



Planning Board AGENDA

Thursday, February 20, 2025 - 6:00 PM

Regular Meeting
Agawam Senior Center
954 Main Street
Agawam, MA 01001

A. Planning Board

- 1) 6:00PM PUBLIC HEARING-ZONING AMENDMENT-"An Ordinance to Amend Chapter 180 of the Code of City of Agawam Regarding Accessory Dwelling Units"-Mayor Johnson
- 2) 6:10PM PUBLIC HEARING-ZONING AMENDMENT-"An Ordinance to Amend Chapter 180 of the Code of the City of Agawam Regarding Zoning Enforcement Powers and Penalties"-Mayor Johnson
- 3) SITE PLAN-207 Bowles Road-RHM Realty, LLC
- 4) DISCUSSION & POSSIBLE VOTE-Planning Board Representative for Housing Committee
- 5) Election of PVPC Commissioner
- 6) APPROVAL OF MINUTES-February 6, 2025
- 7) Correspondences



Town of Agawam

Christopher C. Johnson, Mayor
36 Main Street
Agawam, MA 01001
Telephone: 413-786-0400 | 413-786-4525

Memorandum

To: Agawam City Council
From: Christopher C. Johnson, Mayor
Re: TOR-2025-1 (Zoning Enforcement)
Date: January 16, 2025

Attached please find TOR-2025-1 which is an ordinance to amend §180-15 to §180-16.1 of the Code of the City of Agawam to update and expand zoning enforcement powers and to increase non-criminal enforcement penalties.

The proposed amendment does the following:

- expands non-criminal enforcement to include conditions of a permit or special permit granted under the zoning code or under any decision rendered by the Zoning Board of Appeals or the Planning Board;
- increases the fines for non-criminal enforcement from \$25/\$50/\$100 for first, second and third and subsequent offenses to \$100/\$200/\$300 for first, second and third and subsequent offenses; and
- provides that unpaid fines shall be subject to the municipal charges lien law which is M.G.L. c. 40 §58 (copy attached) which allows the town to lien the property involved and ultimately add unpaid liens to the real estate tax bill for collection.

I have also attached a spreadsheet showing fines in surrounding cities and towns for your information. Please do not hesitate to contact me with any questions.

Very truly yours,

Christopher C. Johnson
Mayor

M.G.L. c. 40 § 58. Any city or town may impose a lien on real property located within the city or town for any local charge or fee that has not been paid by the due date, said lien shall be known as the "municipal charges lien"; provided, that a separate vote at a town meeting, or by a city or town council is taken for each type of charge or fee.

A municipal charges lien authorized under this section shall take effect upon the recording of a list of unpaid municipal charges and fees by parcel of land and by the name of the person assessed for the charge or fee in the registry of deeds of the county or district where the land subject to the lien lies.

If a charge or fee which is secured by a municipal charges lien remains unpaid when the assessors are preparing a real estate tax list and warrant to be committed under section fifty-three of chapter fifty-nine, the board or officer in charge of the collection of the municipal charge or fee, or the town collector of taxes, if applicable under section thirty-eight A of chapter forty-one, shall certify such charge or fee to the assessors, who shall forthwith add such charge or fee to the tax on the property to which it relates and commit it with their warrant to the collector of taxes as part of such tax.

If the property to which such charge or fee relates is tax exempt, such charge or fee shall be committed as the tax. A lien under this section may be discharged by filing a certificate from the tax collector that all municipal charges or fees constituting the lien, together with any interest and costs thereon, have been paid or legally abated. All costs of recording or discharging a lien under this section shall be borne by the owner of the property.

Comparison of Surrounding Communities

Community	Judicial Enforcement	Non-Criminal 1st Offense	Non- Criminal 2nd Offense	Non-Criminal 3rd Offense	Non-Criminal 4th + Offense
Agawam	\$300	\$100	\$200	\$300	\$300
West Springfield	\$300	\$25	\$50	\$100	\$200
East Longmeadow	\$300	\$100	\$200	\$300	\$300
Longmeadow	\$100	\$100	\$100	\$100	\$100
Southwick	\$300	\$300	\$300	\$300	\$300
Springfield	\$100 to \$300	\$100	\$300	\$300	\$300
Chicopee	\$200	\$200	\$200	\$200	\$200
Westfield	\$100 to \$300	\$100	\$300	\$300	\$300

**AN ORDINANCE TO AMEND CHAPTER 180
OF THE CODE OF THE CITY OF AGAWAM REGARDING
ACCESSORY DWELLING UNITS**

(Sponsored by Christopher C. Johnson, Mayor)

WHEREAS, on August 6, 2024, Governor Healey signed the Affordable Homes Act into law (Chapter 150 of the Acts of 2024); and

WHEREAS, Section 8 of the Affordable Homes Act amends the statewide Zoning Act to allow accessory dwelling units up to nine hundred (900) square feet to be built by right in single-family zoning districts in every community in Massachusetts; and

WHEREAS, the new law on accessory dwelling units supersedes existing local zoning ordinances and is effective on February 2, 2025, after which zoning provisions that are inconsistent with the new accessory dwelling unit law become unenforceable; and

WHEREAS, Agawam has no zoning ordinance that deals with accessory dwelling units, and given the potential for the construction or installation of new accessory dwelling units, it is important for Agawam to adopt an ordinance to guide the construction and installation of accessory dwelling units; and

WHEREAS, the Zoning Advisory Committee recommends the proposed amendment and the City Council has the authority to enact the proposed amendment the Code of the City of Agawam; and

WHEREAS, it is in the best interest of the City of Agawam to amend Chapter 180 by adding Article XXIV entitled "Accessory Dwelling Units" which adds §180-174 to §180-178 to the Code of the City of Agawam to provide local guidance regarding the construction and/or installation of accessory dwelling units in Agawam; and

NOW THEREFORE, the Agawam City Council hereby amends the Chapter 180 of the Code of the City of Agawam by adding Article XXIV entitled "Accessory Dwelling Units" which is attached hereto and incorporated herein by reference.

DATED THIS ____ DAY OF _____, 2025.

PER ORDER OF THE AGAWAM CITY COUNCIL

Rosemary Sandlin, President

APPROVED AS TO FORM AND LEGALITY



Christopher S. Cappucci, Solicitor

ARTICLE XXIV Accessory Dwelling Units

§180-174 Purpose and Intent.

The purpose of this Article is to provide a fair process for the safe and orderly construction and installation of Accessory Dwelling Units that can be integrated onto existing Lots which contain a Single Family Residential Dwelling within any zoning district where Single Family Residential Dwellings are permitted or allowed as of right.

§180-175 Definitions.

For the purposes of this Article, the following words and phrases shall have the meanings respectively ascribed to them by this Section:

Accessory Dwelling Unit (ADU): A self-contained housing unit, inclusive of sleeping, cooking and sanitary facilities on the same Lot as a Principal Dwelling, subject to otherwise applicable dimensional and parking requirements, that: (a) maintains a separate entrance, either directly from the outside or through an entry hall or corridor shared with the Principal Dwelling sufficient to meet the requirements of the state building code for safe egress; (b) is not larger in Gross Floor Area than one half (½) the Gross Floor Area of the Principal Dwelling or nine hundred (900) square feet, whichever is smaller; and (c) is held in common ownership as the Principal Dwelling on the Lot.

Dwelling Unit: A single housing unit providing complete, independent living facilities for one or more persons including permanent provisions for living, sleeping, eating, cooking and sanitation.

Gross Floor Area: The sum of the areas of all floors of the building, including basements, cellars, mezzanine and intermediate floored tiers and penthouses of headroom height, measured from the exterior faces of exterior walls or from the centerline of walls separating buildings, but excluding: (i) covered walkways, open roofed-over areas, porches and similar spaces; and (ii) pipe trenches, exterior terraces or steps, chimneys, roof overhangs and similar features.

Lot: An area of land with definite boundaries that is used, or available for use, as the site of a building, or buildings.

Modular Dwelling Unit: A pre-designed Dwelling Unit assembled and equipped with internal plumbing, electrical or similar systems prior to movement to the site where such Dwelling Unit is affixed to a foundation and connected to external utilities; or any portable structure with walls, a floor, and a roof, designed or used as a Dwelling Unit, transportable in one or more sections and affixed to a foundation and connected to external utilities. A Modular Dwelling Unit shall not include a manufactured home, such as those defined under Massachusetts General Laws Chapter 140, Section 32Q, as amended from time to time.

Principal Dwelling: A structure, regardless of whether it conforms to zoning, including use requirements and dimensional requirements, such as setbacks, bulk, and height that contains one Dwelling Unit and is located on the same Lot as an Accessory Dwelling Unit.

Short-term Rental: Short-term rental, as defined in Massachusetts General Laws Chapter 64G, Section 1, as amended from time to time.

Single Family Residential Dwelling: A structure on a Lot containing not more than one Dwelling Unit.

Site Plan Review: The process by which the Inspector of Buildings reviews a submitted site plan along with a building permit application to construct or install an Accessory Dwelling Unit and impose reasonable terms and conditions on, the appearance and layout of the proposed Accessory Dwelling Unit prior to the issuance of a building permit.

Special Permit: A permit issued by the Board of Appeals as the special permit granting authority pursuant to Massachusetts General Laws Chapter 40A, Section 9, and §180-11 of the Code of the Town of Agawam, both as amended from time to time.

§180-176 Procedural Requirements.

1. **Site Plan Review for Accessory Dwelling Units:** An application for a building permit for the construction or installation of an Accessory Dwelling Unit as described herein shall include a site plan prepared by a Massachusetts Registered Land Surveyor.
2. **Procedure:** The applicant shall file an electronic copy plus two (2) hard copies of the site plan with the Inspector of Buildings. The Inspector of Buildings shall review and act upon the building permit application and site plan, including adding such conditions as may be deemed reasonable and appropriate, within thirty (30) days of its receipt, and shall notify the applicant of his/her decision. The decision of the Inspector of Buildings shall be in writing. An application for a building permit for the construction or installation of an Accessory Dwelling Unit shall not be deemed complete until such site plan is submitted.
3. **Site Plan Contents:** All site plans shall be prepared to scale on standard sheets of 24 inches by 36 inches to show with reasonable accuracy the following information, in addition to that information required in §180-4: uses and structures proposed for a parcel of land as required by the zoning regulations, including lot lines, streets, building sites, buildings, landscape features, traffic circulation, parking, drainage, utilities, topography and lighting within the parcel. The site plan shall include descriptions of the means of access and egress for the proposed Accessory Dwelling Unit.
4. **Appeal:** Any decision by the Inspector of Buildings on an application for a building permit with the accompanying site plan, for the construction or installation of an Accessory Dwelling Unit shall be subject to the right of appeal to the Board of Appeals.
5. **Special Permits:** A special permit as set forth in §180-11 shall be required for any application with accompanying site plan that seeks to construct two (2) or more Accessory Dwelling Units on any Lot that contains a Single Family Dwelling Unit.

§180-177 Use and Dimensional Regulations.

1. **Requirements:** The Inspector of Buildings may approve a building permit application with accompanying site plan authorizing the construction or installation of an Accessory Dwelling Unit on a Lot with an existing Single Family Residential Dwelling only when the following conditions are met:
 - a. The Accessory Dwelling Unit shall be a separate Dwelling Unit providing complete, independent living facilities for one or more persons including permanent provisions for living, sleeping, eating, cooking and sanitation;
 - b. Only one Accessory Dwelling Unit may be constructed or installed on a Lot with an existing Single Family Dwelling Unit, unless a Special Permit has been granted pursuant to §180-176;
 - c. Any building permit application with accompanying site plan for an Accessory Dwelling Unit shall comply with all height regulations, setback requirements, side and rear yard requirements and lot coverage restrictions for the zoning district where the Lot is located;
 - d. Any building permit application with accompanying site plan for an Accessory Dwelling Unit shall provide for a minimum of one (1) parking space for the Accessory Dwelling Unit;
 - e. Any building permit application with accompanying site plan for an Accessory Dwelling Unit shall provide for a separate entrance, either directly from the outside or through an entry hall or corridor shared with the Principal Dwelling sufficient to meet the requirements of the State Building Code for safe egress;
 - f. Any building permit application with accompanying site plan for an Accessory Dwelling Unit shall show the gross floor area of the Principal Dwelling and the gross floor area of the proposed Accessory Dwelling Unit. The gross floor area of the proposed Accessory Dwelling Unit shall not be greater than nine hundred (900) square feet or one-half ($\frac{1}{2}$) of the gross floor area of the Principal Dwelling unit, whichever is smaller;
 - g. In order to encourage the development of Accessory Dwelling Units for the disabled and for those with limited mobility, reasonable deviation from the stated conditions may be allowed, within the sole discretion of the Inspector of Buildings, where necessary to install features that facilitate access and mobility for disabled persons;
 - h. Any building permit application with accompanying site plan for an Accessory Dwelling Unit shall comply with the State Building Code, Title V of the State Sanitary Code, and all applicable federal, state and municipal laws and/or regulations; and

- i. Any building permit application with accompanying site plan for an Accessory Dwelling Unit shall comply with the provisions of the Massachusetts Stretch Energy Code for residential properties, as amended from time to time.
2. Prohibited Use of Accessory Dwelling Units: No Accessory Dwelling Unit shall be used for business, commercial, retail or industrial purposes. In addition, no Accessory Dwelling Unit shall be used as a Short-term Rental.
3. Common Ownership with Principal Dwelling: All Accessory Dwelling Units shall be held in common ownership with the owner of the Principal Dwelling on the same Lot.

§180-178 Administration and Enforcement.

It shall be the duty of the Inspector of Buildings to administer and enforce the provisions of this Article. No Accessory Dwelling Unit shall be occupied until a certificate of completion or a certificate of occupancy has been issued by the Inspector of Buildings.



Town of Agawam

Christopher C. Johnson, Mayor
36 Main Street
Agawam, MA 01001
Telephone: 413-786-0400 | 413-786-4525

Memorandum

To: Agawam City Council
From: Christopher C. Johnson, Mayor
Re: TOR-2025-2 (Accessory Dwelling Units)
Date: January 16, 2025

Attached please find TOR-2025-2 which is an ordinance to add Article XXIV entitled "Accessory Dwelling Units" which adds §180-174 to §180-178 of the Code of the City of Agawam to provide local guidance regarding the construction and installation of accessory dwelling units in Agawam.

On August 6, 2024, Governor Healey signed the Affordable Homes Act into law (Chapter 150 of the Acts of 2024). Section 8 of the Affordable Homes Act amends the statewide Zoning Act to allow accessory dwelling units (ADU) up to nine hundred (900) square feet to be built by right in single-family zoning districts in every community in Massachusetts. The new law on accessory dwelling units supersedes existing local zoning ordinances/by-laws in every community in Massachusetts. The new law is effective Sunday, February 2, 2025. After Sunday, February 2, 2025, zoning provisions that are inconsistent with the new ADU law become unenforceable.

The state law provides that an ADU must: maintain a separate entrance, either directly from the outside or through an entry hall or corridor shared with the principal dwelling sufficient to meet the requirements of the state building code for safe egress; be either no larger than half the gross floor area of the principal dwelling or nine hundred (900) square feet, whichever is smaller; meet applicable municipal restrictions, including, but not limited to, size restrictions and/or prohibitions on short-term rental.

The Commonwealth of Massachusetts Executive Office of Housing and Livable Communities published a set of draft regulations dealing with the new ADU law (copy attached). Agawam has no zoning ordinance that deals with accessory dwelling units. Given the potential for the construction and/or installation of new accessory dwelling units, it is important for Agawam to adopt an ordinance to guide the construction and installation of ADU's.

Agawam City Council

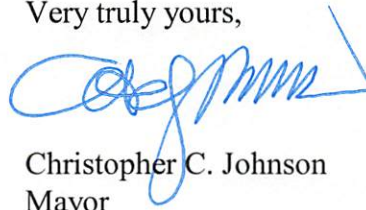
January 16, 2025

Page Two

The proposed zoning amendment represents our best effort to establish a local ordinance to deal with accessory dwelling units that is consistent with the draft state regulations. Obviously, if the state amends the draft regulations, amendments may need to be made to our local ordinance. The proposed ordinance was reviewed and recommended by the Zoning Review Committee.

Please do not hesitate to contact me with any questions.

Very truly yours,

A handwritten signature in blue ink, appearing to read "C. Johnson", with a stylized flourish extending from the end.

Christopher C. Johnson
Mayor

760 CMR 71.00: PROTECTED USE ACCESSORY DWELLING UNITS

Section

- 71.01: Statement of Purpose
- 71.02: Definitions
- 71.03: Regulation of Protected Use ADUs in Single-Family Residential Zoning Districts
- 71.04: Annual Updates

71.01: Statement of Purpose

- (1) *St. 2024, c. 150, s. 8* (the Act) amended M.G.L. c. 40A, s. 3 to encourage the production of accessory dwelling units throughout the Commonwealth with the goal of increasing the production of housing to address statewide, local, and individual housing needs for households of all income levels and at all stages of life.

The Executive Office of Housing and Livable Communities is the regulatory agency that is authorized by the Act to promulgate 760 CMR 71.00 and accompanying guidelines that establish rules, standards and limitations that will assist Municipalities and landowners in the administration of the Act.

- (2) The Act and 760 CMR 71.00 seek to balance municipal interests in regulating the use and construction of ADUs while empowering property owners to add much needed housing stock to address the Commonwealth's housing needs. The Act establishes that in certain circumstances the use of land or structures for ADUs are protected from zoning restrictions by providing that zoning shall not prohibit, unreasonably restrict or require a special permit or other discretionary zoning approval for the use of land or structures for a single ADU, or the rental thereof, in a single-family residential zoning district. The Act balances protection for these ADUs by authorizing municipalities to impose reasonable regulations on the creation and use of ADUs. The Act, however, explicitly prohibits municipalities from imposing requirements on protected accessory dwelling units that require owner-occupancy of either the ADU or the principal dwelling and imposes limitations on Municipal parking requirements.
- (3) 760 CMR 71.00 establishes definitions, standards, and limitations to assist in the local administration of M.G.L. c. 40A, s. 3, para. 11, pursuant to *St. 2024, c. 150, s. 8*. This regulation may be further supplemented by guidelines issued by EOHLC.

71.02: Definitions

Accessory Dwelling Unit (ADU). A self-contained housing unit, inclusive of sleeping, cooking and sanitary facilities on the same Lot as a Principal Dwelling, subject to otherwise applicable dimensional and parking requirements, that: (i) maintains a separate entrance, either directly from the outside or through an entry hall or corridor shared with the Principal Dwelling sufficient to meet the requirements of the state building code for safe egress; (ii) is not larger in Gross Floor Area than 1/2 the Gross Floor Area of the Principal Dwelling or 900 square feet, whichever is smaller; and (iii) is subject to such additional restrictions as may be imposed by a municipality, including, but not limited to, additional size restrictions and restrictions or prohibitions on Short-term Rental; provided, however, that no Municipality shall unreasonably restrict the creation or rental of an ADU that is not a Short-term Rental.

Bus Station. A location serving as a point of embarkation for any bus operated by a Transit Authority. For routes that allow flag stop locations where passengers may signal for a bus to stop at any point along its designated route, the entire route shall be considered a Bus Station.

Commuter Rail Station. Any commuter rail station operated by a Transit Authority with year-round service with trains departing at regular time intervals, rather than intermittent, seasonal, or event-based service.

Design Standards. Clear, measurable and objective provisions of Zoning, or regulations, which are made applicable to the exterior design of, and use of materials for an ADU.

Dwelling Unit. A single housing unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.

EOHLC. The Executive Office of Housing and Livable Communities.

Ferry Terminal. The location where passengers embark and disembark from a ferry service.

Gross Floor Area. The sum of the areas of all floors of the building, including basements, cellars, mezzanine and intermediate floored tiers and penthouses of headroom height, measured from the exterior faces of exterior walls or from the centerline of walls separating buildings, but excluding: (i) covered walkways, open roofed-over areas, porches and similar spaces; and (ii) pipe trenches, exterior terraces or steps, chimneys, roof overhands and similar features.

Historic District. A district in a Municipality established pursuant to M.G.L. c. 40C or other state law that is characterized by the historic or architectural significance of buildings, structures, and sites, and in which exterior changes to and the construction of buildings and structures are subject to regulations adopted by the Municipality pursuant to M.G.L. c. 40C or other state law, as the case may be.

Lot. An area of land with definite boundaries that is used, or available for use, as the site of a building, or buildings.

Modular Dwelling Unit. A pre-designed Dwelling Unit assembled and equipped with internal plumbing, electrical or similar systems prior to movement to the site where such Dwelling Unit is affixed to a foundation and connected to external utilities; or any portable structure with walls, a floor, and a roof, designed or used as a Dwelling Unit, transportable in one or more sections and affixed to a foundation and connected to external utilities. A Modular Dwelling Unit shall not include a manufactured home, such as those defined under M.G.L. c. 140, s. 32Q.

Municipality. Any city or town subject to the provisions of M.G.L. c. 40A.

Principal Dwelling. A structure, regardless of whether it conforms to Zoning, including use requirements and dimensional requirements, such as setbacks, bulk, and height, that contains at least one Dwelling Unit and is located on the same Lot as a Protected Use ADU.

Prohibited Regulation. Zoning restrictions and Municipal regulations that are prohibited pursuant to 760 CMR 71.03(2), and as may be further provided for in EOHLC guidelines.

Protected Use ADU. An attached or detached Accessory Dwelling Unit that is located, or is proposed to be located, on a Lot in a Single-Family Residential Zoning District and no other Accessory Dwelling Unit is located on said Lot and which is protected from Prohibited Regulations and Unreasonable Regulations pursuant to M.G.L. c. 40A, s. 3, para. 11 and 760 CMR 71.00.

Short-term Rental. Short-term rental, as defined in M.G.L. c. 64G, s. 1.

Single-Family Residential Dwelling. A structure on a Lot containing not more than one Dwelling Unit.

Single-Family Residential Zoning District. Any Zoning District where Single-Family Residential Dwellings are a permitted or an allowable use, including any Zoning District where Single-Family Residential Dwellings are allowed as of right, by special permit, variance, waiver, or other zoning relief or discretionary zoning approval.

Site Plan Review. A clear and objective process established by local ordinance or by-law by which a Municipal board or authority may review and impose reasonable terms and conditions on, the appearance and layout of a proposed use of land or structures prior to the issuance of a building permit.

Special Permit. A permit issued by a Municipality's special permit granting authority pursuant to M.G.L. c. 40A, s. 9.

Subway Station. Any of the stops along the Massachusetts Bay Transportation Authority Red Line, Green Line, Orange Line, Silver Line, or Blue Line, including any extensions or additions to such lines.

Transit Authority. The Massachusetts Bay Transportation Authority established by M.G.L. c. 161A, s. 2 or other local or regional transit authority established pursuant to M.G.L. c. 161B, s. 3 or M.G.L., c. 161B, s. 14.

Transit Station. A Subway Station, Commuter Rail Station, Ferry Terminal, or Bus Station.

Unreasonable Regulation. Zoning restrictions and Municipal regulations that are unreasonable pursuant to 760 CMR 71.03(3)(b) and as may be further provided for in EOHLC guidelines.

Use and Occupancy Restrictions. A Zoning restriction, Municipal regulation, covenant, agreement, or a condition in a deed, zoning approval or other requirement imposed by the Municipality that limits the use or occupancy of the Protected Use ADU to individuals or households at a specified income or age, or that imposes conditions that limit future use or occupancy of a Protected Use ADU based on income or age or, that imposes any similar use and occupancy restriction as may be further provided for in EOHLC guidelines.

Zoning. Ordinances and by-laws, adopted by Municipalities pursuant to M.G.L. c. 40A to regulate the use of land, buildings and structures, including base, underlying, and overlay zoning.

Zoning District. A geographic area within a Municipality which, pursuant to Zoning, are subject to use requirements that are generally uniform throughout the area.

71.03: Regulation of Protected Use ADUs in Single-Family Residential Zoning Districts

(1) Municipalities shall not prohibit, impose a Prohibited Regulation or Unreasonable Regulation, or, except as provided under 760 CMR 71.03(5), require a special permit, waiver, variance or other zoning relief or discretionary zoning approval for the use of land or structures for a Protected Use ADU, including the rental thereof, in a Single-Family Residential Zoning District; provided that Municipalities may reasonably regulate a Protected Use ADU, subject to the limitations under 760 CMR 71.03(2) to 760 CMR 71.03(5), inclusive.

(2) **Prohibited Regulation.** A Municipality shall not subject the use of land or structures on a Lot for a Protected Use ADU to any of the following:

(a) **Owner-Occupancy Requirements.** A requirement that either the Protected Use ADU or the Principal Dwelling be owner occupied.

(b) **Minimum Parking Requirements.** A requirement of, as applicable:

1. More than one additional on-street or off-street parking space for each Protected Use ADU on a Lot if all portions of such Lot are located outside a 0.5-mile radius of a Transit Station; or
 2. Any additional on-street or off-street parking space for each Protected Use ADU on a Lot if any portion of such Lot is located within a 0.5-mile radius of a Transit Station.
- (c) Use and Occupancy Restrictions. A requirement that a Protected Use ADU be subject to a Use and Occupancy Restriction.
- (d) Unit Caps & Density. Any limit, quota or other restriction on the number of Protected Use ADUs that may be permitted, constructed, or leased within a Municipality or Zoning District. Protected Use ADUs shall not be counted in any density calculations.
- (e) Relationship to Principal Dwelling. A requirement that a Protected Use ADU be attached to or detached from the Principal Dwelling.
- (3) Unreasonable Regulation.
- (a) A Municipality may reasonably regulate and restrict Protected Use ADUs provided that any restriction or regulation imposed by a Municipality shall be unreasonable if the regulation or restriction, when applicable to a Protected Use ADU:
1. Does not serve a legitimate municipal interest sought to be achieved by local zoning;
 2. Serves a legitimate municipal interest sought to be achieved by local zoning but its application to a Protected Use ADU does not rationally relate to the legitimate municipal interest; or
 3. Serves a legitimate municipal interest sought to be achieved by local zoning and its application to a Protected Use ADU rationally relates to the interest, but compliance with the regulation or restriction will:
 - i. Result in complete nullification of the use or development of a Protected Use ADU;
 - ii. Impose excessive costs on the use or development of a Protected Use ADU without significant gain in advancing the municipality's legitimate interest; or
 - iii. Substantially diminish or interfere with the use or development of a Protected Use ADU without appreciably advancing the municipality's legitimate interest.
- (b) For the purposes of 760 CMR 71.03(3), the following restrictions and regulations shall be considered unreasonable when applicable to a Protected Use ADU:
1. Design Standards. Any Design Standard that (i) would not be applied to a Single-Family Residential Dwelling in the Single-Family Residential Zoning District in which the Protected Use ADU is located or (ii) is so restrictive, excessive, burdensome, or arbitrary that it prohibits, renders infeasible, or unreasonably increases the costs of the use or construction of a Protected Use ADU.
 2. Dimensional Standards. Any requirement concerning dimensional setbacks, lot size, lot coverage, open space, and the bulk and height of structures that are more restrictive than

what is required for a Single-Family Residential Dwelling in the Single-Family Residential Zoning District in which the Protected Use ADU is located.

3. Utilities, Safety, and Emergency Access. Any requirement concerning utilities, safety and emergency access that is more restrictive than state requirements.
4. Environmental Regulation. Any regulation for the protection of public health, safety, welfare and the environment pursuant to Title 5, 310 CMR 15.000 that is more restrictive than is required for a Single-Family Residential Dwelling in the Zoning District in which the Protected Use ADU is located.
5. Site Plan Review. Any requirement under Site Plan Review concerning the Protected Use ADU that is more restrictive than those applied to the Principal Dwelling.
6. Impact Analysis and Studies. Any requirement under Zoning or Site Plan Review for any impact analysis, study, or report that is not required for the development of a Single-Family Residential Dwelling in the Single-Family Residential Zoning District in which the Protected Use ADU is located.
7. Modular Dwelling Units. Any requirement that prohibits, regulates or restricts a Modular Dwelling Unit from being used as a Protected Use ADU that is more restrictive than the Massachusetts state building code.
8. Short-term Rentals. Any restrictions or prohibitions on Short-Term Rentals that are not consistent with M.G.L. c. 64G.

(c) Notwithstanding 760 CMR 71.03(b)1. and 760 CMR 71.03(b)2., a Municipality may establish Design Standards and dimensional standards for Protected Use ADUs located in an Historic District that are more restrictive or different from what is required for a Single-Family Residential Dwelling in the Single-Family Residential Zoning District; provided, however, that such standards are not so restrictive, excessive, burdensome, or arbitrary that it prohibits, renders infeasible, or unreasonably increases the costs of the use or construction of a Protected Use ADU.

(d) EOHLC may clarify and provide examples of what constitutes Unreasonable Regulations through guidelines.

- (4) Enforceability of Restrictions and Regulations on Pre-Existing ADUs. A Municipality shall not enforce any Prohibited Regulation or Unreasonable Regulation that was imposed as a condition for the approval of the use of land or structures for a Protected Use ADU prior to the effective date of 760 CMR 71.00, regardless of whether such Protected Use ADU complies with the Municipality's Zoning, including, but not limited to, use requirements and dimensional requirements, such as setbacks, bulk, and height.
- (5) Special Permits for Multiple ADUs on the Same Lot. Notwithstanding 760 CMR 71.03(1), Zoning shall require a Special Permit in a Single-Family Residential Zoning District for the use of land or structures for an ADU, or rental thereof, on a Lot on which a Protected Use ADU is already located.

71.04: Annual Updates

- (1) Data Collection. To assist EOHLC in the administration of M.G.L c. 40A, s. 3, para 11, Municipalities shall collect and maintain, at a minimum, the following data related to their permitting of ADUs, in a format specified by EOHLC:

- (a) The number of approved ADU permit applications, separately tabulated for attached and detached ADUs;
 - (b) The number of denied ADU permit applications;
 - (c) The number of occupancy permits issued for any ADU; and
 - (d) Other data or information as may be further provided for in EOHLC guidelines.
- (2) **Annual Report.** To assist EOHLC in the administration of M.G.L. c. 40A, s. 3, para 11, Municipalities shall annually submit a report to EOHLC not later than March 31 containing the data collected under 760 CMR 71.04(1) during the prior calendar year. Said report shall be filed on a form as prescribed by EOHLC and shall contain all data as required therein.

REGULATORY AUTHORITY

760 CMR 71.00: M.G.L. c. 40A, s.3, para. 11; St. 2024, c. 150, s. 8.



Town of Agawam

Christopher C. Johnson, Mayor
36 Main Street
Agawam, MA 01001
Telephone: 413-786-0400 | 413-786-4525

Memorandum

To: Agawam City Council
From: Christopher C. Johnson, Mayor
Re: TOR-2025-2 (Accessory Dwelling Units)
Date: February 3, 2025

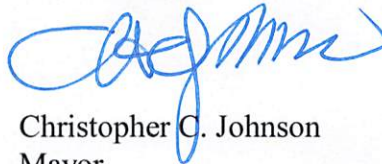
Attached please find an updated version of TOR-2025-2 which is an ordinance to add Article XXIV entitled "Accessory Dwelling Units".

The state finalized the regulations dealing with the new ADU law (copy attached). The new regulations changed some of the definitions. The updated ordinance reflects the following changes:

- updated definition for Gross Floor Area;
- updated definition for Lot;
- updated definition for Modular Dwelling Unit;
- updated definition for Principal Dwelling;
- updated definition for Site Plan Review; and
- addition of §180-177 1 j dealing with building in the Floodplain District.

Please do not hesitate to contact me with any questions.

Very truly yours,



Christopher C. Johnson
Mayor



Town of Agawam

Christopher C. Johnson, Mayor
36 Main Street
Agawam, MA 01001
Telephone: 413-786-0400 | 413-786-4525

Memorandum

To: Agawam City Council
From: Christopher C. Johnson, Mayor
Re: TOR-2025-2 (Accessory Dwelling Units)
Date: January 16, 2025

Attached please find TOR-2025-2 which is an ordinance to add Article XXIV entitled "Accessory Dwelling Units" which adds §180-174 to §180-178 of the Code of the City of Agawam to provide local guidance regarding the construction and installation of accessory dwelling units in Agawam.

On August 6, 2024, Governor Healey signed the Affordable Homes Act into law (Chapter 150 of the Acts of 2024). Section 8 of the Affordable Homes Act amends the statewide Zoning Act to allow accessory dwelling units (ADU) up to nine hundred (900) square feet to be built by right in single-family zoning districts in every community in Massachusetts. The new law on accessory dwelling units supersedes existing local zoning ordinances/by-laws in every community in Massachusetts. The new law is effective Sunday, February 2, 2025. After Sunday, February 2, 2025, zoning provisions that are inconsistent with the new ADU law become unenforceable.

The state law provides that an ADU must: maintain a separate entrance, either directly from the outside or through an entry hall or corridor shared with the principal dwelling sufficient to meet the requirements of the state building code for safe egress; be either no larger than half the gross floor area of the principal dwelling or nine hundred (900) square feet, whichever is smaller; meet applicable municipal restrictions, including, but not limited to, size restrictions and/or prohibitions on short-term rental.

The Commonwealth of Massachusetts Executive Office of Housing and Livable Communities published a set of draft regulations dealing with the new ADU law (copy attached). Agawam has no zoning ordinance that deals with accessory dwelling units. Given the potential for the construction and/or installation of new accessory dwelling units, it is important for Agawam to adopt an ordinance to guide the construction and installation of ADU's.

Agawam City Council

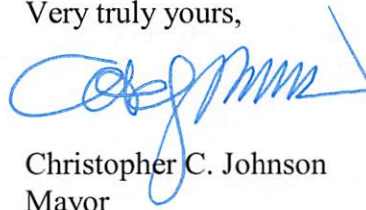
January 16, 2025

Page Two

The proposed zoning amendment represents our best effort to establish a local ordinance to deal with accessory dwelling units that is consistent with the draft state regulations. Obviously, if the state amends the draft regulations, amendments may need to be made to our local ordinance. The proposed ordinance was reviewed and recommended by the Zoning Review Committee.

Please do not hesitate to contact me with any questions.

Very truly yours,

A handwritten signature in blue ink, appearing to read "C. Johnson", with a stylized flourish extending from the end.

Christopher C. Johnson
Mayor

760 CMR 71.00: PROTECTED USE ACCESSORY DWELLING UNITS

Section

71.01: Statement of Purpose

71.02: Definitions

71.03: Regulation of Protected Use ADUs in Single-family Residential Zoning Districts

71.04: Data Collection

71.01: Statement of Purpose

(1) St. 2024, c. 150, § 8 amends M.G.L. c. 40A, § 3 to encourage the production of accessory dwelling units throughout the Commonwealth with the goal of increasing the production of housing to address statewide, local, and individual housing needs for households of all income levels and at all stages of life. The Executive Office of Housing and Livable Communities is the regulatory agency that is authorized by St. 2024, c. 150, § 8 to promulgate 760 CMR 71.00 that establish rules, standards and limitations that will assist Municipalities and landowners in the administration of St. 2024, c. 150, § 8.

(2) St. 2024, c. 150, § 8 and 760 CMR 71.00 seek to balance municipal interests in regulating the use and construction of ADUs while empowering property owners to add much needed housing stock to address the Commonwealth's housing needs. St. 2024, c. 150, § 8 establishes that in certain circumstances the use of land or structures for ADUs are protected from zoning restrictions by providing that zoning shall not prohibit, unreasonably restrict or require a special permit or other discretionary zoning approval for the use of land or structures for a single ADU, or the rental thereof, in a single-family residential zoning district, and imposes protections on ADUs through M.G.L. c. 40A, § 3, the Dover Amendment. The Act balances protection for these ADUs by authorizing municipalities to impose reasonable regulations on the creation and use of ADUs. St. 2024, c. 150, § 8, however, explicitly prohibits municipalities from imposing requirements on protected accessory dwelling units that require owner-occupancy of either the ADU or the principal dwelling and imposes limitations on Municipal parking requirements.

(3) 760 CMR 71.00 establishes definitions, standards, and limitations to assist in the local administration of M.G.L. c. 40A, § 3, para. 11, pursuant to St. 2024, c. 150, § 8. Nothing in 760 CMR 71.00 is intended to supersede state health and safety laws and regulations, such as, but not limited to the Building Code, Fire Code, M.G.L. c. 111, § 189A: Massachusetts Lead Law, or any federal laws.

71.02: Definitions

Accessory Dwelling Unit (ADU). A self-contained housing unit, inclusive of sleeping, cooking and sanitary facilities on the same Lot as a Principal Dwelling, subject to otherwise applicable dimensional and parking requirements, that:

- (a) maintains a separate entrance, either directly from the outside or through an entry hall or corridor shared with the Principal Dwelling sufficient to meet the requirements of the Building Code for safe egress;
- (b) is not larger in Gross Floor Area than $\frac{1}{2}$ the Gross Floor Area of the Principal Dwelling or 900 square feet, whichever is smaller; and
- (c) is subject to such additional restrictions as may be imposed by a municipality including, but not limited to, additional size restrictions, and restrictions or prohibitions on Short-term Rental as defined in section 1 of chapter 64G; provided, however, that no Municipality shall unreasonably restrict the creation or rental of an ADU that is not a Short-term Rental.

Building Code. The Massachusetts state building code, 780 CMR.

Bus Station. A location serving as a point of embarkation for any bus operated by a Transit Authority.

Commuter Rail Station. Any commuter rail station operated by a Transit Authority with year-round service with trains departing at regular time intervals, rather than intermittent, seasonal, or event-based service.

Design Standards. Clear, measurable and objective provisions of Zoning, or general ordinances or by-laws, which are made applicable to the exterior design of, and use of materials for an ADU.

Dwelling Unit. A single housing unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.

EOHLC. The Executive Office of Housing and Livable Communities.

Ferry Terminal. The location where passengers embark and disembark from a ferry service with year-round service with ferries departing at regular time intervals, rather than intermittent, seasonal, or event-based service.

Fire Code. The Massachusetts state fire code, 527 CMR 1.00.

Gross Floor Area (GFA). The sum of the areas of all stories of the building of compliant ceiling height pursuant to the Building Code, including basements, lofts, and intermediate floored tiers, measured from the interior faces of exterior walls or from the centerline of walls separating buildings or dwelling units but excluding crawl spaces, garage parking areas, attics, enclosed porches and similar spaces. Where there

are multiple Principal Dwellings on the Lot, the GFA of the largest Principal Dwelling shall be used for determining the maximum size of a Protected Use ADU.

Historic District. A district in a Municipality established pursuant to M.G.L. c. 40C or other state law that is characterized by the historic or architectural significance of buildings, structures, and sites, and in which exterior changes to and the construction of buildings and structures are subject to regulations adopted by the Municipality pursuant to M.G.L. c. 40C or other state law.

Lot. An area of land with definite boundaries that is used, or available for use, as the site of a structure, or structures, regardless of whether the site conforms to requirements of Zoning.

Modular Dwelling Unit. A pre-designed Dwelling Unit assembled and equipped with internal plumbing, electrical or similar systems prior to movement to the site where such Dwelling Unit is affixed to a foundation and connected to external utilities; or any portable structure with walls, a floor, and a roof, designed or used as a Dwelling Unit, transportable in one or more sections and affixed to a foundation and connected to external utilities.

Municipality. Any city or town subject to the provisions of M.G.L. c. 40A.

Principal Dwelling. A structure, regardless of whether it, or the Lot it is situated on, conforms to Zoning, including use requirements and dimensional requirements, such as setbacks, bulk, and height, that contains at least one Dwelling Unit and is, or will be, located on the same Lot as a Protected Use ADU.

Prohibited Regulation. Zoning or general ordinances or by-laws, or Municipal regulations that are prohibited pursuant to 760 CMR 71.03(2).

Protected Use ADU. An attached or detached ADU that is located, or is proposed to be located, on a Lot in a Single-family Residential Zoning District and is protected by M.G.L. c. 40A, § 3, provided that only one ADU on a lot may qualify as a Protected Use ADU. An ADU that is nonconforming to Zoning shall still qualify as a Protected Use ADU if it otherwise meets this definition.

