow=4.80 cfs 0.424 af

Link EDA: EDA Inflow=6.86 cfs 0.528 af
Primary=6.86 cfs 0.528 af

Link EDA-1: EDA-1 Inflow=6.35 cfs 0.480 af
Primary=6.35 cfs 0.480 af

Link EDA-1B: EDA-1B Inflow=3.41 cfs 0.257 af
Primary=3.41 cfs 0.257 af

Link PDA: PDA Inflow=6.25 cfs 0.330 af
Primary=6.25 cfs 0.330 af

Link PDA-1: PDA-1 Inflow=6.19 cfs 0.325 af
Primary=6.19 cfs 0.325 af

Link Pipe (EX): Bridge St Pipe Inflow=2.93 cfs 0.224 af
Primary=2.93 cfs 0.224 af

Summary for Subcatchment EDA-1A: EDA-1A

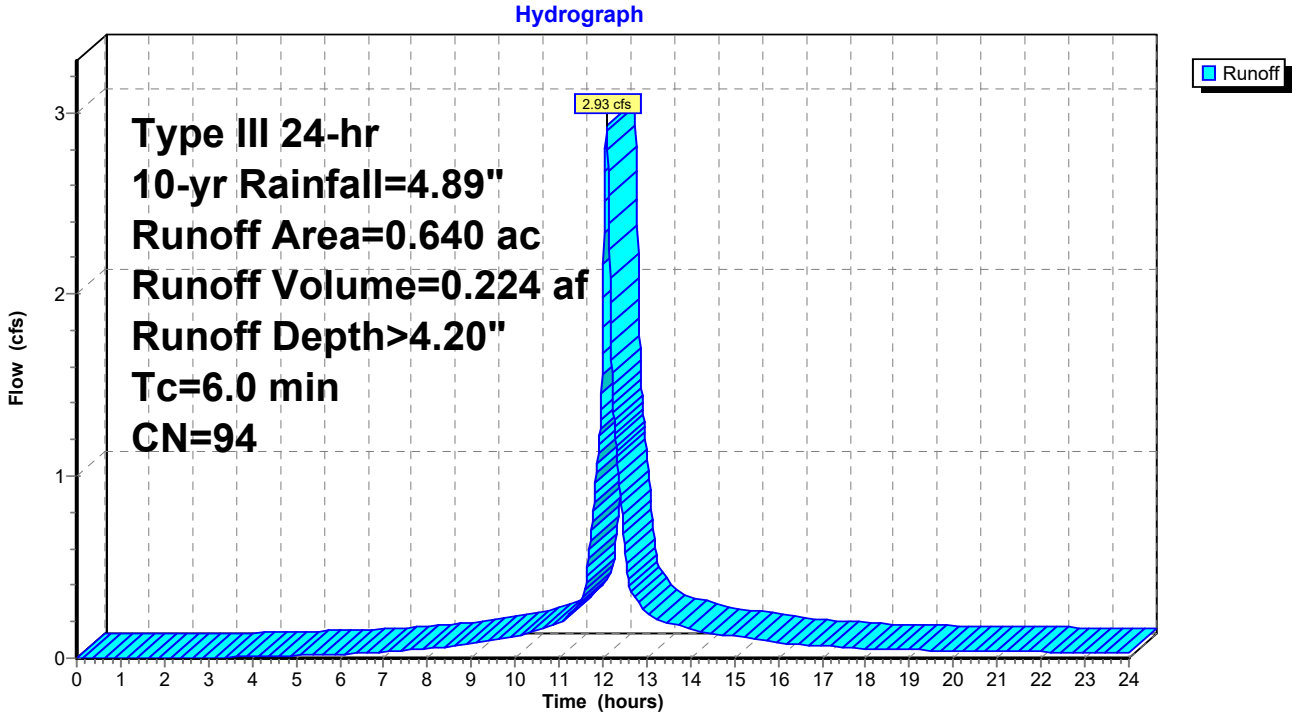
Runoff = 2.93 cfs @ 12.08 hrs, Volume= 0.224 af, Depth> 4.20"
Routed to Link Pipe (EX) : Bridge St Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.89"

Area (ac)	CN	Description
0.540	98	Paved parking, HSG C
0.100	74	>75% Grass cover, Good, HSG C
0.640	94	Weighted Average
0.100		15.63% Pervious Area
0.540		84.38% Impervious Area

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

Subcatchment EDA-1A: EDA-1A



Summary for Subcatchment EDA-1B1: EDA-1B1

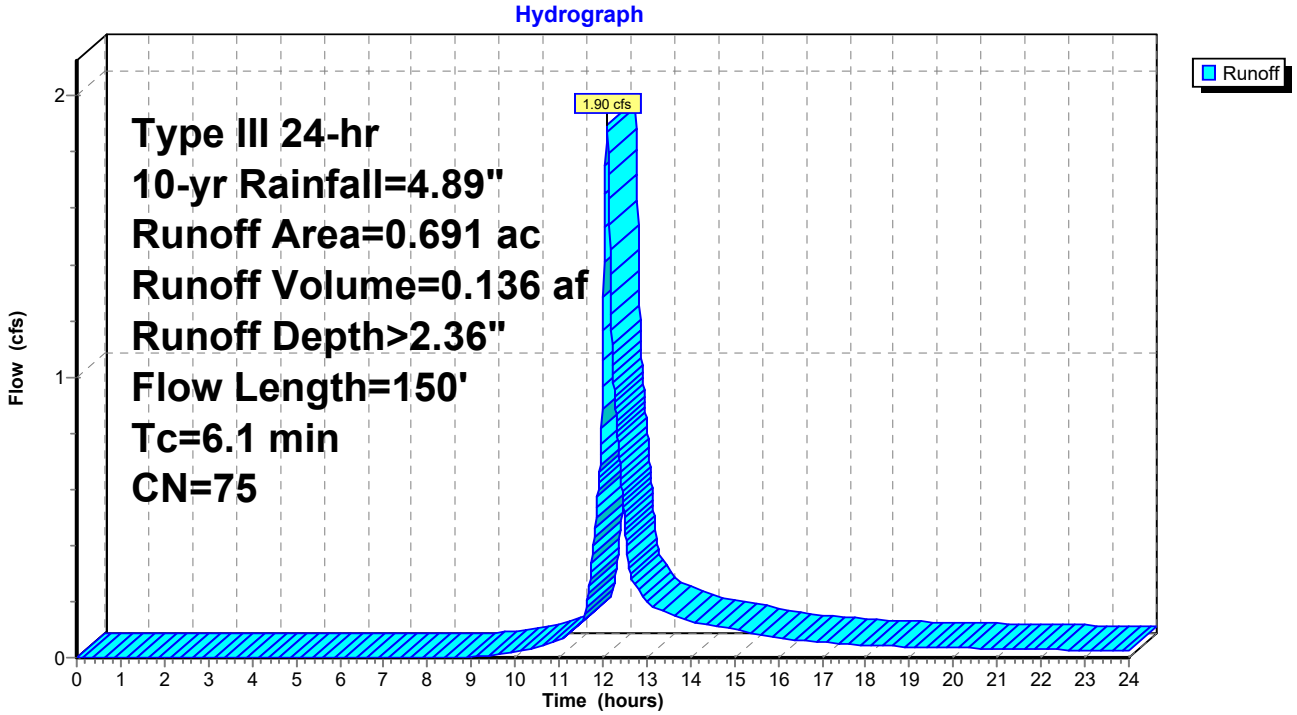
Runoff = 1.90 cfs @ 12.09 hrs, Volume= 0.136 af, Depth> 2.36"
Routed to Link EDA-1B : EDA-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.89"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG C
0.240	70	Woods, Good, HSG C
0.381	74	>75% Grass cover, Good, HSG C
0.691	75	Weighted Average
0.621		89.87% Pervious Area
0.070		10.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.13"
0.4	100	0.0660	4.14		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
6.1	150	Total			

Subcatchment EDA-1B1: EDA-1B1



Summary for Subcatchment EDA-1B2: EDA-1B2

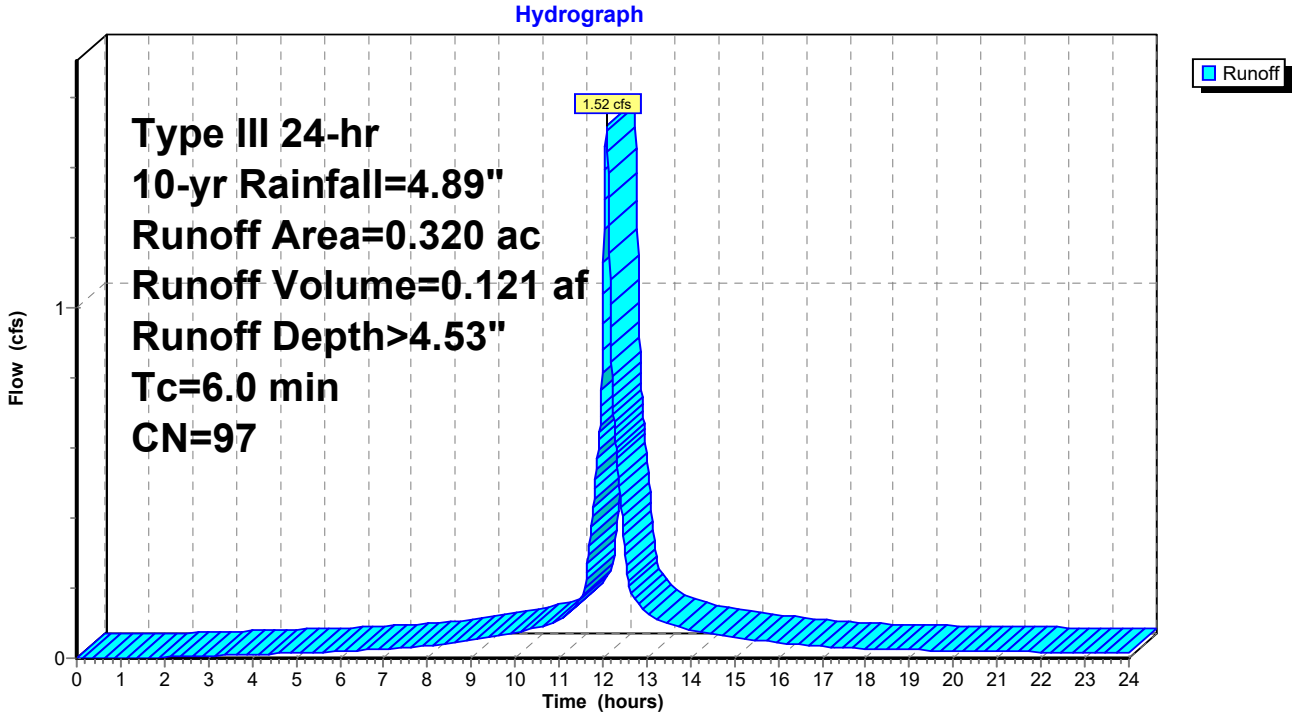
Runoff = 1.52 cfs @ 12.08 hrs, Volume= 0.121 af, Depth> 4.53"
Routed to Link EDA-1B : EDA-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.89"

Area (ac)	CN	Description
0.300	98	Paved parking, HSG C
0.020	74	>75% Grass cover, Good, HSG C
0.320	97	Weighted Average
0.020		6.25% Pervious Area
0.300		93.75% Impervious Area

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

Subcatchment EDA-1B2: EDA-1B2



Summary for Subcatchment EDA-2: EDA-2

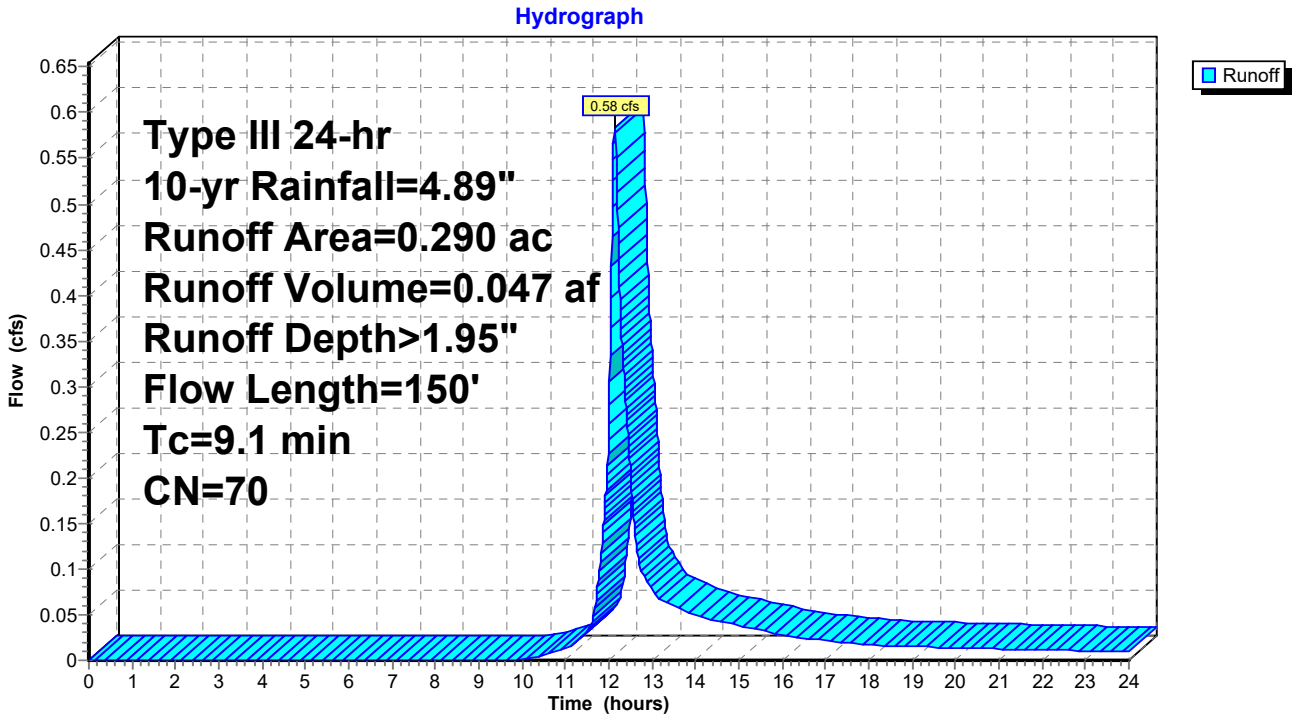
Runoff = 0.58 cfs @ 12.13 hrs, Volume= 0.047 af, Depth> 1.95"
Routed to Link EDA : EDA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.89"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG C
0.260	70	Woods, Good, HSG C
0.030	74	>75% Grass cover, Good, HSG C
0.290	70	Weighted Average
0.290		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0600	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.13"
1.1	100	0.0900	1.50		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
9.1	150	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment PDA-1A: PDA-1A

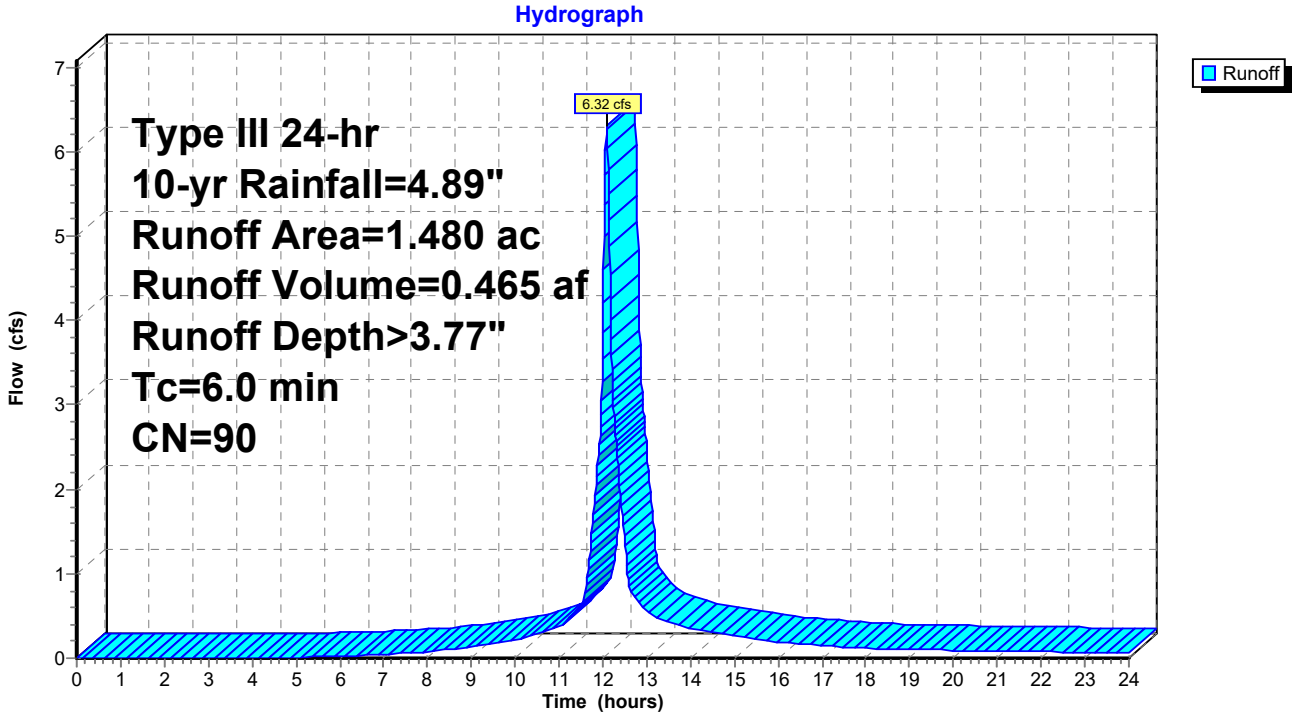
Runoff = 6.32 cfs @ 12.09 hrs, Volume= 0.465 af, Depth> 3.77"
Routed to Pond BASIN : Basin #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.89"

Area (ac)	CN	Description
1.000	98	Paved parking, HSG C
0.480	74	>75% Grass cover, Good, HSG C
1.480	90	Weighted Average
0.480		32.43% Pervious Area
1.000		67.57% Impervious Area

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

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

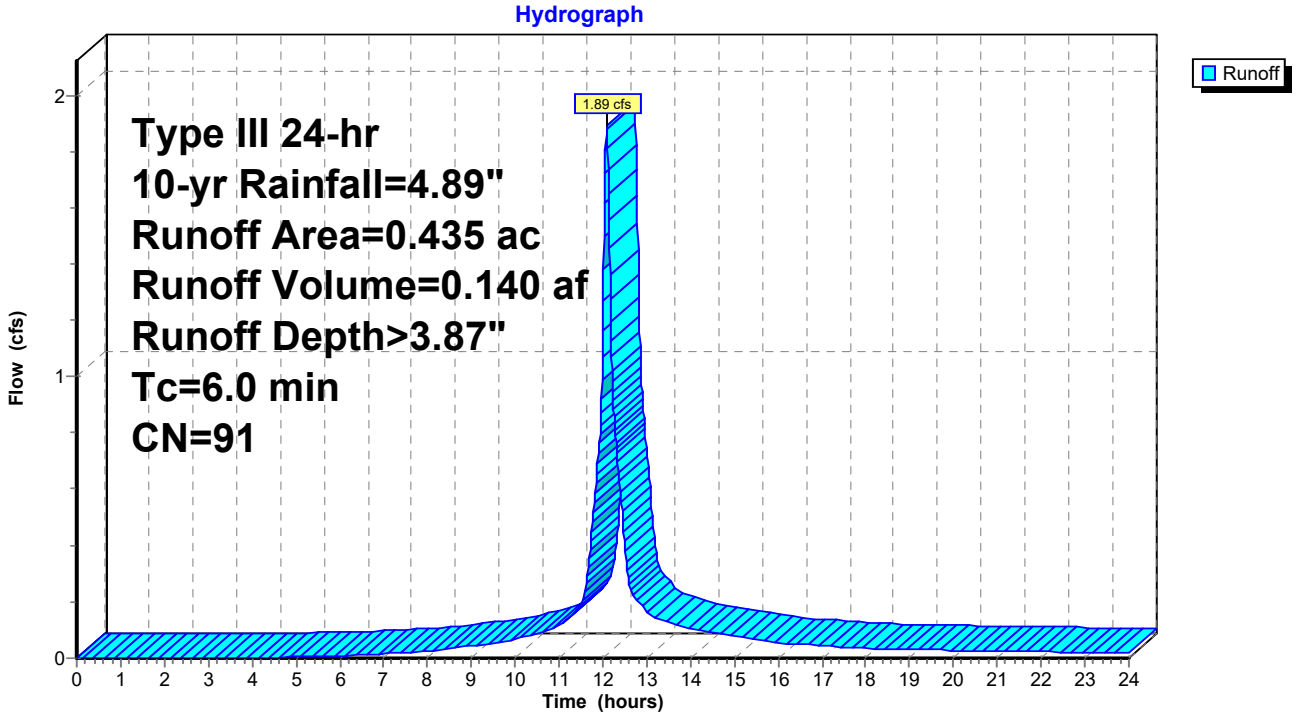
Runoff = 1.89 cfs @ 12.08 hrs, Volume= 0.140 af, Depth> 3.87"
Routed to Link PDA-1 : PDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.89"

Area (ac)	CN	Description
0.308	98	Paved parking, HSG C
0.127	74	>75% Grass cover, Good, HSG C
0.435	91	Weighted Average
0.127		29.20% Pervious Area
0.308		70.80% Impervious Area

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

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-2: PDA-2

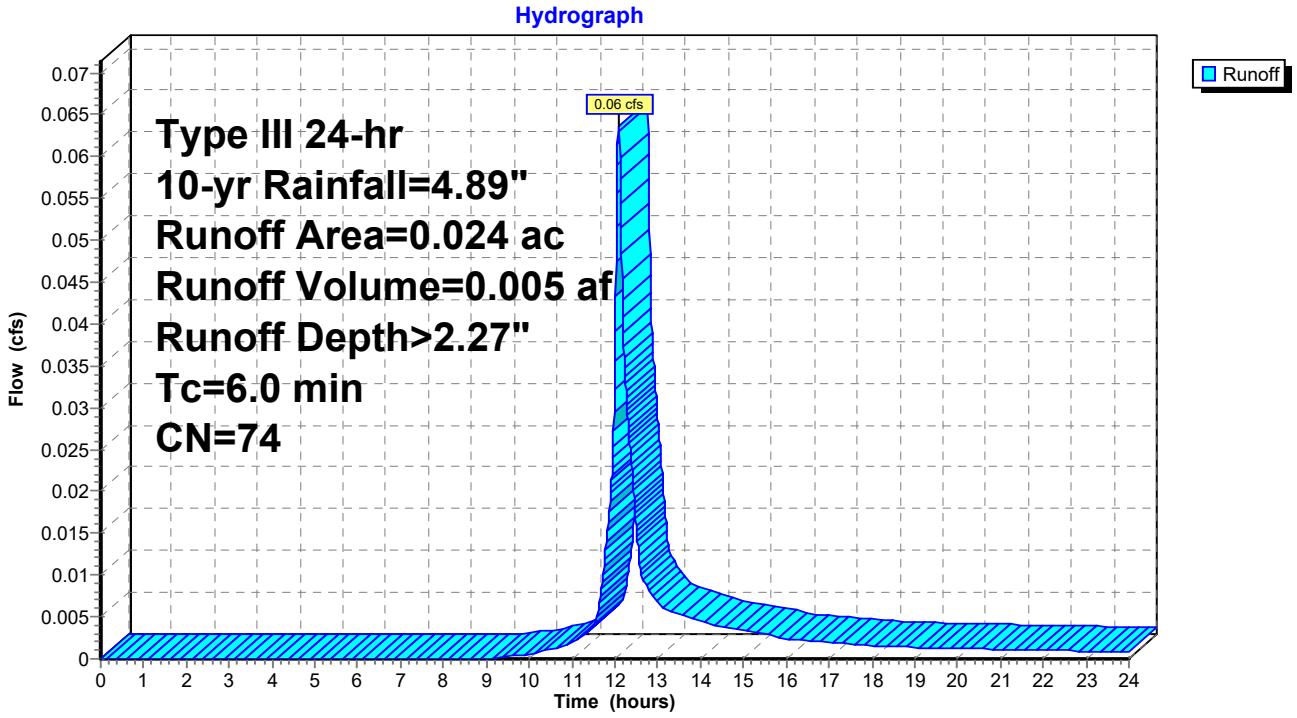
Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.005 af, Depth> 2.27"
Routed to Link PDA : PDA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.89"

Area (ac)	CN	Description
0.024	74	>75% Grass cover, Good, HSG C
0.024		100.00% Pervious Area

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

Subcatchment PDA-2: PDA-2



Summary for Pond BASIN: Basin #1

Inflow Area = 1.480 ac, 67.57% Impervious, Inflow Depth > 3.77" for 10-yr event
Inflow = 6.32 cfs @ 12.09 hrs, Volume= 0.465 af
Outflow = 4.80 cfs @ 12.15 hrs, Volume= 0.424 af, Atten= 24%, Lag= 4.0 min
Discarded = 0.25 cfs @ 12.15 hrs, Volume= 0.239 af
Primary = 4.56 cfs @ 12.15 hrs, Volume= 0.185 af
Routed to Link PDA-1 : PDA-1

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 145.12' @ 12.15 hrs Surf.Area= 3,703 sf Storage= 5,481 cf

Plug-Flow detention time= 128.4 min calculated for 0.424 af (91% of inflow)
Center-of-Mass det. time= 84.5 min (875.3 - 790.9)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	14,134 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

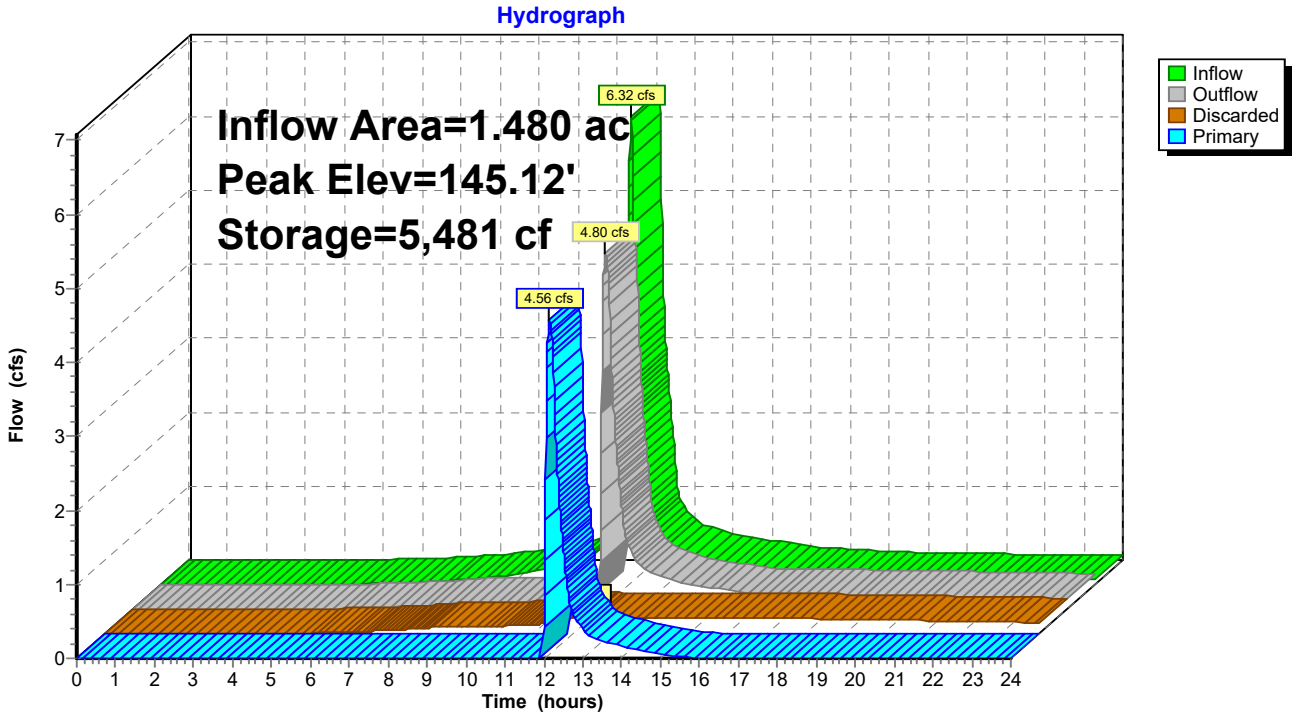
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
143.00	1,516	0	0	1,516
144.00	2,543	2,007	2,007	2,555
145.00	3,582	3,048	5,055	3,612
146.00	4,683	4,120	9,175	4,737
147.00	5,239	4,958	14,134	5,346

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	**2.410 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 135.00'
#2	Primary	142.00'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 142.00' / 141.05' S= 0.0594 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	144.75'	**2.5" x 2.5" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (39% open area) Limited to weir flow at low heads
#4	Primary	145.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.25 cfs @ 12.15 hrs HW=145.12' (Free Discharge)
└**1=Exfiltration** (Controls 0.25 cfs)

Primary OutFlow Max=4.56 cfs @ 12.15 hrs HW=145.12' (Free Discharge)
├**2=Culvert** (Passes 4.56 cfs of 4.83 cfs potential flow)
│└**3=Orifice/Grate** (Orifice Controls 4.56 cfs @ 2.92 fps)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond BASIN: Basin #1



Stage-Discharge for Pond BASIN: Basin #1

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
143.00	0.00	0.00	0.00
143.05	0.09	0.09	0.00
143.10	0.09	0.09	0.00
143.15	0.09	0.09	0.00
143.20	0.10	0.10	0.00
143.25	0.10	0.10	0.00
143.30	0.10	0.10	0.00
143.35	0.11	0.11	0.00
143.40	0.11	0.11	0.00
143.45	0.11	0.11	0.00
143.50	0.12	0.12	0.00
143.55	0.12	0.12	0.00
143.60	0.13	0.13	0.00
143.65	0.13	0.13	0.00
143.70	0.13	0.13	0.00
143.75	0.14	0.14	0.00
143.80	0.14	0.14	0.00
143.85	0.14	0.14	0.00
143.90	0.15	0.15	0.00
143.95	0.15	0.15	0.00
144.00	0.16	0.16	0.00
144.05	0.16	0.16	0.00
144.10	0.16	0.16	0.00
144.15	0.17	0.17	0.00
144.20	0.17	0.17	0.00
144.25	0.17	0.17	0.00
144.30	0.18	0.18	0.00
144.35	0.18	0.18	0.00
144.40	0.19	0.19	0.00
144.45	0.19	0.19	0.00
144.50	0.19	0.19	0.00
144.55	0.20	0.20	0.00
144.60	0.20	0.20	0.00
144.65	0.21	0.21	0.00
144.70	0.21	0.21	0.00
144.75	0.21	0.21	0.00
144.80	0.51	0.22	0.29
144.85	1.05	0.22	0.83
144.90	1.75	0.23	1.52
144.95	2.57	0.23	2.34
145.00	3.51	0.24	3.27
145.05	4.36	0.24	4.12
145.10	4.69	0.24	4.45
145.15	5.01	0.25	4.76
145.20	5.16	0.25	4.91
145.25	5.21	0.26	4.95
145.30	5.26	0.26	5.00
145.35	5.31	0.27	5.04
145.40	5.35	0.27	5.08
145.45	5.40	0.27	5.13
145.50	5.45	0.28	5.17
145.55	5.76	0.28	5.48
145.60	6.29	0.29	6.01
145.65	6.97	0.29	6.68
145.70	7.76	0.30	7.46
145.75	8.69	0.30	8.39
145.80	9.74	0.31	9.43
145.85	10.90	0.31	10.59
145.90	12.17	0.32	11.85
145.95	13.59	0.32	13.27
146.00	15.12	0.32	14.80
146.05	16.77	0.33	16.44
146.10	18.54	0.33	18.21
146.15	20.16	0.33	19.83
146.20	21.83	0.34	21.50
146.25	23.56	0.34	23.22
146.30	25.34	0.34	25.00
146.35	27.21	0.35	26.86
146.40	29.13	0.35	28.78
146.45	31.10	0.35	30.75
146.50	33.13	0.36	32.77
146.55	35.18	0.36	34.82
146.60	37.27	0.36	36.91
146.65	39.41	0.37	39.04
146.70	41.59	0.37	41.22
146.75	43.77	0.37	43.40
146.80	45.99	0.38	45.62
146.85	48.25	0.38	47.87
146.90	50.54	0.38	50.16
146.95	52.95	0.39	52.57
147.00	**55.41**	**0.39**	**55.02**

Stage-Area-Storage for Pond BASIN: Basin #1

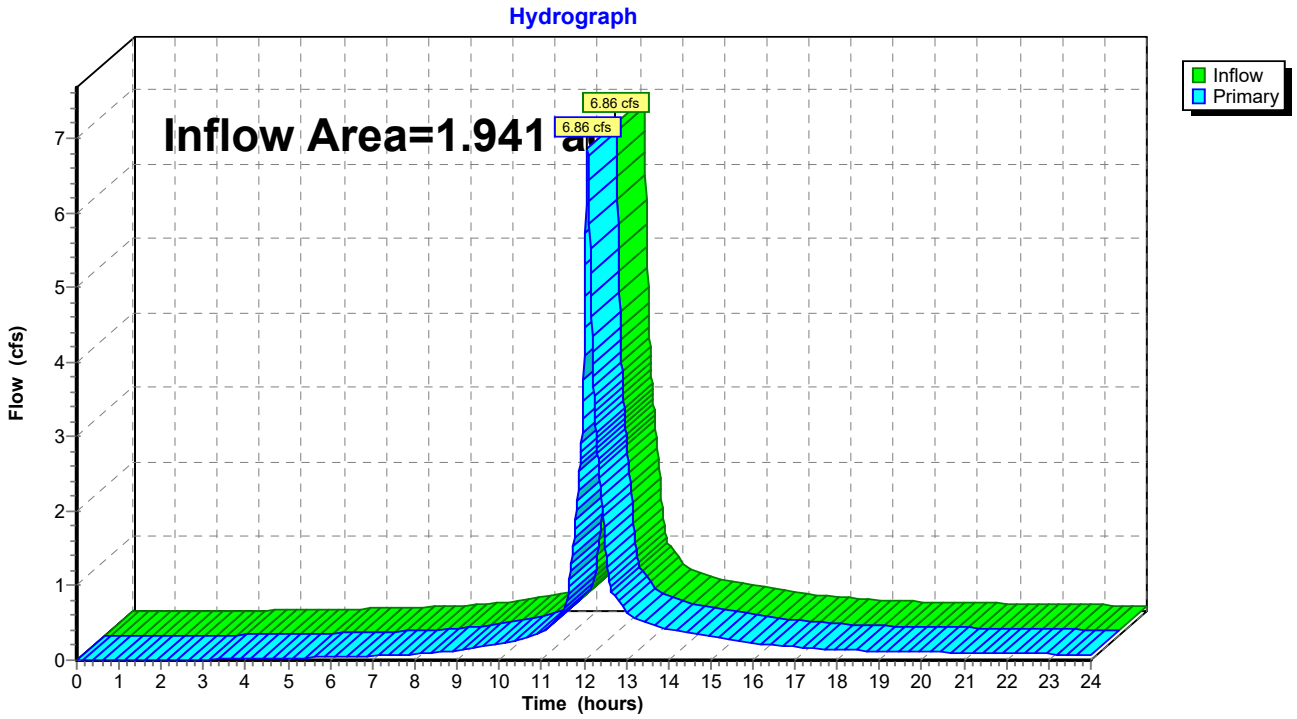
Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
143.00	1,516	1,516	0
143.10	1,607	1,608	156
143.20	1,700	1,702	321
143.30	1,796	1,800	496
143.40	1,895	1,900	681
143.50	1,996	2,002	875
143.60	2,101	2,107	1,080
143.70	2,207	2,215	1,296
143.80	2,316	2,326	1,522
143.90	2,428	2,439	1,759
144.00	2,543	2,555	2,007
144.10	2,639	2,653	2,267
144.20	2,737	2,752	2,535
144.30	2,836	2,853	2,814
144.40	2,937	2,956	3,103
144.50	3,040	3,061	3,401
144.60	3,145	3,168	3,711
144.70	3,252	3,276	4,031
144.80	3,360	3,386	4,361
144.90	3,470	3,499	4,703
145.00	3,582	3,612	5,055
145.10	3,685	3,718	5,419
145.20	3,790	3,825	5,792
145.30	3,897	3,934	6,177
145.40	4,005	4,044	6,572
145.50	4,114	4,156	6,978
145.60	4,225	4,269	7,395
145.70	4,337	4,384	7,823
145.80	4,451	4,500	8,262
145.90	4,566	4,617	8,713
146.00	4,683	4,737	9,175
146.10	4,737	4,796	9,646
146.20	4,792	4,856	10,123
146.30	4,847	4,916	10,605
146.40	4,902	4,976	11,092
146.50	4,957	5,037	11,585
146.60	5,013	5,098	12,084
146.70	5,069	5,160	12,588
146.80	5,125	5,221	13,097
146.90	5,182	5,284	13,613
147.00	**5,239**	**5,346**	**14,134**

Summary for Link EDA: EDA

Inflow Area = 1.941 ac, 46.88% Impervious, Inflow Depth > 3.26" for 10-yr event
Inflow = 6.86 cfs @ 12.09 hrs, Volume= 0.528 af
Primary = 6.86 cfs @ 12.09 hrs, Volume= 0.528 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EDA: EDA

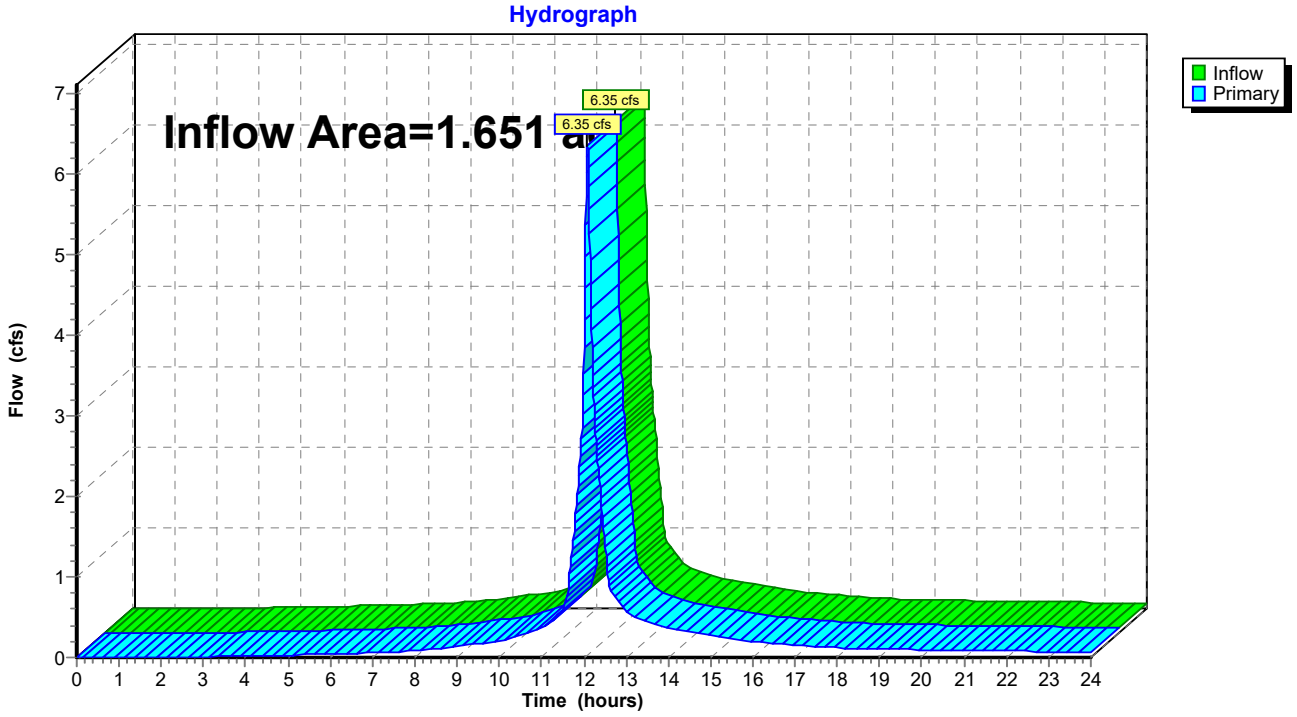


Summary for Link EDA-1: EDA-1

Inflow Area = 1.651 ac, 55.12% Impervious, Inflow Depth > 3.49" for 10-yr event
Inflow = 6.35 cfs @ 12.09 hrs, Volume= 0.480 af
Primary = 6.35 cfs @ 12.09 hrs, Volume= 0.480 af, Atten= 0%, Lag= 0.0 min
Routed to Link EDA : EDA

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EDA-1: EDA-1

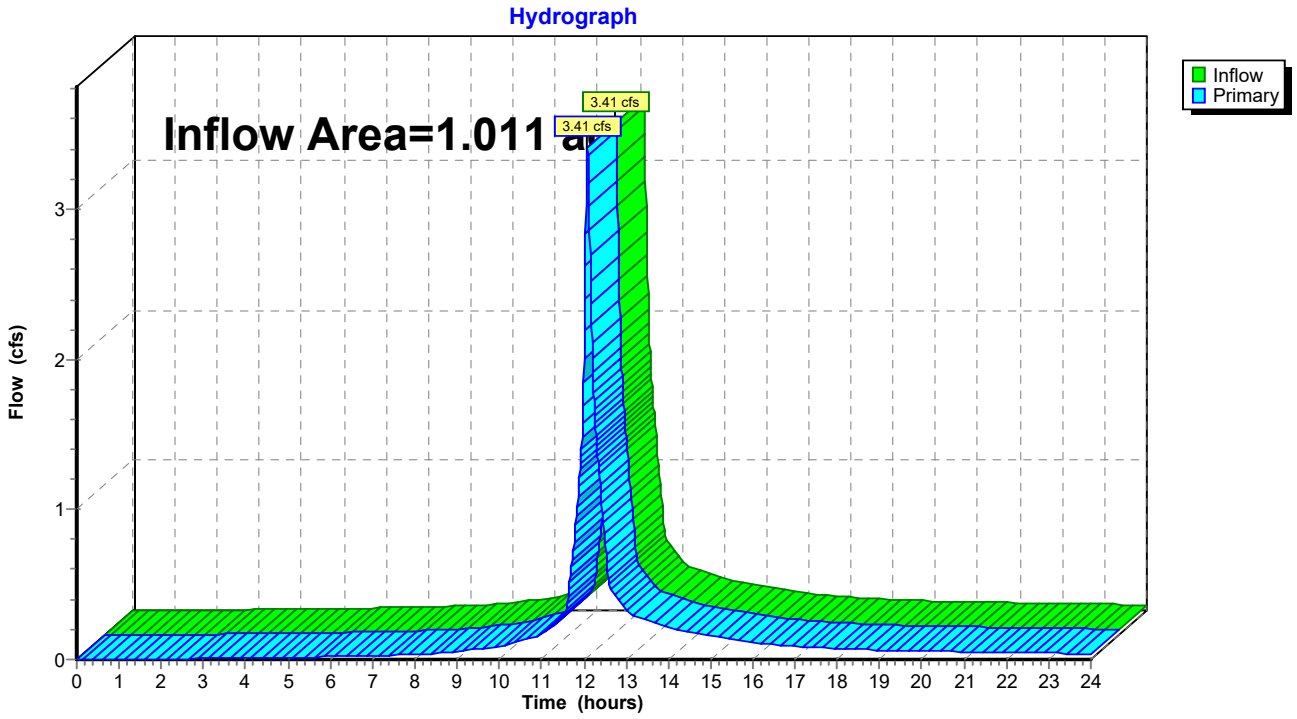


Summary for Link EDA-1B: EDA-1B

Inflow Area = 1.011 ac, 36.60% Impervious, Inflow Depth > 3.05" for 10-yr event
Inflow = 3.41 cfs @ 12.09 hrs, Volume= 0.257 af
Primary = 3.41 cfs @ 12.09 hrs, Volume= 0.257 af, Atten= 0%, Lag= 0.0 min
Routed to Link EDA-1 : EDA-1

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EDA-1B: EDA-1B

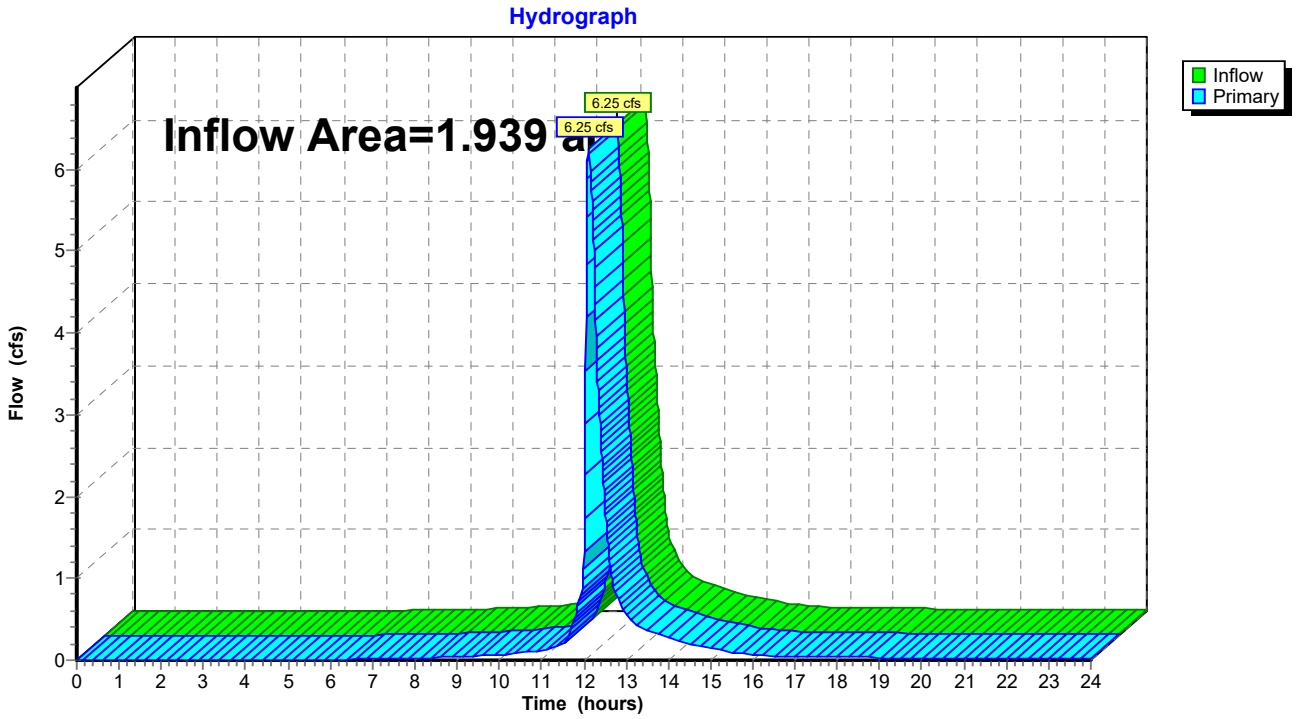


Summary for Link PDA: PDA

Inflow Area = 1.939 ac, 67.46% Impervious, Inflow Depth > 2.04" for 10-yr event
Inflow = 6.25 cfs @ 12.12 hrs, Volume= 0.330 af
Primary = 6.25 cfs @ 12.12 hrs, Volume= 0.330 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link PDA: PDA

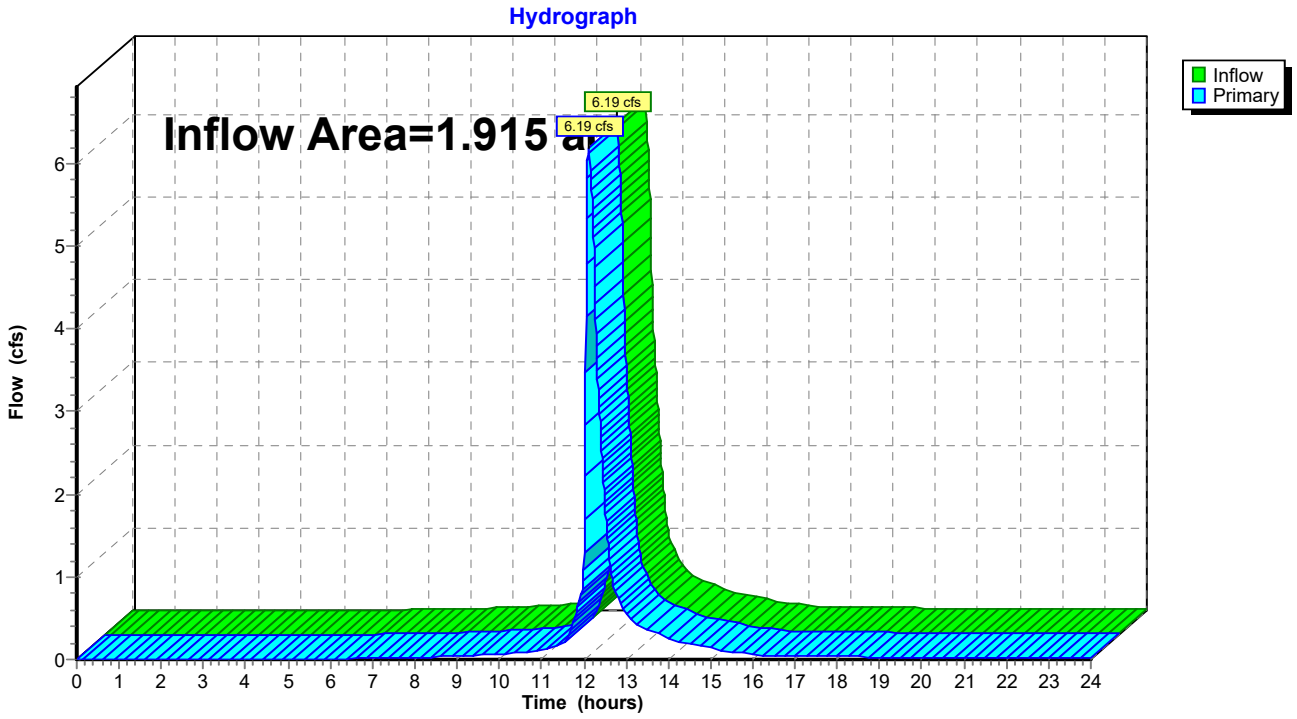


Summary for Link PDA-1: PDA-1

Inflow Area = 1.915 ac, 68.30% Impervious, Inflow Depth > 2.04" for 10-yr event
Inflow = 6.19 cfs @ 12.12 hrs, Volume= 0.325 af
Primary = 6.19 cfs @ 12.12 hrs, Volume= 0.325 af, Atten= 0%, Lag= 0.0 min
Routed to Link PDA : PDA

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link PDA-1: PDA-1

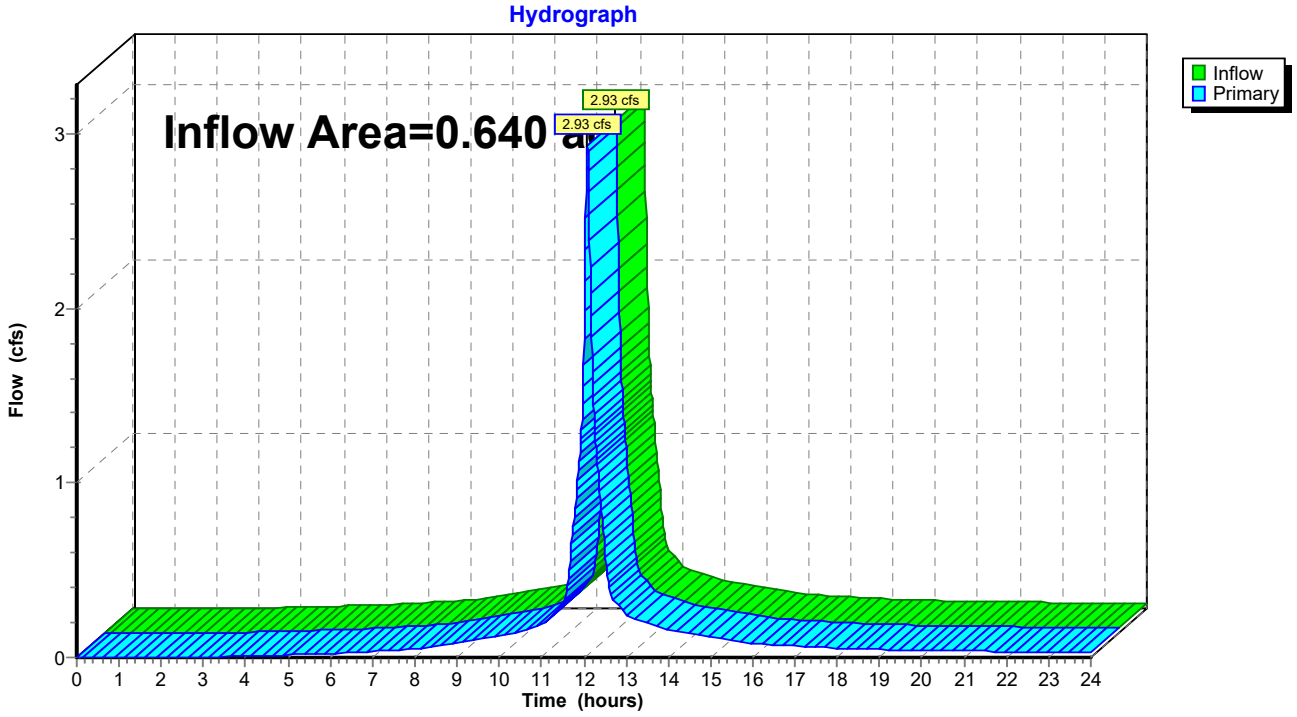


Summary for Link Pipe (EX): Bridge St Pipe

Inflow Area = 0.640 ac, 84.38% Impervious, Inflow Depth > 4.20" for 10-yr event
Inflow = 2.93 cfs @ 12.08 hrs, Volume= 0.224 af
Primary = 2.93 cfs @ 12.08 hrs, Volume= 0.224 af, Atten= 0%, Lag= 0.0 min
Routed to Link EDA-1 : EDA-1

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link Pipe (EX): Bridge St Pipe



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment EDA-1A: EDA-1A Runoff Area=0.640 ac 84.38% Impervious Runoff Depth>5.27"
Tc=6.0 min CN=94 Runoff=3.64 cfs 0.281 af

Subcatchment EDA-1B1: EDA-1B1 Runoff Area=0.691 ac 10.13% Impervious Runoff Depth>3.26"
Flow Length=150' Tc=6.1 min CN=75 Runoff=2.64 cfs 0.188 af

Subcatchment EDA-1B2: EDA-1B2 Runoff Area=0.320 ac 93.75% Impervious Runoff Depth>5.62"
Tc=6.0 min CN=97 Runoff=1.87 cfs 0.150 af

Subcatchment EDA-2: EDA-2 Runoff Area=0.290 ac 0.00% Impervious Runoff Depth>2.78"
Flow Length=150' Tc=9.1 min CN=70 Runoff=0.85 cfs 0.067 af

Subcatchment PDA-1A: PDA-1A Runoff Area=1.480 ac 67.57% Impervious Runoff Depth>4.82"
Tc=6.0 min CN=90 Runoff=7.98 cfs 0.595 af

Subcatchment PDA-1B: PDA-1B Runoff Area=0.435 ac 70.80% Impervious Runoff Depth>4.93"
Tc=6.0 min CN=91 Runoff=2.38 cfs 0.179 af

Subcatchment PDA-2: PDA-2 Runoff Area=0.024 ac 0.00% Impervious Runoff Depth>3.16"
Tc=6.0 min CN=74 Runoff=0.09 cfs 0.006 af

Pond BASIN: Basin #1 Peak Elev=145.32' Storage=6,269 cf Inflow=7.98 cfs 0.595 af
Discarded=0.26 cfs 0.257 af Primary=5.02 cfs 0.287 af Outflow=5.28 cfs 0.544 af

Link EDA: EDA Inflow=8.90 cfs 0.686 af
Primary=8.90 cfs 0.686 af

Link EDA-1: EDA-1 Inflow=8.14 cfs 0.619 af
Primary=8.14 cfs 0.619 af

Link EDA-1B: EDA-1B Inflow=4.50 cfs 0.338 af
Primary=4.50 cfs 0.338 af

Link PDA: PDA Inflow=7.38 cfs 0.472 af
Primary=7.38 cfs 0.472 af

Link PDA-1: PDA-1 Inflow=7.29 cfs 0.466 af
Primary=7.29 cfs 0.466 af

Link Pipe (EX): Bridge St Pipe Inflow=3.64 cfs 0.281 af
Primary=3.64 cfs 0.281 af

Summary for Subcatchment EDA-1A: EDA-1A

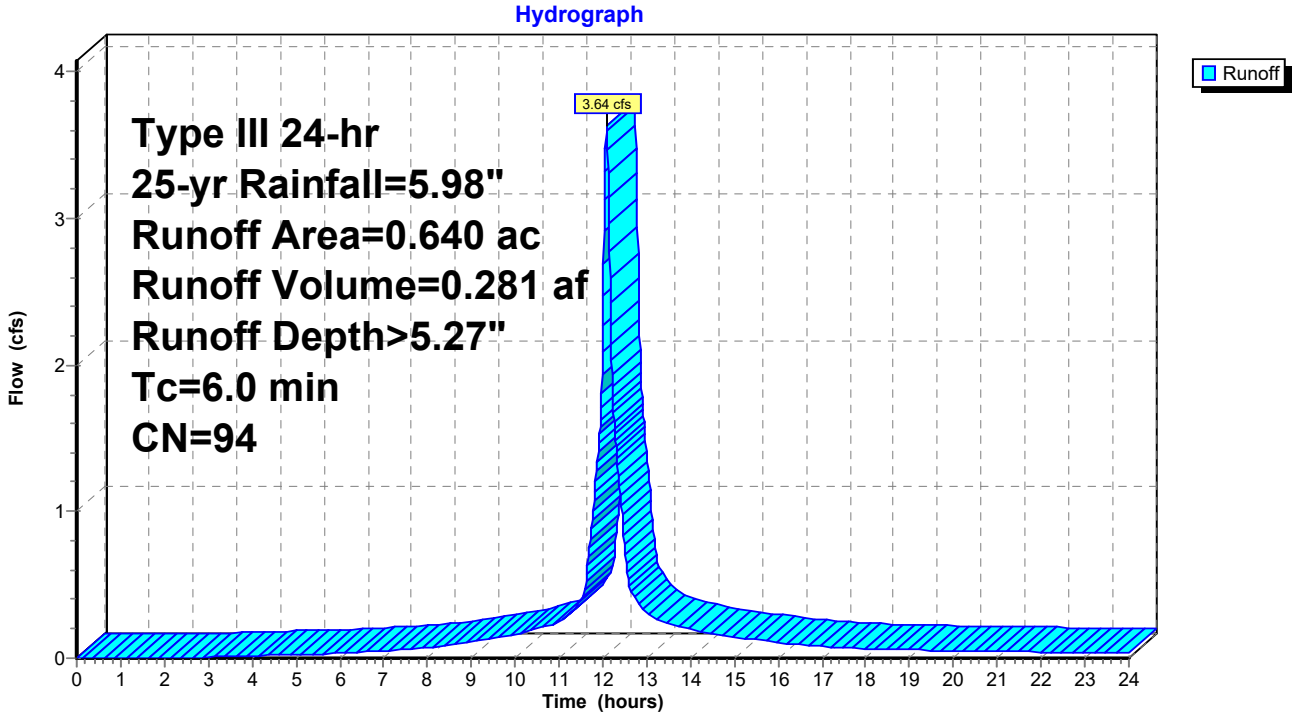
Runoff = 3.64 cfs @ 12.08 hrs, Volume= 0.281 af, Depth> 5.27"
Routed to Link Pipe (EX) : Bridge St Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.98"

Area (ac)	CN	Description
0.540	98	Paved parking, HSG C
0.100	74	>75% Grass cover, Good, HSG C
0.640	94	Weighted Average
0.100		15.63% Pervious Area
0.540		84.38% Impervious Area

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

Subcatchment EDA-1A: EDA-1A



Summary for Subcatchment EDA-1B1: EDA-1B1

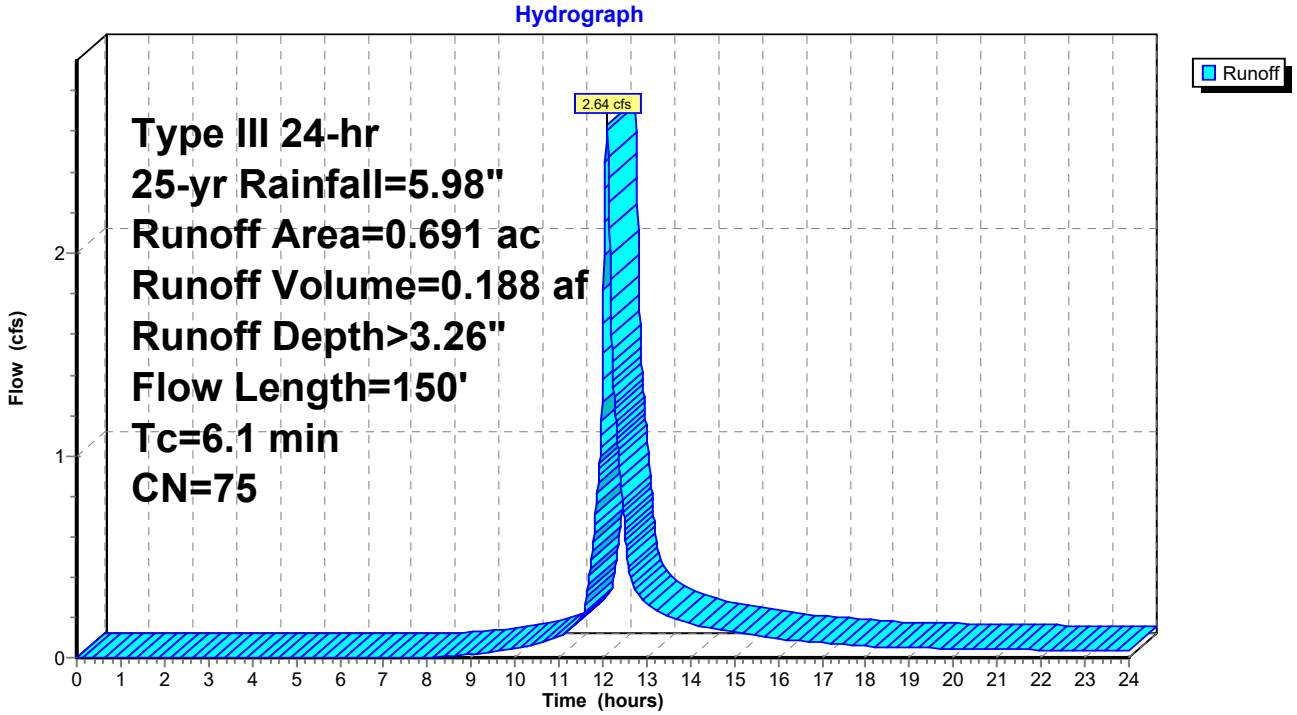
Runoff = 2.64 cfs @ 12.09 hrs, Volume= 0.188 af, Depth> 3.26"
Routed to Link EDA-1B : EDA-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.98"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG C
0.240	70	Woods, Good, HSG C
0.381	74	>75% Grass cover, Good, HSG C
0.691	75	Weighted Average
0.621		89.87% Pervious Area
0.070		10.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.13"
0.4	100	0.0660	4.14		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
6.1	150	Total			

Subcatchment EDA-1B1: EDA-1B1



Summary for Subcatchment EDA-1B2: EDA-1B2

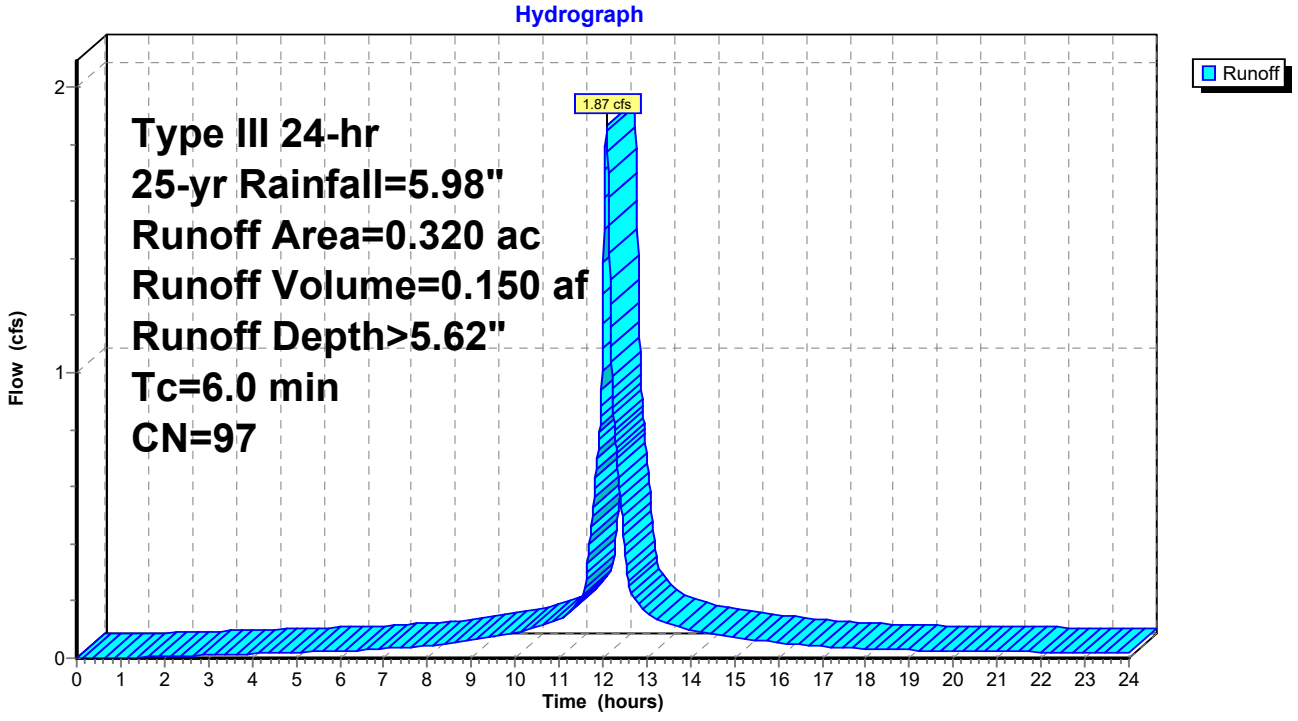
Runoff = 1.87 cfs @ 12.08 hrs, Volume= 0.150 af, Depth> 5.62"
Routed to Link EDA-1B : EDA-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.98"

Area (ac)	CN	Description
0.300	98	Paved parking, HSG C
0.020	74	>75% Grass cover, Good, HSG C
0.320	97	Weighted Average
0.020		6.25% Pervious Area
0.300		93.75% Impervious Area

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

Subcatchment EDA-1B2: EDA-1B2



Summary for Subcatchment EDA-2: EDA-2

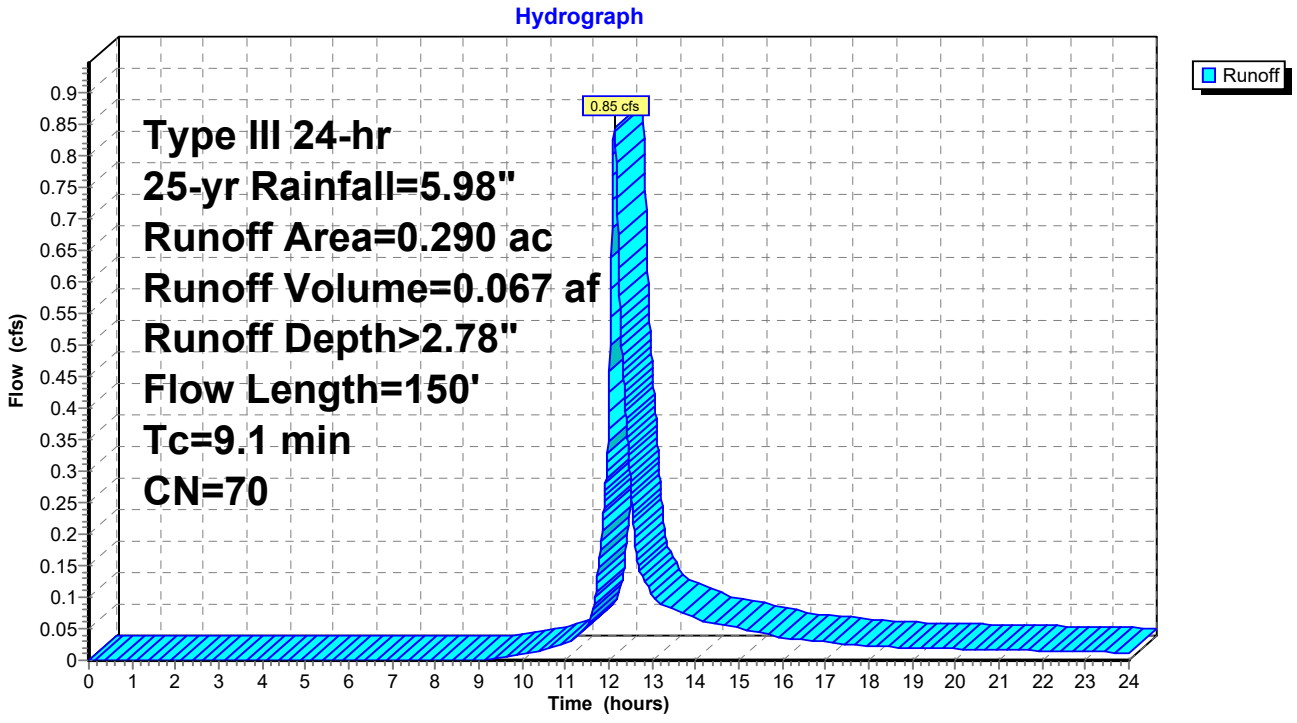
Runoff = 0.85 cfs @ 12.13 hrs, Volume= 0.067 af, Depth> 2.78"
Routed to Link EDA : EDA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.98"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG C
0.260	70	Woods, Good, HSG C
0.030	74	>75% Grass cover, Good, HSG C
0.290	70	Weighted Average
0.290		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0600	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.13"
1.1	100	0.0900	1.50		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
9.1	150	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment PDA-1A: PDA-1A

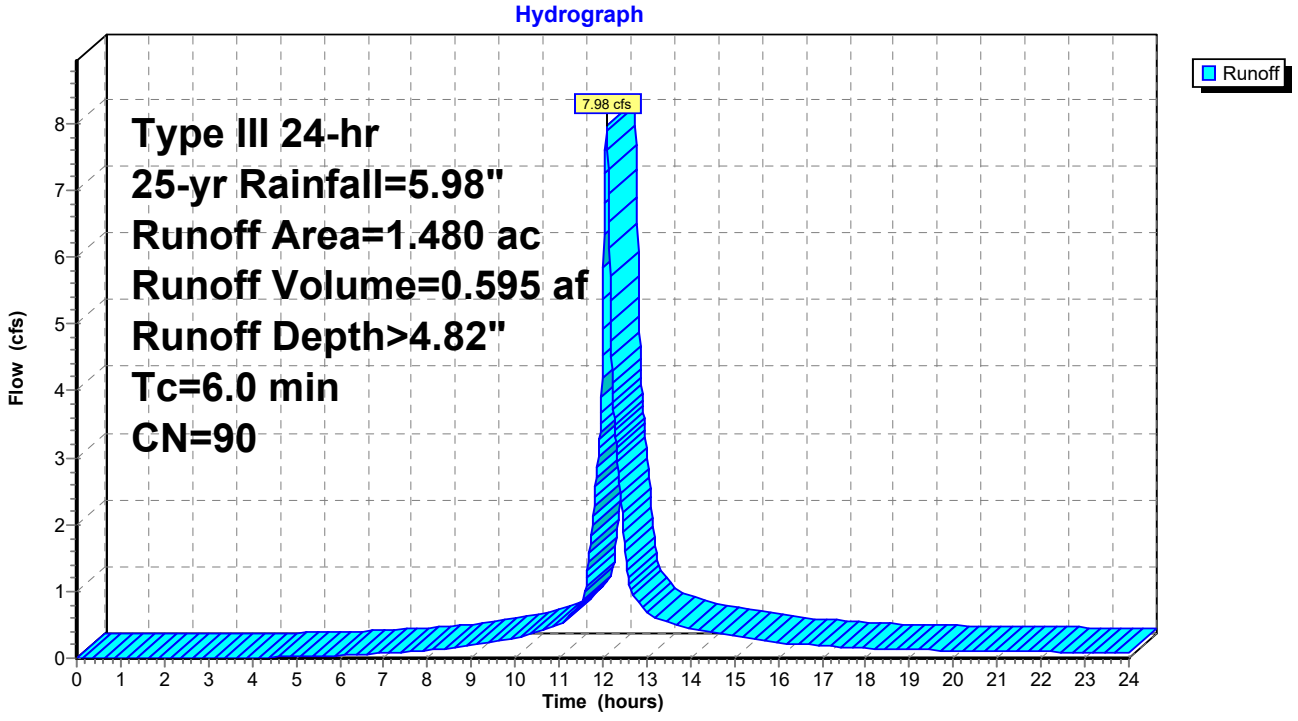
Runoff = 7.98 cfs @ 12.08 hrs, Volume= 0.595 af, Depth> 4.82"
Routed to Pond BASIN : Basin #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.98"

Area (ac)	CN	Description
1.000	98	Paved parking, HSG C
0.480	74	>75% Grass cover, Good, HSG C
1.480	90	Weighted Average
0.480		32.43% Pervious Area
1.000		67.57% Impervious Area

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

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

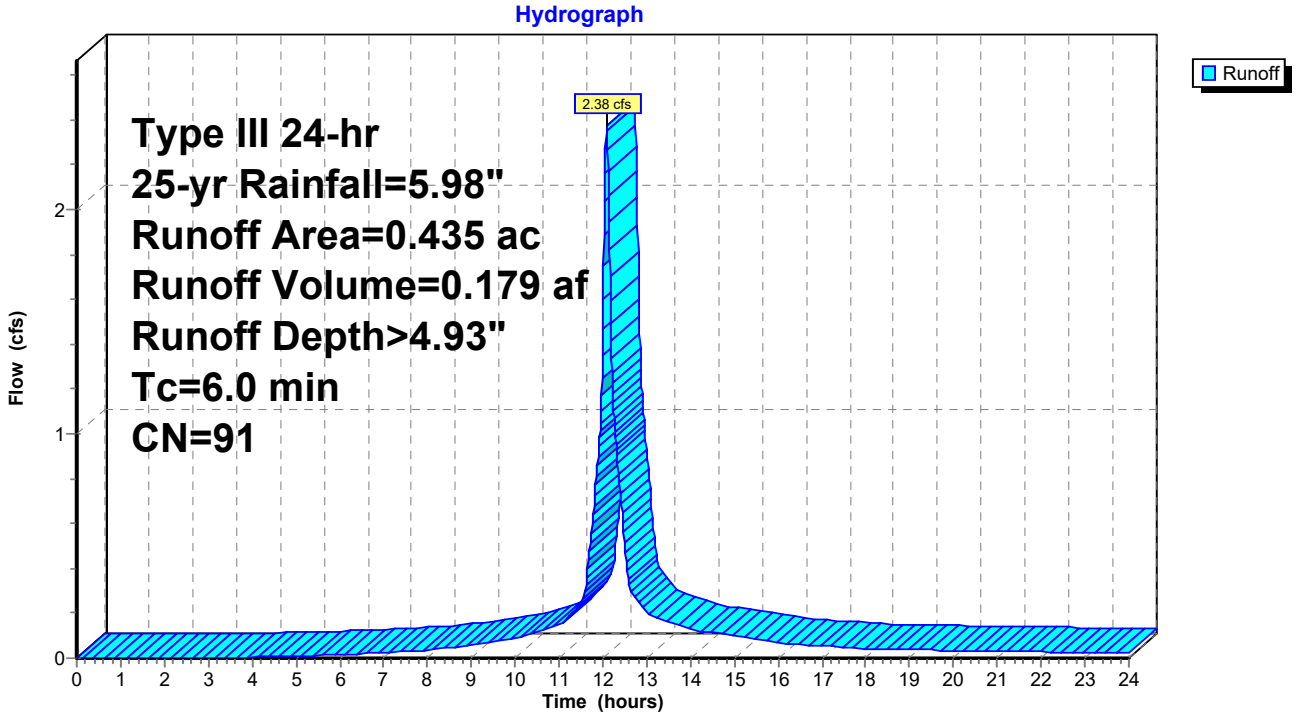
Runoff = 2.38 cfs @ 12.08 hrs, Volume= 0.179 af, Depth> 4.93"
Routed to Link PDA-1 : PDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.98"

Area (ac)	CN	Description
0.308	98	Paved parking, HSG C
0.127	74	>75% Grass cover, Good, HSG C
0.435	91	Weighted Average
0.127		29.20% Pervious Area
0.308		70.80% Impervious Area