Short-term Rental. Short-term rental, as defined in M.G.L. c. 64G, § 1.

Single-family Residential Dwelling. A structure on a Lot containing not more than one Dwelling Unit.

Single-family Residential Zoning District. Any Zoning District where Single-family Residential Dwellings are a permitted or an allowable use, including any Zoning District where Single-family Residential Dwellings are allowed as-of-right or by Special Permit.

Site Plan Review. A process established by local ordinance or by-law by which a Municipal board or authority may review and impose terms and conditions on, the appearance and layout of a proposed use of land or structures prior to the issuance of a building permit.

Special Permit. A permit issued by a Municipality's special permit granting authority pursuant to M.G.L. c. 40A, § 9.

Subway Station. Any of the stops along the Massachusetts Bay Transportation Authority Red Line, Green Line, Orange Line, Silver Line, or Blue Line, including any extensions or additions to such lines.

Transit Authority. The Massachusetts Bay Transportation Authority established by M.G.L. c. 161A, § 2 or other local or regional transit authority established pursuant to M.G.L. c. 161B, § 3 or M.G.L. c. 161B, § 14.

Transit Station. A Subway Station, Commuter Rail Station, Ferry Terminal, or Bus Station.

Unreasonable Regulation. Zoning or general ordinances or by-laws, or Municipal regulations that are unreasonable pursuant to 760 CMR 71.03(3).

Use and Occupancy Restrictions. A Zoning restriction, Municipal regulation, covenant, agreement, or a condition in a deed, zoning approval or other requirement imposed by the Municipality that limits the current, or future, use or occupancy of the Protected Use ADU to individuals or households based upon the characteristics of, or relations between, the occupants, such as but not limited to, income, age, familial relationship, enrollment in an educational institution, or that limits the number of occupants beyond what is required by applicable state code.

Zoning. Ordinances and by-laws, including base, underlying, and overlay zoning, adopted by cities and towns to regulate the use of land, buildings and structures to the full extent of the independent constitutional powers of cities and towns to protect the health, safety and general welfare of their present and future inhabitants.

Zoning District. A geographic area within a Municipality which, pursuant to Zoning, is subject to use and structure requirements that are uniform within the area.

71.03: Regulation of Protected Use ADUs in Single-family Residential Zoning Districts

(1) Municipalities shall not prohibit, impose a Prohibited Regulation or Unreasonable Regulation, or, except as provided under 760 CMR 71.03(5) and 760 CMR 71.03(6), require a special permit, waiver, variance or other zoning relief or discretionary zoning approval for the use of land or structures for a Protected Use ADU, including the rental thereof, in a Single-family Residential Zoning District; provided that Municipalities may reasonably regulate a Protected Use ADU, subject to the limitations under 760 CMR 71.

(2) **Prohibited Regulation.** A Municipality shall not subject the use of land or structures on a Lot for a Protected Use ADU to any of the following:

(a) **Owner-Occupancy Requirements.** A requirement that either the Protected Use ADU or the Principal Dwelling be owner-occupied.

(b) **Minimum Parking Requirements.** A requirement of, as applicable:

1. More than one additional on-street or off-street parking space for a Protected Use ADU if all portions of its Lot are located outside a 0.5-mile radius of a Transit Station; or

2. Any additional on-street or off-street parking space for a Protected Use ADU if any portion of its Lot is located within a 0.5-mile radius of a Transit Station.

(c) **Use and Occupancy Restrictions.** A requirement that a Protected Use ADU be subject to a Use and Occupancy Restriction.

(d) **Unit Caps & Density.** Any limit, quota or other restriction on the number of Protected Use ADUs that may be permitted, constructed, or leased within a Municipality or Zoning District. Protected Use ADUs shall not be counted in any density calculations.

(e) **Relationship to Principal Dwelling.** A requirement that a Protected Use ADU be attached to or detached from the Principal Dwelling.

(3) Unreasonable Regulation.

(a) A Municipality may reasonably regulate and restrict Protected Use ADUs provided that any restriction or regulation imposed by a Municipality shall be unreasonable if the regulation or restriction, when applicable to a Protected Use ADU:

1. Does not serve a legitimate municipal interest sought to be achieved by local Zoning;
2. Serves a legitimate Municipal interest sought to be achieved by local Zoning but its application to a Protected Use ADU does not rationally relate to the legitimate Municipal interest; or
3. Serves a legitimate Municipal interest sought to be achieved by local Zoning and its application to a Protected Use ADU rationally relates to the interest, but compliance with the regulation or restriction will:
 - a. Result in complete nullification of the use or development of a Protected Use ADU;
 - b. Impose excessive costs on the use or development of a Protected Use ADU without significantly advancing the Municipality's legitimate interest; or
 - c. Substantially diminish or interfere with the use or development of a Protected Use ADU without appreciably advancing the Municipality's legitimate interest.

(b) Municipalities shall apply the analysis articulated in 760 CMR 71.03(3)(a) to establish and apply reasonable Zoning or general ordinances or by-laws, or Municipal regulations for Protected Use ADUs, but in no case shall a restriction or regulation be found reasonable where it exceeds the limitations, or is inconsistent with provisions, described below, as applicable:

1. Design Standards. Any Design Standard that:
 - a. Would not be applied to a Single-family Residential Dwelling in the Single-family Residential Zoning District in which the Protected Use ADU is located or
 - b. Is so restrictive, excessive, burdensome, or arbitrary that it prohibits, renders infeasible, or unreasonably increases the costs of the use or construction of a Protected Use ADU.
2. Dimensional Standards. Any requirement concerning dimensional standards, such as dimensional setbacks, lot coverage, open space, bulk and height, and number of stories, that are more restrictive than is required for the Principal Dwelling, or a Single-family Residential Dwelling or accessory structure in the Zoning District in which the Protected Use ADU is located, whichever results in more permissive regulation, provided that a Municipality may not require a minimum Lot size for a Protected Use ADU.

3. Utilities, Safety, and Emergency Access. Any requirement concerning utilities, safety and emergency access that is more restrictive than is permitted by state requirements, including under the Fire Code. A Municipality may not require a separate utility connection, such as water, sewer, electric, provided that a separate connection may be required by a Municipal or regional utility, investor-owned utility; by state law; by a local, regional, or state board or commission; or by court order.

4. Environmental Regulation. Any regulation for the protection of public health, safety, welfare and the environment pursuant to 310 CMR 15.000: *The State Environmental Code, Title 5: Standard Requirements for the Siting, Construction, Inspection, Upgrade and Expansion of On-site Sewage Treatment and Disposal Systems and for the Transport and Disposal of Septage*, that is more restrictive than is required for a Single-family Residential Dwelling in the Zoning District in which the Protected Use ADU is located.

5. Site Plan Review. Site Plan Review concerning the Protected Use ADU that is not clear and objective or imposes terms and conditions that are unreasonable or inconsistent with an as-of-right process as defined in M.G.L. c. 40A, § 1A.

6. Impact Analysis, Studies, and Fees. Any requirement for any impact analysis, study, report, or impact fee that is not required for the development of a Single-family Residential Dwelling in the Single-family Residential Zoning District in which the Protected Use ADU is located.

7. Modular Dwelling Units. Any requirement that prohibits, regulates or restricts a Modular Dwelling Unit from being used as a Protected Use ADU that is more restrictive than the Building Code.

8. Historic Districts. Municipalities may establish Design Standards and Dimensional Standards for Protected Use ADUs located in an Historic District that are more restrictive or different from what is required for a Single-family Residential Dwelling, or Principal Dwelling, in the Single-family Residential Zoning District; provided, however, that such standards are not unreasonable pursuant to 760 CMR 71.03(3)(a).

9. Pre-existing Nonconforming Structures. A Municipality may not prohibit the development of a Protected Use ADU in an existing structure or Principal Dwelling, or Lot due to nonconformance, that could be used for, or converted into, a Protected Use ADU in conformance with the Building Code, 760 CMR 71.00, and state law.

(c) Short-term Rentals. Municipalities may establish restrictions and prohibitions on the Short-term Rental of Protected Use ADUs pursuant to M.G.L. c. 64G.

(4) Enforceability of Restrictions and Regulations on Pre-existing ADUs. A Municipality shall not enforce any Prohibited Regulation or Unreasonable Regulation that was imposed as a condition for the approval of the use of land or structures for a Protected Use ADU prior to the effective date of 760 CMR 71.00, regardless of whether such Protected Use ADU complies with the Municipality's Zoning, including, but not limited to, use requirements and dimensional requirements, such as setbacks, bulk, and height.

(5) Special Permits for Multiple ADUs on the Same Lot. Notwithstanding 760 CMR 71.03(1), if a Municipality chooses to allow additional ADUs on the same Lot as a Protected use ADU in a Single-family Residential Zoning District, Zoning shall require a Special Permit for the use of land or structures for the additional ADUs.

(6) Floodplain and Aquifer Protection Overlay Districts. Municipalities may require a Special Permit for development of a Protected Use ADU in a floodplain or aquifer protection overlay if required for the Principal Dwelling, provided that the Special Permit is based on clear, objective, and non-discretionary criteria.

(7) Nothing in these regulations is intended to prevent a Municipality from adopting more permissive Zoning, or general ordinances or by-laws, or Municipal regulations than would be allowed under 760 CMR 71.03.

(8) Address Assignment. All ADUs shall be assigned an address consistent with the most current Address Standard published by MassGIS. ADU addresses shall be reported to MassGIS and EOHLC after assignment.

71.04: Data Collection

To assist EOHLC in the administration of M.G.L. c. 40A, § 3, para 11, Municipalities shall keep a record of each ADU permit applied for, approved, denied, and issued a certificate of occupancy, with information about the address, square footage, type (attached, detached, or internal), estimated value of construction, and whether the unit required any variances or a Special Permit. Municipalities shall make this record available to EOHLC upon request.

REGULATORY AUTHORITY

760 CMR 71.00: M.G.L. c. 40A, § 3, para. 11; St. 2024, c. 150, § 8.

**AN ORDINANCE TO AMEND CHAPTER 180
OF THE CODE OF THE CITY OF AGAWAM REGARDING
ACCESSORY DWELLING UNITS**

(Sponsored by Christopher C. Johnson, Mayor)

WHEREAS, on August 6, 2024, Governor Healey signed the Affordable Homes Act into law (Chapter 150 of the Acts of 2024); and

WHEREAS, Section 8 of the Affordable Homes Act amends the statewide Zoning Act to allow accessory dwelling units up to nine hundred (900) square feet to be built by right in single-family zoning districts in every community in Massachusetts; and

WHEREAS, the new law on accessory dwelling units supersedes existing local zoning ordinances and is effective on February 2, 2025, after which zoning provisions that are inconsistent with the new accessory dwelling unit law become unenforceable; and

WHEREAS, Agawam has no zoning ordinance that deals with accessory dwelling units, and given the potential for the construction or installation of new accessory dwelling units, it is important for Agawam to adopt an ordinance to guide the construction and installation of accessory dwelling units; and

WHEREAS, the Zoning Advisory Committee recommends the proposed amendment and the City Council has the authority to enact the proposed amendment the Code of the City of Agawam; and

WHEREAS, it is in the best interest of the City of Agawam to amend Chapter 180 by adding Article XXIV entitled "Accessory Dwelling Units" which adds §180-174 to §180-178 to the Code of the City of Agawam to provide local guidance regarding the construction and/or installation of accessory dwelling units in Agawam; and

NOW THEREFORE, the Agawam City Council hereby amends the Chapter 180 of the Code of the City of Agawam by adding Article XXIV entitled "Accessory Dwelling Units" which is attached hereto and incorporated herein by reference.

DATED THIS ____ DAY OF _____, 2025.

PER ORDER OF THE AGAWAM CITY COUNCIL

Rosemary Sandlin, President

APPROVED AS TO FORM AND LEGALITY



Christopher S. Cappucci, Solicitor

ARTICLE XXIV Accessory Dwelling Units

§180-174 Purpose and Intent.

The purpose of this Article is to provide a fair process for the safe and orderly construction and installation of Accessory Dwelling Units that can be integrated onto existing Lots which contain a Single Family Residential Dwelling within any zoning district where Single Family Residential Dwellings are permitted or allowed as of right.

§180-175 Definitions.

For the purposes of this Article, the following words and phrases shall have the meanings respectively ascribed to them by this Section:

Accessory Dwelling Unit (ADU): A self-contained housing unit, inclusive of sleeping, cooking and sanitary facilities on the same Lot as a Principal Dwelling, subject to otherwise applicable dimensional and parking requirements, that: (a) maintains a separate entrance, either directly from the outside or through an entry hall or corridor shared with the Principal Dwelling sufficient to meet the requirements of the state building code for safe egress; (b) is not larger in Gross Floor Area than one half (½) the Gross Floor Area of the Principal Dwelling or nine hundred (900) square feet, whichever is smaller; and (c) is held in common ownership with the Principal Dwelling on the Lot.

Dwelling Unit: A single housing unit providing complete, independent living facilities for one or more persons including permanent provisions for living, sleeping, eating, cooking and sanitation.

Gross Floor Area: The sum of the areas of all stories of the building of compliant ceiling height pursuant to the state building code, including basements, lofts and intermediate floored tiers, measured from the interior faces of exterior walls or from the centerline of walls separating buildings or dwelling units, but excluding: crawl spaces, garage parking areas, attics, enclosed porches and similar spaces. Where there are multiple Principal Dwellings on the Lot, the Gross Floor Area of the largest Principal Dwelling shall be used for determining the maximum size of the Accessory Dwelling Unit.

Lot: An area of land with definite boundaries that is used, or available for use, as the site of a structure or structures, regardless of whether the site conforms to the requirements of zoning.

Modular Dwelling Unit: A pre-designed Dwelling Unit assembled and equipped with internal plumbing, electrical or similar systems prior to movement to the site where such Dwelling Unit is affixed to a foundation and connected to external utilities; or any portable structure with walls, a floor, and a roof, designed or used as a Dwelling Unit, transportable in one or more sections and affixed to a foundation and connected to external utilities.

Principal Dwelling: A structure, regardless of whether it, or the Lot it is situated on, conforms to zoning, including use requirements and dimensional requirements, such as setbacks, bulk, and height that contains one Dwelling Unit and is, or will be, located on the same Lot as an Accessory Dwelling Unit.

Short-term Rental: Short-term rental, as defined in Massachusetts General Laws Chapter 64G, Section 1, as amended from time to time.

Single Family Residential Dwelling: A structure on a Lot containing not more than one Dwelling Unit.

Site Plan Review: The process by which the Inspector of Buildings reviews a submitted site plan along with a building permit application to construct or install an Accessory Dwelling Unit and impose terms and conditions on, the appearance and layout of the proposed Accessory Dwelling Unit prior to the issuance of a building permit.

Special Permit: A permit issued by the Board of Appeals as the special permit granting authority pursuant to Massachusetts General Laws Chapter 40A, Section 9, and §180-11 of the Code of the Town of Agawam, both as amended from time to time.

§180-176 Procedural Requirements.

1. **Site Plan Review for Accessory Dwelling Units:** An application for a building permit for the construction or installation of an Accessory Dwelling Unit as described herein shall include a site plan prepared by a Massachusetts Registered Land Surveyor.
2. **Procedure:** The applicant shall file an electronic copy plus two (2) hard copies of the site plan with the Inspector of Buildings. The Inspector of Buildings shall review and act upon the building permit application and site plan, including adding such conditions as may be deemed reasonable and appropriate, within thirty (30) days of its receipt, and shall notify the applicant of his/her decision. The decision of the Inspector of Buildings shall be in writing. An application for a building permit for the construction or installation of an Accessory Dwelling Unit shall not be deemed complete until such site plan is submitted.
3. **Site Plan Contents:** All site plans shall be prepared to scale on standard sheets of 24 inches by 36 inches to show with reasonable accuracy the following information, in addition to that information required in §180-4: uses and structures proposed for a parcel of land as required by the zoning regulations, including lot lines, streets, building sites, buildings, landscape features, traffic circulation, parking, drainage, utilities, topography and lighting within the parcel. The site plan shall include descriptions of the means of access and egress for the proposed Accessory Dwelling Unit.
4. **Appeal:** Any decision by the Inspector of Buildings on an application for a building permit with the accompanying site plan, for the construction or installation of an Accessory Dwelling Unit shall be subject to the right of appeal to the Board of Appeals.
5. **Special Permits:** A special permit as set forth in §180-11 shall be required for any application with accompanying site plan that seeks to construct two (2) or more Accessory Dwelling Units on any Lot that contains a Single Family Dwelling Unit.

§180-177 Use and Dimensional Regulations.

1. **Requirements:** The Inspector of Buildings may approve a building permit application with accompanying site plan authorizing the construction or installation of an Accessory Dwelling Unit on a Lot with an existing Single Family Residential Dwelling only when the following conditions are met:
 - a. The Accessory Dwelling Unit shall be a separate Dwelling Unit providing complete, independent living facilities for one or more persons including permanent provisions for living, sleeping, eating, cooking and sanitation;
 - b. Only one Accessory Dwelling Unit may be constructed or installed on a Lot with an existing Single Family Dwelling Unit, unless a Special Permit has been granted pursuant to §180-176;
 - c. Any building permit application with accompanying site plan for an Accessory Dwelling Unit shall comply with all height regulations, setback requirements, side and rear yard requirements and lot coverage restrictions for the zoning district where the Lot is located;
 - d. Any building permit application with accompanying site plan for an Accessory Dwelling Unit shall provide for a minimum of one (1) parking space for the Accessory Dwelling Unit;
 - e. Any building permit application with accompanying site plan for an Accessory Dwelling Unit shall provide for a separate entrance, either directly from the outside or through an entry hall or corridor shared with the Principal Dwelling sufficient to meet the requirements of the State Building Code for safe egress;
 - f. Any building permit application with accompanying site plan for an Accessory Dwelling Unit shall show the gross floor area of the Principal Dwelling and the gross floor area of the proposed Accessory Dwelling Unit. The gross floor area of the proposed Accessory Dwelling Unit shall not be greater than nine hundred (900) square feet or one-half (½) of the gross floor area of the Principal Dwelling unit, whichever is smaller;
 - g. In order to encourage the development of Accessory Dwelling Units for the disabled and for those with limited mobility, reasonable deviation from the stated conditions may be allowed, within the sole discretion of the Inspector of Buildings, where necessary to install features that facilitate access and mobility for disabled persons;
 - h. Any building permit application with accompanying site plan for an Accessory Dwelling Unit shall comply with the State Building Code, Title V of the State Sanitary Code, and all applicable federal, state and municipal laws and/or regulations; and

- i. Any building permit application with accompanying site plan for an Accessory Dwelling Unit shall comply with the provisions of the Massachusetts Stretch Energy Code for residential properties, as amended from time to time.
 - j. Any Accessory Dwelling Unit constructed in the Floodplain District as set forth in §180-68 shall require a special permit granted pursuant to §180-71.
- 2. Prohibited Use of Accessory Dwelling Units: No Accessory Dwelling Unit shall be used for business, commercial, retail or industrial purposes. In addition, no Accessory Dwelling Unit shall be used as a Short-term Rental.
- 3. Common Ownership with Principal Dwelling: All Accessory Dwelling Units shall be held in common ownership with the owner of the Principal Dwelling on the same Lot.

§180-178 Administration and Enforcement.

It shall be the duty of the Inspector of Buildings to administer and enforce the provisions of this Article. No Accessory Dwelling Unit shall be occupied until a certificate of completion or a certificate of occupancy has been issued by the Inspector of Buildings.



Town of Agawam
Inspection Services Department
1000 Suffield Street, Agawam, Massachusetts 01001
Telephone - (413) 821-0632

Kevin Duquette
Inspector of Buildings
inspections@agawam.ma.us

January 28, 2025

To: Office of Planning and Community Development:

Re: Planning Board meeting February 20, 2025- Zoning Ordinance Amendment- "Accessory Dwelling Units"- ;

Inspection Services has no zoning issues or concerns for the proposed Accessory Dwelling Unit ordinance amendments.

Respectfully,

Kevin Duquette
Inspector of Buildings
Town of Agawam



AGAWAM CITY COUNCIL

36 MAIN STREET
AGAWAM, MASSACHUSETTS 01001
413-726-9716 Office 413-726-9717 Fax www.agawam.ma.us

COUNCIL PRESIDENT *Rosemary Sandlin*

COUNCIL VICE PRESIDENT *Anthony J. Russo*

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Gerald F. Smith – Peter Smus – Anthony R. Suffriti- Maria Valego*

ADMINISTRATIVE ASSISTANT – *Barbara A. Bard* bbard@agawam.ma.us

January 22, 2025

Agawam Planning Board
36 Main Street
Agawam, MA. 01001

Re: **Referral of Agenda Items**

Dear Members of the Agawam Planning Board:

The Agawam City Council has referred the following items to the Planning Board for their respective Public Hearings and recommendations:

- **TOR-2025-1** - An Ordinance to amend Chapter 180 of the Code of the City of Agawam regarding zoning enforcement powers and penalties (Sponsored by Mayor Johnson)
- **TOR-2025-2** - An Ordinance to amend Chapter 180 of the Code of the City of Agawam regarding Accessory Dwelling Units (Sponsored by Mayor Johnson)

After coordinating with the Planning Office, the City Council plans on having our Public Hearing on March 3, 2025. If you have any questions, please do not hesitate to contact the City Council Office.

Sincerely,

Rosemary Sandlin, President
Agawam City Council

RS/bb

cc: Full Council, Mayor, Planning

**AN ORDINANCE TO AMEND CHAPTER 180
OF THE CODE OF THE CITY OF AGAWAM REGARDING
ZONING ENFORCEMENT POWERS AND PENALTIES**

(Sponsored by Christopher C. Johnson, Mayor)

WHEREAS, Section 180-15 to Section 180-16.1 of the Code of the City of Agawam sets forth the zoning enforcement powers of the Inspector of Buildings and the non-criminal enforcement penalties; and

WHEREAS, the Zoning Advisory Committee recommends the proposed amendment and the City Council has the authority to enact the proposed amendment the Code of the City of Agawam; and

WHEREAS, Section 180-16.1 of the Code of the City of Agawam sets the non-criminal enforcement penalties and was last updated in 2005; and

WHEREAS, the Inspector of Buildings wants to expand the enforcement powers and increase the non-criminal enforcement penalties to improve zoning enforcement efforts; and

WHEREAS, the proposed amendment to Section 180-15 to Section 180-16.1 of the Code of the City of Agawam expands non-criminal enforcement to include conditions of a permit or special permit granted under the zoning code or under any decision rendered by the Zoning Board of Appeals or the Planning Board; and it further provides that unpaid fines shall be subject to the municipal charges lien law (M.G.L. c. 40 §58) which allows the town to lien the property involved and ultimately add unpaid liens to the real estate tax bill for collection; and

WHEREAS, it is in the best interest of the City of Agawam to amend Section 180-15 to Section 180-16.1 of the Code of the City of Agawam to enhance the zoning enforcement powers of the Inspector of Buildings and to increase the non-criminal enforcement penalties; and

NOW THEREFORE, the Agawam City Council hereby amends the Code of the City of Agawam Chapter 180, Section 180-15 to Section 180-16.1 by deleting those sections in their entirety and inserting in place thereof the following:

§180-15. Enforcement. The provisions of this Chapter shall be enforced by the Inspector of Buildings, and no permit shall be granted for the construction, alteration, relocation or use of any building, structure or premises in violation of any provision of this Chapter. Whenever any permit or license is refused because of some provision of this Chapter, the reason therefor shall be clearly stated in writing and kept on file.

§180-16. Judicial Enforcement Penalties. Complaints for enforcement of this Chapter brought to Superior Court or Housing Court shall carry a penalty of three hundred (\$300.00) dollars for each violation. Each day such violation continues shall be deemed a separate offense.

§180-16.1. Noncriminal Enforcement. In addition to the procedures for enforcement as described above, the provisions of this Chapter, the conditions of a permit or special permit granted under this Chapter, or any decision rendered by the Zoning Board of Appeals or Planning Board under this Chapter shall be enforced by the Inspector of Buildings, by noncriminal complaint pursuant to the provisions of Massachusetts General Laws Chapter 40, §21D, as amended from time to time. The fine for any violation disposed of through this procedure shall be one hundred (\$100.00) dollars for the first offense; two hundred (\$200.00) dollars for the second offense; and three hundred (\$300.00) dollars for the third and each subsequent offense. Each day such violation continues shall be deemed a separate offense. Unpaid fine(s) shall be subject to the municipal charges lien pursuant to Massachusetts General Laws Chapter 40, §58, as amended from time to time.

DATED THIS _____ DAY OF _____, 2025.

PER ORDER OF THE AGAWAM CITY COUNCIL

Rosemary Sandlin, President

APPROVED AS TO FORM AND LEGALITY



Christopher S. Cappucci, Solicitor



Town of Agawam

Christopher C. Johnson, Mayor
36 Main Street
Agawam, MA 01001
Telephone: 413-786-0400 | 413-786-4525

Memorandum

To: Agawam City Council
From: Christopher C. Johnson, Mayor
Re: TOR-2025-1 (Zoning Enforcement)
Date: January 16, 2025

Attached please find TOR-2025-1 which is an ordinance to amend §180-15 to §180-16.1 of the Code of the City of Agawam to update and expand zoning enforcement powers and to increase non-criminal enforcement penalties.

The proposed amendment does the following:

- expands non-criminal enforcement to include conditions of a permit or special permit granted under the zoning code or under any decision rendered by the Zoning Board of Appeals or the Planning Board;
- increases the fines for non-criminal enforcement from \$25/\$50/\$100 for first, second and third and subsequent offenses to \$100/\$200/\$300 for first, second and third and subsequent offenses; and
- provides that unpaid fines shall be subject to the municipal charges lien law which is M.G.L. c. 40 §58 (copy attached) which allows the town to lien the property involved and ultimately add unpaid liens to the real estate tax bill for collection.

I have also attached a spreadsheet showing fines in surrounding cities and towns for your information. Please do not hesitate to contact me with any questions.

Very truly yours,

Christopher C. Johnson
Mayor

M.G.L. c. 40 § 58. Any city or town may impose a lien on real property located within the city or town for any local charge or fee that has not been paid by the due date, said lien shall be known as the "municipal charges lien"; provided, that a separate vote at a town meeting, or by a city or town council is taken for each type of charge or fee.

A municipal charges lien authorized under this section shall take effect upon the recording of a list of unpaid municipal charges and fees by parcel of land and by the name of the person assessed for the charge or fee in the registry of deeds of the county or district where the land subject to the lien lies.

If a charge or fee which is secured by a municipal charges lien remains unpaid when the assessors are preparing a real estate tax list and warrant to be committed under section fifty-three of chapter fifty-nine, the board or officer in charge of the collection of the municipal charge or fee, or the town collector of taxes, if applicable under section thirty-eight A of chapter forty-one, shall certify such charge or fee to the assessors, who shall forthwith add such charge or fee to the tax on the property to which it relates and commit it with their warrant to the collector of taxes as part of such tax.

If the property to which such charge or fee relates is tax exempt, such charge or fee shall be committed as the tax. A lien under this section may be discharged by filing a certificate from the tax collector that all municipal charges or fees constituting the lien, together with any interest and costs thereon, have been paid or legally abated. All costs of recording or discharging a lien under this section shall be borne by the owner of the property.

Comparison of Surrounding Communities

Community	Judicial Enforcement	Non-Criminal 1st Offense	Non- Criminal 2nd Offense	Non-Criminal 3rd Offense	Non-Criminal 4th + Offense
Agawam	\$300	\$100	\$200	\$300	\$300
West Springfield	\$300	\$25	\$50	\$100	\$200
East Longmeadow	\$300	\$100	\$200	\$300	\$300
Longmeadow	\$100	\$100	\$100	\$100	\$100
Southwick	\$300	\$300	\$300	\$300	\$300
Springfield	\$100 to \$300	\$100	\$300	\$300	\$300
Chicopee	\$200	\$200	\$200	\$200	\$200
Westfield	\$100 to \$300	\$100	\$300	\$300	\$300



Town of Agawam
Inspection Services Department
1000 Suffield Street, Agawam, Massachusetts 01001
Telephone - (413) 821-0632

Kevin Duquette
Inspector of Buildings
inspections@agawam.ma.us

January 28, 2025

To: Office of Planning and Community Development:

Re: Planning Board meeting February 20, 2025- Zoning Ordinance Amendment- "Zoning Enforcement Powers and Penalties";

Inspection Services has no zoning issues or concerns for the proposed "Enforcement and Penalties" ordinance amendments.

Respectfully,

Kevin Duquette
Inspector of Buildings
Town of Agawam



AGAWAM CITY COUNCIL

36 MAIN STREET
AGAWAM, MASSACHUSETTS 01001
413-726-9716 Office 413-726-9717 Fax www.agawam.ma.us

COUNCIL PRESIDENT *Rosemary Sandlin*

COUNCIL VICE PRESIDENT *Anthony J. Russo*

COUNCILORS

*George Bitzas – Edward Borgatti – Thomas D. Hendrickson – Dino R. Mercadante – Robert E. Rossi
Gerald F. Smith – Peter Smus – Anthony R. Suffriti- Maria Valego*

ADMINISTRATIVE ASSISTANT – *Barbara A. Bard* bbard@agawam.ma.us

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After coordinating with the Planning Office, the City Council plans on having our Public Hearing on March 3, 2025. If you have any questions, please do not hesitate to contact the City Council Office.

Sincerely,

Rosemary Sandlin, President
Agawam City Council

RS/bb

cc: Full Council, Mayor, Planning

Furrow Engineering

January 31, 2025

Taryn Egerton, Assistant Planner
Town of Agawam
36 Main Street
Agawam, Ma 01001

RE: Application for Site Plan Approval, Addition to Litron, 207 Bowles Road, Agawam, Massachusetts

Ms. Egerton:

On behalf of RHM Realty LLC, Furrow Engineering is submitting the attached application and supporting documents for Site Plan approval.

In general, the application is for the construction of a proposed 11,100 S.F. addition to Litron's existing manufacturing and office facility. The project will also include an expansion to the existing parking lot.

The following information is attached for your review:

- Form D Application for Site Plan Approval (2 copies)
- Stormwater Management Report (1 copy, Under Separate Cover)
- Engineered Site Plans & Preliminary Architectural Plans (2 copies, Under Separate Cover)

We look forward to working with the Town of Agawam Planning Department to ensure the design is in conformance with the Agawam Zoning Ordinance. We are available at your convenience to review the plans and supporting documents. If you have any questions, please feel free to contact us.

Sincerely,



Luke Showalter, P.E.
Project Engineer

C.C. Mark Plasse, Litron Inc.

Furrow Engineering
199 Servistar Industrial Way, Suite 2
Westfield, Massachusetts 01085
Tel: 413-562-4884
Page 1 of 1

TOWN OF AGAWAM, MASSACHUSETTS

FORM D

Application for Site Plan Approval

Please complete the following form and electronically submit with site plans, completed Zoning Determination and Storm Water Management Report to: siteplan@agawam.ma.us in addition to sending four (4) hard copies of the Site Plan and one (1) hard copy of the Storm Water Management Report and completed Zoning Determination to:

Agawam Planning Department

36 Main Street

Agawam, MA 01001

January 31, 2025

1. Name of Business Litron Inc.

Address 207 Bowles Road

Phone # 413-562-4884 email m_plasse@comcast.net

2. Name of Applicant/Owner RHM Realty LLC

Address 207 Bowles Road

Phone # 413-562-4884 email m_plasse@comcast.net

3. Name of Engineer/Architect Furrow Engineering

Address 199 Servistar Industrial Way, Suite 2, Westfield, MA 01085

Phone # 413-562-4884 email Luke@sage-llc.com

4. Please give a brief description of the proposed project:

Construction of a 11,100 S.F. addition to the existing manufacturing facility, including a parking expansion.

SITE EVALUATION STATEMENT AND STORMWATER MANAGEMENT REPORT

Project:
**LITRON BUILDING ADDITION
207 BOWLES ROAD
AGAWAM, MA 01001
FURROW Project No. 1154-11-24**

Applicant:
**RHM REALTY LLC
207 BOWLES ROAD
AGAWAM, MA 01001**

Prepared By:
FURROW ENGINEERING
**199 SERVISTAR INDUSTRIAL WAY, SUITE 2
WESTFIELD, MASSACHUSETTS 01085**



Luke Showalter, P.E.
Project Engineer

Date:
January 27, 2025

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 - C. Pre-Development Conditions
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 - 1. Sub-Catchment Descriptions
 - 2. Time of Concentration
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- VI. Inspection and Construction Schedule
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Appendix

- Appendix A: Pre-Development Storm Water Runoff Volume Calculations
- Appendix B: Post-Development Storm Water Runoff Volume Calculations

I. INTRODUCTION

A. Project Description

The site under investigation consists of approximately 2.9 acres of previously developed land and is located at 207 Bowles Road in Agawam, Massachusetts.

The subject parcel is located south of Bowles Road. The parcel maintains one (1) section of frontage on Bowles Road of approximately 253 feet. It is abutted on all side by developed industrial properties.

RHM Realty LLC is proposing to redevelop the subject property. The property is currently developed with a 17,530 S.F. building, a paved loading area, a parking lot, and a stormwater management system which includes an infiltration basin. The proposed development includes a 11,100 S.F. building addition, as well as new paved parking areas with 37 new parking spaces.

The increase in stormwater runoff due to the additional proposed impervious area is mitigated by expanding the size of the infiltration basin and constructing a sediment forebay. Stormwater runoff from all existing and proposed impervious paved areas will sheet flow directly into the infiltration basin.

B. Existing Soils, Topography and Land Uses

The subject property is currently a developed lot with a 17,530 SF manufacturing building, a parking lot, and grassed landscape areas. The topography of the proposed area of development has slopes ranging from 1.5% to approximately 15.0%.

The United States Department of Agriculture – Soil Conservation Service- Soil Survey of Hampden County, Massachusetts characterized soils on site and land adjacent as follows

Map Unit Symbol	Location	Soil Name	Hydrologic Group	USDA Soil Texture Class	Other Description
254A	On-site	Merrimac	A	Sandy Loam	

The USDA defines groups of soils into Hydrologic Soil Groups (HSG) according to their runoff-producing characteristics. Soils are assigned to four groups (A, B, C, and D Groups). In group A, are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They typically are deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate

and thus a high runoff potential. They may have a hardpan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other nearly impervious material. The USDA Soil Survey gives an HSG A for Merrimac soil. The soil type on-site is confirmed based on knowledge of soils in the area from deep hole observations on adjacent properties. A pre-existing stormwater infiltration basin exists on-site which currently infiltrates stormwater back into the ground with no issues. In conclusion, the soils on-site have a high permeability and are suitable for stormwater infiltration.

II. STORMWATER RUNOFF ANALYSIS

A. Design Criteria

The potential stormwater impacts of this project were evaluated for the 2-, 10-, 25-, and 100-yr., 24-hour storm events. These storm events were evaluated in order to model the operation of the proposed stormwater management system, during the design storm events to ensure no increased runoff occurs due to the proposed development.

Rainfall depths were derived from Technical Paper No.40 published by the National Weather Service. The 24-hour precipitation/rainfall amounts for the design storms are as follows:

Table 1: 24-hour Rainfall Depths

24-hour Rainfall (in)				
Design Storm, Recurrence Interval	2-year	10-year	25-year	100-year
Precipitation, inches	2.9	4.5	5.2	6.5

B. Methodology

Peak Flow Rate Calculations

Stormwater Runoff volumes for the indicated recurrence intervals were computed using Hydro Cad and verified with the Rational Method. HydroCAD, a hydrology program, is designed and calculations are in accordance with the criteria of the Natural Resource Conservation Service's "Urban Hydrology for Small Watersheds," Technical Release (TR) TR-55 and TR-20. HydroCAD, was utilized to tabulate and graph the individual sub-catchments hydrograph and provide stage-discharge graphs and tables.

III. STORMWATER MANAGEMENT

A. Introduction

The potential stormwater impacts of this project were evaluated for the 2-, 10-, 25- and 100-year 24-hour storm event. The stormwater runoff from the subject parcel shall be mitigated, below pre-development levels. These storm events were evaluated in order to model the operation of the proposed stormwater management system. The subject project does not increase the peak flow rate for the 2-, 10-, 25- or 100-year 24-hour storm events. Peak stormwater flows for the indicated recurrence intervals were computed using HydroCAD (a proprietary stormwater modeling program that utilizes the SCS TR-20/TR-55 methodology) for the sub-catchment areas within the proposed project site.

B. Runoff Curve Coefficient

The computation of the runoff curve number is based on a combination of land use. The pre and post-development conditions have a variety of different land uses. The land use categories listed in Table 1 were identified for use in computing the pre-and post-development runoff from the site. The table also indicates the runoff curve number (RCN) and hydrologic soil group assigned to each land use.

Table 1: Pre and Post-Development RCN

<u>Land Use</u>	<u>Hydrologic Soil Group</u>	<u>RCN</u>
Impervious, Pavement	N/A	98
Impervious, Building	N/A	98
>75% Grass Cover, Good Condition	A	39
Woods, Good Condition	A	30

C. Pre-Development Conditions

1. Sub-Catchment Description:

Table 1 indicates the RCN and hydrologic soil group assigned to each land use within the sub-catchment for the pre-development conditions. The existing watershed for the property consists of three (3) sub-catchment areas and one (1) infiltration basin (see figure F-1 for locations). Sub-Catchment E1 contains a majority of the development, including the existing building and parking lot, the infiltration basin. Runoff from the existing parking areas sheet flow directly into the infiltration basin. Runoff from the existing building is captured via downspouts

and discharged to the infiltration basin. For this analysis we have utilized a point on the riprap emergency spillway of the infiltration basin as Analysis Point “A” (see Figure F-1).

Sub-Catchment E2 contains a large grassed area at the front and side of the existing building. Runoff from the entire subcatchment drains via sheet and shallow concentrated flow into the existing grassed drainage channel that runs adjacent to Bowles Road. For this analysis we have utilized a point in the drainage channel where the runoff flows off the property as Analysis Point “B” (see Figure F-1).

Sub-Catchment E3 contains a small portion of grassed area east of the existing parking areas. Runoff from the entire subcatchment drains to the east and off the property via sheet and shallow concentrated flow. For this analysis we have utilized the eastern property lines as Analysis Line “C” (see Figure F-1).

The results of the stormwater management pre-development analysis are summarized in Tables 2 and 3 below.

2. Time of Concentration

Each flow path is delineated along the longest hydrologic path within each corresponding sub-catchment.

Table 2: Pre-Development Hydrologic Parameters

Sub-Catchment	Drainage Area, Sq. Ft.	Weighted Runoff Curve No.	Time of Concentration, Min.
E1	71,084	74	9.4
E2	43,311	39	9.4
E3	11,083	47	2.2

Ref. Appendix A and Figure 1 Pre-Development Sub-Catchment Plan

Table 3: Pre-Development Peak Flow Rates per Storm Event

Analysis Point/Line	Peak Flow Rates 24-hour Storm Event [CFS]			
	2-Year	10-Year	25-Year	100-Year
Point "A"	0.00	0.00	0.44	2.66
Point "B"	0.00	0.01	0.06	0.27
Line "C"	0.00	0.04	0.10	0.30

Ref. Appendix A and Figure 1 Pre-Development Sub-Catchment Plan

D. Post-Development Conditions

1. Sub-catchment Description:

Table 1 indicates the RCN and hydrologic soil group assigned to each land use for the post-development conditions. The proposed watershed on the subject parcel is composed of three (3) sub-catchments and one (1) infiltration basin (see figure F-2 for locations).

Sub-Catchment P1 contains a majority of the development, including a portion of the existing building and parking lot, the infiltration basin, and the proposed building addition and parking expansion. Runoff from the proposed parking area sheet flows directly into the sediment forebay of the infiltration basin. Runoff from the existing and proposed building is captured via downspouts and discharged to the infiltration basin. For this analysis we have utilized a point on the riprap emergency spillway of the infiltration basin as Analysis Point "A" (see Figure F-1).