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

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-2: PDA-2

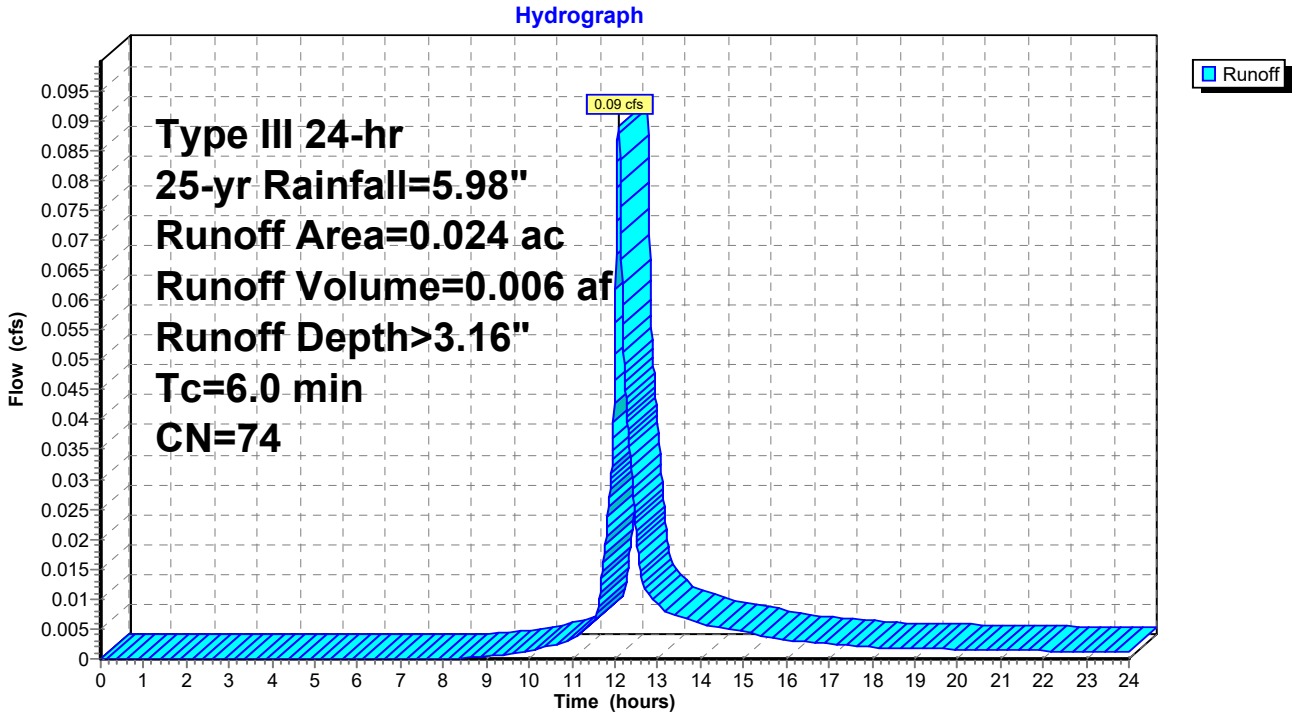
Runoff = 0.09 cfs @ 12.09 hrs, Volume= 0.006 af, Depth> 3.16"
Routed to Link PDA : PDA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.98"

Area (ac)	CN	Description
0.024	74	>75% Grass cover, Good, HSG C
0.024		100.00% Pervious Area

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

Subcatchment PDA-2: PDA-2



Summary for Pond BASIN: Basin #1

Inflow Area = 1.480 ac, 67.57% Impervious, Inflow Depth > 4.82" for 25-yr event
Inflow = 7.98 cfs @ 12.08 hrs, Volume= 0.595 af
Outflow = 5.28 cfs @ 12.17 hrs, Volume= 0.544 af, Atten= 34%, Lag= 5.3 min
Discarded = 0.26 cfs @ 12.17 hrs, Volume= 0.257 af
Primary = 5.02 cfs @ 12.17 hrs, Volume= 0.287 af
Routed to Link PDA-1 : PDA-1

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 145.32' @ 12.17 hrs Surf.Area= 3,922 sf Storage= 6,269 cf

Plug-Flow detention time= 108.5 min calculated for 0.544 af (91% of inflow)
Center-of-Mass det. time= 65.1 min (849.3 - 784.2)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	14,134 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

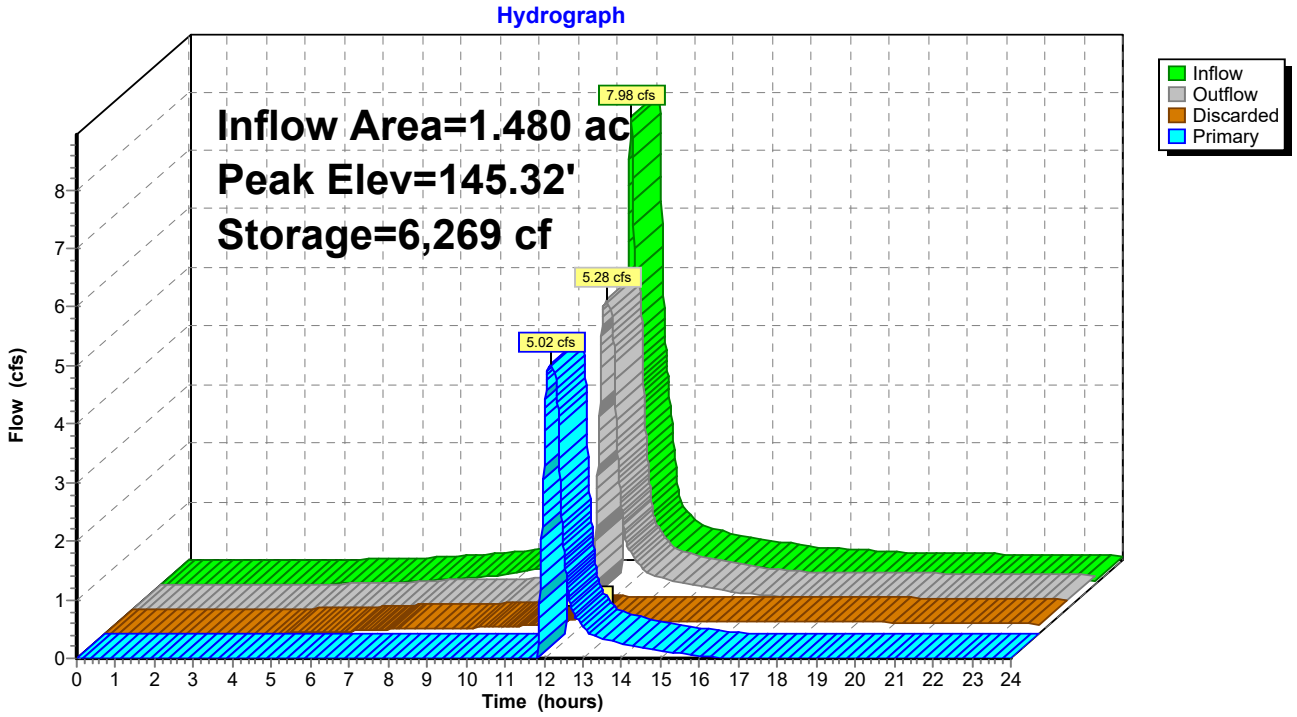
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
143.00	1,516	0	0	1,516
144.00	2,543	2,007	2,007	2,555
145.00	3,582	3,048	5,055	3,612
146.00	4,683	4,120	9,175	4,737
147.00	5,239	4,958	14,134	5,346

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	**2.410 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 135.00'
#2	Primary	142.00'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 142.00' / 141.05' S= 0.0594 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	144.75'	**2.5" x 2.5" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (39% open area) Limited to weir flow at low heads
#4	Primary	145.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.26 cfs @ 12.17 hrs HW=145.32' (Free Discharge)
└**1=Exfiltration** (Controls 0.26 cfs)

Primary OutFlow Max=5.02 cfs @ 12.17 hrs HW=145.32' (Free Discharge)
├**2=Culvert** (Inlet Controls 5.02 cfs @ 6.39 fps)
│└**3=Orifice/Grate** (Passes 5.02 cfs of 5.70 cfs potential flow)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond BASIN: Basin #1



Stage-Discharge for Pond BASIN: Basin #1

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
143.00	0.00	0.00	0.00
143.05	0.09	0.09	0.00
143.10	0.09	0.09	0.00
143.15	0.09	0.09	0.00
143.20	0.10	0.10	0.00
143.25	0.10	0.10	0.00
143.30	0.10	0.10	0.00
143.35	0.11	0.11	0.00
143.40	0.11	0.11	0.00
143.45	0.11	0.11	0.00
143.50	0.12	0.12	0.00
143.55	0.12	0.12	0.00
143.60	0.13	0.13	0.00
143.65	0.13	0.13	0.00
143.70	0.13	0.13	0.00
143.75	0.14	0.14	0.00
143.80	0.14	0.14	0.00
143.85	0.14	0.14	0.00
143.90	0.15	0.15	0.00
143.95	0.15	0.15	0.00
144.00	0.16	0.16	0.00
144.05	0.16	0.16	0.00
144.10	0.16	0.16	0.00
144.15	0.17	0.17	0.00
144.20	0.17	0.17	0.00
144.25	0.17	0.17	0.00
144.30	0.18	0.18	0.00
144.35	0.18	0.18	0.00
144.40	0.19	0.19	0.00
144.45	0.19	0.19	0.00
144.50	0.19	0.19	0.00
144.55	0.20	0.20	0.00
144.60	0.20	0.20	0.00
144.65	0.21	0.21	0.00
144.70	0.21	0.21	0.00
144.75	0.21	0.21	0.00
144.80	0.51	0.22	0.29
144.85	1.05	0.22	0.83
144.90	1.75	0.23	1.52
144.95	2.57	0.23	2.34
145.00	3.51	0.24	3.27
145.05	4.36	0.24	4.12
145.10	4.69	0.24	4.45
145.15	5.01	0.25	4.76
145.20	5.16	0.25	4.91
145.25	5.21	0.26	4.95
145.30	5.26	0.26	5.00
145.35	5.31	0.27	5.04
145.40	5.35	0.27	5.08
145.45	5.40	0.27	5.13
145.50	5.45	0.28	5.17
145.55	5.76	0.28	5.48
145.60	6.29	0.29	6.01
145.65	6.97	0.29	6.68
145.70	7.76	0.30	7.46
145.75	8.69	0.30	8.39
145.80	9.74	0.31	9.43
145.85	10.90	0.31	10.59
145.90	12.17	0.32	11.85
145.95	13.59	0.32	13.27
146.00	15.12	0.32	14.80
146.05	16.77	0.33	16.44
146.10	18.54	0.33	18.21
146.15	20.16	0.33	19.83
146.20	21.83	0.34	21.50
146.25	23.56	0.34	23.22
146.30	25.34	0.34	25.00
146.35	27.21	0.35	26.86
146.40	29.13	0.35	28.78
146.45	31.10	0.35	30.75
146.50	33.13	0.36	32.77
146.55	35.18	0.36	34.82
146.60	37.27	0.36	36.91
146.65	39.41	0.37	39.04
146.70	41.59	0.37	41.22
146.75	43.77	0.37	43.40
146.80	45.99	0.38	45.62
146.85	48.25	0.38	47.87
146.90	50.54	0.38	50.16
146.95	52.95	0.39	52.57
147.00	**55.41**	**0.39**	**55.02**

Stage-Area-Storage for Pond BASIN: Basin #1

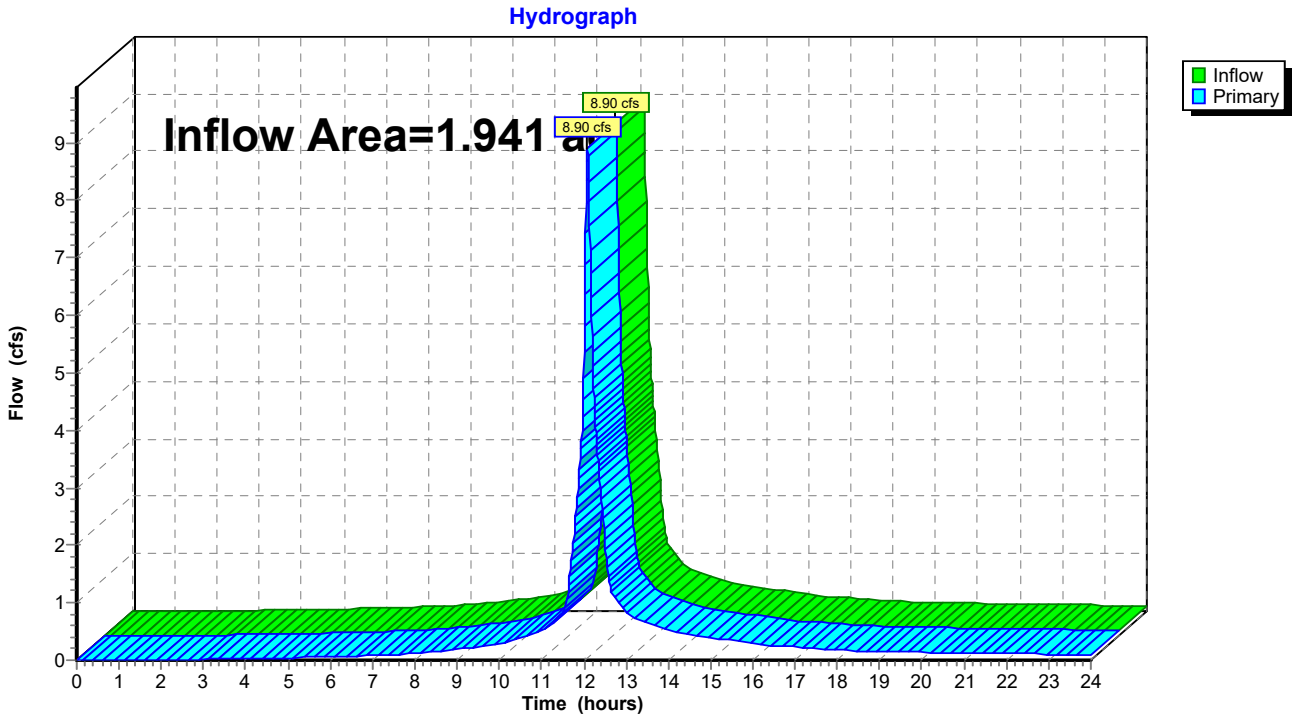
Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
143.00	1,516	1,516	0
143.10	1,607	1,608	156
143.20	1,700	1,702	321
143.30	1,796	1,800	496
143.40	1,895	1,900	681
143.50	1,996	2,002	875
143.60	2,101	2,107	1,080
143.70	2,207	2,215	1,296
143.80	2,316	2,326	1,522
143.90	2,428	2,439	1,759
144.00	2,543	2,555	2,007
144.10	2,639	2,653	2,267
144.20	2,737	2,752	2,535
144.30	2,836	2,853	2,814
144.40	2,937	2,956	3,103
144.50	3,040	3,061	3,401
144.60	3,145	3,168	3,711
144.70	3,252	3,276	4,031
144.80	3,360	3,386	4,361
144.90	3,470	3,499	4,703
145.00	3,582	3,612	5,055
145.10	3,685	3,718	5,419
145.20	3,790	3,825	5,792
145.30	3,897	3,934	6,177
145.40	4,005	4,044	6,572
145.50	4,114	4,156	6,978
145.60	4,225	4,269	7,395
145.70	4,337	4,384	7,823
145.80	4,451	4,500	8,262
145.90	4,566	4,617	8,713
146.00	4,683	4,737	9,175
146.10	4,737	4,796	9,646
146.20	4,792	4,856	10,123
146.30	4,847	4,916	10,605
146.40	4,902	4,976	11,092
146.50	4,957	5,037	11,585
146.60	5,013	5,098	12,084
146.70	5,069	5,160	12,588
146.80	5,125	5,221	13,097
146.90	5,182	5,284	13,613
147.00	**5,239**	**5,346**	**14,134**

Summary for Link EDA: EDA

Inflow Area = 1.941 ac, 46.88% Impervious, Inflow Depth > 4.24" for 25-yr event
Inflow = 8.90 cfs @ 12.09 hrs, Volume= 0.686 af
Primary = 8.90 cfs @ 12.09 hrs, Volume= 0.686 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EDA: EDA

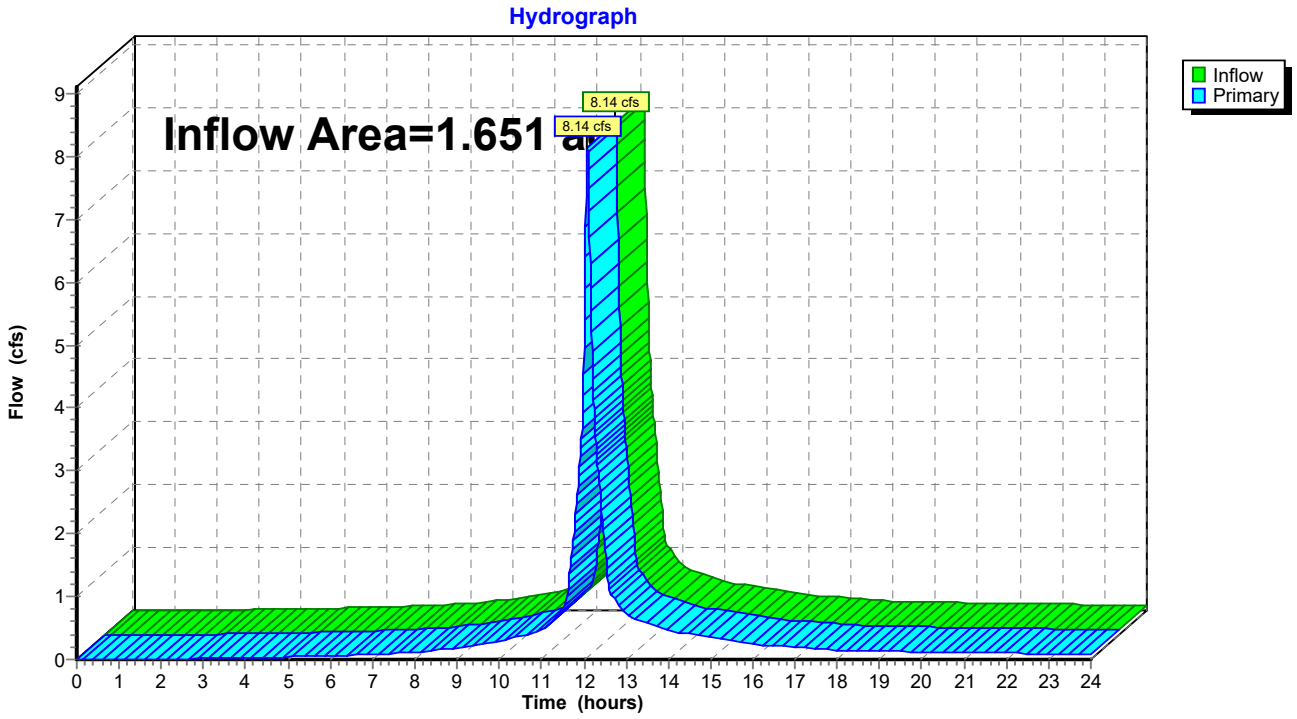


Summary for Link EDA-1: EDA-1

Inflow Area = 1.651 ac, 55.12% Impervious, Inflow Depth > 4.50" for 25-yr event
Inflow = 8.14 cfs @ 12.09 hrs, Volume= 0.619 af
Primary = 8.14 cfs @ 12.09 hrs, Volume= 0.619 af, Atten= 0%, Lag= 0.0 min
Routed to Link EDA : EDA

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EDA-1: EDA-1

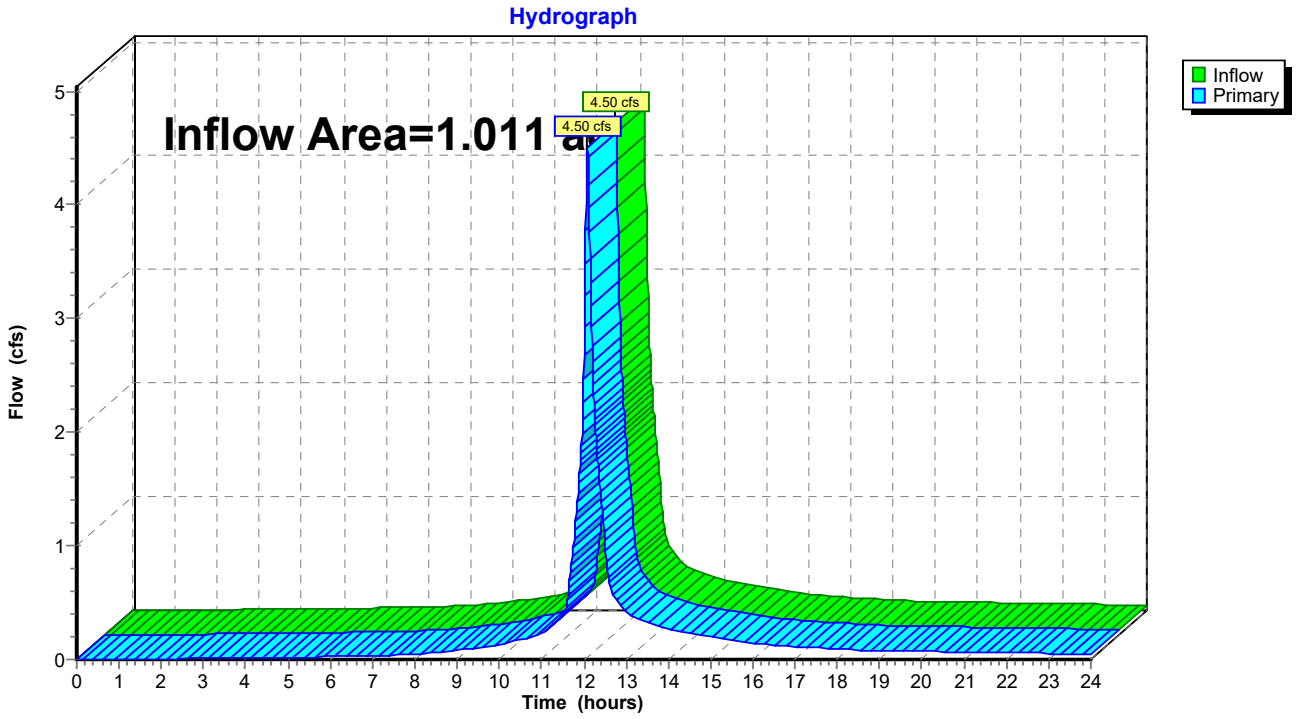


Summary for Link EDA-1B: EDA-1B

Inflow Area = 1.011 ac, 36.60% Impervious, Inflow Depth > 4.01" for 25-yr event
Inflow = 4.50 cfs @ 12.09 hrs, Volume= 0.338 af
Primary = 4.50 cfs @ 12.09 hrs, Volume= 0.338 af, Atten= 0%, Lag= 0.0 min
Routed to Link EDA-1 : EDA-1

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EDA-1B: EDA-1B

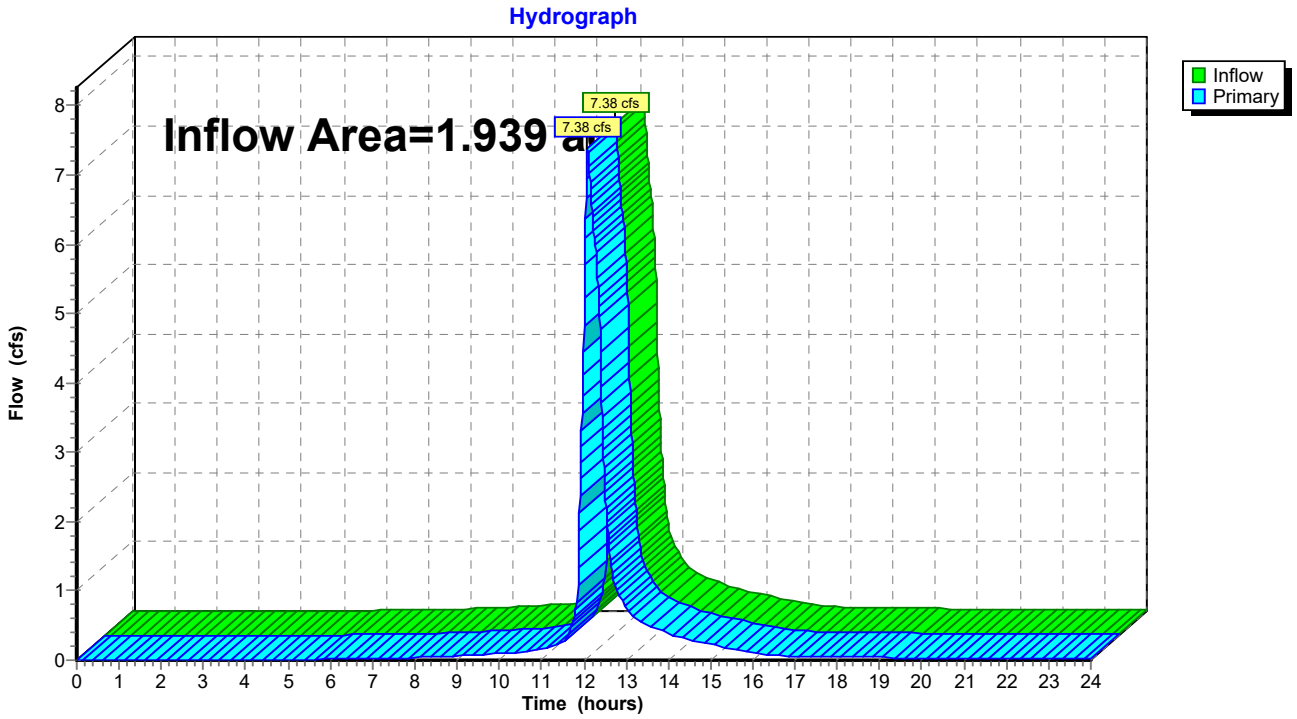


Summary for Link PDA: PDA

Inflow Area = 1.939 ac, 67.46% Impervious, Inflow Depth > 2.92" for 25-yr event
Inflow = 7.38 cfs @ 12.09 hrs, Volume= 0.472 af
Primary = 7.38 cfs @ 12.09 hrs, Volume= 0.472 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link PDA: PDA

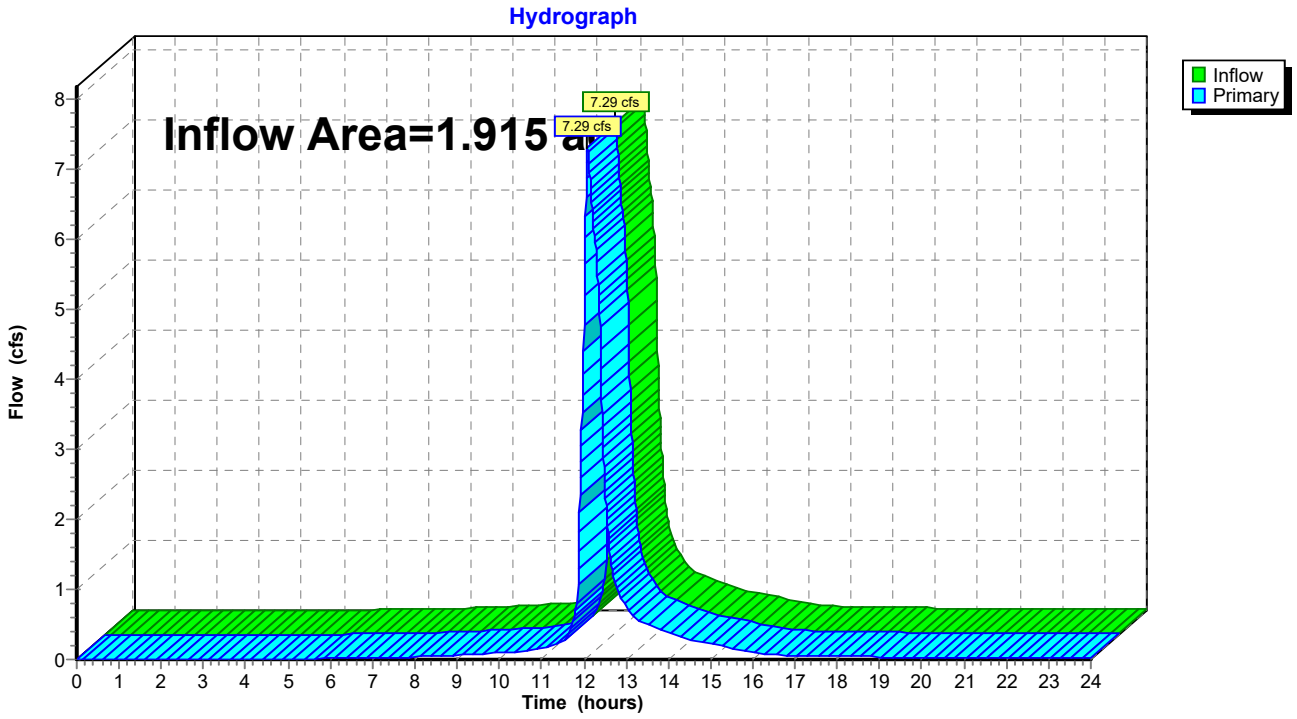


Summary for Link PDA-1: PDA-1

Inflow Area = 1.915 ac, 68.30% Impervious, Inflow Depth > 2.92" for 25-yr event
Inflow = 7.29 cfs @ 12.09 hrs, Volume= 0.466 af
Primary = 7.29 cfs @ 12.09 hrs, Volume= 0.466 af, Atten= 0%, Lag= 0.0 min
Routed to Link PDA : PDA

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link PDA-1: PDA-1

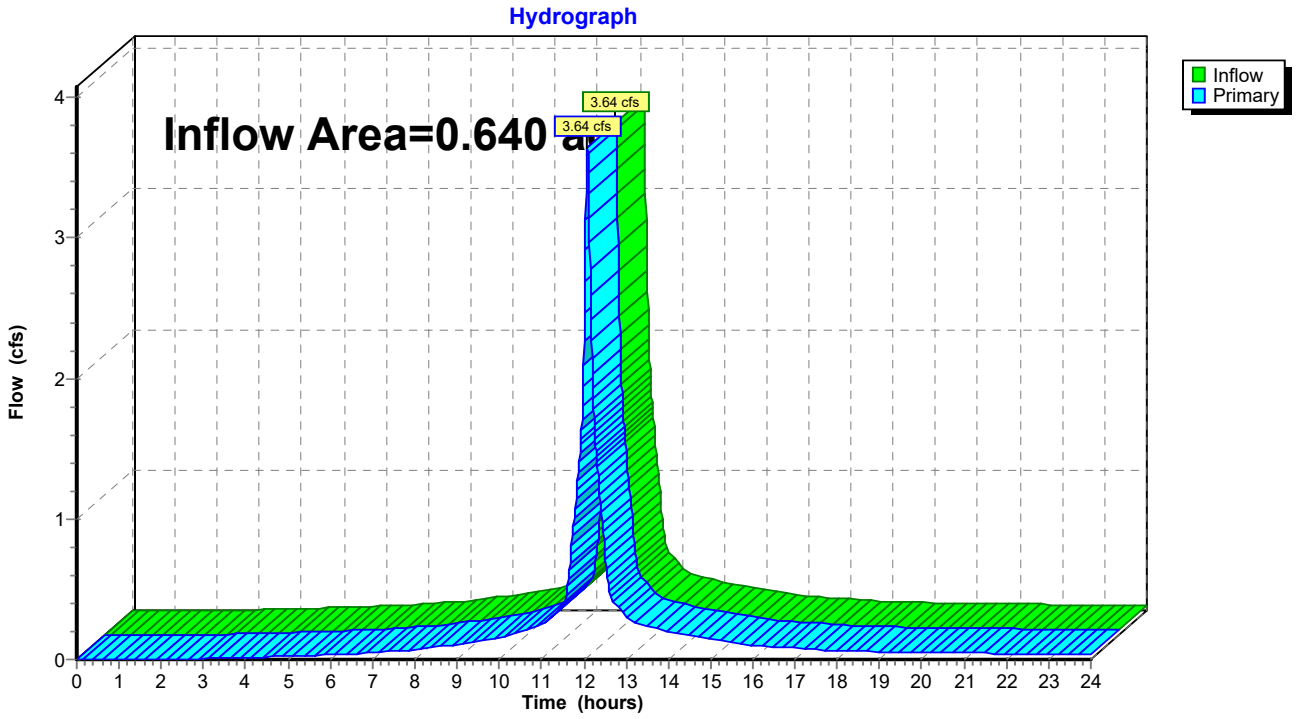


Summary for Link Pipe (EX): Bridge St Pipe

Inflow Area = 0.640 ac, 84.38% Impervious, Inflow Depth > 5.27" for 25-yr event
Inflow = 3.64 cfs @ 12.08 hrs, Volume= 0.281 af
Primary = 3.64 cfs @ 12.08 hrs, Volume= 0.281 af, Atten= 0%, Lag= 0.0 min
Routed to Link EDA-1 : EDA-1

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link Pipe (EX): Bridge St Pipe



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment EDA-1A: EDA-1A Runoff Area=0.640 ac 84.38% Impervious Runoff Depth>6.07"
Tc=6.0 min CN=94 Runoff=4.16 cfs 0.324 af

Subcatchment EDA-1B1: EDA-1B1 Runoff Area=0.691 ac 10.13% Impervious Runoff Depth>3.96"
Flow Length=150' Tc=6.1 min CN=75 Runoff=3.20 cfs 0.228 af

Subcatchment EDA-1B2: EDA-1B2 Runoff Area=0.320 ac 93.75% Impervious Runoff Depth>6.43"
Tc=6.0 min CN=97 Runoff=2.12 cfs 0.171 af

Subcatchment EDA-2: EDA-2 Runoff Area=0.290 ac 0.00% Impervious Runoff Depth>3.44"
Flow Length=150' Tc=9.1 min CN=70 Runoff=1.05 cfs 0.083 af

Subcatchment PDA-1A: PDA-1A Runoff Area=1.480 ac 67.57% Impervious Runoff Depth>5.61"
Tc=6.0 min CN=90 Runoff=9.21 cfs 0.692 af

Subcatchment PDA-1B: PDA-1B Runoff Area=0.435 ac 70.80% Impervious Runoff Depth>5.73"
Tc=6.0 min CN=91 Runoff=2.74 cfs 0.208 af

Subcatchment PDA-2: PDA-2 Runoff Area=0.024 ac 0.00% Impervious Runoff Depth>3.86"
Tc=6.0 min CN=74 Runoff=0.11 cfs 0.008 af

Pond BASIN: Basin #1 Peak Elev=145.49' Storage=6,941 cf Inflow=9.21 cfs 0.692 af
Discarded=0.28 cfs 0.269 af Primary=5.16 cfs 0.365 af Outflow=5.44 cfs 0.634 af

Link EDA: EDA Inflow=10.43 cfs 0.807 af
Primary=10.43 cfs 0.807 af

Link EDA-1: EDA-1 Inflow=9.48 cfs 0.723 af
Primary=9.48 cfs 0.723 af

Link EDA-1B: EDA-1B Inflow=5.32 cfs 0.399 af
Primary=5.32 cfs 0.399 af

Link PDA: PDA Inflow=7.84 cfs 0.581 af
Primary=7.84 cfs 0.581 af

Link PDA-1: PDA-1 Inflow=7.73 cfs 0.573 af
Primary=7.73 cfs 0.573 af

Link Pipe (EX): Bridge St Pipe Inflow=4.16 cfs 0.324 af
Primary=4.16 cfs 0.324 af

Summary for Subcatchment EDA-1A: EDA-1A

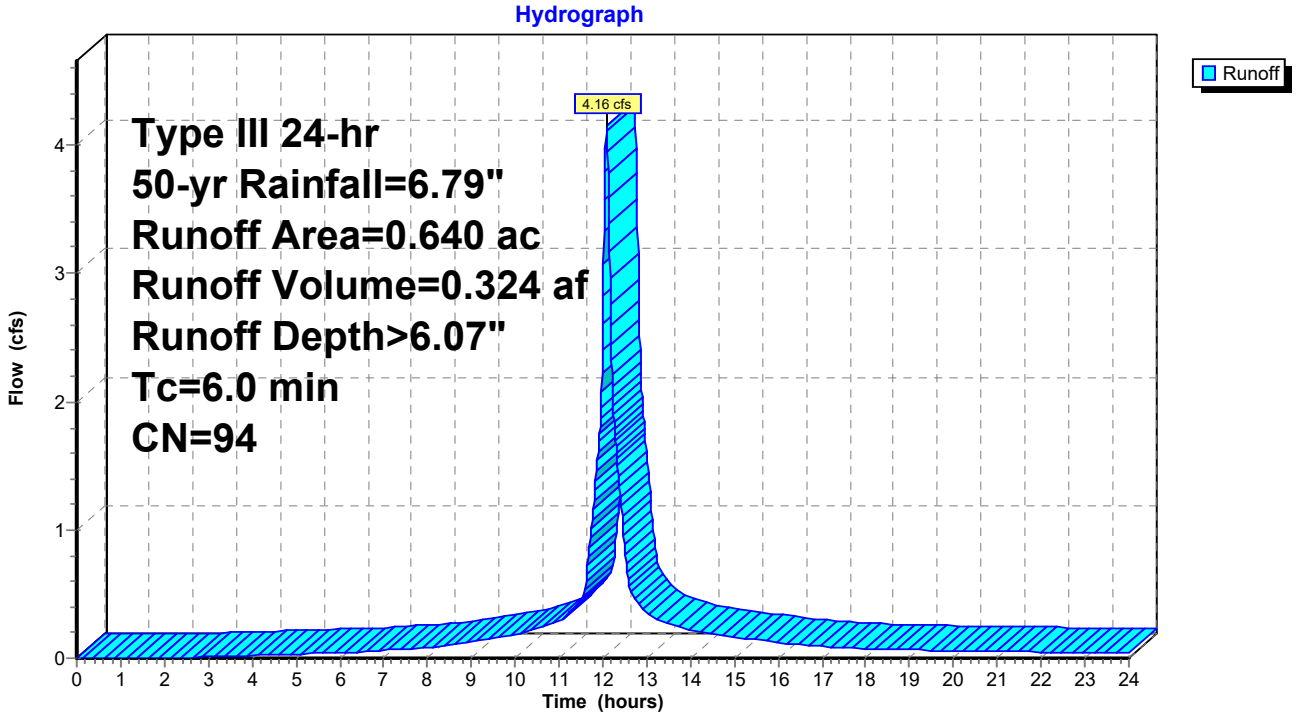
Runoff = 4.16 cfs @ 12.08 hrs, Volume= 0.324 af, Depth> 6.07"
Routed to Link Pipe (EX) : Bridge St Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=6.79"

Area (ac)	CN	Description
0.540	98	Paved parking, HSG C
0.100	74	>75% Grass cover, Good, HSG C
0.640	94	Weighted Average
0.100		15.63% Pervious Area
0.540		84.38% Impervious Area

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

Subcatchment EDA-1A: EDA-1A



Summary for Subcatchment EDA-1B1: EDA-1B1

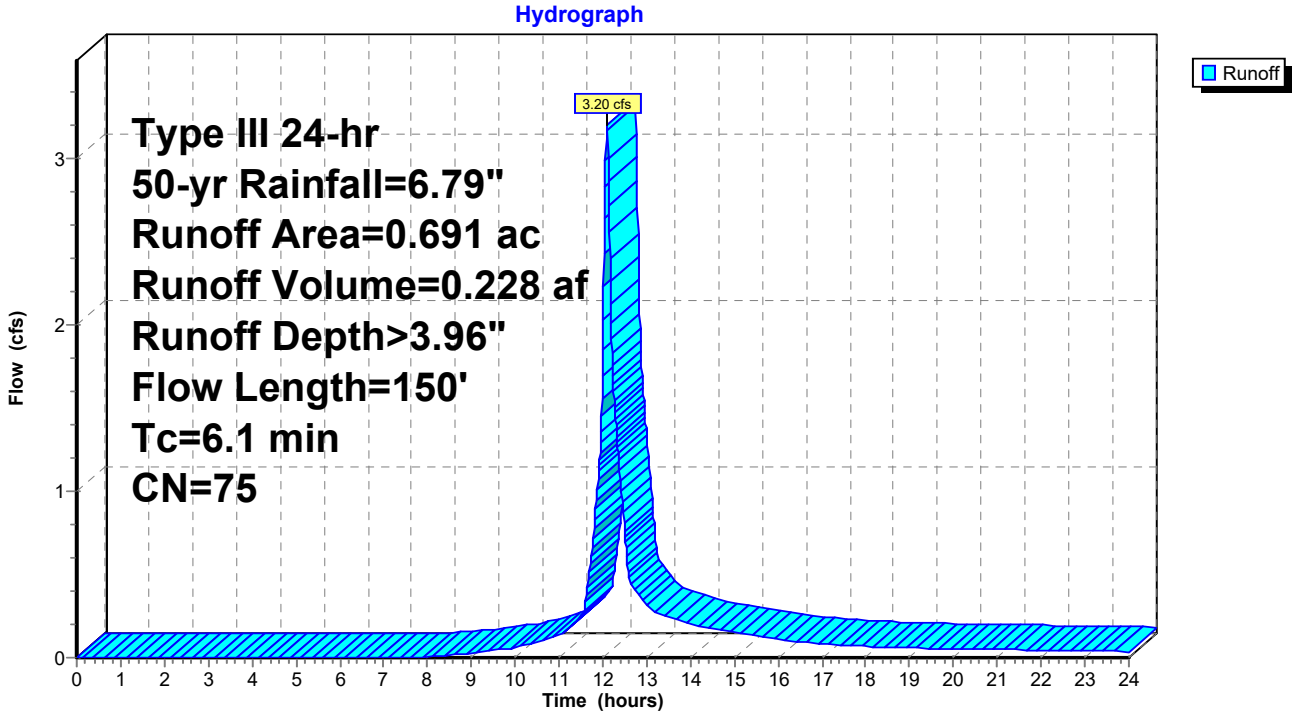
Runoff = 3.20 cfs @ 12.09 hrs, Volume= 0.228 af, Depth> 3.96"
Routed to Link EDA-1B : EDA-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=6.79"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG C
0.240	70	Woods, Good, HSG C
0.381	74	>75% Grass cover, Good, HSG C
0.691	75	Weighted Average
0.621		89.87% Pervious Area
0.070		10.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.13"
0.4	100	0.0660	4.14		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
6.1	150	Total			

Subcatchment EDA-1B1: EDA-1B1



Summary for Subcatchment EDA-1B2: EDA-1B2

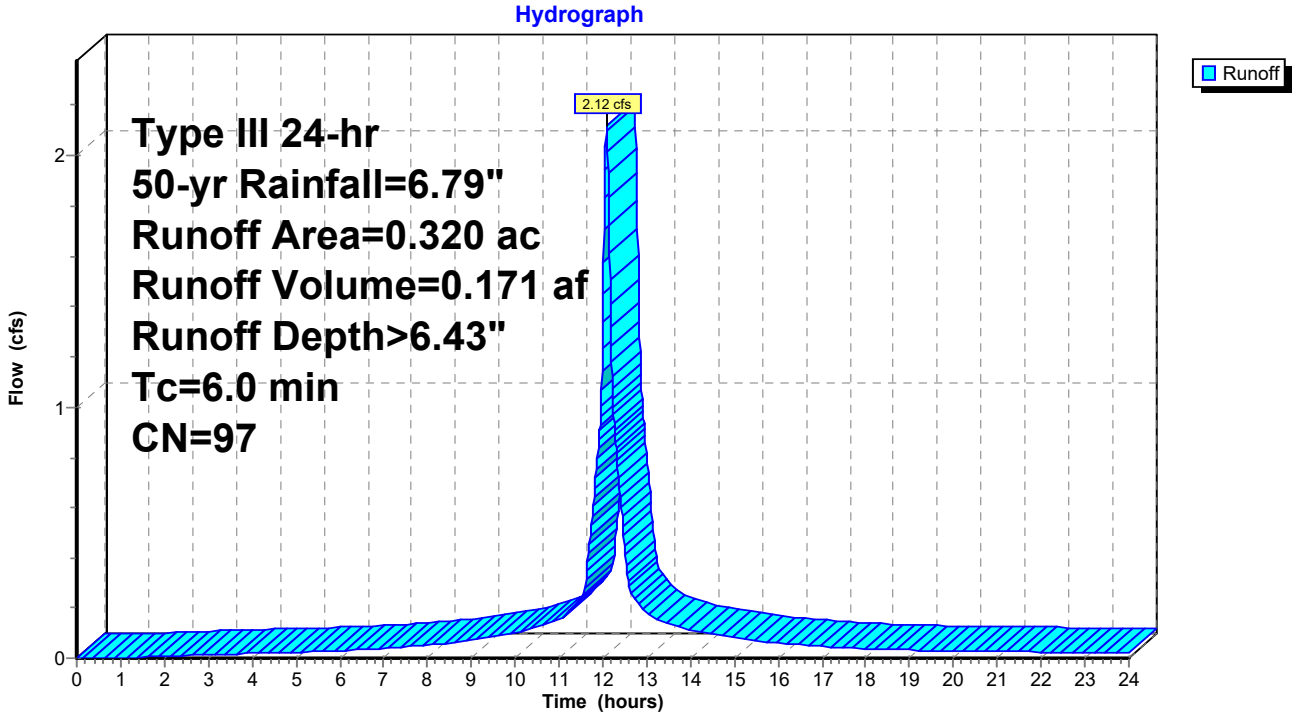
Runoff = 2.12 cfs @ 12.08 hrs, Volume= 0.171 af, Depth> 6.43"
Routed to Link EDA-1B : EDA-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=6.79"

Area (ac)	CN	Description
0.300	98	Paved parking, HSG C
0.020	74	>75% Grass cover, Good, HSG C
0.320	97	Weighted Average
0.020		6.25% Pervious Area
0.300		93.75% Impervious Area

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

Subcatchment EDA-1B2: EDA-1B2



Summary for Subcatchment EDA-2: EDA-2

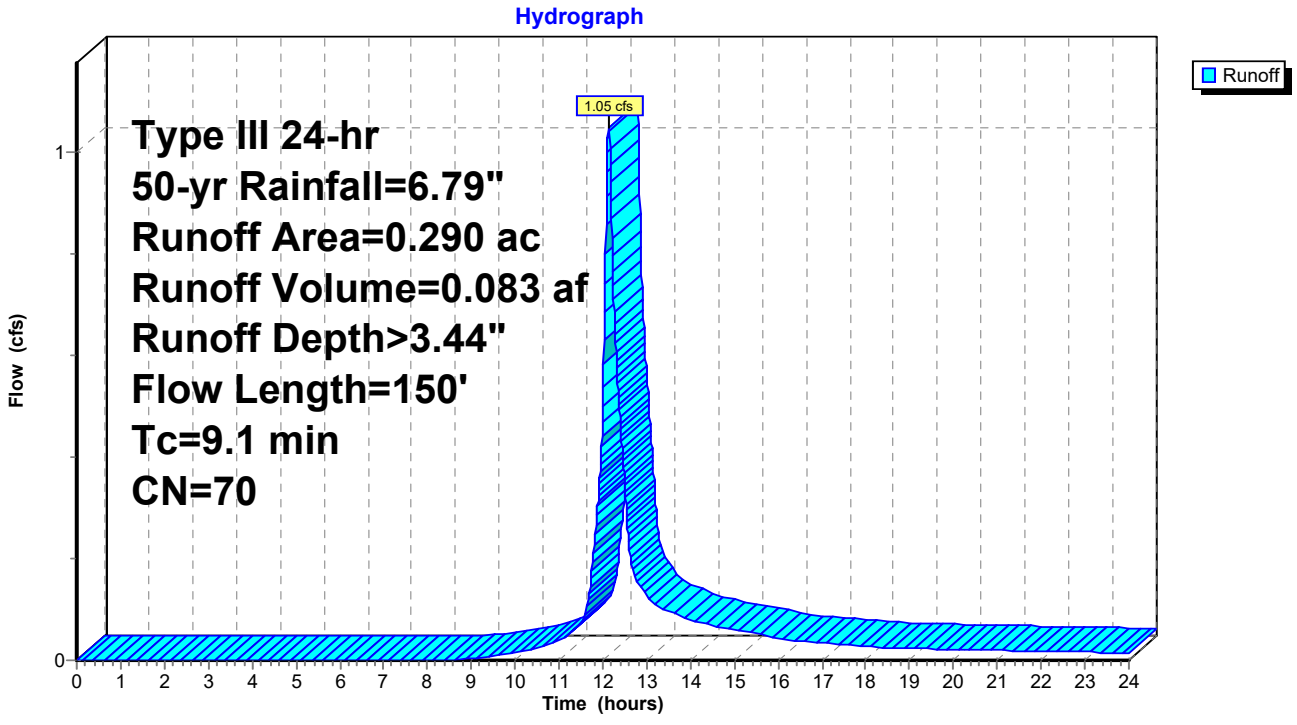
Runoff = 1.05 cfs @ 12.13 hrs, Volume= 0.083 af, Depth> 3.44"
Routed to Link EDA : EDA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=6.79"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG C
0.260	70	Woods, Good, HSG C
0.030	74	>75% Grass cover, Good, HSG C
0.290	70	Weighted Average
0.290		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0600	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.13"
1.1	100	0.0900	1.50		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
9.1	150	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment PDA-1A: PDA-1A

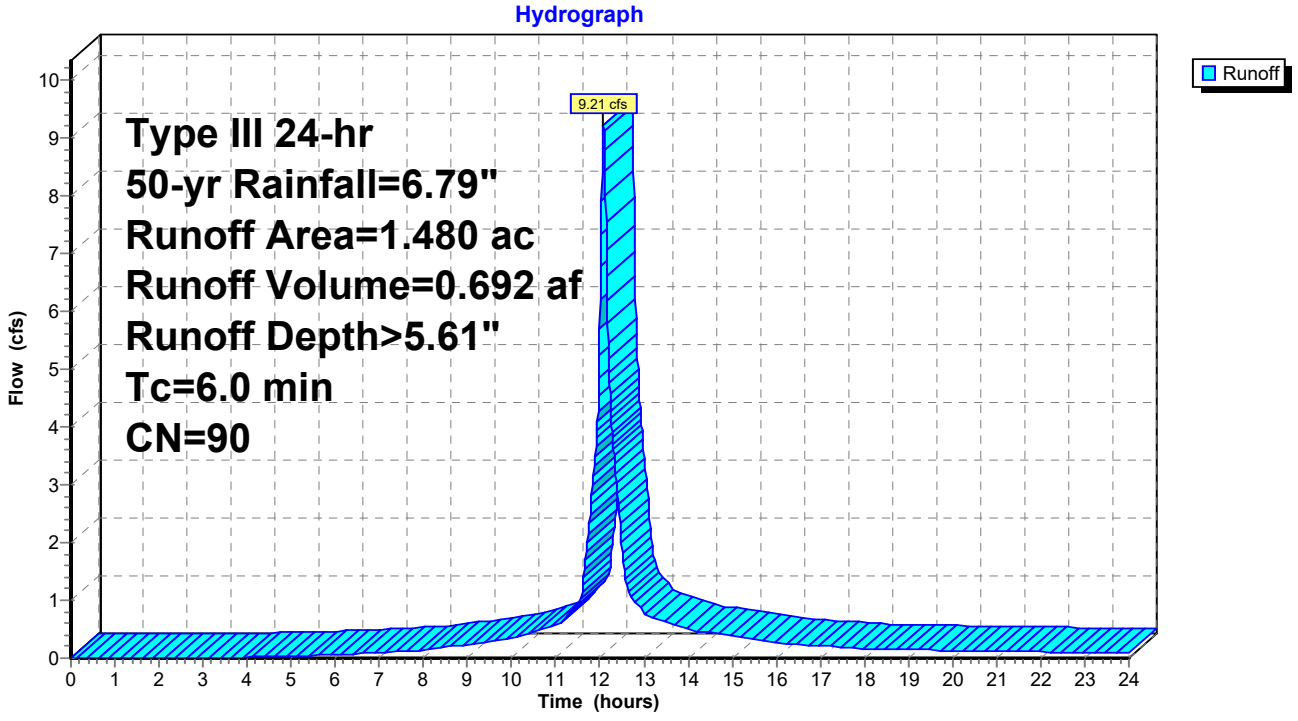
Runoff = 9.21 cfs @ 12.08 hrs, Volume= 0.692 af, Depth> 5.61"
Routed to Pond BASIN : Basin #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=6.79"

Area (ac)	CN	Description
1.000	98	Paved parking, HSG C
0.480	74	>75% Grass cover, Good, HSG C
1.480	90	Weighted Average
0.480		32.43% Pervious Area
1.000		67.57% Impervious Area

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

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

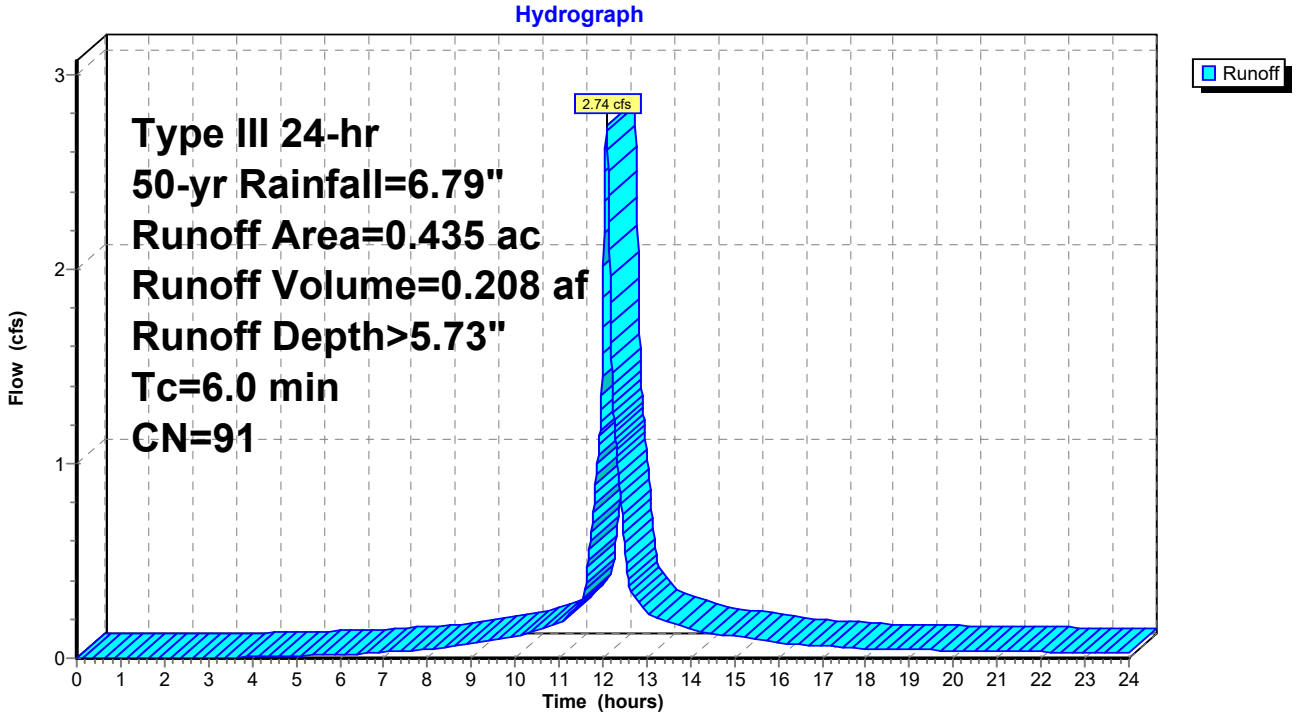
Runoff = 2.74 cfs @ 12.08 hrs, Volume= 0.208 af, Depth> 5.73"
Routed to Link PDA-1 : PDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=6.79"

Area (ac)	CN	Description
0.308	98	Paved parking, HSG C
0.127	74	>75% Grass cover, Good, HSG C
0.435	91	Weighted Average
0.127		29.20% Pervious Area
0.308		70.80% Impervious Area

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

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-2: PDA-2

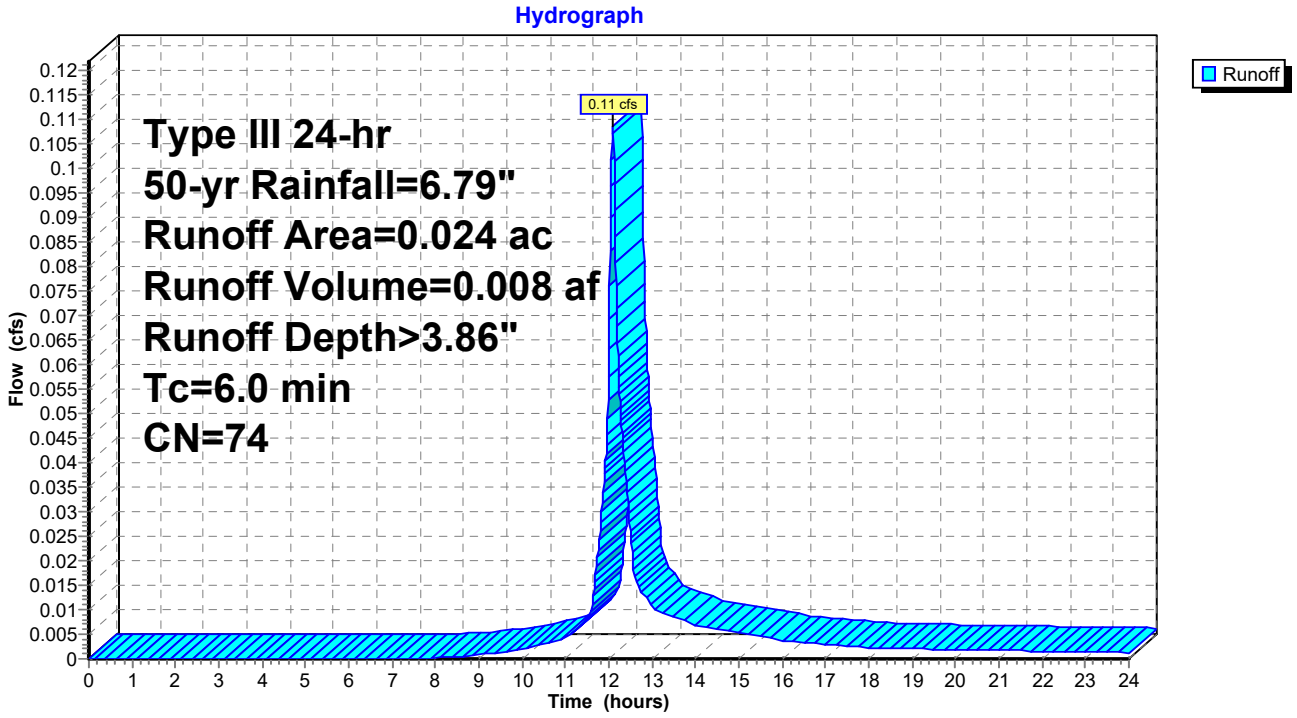
Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.008 af, Depth> 3.86"
Routed to Link PDA : PDA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=6.79"

Area (ac)	CN	Description
0.024	74	>75% Grass cover, Good, HSG C
0.024		100.00% Pervious Area

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

Subcatchment PDA-2: PDA-2



Summary for Pond BASIN: Basin #1

Inflow Area = 1.480 ac, 67.57% Impervious, Inflow Depth > 5.61" for 50-yr event
Inflow = 9.21 cfs @ 12.08 hrs, Volume= 0.692 af
Outflow = 5.44 cfs @ 12.19 hrs, Volume= 0.634 af, Atten= 41%, Lag= 6.4 min
Discarded = 0.28 cfs @ 12.19 hrs, Volume= 0.269 af
Primary = 5.16 cfs @ 12.19 hrs, Volume= 0.365 af
Routed to Link PDA-1 : PDA-1

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 145.49' @ 12.19 hrs Surf.Area= 4,104 sf Storage= 6,941 cf

Plug-Flow detention time= 98.3 min calculated for 0.634 af (92% of inflow)
Center-of-Mass det. time= 55.7 min (836.0 - 780.2)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	14,134 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

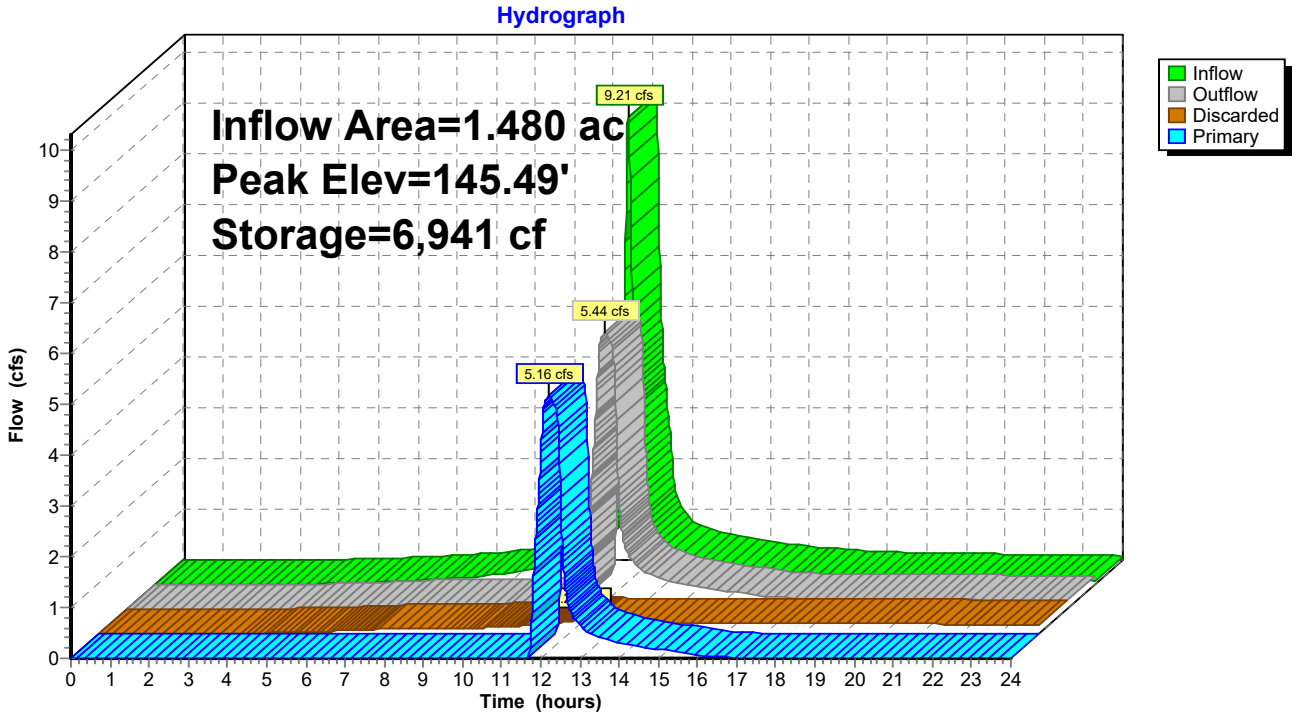
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
143.00	1,516	0	0	1,516
144.00	2,543	2,007	2,007	2,555
145.00	3,582	3,048	5,055	3,612
146.00	4,683	4,120	9,175	4,737
147.00	5,239	4,958	14,134	5,346

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	**2.410 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 135.00'
#2	Primary	142.00'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 142.00' / 141.05' S= 0.0594 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	144.75'	**2.5" x 2.5" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (39% open area) Limited to weir flow at low heads
#4	Primary	145.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.28 cfs @ 12.19 hrs HW=145.49' (Free Discharge)
└**1=Exfiltration** (Controls 0.28 cfs)

Primary OutFlow Max=5.16 cfs @ 12.19 hrs HW=145.49' (Free Discharge)
├**2=Culvert** (Inlet Controls 5.16 cfs @ 6.57 fps)
│ └**3=Orifice/Grate** (Passes 5.16 cfs of 6.48 cfs potential flow)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond BASIN: Basin #1



Stage-Discharge for Pond BASIN: Basin #1

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
143.00	0.00	0.00	0.00
143.05	0.09	0.09	0.00
143.10	0.09	0.09	0.00
143.15	0.09	0.09	0.00
143.20	0.10	0.10	0.00
143.25	0.10	0.10	0.00
143.30	0.10	0.10	0.00
143.35	0.11	0.11	0.00
143.40	0.11	0.11	0.00
143.45	0.11	0.11	0.00
143.50	0.12	0.12	0.00
143.55	0.12	0.12	0.00
143.60	0.13	0.13	0.00
143.65	0.13	0.13	0.00
143.70	0.13	0.13	0.00
143.75	0.14	0.14	0.00
143.80	0.14	0.14	0.00
143.85	0.14	0.14	0.00
143.90	0.15	0.15	0.00
143.95	0.15	0.15	0.00
144.00	0.16	0.16	0.00
144.05	0.16	0.16	0.00
144.10	0.16	0.16	0.00
144.15	0.17	0.17	0.00
144.20	0.17	0.17	0.00
144.25	0.17	0.17	0.00
144.30	0.18	0.18	0.00
144.35	0.18	0.18	0.00
144.40	0.19	0.19	0.00
144.45	0.19	0.19	0.00
144.50	0.19	0.19	0.00
144.55	0.20	0.20	0.00
144.60	0.20	0.20	0.00
144.65	0.21	0.21	0.00
144.70	0.21	0.21	0.00
144.75	0.21	0.21	0.00
144.80	0.51	0.22	0.29
144.85	1.05	0.22	0.83
144.90	1.75	0.23	1.52
144.95	2.57	0.23	2.34
145.00	3.51	0.24	3.27
145.05	4.36	0.24	4.12
145.10	4.69	0.24	4.45
145.15	5.01	0.25	4.76
145.20	5.16	0.25	4.91
145.25	5.21	0.26	4.95
145.30	5.26	0.26	5.00
145.35	5.31	0.27	5.04
145.40	5.35	0.27	5.08
145.45	5.40	0.27	5.13
145.50	5.45	0.28	5.17
145.55	5.76	0.28	5.48
145.60	6.29	0.29	6.01
145.65	6.97	0.29	6.68
145.70	7.76	0.30	7.46
145.75	8.69	0.30	8.39
145.80	9.74	0.31	9.43
145.85	10.90	0.31	10.59
145.90	12.17	0.32	11.85
145.95	13.59	0.32	13.27
146.00	15.12	0.32	14.80
146.05	16.77	0.33	16.44
146.10	18.54	0.33	18.21
146.15	20.16	0.33	19.83
146.20	21.83	0.34	21.50
146.25	23.56	0.34	23.22
146.30	25.34	0.34	25.00
146.35	27.21	0.35	26.86
146.40	29.13	0.35	28.78
146.45	31.10	0.35	30.75
146.50	33.13	0.36	32.77
146.55	35.18	0.36	34.82
146.60	37.27	0.36	36.91
146.65	39.41	0.37	39.04
146.70	41.59	0.37	41.22
146.75	43.77	0.37	43.40
146.80	45.99	0.38	45.62
146.85	48.25	0.38	47.87
146.90	50.54	0.38	50.16
146.95	52.95	0.39	52.57
147.00	**55.41**	**0.39**	**55.02**

Stage-Area-Storage for Pond BASIN: Basin #1

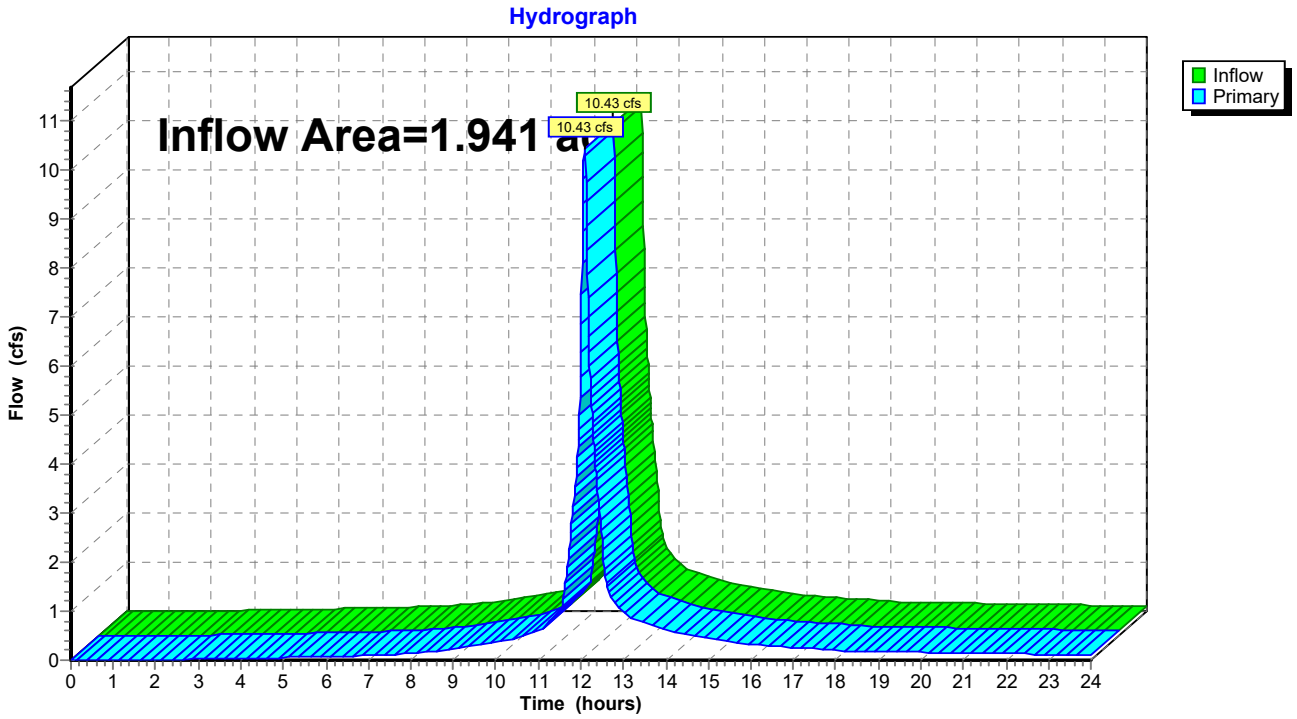
Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
143.00	1,516	1,516	0
143.10	1,607	1,608	156
143.20	1,700	1,702	321
143.30	1,796	1,800	496
143.40	1,895	1,900	681
143.50	1,996	2,002	875
143.60	2,101	2,107	1,080
143.70	2,207	2,215	1,296
143.80	2,316	2,326	1,522
143.90	2,428	2,439	1,759
144.00	2,543	2,555	2,007
144.10	2,639	2,653	2,267
144.20	2,737	2,752	2,535
144.30	2,836	2,853	2,814
144.40	2,937	2,956	3,103
144.50	3,040	3,061	3,401
144.60	3,145	3,168	3,711
144.70	3,252	3,276	4,031
144.80	3,360	3,386	4,361
144.90	3,470	3,499	4,703
145.00	3,582	3,612	5,055
145.10	3,685	3,718	5,419
145.20	3,790	3,825	5,792
145.30	3,897	3,934	6,177
145.40	4,005	4,044	6,572
145.50	4,114	4,156	6,978
145.60	4,225	4,269	7,395
145.70	4,337	4,384	7,823
145.80	4,451	4,500	8,262
145.90	4,566	4,617	8,713
146.00	4,683	4,737	9,175
146.10	4,737	4,796	9,646
146.20	4,792	4,856	10,123
146.30	4,847	4,916	10,605
146.40	4,902	4,976	11,092
146.50	4,957	5,037	11,585
146.60	5,013	5,098	12,084
146.70	5,069	5,160	12,588
146.80	5,125	5,221	13,097
146.90	5,182	5,284	13,613
147.00	**5,239**	**5,346**	**14,134**

Summary for Link EDA: EDA

Inflow Area = 1.941 ac, 46.88% Impervious, Inflow Depth > 4.99" for 50-yr event
Inflow = 10.43 cfs @ 12.09 hrs, Volume= 0.807 af
Primary = 10.43 cfs @ 12.09 hrs, Volume= 0.807 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EDA: EDA

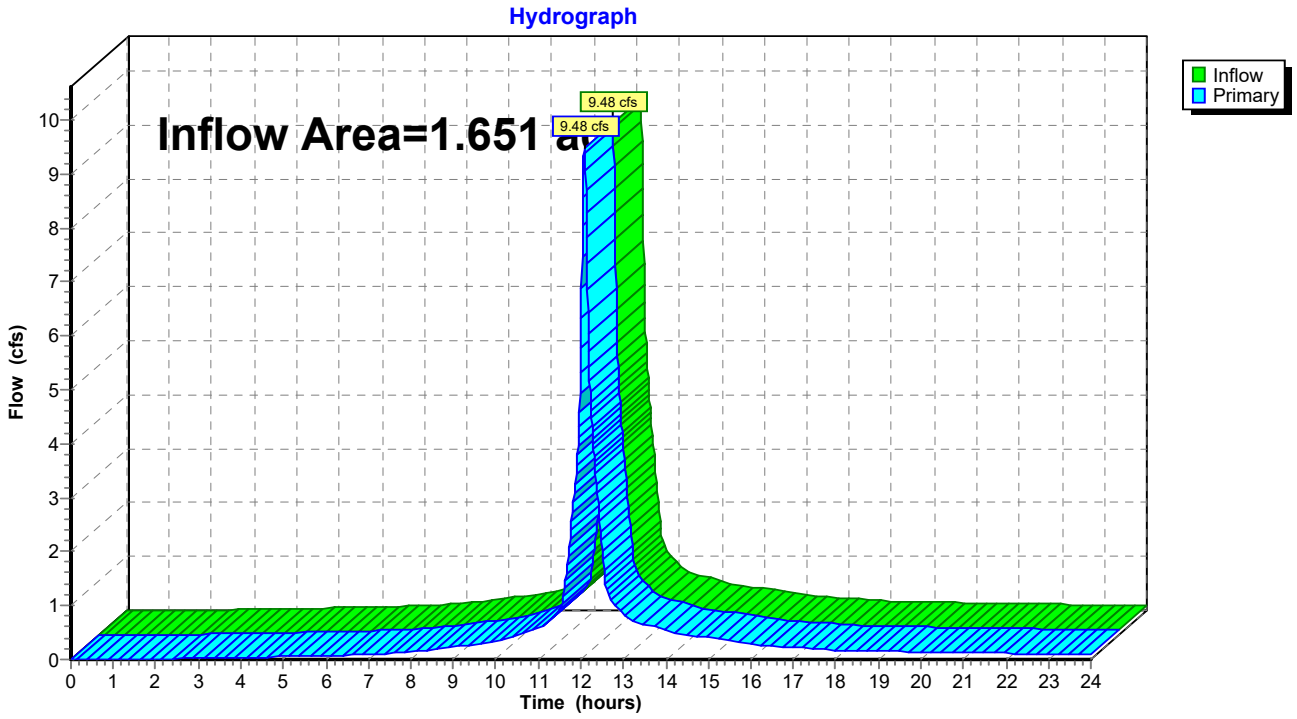


Summary for Link EDA-1: EDA-1

Inflow Area = 1.651 ac, 55.12% Impervious, Inflow Depth > 5.26" for 50-yr event
Inflow = 9.48 cfs @ 12.09 hrs, Volume= 0.723 af
Primary = 9.48 cfs @ 12.09 hrs, Volume= 0.723 af, Atten= 0%, Lag= 0.0 min
Routed to Link EDA : EDA

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EDA-1: EDA-1

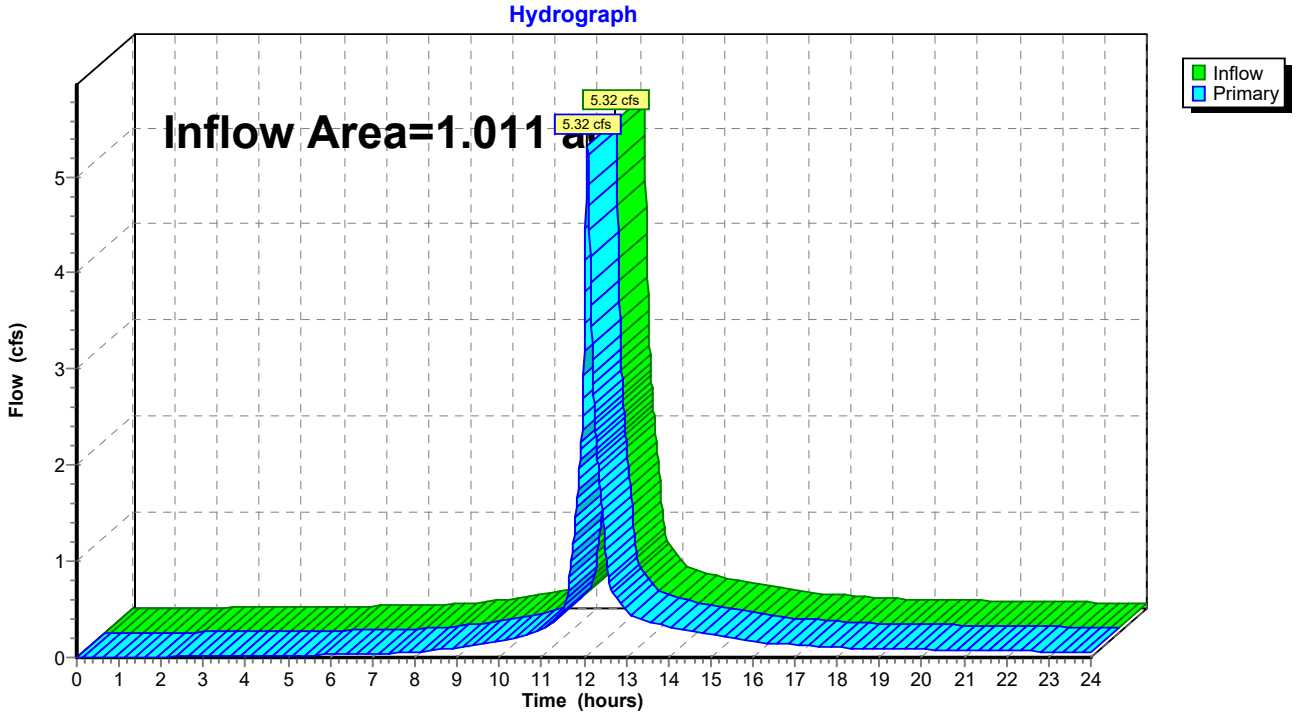


Summary for Link EDA-1B: EDA-1B

Inflow Area = 1.011 ac, 36.60% Impervious, Inflow Depth > 4.74" for 50-yr event
Inflow = 5.32 cfs @ 12.09 hrs, Volume= 0.399 af
Primary = 5.32 cfs @ 12.09 hrs, Volume= 0.399 af, Atten= 0%, Lag= 0.0 min
Routed to Link EDA-1 : EDA-1