Sub-Catchment P2 contains the remaining grassed area at the front and side of the building. Runoff from the entire subcatchment drains via sheet and shallow concentrated flow into the existing grassed drainage channel that runs adjacent to Bowles Road. For this analysis we have utilized a point in the drainage channel where the runoff flows off the property as Analysis Point "B" (see Figure F-1).

Sub-Catchment P3 contains a small portion of grassed area east of the existing parking areas. Runoff from the entire subcatchment drains to the east and off the property via sheet and shallow concentrated flow. For this analysis we have utilized the eastern property lines as Analysis Line "C" (see Figure F-1).

The results of the stormwater management post-development analysis are summarized in Tables 4 and 5 below.

2. Time of Concentration

Each flow path is delineated along the longest hydrologic path within each corresponding sub-catchment.

Table 4: Post-Development Hydrologic Parameters

Sub-Catchment	Drainage Area, Sq. Ft.	Weighted Runoff Curve No.	Time of Concentration, Min.
P1	88,937	82	7.1
P2	27,444	39	7.8
P3	9,097	48	2.2

Ref. Appendix B and Figure 2 Post-Development Sub-Catchment Plan

Table 5: Post-Development Mitigated Peak Flow Rates per Storm Event

Analysis Point/Line	Peak Flow Rates 24-hour Storm Event [CFS]			
	2-Year	10-Year	25-Year	100-Year
Point "A"	0.00	0.00	0.00	2.31
Point "B"	0.00	0.01	0.04	0.17
Line "C"	0.00	0.04	0.11	0.27

Ref. Appendix B and Figure 2 Post-Development Sub-Catchment Plan

E. Pre and Post Development Summary

The following tables summarize the Pre and Post-development conditions for the proposed project. The post-mitigated peak flow rates are stormwater flow rates with the proposed detention basin in-place.

Table 6: Summary of Peak Flow Rates per Storm Event - Analysis Point “A”

Storm Event	Peak Stormwater Runoff Flow Rate per 24-hour Storm Event Type III 24-Hour	
	Cubic Feet per Second (CFS)	
	Analysis Point “A”	
	Pre-Development	Post-Development
2 Year	0.00	0.00
10 Year	0.00	0.00
25 Year	0.44	0.00
100 Year	2.66	2.31

Ref. Appendix A and B

Table 7: Summary of Peak Flow Rates per Storm Event - Analysis Point “B”

Storm Event	Peak Stormwater Runoff Flow Rate per 24-hour Storm Event Type III 24-Hour	
	Cubic Feet per Second (CFS)	
	Analysis Point “B”	
	Pre-Development	Post-Development
2 Year	0.00	0.00
10 Year	0.01	0.01
25 Year	0.06	0.04
100 Year	0.27	0.17

Ref. Appendix A and B

Table 8: Summary of Peak Flow Rates per Storm Event - Analysis Line "C"

Storm Event	Peak Stormwater Runoff Flow Rate per 24-hour Storm Event Type III 24-Hour	
	Cubic Feet per Second (CFS)	
	Analysis Line "C"	
	Pre-Development	Post-Development
2 Year	0.00	0.00
10 Year	0.04	0.04
25 Year	0.10	0.11
100 Year	0.30	0.27

Ref. Appendix A and B

IV. Stormwater Management Performance Standards Narrative

The following is a summary of the Agawam Stormwater Management Ordinance (Ch. 175-35) Performance Standards for redevelopment, along with a narrative detailing compliance with these standards.

Section 175-35. C. Permanent measures; runoff quality and quantity best management practices.

(2) Redevelopment. Previously developed sites must meet the stormwater management standards to the maximum extent practicable. However, if it is not practicable to meet all the standards, the new (retrofitted or expanded) stormwater management system must be designed to improve existing conditions.

(a) Stormwater management measures.

An existing infiltration basin was utilized for temporary runoff storage, flow attenuation, and pollutant removal. The detention pond was expanded to manage the flow from the existing and proposed impervious areas and designed so as not to create a permanent pool of water.

(b) Peak flow rates.

Peak flow rates for the post-development conditions do not exceed the peak flow rates for the pre-development condition for the 2-yr, 10-yr, and 100-yr twenty-four-hour design storm events. See Table 6, 7, and 8 on the previous pages for pre and post development flow rates, and Appendix A & B for calculations.

(c) Minimize pollutants

The existing infiltration basin will be expanded to include a newly constructed sediment forebay. All stormwater runoff from the proposed development will first pass through the sediment forebay before entering the basin. According to the MassDEP Stormwater Handbook guidelines, this system is expected to achieve an 80% removal rate of total suspended solids (TSS).

(d) Projects involving the storage or use of hazardous chemicals or petroleum products

There will be no storage or use of hazardous chemicals or petroleum products on the site.

(e) Connection to MS4.

The proposed stormwater management system will not connect to MS4.

(f) Emergency overflow.

The proposed detention basin is designed with a riprap emergency overflow spillway.

(g) Down stream structures.

No stormwater structures are being proposed

(h) Centralized detention facilities.

All stormwater from the proposed development is being managed by an on-site detention system.

(i) Detention ponds.

The proposed detention pond was designed in accordance with the MassDEP Stormwater Handbook guidelines.

(l) Detention pond maintenance requirements (for detention ponds within Town of Agawam easements).

The proposed detention pond is not located within a Town of Agawam easement. Operation and maintenance requirements for the proposed detention pond can be found in Section IV. Operation and Maintenance Narrative.

(m) Calculations submittals.

All calculations and supporting documents required have been included in this Stormwater Management Report and the accompanying site plans.

IV. Operation and Maintenance Narrative

A. Recharge Basin:

The Recharge Basin shall be maintained as follows:

1. The basin should be inspected for proper function and preventative maintenance be completed after every major storm during the first three months of operation and at least twice a year thereafter. Preventative maintenance shall include inspecting for:
 - Signs of differential settlement
 - Cracking
 - Erosion
 - Leakage in the embankment
 - Tree growth on the embankments
 - Condition of rip rap
 - Sediment accumulation
 - The health of the turf
 2. Mow the buffer area, side slopes, and basin bottom at least twice a year. Trash debris, grass clippings and organic matter should be removed at this time.
 3. Inspect and clean pretreatment devices at least twice a year and after every major storm event.
 4. Remove any sediment from the basin if standing water is present 48 to 72 hours after a storm event.
 5. Sediment should be removed from the basin as necessary. When sediment is observed to be 6 inches deep, the owner shall remove all sediment and bottom vegetation to the original elevation.
 6. To remove sediment, wait until the floor of the basin is thoroughly dry. Use light equipment to remove the top layer, deeply till the remaining soil, and re-vegetate as soon as possible.
-

B. General Maintenance Practices

1. Grass clippings, excess landscape material or any debris shall NOT be disposed of within the forebay or the recharge basin.
2. Paved access ways should be treated with sand and limited amounts of de-icing materials during the winter months. As soon as practicable in the spring these areas should be swept clean and again prior to the end of the fall season.
3. All vegetated slopes and swales shall be visibly inspected, twice annually, prior to the seeding seasons. All areas in need of repair shall be fertilized and seeded as required.

VI. Inspection and Construction Schedule

A. Construction Schedule

1. Mobilize equipment on site.
2. Install erosion and sediment control measures
3. Begin site preparation
4. Excavate for site utilities and drainage system.
5. Roadway/Parking Lot Construction
6. Building construction
7. Final Grading and Seeding
8. Paving and Landscaping

B. Inspection Schedule

1. Project engineer shall inspect the drainage systems during general construction intervals.
2. During grading and construction of the detention basin, a soil evaluator or professional engineer shall be present on site to ensure native or similar soils underlay the entire basin to promote infiltration.
3. Project engineer shall inspect the following specific phases of work:
 - A. Installation of erosion control barrier
 - B. Rough drainage system
 - C. Final grading and seeding
 - D. Follow-up inspection during the following growing season.

VII. Long Term and Construction Period Pollution Prevention and Erosion and Sedimentation Control

EROSION AND SEDIMENTATION CONTROLS:

STABILIZATION PRACTICES:

Temporary Stabilization: Any disturbed area where construction activity is suspended for more than fourteen days shall be seeded to stabilize erodible materials.

Permanent Stabilization: When a landscaped area has been graded to the final increment, it shall be seeded or sodded within fourteen days.

STRUCTURAL PRACTICES:

Sedimentation Control System: Sedimentation control systems consisting of silt fence shall be installed along the limits of the project as shown on the plans (see attached plans). Where necessary, wings shall be added to the sedimentation control system along the toe of slope to prevent sediment from moving along and around the fence.

Catch Basin Protection: Catch basins shall be protected using filtration fabric sedimentation control systems as shown on the plans.

OTHER CONTROLS

WASTE DISPOSAL :

Waste Materials: All waste materials shall be collected and stored in a manner that will prevent materials from entering watercourses, wetlands, or other off site areas. Material shall be regularly collected and disposed of offsite in a manner consistent with all federal, state and local regulations.

Hazardous Waste: All hazardous waste materials shall be disposed of in a manner specified by State regulations and/or in accordance with the manufacturer's recommendations.

Sanitary Waste: During construction all sanitary waste will be collected in portable sanitary units. These units will be emptied as necessary by a qualified contractor and disposed of in accordance with all State and local regulations. After completion all sanitary waste will be directed into the municipal sewer system.

OFF-SITE VEHICLE TRACKING:

The paved areas adjacent to the site entrance will be swept as needed to remove any excess mud, dirt or rock tracked from the site. The site was designed to balance the total cut with the total fill, eliminating most need for hauling material on and off site. Dump trucks hauling material from the construction site will be covered with a tarpaulin.

MAINTENANCE AND INSPECTION

INSPECTION SCHEDULE

DURING CONSTRUCTION:

All areas disturbed by construction that have not been finally stabilized will be inspected at least once every seven-calendar day. These areas will also be inspected following (within 24 hours) any storm in which 0.5 inches or more of rain occurs in a 24-hour period.

POST CONSTRUCTION:

All areas that have been temporarily or finally stabilized will be inspected at least once a month for three months following final stabilization.

INSPECTION PROCEDURES

PERSONNEL:

Inspections shall be conducted by qualified personnel provided by the contractor.

ITEMS TO BE INSPECTED:

The following items shall be inspected as described below:

<u>Item</u>	<u>Procedure</u>
Silt fence	Silt fence shall be inspected to insure that fence line is intact with no breaks or tears, and that the bottom of the fabric is securely buried in the ground. Areas where fence is excessively sagging or where support posts are broken or uprooted shall be noted. Depth of sediment behind the fence shall be noted.
Discharge points	All discharge points shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Discharge points shall also be inspected to insure that erosion protection measures at the discharge are functioning

Vehicle entrances/exits	Locations where vehicles enter or exit the site shall be inspected for evidence of off- site sediment tracking.
General	Construction areas and perimeter of the site shall be inspected for any evidence of debris that may blow or wash off site, and for debris that has blown or washed off site. Construction areas shall be inspected for any spills or unsafe storage of materials that could pollute off site waters.

REVISIONS TO POLLUTION CONTROL PLAN:

If the results of the inspections require modifications to the pollution control plan, the plans shall be revised as soon as practicable after the inspection. Changes to the plan shall be implemented within 7 calendar days following the inspection.

RECORD KEEPING:

A written report summarizing the scope of the inspection, the name(s) and qualifications of inspection personnel, the date and time of the inspection, major observations relative to the implementation of the pollution control plan, and actions taken shall be completed within 24 hours of the inspection. This report shall be signed by the responsible person designated by the registrant. This report shall be retained as part of the pollution control plan for at least three years after the date of the inspection.

MAINTENANCE:

GENERAL:

Maintenance procedures should be implemented as soon as possible after the need for maintenance is recognized. Contractors shall utilize good housekeeping practices to minimize the possibilities of spills or leaks of potential pollutants. Hazardous materials shall be handled with the utmost care in accordance with all regulations and the recommendations of the manufacturer.

MAINTENANCE OF EROSION CONTROLS:

Erosion controls shall be maintained as noted below:

<u>Item</u>	<u>Procedure</u>
Silt fence	Sediment shall be removed when it reaches one third of the height of the silt fence. Care shall be taken to avoid damaging the fence during cleanout. Any areas of damaged or torn fabric, broken posts or undermined fence shall be repaired.

Discharge points	Any sediment or debris accumulated at discharge points shall be removed. Any damage to riprap shall be immediately repaired.
Vehicle entrances/exits	Any material tracked onto roadways shall be immediately cleaned up. If necessary, stabilized construction entrances shall be provided to minimize sediment tracking.
General	Any debris blowing or flowing off the site shall be immediately cleaned up. Any unsafe storage practices noted in the inspection shall be immediately remedied.

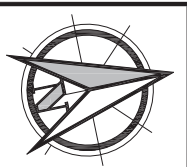
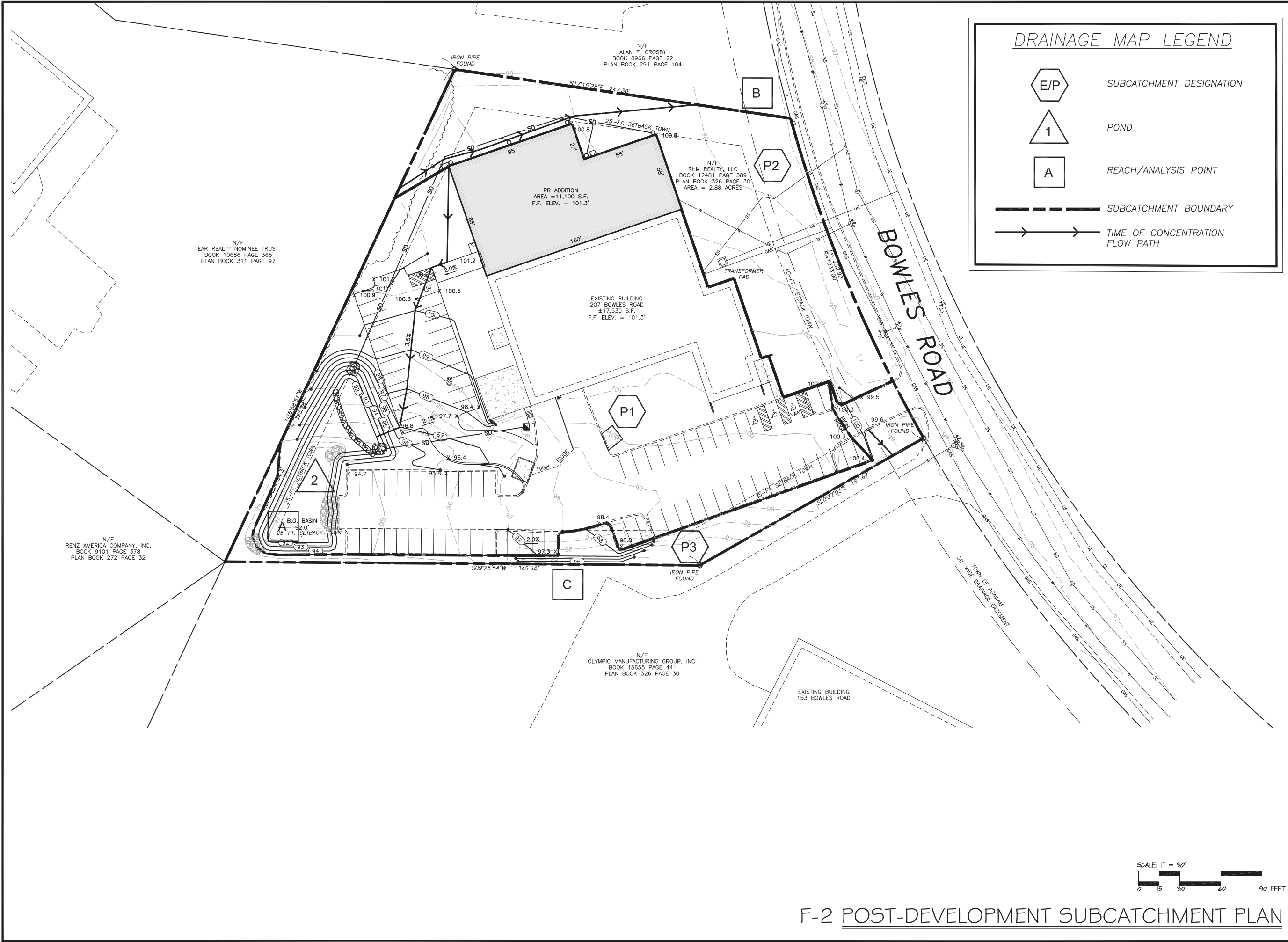
NON-STORM WATER DISCHARGES

GENERAL:

It is expected that the following non-storm water discharges may occur from the site during the construction period:

- Discharges from firefighting activities.
- Waters used for dust control.
- Drainage from watering vegetation.
- Pavement wash waters without use of detergent and where spills or leaks of hazardous materials have not occurred (unless cleanup has removed all spilled materials)
- Uncontaminated groundwater from dewatering operations.
- All non-stormwater discharges will be directed to the storm drainage system and/or discharge upstream of sediment and erosion controls.





PROJECT DESCRIPTION:
NEW MANUFACTURING ADDITION
207 BOWLES ROAD
AGAWAM, MASSACHUSETTS 01001

APPLICANT:
RHM REALTY LLC
207 BOWLES ROAD
AGAWAM, MASSACHUSETTS 01001

Furrow
Engineering

199 Servistar Industrial Way - Suite 2
Westfield, MA 01085
Phone: (413) 562-4884

ORIGINAL SEAL IS IN BLUE
INK COPIES ARE NOT VALID

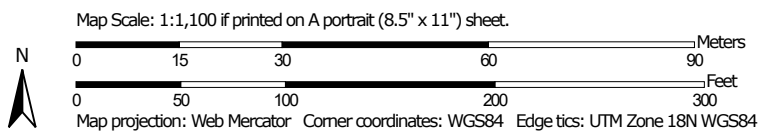
REVISION DESCRIPTION	BY	DATE
1		
2		
3		
4		
5		
PROJECT # 154-11-23		
DRAWN BY: LDS		
DATE: 9-19-2024		
SCALE: 1" = 30'		
SHEET: F-2		



F-2 POST-DEVELOPMENT SUBCATCHMENT PLAN

FIGURE 3
USDA SOIL SURVEY MAP

Soil Map—Hampden County, Massachusetts, Central Part



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hampden County, Massachusetts, Central Part

Survey Area Data: Version 18, Aug 27, 2024

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

Date(s) aerial images were photographed: Oct 15, 2020—Oct 31, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
254A	Merrimac fine sandy loam, 0 to 3 percent slopes	4.7	100.0%
Totals for Area of Interest		4.7	100.0%

Hampden County, Massachusetts, Central Part

254A—Merrimac fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tyqr

Elevation: 0 to 1,100 feet

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 240 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Merrimac and similar soils: 86 percent

Minor components: 14 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Outwash plains, outwash terraces, moraines, eskers, kames

Landform position (two-dimensional): Summit, shoulder, backslope, footslope

Landform position (three-dimensional): Side slope, crest, riser, tread

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam

Bw1 - 10 to 22 inches: fine sandy loam

Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand

2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water

(Ksat): Moderately high to very high (1.42 to 99.90 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 2 percent

Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 1

Hydrologic Soil Group: A

Ecological site: F145XY008MA - Dry Outwash

Hydric soil rating: No

Minor Components

Sudbury

Percent of map unit: 5 percent

Landform: Deltas, terraces, outwash plains

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Tread, dip

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

Hinckley

Percent of map unit: 5 percent

Landform: Deltas, kames, eskers, outwash plains

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Head slope, nose slope,
side slope, crest, rise

Down-slope shape: Convex

Across-slope shape: Convex, linear

Hydric soil rating: No

Windsor

Percent of map unit: 3 percent

Landform: Dunes, deltas, outwash terraces, outwash plains

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Tread, riser

Down-slope shape: Convex, linear

Across-slope shape: Convex, linear

Hydric soil rating: No

Walpole

Percent of map unit: 1 percent

Landform: Depressions

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Concave

Ecological site: F144AY028MA - Wet Outwash

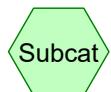
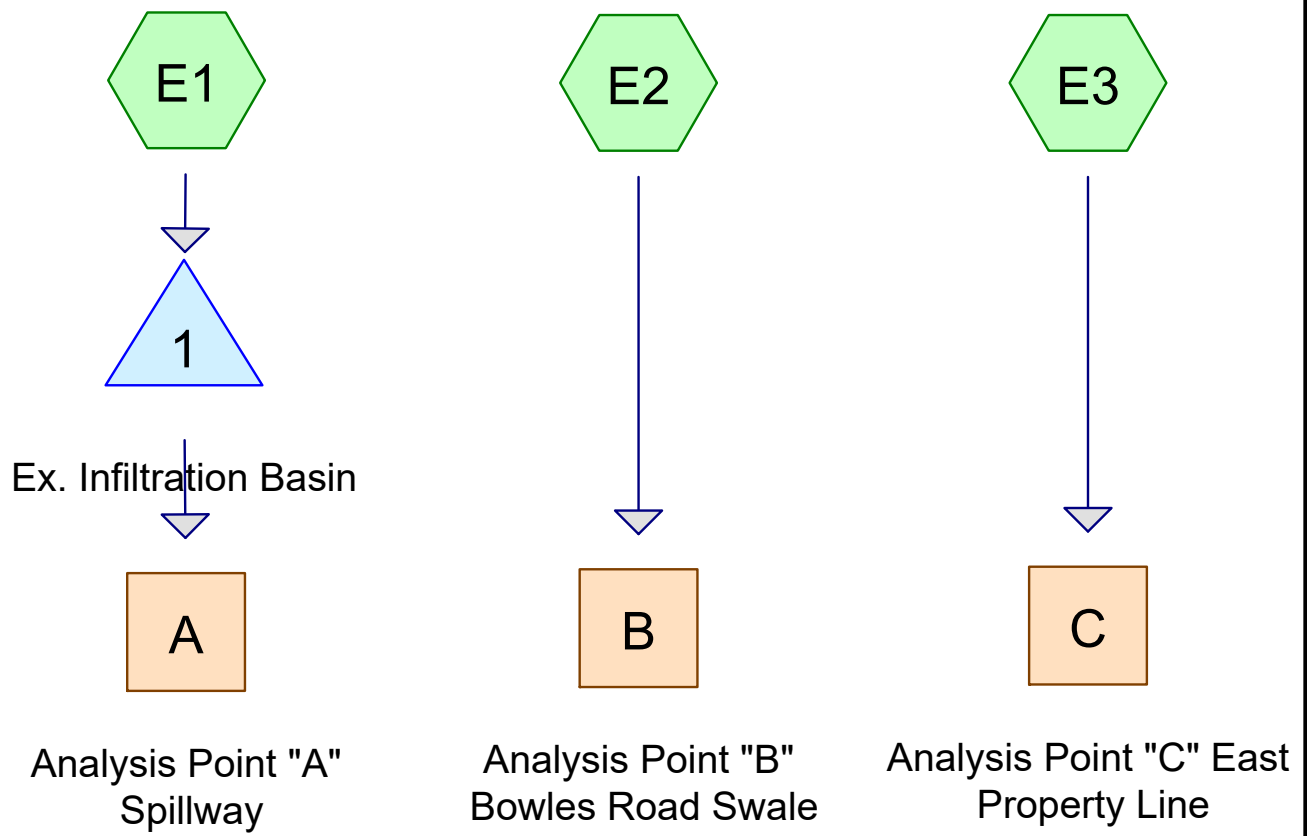
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Hampden County, Massachusetts, Central Part

Survey Area Data: Version 18, Aug 27, 2024

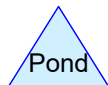
APPENDIX A
PRE DEVELOPMENT RUNOFF CALCULATIONS



Subcat



Reach



Pond



Link

Routing Diagram for 1154- Hydro CAD PRE
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1154- Hydro CAD PRE

Prepared by Furrow Engineering

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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.789	39	>75% Grass cover, Good, HSG A (E1, E2, E3)
0.605	98	Paved parking, HSG A (E1, E3)
0.402	98	Roofs, HSG A (E1)
0.084	30	Woods, Good, HSG A (E1, E2)
2.881	59	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.881	HSG A	E1, E2, E3
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
2.881		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
1.789	0.000	0.000	0.000	0.000	1.789	>75% Grass cover, Good	E1, E2, E3
0.605	0.000	0.000	0.000	0.000	0.605	Paved parking	E1, E3
0.402	0.000	0.000	0.000	0.000	0.402	Roofs	E1
0.084	0.000	0.000	0.000	0.000	0.084	Woods, Good	E1, E2
2.881	0.000	0.000	0.000	0.000	2.881	TOTAL AREA	

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Type III 24-hr 2-Year Rainfall=2.90"

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Page 5

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E1: Runoff Area=71,084 sf 59.61% Impervious Runoff Depth=0.85"
Flow Length=229' Tc=9.4 min CN=74 Runoff=1.31 cfs 0.115 af

Subcatchment E2: Runoff Area=43,311 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=307' Slope=0.0130 '/' Tc=9.4 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment E3: Runoff Area=11,083 sf 13.45% Impervious Runoff Depth=0.03"
Flow Length=27' Slope=0.0450 '/' Tc=2.2 min CN=47 Runoff=0.00 cfs 0.001 af

Reach A: Analysis Point "A" Spillway Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach B: Analysis Point "B" Bowles Road Swale Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach C: Analysis Point "C" East Property Line Inflow=0.00 cfs 0.001 af
Outflow=0.00 cfs 0.001 af

Pond 1: Ex. Infiltration Basin Peak Elev=92.47' Storage=950 cf Inflow=1.31 cfs 0.115 af
Discarded=0.42 cfs 0.115 af Primary=0.00 cfs 0.000 af Outflow=0.42 cfs 0.115 af

Total Runoff Area = 2.881 ac Runoff Volume = 0.116 af Average Runoff Depth = 0.48"
65.04% Pervious = 1.874 ac 34.96% Impervious = 1.007 ac

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Type III 24-hr 2-Year Rainfall=2.90"

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Summary for Subcatchment E1:

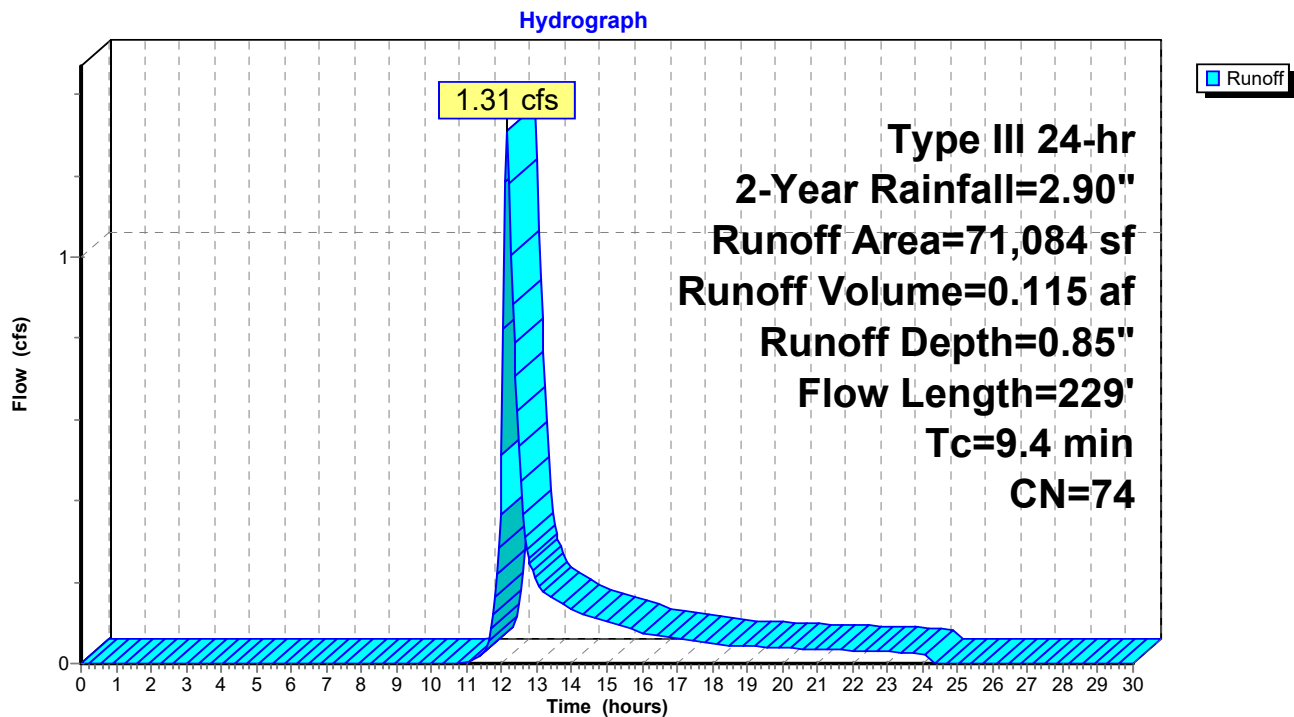
Runoff = 1.31 cfs @ 12.15 hrs, Volume= 0.115 af, Depth= 0.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=2.90"

Area (sf)	CN	Description
24,842	98	Paved parking, HSG A
17,530	98	Roofs, HSG A
2,200	30	Woods, Good, HSG A
26,512	39	>75% Grass cover, Good, HSG A
71,084	74	Weighted Average
28,712		40.39% Pervious Area
42,372		59.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	20	0.0055	0.07		Sheet Flow, 20 feet short grass Grass: Short n= 0.150 P2= 2.90"
3.5	108	0.0055	0.52		Shallow Concentrated Flow, grass 0.5% Slope Short Grass Pasture Kv= 7.0 fps
0.6	66	0.0750	1.92		Shallow Concentrated Flow, grass 7.5% Slope Short Grass Pasture Kv= 7.0 fps
0.5	35	0.0290	1.19		Shallow Concentrated Flow, grass 2.9% Slope Short Grass Pasture Kv= 7.0 fps
9.4	229	Total			

Subcatchment E1:



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Type III 24-hr 2-Year Rainfall=2.90"

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Summary for Subcatchment E2:

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

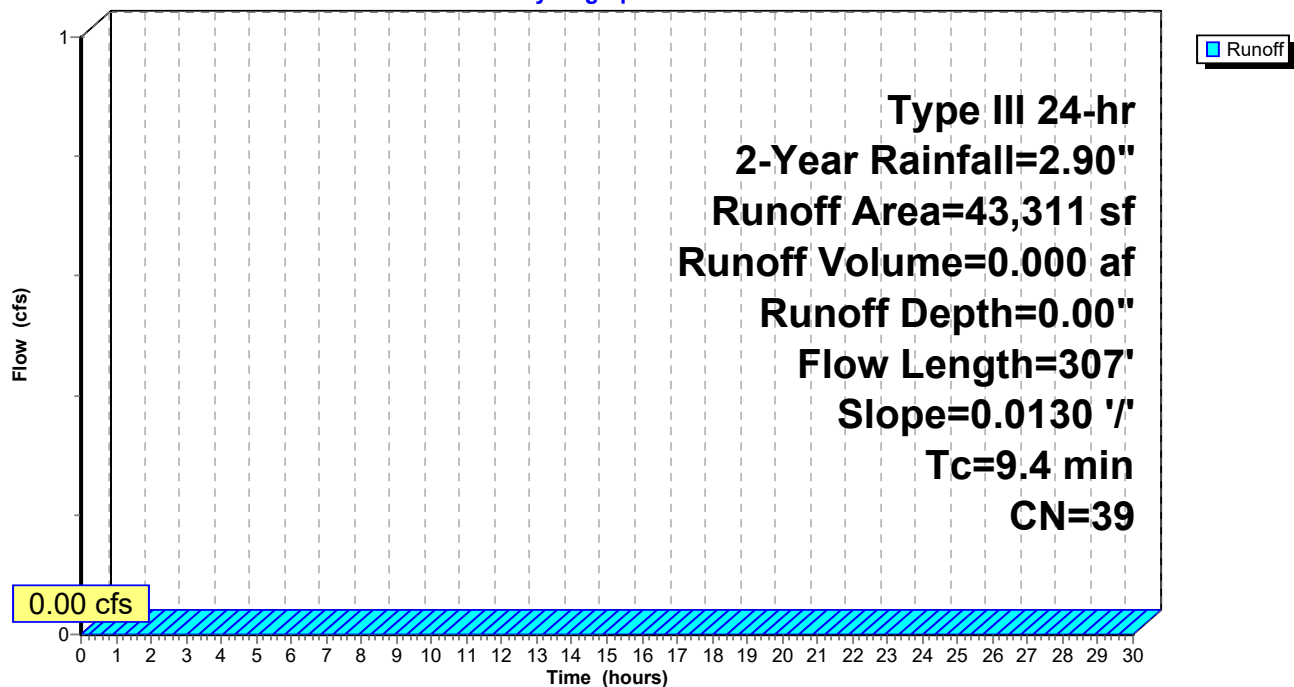
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=2.90"

Area (sf)	CN	Description
1,465	30	Woods, Good, HSG A
41,846	39	>75% Grass cover, Good, HSG A
43,311	39	Weighted Average
43,311		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	20	0.0130	0.10		Sheet Flow, 20 feet grass Grass: Short n= 0.150 P2= 2.90"
6.0	287	0.0130	0.80		Shallow Concentrated Flow, Grass 1.3% Slope Short Grass Pasture Kv= 7.0 fps
9.4	307	Total			

Subcatchment E2:

Hydrograph



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Type III 24-hr 2-Year Rainfall=2.90"

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Summary for Subcatchment E3:[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.00 cfs @ 15.44 hrs, Volume= 0.001 af, Depth= 0.03"

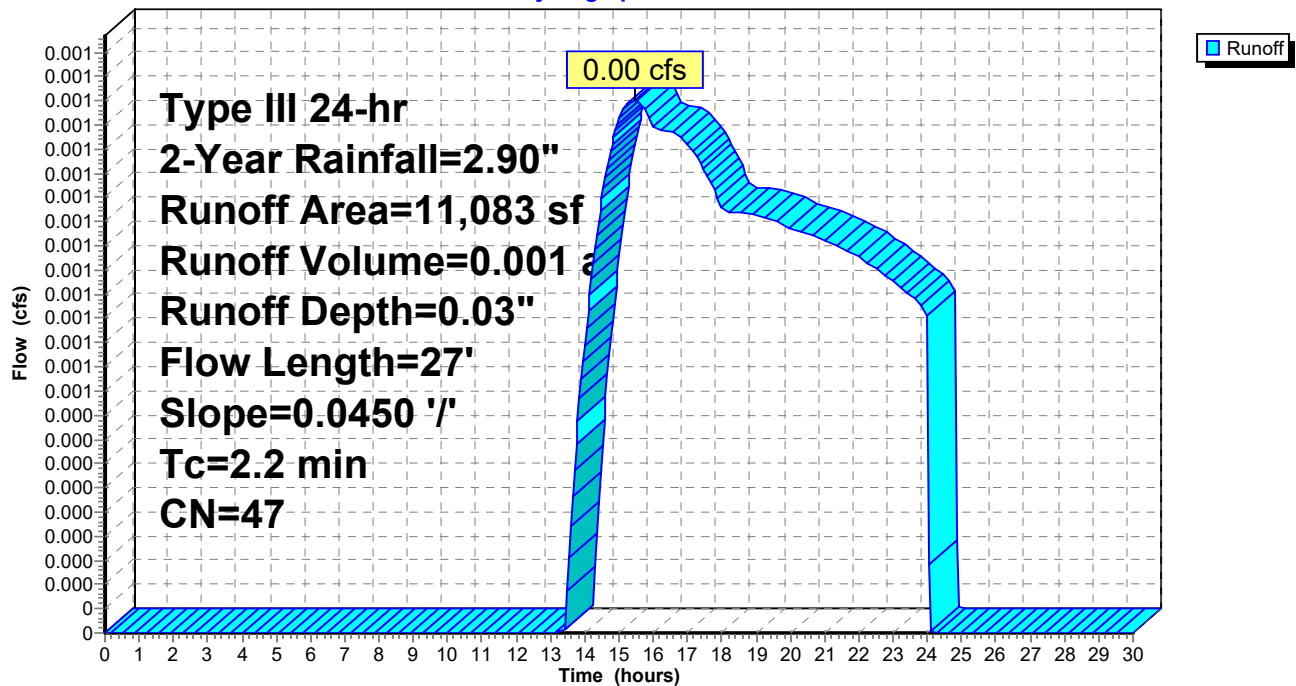
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, $dt=0.05$ hrs
Type III 24-hr 2-Year Rainfall=2.90"

Area (sf)	CN	Description
1,491	98	Paved parking, HSG A
9,592	39	>75% Grass cover, Good, HSG A
11,083	47	Weighted Average
9,592		86.55% Pervious Area
1,491		13.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	20	0.0450	0.16		Sheet Flow, 20 feet grass Grass: Short n= 0.150 P2= 2.90"
0.1	7	0.0450	1.48		Shallow Concentrated Flow, Grass 4.5% Slope Short Grass Pasture Kv= 7.0 fps
2.2	27	Total			

Subcatchment E3:

Hydrograph



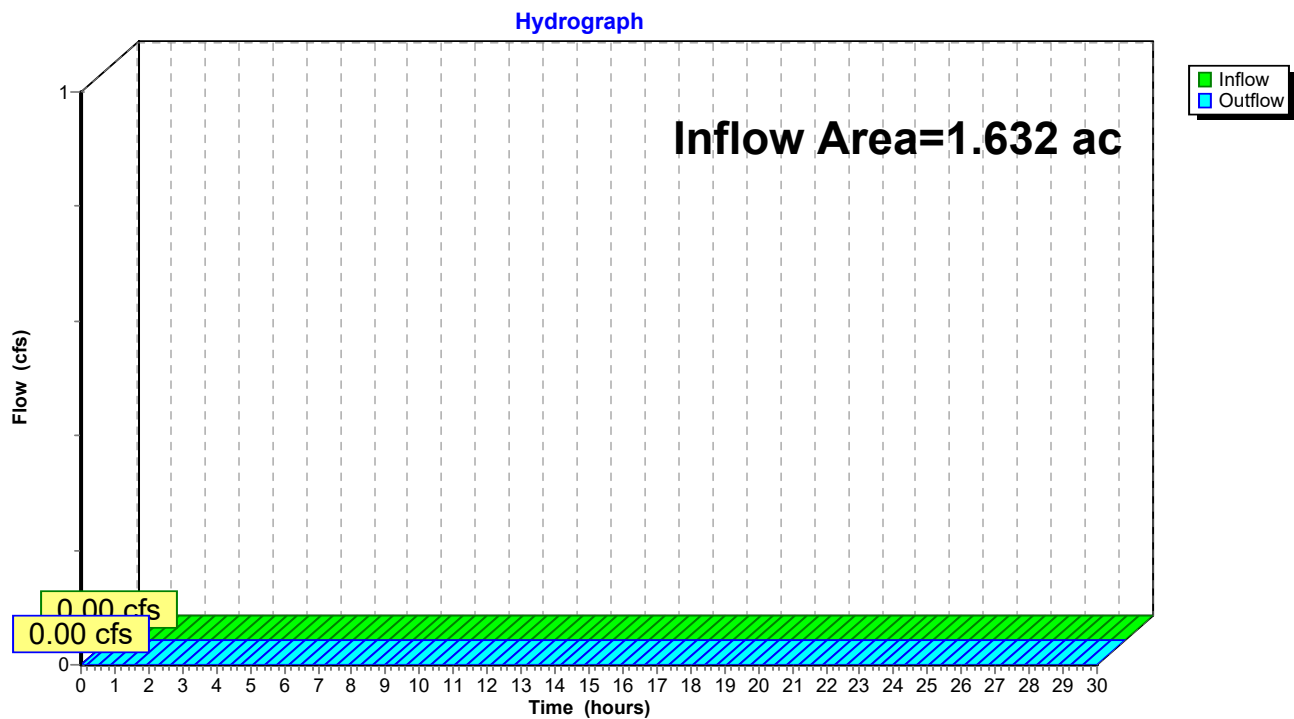
Summary for Reach A: Analysis Point "A" Spillway