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EDA-1B: EDA-1B

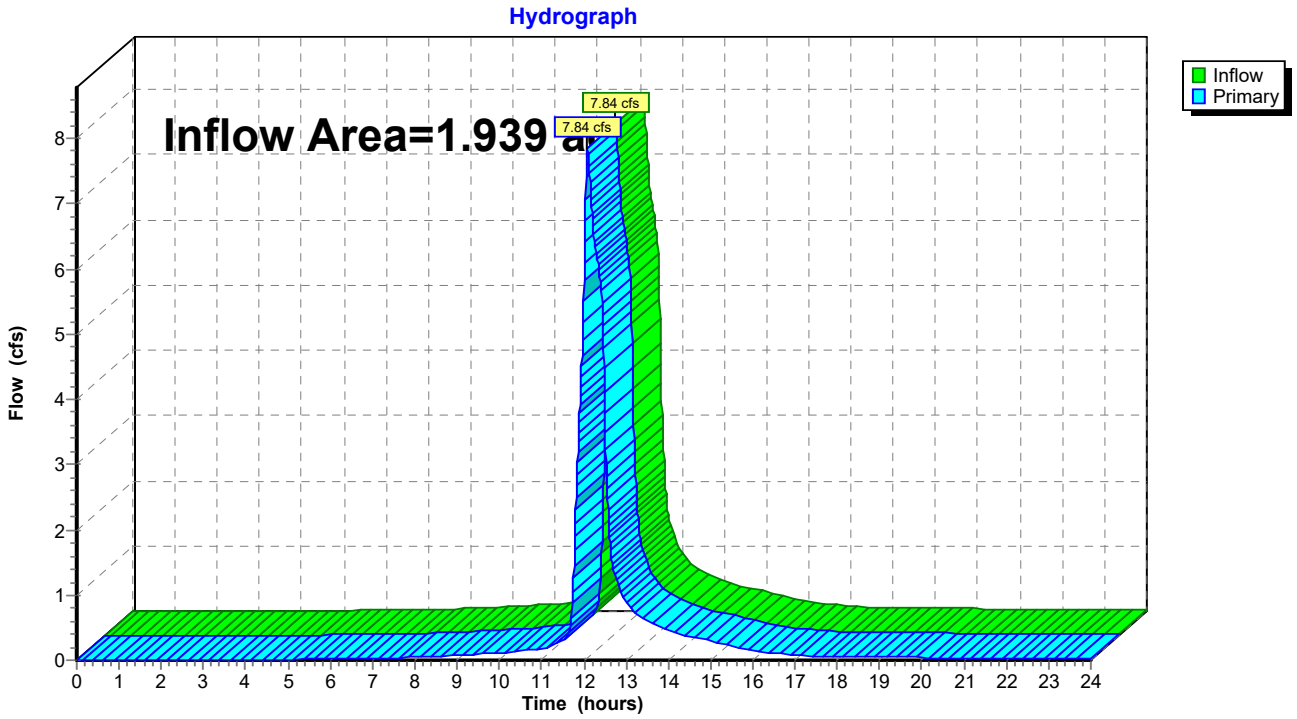


Summary for Link PDA: PDA

Inflow Area = 1.939 ac, 67.46% Impervious, Inflow Depth > 3.59" for 50-yr event
Inflow = 7.84 cfs @ 12.09 hrs, Volume= 0.581 af
Primary = 7.84 cfs @ 12.09 hrs, Volume= 0.581 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link PDA: PDA

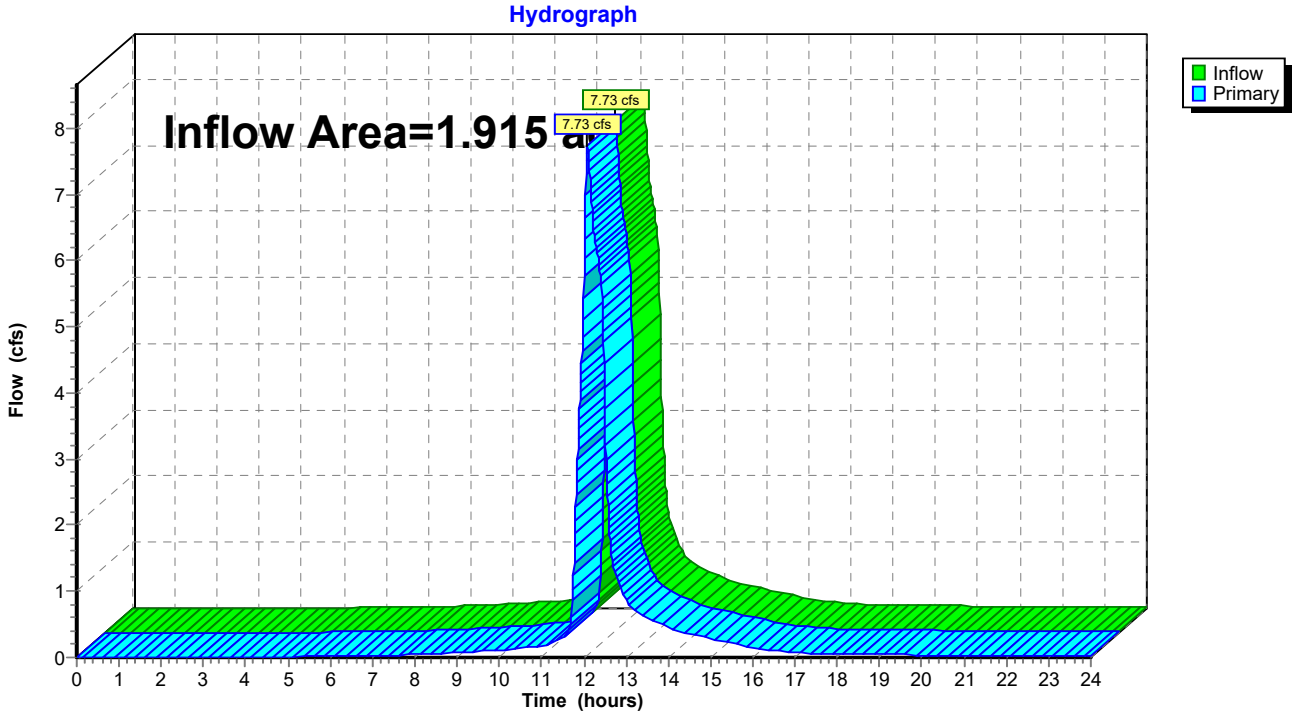


Summary for Link PDA-1: PDA-1

Inflow Area = 1.915 ac, 68.30% Impervious, Inflow Depth > 3.59" for 50-yr event
Inflow = 7.73 cfs @ 12.09 hrs, Volume= 0.573 af
Primary = 7.73 cfs @ 12.09 hrs, Volume= 0.573 af, Atten= 0%, Lag= 0.0 min
Routed to Link PDA : PDA

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link PDA-1: PDA-1

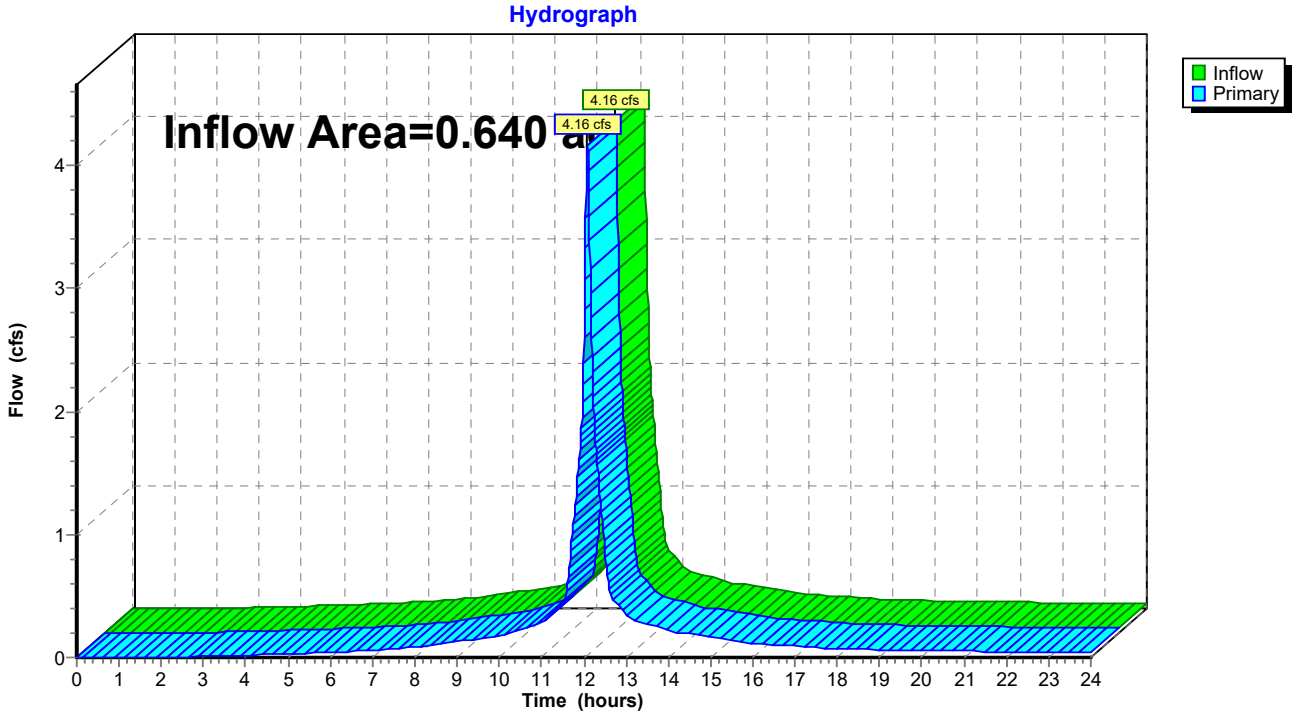


Summary for Link Pipe (EX): Bridge St Pipe

Inflow Area = 0.640 ac, 84.38% Impervious, Inflow Depth > 6.07" for 50-yr event
Inflow = 4.16 cfs @ 12.08 hrs, Volume= 0.324 af
Primary = 4.16 cfs @ 12.08 hrs, Volume= 0.324 af, Atten= 0%, Lag= 0.0 min
Routed to Link EDA-1 : EDA-1

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link Pipe (EX): Bridge St Pipe



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment EDA-1A: EDA-1A Runoff Area=0.640 ac 84.38% Impervious Runoff Depth>6.95"
Tc=6.0 min CN=94 Runoff=4.72 cfs 0.371 af

Subcatchment EDA-1B1: EDA-1B1 Runoff Area=0.691 ac 10.13% Impervious Runoff Depth>4.74"
Flow Length=150' Tc=6.1 min CN=75 Runoff=3.82 cfs 0.273 af

Subcatchment EDA-1B2: EDA-1B2 Runoff Area=0.320 ac 93.75% Impervious Runoff Depth>7.31"
Tc=6.0 min CN=97 Runoff=2.40 cfs 0.195 af

Subcatchment EDA-2: EDA-2 Runoff Area=0.290 ac 0.00% Impervious Runoff Depth>4.17"
Flow Length=150' Tc=9.1 min CN=70 Runoff=1.28 cfs 0.101 af

Subcatchment PDA-1A: PDA-1A Runoff Area=1.480 ac 67.57% Impervious Runoff Depth>6.48"
Tc=6.0 min CN=90 Runoff=10.54 cfs 0.799 af

Subcatchment PDA-1B: PDA-1B Runoff Area=0.435 ac 70.80% Impervious Runoff Depth>6.59"
Tc=6.0 min CN=91 Runoff=3.13 cfs 0.239 af

Subcatchment PDA-2: PDA-2 Runoff Area=0.024 ac 0.00% Impervious Runoff Depth>4.63"
Tc=6.0 min CN=74 Runoff=0.13 cfs 0.009 af

Pond BASIN: Basin #1 Peak Elev=145.63' Storage=7,522 cf Inflow=10.54 cfs 0.799 af
Discarded=0.29 cfs 0.280 af Primary=6.40 cfs 0.453 af Outflow=6.69 cfs 0.734 af

Link EDA: EDA Inflow=12.10 cfs 0.939 af
Primary=12.10 cfs 0.939 af

Link EDA-1: EDA-1 Inflow=10.94 cfs 0.838 af
Primary=10.94 cfs 0.838 af

Link EDA-1B: EDA-1B Inflow=6.22 cfs 0.468 af
Primary=6.22 cfs 0.468 af

Link PDA: PDA Inflow=8.66 cfs 0.702 af
Primary=8.66 cfs 0.702 af

Link PDA-1: PDA-1 Inflow=8.56 cfs 0.692 af
Primary=8.56 cfs 0.692 af

Link Pipe (EX): Bridge St Pipe Inflow=4.72 cfs 0.371 af
Primary=4.72 cfs 0.371 af

Summary for Subcatchment EDA-1A: EDA-1A

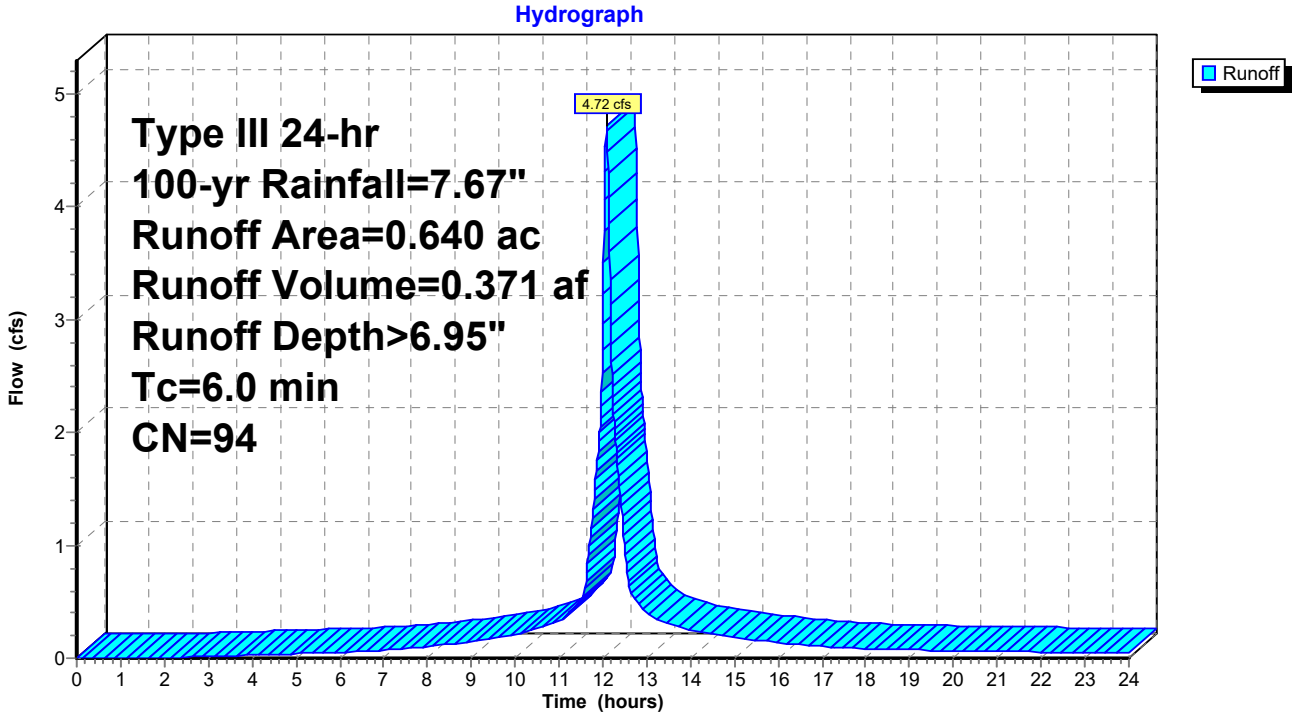
Runoff = 4.72 cfs @ 12.08 hrs, Volume= 0.371 af, Depth> 6.95"
Routed to Link Pipe (EX) : Bridge St Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.67"

Area (ac)	CN	Description
0.540	98	Paved parking, HSG C
0.100	74	>75% Grass cover, Good, HSG C
0.640	94	Weighted Average
0.100		15.63% Pervious Area
0.540		84.38% Impervious Area

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

Subcatchment EDA-1A: EDA-1A



Summary for Subcatchment EDA-1B1: EDA-1B1

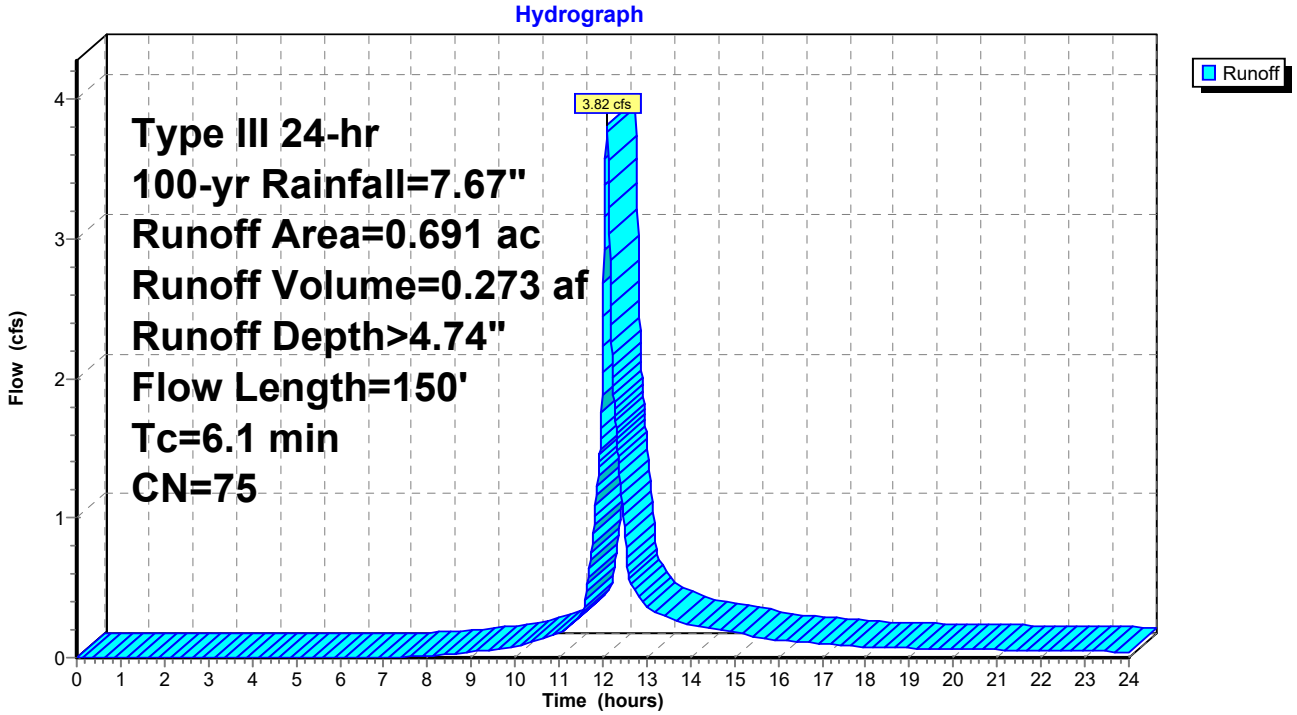
Runoff = 3.82 cfs @ 12.09 hrs, Volume= 0.273 af, Depth> 4.74"
Routed to Link EDA-1B : EDA-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.67"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG C
0.240	70	Woods, Good, HSG C
0.381	74	>75% Grass cover, Good, HSG C
0.691	75	Weighted Average
0.621		89.87% Pervious Area
0.070		10.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.13"
0.4	100	0.0660	4.14		**Shallow Concentrated Flow, BC** Unpaved Kv= 16.1 fps
6.1	150	Total			

Subcatchment EDA-1B1: EDA-1B1



Summary for Subcatchment EDA-1B2: EDA-1B2

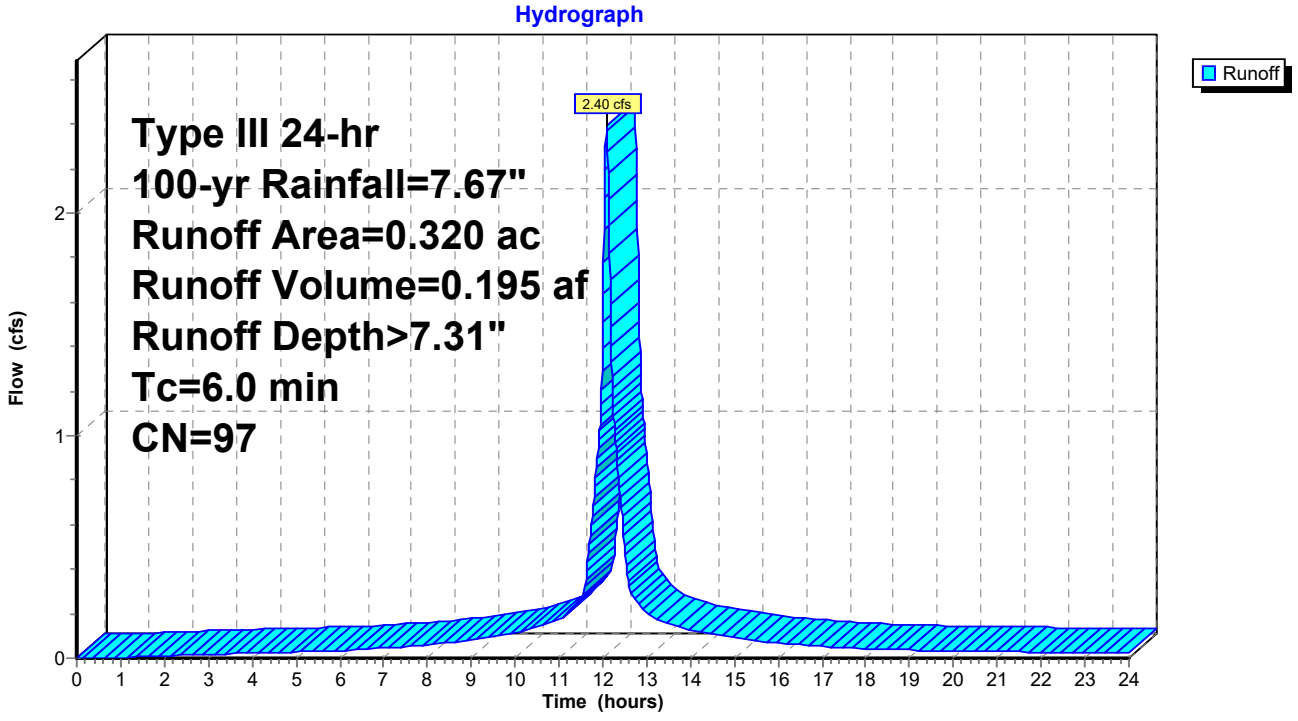
Runoff = 2.40 cfs @ 12.08 hrs, Volume= 0.195 af, Depth> 7.31"
Routed to Link EDA-1B : EDA-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.67"

Area (ac)	CN	Description
0.300	98	Paved parking, HSG C
0.020	74	>75% Grass cover, Good, HSG C
0.320	97	Weighted Average
0.020		6.25% Pervious Area
0.300		93.75% Impervious Area

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

Subcatchment EDA-1B2: EDA-1B2



Summary for Subcatchment EDA-2: EDA-2

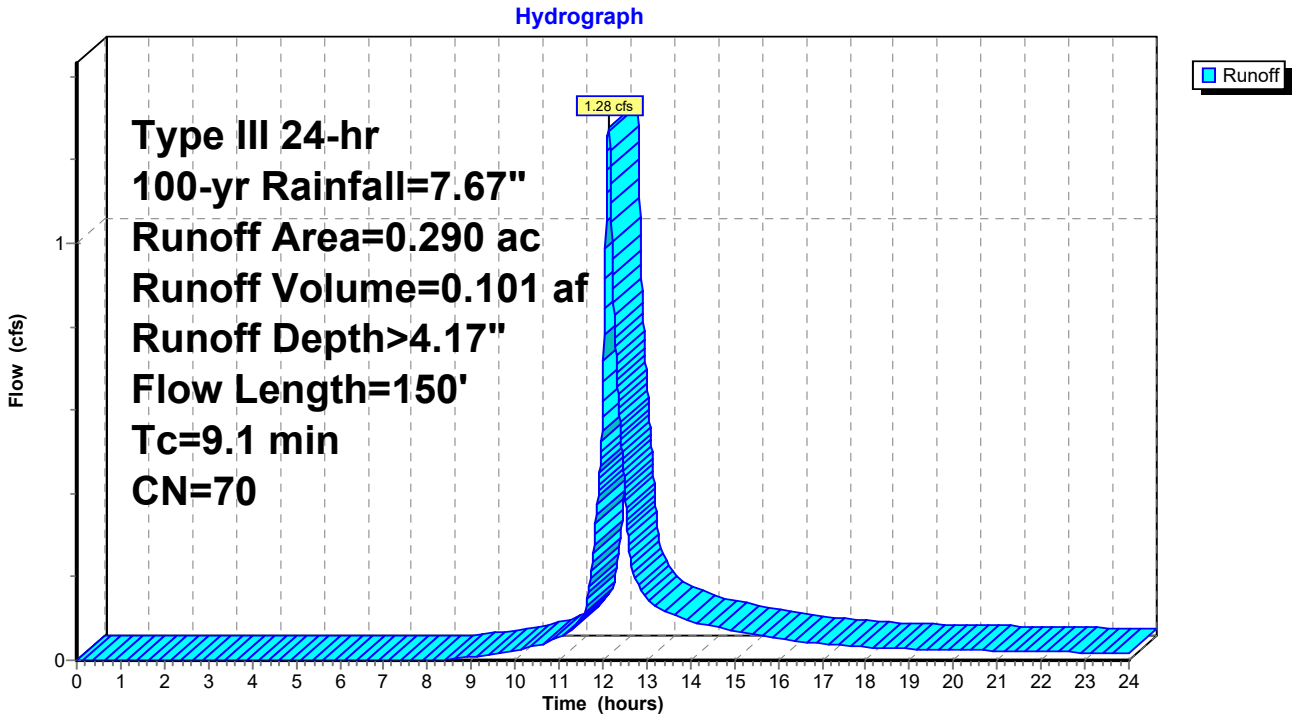
Runoff = 1.28 cfs @ 12.13 hrs, Volume= 0.101 af, Depth> 4.17"
Routed to Link EDA : EDA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.67"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG C
0.260	70	Woods, Good, HSG C
0.030	74	>75% Grass cover, Good, HSG C
0.290	70	Weighted Average
0.290		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0600	0.10		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.13"
1.1	100	0.0900	1.50		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
9.1	150	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment PDA-1A: PDA-1A

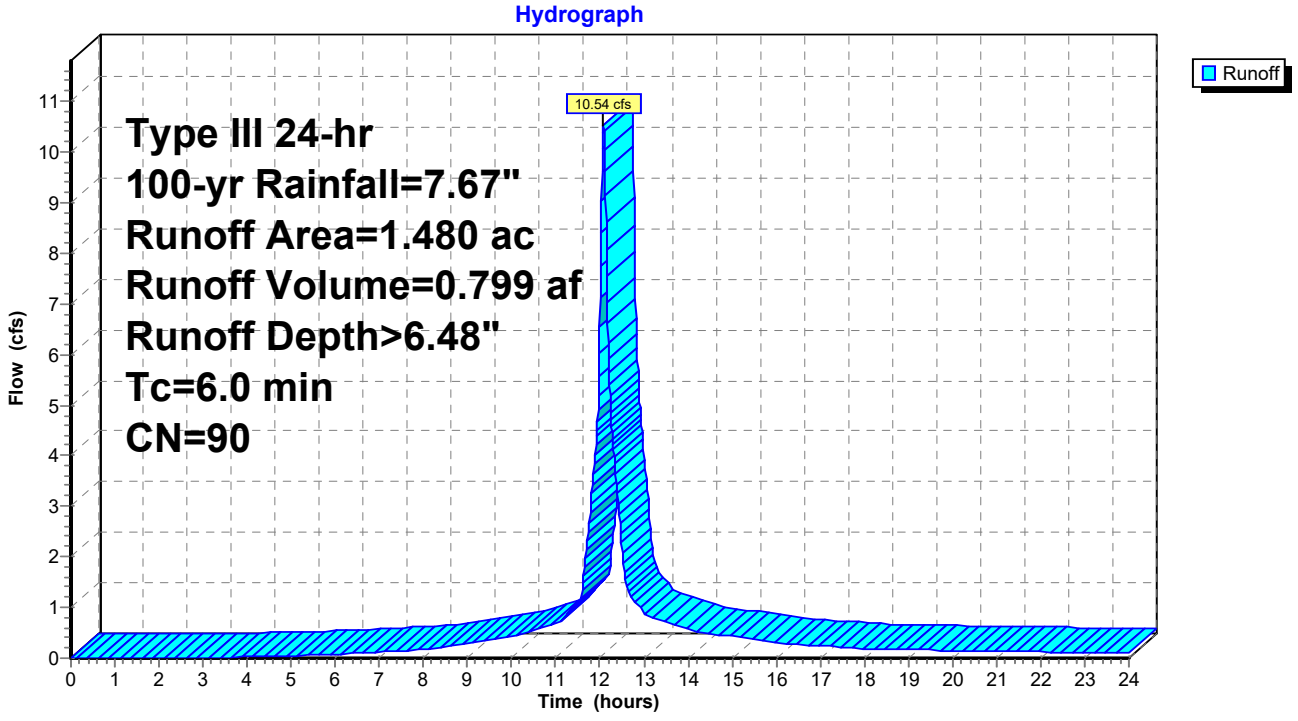
Runoff = 10.54 cfs @ 12.08 hrs, Volume= 0.799 af, Depth> 6.48"
Routed to Pond BASIN : Basin #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.67"

Area (ac)	CN	Description
1.000	98	Paved parking, HSG C
0.480	74	>75% Grass cover, Good, HSG C
1.480	90	Weighted Average
0.480		32.43% Pervious Area
1.000		67.57% Impervious Area

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

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

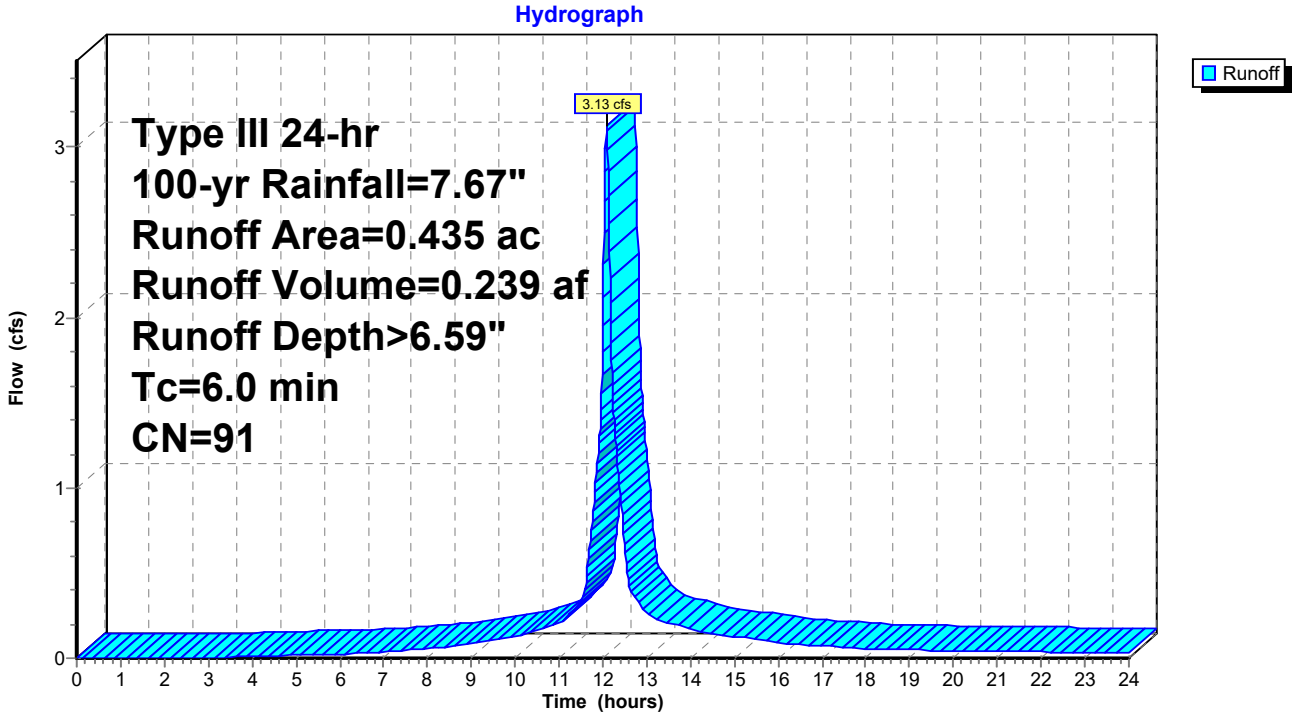
Runoff = 3.13 cfs @ 12.08 hrs, Volume= 0.239 af, Depth> 6.59"
Routed to Link PDA-1 : PDA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.67"

Area (ac)	CN	Description
0.308	98	Paved parking, HSG C
0.127	74	>75% Grass cover, Good, HSG C
0.435	91	Weighted Average
0.127		29.20% Pervious Area
0.308		70.80% Impervious Area

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

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-2: PDA-2

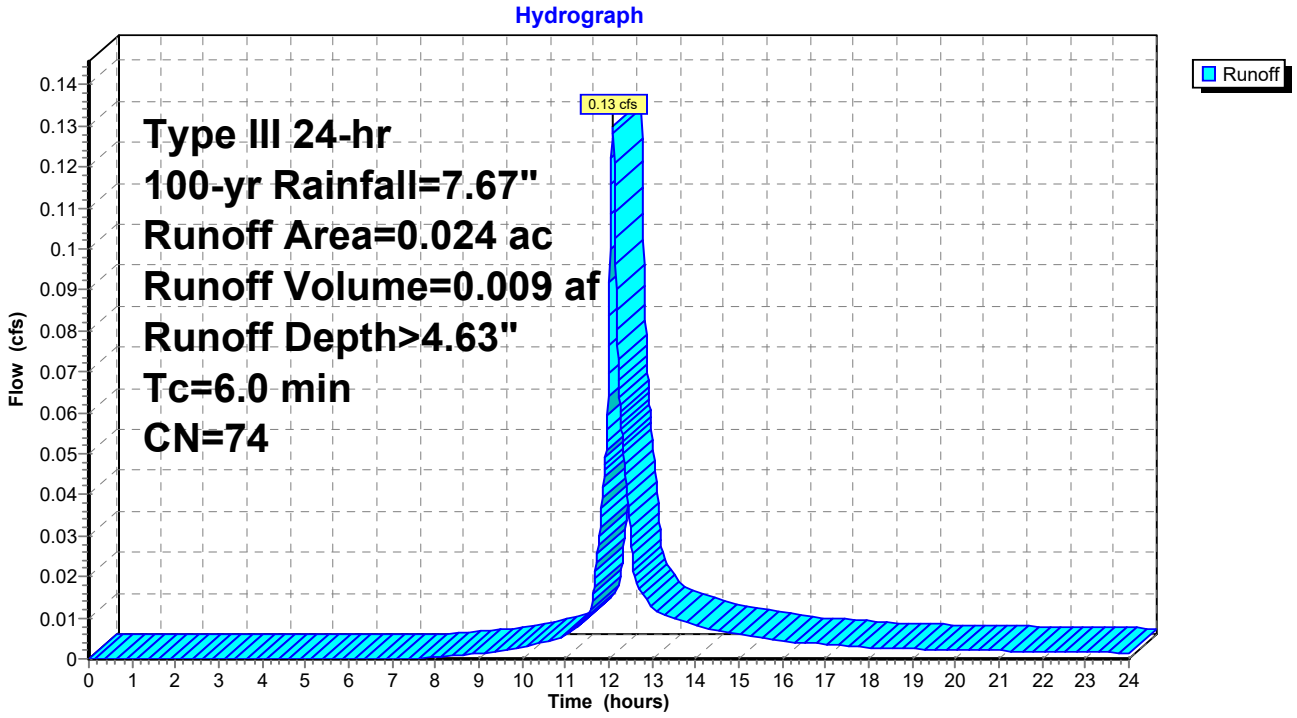
Runoff = 0.13 cfs @ 12.09 hrs, Volume= 0.009 af, Depth> 4.63"
Routed to Link PDA : PDA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.67"

Area (ac)	CN	Description
0.024	74	>75% Grass cover, Good, HSG C
0.024		100.00% Pervious Area

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

Subcatchment PDA-2: PDA-2



Summary for Pond BASIN: Basin #1

Inflow Area = 1.480 ac, 67.57% Impervious, Inflow Depth > 6.48" for 100-yr event
Inflow = 10.54 cfs @ 12.08 hrs, Volume= 0.799 af
Outflow = 6.69 cfs @ 12.18 hrs, Volume= 0.734 af, Atten= 37%, Lag= 5.7 min
Discarded = 0.29 cfs @ 12.18 hrs, Volume= 0.280 af
Primary = 6.40 cfs @ 12.18 hrs, Volume= 0.453 af
Routed to Link PDA-1 : PDA-1