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.632 ac, 59.61% Impervious, Inflow Depth = 0.00" for 2-Year event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach A: Analysis Point "A" Spillway

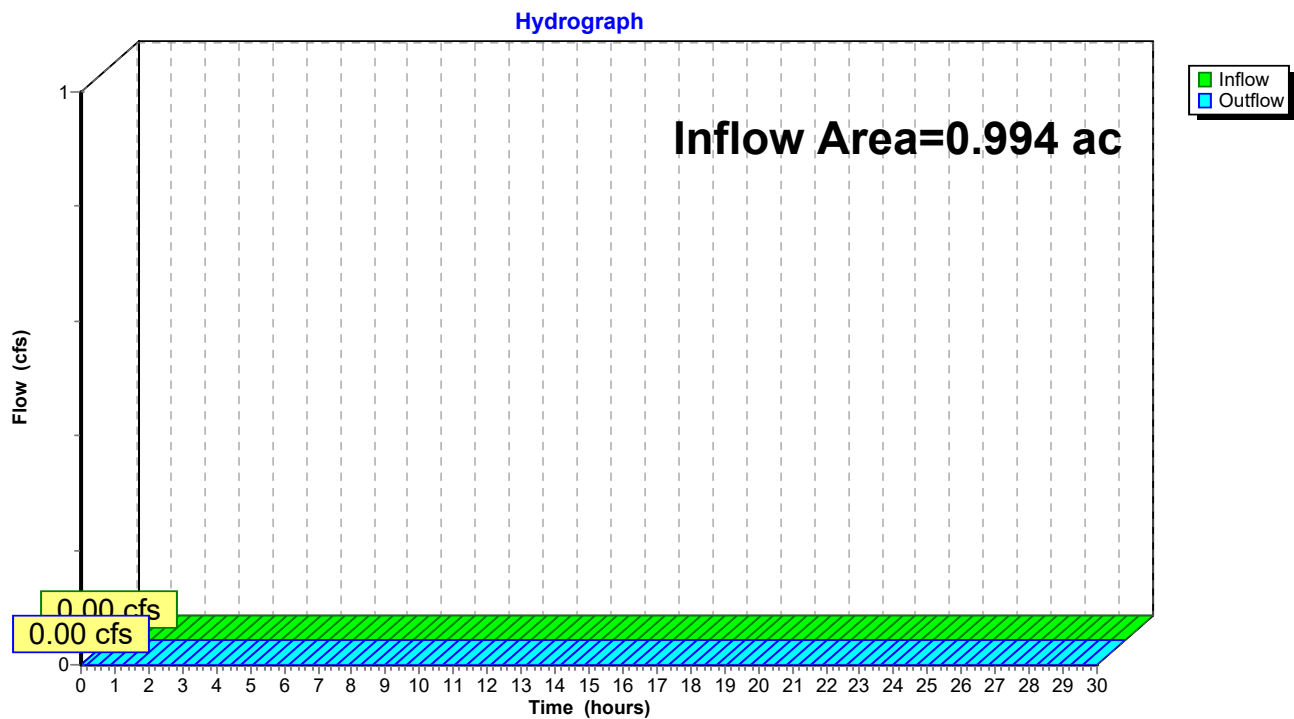


Summary for Reach B: Analysis Point "B" Bowles Road Swale

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.994 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

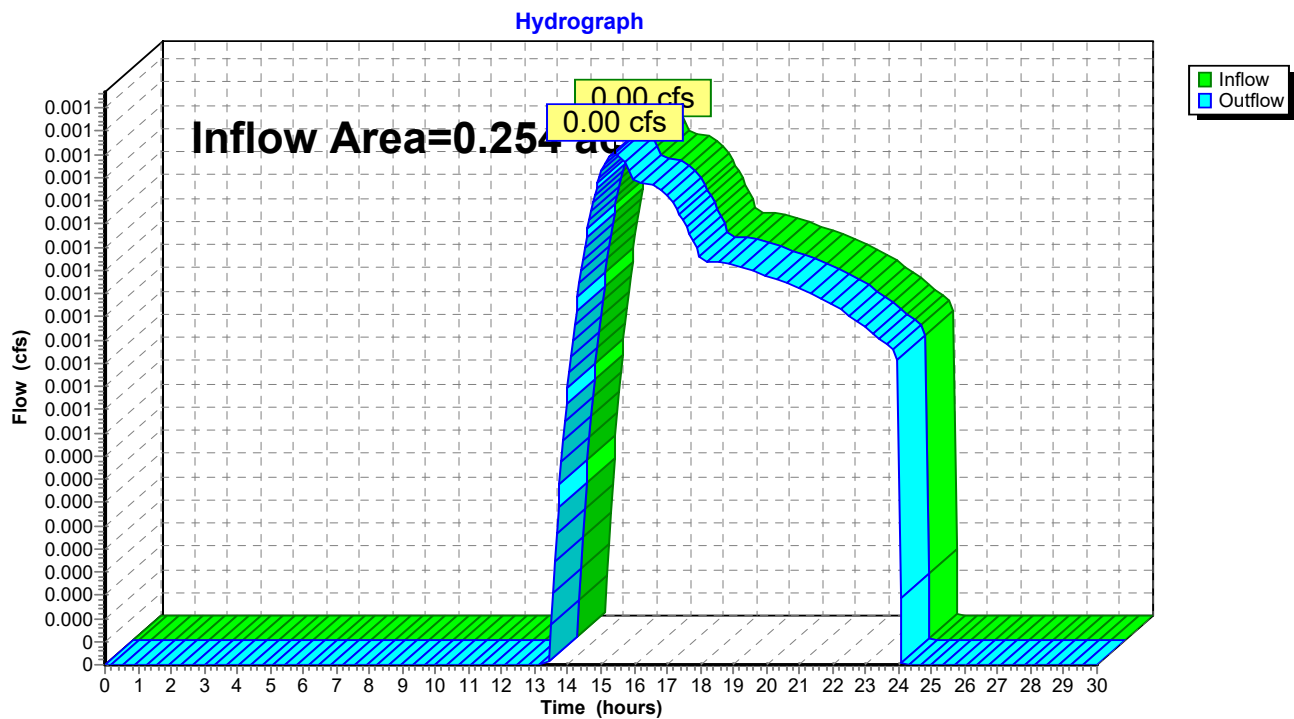
Reach B: Analysis Point "B" Bowles Road Swale

Summary for Reach C: Analysis Point "C" East Property Line

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.254 ac, 13.45% Impervious, Inflow Depth = 0.03" for 2-Year event
Inflow = 0.00 cfs @ 15.44 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 15.44 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach C: Analysis Point "C" East Property Line

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Type III 24-hr 2-Year Rainfall=2.90"

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Summary for Pond 1: Ex. Infiltration Basin

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=101)

Inflow Area = 1.632 ac, 59.61% Impervious, Inflow Depth = 0.85" for 2-Year event
 Inflow = 1.31 cfs @ 12.15 hrs, Volume= 0.115 af
 Outflow = 0.42 cfs @ 12.57 hrs, Volume= 0.115 af, Atten= 68%, Lag= 25.0 min
 Discarded = 0.42 cfs @ 12.57 hrs, Volume= 0.115 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 92.47' @ 12.57 hrs Surf.Area= 2,193 sf Storage= 950 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 13.0 min (884.7 - 871.7)

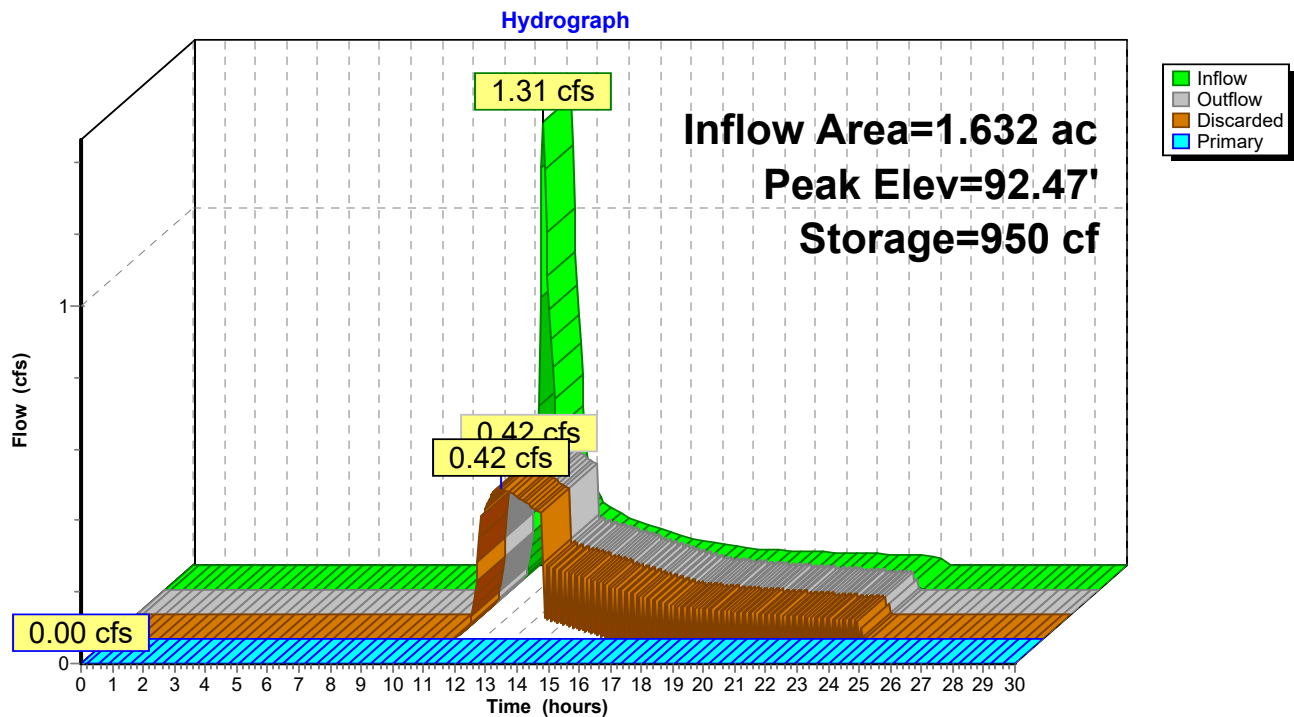
Volume	Invert	Avail.Storage	Storage Description	
#1	92.00'	6,501 cf	Custom Stage Data (Conic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.00	1,822	0	0	1,822
93.00	2,644	2,220	2,220	2,661
94.00	3,573	3,097	5,317	3,610
94.30	4,332	1,184	6,501	4,372

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.00'	8.270 in/hr Exfiltration over Wetted area
#2	Primary	93.80'	27.0 deg x 6.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir Cv= 2.63 (C= 3.29)

Discarded OutFlow Max=0.42 cfs @ 12.57 hrs HW=92.47' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.42 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.00' TW=0.00' (Dynamic Tailwater)
 ↑**2=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond 1: Ex. Infiltration Basin



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Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E1: Runoff Area=71,084 sf 59.61% Impervious Runoff Depth=1.97"
Flow Length=229' Tc=9.4 min CN=74 Runoff=3.27 cfs 0.268 af

Subcatchment E2: Runoff Area=43,311 sf 0.00% Impervious Runoff Depth=0.11"
Flow Length=307' Slope=0.0130 '/' Tc=9.4 min CN=39 Runoff=0.01 cfs 0.009 af

Subcatchment E3: Runoff Area=11,083 sf 13.45% Impervious Runoff Depth=0.37"
Flow Length=27' Slope=0.0450 '/' Tc=2.2 min CN=47 Runoff=0.04 cfs 0.008 af

Reach A: Analysis Point "A" Spillway Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach B: Analysis Point "B" Bowles Road Swale Inflow=0.01 cfs 0.009 af
Outflow=0.01 cfs 0.009 af

Reach C: Analysis Point "C" East Property Line Inflow=0.04 cfs 0.008 af
Outflow=0.04 cfs 0.008 af

Pond 1: Ex. Infiltration Basin Peak Elev=93.51' Storage=3,692 cf Inflow=3.27 cfs 0.268 af
Discarded=0.60 cfs 0.269 af Primary=0.00 cfs 0.000 af Outflow=0.60 cfs 0.269 af

Total Runoff Area = 2.881 ac Runoff Volume = 0.285 af Average Runoff Depth = 1.19"
65.04% Pervious = 1.874 ac 34.96% Impervious = 1.007 ac

1154- Hydro CAD PRE

Type III 24-hr 10-Year Rainfall=4.50"

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Summary for Subcatchment E1:

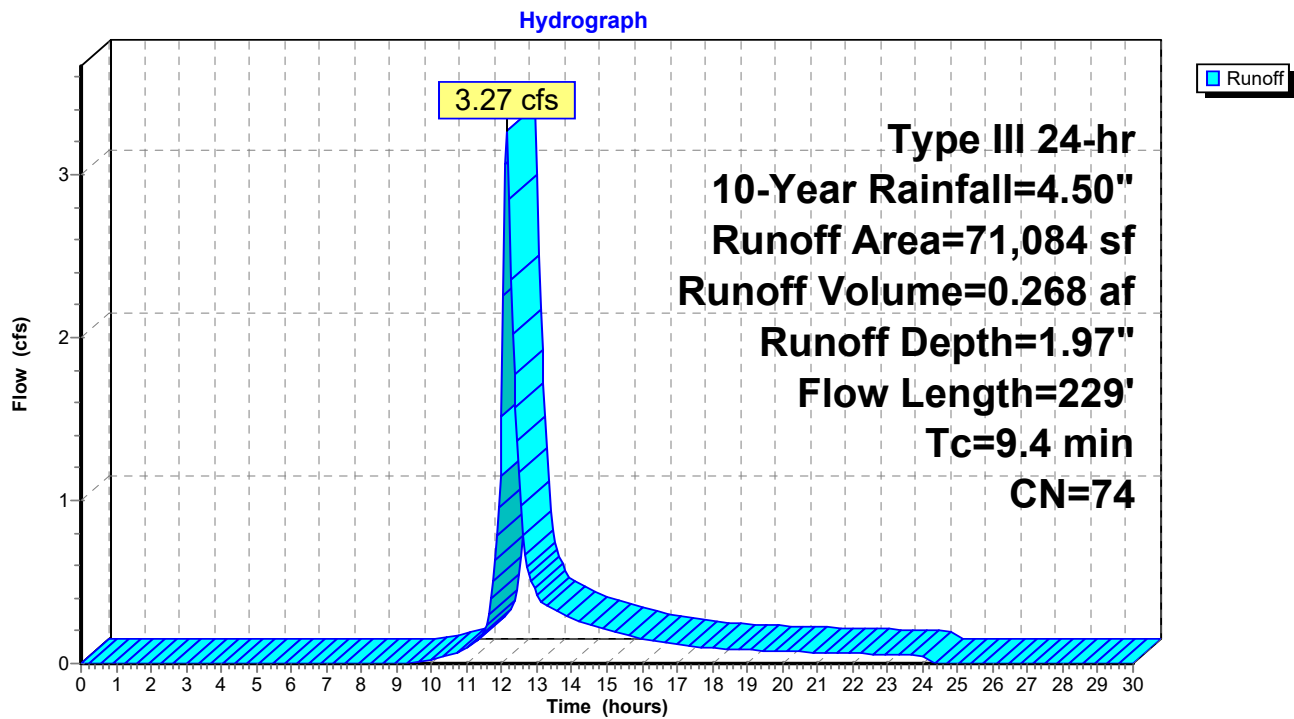
Runoff = 3.27 cfs @ 12.14 hrs, Volume= 0.268 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
24,842	98	Paved parking, HSG A
17,530	98	Roofs, HSG A
2,200	30	Woods, Good, HSG A
26,512	39	>75% Grass cover, Good, HSG A
71,084	74	Weighted Average
28,712		40.39% Pervious Area
42,372		59.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	20	0.0055	0.07		Sheet Flow, 20 feet short grass Grass: Short n= 0.150 P2= 2.90"
3.5	108	0.0055	0.52		Shallow Concentrated Flow, grass 0.5% Slope Short Grass Pasture Kv= 7.0 fps
0.6	66	0.0750	1.92		Shallow Concentrated Flow, grass 7.5% Slope Short Grass Pasture Kv= 7.0 fps
0.5	35	0.0290	1.19		Shallow Concentrated Flow, grass 2.9% Slope Short Grass Pasture Kv= 7.0 fps
9.4	229	Total			

Subcatchment E1:



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Type III 24-hr 10-Year Rainfall=4.50"

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Summary for Subcatchment E2:

Runoff = 0.01 cfs @ 14.77 hrs, Volume= 0.009 af, Depth= 0.11"

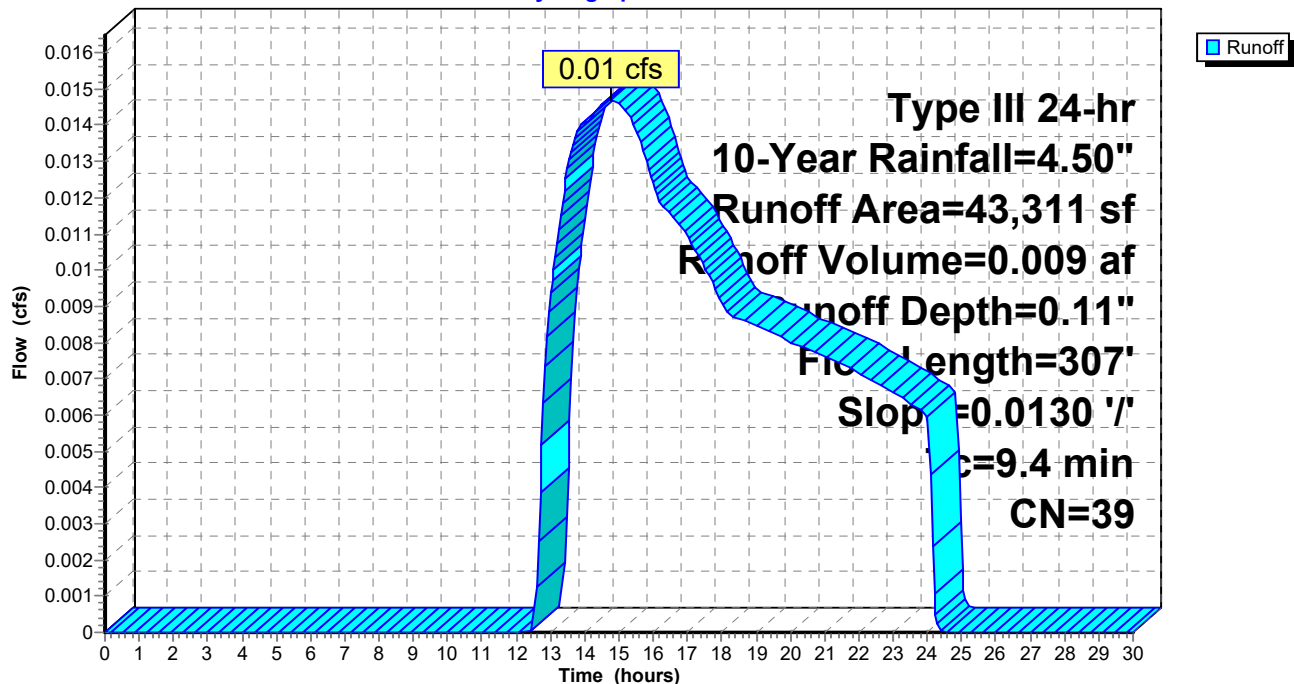
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
1,465	30	Woods, Good, HSG A
41,846	39	>75% Grass cover, Good, HSG A
43,311	39	Weighted Average
43,311		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	20	0.0130	0.10		Sheet Flow, 20 feet grass Grass: Short n= 0.150 P2= 2.90"
6.0	287	0.0130	0.80		Shallow Concentrated Flow, Grass 1.3% Slope Short Grass Pasture Kv= 7.0 fps
9.4	307	Total			

Subcatchment E2:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.50"

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Summary for Subcatchment E3:[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.04 cfs @ 12.26 hrs, Volume= 0.008 af, Depth= 0.37"

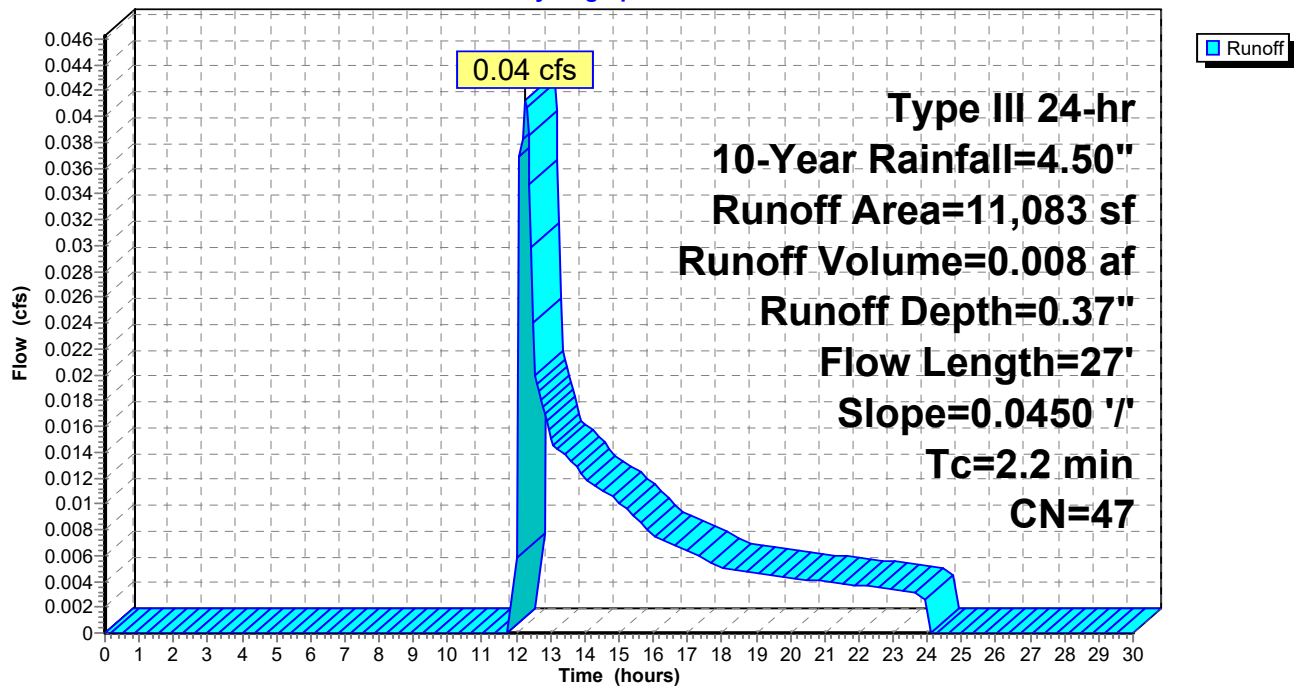
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, $dt=0.05$ hrs
Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
1,491	98	Paved parking, HSG A
9,592	39	>75% Grass cover, Good, HSG A
11,083	47	Weighted Average
9,592		86.55% Pervious Area
1,491		13.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	20	0.0450	0.16		Sheet Flow, 20 feet grass Grass: Short n= 0.150 P2= 2.90"
0.1	7	0.0450	1.48		Shallow Concentrated Flow, Grass 4.5% Slope Short Grass Pasture Kv= 7.0 fps
2.2	27	Total			

Subcatchment E3:

Hydrograph

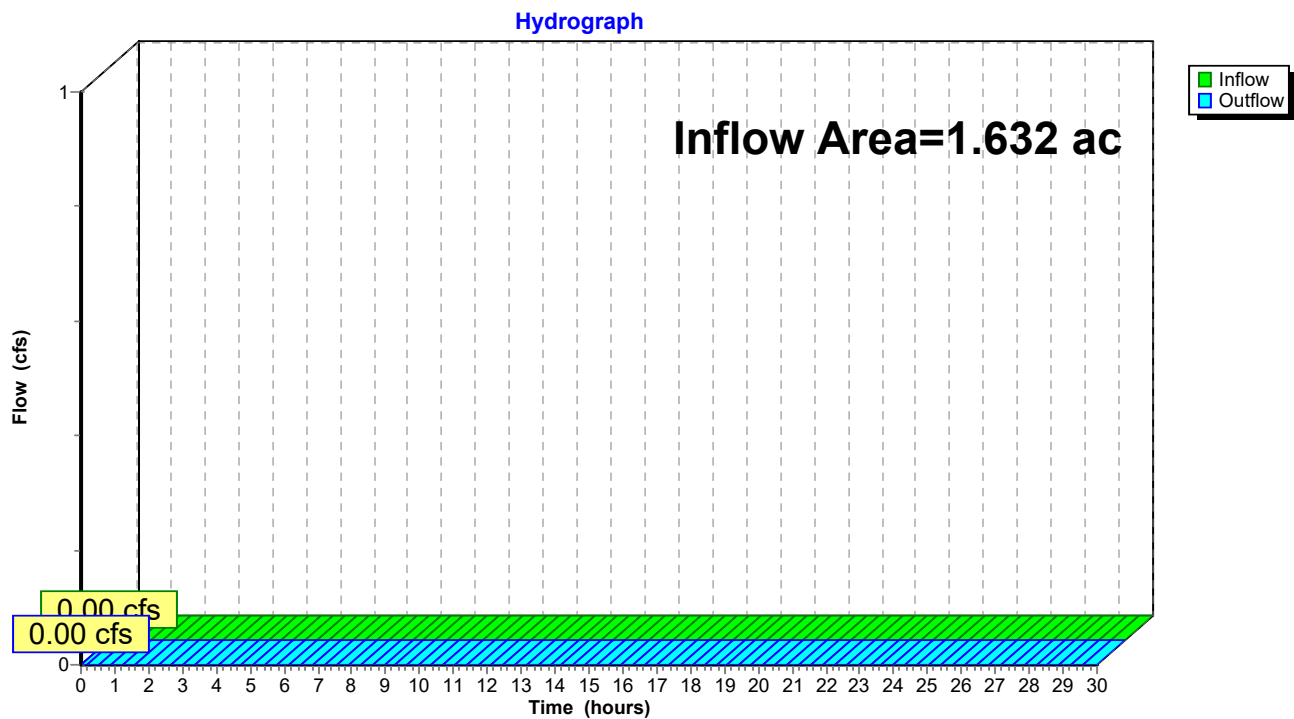


Summary for Reach A: Analysis Point "A" Spillway

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.632 ac, 59.61% Impervious, Inflow Depth = 0.00" for 10-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

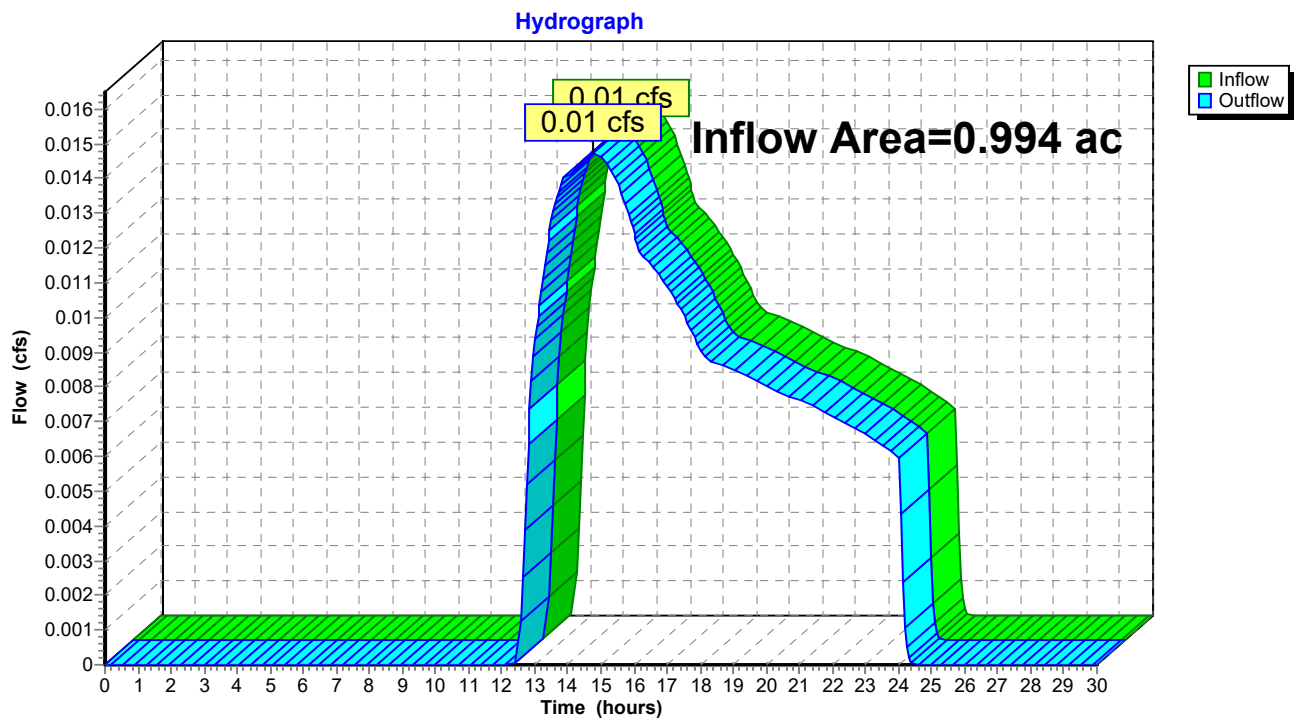
Reach A: Analysis Point "A" Spillway

Summary for Reach B: Analysis Point "B" Bowles Road Swale

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.994 ac, 0.00% Impervious, Inflow Depth = 0.11" for 10-Year event
Inflow = 0.01 cfs @ 14.77 hrs, Volume= 0.009 af
Outflow = 0.01 cfs @ 14.77 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

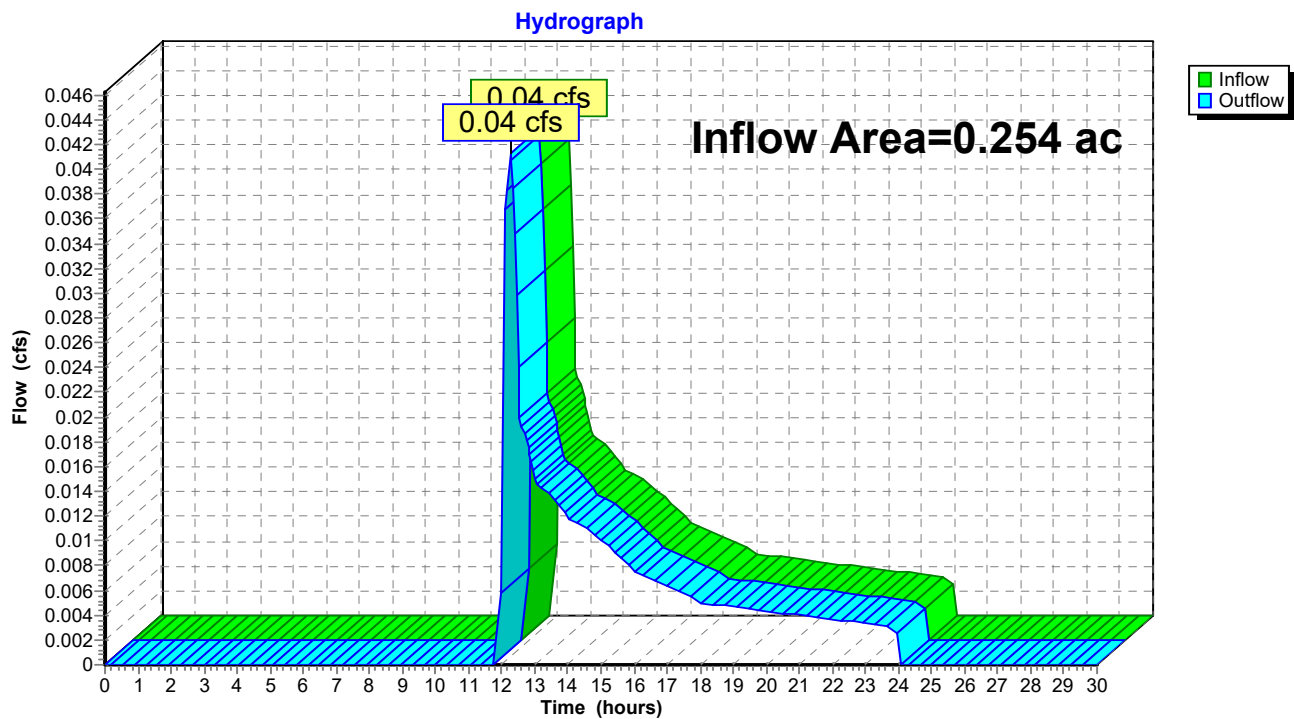
Reach B: Analysis Point "B" Bowles Road Swale

Summary for Reach C: Analysis Point "C" East Property Line

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.254 ac, 13.45% Impervious, Inflow Depth = 0.37" for 10-Year event
Inflow = 0.04 cfs @ 12.26 hrs, Volume= 0.008 af
Outflow = 0.04 cfs @ 12.26 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach C: Analysis Point "C" East Property Line

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Type III 24-hr 10-Year Rainfall=4.50"

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Summary for Pond 1: Ex. Infiltration Basin

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=72)

Inflow Area = 1.632 ac, 59.61% Impervious, Inflow Depth = 1.97" for 10-Year event
 Inflow = 3.27 cfs @ 12.14 hrs, Volume= 0.268 af
 Outflow = 0.60 cfs @ 12.70 hrs, Volume= 0.269 af, Atten= 82%, Lag= 33.7 min
 Discarded = 0.60 cfs @ 12.70 hrs, Volume= 0.269 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 93.51' @ 12.70 hrs Surf.Area= 3,103 sf Storage= 3,692 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 52.1 min (898.0 - 845.9)

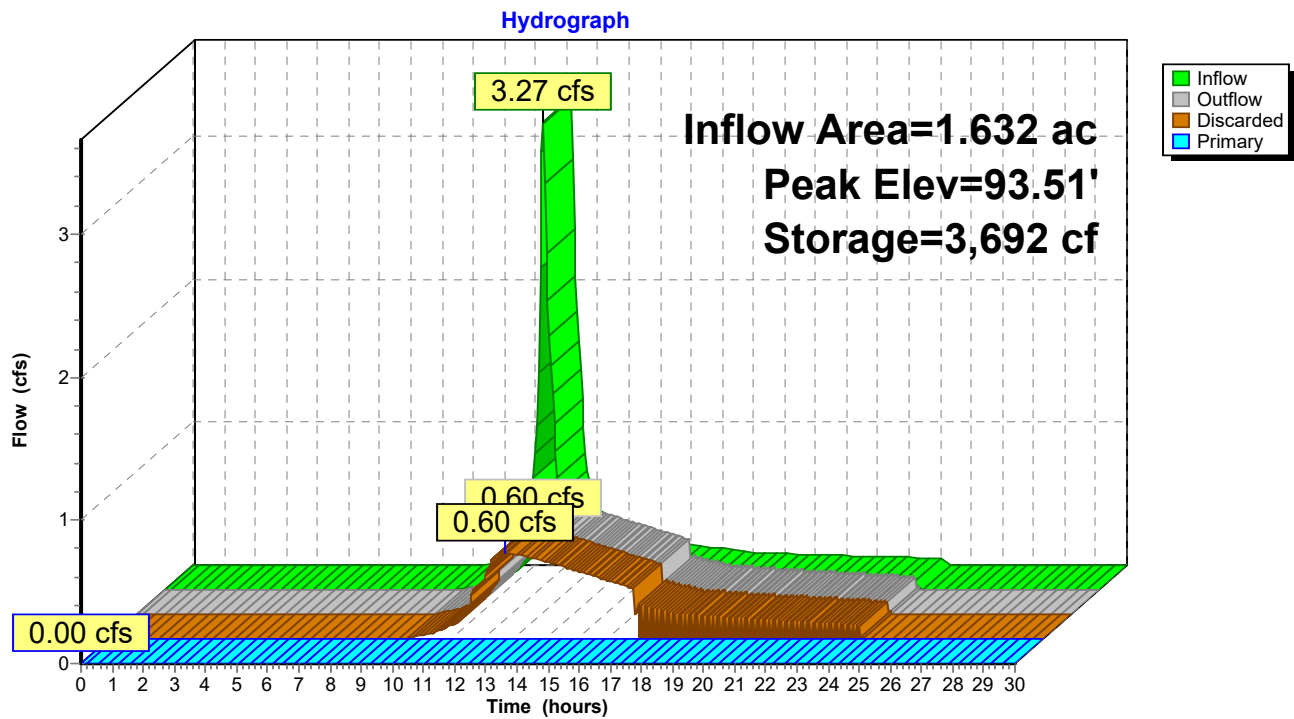
Volume	Invert	Avail.Storage	Storage Description	
#1	92.00'	6,501 cf	Custom Stage Data (Conic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.00	1,822	0	0	1,822
93.00	2,644	2,220	2,220	2,661
94.00	3,573	3,097	5,317	3,610
94.30	4,332	1,184	6,501	4,372

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.00'	8.270 in/hr Exfiltration over Wetted area
#2	Primary	93.80'	27.0 deg x 6.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir Cv= 2.63 (C= 3.29)

Discarded OutFlow Max=0.60 cfs @ 12.70 hrs HW=93.51' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.60 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.00' TW=0.00' (Dynamic Tailwater)
 ↑**2=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond 1: Ex. Infiltration Basin



1154- Hydro CAD PRE*Type III 24-hr 25-Year Rainfall=5.20"*

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Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E1: Runoff Area=71,084 sf 59.61% Impervious Runoff Depth=2.52"
Flow Length=229' Tc=9.4 min CN=74 Runoff=4.22 cfs 0.343 af

Subcatchment E2: Runoff Area=43,311 sf 0.00% Impervious Runoff Depth=0.24"
Flow Length=307' Slope=0.0130 '/' Tc=9.4 min CN=39 Runoff=0.06 cfs 0.020 af

Subcatchment E3: Runoff Area=11,083 sf 13.45% Impervious Runoff Depth=0.61"
Flow Length=27' Slope=0.0450 '/' Tc=2.2 min CN=47 Runoff=0.10 cfs 0.013 af

Reach A: Analysis Point "A" Spillway Inflow=0.44 cfs 0.010 af
Outflow=0.44 cfs 0.010 af

Reach B: Analysis Point "B" Bowles Road Swale Inflow=0.06 cfs 0.020 af
Outflow=0.06 cfs 0.020 af

Reach C: Analysis Point "C" East Property Line Inflow=0.10 cfs 0.013 af
Outflow=0.10 cfs 0.013 af

Pond 1: Ex. Infiltration Basin Peak Elev=93.88' Storage=4,891 cf Inflow=4.22 cfs 0.343 af
Discarded=0.67 cfs 0.334 af Primary=0.44 cfs 0.010 af Outflow=1.10 cfs 0.344 af

Total Runoff Area = 2.881 ac Runoff Volume = 0.376 af Average Runoff Depth = 1.57"
65.04% Pervious = 1.874 ac 34.96% Impervious = 1.007 ac

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Type III 24-hr 25-Year Rainfall=5.20"

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Summary for Subcatchment E1:

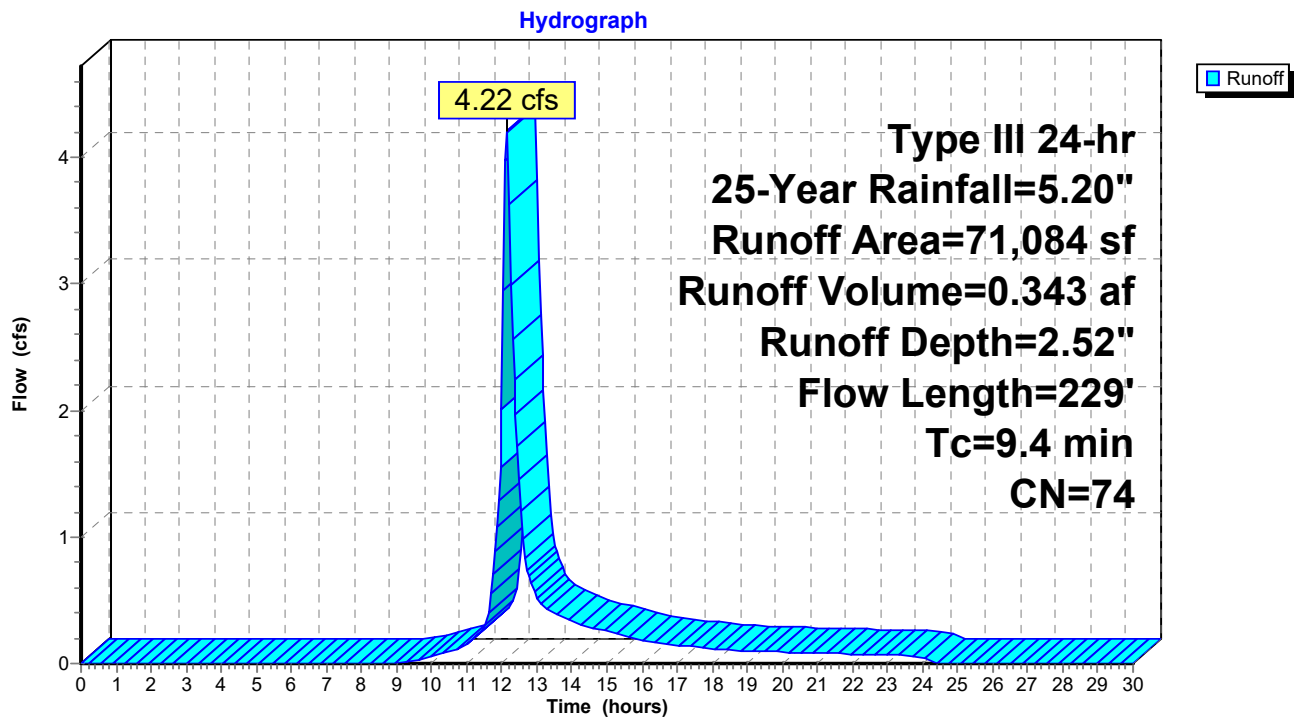
Runoff = 4.22 cfs @ 12.14 hrs, Volume= 0.343 af, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.20"

Area (sf)	CN	Description
24,842	98	Paved parking, HSG A
17,530	98	Roofs, HSG A
2,200	30	Woods, Good, HSG A
26,512	39	>75% Grass cover, Good, HSG A
71,084	74	Weighted Average
28,712		40.39% Pervious Area
42,372		59.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	20	0.0055	0.07		Sheet Flow, 20 feet short grass Grass: Short n= 0.150 P2= 2.90"
3.5	108	0.0055	0.52		Shallow Concentrated Flow, grass 0.5% Slope Short Grass Pasture Kv= 7.0 fps
0.6	66	0.0750	1.92		Shallow Concentrated Flow, grass 7.5% Slope Short Grass Pasture Kv= 7.0 fps
0.5	35	0.0290	1.19		Shallow Concentrated Flow, grass 2.9% Slope Short Grass Pasture Kv= 7.0 fps
9.4	229	Total			

Subcatchment E1:



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Type III 24-hr 25-Year Rainfall=5.20"

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Summary for Subcatchment E2:

Runoff = 0.06 cfs @ 12.50 hrs, Volume= 0.020 af, Depth= 0.24"

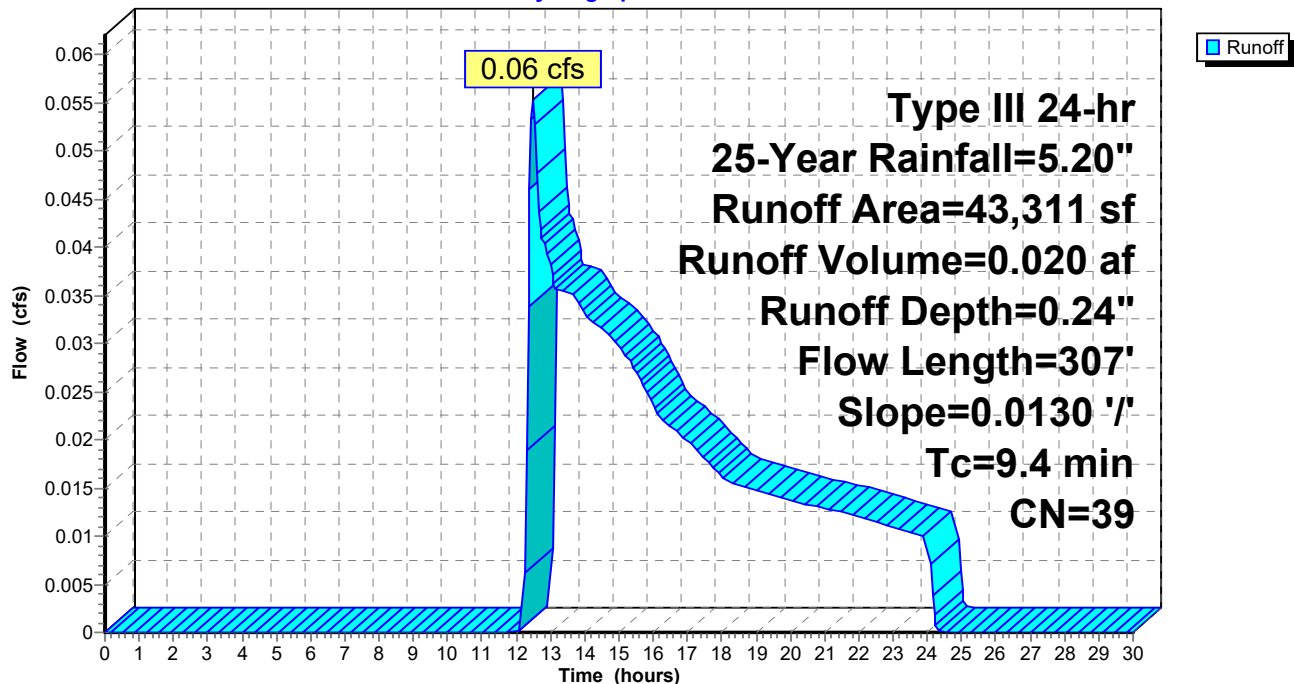
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.20"

Area (sf)	CN	Description
1,465	30	Woods, Good, HSG A
41,846	39	>75% Grass cover, Good, HSG A
43,311	39	Weighted Average
43,311		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	20	0.0130	0.10		Sheet Flow, 20 feet grass Grass: Short n= 0.150 P2= 2.90"
6.0	287	0.0130	0.80		Shallow Concentrated Flow, Grass 1.3% Slope Short Grass Pasture Kv= 7.0 fps
9.4	307	Total			

Subcatchment E2:

Hydrograph



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Type III 24-hr 25-Year Rainfall=5.20"

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Summary for Subcatchment E3:[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.10 cfs @ 12.08 hrs, Volume= 0.013 af, Depth= 0.61"

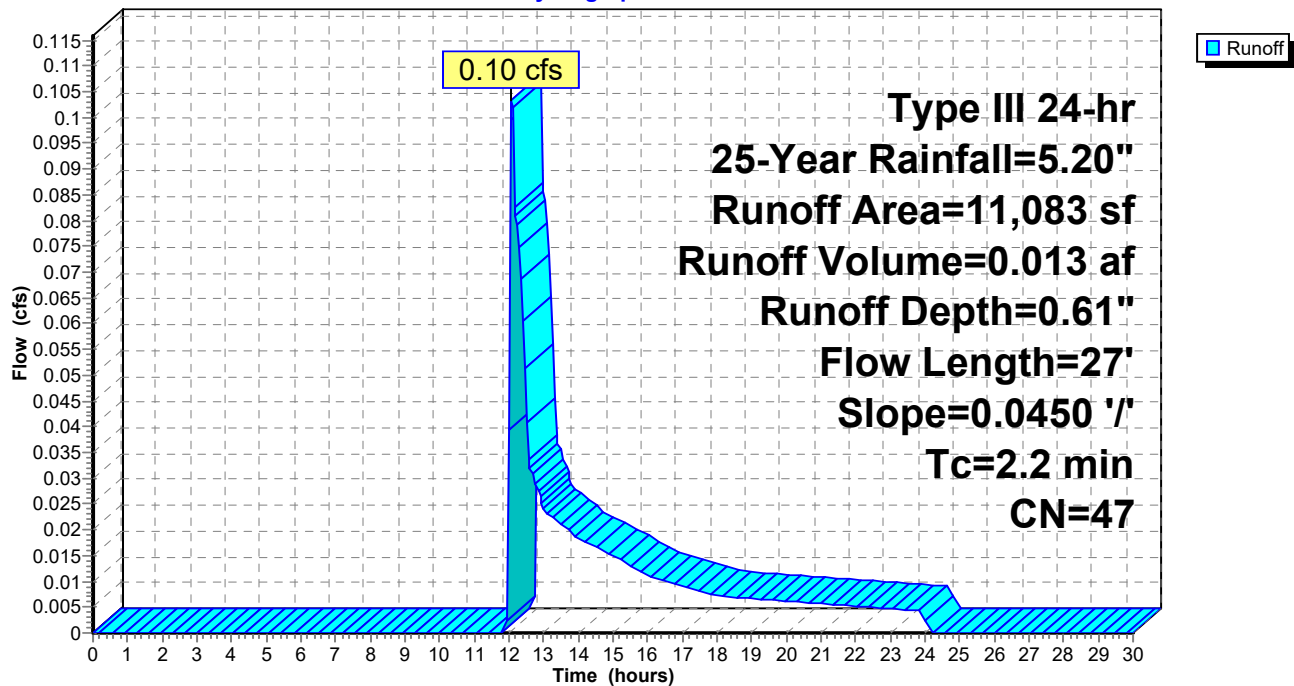
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, $dt=0.05$ hrs
Type III 24-hr 25-Year Rainfall=5.20"

Area (sf)	CN	Description
1,491	98	Paved parking, HSG A
9,592	39	>75% Grass cover, Good, HSG A
11,083	47	Weighted Average
9,592		86.55% Pervious Area
1,491		13.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	20	0.0450	0.16		Sheet Flow, 20 feet grass Grass: Short n= 0.150 P2= 2.90"
0.1	7	0.0450	1.48		Shallow Concentrated Flow, Grass 4.5% Slope Short Grass Pasture Kv= 7.0 fps
2.2	27	Total			

Subcatchment E3:

Hydrograph

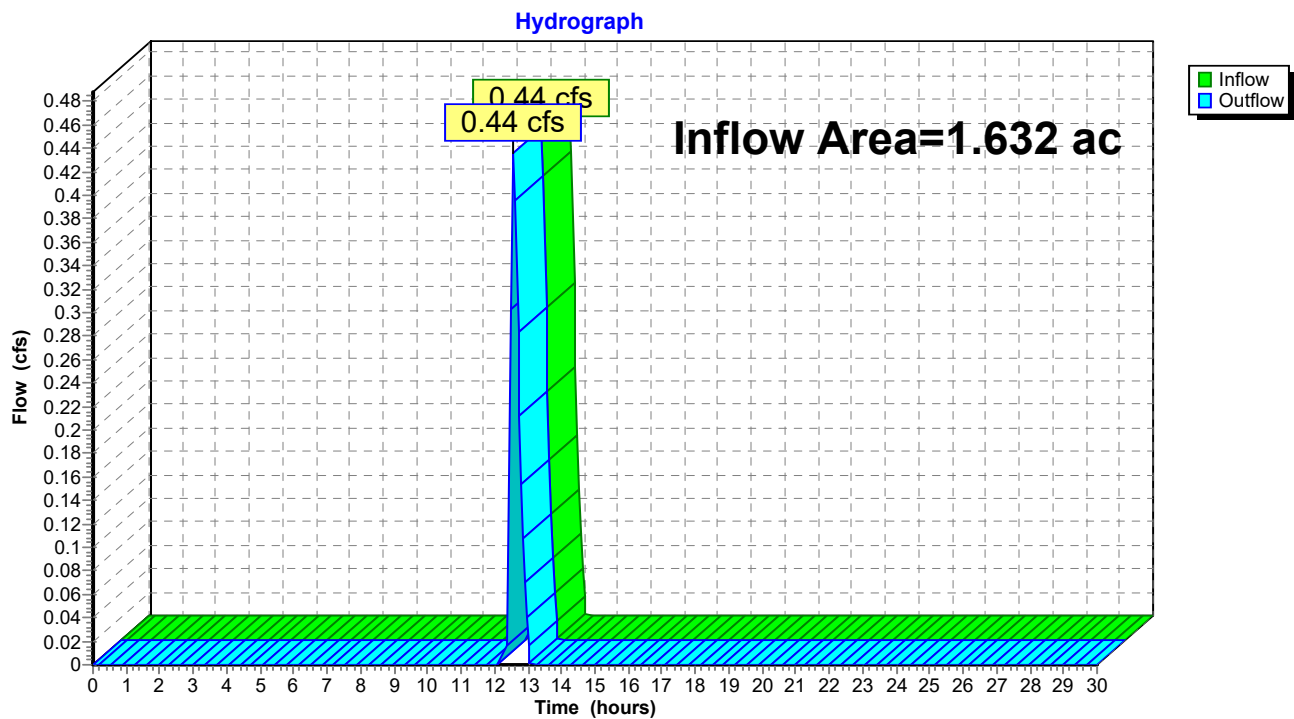


Summary for Reach A: Analysis Point "A" Spillway

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.632 ac, 59.61% Impervious, Inflow Depth = 0.08" for 25-Year event
Inflow = 0.44 cfs @ 12.58 hrs, Volume= 0.010 af
Outflow = 0.44 cfs @ 12.58 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

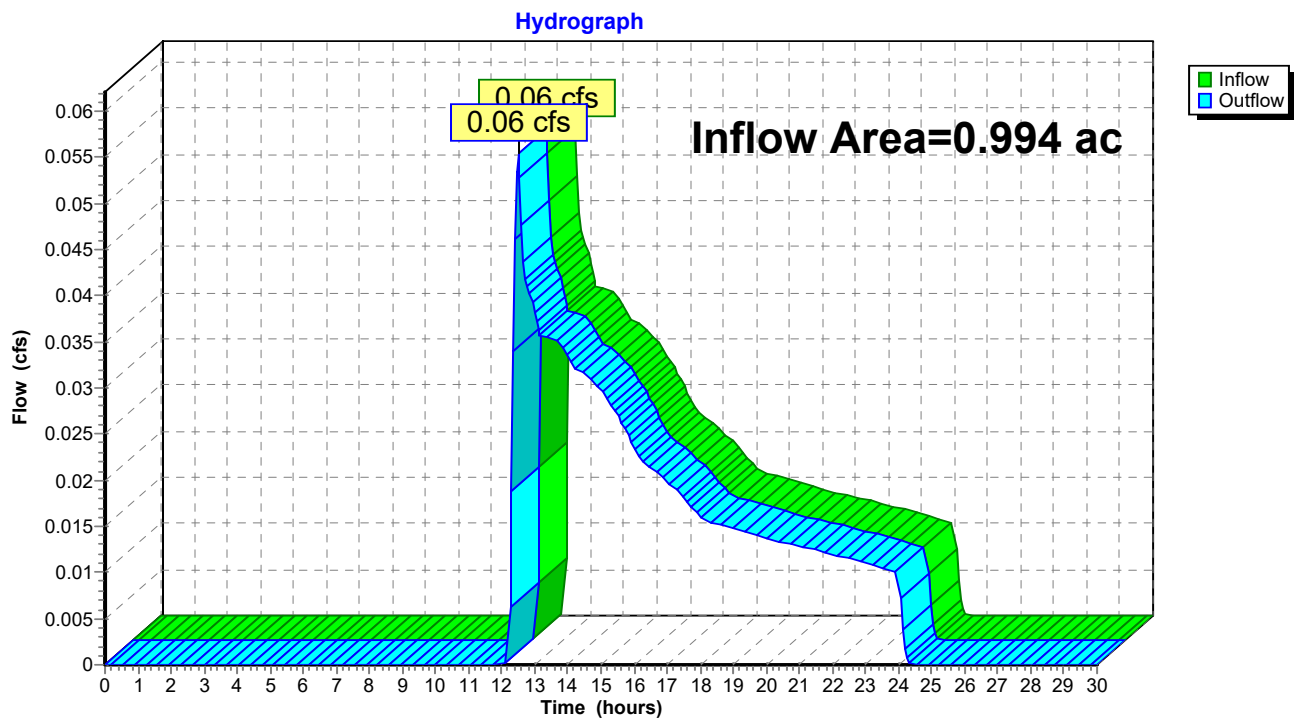
Reach A: Analysis Point "A" Spillway

Summary for Reach B: Analysis Point "B" Bowles Road Swale

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.994 ac, 0.00% Impervious, Inflow Depth = 0.24" for 25-Year event
Inflow = 0.06 cfs @ 12.50 hrs, Volume= 0.020 af
Outflow = 0.06 cfs @ 12.50 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

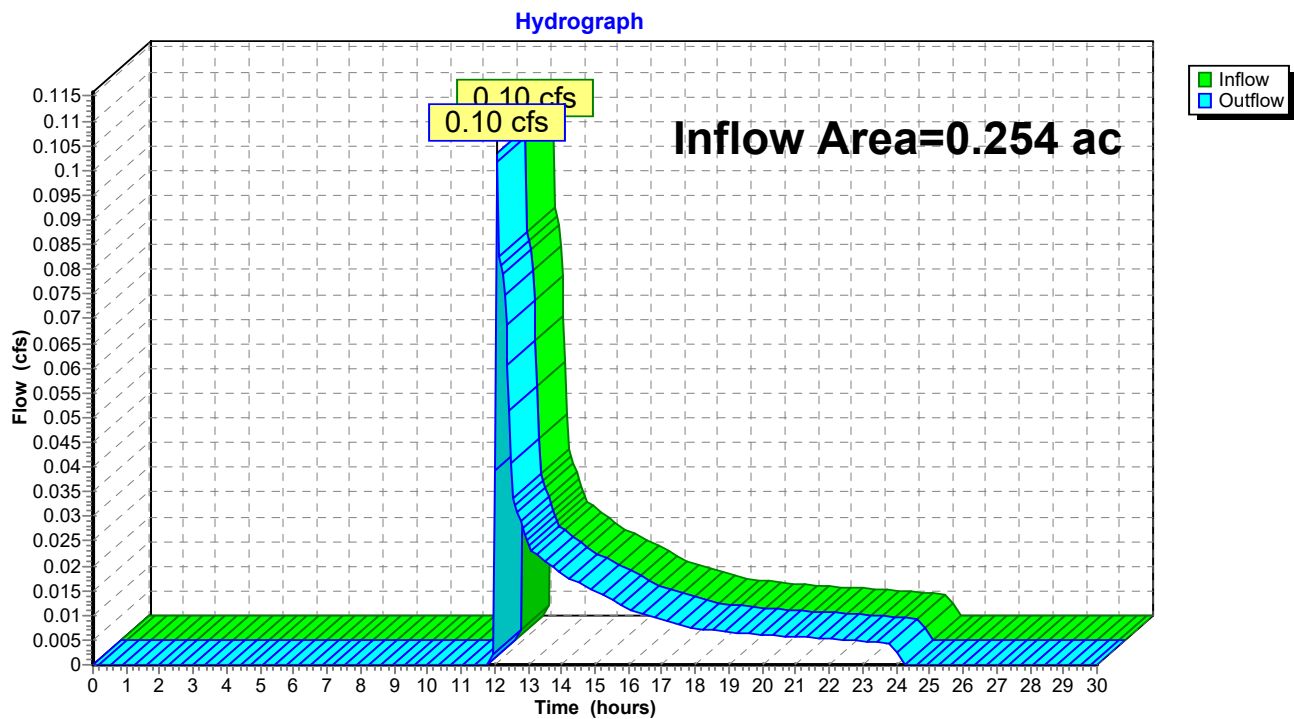
Reach B: Analysis Point "B" Bowles Road Swale

Summary for Reach C: Analysis Point "C" East Property Line

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.254 ac, 13.45% Impervious, Inflow Depth = 0.61" for 25-Year event
Inflow = 0.10 cfs @ 12.08 hrs, Volume= 0.013 af
Outflow = 0.10 cfs @ 12.08 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach C: Analysis Point "C" East Property Line

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Type III 24-hr 25-Year Rainfall=5.20"

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Summary for Pond 1: Ex. Infiltration Basin

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=62)

Inflow Area = 1.632 ac, 59.61% Impervious, Inflow Depth = 2.52" for 25-Year event
 Inflow = 4.22 cfs @ 12.14 hrs, Volume= 0.343 af
 Outflow = 1.10 cfs @ 12.58 hrs, Volume= 0.344 af, Atten= 74%, Lag= 26.2 min
 Discarded = 0.67 cfs @ 12.58 hrs, Volume= 0.334 af
 Primary = 0.44 cfs @ 12.58 hrs, Volume= 0.010 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 93.88' @ 12.58 hrs Surf.Area= 3,453 sf Storage= 4,891 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 62.9 min (901.5 - 838.7)

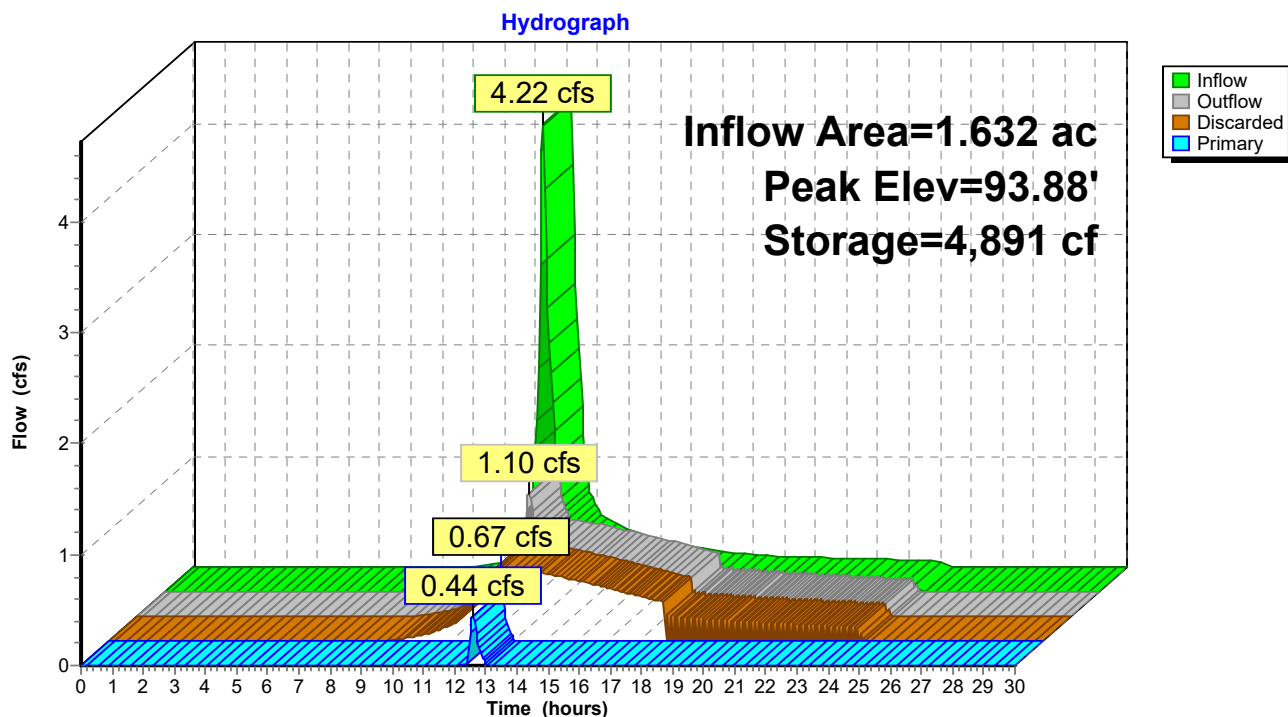
Volume	Invert	Avail.Storage	Storage Description	
#1	92.00'	6,501 cf	Custom Stage Data (Conic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.00	1,822	0	0	1,822
93.00	2,644	2,220	2,220	2,661
94.00	3,573	3,097	5,317	3,610
94.30	4,332	1,184	6,501	4,372

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.00'	8.270 in/hr Exfiltration over Wetted area
#2	Primary	93.80'	27.0 deg x 6.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir Cv= 2.63 (C= 3.29)

Discarded OutFlow Max=0.67 cfs @ 12.58 hrs HW=93.88' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.67 cfs)

Primary OutFlow Max=0.43 cfs @ 12.58 hrs HW=93.88' TW=0.00' (Dynamic Tailwater)
 ↑**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.43 cfs @ 0.92 fps)

Pond 1: Ex. Infiltration Basin



1154- Hydro CAD PRE*Type III 24-hr 100-Year Rainfall=6.50"*

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Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E1: Runoff Area=71,084 sf 59.61% Impervious Runoff Depth=3.61"
Flow Length=229' Tc=9.4 min CN=74 Runoff=6.05 cfs 0.491 af

Subcatchment E2: Runoff Area=43,311 sf 0.00% Impervious Runoff Depth=0.60"
Flow Length=307' Slope=0.0130 '/' Tc=9.4 min CN=39 Runoff=0.27 cfs 0.050 af

Subcatchment E3: Runoff Area=11,083 sf 13.45% Impervious Runoff Depth=1.16"
Flow Length=27' Slope=0.0450 '/' Tc=2.2 min CN=47 Runoff=0.30 cfs 0.025 af

Reach A: Analysis Point "A" Spillway Inflow=2.66 cfs 0.086 af
Outflow=2.66 cfs 0.086 af

Reach B: Analysis Point "B" Bowles Road Swale Inflow=0.27 cfs 0.050 af
Outflow=0.27 cfs 0.050 af

Reach C: Analysis Point "C" East Property Line Inflow=0.30 cfs 0.025 af
Outflow=0.30 cfs 0.025 af

Pond 1: Ex. Infiltration Basin Peak Elev=94.06' Storage=5,542 cf Inflow=6.05 cfs 0.491 af
Discarded=0.72 cfs 0.405 af Primary=2.66 cfs 0.086 af Outflow=3.38 cfs 0.491 af

Total Runoff Area = 2.881 ac Runoff Volume = 0.565 af Average Runoff Depth = 2.35"
65.04% Pervious = 1.874 ac 34.96% Impervious = 1.007 ac

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Type III 24-hr 100-Year Rainfall=6.50"

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Summary for Subcatchment E1:

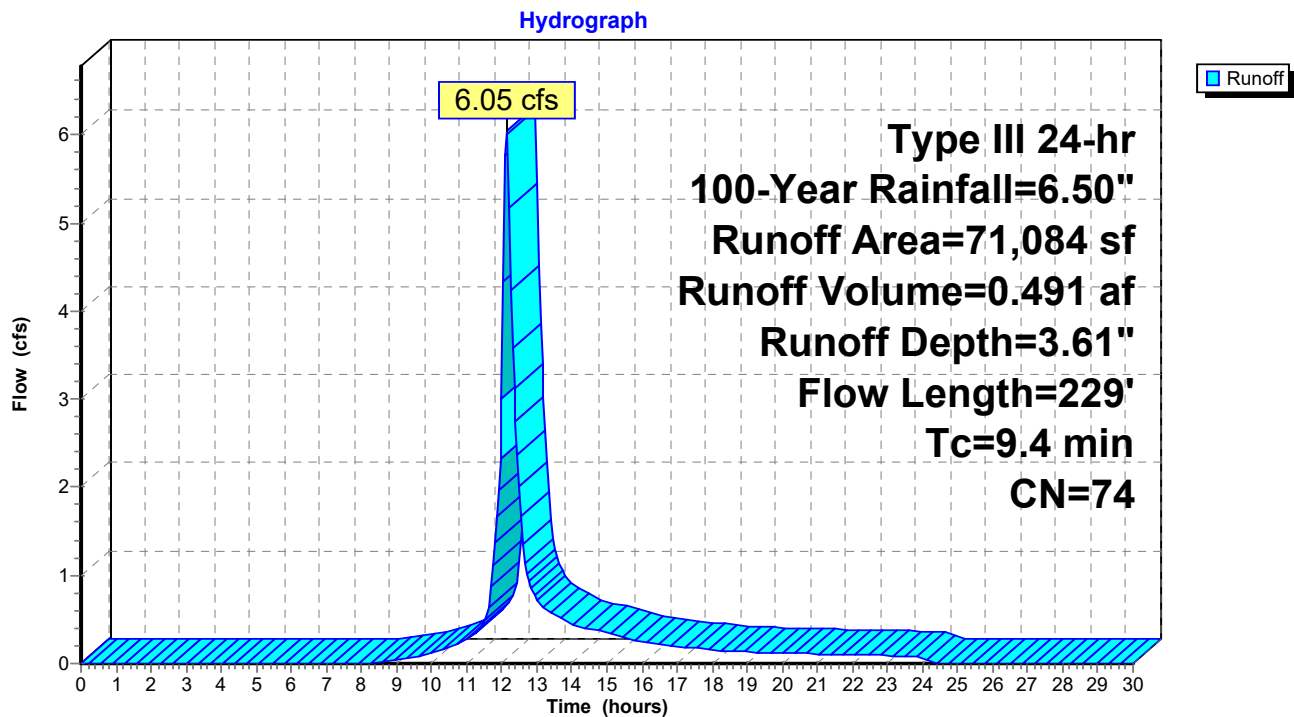
Runoff = 6.05 cfs @ 12.14 hrs, Volume= 0.491 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
24,842	98	Paved parking, HSG A
17,530	98	Roofs, HSG A
2,200	30	Woods, Good, HSG A
26,512	39	>75% Grass cover, Good, HSG A
71,084	74	Weighted Average
28,712		40.39% Pervious Area
42,372		59.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	20	0.0055	0.07		Sheet Flow, 20 feet short grass Grass: Short n= 0.150 P2= 2.90"
3.5	108	0.0055	0.52		Shallow Concentrated Flow, grass 0.5% Slope Short Grass Pasture Kv= 7.0 fps
0.6	66	0.0750	1.92		Shallow Concentrated Flow, grass 7.5% Slope Short Grass Pasture Kv= 7.0 fps
0.5	35	0.0290	1.19		Shallow Concentrated Flow, grass 2.9% Slope Short Grass Pasture Kv= 7.0 fps
9.4	229	Total			

Subcatchment E1:



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Type III 24-hr 100-Year Rainfall=6.50"

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Summary for Subcatchment E2:

Runoff = 0.27 cfs @ 12.35 hrs, Volume= 0.050 af, Depth= 0.60"

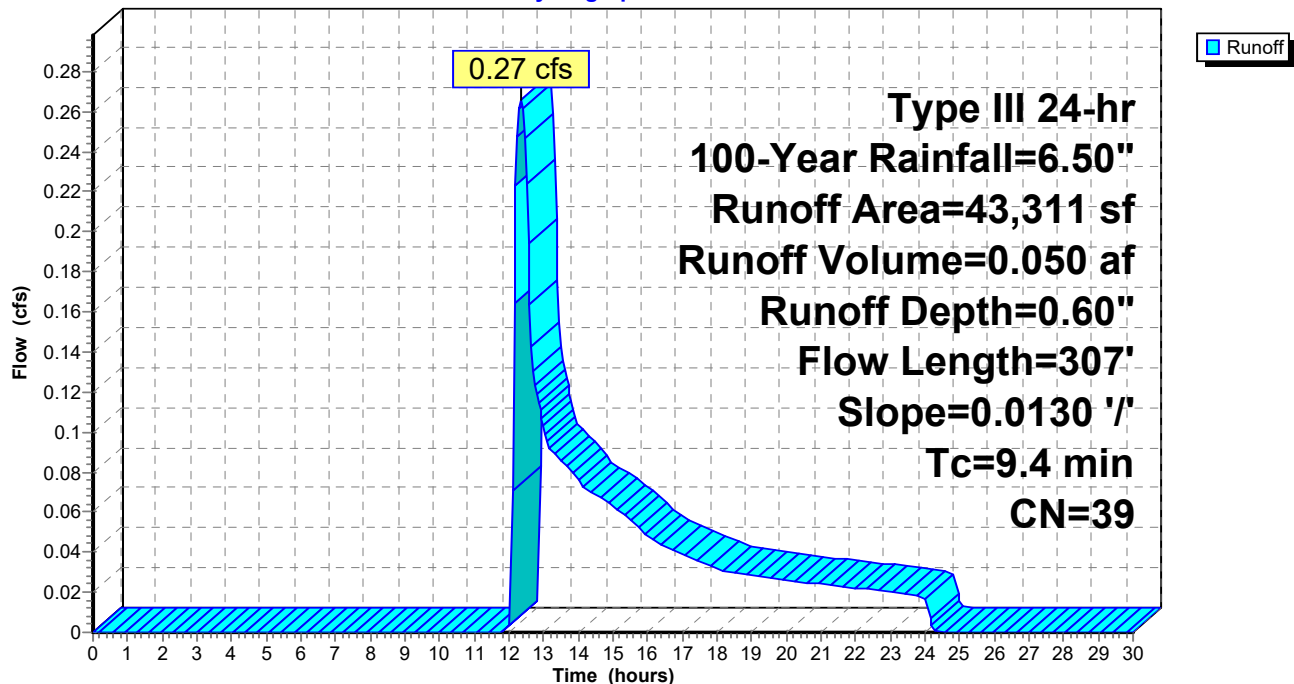
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
1,465	30	Woods, Good, HSG A
41,846	39	>75% Grass cover, Good, HSG A
43,311	39	Weighted Average
43,311		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	20	0.0130	0.10		Sheet Flow, 20 feet grass
					Grass: Short n= 0.150 P2= 2.90"
6.0	287	0.0130	0.80		Shallow Concentrated Flow, Grass 1.3% Slope
					Short Grass Pasture Kv= 7.0 fps
9.4	307	Total			

Subcatchment E2:

Hydrograph



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Type III 24-hr 100-Year Rainfall=6.50"

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Summary for Subcatchment E3:[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.30 cfs @ 12.06 hrs, Volume= 0.025 af, Depth= 1.16"

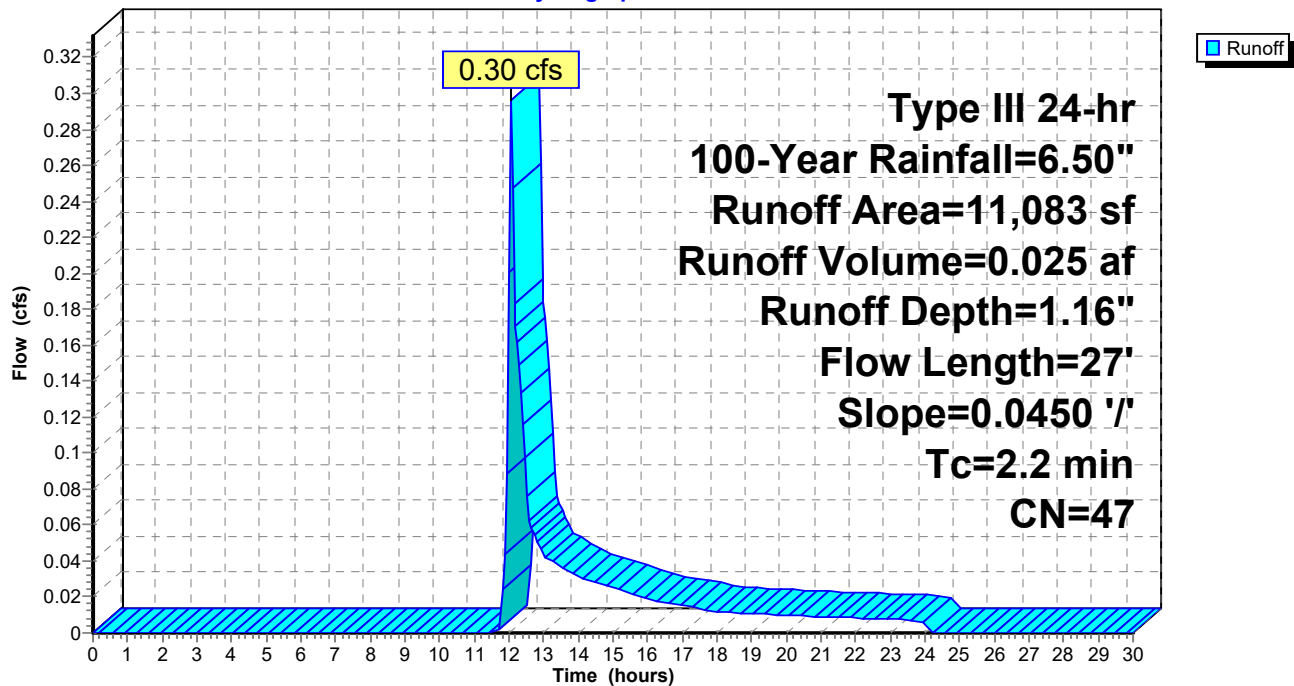
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, $dt=0.05$ hrs
Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
1,491	98	Paved parking, HSG A
9,592	39	>75% Grass cover, Good, HSG A
11,083	47	Weighted Average
9,592		86.55% Pervious Area
1,491		13.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	20	0.0450	0.16		Sheet Flow, 20 feet grass Grass: Short n= 0.150 P2= 2.90"
0.1	7	0.0450	1.48		Shallow Concentrated Flow, Grass 4.5% Slope Short Grass Pasture Kv= 7.0 fps
2.2	27	Total			

Subcatchment E3:

Hydrograph

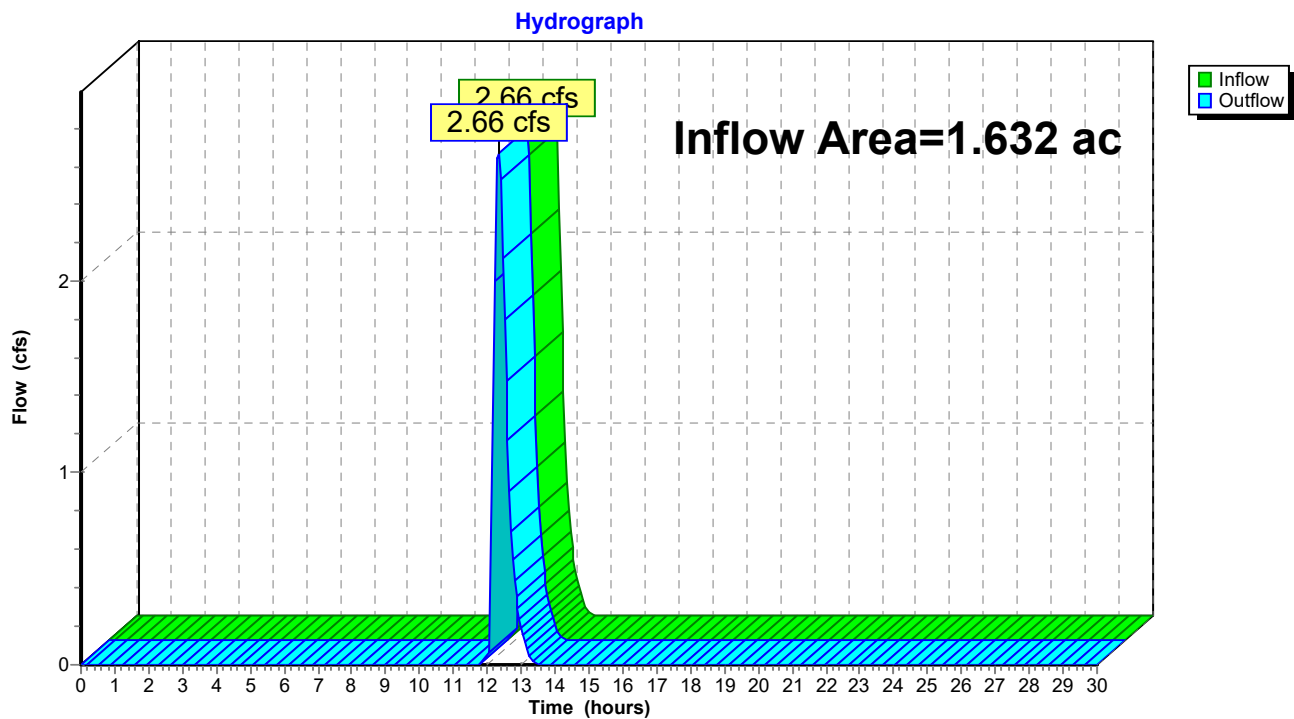


Summary for Reach A: Analysis Point "A" Spillway

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.632 ac, 59.61% Impervious, Inflow Depth = 0.63" for 100-Year event
Inflow = 2.66 cfs @ 12.33 hrs, Volume= 0.086 af
Outflow = 2.66 cfs @ 12.33 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