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 145.63' @ 12.18 hrs Surf.Area= 4,258 sf Storage= 7,522 cf

Plug-Flow detention time= 89.8 min calculated for 0.733 af (92% of inflow)
Center-of-Mass det. time= 48.2 min (824.7 - 776.6)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	14,134 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

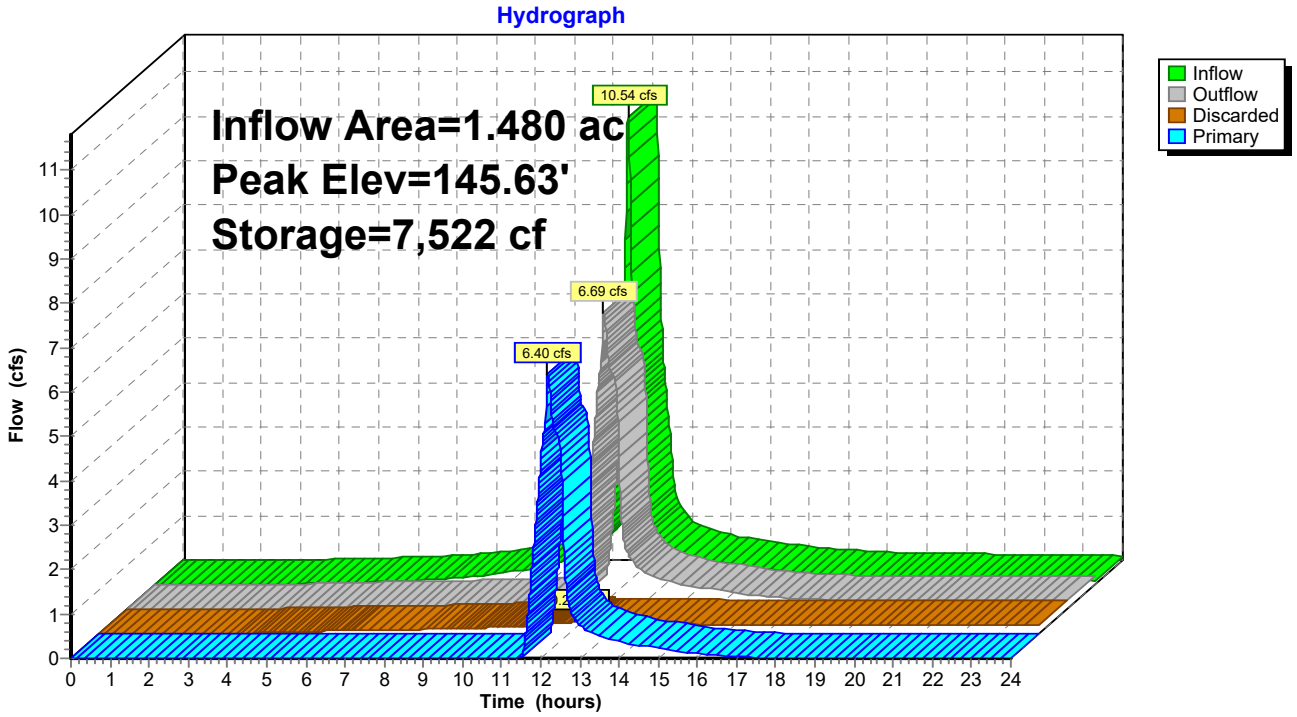
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
143.00	1,516	0	0	1,516
144.00	2,543	2,007	2,007	2,555
145.00	3,582	3,048	5,055	3,612
146.00	4,683	4,120	9,175	4,737
147.00	5,239	4,958	14,134	5,346

Device	Routing	Invert	Outlet Devices
#1	Discarded	143.00'	**2.410 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 135.00'
#2	Primary	142.00'	**12.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 142.00' / 141.05' S= 0.0594 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	144.75'	**2.5" x 2.5" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (39% open area) Limited to weir flow at low heads
#4	Primary	145.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.29 cfs @ 12.18 hrs HW=145.63' (Free Discharge)
└**1=Exfiltration** (Controls 0.29 cfs)

Primary OutFlow Max=6.39 cfs @ 12.18 hrs HW=145.63' (Free Discharge)
├**2=Culvert** (Inlet Controls 5.28 cfs @ 6.72 fps)
│└**3=Orifice/Grate** (Passes 5.28 cfs of 7.06 cfs potential flow)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 1.11 cfs @ 0.85 fps)

Pond BASIN: Basin #1



Stage-Discharge for Pond BASIN: Basin #1

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
143.00	0.00	0.00	0.00
143.05	0.09	0.09	0.00
143.10	0.09	0.09	0.00
143.15	0.09	0.09	0.00
143.20	0.10	0.10	0.00
143.25	0.10	0.10	0.00
143.30	0.10	0.10	0.00
143.35	0.11	0.11	0.00
143.40	0.11	0.11	0.00
143.45	0.11	0.11	0.00
143.50	0.12	0.12	0.00
143.55	0.12	0.12	0.00
143.60	0.13	0.13	0.00
143.65	0.13	0.13	0.00
143.70	0.13	0.13	0.00
143.75	0.14	0.14	0.00
143.80	0.14	0.14	0.00
143.85	0.14	0.14	0.00
143.90	0.15	0.15	0.00
143.95	0.15	0.15	0.00
144.00	0.16	0.16	0.00
144.05	0.16	0.16	0.00
144.10	0.16	0.16	0.00
144.15	0.17	0.17	0.00
144.20	0.17	0.17	0.00
144.25	0.17	0.17	0.00
144.30	0.18	0.18	0.00
144.35	0.18	0.18	0.00
144.40	0.19	0.19	0.00
144.45	0.19	0.19	0.00
144.50	0.19	0.19	0.00
144.55	0.20	0.20	0.00
144.60	0.20	0.20	0.00
144.65	0.21	0.21	0.00
144.70	0.21	0.21	0.00
144.75	0.21	0.21	0.00
144.80	0.51	0.22	0.29
144.85	1.05	0.22	0.83
144.90	1.75	0.23	1.52
144.95	2.57	0.23	2.34
145.00	3.51	0.24	3.27
145.05	4.36	0.24	4.12
145.10	4.69	0.24	4.45
145.15	5.01	0.25	4.76
145.20	5.16	0.25	4.91
145.25	5.21	0.26	4.95
145.30	5.26	0.26	5.00
145.35	5.31	0.27	5.04
145.40	5.35	0.27	5.08
145.45	5.40	0.27	5.13
145.50	5.45	0.28	5.17
145.55	5.76	0.28	5.48
145.60	6.29	0.29	6.01
145.65	6.97	0.29	6.68
145.70	7.76	0.30	7.46
145.75	8.69	0.30	8.39
145.80	9.74	0.31	9.43
145.85	10.90	0.31	10.59
145.90	12.17	0.32	11.85
145.95	13.59	0.32	13.27
146.00	15.12	0.32	14.80
146.05	16.77	0.33	16.44
146.10	18.54	0.33	18.21
146.15	20.16	0.33	19.83
146.20	21.83	0.34	21.50
146.25	23.56	0.34	23.22
146.30	25.34	0.34	25.00
146.35	27.21	0.35	26.86
146.40	29.13	0.35	28.78
146.45	31.10	0.35	30.75
146.50	33.13	0.36	32.77
146.55	35.18	0.36	34.82
146.60	37.27	0.36	36.91
146.65	39.41	0.37	39.04
146.70	41.59	0.37	41.22
146.75	43.77	0.37	43.40
146.80	45.99	0.38	45.62
146.85	48.25	0.38	47.87
146.90	50.54	0.38	50.16
146.95	52.95	0.39	52.57
147.00	**55.41**	**0.39**	**55.02**

Stage-Area-Storage for Pond BASIN: Basin #1

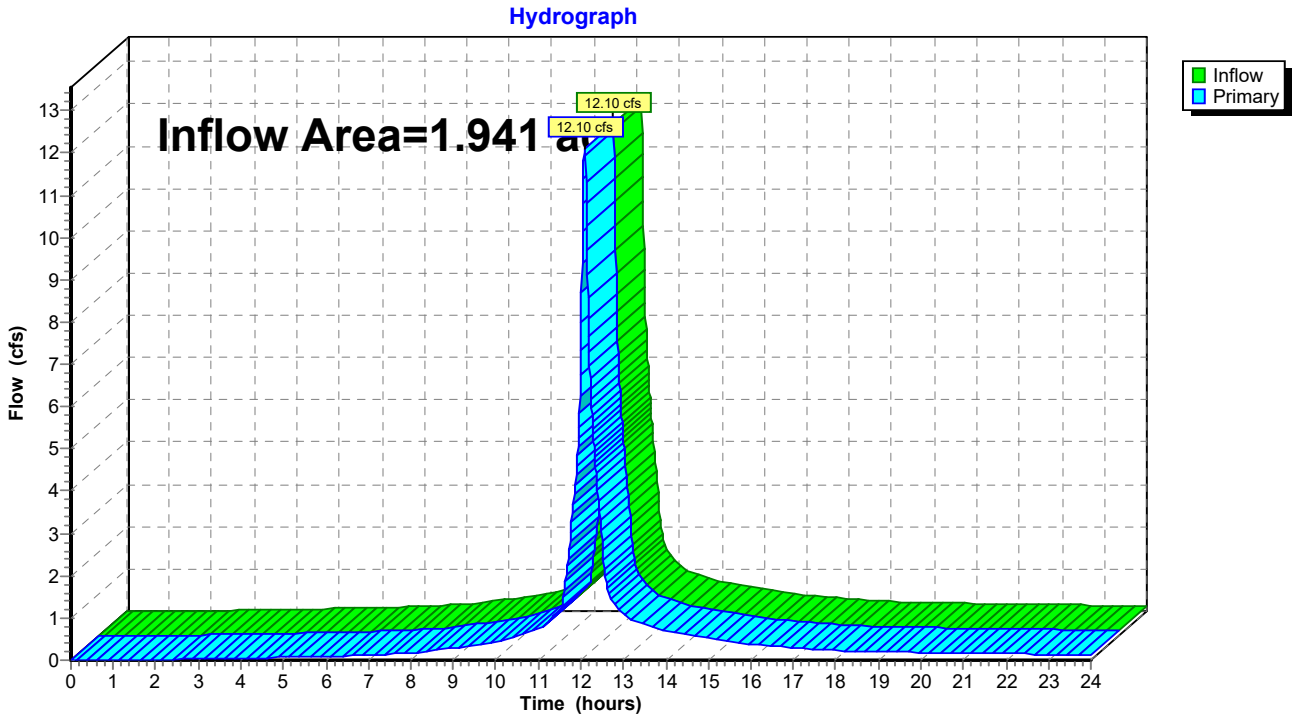
Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
143.00	1,516	1,516	0
143.10	1,607	1,608	156
143.20	1,700	1,702	321
143.30	1,796	1,800	496
143.40	1,895	1,900	681
143.50	1,996	2,002	875
143.60	2,101	2,107	1,080
143.70	2,207	2,215	1,296
143.80	2,316	2,326	1,522
143.90	2,428	2,439	1,759
144.00	2,543	2,555	2,007
144.10	2,639	2,653	2,267
144.20	2,737	2,752	2,535
144.30	2,836	2,853	2,814
144.40	2,937	2,956	3,103
144.50	3,040	3,061	3,401
144.60	3,145	3,168	3,711
144.70	3,252	3,276	4,031
144.80	3,360	3,386	4,361
144.90	3,470	3,499	4,703
145.00	3,582	3,612	5,055
145.10	3,685	3,718	5,419
145.20	3,790	3,825	5,792
145.30	3,897	3,934	6,177
145.40	4,005	4,044	6,572
145.50	4,114	4,156	6,978
145.60	4,225	4,269	7,395
145.70	4,337	4,384	7,823
145.80	4,451	4,500	8,262
145.90	4,566	4,617	8,713
146.00	4,683	4,737	9,175
146.10	4,737	4,796	9,646
146.20	4,792	4,856	10,123
146.30	4,847	4,916	10,605
146.40	4,902	4,976	11,092
146.50	4,957	5,037	11,585
146.60	5,013	5,098	12,084
146.70	5,069	5,160	12,588
146.80	5,125	5,221	13,097
146.90	5,182	5,284	13,613
147.00	**5,239**	**5,346**	**14,134**

Summary for Link EDA: EDA

Inflow Area = 1.941 ac, 46.88% Impervious, Inflow Depth > 5.81" for 100-yr event
Inflow = 12.10 cfs @ 12.09 hrs, Volume= 0.939 af
Primary = 12.10 cfs @ 12.09 hrs, Volume= 0.939 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EDA: EDA

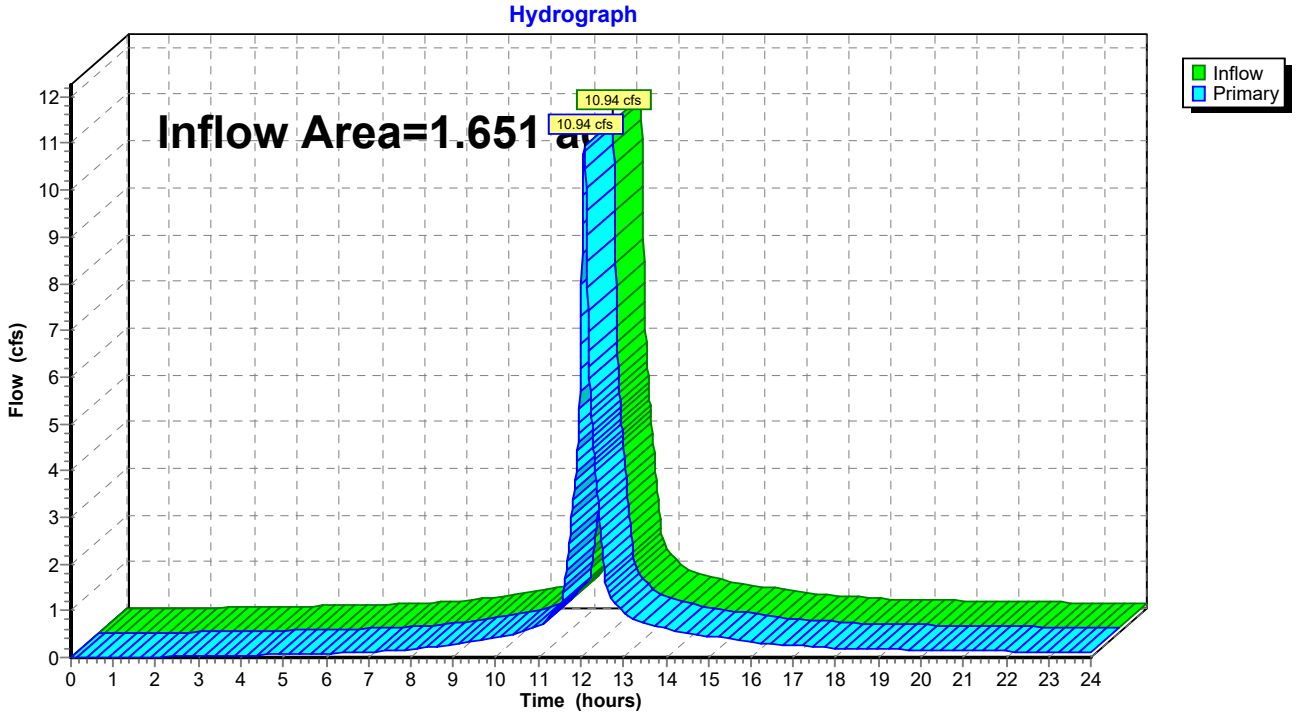


Summary for Link EDA-1: EDA-1

Inflow Area = 1.651 ac, 55.12% Impervious, Inflow Depth > 6.09" for 100-yr event
Inflow = 10.94 cfs @ 12.09 hrs, Volume= 0.838 af
Primary = 10.94 cfs @ 12.09 hrs, Volume= 0.838 af, Atten= 0%, Lag= 0.0 min
Routed to Link EDA : EDA

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EDA-1: EDA-1

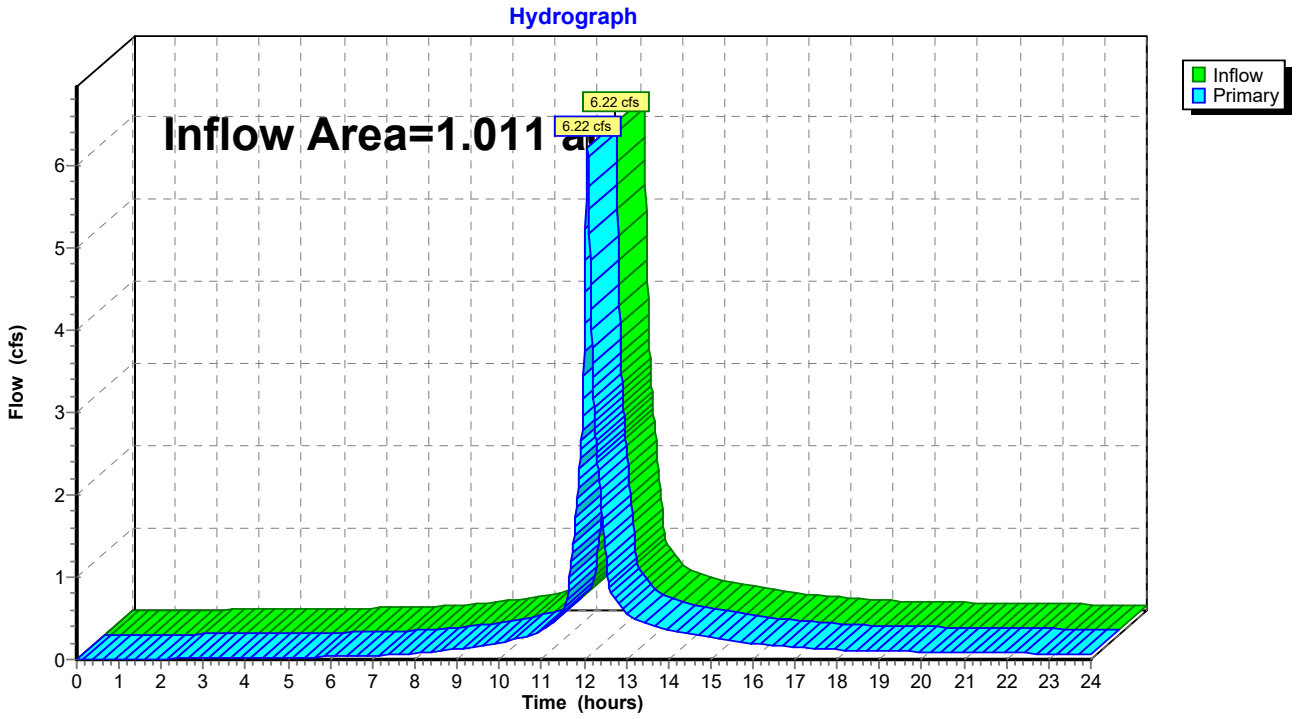


Summary for Link EDA-1B: EDA-1B

Inflow Area = 1.011 ac, 36.60% Impervious, Inflow Depth > 5.55" for 100-yr event
Inflow = 6.22 cfs @ 12.09 hrs, Volume= 0.468 af
Primary = 6.22 cfs @ 12.09 hrs, Volume= 0.468 af, Atten= 0%, Lag= 0.0 min
Routed to Link EDA-1 : EDA-1

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EDA-1B: EDA-1B

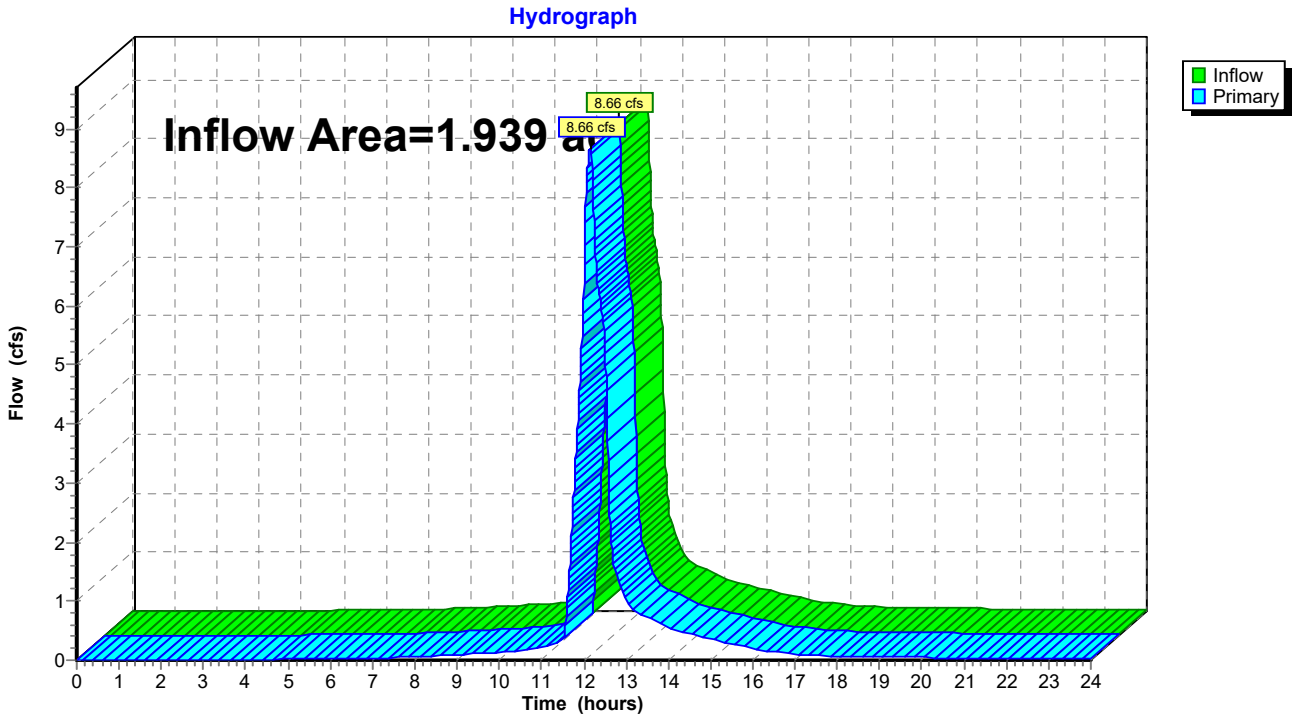


Summary for Link PDA: PDA

Inflow Area = 1.939 ac, 67.46% Impervious, Inflow Depth > 4.34" for 100-yr event
Inflow = 8.66 cfs @ 12.15 hrs, Volume= 0.702 af
Primary = 8.66 cfs @ 12.15 hrs, Volume= 0.702 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link PDA: PDA

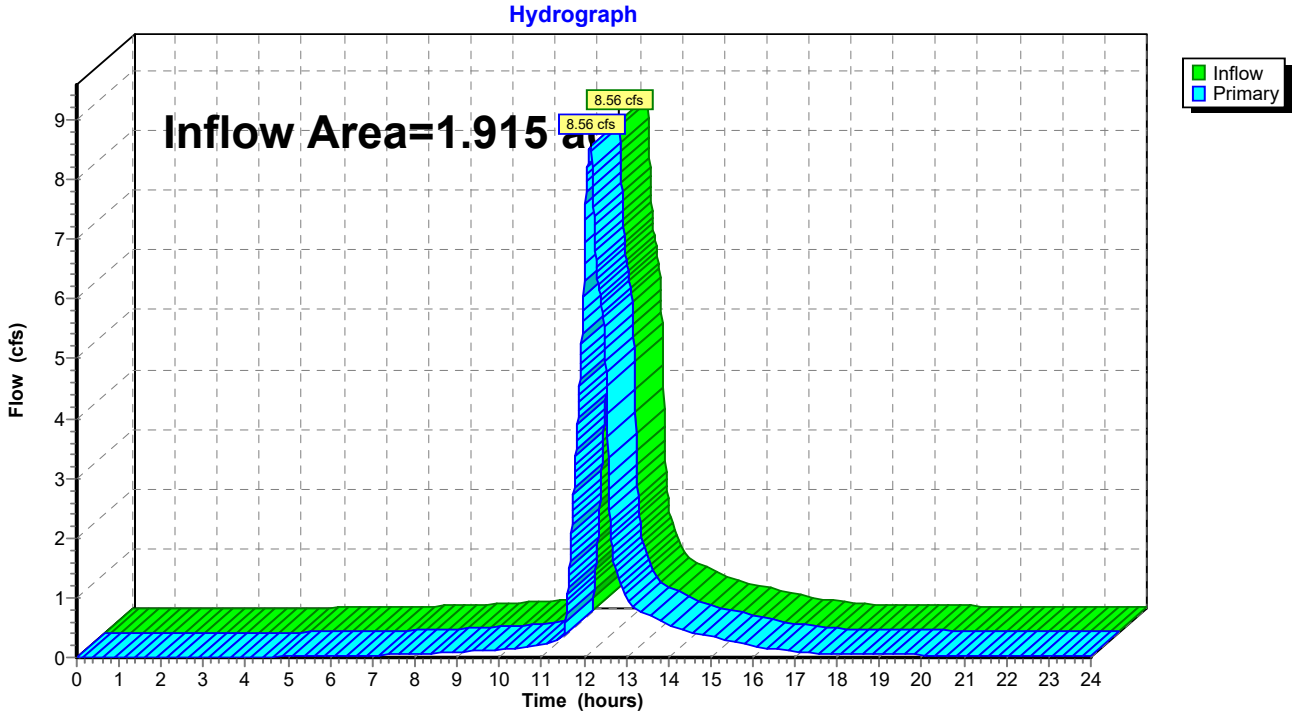


Summary for Link PDA-1: PDA-1

Inflow Area = 1.915 ac, 68.30% Impervious, Inflow Depth > 4.34" for 100-yr event
Inflow = 8.56 cfs @ 12.15 hrs, Volume= 0.692 af
Primary = 8.56 cfs @ 12.15 hrs, Volume= 0.692 af, Atten= 0%, Lag= 0.0 min
Routed to Link PDA : PDA

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link PDA-1: PDA-1

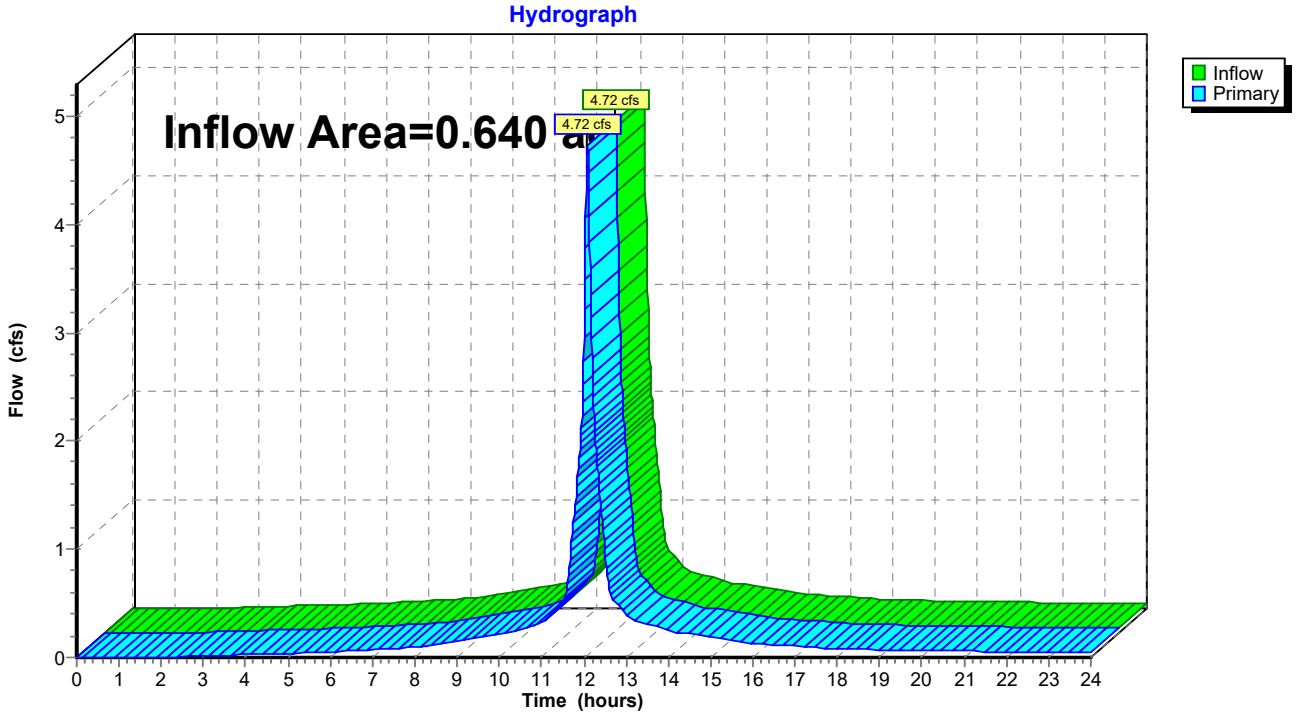


Summary for Link Pipe (EX): Bridge St Pipe

Inflow Area = 0.640 ac, 84.38% Impervious, Inflow Depth > 6.95" for 100-yr event
Inflow = 4.72 cfs @ 12.08 hrs, Volume= 0.371 af
Primary = 4.72 cfs @ 12.08 hrs, Volume= 0.371 af, Atten= 0%, Lag= 0.0 min
Routed to Link EDA-1 : EDA-1

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link Pipe (EX): Bridge St Pipe



Project **Arlington / Bridge St Redevelopment** By **PDS** Date **12/10/24**

Location **5 Arlington St, Dracut, MA** Checked **CJB** Date **12/10/24**

Bold one: Present **Developed** **CBDA-A1**

1. Runoff Coefficient ©

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	C [1]			Area [x] acres [ ] mi^2 [ ] %	Product of C x area
	Impervious Area	**0.95**			**0.23**	**0.22**
	Landscaped Area	**0.35**			**0.02**	**0.01**
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one C source per line				Totals =	**0.25**	**0.23**

C (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{0.23}{0.25} =$ 0.90 Use C = **0.90**

Project **Arlington / Bridge St Redevelopment** By **PDS** Date **12/10/24**

Location **5 Arlington St, Dracut, MA** Checked **CJB** Date **12/10/24**

Bold one: Present **Developed** **CBDA-A2**

1. Runoff Coefficient ©

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	C [1]			Area [x] acres [ ] mi^2 [ ] %	Product of C x area
	Impervious Area	**0.95**			**0.10**	**0.09**
	Landscaped Area	**0.35**			**0.07**	**0.02**
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00

1 Use only one C source per line

Totals = **0.17** **0.12**

C (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{0.12}{0.17} =$ 0.69 Use C = **0.69**

Project **Arlington / Bridge St Redevelopment** By **PDS** Date **12/10/24**

Location **5 Arlington St, Dracut, MA** Checked **CJB** Date **12/10/24**

Bold one: Present **Developed** **CBDA-A3**

1. Runoff Coefficient ©

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	C [1]			Area [x] acres [ ] mi^2 [ ] %	Product of C x area
	Impervious Area	**0.95**			**0.13**	**0.12**
	Landscaped Area	**0.35**			**0.01**	**0.00**
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00

1 Use only one C source per line

Totals = **0.14** **0.13**

C (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{0.13}{0.14} =$ 0.90 Use C = **0.90**

Project **Arlington / Bridge St Redevelopment** By **PDS** Date **12/10/24**

Location **5 Arlington St, Dracut, MA** Checked **CJB** Date **12/10/24**

Bold one: Present **Developed** **CBDA-A4**

1. Runoff Coefficient ©

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	C [1]			Area [x] acres [ ] mi^2 [ ] %	Product of C x area
	Impervious Area	**0.95**			**0.24**	**0.23**
	Landscaped Area	**0.35**			**0.10**	**0.03**
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one C source per line				Totals =	**0.34**	**0.26**

C (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{0.26}{0.34} =$ 0.78 Use C = **0.78**

Project **Arlington / Bridge St Redevelopment** By **PDS** Date **12/10/24**

Location **5 Arlington St, Dracut, MA** Checked **CJB** Date **12/10/24**

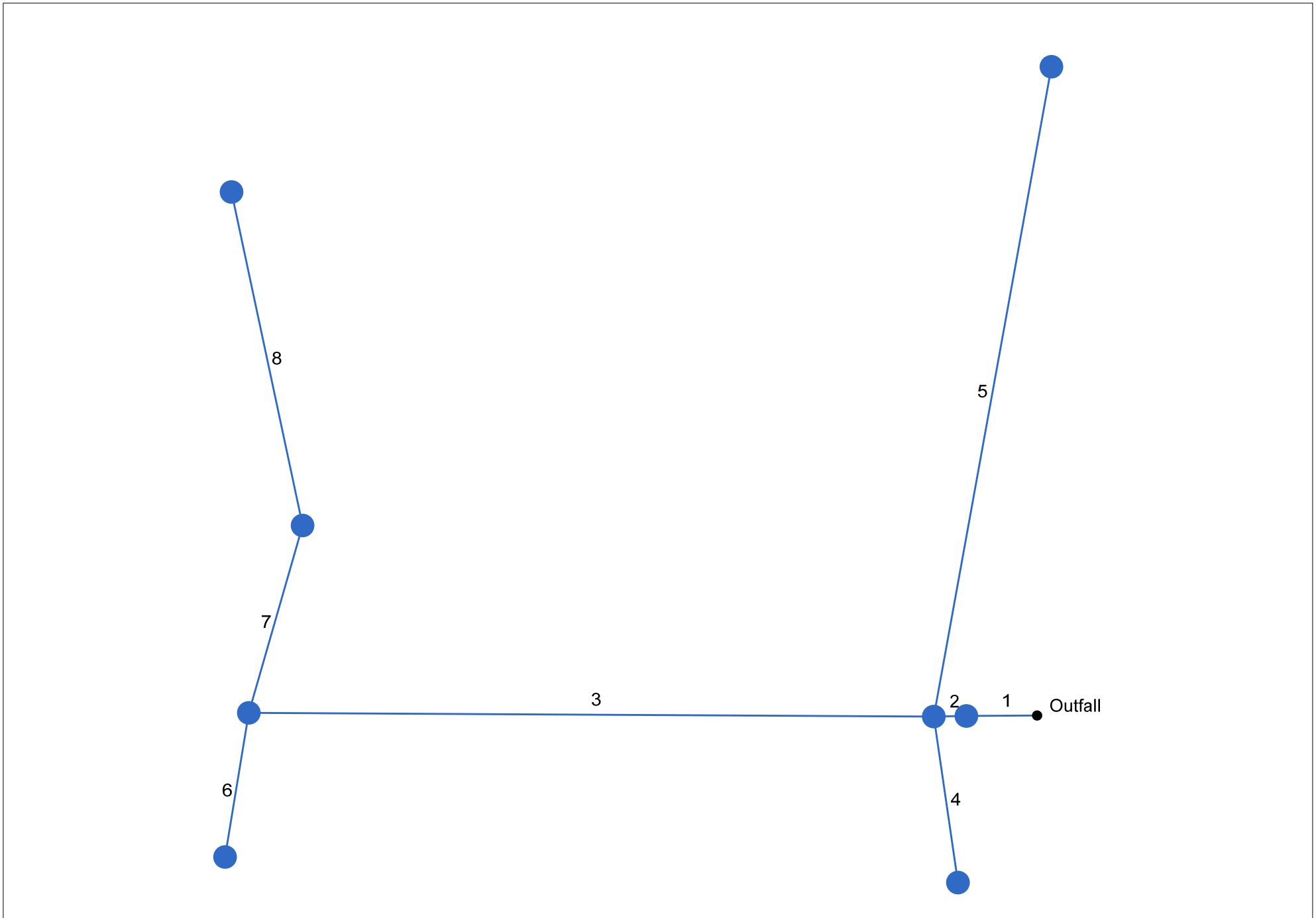
Bold one: Present **Developed** **CBDA-A5**

1. Runoff Coefficient ©

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	C [1]			Area [x] acres [ ] mi^2 [ ] %	Product of C x area
	Impervious Area	**0.95**			**0.20**	**0.19**
	Landscaped Area	**0.35**			**0.05**	**0.02**
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one C source per line				Totals =	**0.25**	**0.21**

C (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{0.21}{0.25} =$ 0.83 Use C = **0.83**

Proposed Storm Sewers Analysis



Project File: Proposed Storm Sewers Analysis.stm	Number of lines: 8	Date: 3/5/2025

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1		Manhole	151.00	Cir	4.00	4.00	18	Cir	144.55	18	Cir	144.60
2		Manhole	151.25	Cir	4.00	4.00	18	Cir	144.65	12 12 12	Cir Cir Cir	145.00 144.75 144.75
3		Manhole	153.50	Cir	4.00	4.00	12	Cir	147.75	12 12	Cir Cir	147.85 147.85
4		Combination	150.40	Cir	4.00	4.00	12	Cir	145.10			
5		Combination	150.65	Cir	4.00	4.00	12	Cir	146.00			
6		Combination	153.30	Cir	4.00	4.00	12	Cir	148.15			
7		Combination	152.95	Cir	4.00	4.00	12	Cir	148.20	12	Cir	148.30
8		Combination	153.30	Cir	4.00	4.00	12	Cir	148.95			

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	13.000	0.00	1.13	0.00	0.00	0.92	0.0	7.3	6.8	6.85	6.51	5.08	18	0.38	144.50	144.55	145.51	145.69	0.00	151.00	HEADWALL - WQ
2	1	6.000	0.00	1.13	0.00	0.00	0.92	0.0	7.3	6.8	6.86	9.59	5.08	18	0.83	144.60	144.65	145.74	145.66	151.00	151.25	WQU (A1) - DMH
3	2	126.000	0.00	0.55	0.00	0.00	0.44	0.0	6.7	7.0	3.10	5.26	5.24	12	2.18	145.00	147.75	145.66	148.50	151.25	153.50	DMH (A2) - DMH (
4	2	31.000	0.24	0.24	0.90	0.22	0.22	6.0	6.0	7.4	1.89	3.78	3.23	12	1.13	144.75	145.10	145.66	145.68	151.25	150.40	DMH (A2) - CB (A
5	2	122.000	0.34	0.34	0.78	0.27	0.27	6.0	6.0	7.4	2.28	3.60	3.64	12	1.02	144.75	146.00	145.66	146.65	151.25	150.65	DMH (A2) - CB (A
6	3	27.000	0.17	0.17	0.69	0.12	0.12	6.0	6.0	7.4	0.87	3.75	2.33	12	1.11	147.85	148.15	148.50	148.54	153.50	153.30	DMH (A5) - CB (A
7	3	36.000	0.13	0.38	0.90	0.12	0.32	6.0	6.5	7.1	2.31	3.51	4.26	12	0.97	147.85	148.20	148.50	148.85	153.50	152.95	DMH (A5) - CB (A
8	7	63.000	0.25	0.25	0.83	0.21	0.21	6.0	6.0	7.4	1.53	3.62	3.57	12	1.03	148.30	148.95	148.85	149.47	152.95	153.30	CB (A7) - CB (A8)

Proposed Storm Sewers Analysis | Number of lines: 8 | Run Date: 3/5/2025

NOTES:Intensity = 37.14 / (Inlet time + 3.70) ^ 0.71; Return period =Yrs. 25 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1		0.00	0.00	0.00	0.00	MH	4.0	4.00	2.00	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.00	0.00	0.00	0.00	0.0	Off
2		0.00	0.00	0.00	0.00	MH	4.0	4.00	2.00	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.00	0.00	0.00	0.00	0.0	1
3		0.00	0.00	0.00	0.00	MH	4.0	4.00	2.00	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.00	0.00	0.00	0.00	0.0	2
4		1.89*	0.00	1.89	0.00	Comb	4.0	4.00	2.00	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.21	7.47	0.21	7.47	0.0	2
5		2.28*	0.00	2.28	0.00	Comb	4.0	4.00	2.00	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.23	8.51	0.23	8.51	0.0	2
6		0.87	0.00	0.87	0.00	Comb	4.0	4.00	2.00	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.15	4.33	0.15	4.33	0.0	3
7		0.86	0.00	0.86	0.00	Comb	4.0	4.00	2.00	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.15	4.32	0.15	4.32	0.0	3
8		1.53	0.00	1.53	0.00	Comb	4.0	4.00	2.00	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.19	6.47	0.19	6.47	0.0	7

Proposed Storm Sewers Analysis | Number of lines: 8 | Run Date: 3/5/2025

NOTES: Inlet N-Values = 0.016; Intensity = 37.14 / (Inlet time + 3.70) ^ 0.71; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	18	6.85	144.50	145.51	1.01	1.27	5.40	0.45	145.97	0.670	13.000	144.55	145.69	1.14	1.44	4.75	0.35	146.04	0.496	0.583	0.076	0.15	0.05
2	18	6.86	144.60	145.74	1.14	1.27	4.75	0.45	146.20	0.000	6.000	144.65	145.66	1.01**	1.27	5.40	0.45	146.12	0.000	0.000	n/a	1.00	n/a
3	12	3.10	145.00	145.66	0.66	0.55	5.61	0.37	146.03	0.000	126.000	147.75	148.50	0.75**	0.64	4.88	0.37	148.87	0.000	0.000	n/a	1.00	0.37
4	12	1.89	144.75	145.66	0.91	0.48	2.51	0.24	145.91	0.000	31.000	145.10	145.68 j	0.58**	0.48	3.95	0.24	145.93	0.000	0.000	n/a	1.00	n/a
5	12	2.28	144.75	145.66	0.91	0.54	3.03	0.28	145.94	0.000	122.000	146.00	146.65 j	0.65**	0.54	4.25	0.28	146.93	0.000	0.000	n/a	1.00	0.28
6	12	0.87	147.85	148.50	0.65	0.28	1.59	0.15	148.65	0.000	27.000	148.15	148.54 j	0.39**	0.28	3.06	0.15	148.69	0.000	0.000	n/a	1.00	n/a
7	12	2.31	147.85	148.50	0.65	0.54	4.24	0.28	148.79	0.000	36.000	148.20	148.85 j	0.65**	0.54	4.27	0.28	149.13	0.000	0.000	n/a	0.79	n/a
8	12	1.53	148.30	148.85	0.55	0.42	3.47	0.21	149.06	0.000	63.000	148.95	149.47 j	0.52**	0.42	3.67	0.21	149.68	0.000	0.000	n/a	1.00	n/a

Proposed Storm Sewers Analysis | Number of lines: 8 | Run Date: 3/5/2025

Notes: ; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraflow HGL Computation Procedure

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.

Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.

Col. 3 Total flow rate in the line.

Col. 4 The elevation of the downstream invert.

Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.

Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 7 Cross-sectional area of the flow at the downstream end.

Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).

Col. 9 Velocity head (Velocity squared / 2g).

Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).

Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).

Col. 12 The line length.

Col. 13 The elevation of the upstream invert.

Col. 14 Elevation of the hydraulic grade line at the upstream end.

Col. 15 The upstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 16 Cross-sectional area of the flow at the upstream end.

Col. 17 The velocity of the flow at the upstream end, (Col. 3 / Col. 16).

Col. 18 Velocity head (Velocity squared / 2g).

Col. 19 The elevation of the energy grade line at the upstream end, HGL + Velocity head, (Col. 14 + Col. 18) .

Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).

Col. 21 The average of the downstream and upstream friction slopes.

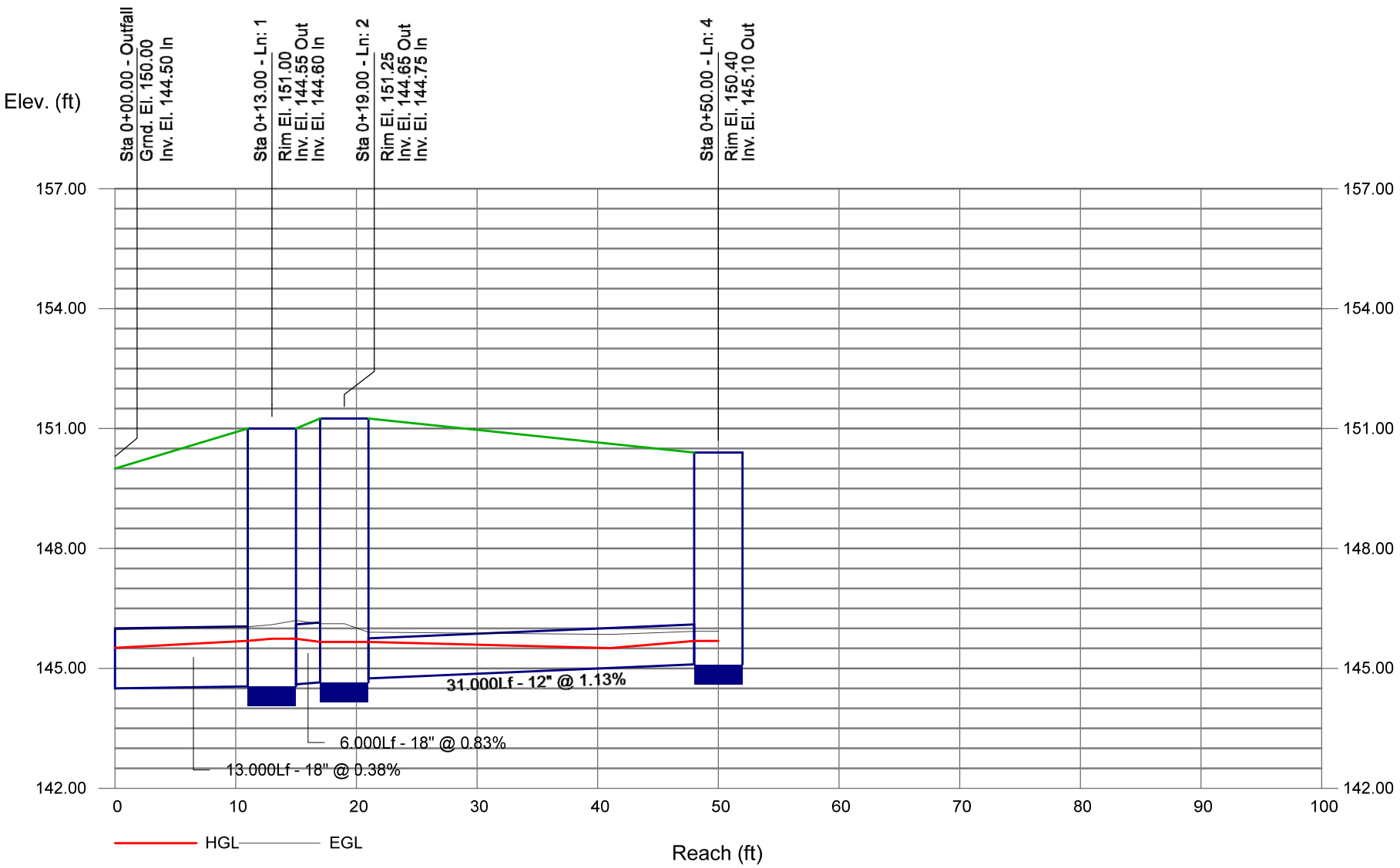
Col. 22 Energy loss. Average Sf/100 x Line Length (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.

Col. 23 The junction loss coefficient (K).

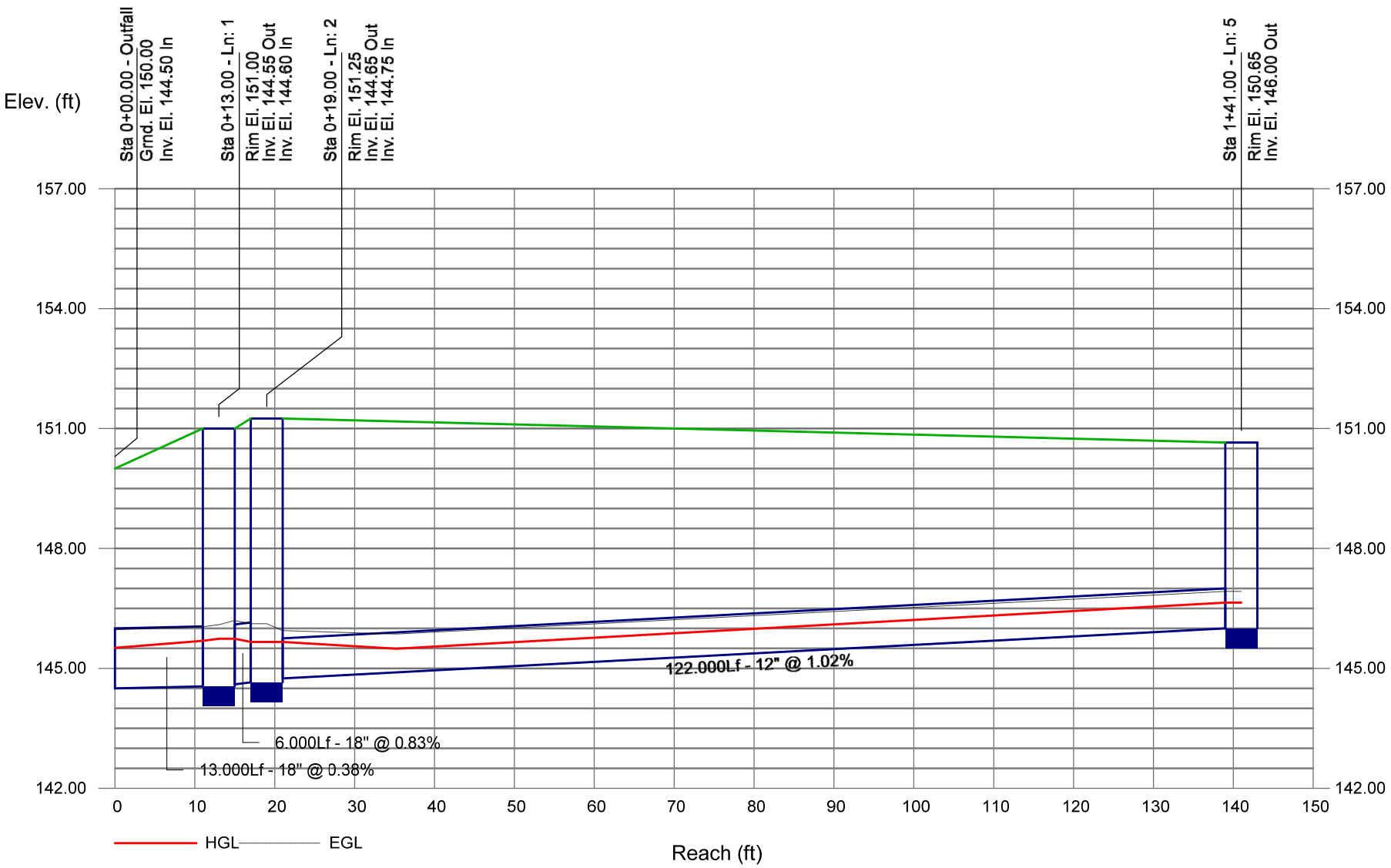
Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

Storm Sewer Profile

Proj. file: Proposed Storm Sewers Analysis.stm

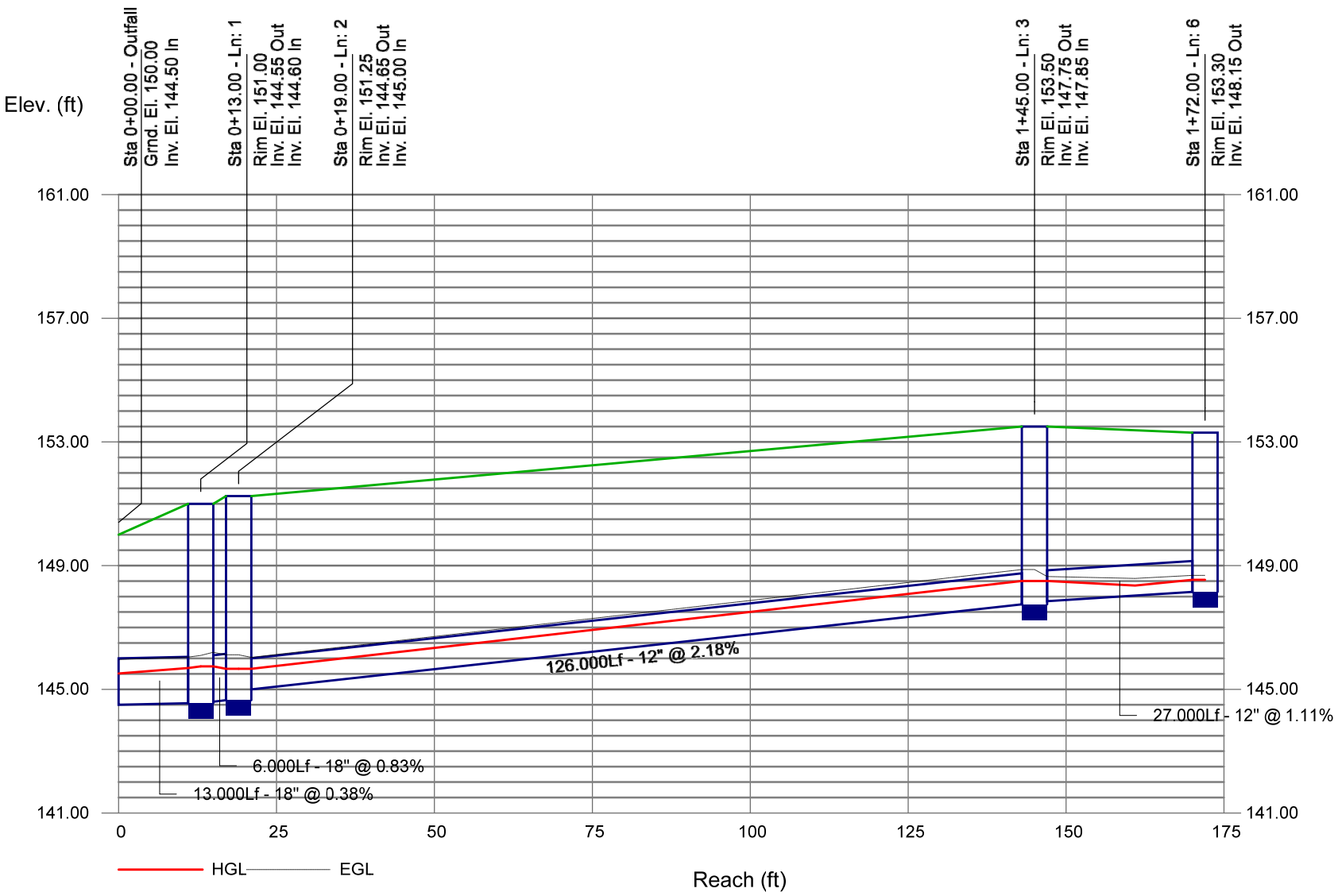


Storm Sewer Profile



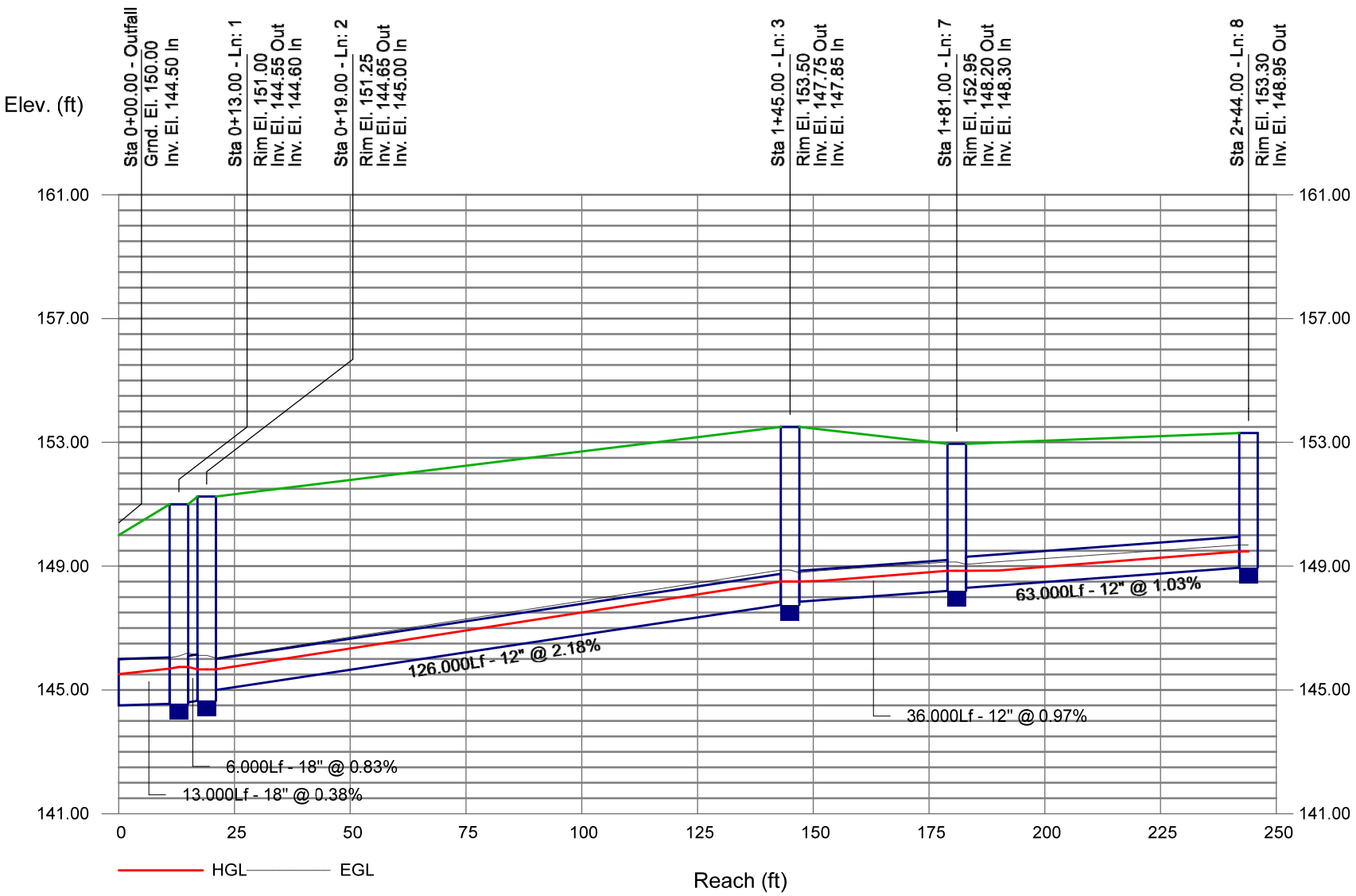
Storm Sewer Profile

Proj. file: Proposed Storm Sewers Analysis.stm



Storm Sewer Profile

Proj. file: Proposed Storm Sewers Analysis.stm



INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: 5 Arlington Street Dracut, MA

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
4-Foot Sump with Hooded Outlet	0.25	**1.00**	0.25	0.75
Water Quality Unit	0.50	0.75	0.375	0.375
Infiltration Basin	0.80	0.375	0.30	0.075

Total TSS Removal = 92.5%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: Prop. Bridge Street Landing

Prepared By: OSK

Date: 03/20/2025

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION
BASED ON THE RATIONAL RAINFALL METHOD

BRIDGE ST LANDING
DRACUT, MA

Area	**1.00 ac**	Unit Site Designation	**WQU A1**
Weighted C	**0.9**	Rainfall Station #	**68**
t_c	**5 min**		
CDS Model	**2015-4**	CDS Treatment Capacity	**1.4 cfs**

Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Total Flowrate (cfs)	Treated Flowrate (cfs)	Incremental Removal (%)
0.02	9.3%	9.3%	0.02	0.02	9.3
0.04	9.5%	18.8%	0.04	0.04	9.5
0.06	8.7%	27.5%	0.05	0.05	8.7
0.08	10.1%	37.6%	0.07	0.07	10.0
0.10	7.2%	44.8%	0.09	0.09	7.0
0.12	6.0%	50.8%	0.11	0.11	5.9
0.14	6.3%	57.1%	0.13	0.13	6.1
0.16	5.6%	62.7%	0.14	0.14	5.4
0.18	4.7%	67.4%	0.16	0.16	4.5
0.20	3.6%	71.0%	0.18	0.18	3.4
0.25	8.2%	79.1%	0.23	0.23	7.6
0.50	14.9%	94.0%	0.45	0.45	12.8
0.75	3.2%	97.3%	0.68	0.68	2.5
1.00	1.2%	98.5%	0.90	0.90	0.9
1.50	0.7%	99.2%	1.35	1.35	0.4
2.00	0.8%	100.0%	1.80	1.40	0.3
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
					94.4
				Removal Efficiency Adjustment[2] =	6.5%
				Predicted % Annual Rainfall Treated =	93.4%
				Predicted Net Annual Load Removal Efficiency =	**88.0%**

1 - Based on 10 years of rainfall data from NCDC station 736, Blue Hill, Norfolk County, MA
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

Project: Bridge St Landing
Location: Dracut, MA
Prepared For: Solli Eng / Patrick Sheldon

Purpose: To calculate the water quality flow rate (WQF) over a given site area. In this situation the WQF is derived from the first 1" of runoff from the contributing impervious surface.

Reference: Massachusetts Dept. of Environmental Protection Wetlands Program / United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual

Procedure: Determine unit peak discharge using Figure 1 or 2. Figure 2 is in tabular form so is preferred. Using the tc, read the unit peak discharge (qu) from Figure 1 or Table in Figure 2. qu is expressed in the following units: cfs/mi^2/watershed inches (csm/in).

Compute Q Rate using the following equation:

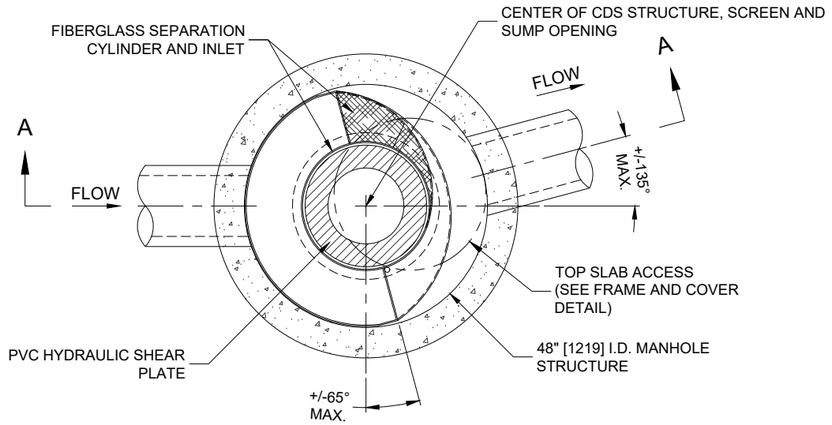
Q = (qu) (A) (WQV)

where:

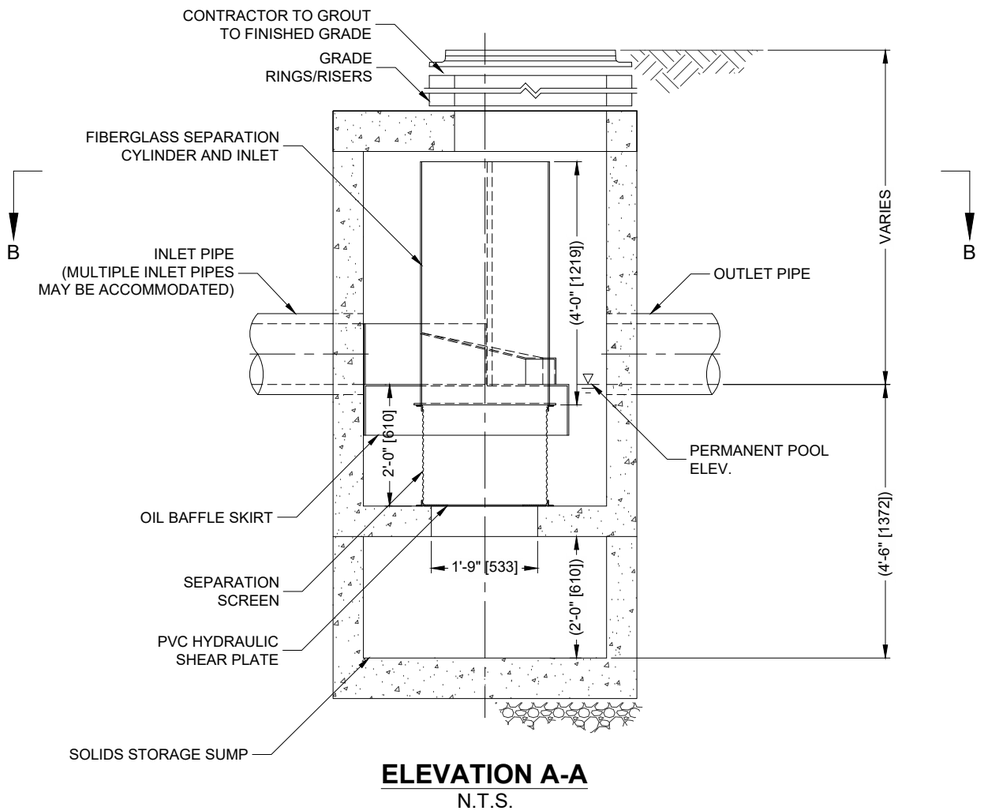
Q = flow rate associated with first 1" of runoff
qu = the unit peak discharge, in csm/in.
A = impervious surface drainage area (in square miles)
WQV = water quality volume in watershed inches (1" in this case)

Structure Name	Impv. (acres)	A (miles^2)	t_c (min)	t_c (hr)	WQV (in)	qu (csm/in.)	Q (cfs)
WQU A1	1.00	0.0015625	5.0	0.083	1.00	795.00	1.24

The WQf sizing calculation selects the minimum size CDS/Cascade/StormCeptor model capable of operating at the computed WQf peak flowrate prior to bypassing. It assumes free discharge of the WQf through the unit and ignores the routing effect of any upstream storm drain piping. As with all hydrodynamic separators, there will be some impact to the Hydraulic Gradient of the corresponding drainage system, and evaluation of this impact should be considered in the design.



PLAN VIEW B-B
N.T.S.



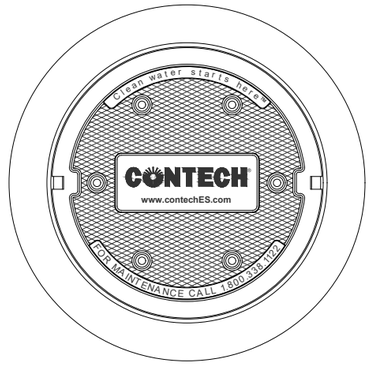
ELEVATION A-A
N.T.S.

CDS2015-4-C DESIGN NOTES

CDS2015-4-C RATED TREATMENT CAPACITY IS 1.4 CFS, OR PER LOCAL REGULATIONS.

THE STANDARD CDS2015-4-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID			
WATER QUALITY FLOW RATE (CFS OR L/s)			*
PEAK FLOW RATE (CFS OR L/s)			*
RETURN PERIOD OF PEAK FLOW (YRS)			*
SCREEN APERTURE (2400 OR 4700)			*
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*
RIM ELEVATION			*
ANTI-FLOTATION BALLAST		WIDTH	HEIGHT
		*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO..
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CDS2015-4-C
ONLINE CDS
STANDARD DETAIL

Appendix D – Detailed Design Plans

ANR Plan

Prepared by Northeast Survey Consultants

Existing Conditions Plan

Prepared by Northeast Survey Consultants

Existing Drainage Area Map (EDA)

Proposed Drainage Area Map (PDA)

Catch Basin Drainage Area Map (CBDA)

For more information regarding the Design Plans refer to the Permitting Plan Set, prepared by Solli Engineering, submitted in conjunction with this Report.

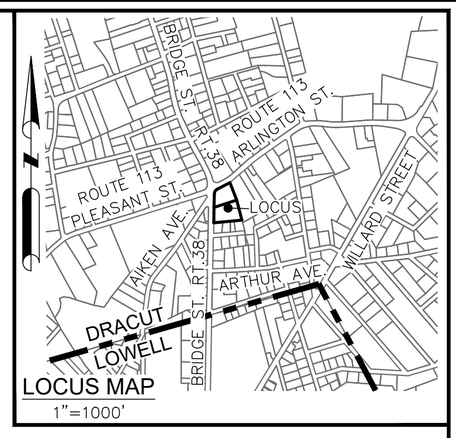
PLANNING BOARD
DRACUT, MASSACHUSETTS

APPROVAL UNDER THE SUBDIVISION CONTROL LAW NOT REQUIRED

DATE: _____

THE BOARD'S ENDORSEMENT OF THE PLAN AS NOT REQUIRING APPROVAL UNDER THE SUBDIVISION CONTROL LAW DOES NOT GIVE LOTS OR PARCELS ANY STANDING UNDER THE TOWN OF DRACUT ZONING BYLAW.

RESERVED FOR REGISTRY USE ONLY



LOCUS MAP
1"=1000'

LEGEND

- LOCUS PROPERTY LINE
- ABUTTERS LINE
- OHW — OVERHEAD WIRES
- TREELINE
- ZONING LINE
- HEDGE ROW
- STOCKADE FENCE
- CHAIN LINK FENCE
- E — UNDERGROUND ELECTRIC LINE
- EDGE OF PAVEMENT
- CONC. CONCRETE
- GBF GRANITE BOUND FOUND
- IPF/IRF IRON PIPE/ROD FOUND
- CALCULATED POINT
- POST
- LIGHT POLE
- UTILITY POLE

ARLINGTON STREET - ROUTE 113
PUBLIC – 1924 COUNTY LAYOUT & 1978 COUNTY ALTERATION
R.O.W. WIDTH 50' PAVEMENT WIDTH 33'–38'

BRIDGE STREET - ROUTE 38
PUBLIC – 1900 COUNTY LAYOUT & 1978 COUNTY ALTERATION
R.O.W. WIDTH 50' PAVEMENT WIDTH 36'–42'

AIKEN AVENUE

PAVED ROAD

PAVED ROAD

IPF (POSSIBLE WITNESS)
S17°21'53"W 0.44'
FROM CORNER

SEE EASEMENT TO MECO FOR UNDERGROUND AND OVERHEAD SYSTEM (NO WIDTH GIVEN) DEED 8036~135

GBF W/DH

S61°51'24"W 131.88'

N21°09'49"W 176.10'

CONC. WALK

R=54.00' L=57.18'
CHD=S31°31'24"W
CHD L=54.55'

S01°11'24"W 124.31'

PAVED DRIVE

"WENDY'S"
1 STY.
MASONRY BUILDING

FREEZER

PAVED PARKING & DRIVE

PAVED PARKING

CONC. WALK

PAVED PARKING & DRIVE

CONC.

CONTAINER

DUMPSTER AREA

IRF

52–0–13
17 ARLINGTON STREET
N/F
AYOTTE LLC
DEED 29708~114

50-0-224
5 ARLINGTON STREET
N/F
TWIN COAST PROPERTIES, L.L.C.
DEED 10084~2
PLAN 127~32

AREA = 30,456 SQ. FT. ±
(0.699 AC. ±)

TO BE COMBINED
WITH PARCEL 50–0–225
TO FORM LOT 1

EXISTING PARCEL LINE TO BE REMOVED

LOT 1
THE COMBINATION OF PARCELS
50–0–224 & 50–0–225
AREA = 70,508 SQ. FT. ±
(1.618 AC. ±)

TOTAL FRONTAGE ON ARLINGTON ST. = 131.88'
TOTAL FRONTAGE ON BRIDGE ST. = 266.64'
MINIMUM LOT WIDTH = 174.29'

RET. WALL

N71°56'45"E 221.89'

RET. WALL

IRF

S14°31'37"E 193.46'

APPROX. MAG.

MCS NAD83 (2011) sFT

ABANDONED
2½ STY.
W/F HOUSE
(TO BE RAZED)

GRAVEL DRIVE

N01°07'19"E 142.33'

BIT. WALK

50-0-225
1327 BRIDGE STREET
N/F
FAS HOLDINGS, LLC
DEED 31978~289
PLAN 207~18

AREA = 40,052 SQ. FT. ±
(0.919 AC. ±)

TO BE CONVEYED TO
TWIN COAST PROPERTIES, LLC
AND COMBINED WITH
PARCEL 50–0–224
TO FORM LOT 1

CLEARED AREA OVER BOUNDARY LINE

ZONE:B-3 & DRACUT CENTER NEIGHBORHOOD OVERLAY

ZONE:R-3

ZONE:B-3

FENCE & RET. WALL OVER BOUNDARY LINE

S84°48'56"W 263.36'

RET. WALL

IRF

CONC.

IRF

50–0–226
1315 BRIDGE STREET
N/F
BRIAN C. BELMORE
DEED 21844~103
PLAN 80~18

50–0–227
12 ELISE AVENUE
N/F
JOHN P. &
DARLEEN M. FARREN
DEED 19184~137
PLAN 80~18

50–0–228
16 ELISE AVENUE
N/F
BRIAN J. &
ALLISON J. HANNIGAN
DEED 35526~246
PLAN 80~18

52–0–30
18 ELISE AVENUE
N/F
BRIAN J. &
ALLISON J. HANNIGAN
DEED 8916~273
PLAN 33~100

15' 0' 15' 30'

NOTES:
1. FIELD SURVEY BY EDM TOTAL STATION & RTK GPS IN DECEMBER 2022 AND JANUARY 2023.

2. THE HORIZONTAL DATUM IS NAD83 (2011) MASS. MAINLAND, US SURVEY FT.

3. THE LOCATIONS OF UTILITIES SHOWN HEREON ARE THE RESULT OF SURFACE EVIDENCE AS LOCATED BY FIELD SURVEY, PLANS OF RECORD AND OPENING DRAIN AND SEWER STRUCTURES. THIS PLAN DOES NOT NECESSARILY DEPICT THE EXACT LOCATION OF THESE UTILITIES AND MAY NOT SHOW ALL OF THE UTILITIES WHICH EXIST WITHIN THE PREMISES SURVEYED. CONTACT DIG–SAFE AT 1–888–344–7233 BEFORE EXCAVATION.

4. THE LOCUS PARCELS ARE LOCATED IN THE TOWN OF DRACUT B–3 ZONING DISTRICT.

I HEREBY CERTIFY TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION AND BELIEF THAT:

THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

BRIAN C. FRANETOVICH
MA PLS #54258

COMMONWEALTH OF MASSACHUSETTS
BRIAN C. FRANETOVICH
NO. 54258
REGISTERED PROFESSIONAL LAND SURVEYOR

SHEET NO. 1 OF 1

PLAN OF LAND IN DRACUT, MA
5 ARLINGTON ST. & 1327 BRIDGE ST.
MIDDLESEX NORTH REGISTRY
PREPARED FOR
TWIN COAST PROPERTIES, L.L.C.

SURVEYOR:	BCF	ENGINEER:	–
DRAFTING:	JDG JED BCF	DESIGN:	–
FIELD WORK:	NAE	HORZ. SCALE:	1" = 15'
PROJECT NUMBER:	22–257	VERT. SCALE:	–
DRAWING NAME:	22–257 ANR.DWG	DATE:	4–12–2023

APPROVAL NOT REQUIRED

NORTHEAST SURVEY CONSULTANTS
3 FERRY STREET
STUDIO 1 EAST
EASTHAMPTON, MA 01027
(413) 203-5144

LEGEND

CONC.	CONCRETE
BIT.	BITUMINOUS CONCRETE
C/T	TELECOMMUNICATIONS
D	DRAIN
E	ELECTRIC
G	GAS
S	SEWER
W	WATER
G.C.	GRANITE CURB
TCB	TRAFFIC CONTROL BOX
I	IRRIGATION CONTROL BOX
	TEMPORARY BENCHMARK (TBM)
	POST / BOLLARD
	FLAG POLE
	SIGN POST
	TREE
	LIGHT POLE
	CATCH BASIN
	MANHOLE
	GAS / WATER GATE VALVE
	HYDRANT
	UTILITY POLE
	BUSH
	LOCUS PROPERTY LINE
	ABUTTERS LINE
U	BURIED UTILITY LINE
	CONTOUR LINE
OHW	OVERHEAD WIRES
	WHITE PAINT LINE
	YELLOW PAINT LINE
	TREELINE
	ZONING LINE
	HEDGE ROW

NOTES:
1. FIELD SURVEY BY EDM TOTAL STATION & RTK GPS IN DECEMBER 2022 AND JANUARY 2023.

2. THE HORIZONTAL DATUM IS NAD83 (MASS. MAINLAND), THE VERTICAL DATUM IS NAVD88 AND BOTH ARE BASED ON RTK GPS OBSERVATIONS TAKEN ON SITE.

3. THE LOCATIONS OF UTILITIES SHOWN HEREON ARE THE RESULT OF SURFACE EVIDENCE AS LOCATED BY FIELD SURVEY, PLANS OF RECORD AND OPENING DRAIN AND SEWER STRUCTURES. THIS PLAN DOES NOT NECESSARILY DEPICT THE EXACT LOCATION OF THESE UTILITIES AND MAY NOT SHOW ALL OF THE UTILITIES WHICH EXIST WITHIN THE PREMISES SURVEYED. CONTACT DIG-SAFE AT 1-888-344-7233 BEFORE EXCAVATION.

4. ACCORDING TO FEDERAL EMERGENCY MANAGEMENT AGENCY MAPS, THE SURVEY AREA IS DESIGNATED AS ZONE X (AREAS OF MINIMAL FLOODING). MAP NUMBER 25017C 0141 E, EFFECTIVE DATE 6-4-2010.

5. THE LOCUS PARCELS ARE LOCATED IN THE TOWN OF DRACUT B-3 ZONING DISTRICT.

BRIAN C. FRANETOVICH
MA PLS #54258

COMMONWEALTH OF MASSACHUSETTS
BRIAN C. FRANETOVICH
NO. 54258
REGISTERED PROFESSIONAL LAND SURVEYOR

ARLINGTON STREET - ROUTE 113
1924 COUNTY LAYOUT & 1978 COUNTY ALTERATION

TBM
TOP SPINDLE OF HYDRANT
EL=163.88'

IPF (POSSIBLE WITNESS) OFF CORNER 0.44' S17°21'53"W

SEE EASEMENT TO MECO FOR UNDERGROUND AND OVERHEAD SYSTEM (NO WIDTH GIVEN) DEED 8036~135

"MOBILE ORDER PARKING"

MCS NAD83

SMH#1147
RIM=158.02'
4" PVC IN FROM BLDG=155.20'
4" PVC IN FROM SMH#1167=154.89'
4" PVC OUT TO SMH#1773=154.92'
OUT IS HIGHER THAN IN

SMH#1167
RIM=157.88'
1 VERTICAL PIPE OBSERVED, LIKELY PART OF GREASE TRAP

SMH#1346
RIM=157.62'
4" CI TO/FROM S=154.46'
FULL OF SILT

SMH#1347
RIM=157.86'
4" CI TO/FROM S=154.90'
FULL OF SILT

SMH#1704
RIM=151.30'
8" PVC IN FROM SMH#1924=142.42'
8" PVC OUT TO S=142.30'
SHELF =143.14'

SMH#1773
RIM=158.97'
8" PVC IN FROM E=149.34'
8" PVC OUT TO SMH#1813=149.29'
4" PVC IN (FROM SMH#1147) NOT SEEN

SMH#1813
RIM=157.65'
8" PVC IN FROM N=148.36'
8" PVC IN FROM SMH#1773=148.27'
8" PVC OUT TO SMH#1815=148.19'
SHELF =148.81'

SMH#1815
RIM=156.96'
8" PVC IN FROM SMH#1813=147.98'
8" PVC OUT TO W=147.83'

SMH#1924
RIM=152.77'
NOT OPENED

CB#1703
RIM=149.36'
12" RCP IN FROM CB#1925=145.65'
12" RCP IN FROM DMH#1814=146.25'
12" RCP OUT TO S=145.35'
SUMP=143.62'

CB#1785
RIM=158.82'
12" RCP IN FROM NORTH=155.42'
8" PVC OUT TO DMH#1814=155.38'
SUMP=154.42'

CB#1840
RIM=157.07'
12" RCP OUT TO DMH#1814=154.69'
SUMP=152.72'

CB#1925
RIM=149.50'
BURIED DOWN 2FT - NOT OPENED

DMH#1814
RIM=157.60'
8" RCP IN FROM CB#1840=154.61'
8" RCP IN FROM CB#1785=154.01'
12" RCP OUT TO CB#1703=153.75'
SUMP=153.55'

50-0-224
5 ARLINGTON STREET
N/F
TWIN COAST PROPERTIES, L.L.C.
DEED 10084~2
PLAN 127~32
AREA = 0.699 AC. ±

"WENDY'S"
1 STY.
MASONRY BUILDING

50-0-225
1327 BRIDGE STREET
N/F
FAS HOLDINGS, LLC
DEED 31978~289
PLAN 207~18
AREA = 0.919 AC. ±

52-0-13
17 ARLINGTON STREET
N/F
AYOTTE LLC
DEED 29708~114

50-0-226
1315 BRIDGE STREET
N/F
BRIAN C. BELMORE
DEED 21844~103
PLAN 80~18

50-0-227
12 ELISE AVENUE
N/F
JOHN P. & DARLEEN M. FARREN
DEED 19184~137
PLAN 80~18

50-0-228
16 ELISE AVENUE
N/F
BRIAN J. & ALLISON J. HANNIGAN
DEED 35526~246
PLAN 80~18

52-0-30
18 ELISE AVENUE
N/F
BRIAN J. & ALLISON J. HANNIGAN
DEED 8916~273
PLAN 33~100

BRIDGE STREET - ROUTE 38
1900 COUNTY LAYOUT & 1978 COUNTY ALTERATION

AIKEN AVENUE

TBM
SPIKE IN UP
EL=148.17'

SHEET NO.	1 OF 1

PLAN OF LAND IN DRACUT, MA
5 ARLINGTON ST. & 1327 BRIDGE ST.
PREPARED FOR
SOLLI ENGINEERING, LLC

SURVEYOR:	BCF	ENGINEER:	-
DRAFTING:	JDG JED BCF	DESIGN:	-
FIELD WORK:	NAE	HORZ. SCALE:	1" = 15'
PROJECT NUMBER:	22-257	VERT. SCALE:	-
DRAWING NAME:	22-257.DWG	DATE:	5-31-2023

EXISTING CONDITIONS

NORTHEAST SURVEY CONSULTANTS
3 FERRY STREET
STUDIO 1 EAST
EASTHAMPTON, MA 01027
(413) 203-5144

GENERAL NOTES

1. THESE PLANS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT FOR CONSTRUCTION. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.
2. ALL SITE WORK TO BE COMPLETED IN ACCORDANCE WITH ALL PERMITS, APPROVALS AND CONDITIONS OF APPROVALS ISSUED BY THE TOWN OF DRACUT FOR THIS PROJECT.
3. EXISTING SITE CONDITIONS AND BOUNDARY INFORMATION TAKEN FROM A PLAN TITLED "PLAN OF LAND IN DRACUT, MA, 5 ARLINGTON STREET & 1327 BRIDGE STREET", DATED JANUARY 26, 2023, SCALE: 1"=15', PREPARED BY NORTHEAST SURVEY CONSULTANTS.
   - 3.1. THE HORIZONTAL DATUM IS NAD83 (MASS. MAINLAND), THE VERTICAL DATUM IS NAVD88 AND BOTH ARE BASED ON RTK GPS OBSERVATION TAKEN ON SITE BY NORTHEAST SURVEY CONSULTANTS.
   - 3.2. TOPOGRAPHIC CONDITIONS OUTSIDE OF THE PROJECT SITE WERE DOWNLOADED AND INTERPOLATED OFF THE LIDAR DATABASE FROM THE NOAA DATA ACCESS VIEWER.
4. THE STORMWATER MANAGEMENT PLAN AND DESIGN IS INTENDED TO BE IN COMPLIANCE WITH THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION'S STORMWATER MANAGEMENT HANDBOOK AND THE TOWN OF DRACUT, MASSACHUSETTS STORMWATER REGULATIONS.
5. STORMWATER RUNOFF ANALYSIS WAS CALCULATED USING THE SCS TR-55 METHODOLOGY.
6. BASED ON SOIL MAPPING PRODUCED BY THE USDA NATURAL RESOURCES CONSERVATION SERVICE, THE SITE IS LOCATED WITHIN AN AREA OF "WOODBRIDGE FINE SANDY LOAM". THIS UNIT HAS A SPECIFIED HYDROLOGIC SOIL RATING OF "C/D". FOR CONSERVATIVE MEASURES, THE ANALYSIS WAS PERFORMED ASSUMING A "D" SOIL RATING.

LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJOINING LOT LINE
- LIMIT OF DRAINAGE AREA
- FLOW PATH

DRACUT PLANNING BOARD

DATE:

THE ENDORSEMENT ABOVE IS NOT A DETERMINATION BY THE PLANNING BOARD AS TO COMPLIANCE WITH THE ZONING BYLAWS.

Rev. #:	Date	Description

Graphic Scale: 20 0 20 40

SOLLI ENGINEERING
MONROE, CT | W. HARTFORD, CT | NORWOOD, MA
SOLLIENGINEERING.COM
T: (203) 880-5455 | F: (203) 880-9695

Drawn By:	VER
Checked By:	CJB
Approved By:	KMS
Project #:	22203701
Plan Date:	12/18/24
Scale:	1" = 20'

COMMONWEALTH OF MASSACHUSETTS — KEVIN M. SOLLI — CIVIL — NO. 51952 — REGISTERED PROFESSIONAL ENGINEER

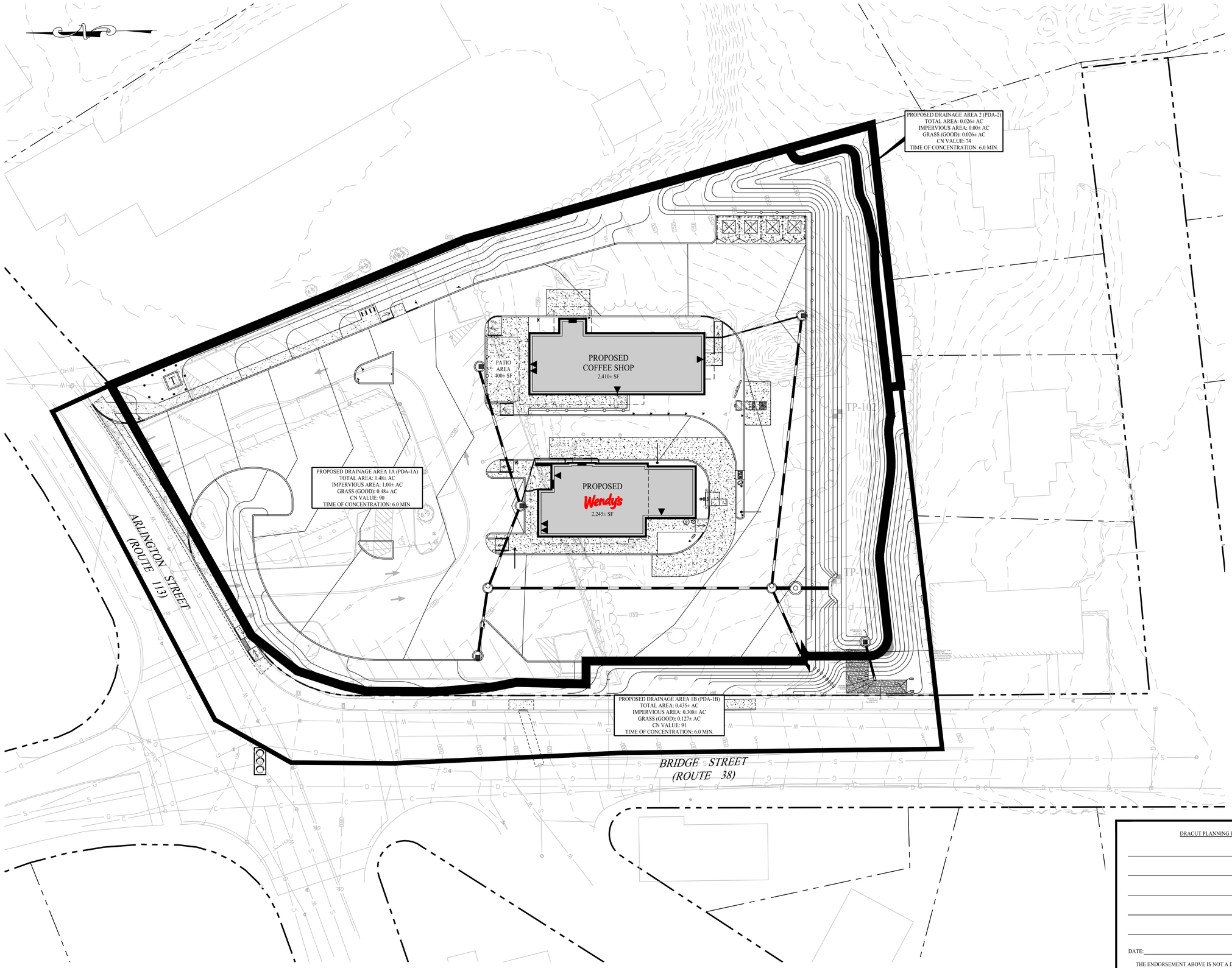
Kevin Solli, P.E.
MA 51952

Project:

BRIDGE STREET LANDING

5 ARLINGTON STREET
DRACUT, MASSACHUSETTS

Sheet Title:	Sheet #:
EXISTING DRAINAGE AREA MAP	EDA



GENERAL NOTES

1. THESE PLANS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT FOR CONSTRUCTION. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.
2. ALL SITE WORK TO BE COMPLETED IN ACCORDANCE WITH ALL PERMITS, APPROVALS AND CONDITIONS OF APPROVALS ISSUED BY THE TOWN OF DRACUT FOR THIS PROJECT.
3. EXISTING SITE CONDITIONS AND BOUNDARY INFORMATION TAKEN FROM A PLAN TITLED "PLAN OF LAND IN DRACUT, MA, 5 ARLINGTON STREET & 1327 BRIDGE STREET", DATED JANUARY 26, 2023, SCALE: 1"=15', PREPARED BY NORTHEAST SURVEY CONSULTANTS.
   - 3.1. THE HORIZONTAL DATUM IS NAD83 (MASS. MAINLAND), THE VERTICAL DATUM IS NAVD88 AND BOTH ARE BASED ON RTK GPS OBSERVATION TAKEN ON SITE BY NORTHEAST SURVEY CONSULTANTS.
   - 3.2. TOPOGRAPHIC CONDITIONS OUTSIDE OF THE PROJECT SITE WERE DOWNLOADED AND INTERPOLATED OFF THE LIDAR DATABASE FROM THE NOAA DATA ACCESS VIEWER.
4. THE STORMWATER MANAGEMENT PLAN AND DESIGN IS INTENDED TO BE IN COMPLIANCE WITH THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION'S STORMWATER MANAGEMENT HANDBOOK AND THE TOWN OF DRACUT, MASSACHUSETTS STORMWATER REGULATIONS.
5. STORMWATER RUNOFF ANALYSIS WAS CALCULATED USING THE SCS TR-55 METHODOLOGY.
6. BASED ON SOIL MAPPING PRODUCED BY THE USDA NATURAL RESOURCES CONSERVATION SERVICE, THE SITE IS LOCATED WITHIN AN AREA OF "WOODBRIDGE FINE SANDY LOAM". THIS UNIT HAS A SPECIFIED HYDROLOGIC SOIL RATING OF "C/D". FOR CONSERVATIVE MEASURES, THE ANALYSIS WAS PERFORMED ASSUMING A "D" SOIL RATING.

LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJOINING LOT LINE
- LIMIT OF DRAINAGE AREA
- FLOW PATH

DRACUT PLANNING BOARD

DATE: _____

THE ENDORSEMENT ABOVE IS NOT A DETERMINATION BY THE PLANNING BOARD AS TO COMPLIANCE WITH THE ZONING BYLAWS.

Rev. #: Date Description

Graphic Scale: 20 0 20 40

SOLLI ENGINEERING
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Drawn By:	PDS
Checked By:	CJB
Approved By:	KMS
Project #:	22203701
Plan Date:	12/18/24
Scale:	1" = 20'

COMMONWEALTH OF MASSACHUSETTS — KEVIN M. SOLLI — CIVIL — NO. 51952 — REGISTERED PROFESSIONAL ENGINEER

Kevin Solli, P.E.
MA 51952

Project:

BRIDGE STREET LANDING

5 ARLINGTON STREET
DRACUT, MASSACHUSETTS

Sheet Title: PROPOSED DRAINAGE AREA MAP

Sheet #: PDA

Mar 27, 2025 - 9:43am Okimball
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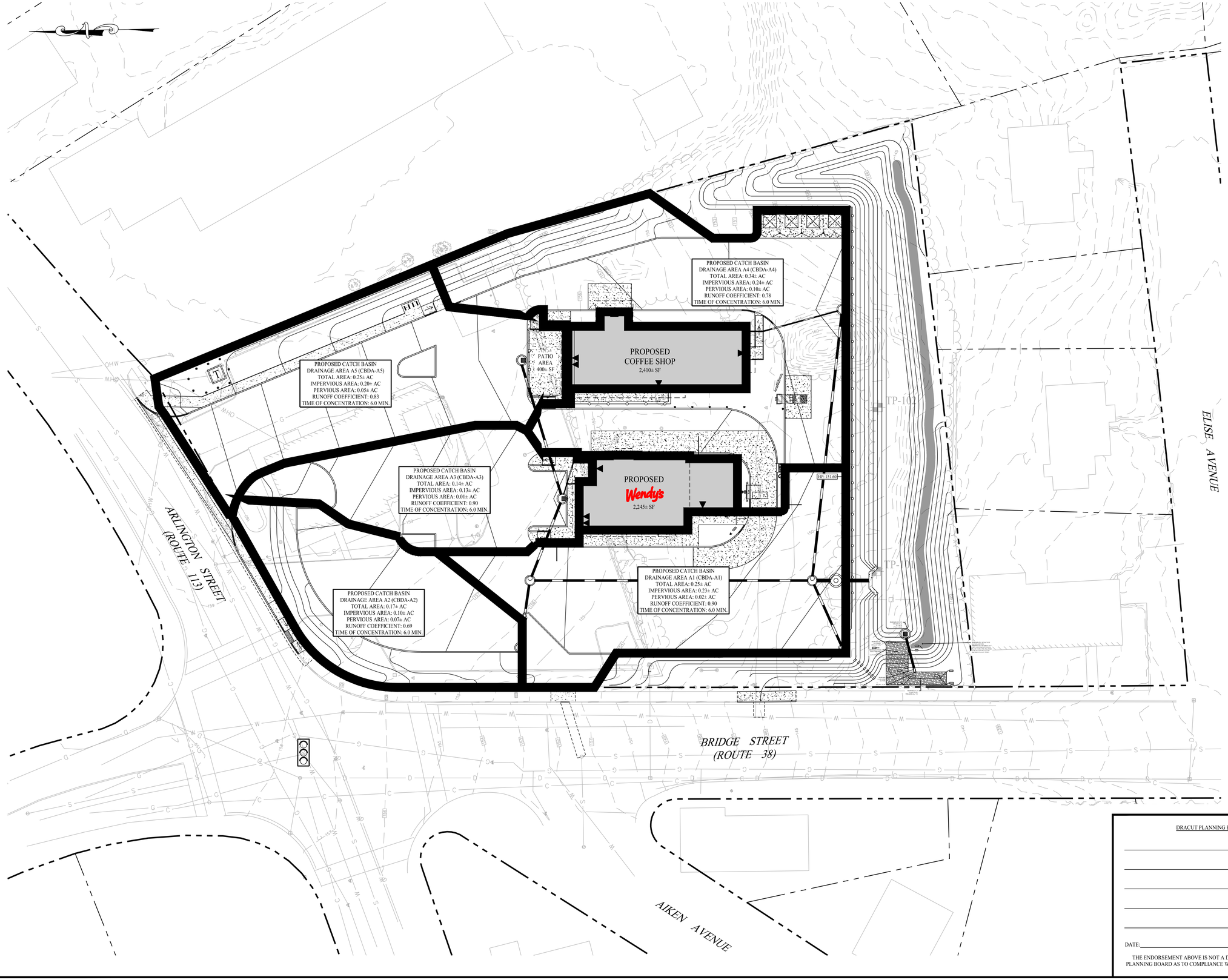

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DRACUT PLANNING BOARD

DATE:

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Sheet Title: PROPOSED CATCH BASIN DRAINAGE AREA MAP

Sheet #: CBDA

Mar 27, 2025 - 9:44am Okimbell
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Appendix E – Long-Term Operation & Maintenance

Operation & Maintenance Manual

LONG-TERM
OPERATION & MAINTENANCE MANUAL

For the Proposed:

BRIDGE STREET
LANDING

Located At:
5 Arlington Street
Dracut, Massachusetts 01826

Prepared On:
December 18th, 2024

Revised On:
March 27th, 2025

Prepared For:
Town of Dracut
Planning Board Submission

Prepared By:

SOLLI ENGINEERING

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Prepared For:

Twin Coast Properties, LLC

59 Stiles Road, Suite 201
Salem, New Hampshire 03079
T: (603) 296-4930

TABLE OF CONTENTS

SOLLI ENGINEERING

INTRODUCTION

Solli Engineering (Solli) has prepared this Operations and Maintenance Manual in accordance with Standard 9 of the Massachusetts Stormwater Handbook. The Long-Term Operations and Maintenance (O&M) Manual, filed with the Town of Dracut, shall be implemented at the proposed Bridge Street Landing development at 5 Arlington Street in Dracut, Massachusetts to ensure that the stormwater management functions as designed. The owner possesses the primary responsibility for overseeing and implementing the O&M plan and assigning a Property Manager who will be responsible for the proper operation and maintenance of the stormwater structures. In case of transfer of property ownership, future property owners shall be notified of the presence of the stormwater management system and the requirements for proper implementation of the O&M plan. Included in the O&M plan identifying key components of the stormwater system as well as a log for tracking inspections and maintenance.

The stormwater management system protects and enhances the stormwater runoff water quality through the removal of sediment and pollutants, and source control significantly reduces the number of pollutants entering the system. Preventive maintenance of the system will include a comprehensive source reduction program of regular vacuuming and litter removal, prohibitions on the use of pesticides and maintenance of designated waste and recycling. All inspections and maintenance shall be performed in accordance with the Massachusetts Stormwater Handbook and Stormwater Standards.

DOCUMENTATION

An inspection and maintenance record log and schedule will be kept by the Owner or Property Manager summarizing inspections, maintenance, repairs, and any corrective actions taken. The log will include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean-out of any sediments or debris, the location where the sediment and debris was disposed after removal will be indicated. Inspection & Maintenance Logs will be kept on file at the on-site Property Management office.

RESPONSIBILITY

The purpose of the Long-Term Operation and Maintenance (O&M) Manual is to ensure inspection of the system, removal of accumulated sediments, oils, and debris and implementation of corrective action and record keeping activities. The below O&M activities associated with the site will be performed by a Contract Operator for the scope of maintenance. The Contract Operator will be a professional engineer or other technical professional with expertise and experience with stormwater management facilities operation and maintenance.

The ongoing responsibility is the Owner, its successors, and assigns. Adequate maintenance is defined in this document as good working conditions. The below contact is directly responsible for operation and maintenance of the stormwater system, financing, and all emergency repairs.

Responsibility for O&M (to be transferred upon sale of property / development):

Contact:	Chris Baker / Twin Coast Properties, LLC
Number:	603-296-4930
Address:	59 Stiles Road, Suite 201
City, State:	Salem, New Hampshire 03079

Owner (Signature) Date

Owner's Name (Printed) Date

MAINTENANCE PROGRAM

The Owner, Property Manager, and maintenance staff will conduct the Operation and Maintenance program set forth in this document. The Owner or Property Manager will ensure that inspections and record keeping are timely and accurate, and that cleaning and maintenance are performed in accordance with the recommended frequency for each stormwater component. Inspection & Maintenance Log Forms shall include the date and the amount of the last significant storm event in excess of 1-inch of rain in a 24-hour period, physical conditions of the structures, depth of sediment in structures, evidence of overtopping or debris blockage and maintenance required of each structure. The following areas, facilities and measures will be inspected by the Owner or Property Manager and maintained as specified below. Identified deficiencies will be corrected. Accumulated sediments and debris will be properly handled and disposed of off-site, in accordance with local, state, and federal guidelines and regulations.

All inspections and maintenance performed shall be in accordance with specifications outlined in the Massachusetts Stormwater Handbook.

STORMWATER INFILTRATION BASIN

The proposed stormwater infiltration basin is designed as an impoundment with seed mixes designed to thrive in wet conditions and the basin has been designed to temporarily attenuate stormwater runoff. To successfully maintain the design parameters the following will be required for upkeep:

Maintenance:

- Inspect basin three (3) months post construction to ensure growth of seed mixes;
- Inspect basin during the both the growing and non-growing seasons. This inspection should occur twice a year for the first three years of construction. Said inspection should be by a trained qualified profession.
- Annual inspection of the basin shall occur inspection of side slopes and riprap. Inspections should be observant of sediment deposits, trash, and debris and if observed they shall be removed and disposed of in an approved manner.
- The proposed landscaping shall be maintained on a monthly basis once established. The grass areas should be mowed to 3 to 4 inches. Steep slopes should be weed whacked.
- Inspection and repair of embankments and spillways.

INVASIVE SPECIES MITIGATION

During annual inspection of the basin the inspector should be cognizant of vegetation growing within the system. If unordinary species, or species not specified on the landscape plan are identified, the civil engineer of record and a professional wetlands scientist shall be notified immediately. Unordinary species could be invasive species and if so, should be removed and disposed of in an appropriate manner under the direction of a wetland's scientist or botanist.

HYDRODYNAMIC SEPARATOR UNIT

Hydrodynamic separators protect the environment by removing a wide range of pollutants from stormwater runoff. Periodic removal of these captured pollutants is essential to the continuous, long-term functioning of the separator. The units will capture and retain sediment and oil until the sediment and oil storage volumes are full to capacity. When sediment and oil storage capacities are reached, the structures will no longer be able to store removed sediment and oil.

The stormwater management system proposes to incorporate a Contech water quality unit. According to the Contech Guide Operation, Design, Performance and Maintenance, inspections shall take place at regular intervals to ensure optimum performance. At a minimum, inspections shall be performed twice a year (Ex.: spring & fall) however more frequent inspections may be required depending on several things, one being severity of winter (excessive sanding/salting). The frequency of cleanout is determined in the field after installation. During the first year of operation, the units should be inspected regularly and then after, every six months (twice a year) to determine the rate of sediment and floatables accumulation. A simple probe can be used to determine the level of accumulated solids stored in the sump. This information should be recorded in the inspection logs. On the log it is important to note the date, location of structure (or identification), estimated volume of floatables, and depth of sediment. Securely replace the top of the structure and take down any safety equipment. Then notify the engineer of record for any irregularities in the structure's performance if any. The systems should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. Sediment and debris removal can be done manually or with approved sumpvac (or equal).

For more information regarding the CDS Guide Operation, Design, Performance and Maintenance visit:
https://www.conteches.com/Portals/0/Documents/Design%20Guides/CDSDesign%20Guide.pdf?ver=2018-05-16-083621-907

DEEP SUMP CATCH BASIN

Deep sump catch basins are underground concrete structures which are designed to retain removed trash, debris, and coarse sediment from stormwater runoff and serve as temporary spill containment devices for floatables such as oil and greases prior to discharge into a storm sewer pipe. The functions of a deep sump catch basin include:

- A grate and/or vertical notch found in the curbing that allow stormwater to enter the structure while filtering out larger objects such as trash and leaves.
- A four-foot (minimum) sump below the invert of the storm sewer pipe provides an area for detention time which allows sands and other sediments to settle out of the runoff prior discharge.
- An attached hooded outlet, that prevents floatables and sediment from entering the storm sewer pipes.

At a minimum, deep sump catch basins and drain manholes shall be inspected quarterly (four times per year). Ideally, inspections should be conducted in the fall, at the end of the leaf-drop, in the spring following snowmelt and following heavy rain falls, defined as a storm event exceeding 1-inch of rain fall within a twenty-four-hour period to verify that inlet openings are not clogged by debris. Each structure should be cleaned whenever the depth of sediment deposits is greater than or equal to one half the depth of the sump from the bottom of the structure to the bottom of the lowest pipe invert. Structures shall be inspected for the buildup of sediments, oils, debris, cracks, breaks, or deformations. Any function of the catch basin and drain manhole that is not in working order will be replaced with similar materials, as per detail, to prevent the storm sewer system from failing.

If floating hydrocarbons are observed during an inspection, the material should be removed immediately by skimming, absorbent materials, or other methods and disposed in conformance with applicable state and federal regulations.

The catch basins shall be cleaned by means of handheld shovels, scallop shovel and/or vacuum truck. A vacuum truck may be required instead of shovels to avoid damage to the structure. The grate opening shall be clear of any foreign or lodged object. If floating hydrocarbons are observed during an inspection, the material should be removed immediately by skimming, absorbent materials or other methods and salts used in the winter will be removed from the catch basin sumps in the early spring. Leaves, pine needles and branches brought down by autumn winds, rain, and cold weather will be removed from the catch basin sumps in the late fall. Collected sediment, debris and hydrocarbons will be properly disposed of per local, state, and federal requirements.

Damaged Hoods should be replaced when noted by inspection.

RIPRAP APRON OUTLET PROTECTION

All riprap aprons are to be inspected at a minimum annually for accumulation of sediment and debris and for any signs of erosion within the outlet, riprap apron, or down-slope of the apron. Upon inspection, if any accumulated debris or sediment is observed it should be removed. Snow should not be stored on or down gradient of the riprap aprons. During the inspection, if the apron appears to be degraded or if any erosion is observed the apron shall be re-graded or the riprap shall be replaced, as warranted by inspection.

SNOW REMOVAL

Snow accumulations removed from the driveway, parking areas and other impervious surfaces should be placed in appropriately designated areas. Designated snow storage areas are depicted on the Landscape Plan (Sheet 2.61) within the Permitting Plan Set. Excess snow should be removed from the site and properly disposed of in an approved snow disposal facility. Care must be exercised not to deposit snow in the following areas: on top of storm drain catch basins, in natural depressions and where sand and debris can directly get into the watercourse or within a detention / infiltration basin.

PARKING LOT MAINTENANCE

At a minimum, the proposed parking areas shall be swept annually, in the months of March or April (after the last significant snowfall). Parking lot sweeping may be performed by mechanical sweeping equipment or vacuum equipment. All sediment collected during the sweeping operations shall be removed from the Site and disposed of at an appropriate off-site disposal location.

EMERGENCY SPILL CONTAINMENT

The Owner, along with the on-site Property Manager is responsible for educating staff and informing tenants of the environmental benefits associated with the use of pavement at the site. Staff must be trained, and tenants informed via the community website as to the proper spill prevention control and response procedures should a spill occur on the pavement surface. Proper spill control products, such as a granular dry absorbent, must be kept on-site at the property management office in a clean, dry chemical and corrosion resistant container.

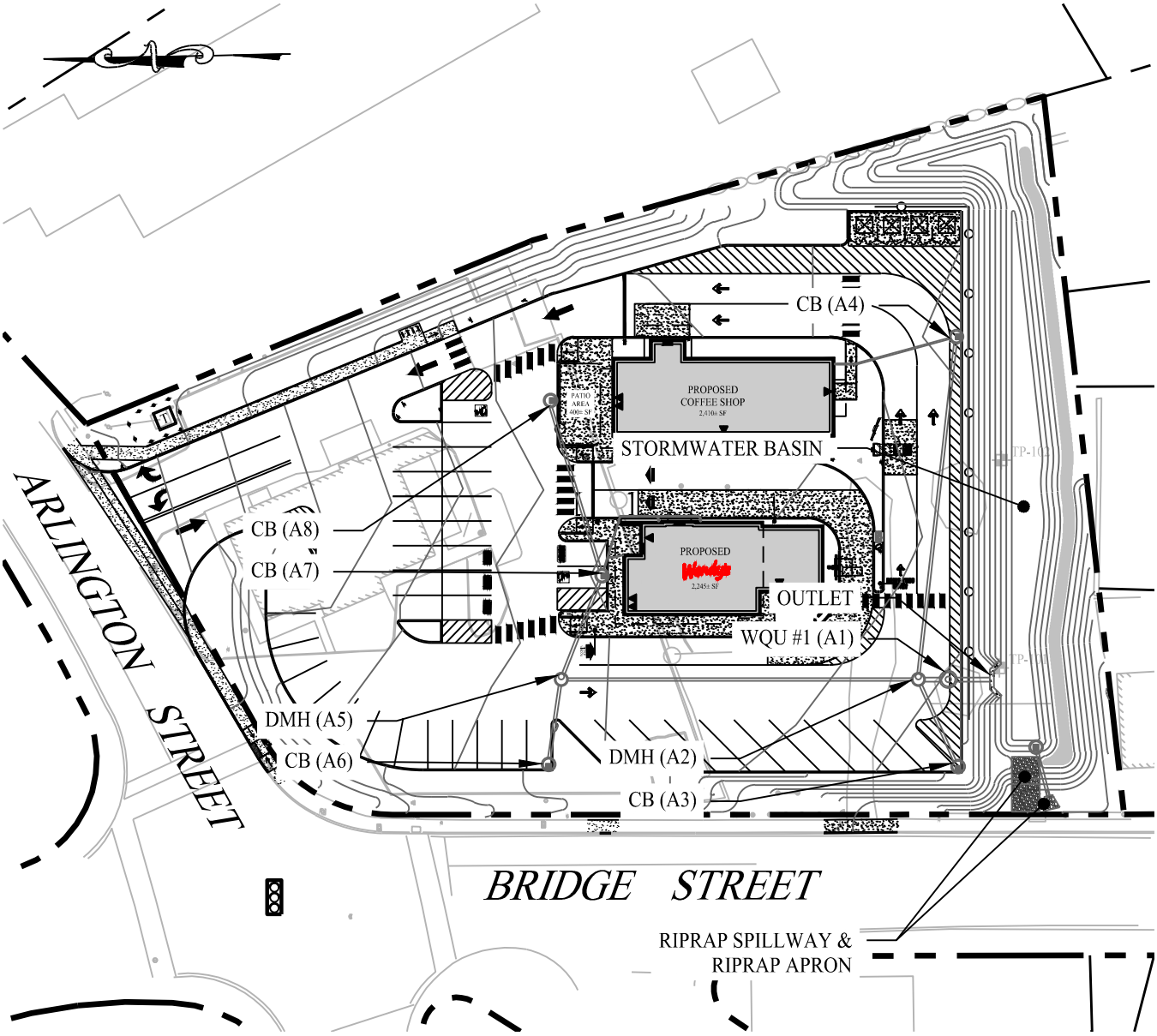
A spill of greater than 10 gallons of oil or a spill of any quantity that has reached a surface water, into a sewer, storm drain, ditch, or culvert leading to a surface water, is immediately reported to one or more municipal, state, or federal authority. In the event of a hazardous waste spill on-site, the following protocol should be followed.

- If it is safe to do so, maintenance staff or tenants detecting an oil spill should immediately stop the release and use available materials to prevent the spread of oil.
- If there is a potentially flammable, toxic, or explosive condition, evacuate the vicinity of the spill.
- If it is believed that a reportable or dangerous condition exists, immediately call your local Fire Department to notify them of the release.
- If it is believed that a reportable condition exists, immediately call the Massachusetts Department of Environmental Protection (DEP) to notify them of the release.
- Call the DEP Emergency Response Section toll free statewide number, 1-888-304-1133. Be prepared to provide the following information to the DEP and the Fire Department:
    - Identity of the caller
    - Contact phone number Location of the spill
    - Type of product spilled
    - Approximate quantity or product spilled Extent of actual and/or potential water pollution
    - Date and time of spill
    - Cause of spill
    - Contact a Licensed Site Professional (LSP) to assist in further handling of the material(s) and DEP.

ESTIMATED OPERATIONS & MAINTENANCE BUDGET

BMP Structure / Service	Estimated Maintenance Cost*	Occurrence *	Total Estimated Annual Maintenance Cost*
BMP Inspectional Services	$1,250*	Quarterly*	$5,000*
Snow Management	$10,000*	Annually*	$10,000*
Pavement Sweeping	$750*	Annually*	$750*
Landscaping	$300*	Bi-Weekly* (Spring through Fall)	$4,500*
		Total	**$20,250***

*The maintenance costs, occurrence of maintenance, and estimated annual maintenance costs are an estimated and this budget was prepared in compliance with #6 within Standard 9 of the MassDEP Stormwater Handbook. This budget is subject to change at the discretion of the Owner & Property Maintenance entity without notice to the Town of Dracut.



NOTES

1. THIS PLAN IS FOR OPERATION & MAINTENANCE REFERENCE ONLY.
2. REFER TO THE GRADING & DRAINAGE PLAN (SHEET 2.21) OF THE PERMITTING PLAN SET FOR THE BRIDGE STREET LANDING PROJECT FOR DETAILED INFORMATION PERTAINING TO THE PROPOSED IMPROVEMENTS.
3. ALL STRUCTURES AND SYSTEMS IDENTIFIED ON THIS PLAN ARE SUBJECT TO THE APPROVED LONG-TERM OPERATION & MAINTENANCE PLAN ASSOCIATED WITH THIS PROJECT.

STORMWATER STRUCTURE LIST

1. STORMWATER BASIN
2. RIPRAP SPILLWAY
3. RIPRAP APRON
4. OUTLET
5. WQU #1 (A1)
6. DMH (A2)
7. CB (A3)
8. CB (A4)
9. DMH (A5)
10. CB (A6)
11. CB (A7)
12. CB (A8)

ABBREVIATIONS

CB	CATCH BASIN
DMH	DRAINAGE MANHOLE
WQU	WATER QUALITY UNIT

60 0 30 60

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STORMWATER MANAGEMENT OPERATION & MAINTENANCE PLAN

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Project #:	22203701
Plan Date:	04/02/25
Scale:	1" = 60'
Figure:	1

	Title:	Inpsection #:
	Location:	Project #:
		Field Date:

INSPECTION & MAINTENANCE LOG

Name(s) & Title(s) of Individual(s) performing inspection: _____

Week of Inspection: _____

Type of Inspection:

☐ Monthly ☐ Quarterly ☐ Biannually ☐ Annually ☐ Emergency

Weather (during inspection)

☐ Clear ☐ Cloudy ☐ Rain ☐ Snow ☐ Sunny ☐ Windy ☐ Fog

Other:

Time of Inspection:		**Temp. during inspection:**	°F
Start Time:	**a.m.** **End Time:** **a.m.**	**Precip. since last inspection:**	"

Site Specific BMP's

#	BMP	Maintenance Required		Corrective Action Needed & Notes
1		☐ Yes	☐ No	
2		☐ Yes	☐ No	
3		☐ Yes	☐ No	
4		☐ Yes	☐ No	
5		☐ Yes	☐ No	
6		☐ Yes	☐ No	
7		☐ Yes	☐ No	
8		☐ Yes	☐ No	
9		☐ Yes	☐ No	
10		☐ Yes	☐ No	

Overall Site Maintenance Concerns

BMP/Activity	Maintenance Required		Corrective Action Needed & Notes
Are discharge points & receiving waters free of any sediment deposits?	☐ Yes	☐ No	
Are storm drain inlets properly working?	☐ Yes	☐ No	
Is trash/litter from site areas collected & placed in covered dumpsters?	☐ Yes	☐ No	
What is the level of sediment within infiltration basin?	☐ Yes	☐ No	
What is the level of sediment within the hydrodynamic separators?	☐ Yes	☐ No	
What is the levels of oil/grit/trash within the infiltration basin or hydrodynamic separators?	☐ Yes	☐ No	
(Other)	☐ Yes	☐ No	

Inspector(s) Signature(s): _____