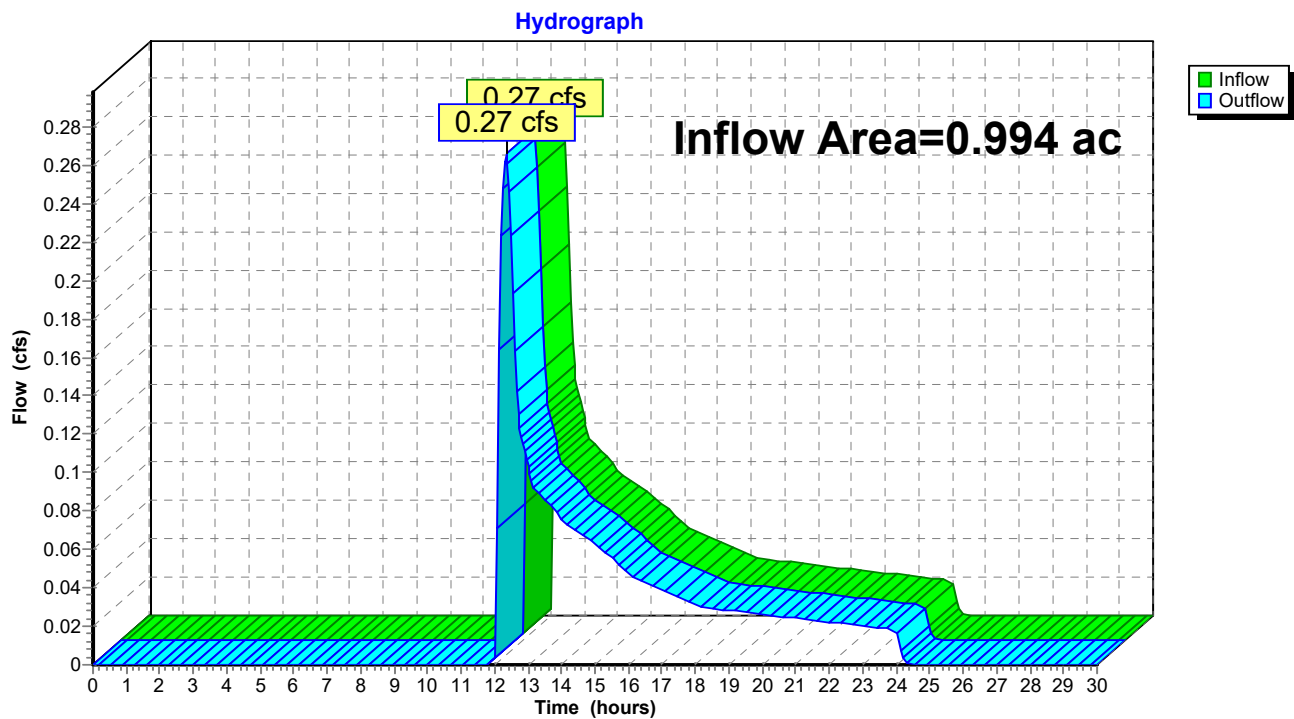
Reach A: Analysis Point "A" Spillway

Summary for Reach B: Analysis Point "B" Bowles Road Swale

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.994 ac, 0.00% Impervious, Inflow Depth = 0.60" for 100-Year event
Inflow = 0.27 cfs @ 12.35 hrs, Volume= 0.050 af
Outflow = 0.27 cfs @ 12.35 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

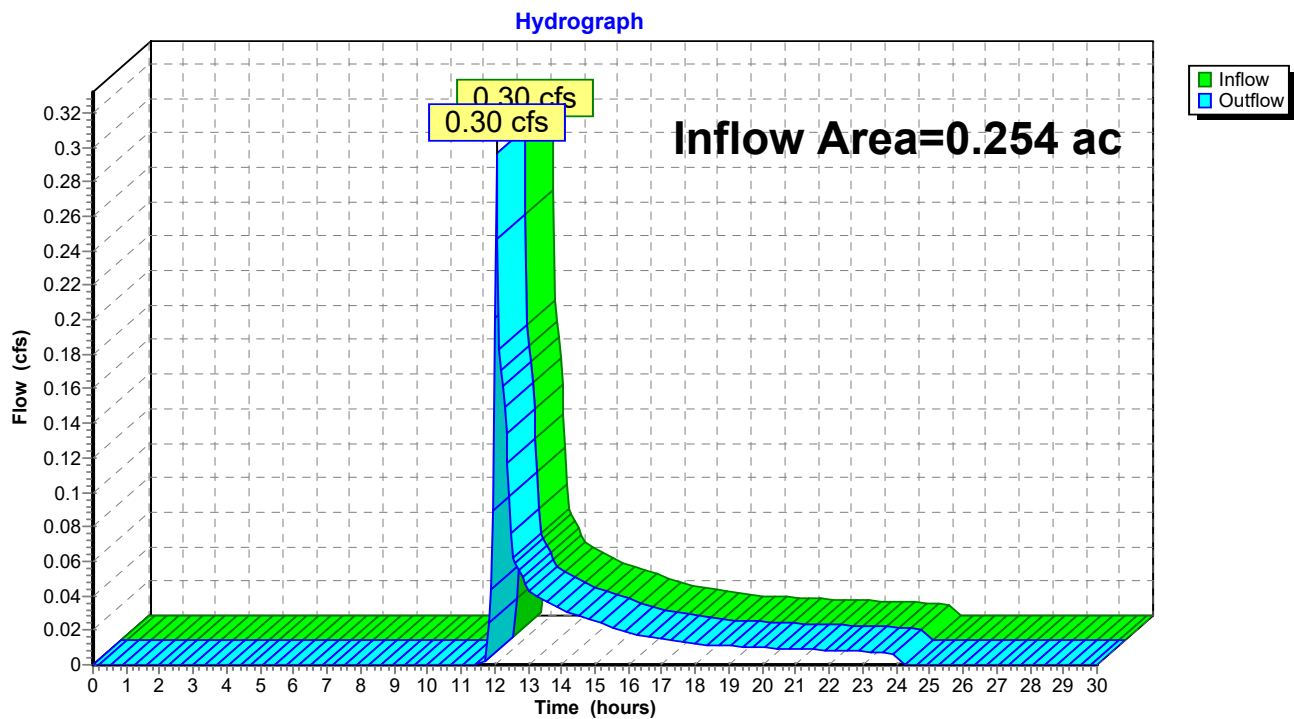
Reach B: Analysis Point "B" Bowles Road Swale

Summary for Reach C: Analysis Point "C" East Property Line

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.254 ac, 13.45% Impervious, Inflow Depth = 1.16" for 100-Year event
Inflow = 0.30 cfs @ 12.06 hrs, Volume= 0.025 af
Outflow = 0.30 cfs @ 12.06 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach C: Analysis Point "C" East Property Line

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Type III 24-hr 100-Year Rainfall=6.50"

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Summary for Pond 1: Ex. Infiltration Basin

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=53)

Inflow Area = 1.632 ac, 59.61% Impervious, Inflow Depth = 3.61" for 100-Year event
 Inflow = 6.05 cfs @ 12.14 hrs, Volume= 0.491 af
 Outflow = 3.38 cfs @ 12.33 hrs, Volume= 0.491 af, Atten= 44%, Lag= 11.3 min
 Discarded = 0.72 cfs @ 12.33 hrs, Volume= 0.405 af
 Primary = 2.66 cfs @ 12.33 hrs, Volume= 0.086 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 94.06' @ 12.33 hrs Surf.Area= 3,723 sf Storage= 5,542 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 56.4 min (884.8 - 828.4)

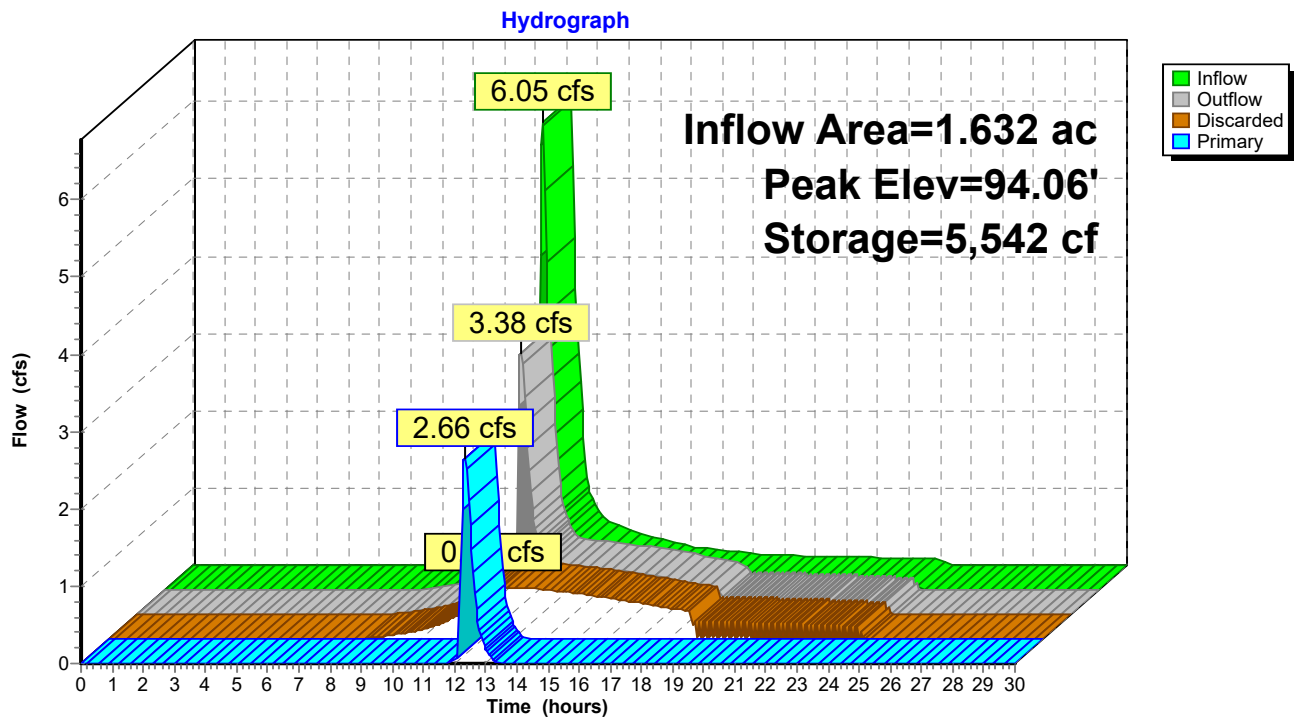
Volume	Invert	Avail.Storage	Storage Description	
#1	92.00'	6,501 cf	Custom Stage Data (Conic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.00	1,822	0	0	1,822
93.00	2,644	2,220	2,220	2,661
94.00	3,573	3,097	5,317	3,610
94.30	4,332	1,184	6,501	4,372

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.00'	8.270 in/hr Exfiltration over Wetted area
#2	Primary	93.80'	27.0 deg x 6.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir Cv= 2.63 (C= 3.29)

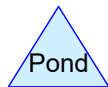
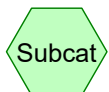
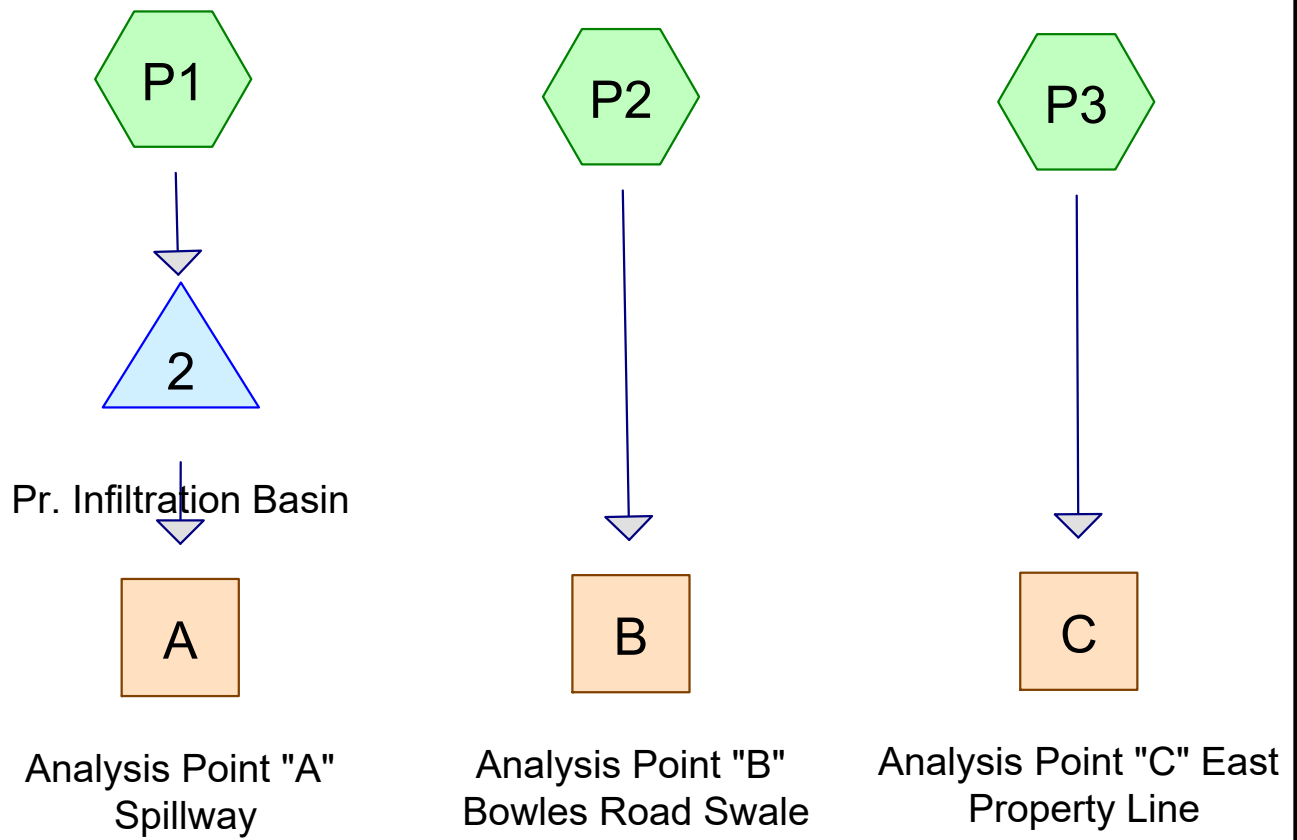
Discarded OutFlow Max=0.72 cfs @ 12.33 hrs HW=94.06' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.72 cfs)

Primary OutFlow Max=2.63 cfs @ 12.33 hrs HW=94.06' TW=0.00' (Dynamic Tailwater)
 ↑2=Sharp-Crested Vee/Trap Weir (Weir Controls 2.63 cfs @ 1.67 fps)

Pond 1: Ex. Infiltration Basin



APPENDIX B
POST DEVELOPMENT RUNOFF CALCULATIONS



Routing Diagram for 1154- Hydro CAD POST
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.322	39	>75% Grass cover, Good, HSG A (P1, P2, P3)
0.866	98	Paved parking, HSG A (P1, P3)
0.657	98	Roofs, HSG A (P1)
0.035	30	Woods, Good, HSG A (P1, P2)
2.881	70	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.881	HSG A	P1, P2, P3
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
2.881		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
1.322	0.000	0.000	0.000	0.000	1.322	>75% Grass cover, Good	P1, P2, P3
0.866	0.000	0.000	0.000	0.000	0.866	Paved parking	P1, P3
0.657	0.000	0.000	0.000	0.000	0.657	Roofs	P1
0.035	0.000	0.000	0.000	0.000	0.035	Woods, Good	P1, P2
2.881	0.000	0.000	0.000	0.000	2.881	TOTAL AREA	

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Type III 24-hr 2-Year Rainfall=2.90"

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Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P1:

Runoff Area=88,937 sf 73.10% Impervious Runoff Depth=1.30"
Flow Length=220' Tc=7.1 min CN=82 Runoff=2.93 cfs 0.221 af

Subcatchment P2:

Runoff Area=27,444 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=230' Tc=7.8 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment P3:

Runoff Area=9,097 sf 14.77% Impervious Runoff Depth=0.05"
Flow Length=27' Slope=0.0450 '/ Tc=2.2 min CN=48 Runoff=0.00 cfs 0.001 af

Reach A: Analysis Point "A" Spillway

Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach B: Analysis Point "B" Bowles Road Swale

Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach C: Analysis Point "C" East Property Line

Inflow=0.00 cfs 0.001 af
Outflow=0.00 cfs 0.001 af

Pond 2: Pr. Infiltration Basin

Peak Elev=92.47' Storage=1,941 cf Inflow=2.93 cfs 0.221 af
Discarded=0.83 cfs 0.222 af Primary=0.00 cfs 0.000 af Outflow=0.83 cfs 0.222 af

Total Runoff Area = 2.881 ac Runoff Volume = 0.222 af Average Runoff Depth = 0.93"
47.11% Pervious = 1.357 ac 52.89% Impervious = 1.523 ac

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Type III 24-hr 2-Year Rainfall=2.90"

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Summary for Subcatchment P1:

Runoff = 2.93 cfs @ 12.11 hrs, Volume= 0.221 af, Depth= 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=2.90"

Area (sf)	CN	Description
36,387	98	Paved parking, HSG A
28,630	98	Roofs, HSG A
678	30	Woods, Good, HSG A
23,242	39	>75% Grass cover, Good, HSG A
88,937	82	Weighted Average
23,920		26.90% Pervious Area
65,017		73.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	20	0.0055	0.07		Sheet Flow, 20 feet short grass Grass: Short n= 0.150 P2= 2.90"
1.6	50	0.0055	0.52		Shallow Concentrated Flow, grass 0.5% Slope Short Grass Pasture Kv= 7.0 fps
0.6	130	0.0350	3.80		Shallow Concentrated Flow, paved 3.5% Slope Paved Kv= 20.3 fps
0.1	20	0.3300	4.02		Shallow Concentrated Flow, grass 33% Slope Short Grass Pasture Kv= 7.0 fps
7.1	220	Total			

1154- Hydro CAD POST

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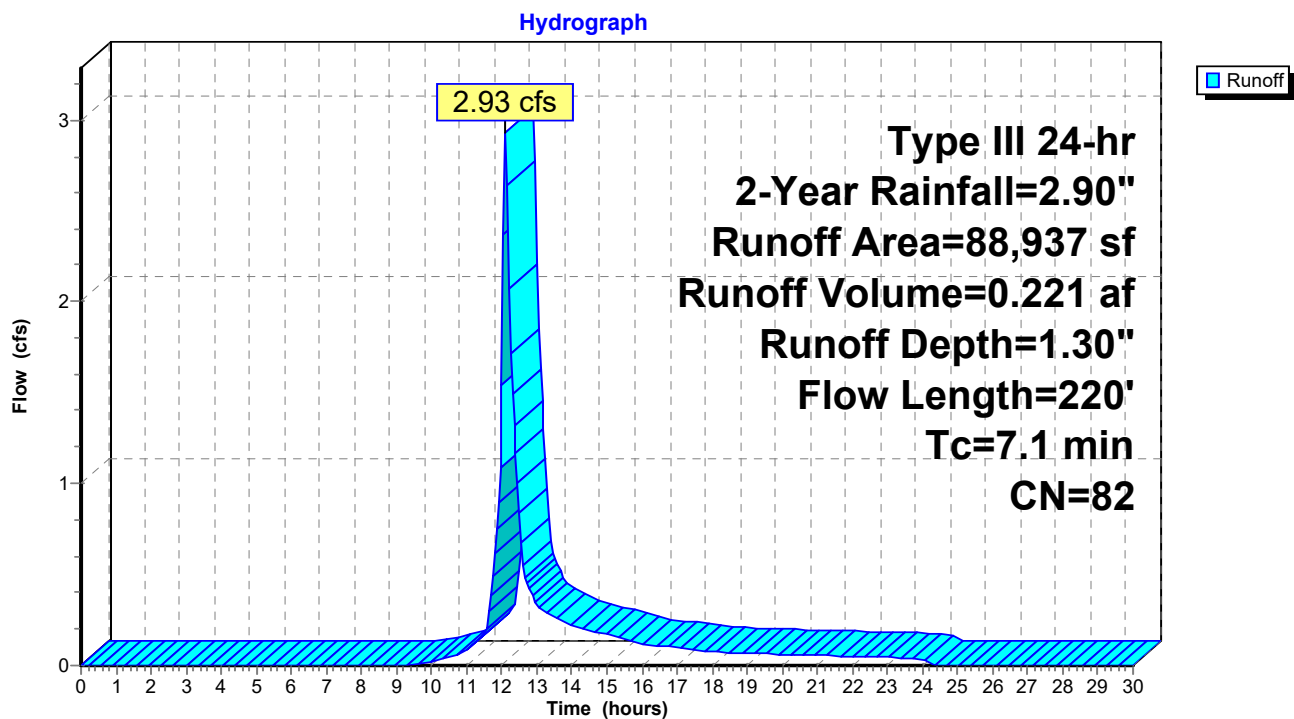
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Type III 24-hr 2-Year Rainfall=2.90"

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Subcatchment P1:



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Type III 24-hr 2-Year Rainfall=2.90"

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Summary for Subcatchment P2:

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

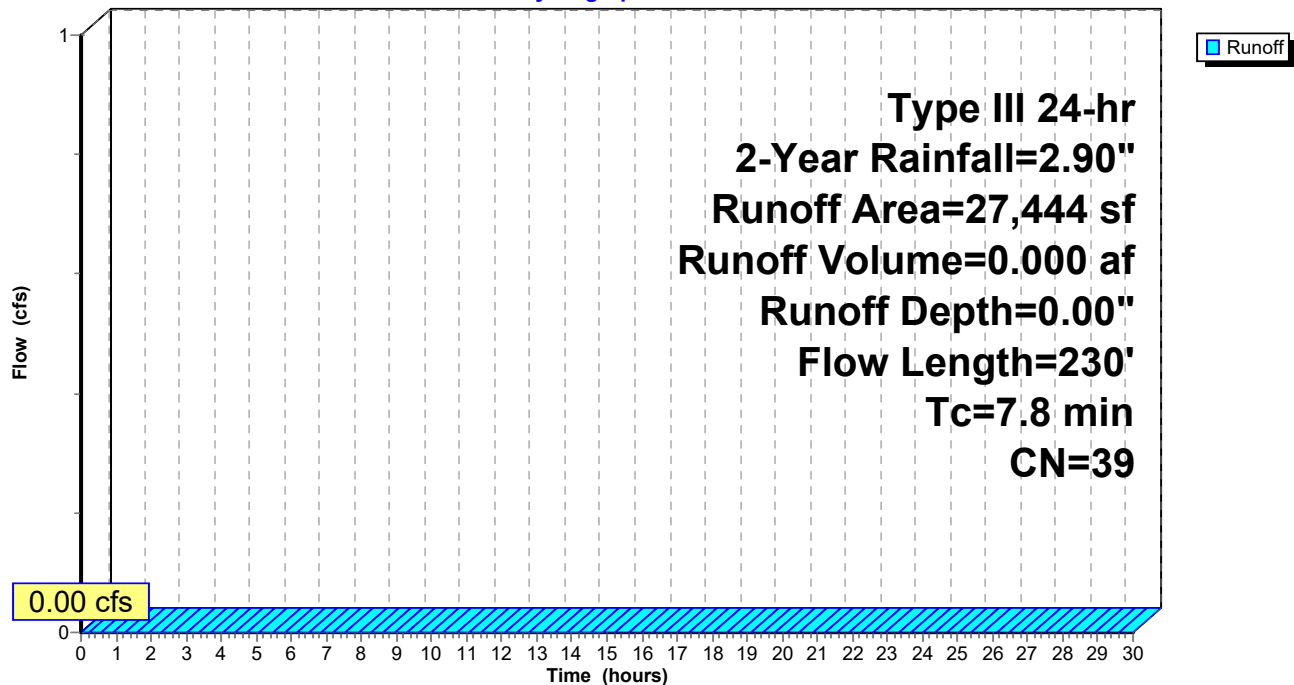
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=2.90"

Area (sf)	CN	Description
865	30	Woods, Good, HSG A
26,579	39	>75% Grass cover, Good, HSG A
27,444	39	Weighted Average
27,444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	20	0.0130	0.10		Sheet Flow, 20 feet grass Grass: Short n= 0.150 P2= 2.90"
4.4	210	0.0130	0.80		Shallow Concentrated Flow, Grass 1.3% Slope Short Grass Pasture Kv= 7.0 fps
7.8	230	Total			

Subcatchment P2:

Hydrograph



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Type III 24-hr 2-Year Rainfall=2.90"

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Summary for Subcatchment P3:

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

Runoff = 0.00 cfs @ 15.13 hrs, Volume= 0.001 af, Depth= 0.05"

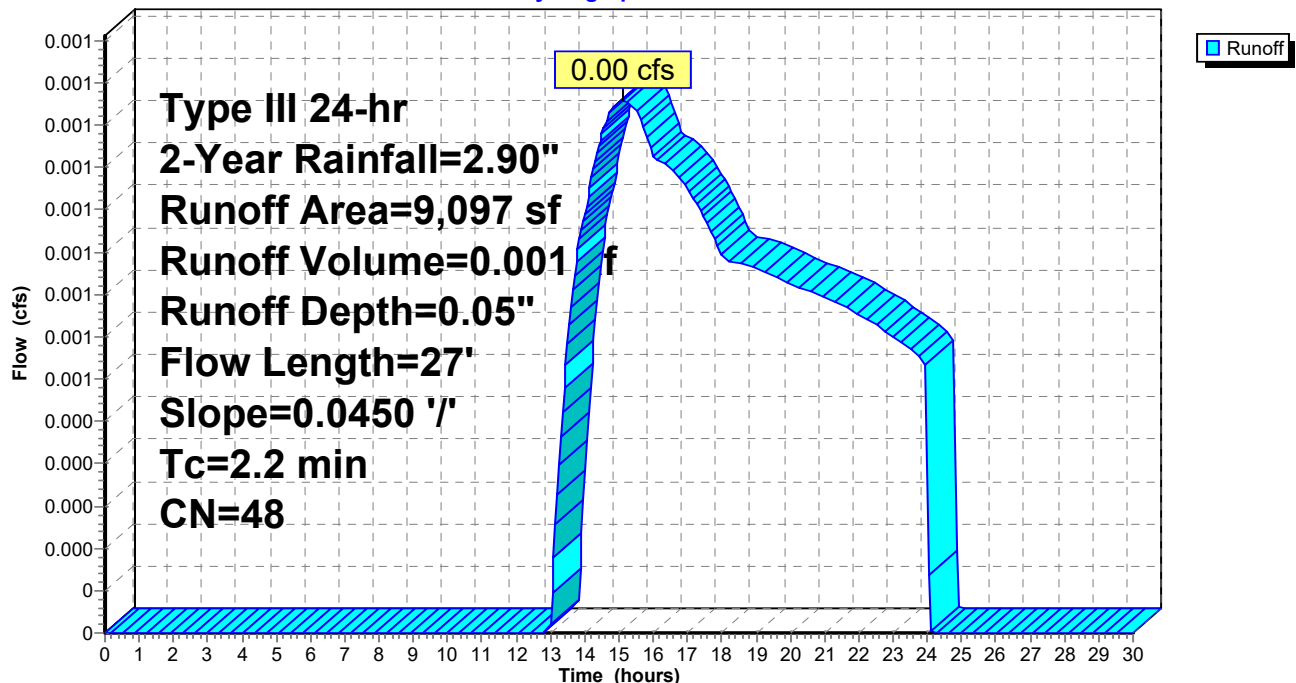
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, $dt=0.05$ hrs
Type III 24-hr 2-Year Rainfall=2.90"

Area (sf)	CN	Description
1,344	98	Paved parking, HSG A
7,753	39	>75% Grass cover, Good, HSG A
9,097	48	Weighted Average
7,753		85.23% Pervious Area
1,344		14.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	20	0.0450	0.16		Sheet Flow, 20 feet grass Grass: Short n= 0.150 P2= 2.90"
0.1	7	0.0450	1.48		Shallow Concentrated Flow, Grass 4.5% Slope Short Grass Pasture Kv= 7.0 fps
2.2	27	Total			

Subcatchment P3:

Hydrograph



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Type III 24-hr 2-Year Rainfall=2.90"

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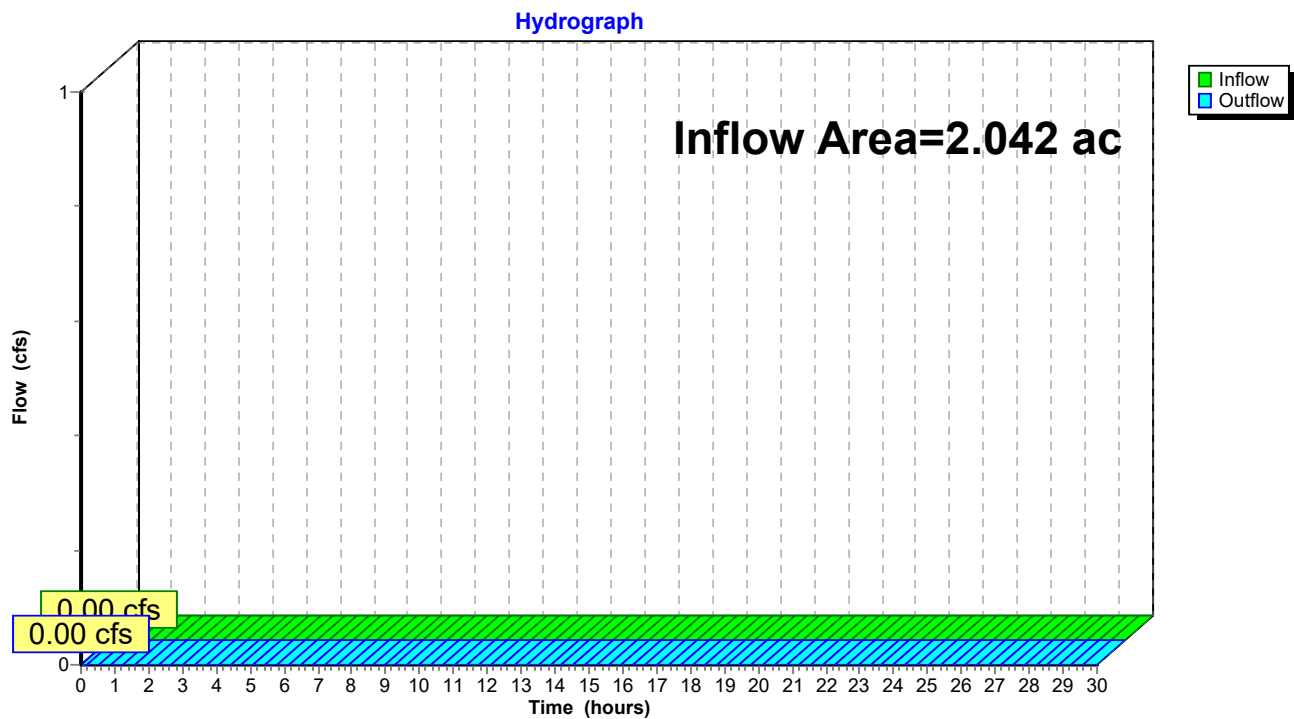
Summary for Reach A: Analysis Point "A" Spillway

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.042 ac, 73.10% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach A: Analysis Point "A" Spillway



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Type III 24-hr 2-Year Rainfall=2.90"

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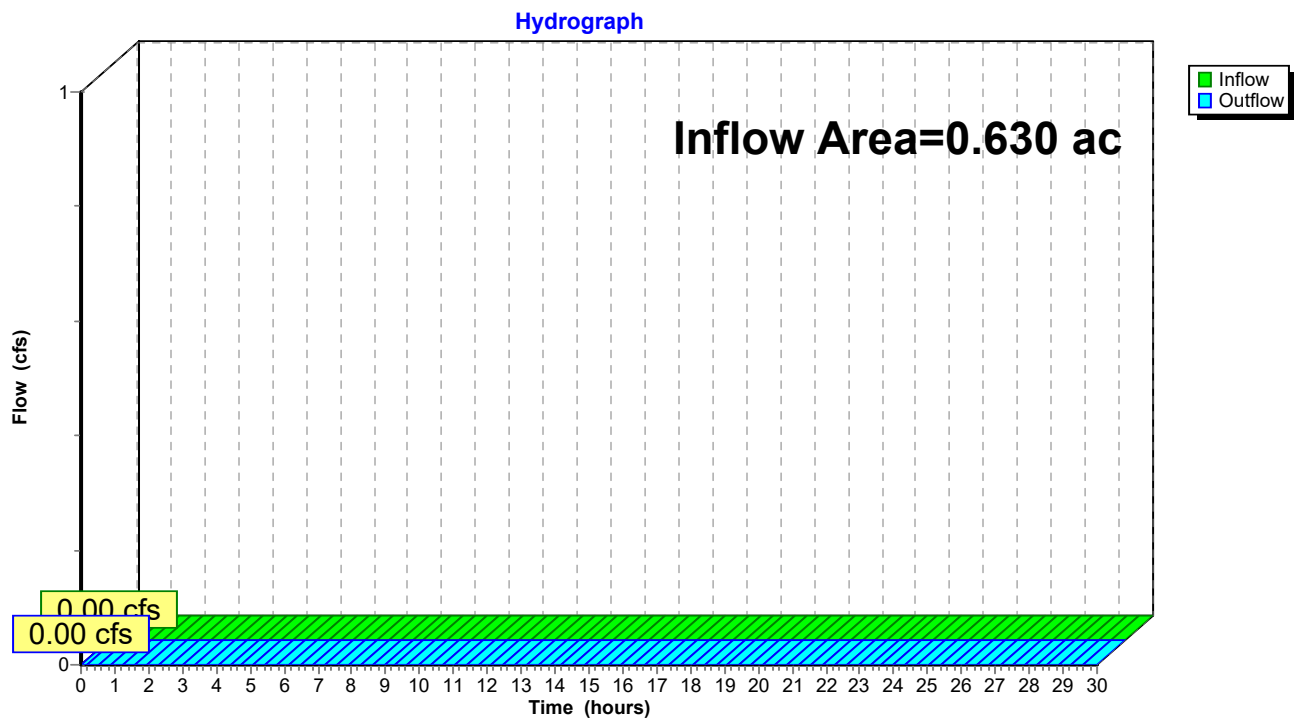
Summary for Reach B: Analysis Point "B" Bowles Road Swale

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.630 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach B: Analysis Point "B" Bowles Road Swale



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Type III 24-hr 2-Year Rainfall=2.90"

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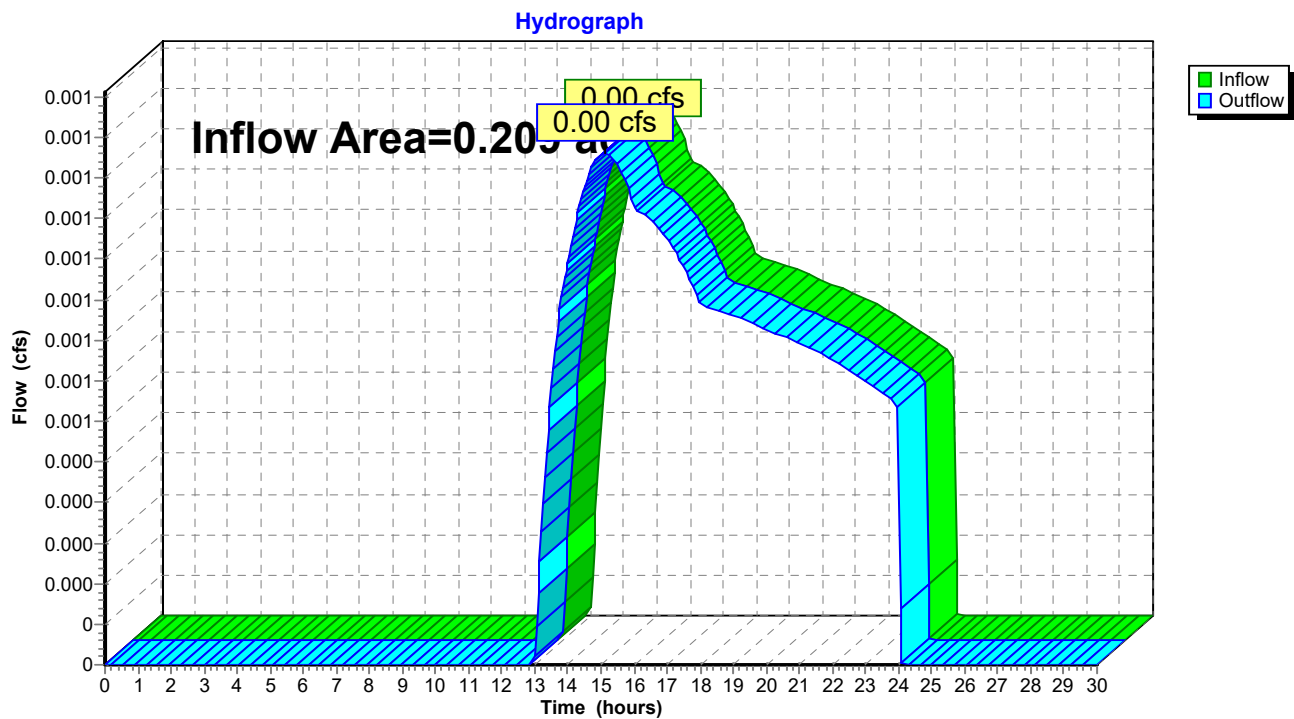
Summary for Reach C: Analysis Point "C" East Property Line

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.209 ac, 14.77% Impervious, Inflow Depth = 0.05" for 2-Year event
Inflow = 0.00 cfs @ 15.13 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 15.13 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach C: Analysis Point "C" East Property Line



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Type III 24-hr 2-Year Rainfall=2.90"

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Summary for Pond 2: Pr. Infiltration Basin

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=102)

Inflow Area = 2.042 ac, 73.10% Impervious, Inflow Depth = 1.30" for 2-Year event
 Inflow = 2.93 cfs @ 12.11 hrs, Volume= 0.221 af
 Outflow = 0.83 cfs @ 12.50 hrs, Volume= 0.222 af, Atten= 72%, Lag= 23.7 min
 Discarded = 0.83 cfs @ 12.50 hrs, Volume= 0.222 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 92.47' @ 12.50 hrs Surf.Area= 4,332 sf Storage= 1,941 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 13.0 min (855.1 - 842.2)

Volume	Invert	Avail.Storage	Storage Description	
#1	92.00'	11,697 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)
92.00	3,857	0	0	3,857
93.00	4,890	4,363	4,363	4,916
94.00	5,986	5,429	9,792	6,043
94.30	6,720	1,905	11,697	6,782

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.00'	8.270 in/hr Exfiltration over Wetted area
#2	Primary	93.80'	27.0 deg x 6.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir Cv= 2.63 (C= 3.29)

Discarded OutFlow Max=0.83 cfs @ 12.50 hrs HW=92.47' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.83 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.00' TW=0.00' (Dynamic Tailwater)
 ↑2=Sharp-Crested Vee/Trap Weir (Controls 0.00 cfs)

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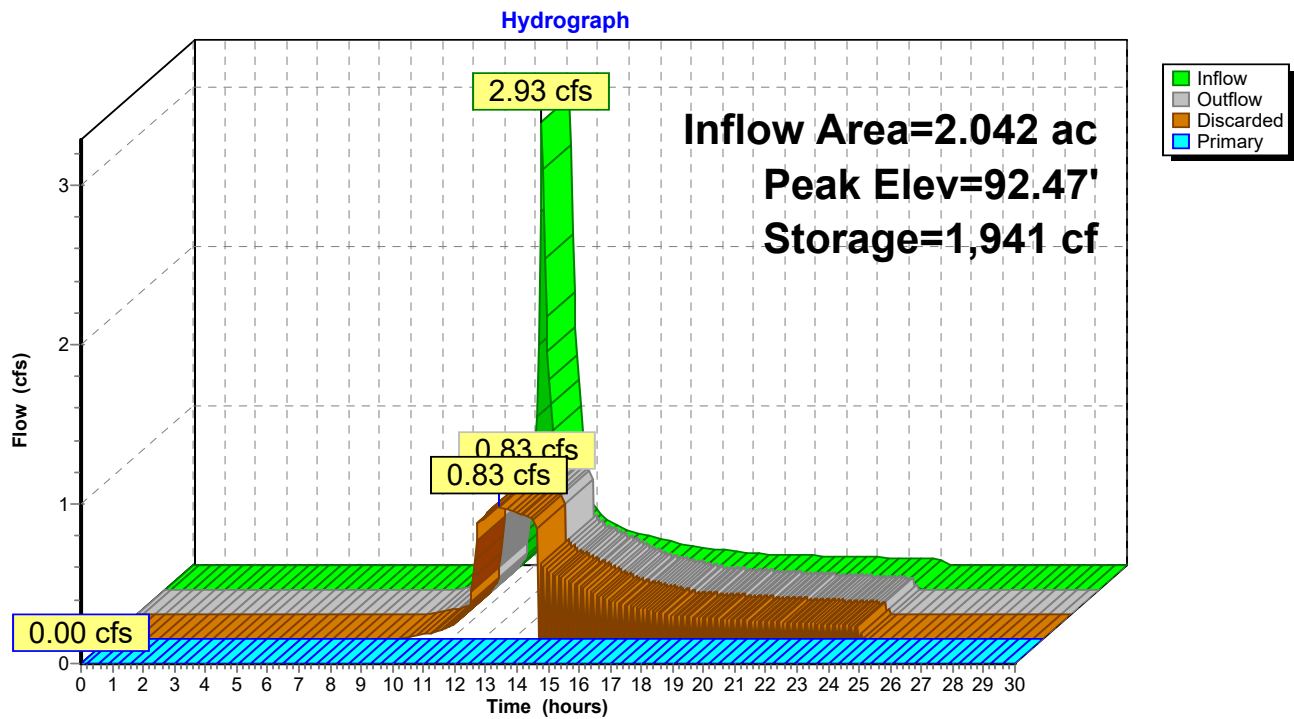
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Type III 24-hr 2-Year Rainfall=2.90"

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Pond 2: Pr. Infiltration Basin



1154- Hydro CAD POST*Type III 24-hr 10-Year Rainfall=4.50"*

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Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P1: Runoff Area=88,937 sf 73.10% Impervious Runoff Depth=2.64"
Flow Length=220' Tc=7.1 min CN=82 Runoff=5.99 cfs 0.449 af

Subcatchment P2: Runoff Area=27,444 sf 0.00% Impervious Runoff Depth=0.11"
Flow Length=230' Tc=7.8 min CN=39 Runoff=0.01 cfs 0.006 af

Subcatchment P3: Runoff Area=9,097 sf 14.77% Impervious Runoff Depth=0.41"
Flow Length=27' Slope=0.0450 '/ Tc=2.2 min CN=48 Runoff=0.04 cfs 0.007 af

Reach A: Analysis Point "A" Spillway Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach B: Analysis Point "B" Bowles Road Swale Inflow=0.01 cfs 0.006 af
Outflow=0.01 cfs 0.006 af

Reach C: Analysis Point "C" East Property Line Inflow=0.04 cfs 0.007 af
Outflow=0.04 cfs 0.007 af

Pond 2: Pr. Infiltration Basin Peak Elev=93.33' Storage=6,044 cf Inflow=5.99 cfs 0.449 af
Discarded=1.01 cfs 0.449 af Primary=0.00 cfs 0.000 af Outflow=1.01 cfs 0.449 af

Total Runoff Area = 2.881 ac Runoff Volume = 0.462 af Average Runoff Depth = 1.92"
47.11% Pervious = 1.357 ac 52.89% Impervious = 1.523 ac

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Type III 24-hr 10-Year Rainfall=4.50"

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Summary for Subcatchment P1:

Runoff = 5.99 cfs @ 12.10 hrs, Volume= 0.449 af, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
36,387	98	Paved parking, HSG A
28,630	98	Roofs, HSG A
678	30	Woods, Good, HSG A
23,242	39	>75% Grass cover, Good, HSG A
88,937	82	Weighted Average
23,920		26.90% Pervious Area
65,017		73.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	20	0.0055	0.07		Sheet Flow, 20 feet short grass Grass: Short n= 0.150 P2= 2.90"
1.6	50	0.0055	0.52		Shallow Concentrated Flow, grass 0.5% Slope Short Grass Pasture Kv= 7.0 fps
0.6	130	0.0350	3.80		Shallow Concentrated Flow, paved 3.5% Slope Paved Kv= 20.3 fps
0.1	20	0.3300	4.02		Shallow Concentrated Flow, grass 33% Slope Short Grass Pasture Kv= 7.0 fps
7.1	220	Total			

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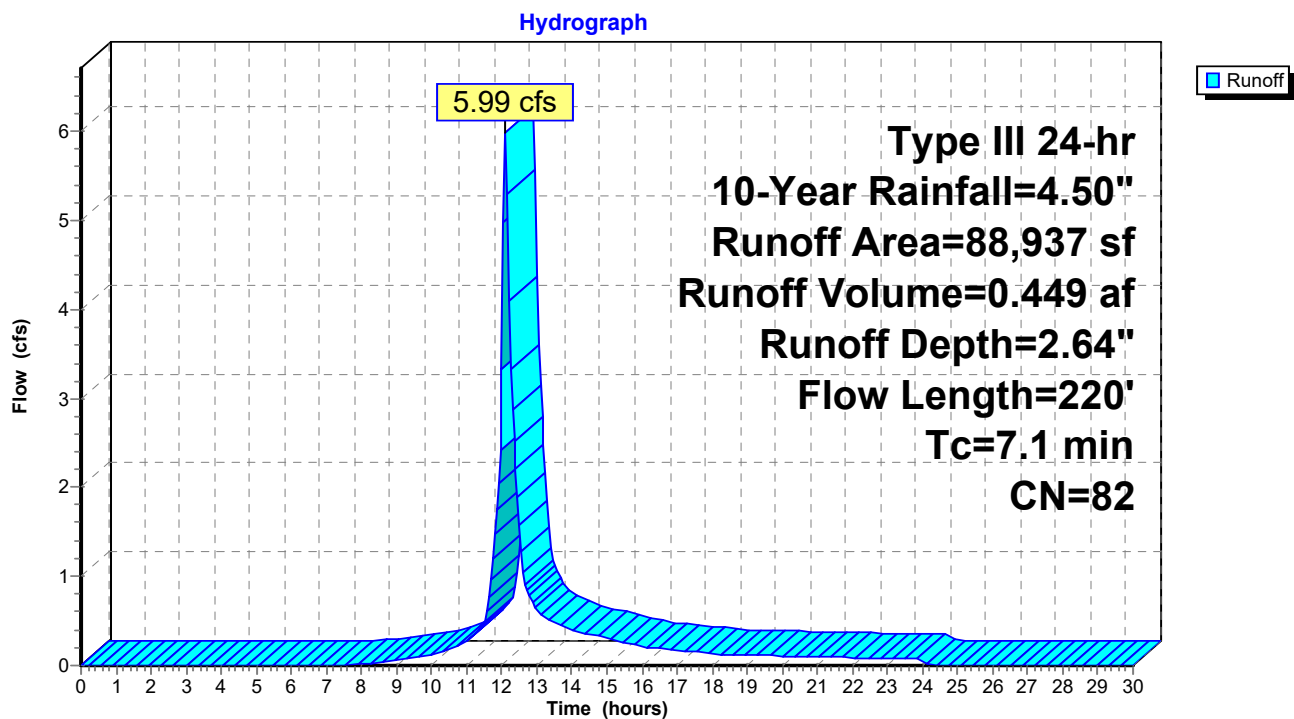
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Type III 24-hr 10-Year Rainfall=4.50"

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Subcatchment P1:



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Type III 24-hr 10-Year Rainfall=4.50"

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Summary for Subcatchment P2:

Runoff = 0.01 cfs @ 14.74 hrs, Volume= 0.006 af, Depth= 0.11"

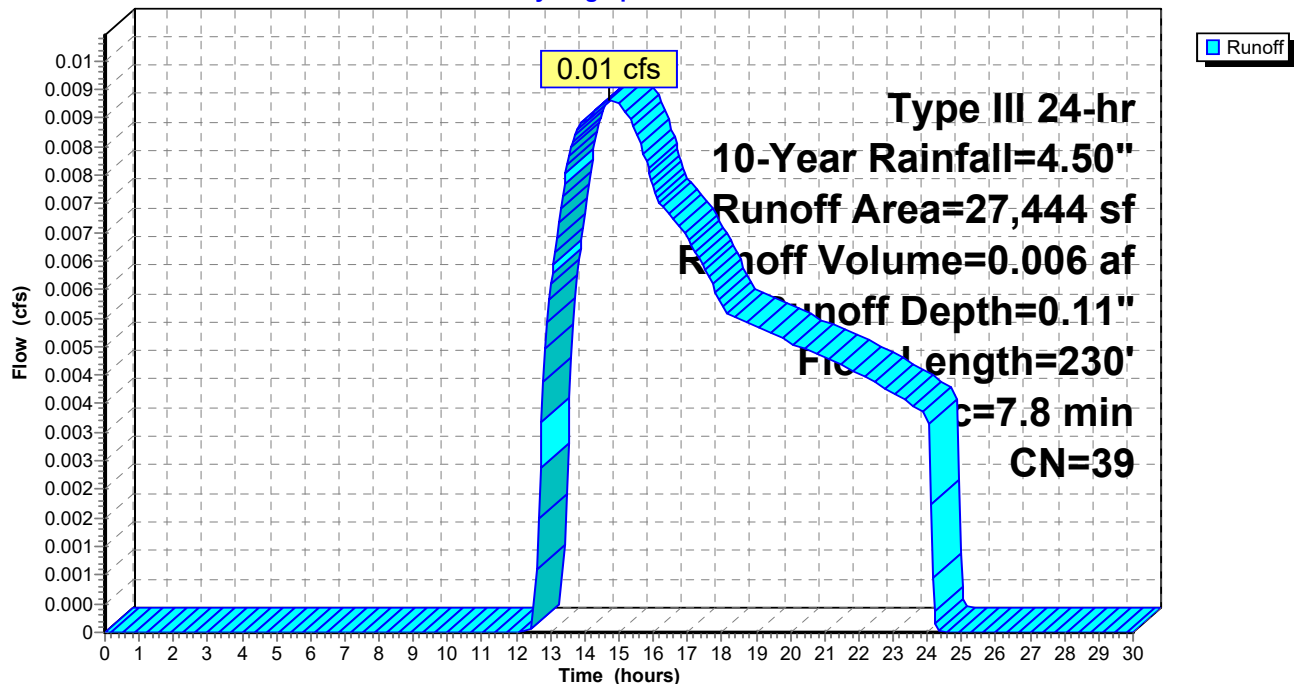
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
865	30	Woods, Good, HSG A
26,579	39	>75% Grass cover, Good, HSG A
27,444	39	Weighted Average
27,444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	20	0.0130	0.10		Sheet Flow, 20 feet grass Grass: Short n= 0.150 P2= 2.90"
4.4	210	0.0130	0.80		Shallow Concentrated Flow, Grass 1.3% Slope Short Grass Pasture Kv= 7.0 fps
7.8	230	Total			

Subcatchment P2:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.50"

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Summary for Subcatchment P3:[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.04 cfs @ 12.11 hrs, Volume= 0.007 af, Depth= 0.41"

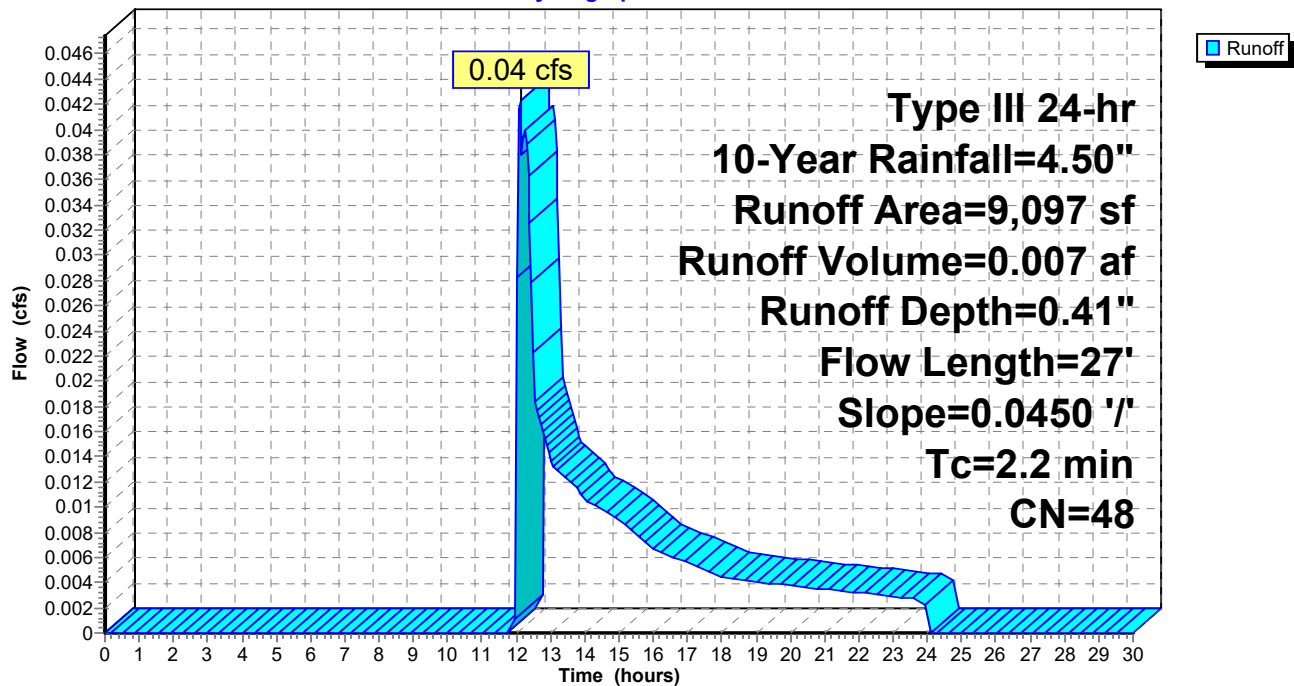
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, $dt=0.05$ hrs
Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
1,344	98	Paved parking, HSG A
7,753	39	>75% Grass cover, Good, HSG A
9,097	48	Weighted Average
7,753		85.23% Pervious Area
1,344		14.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	20	0.0450	0.16		Sheet Flow, 20 feet grass Grass: Short $n=0.150$ $P2=2.90"$
0.1	7	0.0450	1.48		Shallow Concentrated Flow, Grass 4.5% Slope Short Grass Pasture $K_v=7.0$ fps
2.2	27	Total			

Subcatchment P3:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.50"

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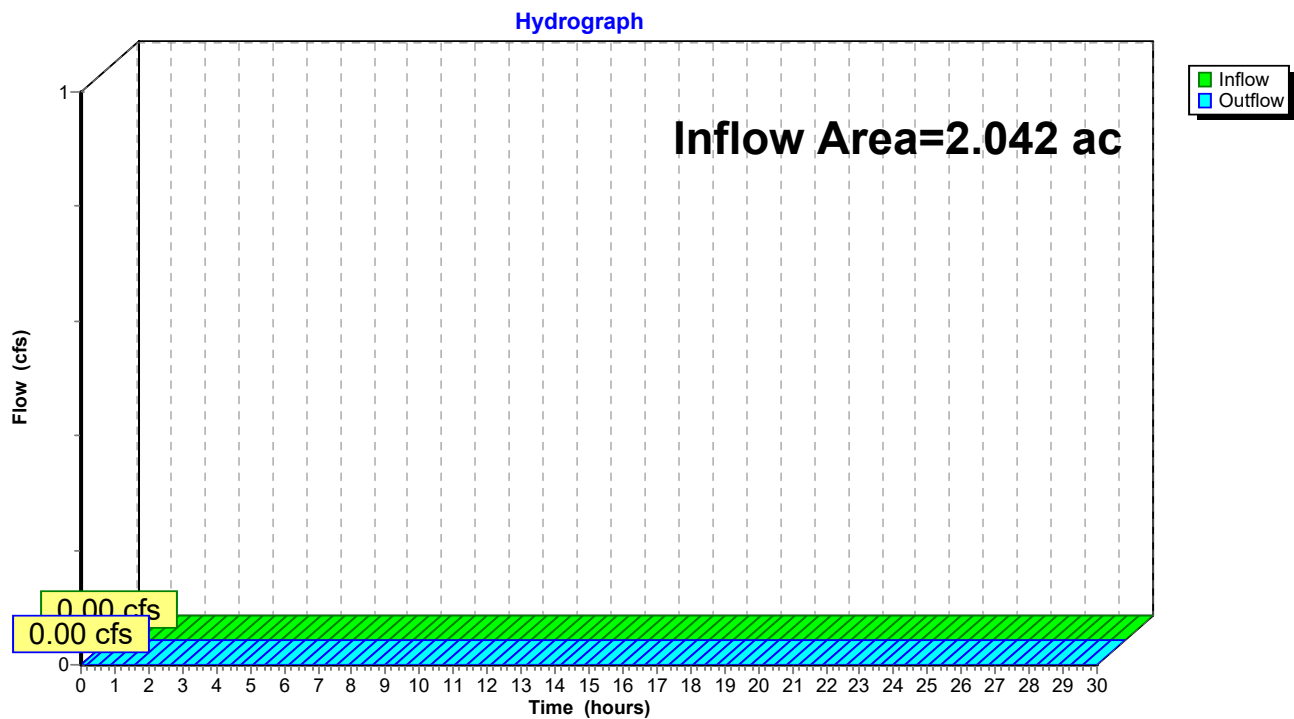
Summary for Reach A: Analysis Point "A" Spillway

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.042 ac, 73.10% Impervious, Inflow Depth = 0.00" for 10-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach A: Analysis Point "A" Spillway



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Type III 24-hr 10-Year Rainfall=4.50"

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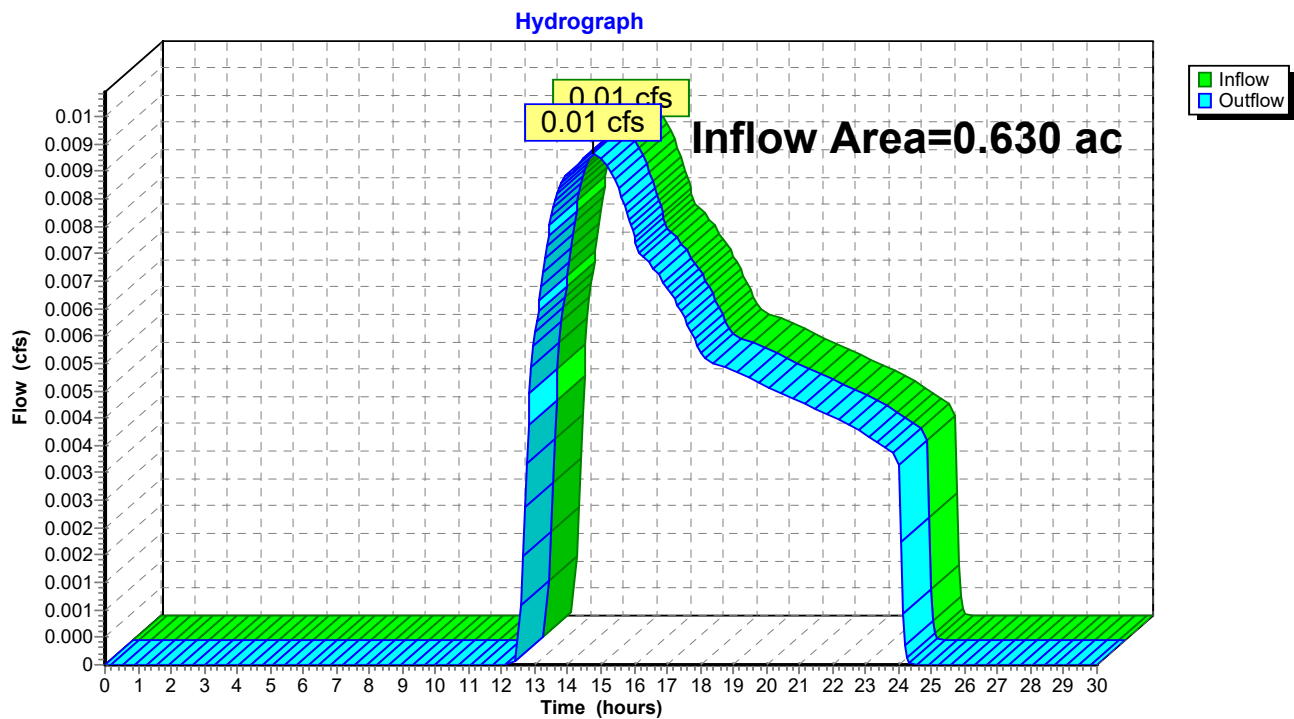
Summary for Reach B: Analysis Point "B" Bowles Road Swale

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.630 ac, 0.00% Impervious, Inflow Depth = 0.11" for 10-Year event
Inflow = 0.01 cfs @ 14.74 hrs, Volume= 0.006 af
Outflow = 0.01 cfs @ 14.74 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach B: Analysis Point "B" Bowles Road Swale



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Type III 24-hr 10-Year Rainfall=4.50"

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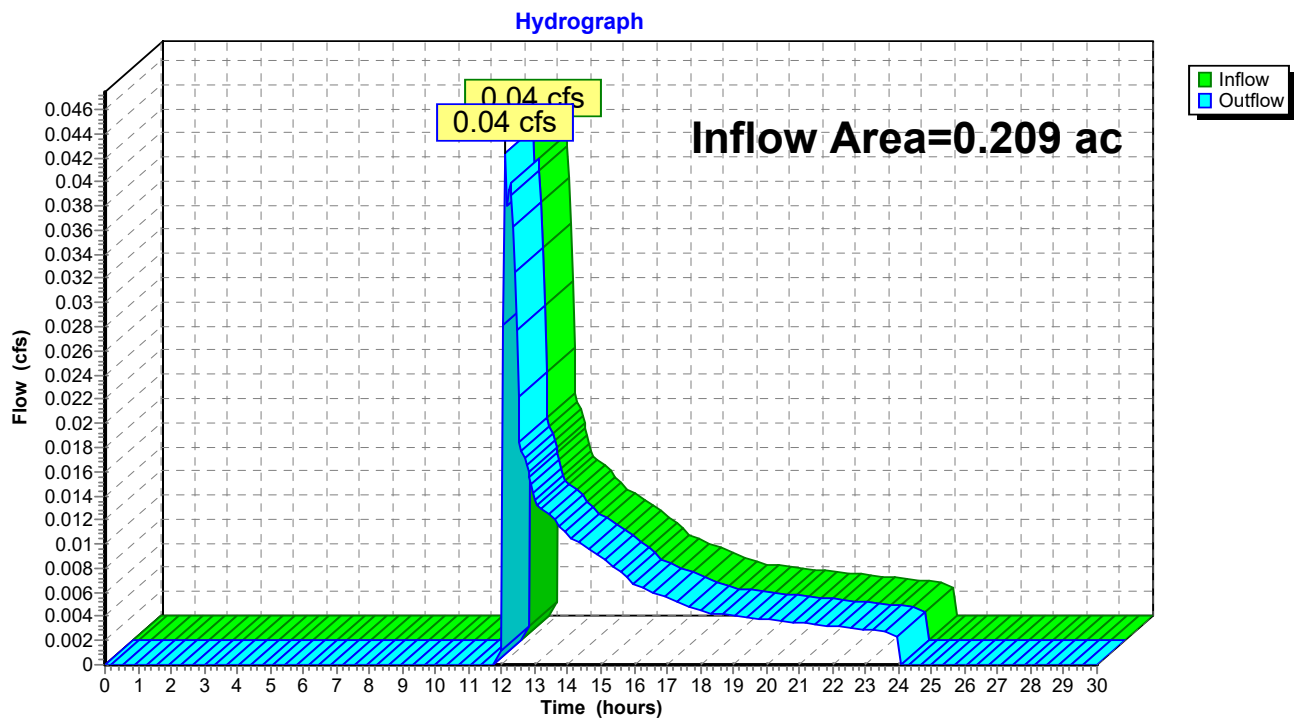
Summary for Reach C: Analysis Point "C" East Property Line

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.209 ac, 14.77% Impervious, Inflow Depth = 0.41" for 10-Year event
Inflow = 0.04 cfs @ 12.11 hrs, Volume= 0.007 af
Outflow = 0.04 cfs @ 12.11 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach C: Analysis Point "C" East Property Line



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Type III 24-hr 10-Year Rainfall=4.50"

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Summary for Pond 2: Pr. Infiltration Basin

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=79)

Inflow Area = 2.042 ac, 73.10% Impervious, Inflow Depth = 2.64" for 10-Year event
 Inflow = 5.99 cfs @ 12.10 hrs, Volume= 0.449 af
 Outflow = 1.01 cfs @ 12.61 hrs, Volume= 0.449 af, Atten= 83%, Lag= 30.6 min
 Discarded = 1.01 cfs @ 12.61 hrs, Volume= 0.449 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 93.33' @ 12.61 hrs Surf.Area= 5,241 sf Storage= 6,044 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 44.2 min (866.0 - 821.7)

Volume	Invert	Avail.Storage	Storage Description	
#1	92.00'	11,697 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)
92.00	3,857	0	0	3,857
93.00	4,890	4,363	4,363	4,916
94.00	5,986	5,429	9,792	6,043
94.30	6,720	1,905	11,697	6,782

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.00'	8.270 in/hr Exfiltration over Wetted area
#2	Primary	93.80'	27.0 deg x 6.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir Cv= 2.63 (C= 3.29)

Discarded OutFlow Max=1.01 cfs @ 12.61 hrs HW=93.33' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 1.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.00' TW=0.00' (Dynamic Tailwater)
 ↑2=Sharp-Crested Vee/Trap Weir (Controls 0.00 cfs)

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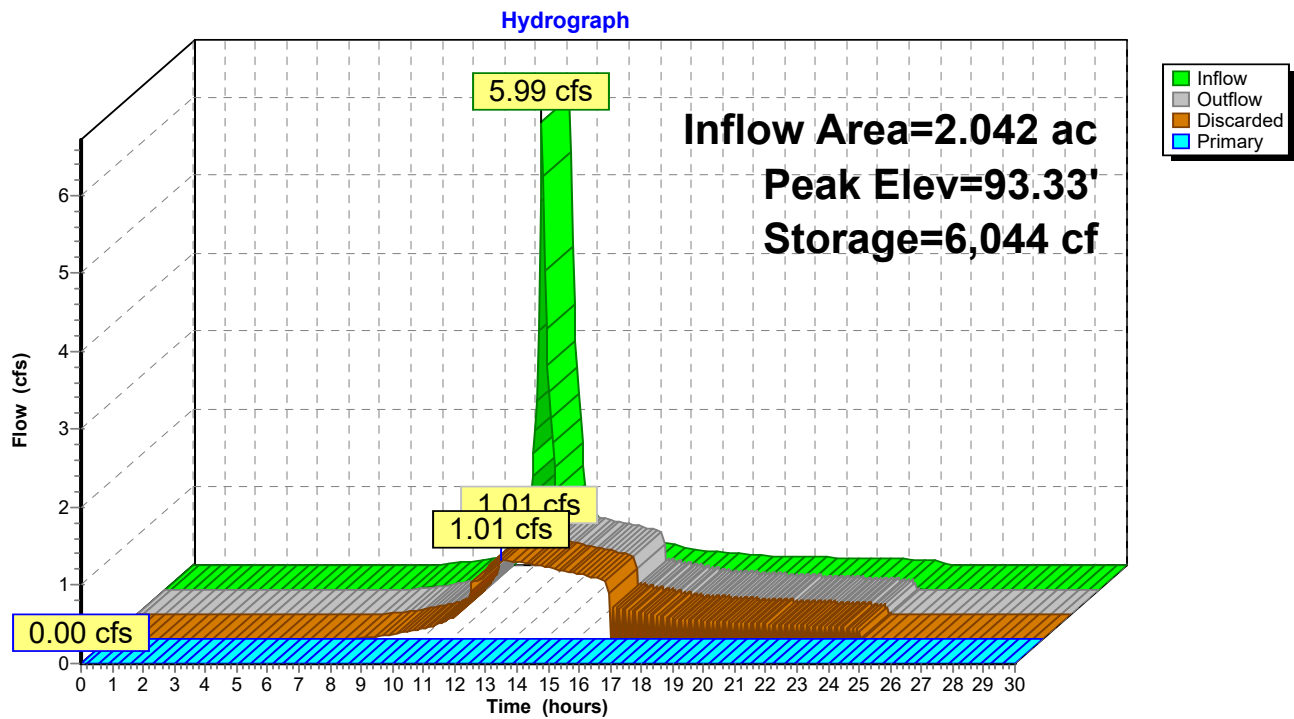
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Type III 24-hr 10-Year Rainfall=4.50"

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Pond 2: Pr. Infiltration Basin



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Type III 24-hr 25-Year Rainfall=5.20"

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Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P1:

Runoff Area=88,937 sf 73.10% Impervious Runoff Depth=3.26"
Flow Length=220' Tc=7.1 min CN=82 Runoff=7.39 cfs 0.554 af

Subcatchment P2:

Runoff Area=27,444 sf 0.00% Impervious Runoff Depth=0.24"
Flow Length=230' Tc=7.8 min CN=39 Runoff=0.04 cfs 0.013 af

Subcatchment P3:

Runoff Area=9,097 sf 14.77% Impervious Runoff Depth=0.66"
Flow Length=27' Slope=0.0450 '/' Tc=2.2 min CN=48 Runoff=0.11 cfs 0.012 af

Reach A: Analysis Point "A" Spillway

Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach B: Analysis Point "B" Bowles Road Swale

Inflow=0.04 cfs 0.013 af
Outflow=0.04 cfs 0.013 af

Reach C: Analysis Point "C" East Property Line

Inflow=0.11 cfs 0.012 af
Outflow=0.11 cfs 0.012 af

Pond 2: Pr. Infiltration Basin

Peak Elev=93.70' Storage=8,052 cf Inflow=7.39 cfs 0.554 af
Discarded=1.09 cfs 0.554 af Primary=0.00 cfs 0.000 af Outflow=1.09 cfs 0.554 af

Total Runoff Area = 2.881 ac Runoff Volume = 0.579 af Average Runoff Depth = 2.41"
47.11% Pervious = 1.357 ac 52.89% Impervious = 1.523 ac

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Type III 24-hr 25-Year Rainfall=5.20"

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Summary for Subcatchment P1:

Runoff = 7.39 cfs @ 12.10 hrs, Volume= 0.554 af, Depth= 3.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.20"

Area (sf)	CN	Description
36,387	98	Paved parking, HSG A
28,630	98	Roofs, HSG A
678	30	Woods, Good, HSG A
23,242	39	>75% Grass cover, Good, HSG A
88,937	82	Weighted Average
23,920		26.90% Pervious Area
65,017		73.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	20	0.0055	0.07		Sheet Flow, 20 feet short grass Grass: Short n= 0.150 P2= 2.90"
1.6	50	0.0055	0.52		Shallow Concentrated Flow, grass 0.5% Slope Short Grass Pasture Kv= 7.0 fps
0.6	130	0.0350	3.80		Shallow Concentrated Flow, paved 3.5% Slope Paved Kv= 20.3 fps
0.1	20	0.3300	4.02		Shallow Concentrated Flow, grass 33% Slope Short Grass Pasture Kv= 7.0 fps
7.1	220	Total			

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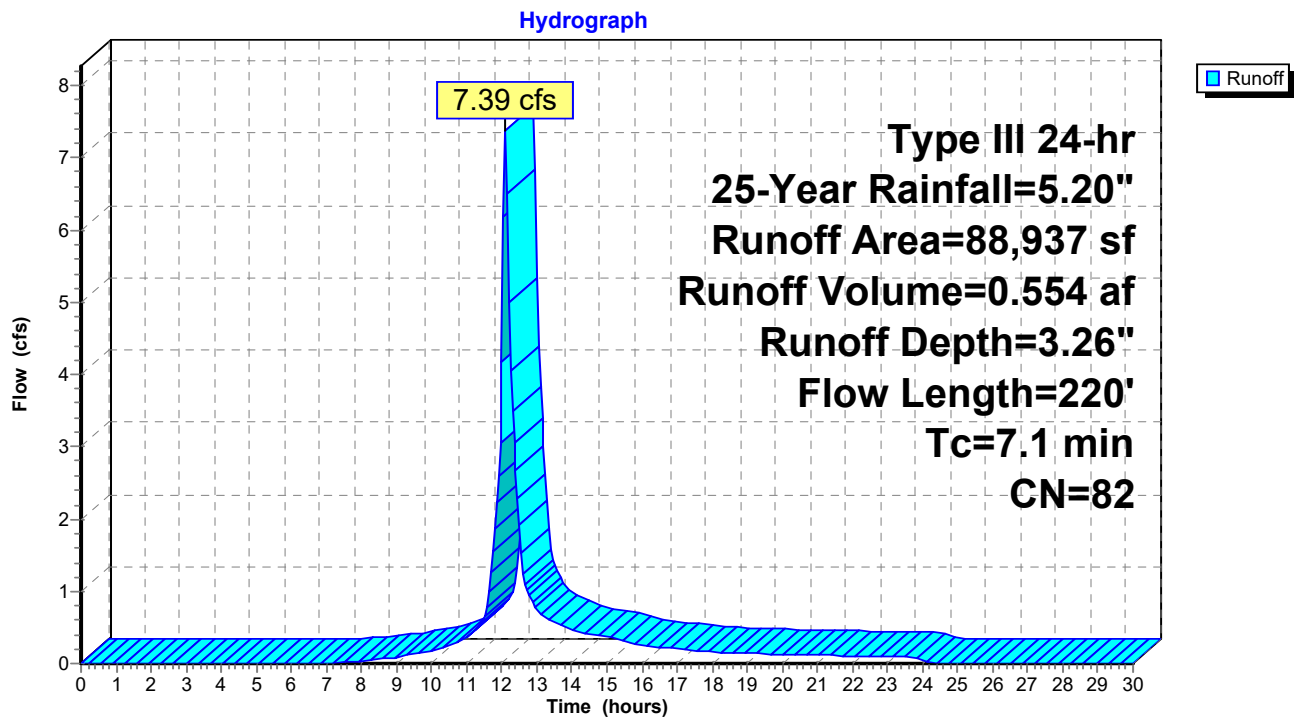
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Type III 24-hr 25-Year Rainfall=5.20"

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Subcatchment P1:



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Type III 24-hr 25-Year Rainfall=5.20"

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Summary for Subcatchment P2:

Runoff = 0.04 cfs @ 12.47 hrs, Volume= 0.013 af, Depth= 0.24"

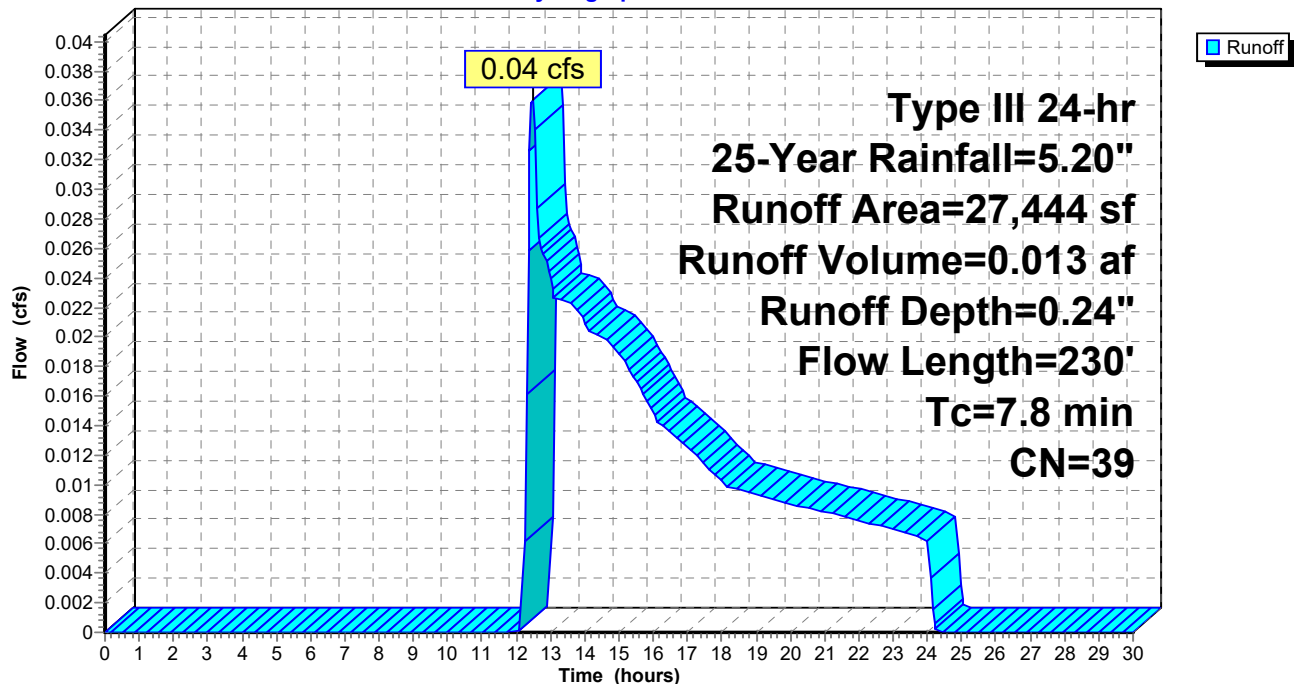
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.20"

Area (sf)	CN	Description
865	30	Woods, Good, HSG A
26,579	39	>75% Grass cover, Good, HSG A
27,444	39	Weighted Average
27,444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	20	0.0130	0.10		Sheet Flow, 20 feet grass Grass: Short n= 0.150 P2= 2.90"
4.4	210	0.0130	0.80		Shallow Concentrated Flow, Grass 1.3% Slope Short Grass Pasture Kv= 7.0 fps
7.8	230	Total			

Subcatchment P2:

Hydrograph



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Type III 24-hr 25-Year Rainfall=5.20"

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Summary for Subcatchment P3:[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.11 cfs @ 12.07 hrs, Volume= 0.012 af, Depth= 0.66"

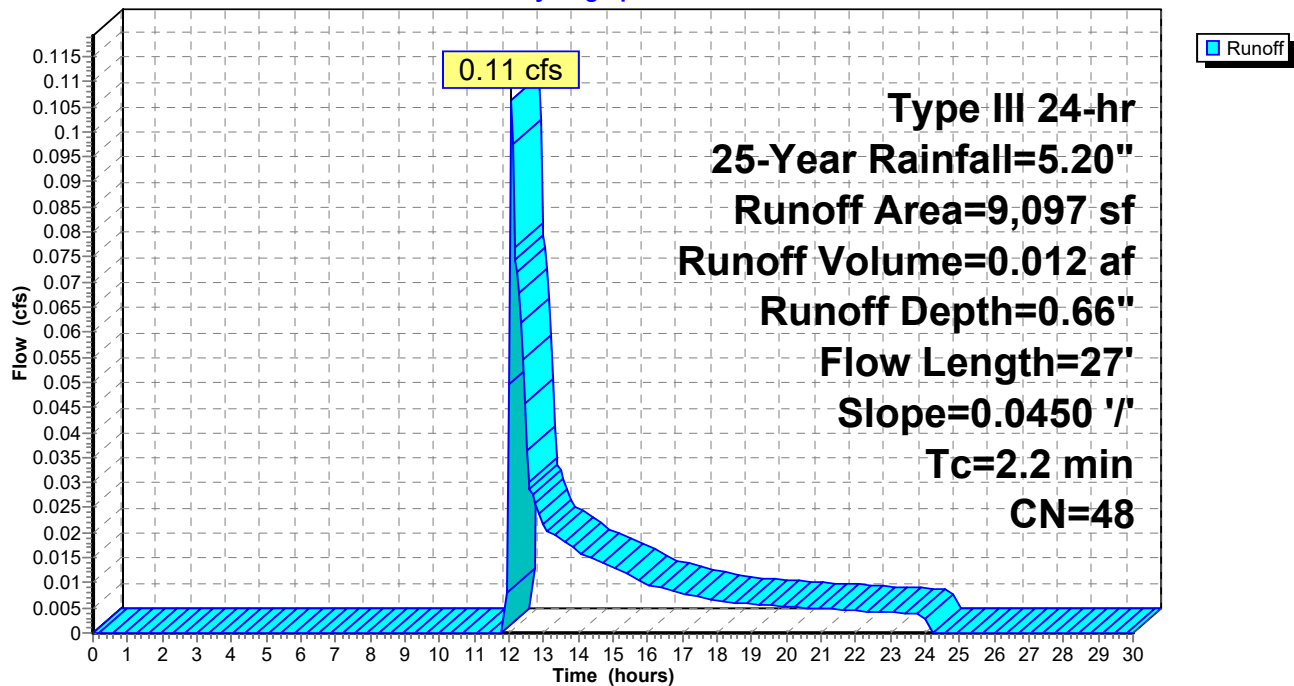
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, $dt=0.05$ hrs
Type III 24-hr 25-Year Rainfall=5.20"

Area (sf)	CN	Description
1,344	98	Paved parking, HSG A
7,753	39	>75% Grass cover, Good, HSG A
9,097	48	Weighted Average
7,753		85.23% Pervious Area
1,344		14.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	20	0.0450	0.16		Sheet Flow, 20 feet grass Grass: Short n= 0.150 P2= 2.90"
0.1	7	0.0450	1.48		Shallow Concentrated Flow, Grass 4.5% Slope Short Grass Pasture Kv= 7.0 fps
2.2	27	Total			

Subcatchment P3:

Hydrograph



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Type III 24-hr 25-Year Rainfall=5.20"

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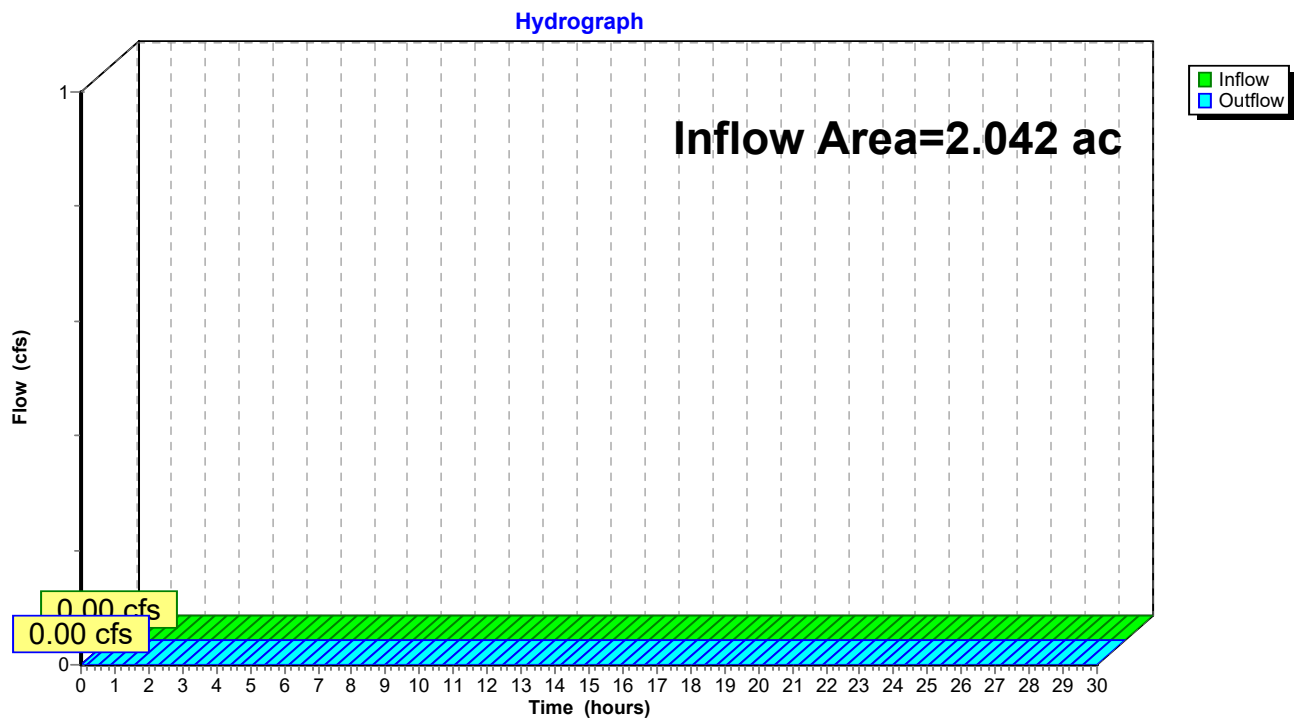
Summary for Reach A: Analysis Point "A" Spillway

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.042 ac, 73.10% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach A: Analysis Point "A" Spillway



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Type III 24-hr 25-Year Rainfall=5.20"

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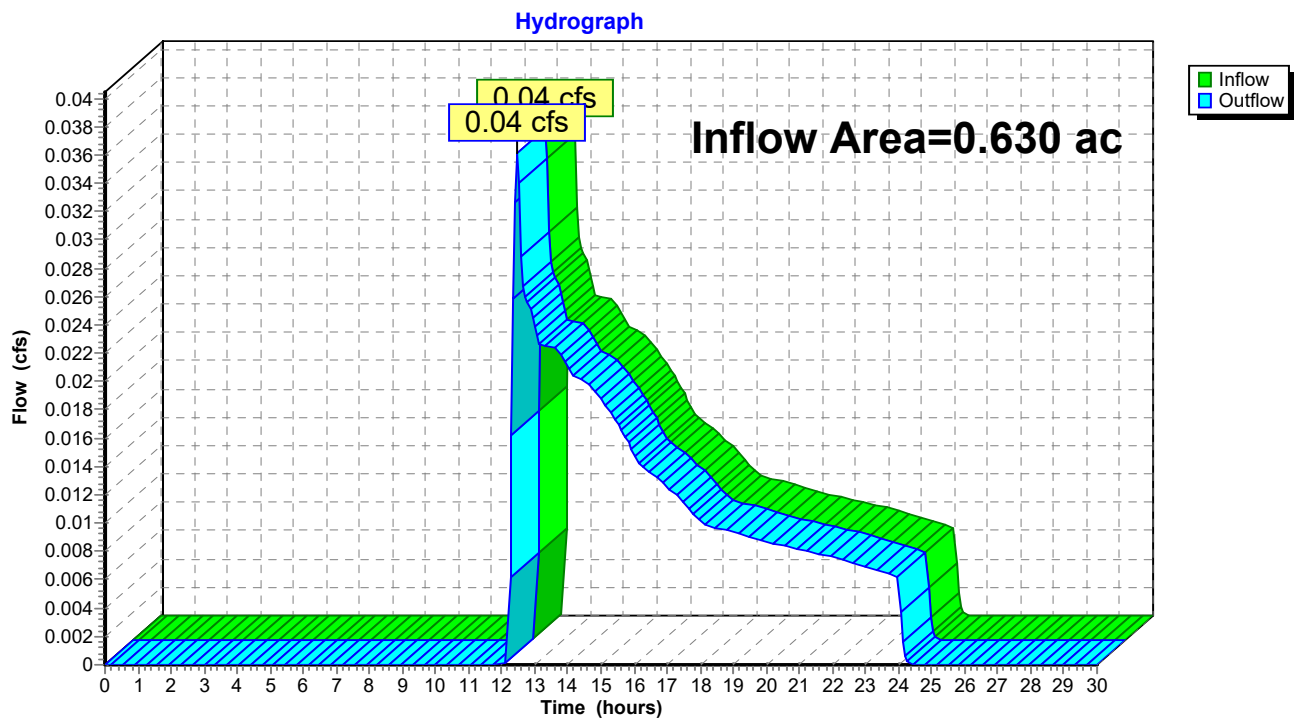
Summary for Reach B: Analysis Point "B" Bowles Road Swale

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.630 ac, 0.00% Impervious, Inflow Depth = 0.24" for 25-Year event
Inflow = 0.04 cfs @ 12.47 hrs, Volume= 0.013 af
Outflow = 0.04 cfs @ 12.47 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach B: Analysis Point "B" Bowles Road Swale



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Type III 24-hr 25-Year Rainfall=5.20"

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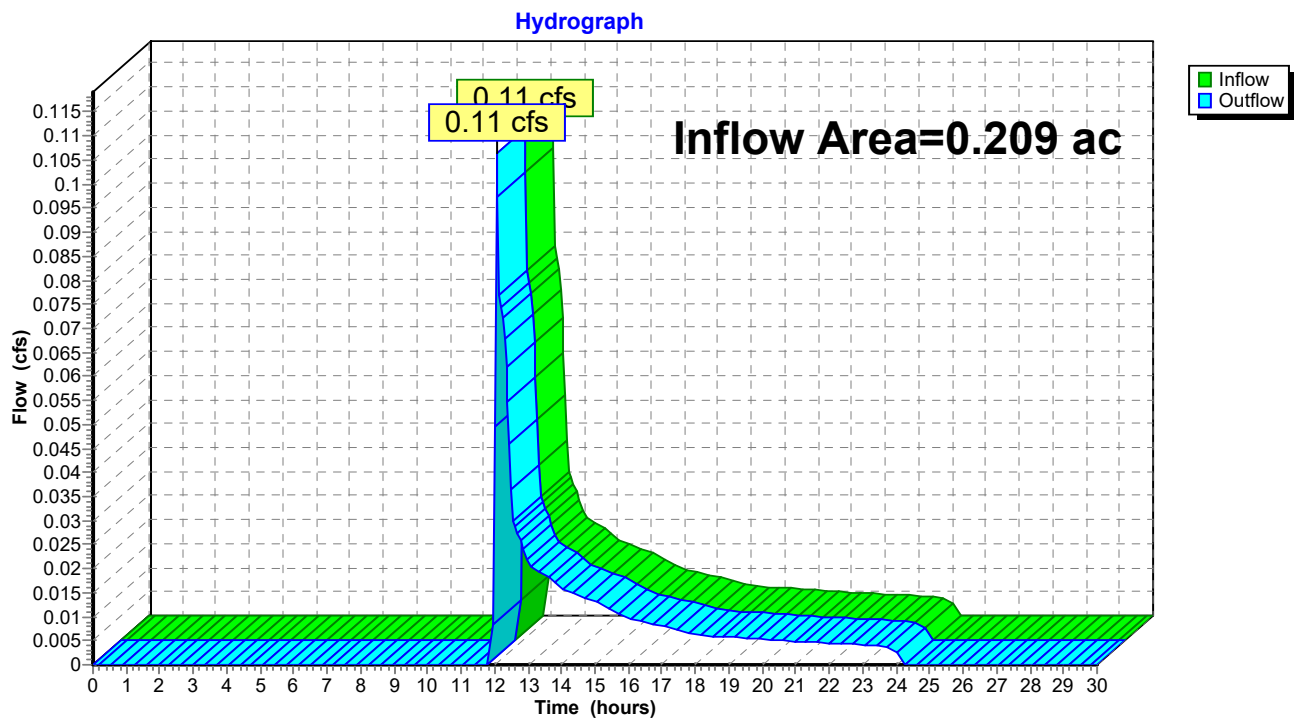
Summary for Reach C: Analysis Point "C" East Property Line

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.209 ac, 14.77% Impervious, Inflow Depth = 0.66" for 25-Year event
Inflow = 0.11 cfs @ 12.07 hrs, Volume= 0.012 af
Outflow = 0.11 cfs @ 12.07 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach C: Analysis Point "C" East Property Line



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Type III 24-hr 25-Year Rainfall=5.20"

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Summary for Pond 2: Pr. Infiltration Basin

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=70)

Inflow Area = 2.042 ac, 73.10% Impervious, Inflow Depth = 3.26" for 25-Year event
 Inflow = 7.39 cfs @ 12.10 hrs, Volume= 0.554 af
 Outflow = 1.09 cfs @ 12.66 hrs, Volume= 0.554 af, Atten= 85%, Lag= 33.3 min
 Discarded = 1.09 cfs @ 12.66 hrs, Volume= 0.554 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 93.70' @ 12.66 hrs Surf.Area= 5,646 sf Storage= 8,052 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 58.2 min (873.9 - 815.7)

Volume	Invert	Avail.Storage	Storage Description	
#1	92.00'	11,697 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)
92.00	3,857	0	0	3,857
93.00	4,890	4,363	4,363	4,916
94.00	5,986	5,429	9,792	6,043
94.30	6,720	1,905	11,697	6,782

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.00'	8.270 in/hr Exfiltration over Wetted area
#2	Primary	93.80'	27.0 deg x 6.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir Cv= 2.63 (C= 3.29)

Discarded OutFlow Max=1.09 cfs @ 12.66 hrs HW=93.70' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 1.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.00' TW=0.00' (Dynamic Tailwater)
 ↑**2=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

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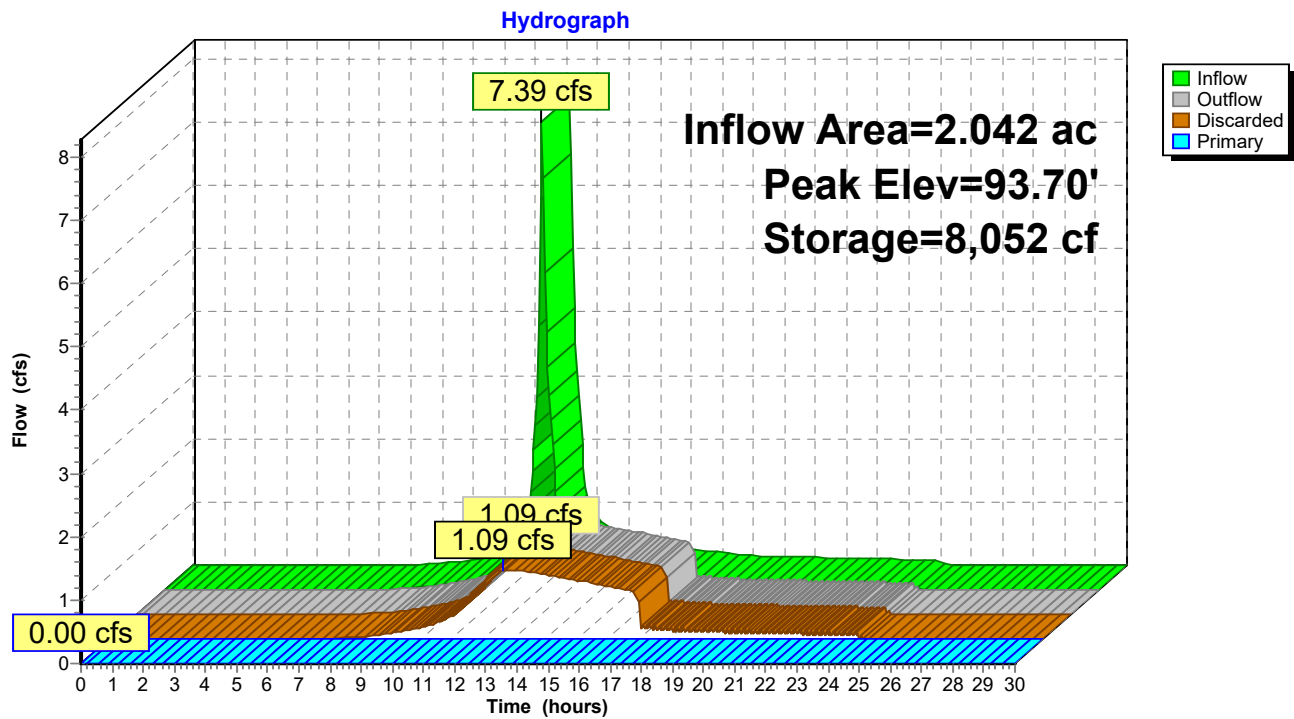
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Type III 24-hr 25-Year Rainfall=5.20"

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Pond 2: Pr. Infiltration Basin



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Type III 24-hr 100-Year Rainfall=6.50"

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Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P1:

Runoff Area=88,937 sf 73.10% Impervious Runoff Depth=4.45"
Flow Length=220' Tc=7.1 min CN=82 Runoff=10.00 cfs 0.757 af

Subcatchment P2:

Runoff Area=27,444 sf 0.00% Impervious Runoff Depth=0.60"
Flow Length=230' Tc=7.8 min CN=39 Runoff=0.17 cfs 0.031 af

Subcatchment P3:

Runoff Area=9,097 sf 14.77% Impervious Runoff Depth=1.24"
Flow Length=27' Slope=0.0450 '/' Tc=2.2 min CN=48 Runoff=0.27 cfs 0.022 af

Reach A: Analysis Point "A" Spillway

Inflow=2.31 cfs 0.076 af
Outflow=2.31 cfs 0.076 af

Reach B: Analysis Point "B" Bowles Road Swale

Inflow=0.17 cfs 0.031 af
Outflow=0.17 cfs 0.031 af

Reach C: Analysis Point "C" East Property Line

Inflow=0.27 cfs 0.022 af
Outflow=0.27 cfs 0.022 af

Pond 2: Pr. Infiltration Basin

Peak Elev=94.04' Storage=10,022 cf Inflow=10.00 cfs 0.757 af
Discarded=1.17 cfs 0.682 af Primary=2.31 cfs 0.076 af Outflow=3.48 cfs 0.758 af

Total Runoff Area = 2.881 ac Runoff Volume = 0.810 af Average Runoff Depth = 3.37"
47.11% Pervious = 1.357 ac 52.89% Impervious = 1.523 ac

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Type III 24-hr 100-Year Rainfall=6.50"

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Summary for Subcatchment P1:

Runoff = 10.00 cfs @ 12.10 hrs, Volume= 0.757 af, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
36,387	98	Paved parking, HSG A
28,630	98	Roofs, HSG A
678	30	Woods, Good, HSG A
23,242	39	>75% Grass cover, Good, HSG A
88,937	82	Weighted Average
23,920		26.90% Pervious Area
65,017		73.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	20	0.0055	0.07		Sheet Flow, 20 feet short grass Grass: Short n= 0.150 P2= 2.90"
1.6	50	0.0055	0.52		Shallow Concentrated Flow, grass 0.5% Slope Short Grass Pasture Kv= 7.0 fps
0.6	130	0.0350	3.80		Shallow Concentrated Flow, paved 3.5% Slope Paved Kv= 20.3 fps
0.1	20	0.3300	4.02		Shallow Concentrated Flow, grass 33% Slope Short Grass Pasture Kv= 7.0 fps
7.1	220	Total			

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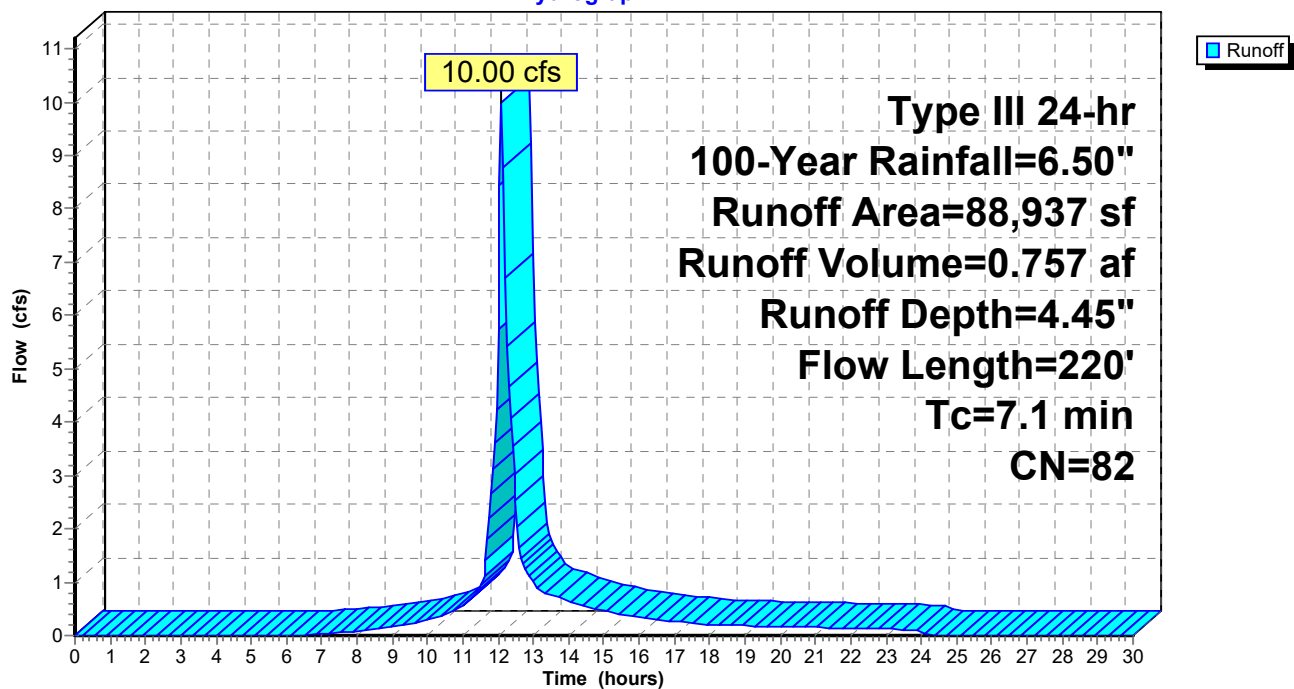
Type III 24-hr 100-Year Rainfall=6.50"

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Subcatchment P1:

Hydrograph



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Type III 24-hr 100-Year Rainfall=6.50"

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Summary for Subcatchment P2:

Runoff = 0.17 cfs @ 12.32 hrs, Volume= 0.031 af, Depth= 0.60"

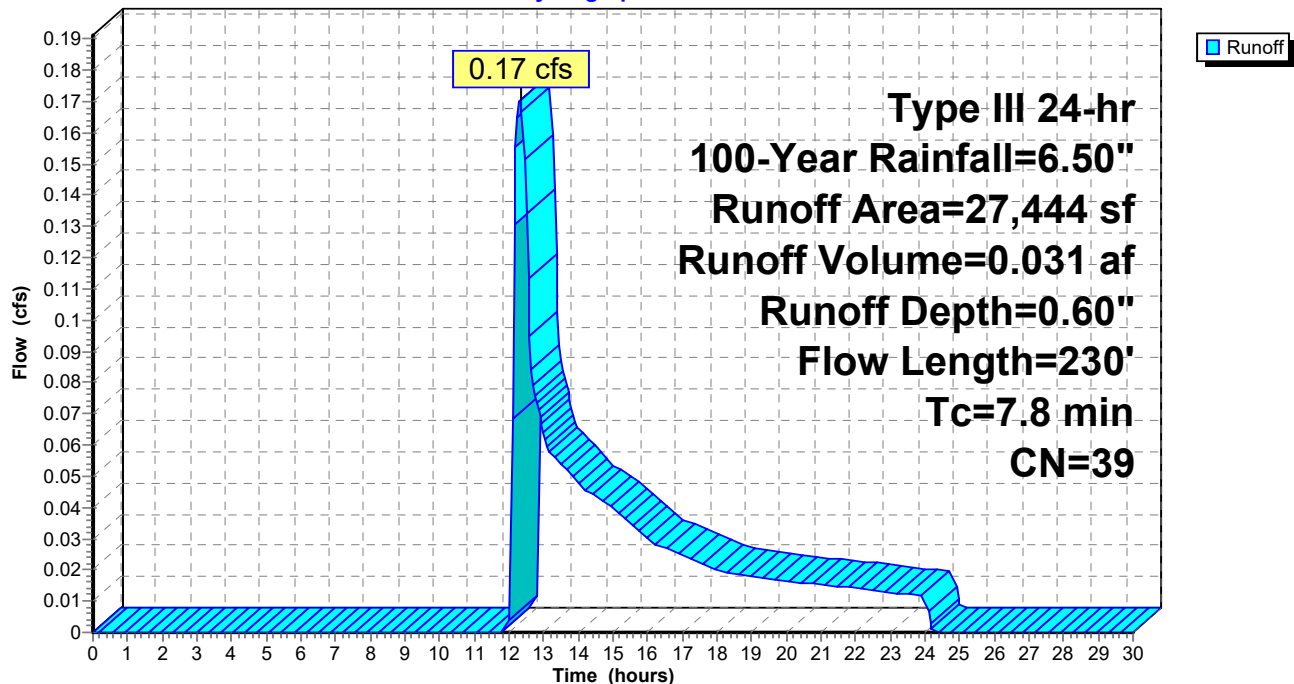
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
865	30	Woods, Good, HSG A
26,579	39	>75% Grass cover, Good, HSG A
27,444	39	Weighted Average
27,444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	20	0.0130	0.10		Sheet Flow, 20 feet grass Grass: Short n= 0.150 P2= 2.90"
4.4	210	0.0130	0.80		Shallow Concentrated Flow, Grass 1.3% Slope Short Grass Pasture Kv= 7.0 fps
7.8	230	Total			

Subcatchment P2:

Hydrograph



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Type III 24-hr 100-Year Rainfall=6.50"

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Summary for Subcatchment P3:

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

Runoff = 0.27 cfs @ 12.06 hrs, Volume= 0.022 af, Depth= 1.24"

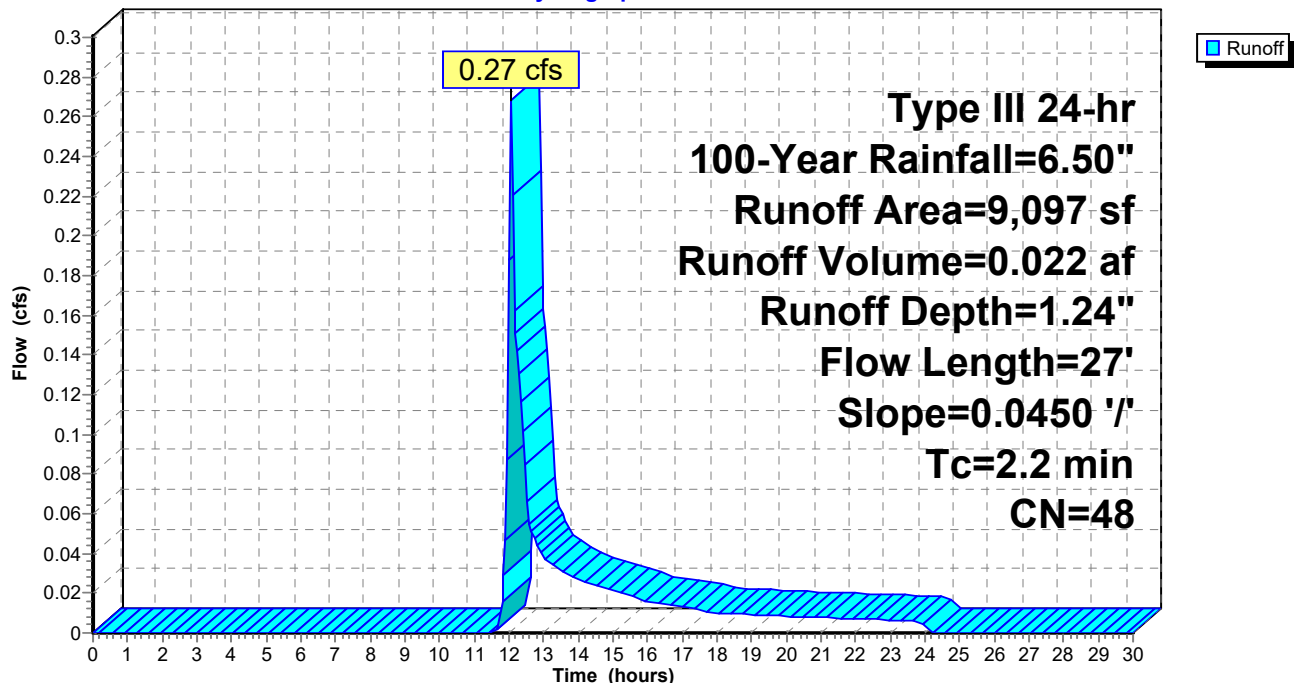
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, $dt=0.05$ hrs
Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
1,344	98	Paved parking, HSG A
7,753	39	>75% Grass cover, Good, HSG A
9,097	48	Weighted Average
7,753		85.23% Pervious Area
1,344		14.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	20	0.0450	0.16		Sheet Flow, 20 feet grass Grass: Short n= 0.150 P2= 2.90"
0.1	7	0.0450	1.48		Shallow Concentrated Flow, Grass 4.5% Slope Short Grass Pasture Kv= 7.0 fps
2.2	27	Total			

Subcatchment P3:

Hydrograph



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Type III 24-hr 100-Year Rainfall=6.50"

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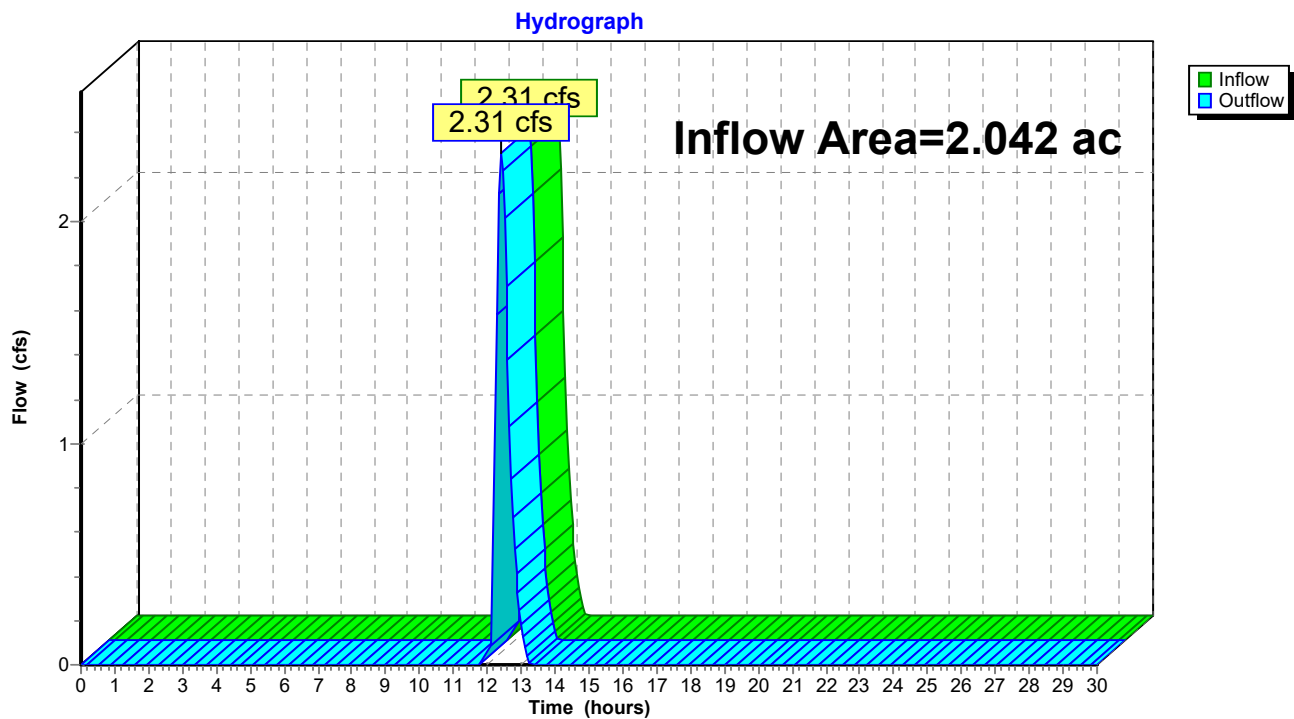
Summary for Reach A: Analysis Point "A" Spillway

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.042 ac, 73.10% Impervious, Inflow Depth = 0.45" for 100-Year event
Inflow = 2.31 cfs @ 12.41 hrs, Volume= 0.076 af
Outflow = 2.31 cfs @ 12.41 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach A: Analysis Point "A" Spillway



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Type III 24-hr 100-Year Rainfall=6.50"

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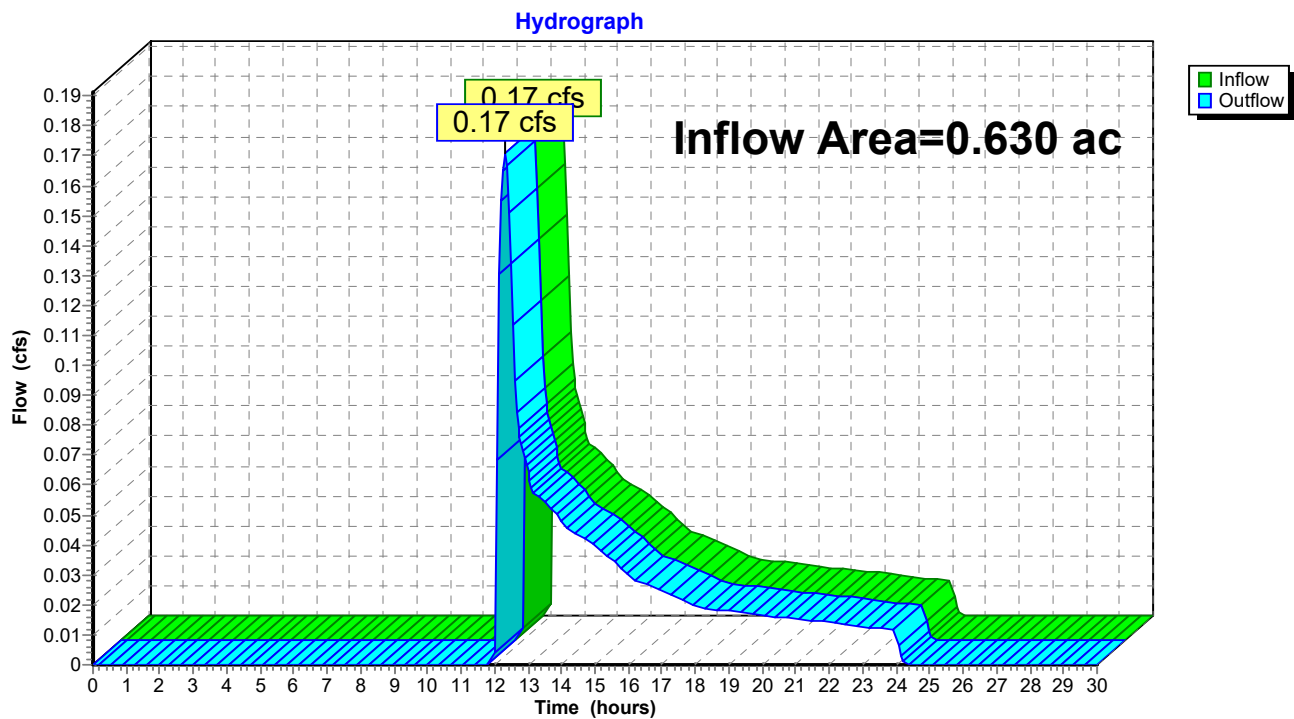
Summary for Reach B: Analysis Point "B" Bowles Road Swale

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.630 ac, 0.00% Impervious, Inflow Depth = 0.60" for 100-Year event
Inflow = 0.17 cfs @ 12.32 hrs, Volume= 0.031 af
Outflow = 0.17 cfs @ 12.32 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach B: Analysis Point "B" Bowles Road Swale



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Type III 24-hr 100-Year Rainfall=6.50"

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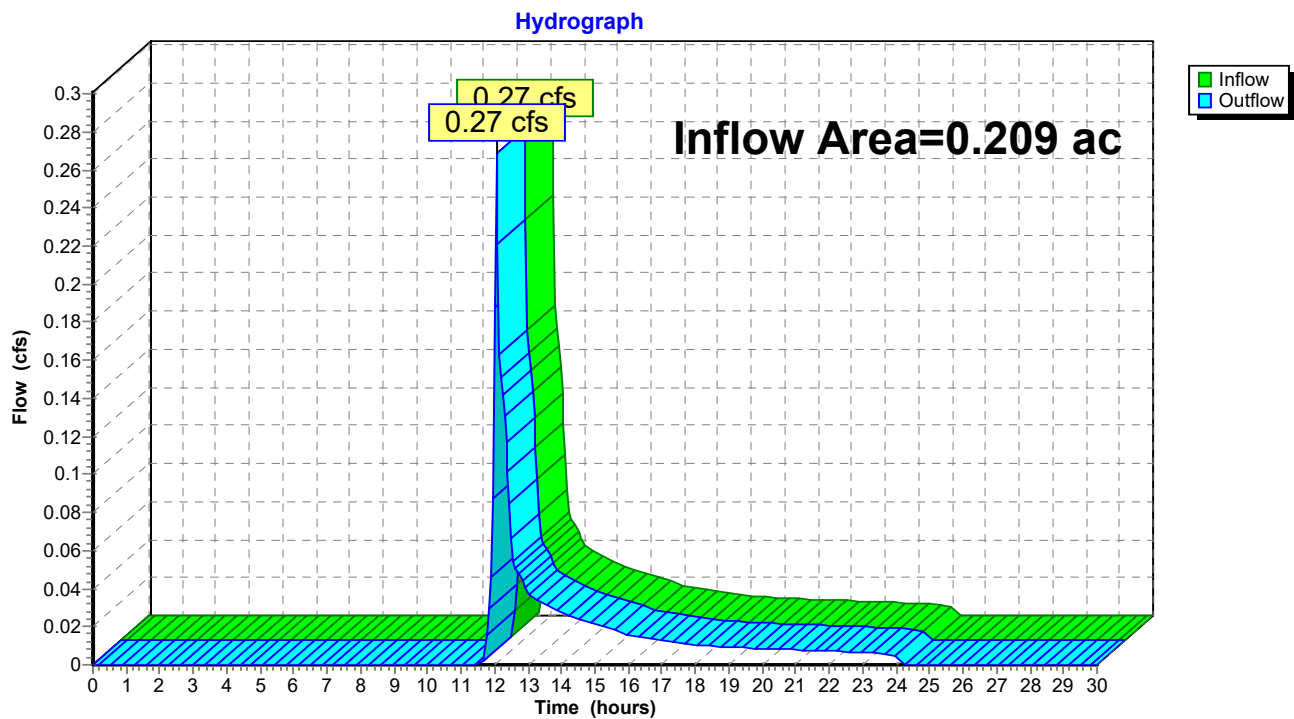
Summary for Reach C: Analysis Point "C" East Property Line

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.209 ac, 14.77% Impervious, Inflow Depth = 1.24" for 100-Year event
Inflow = 0.27 cfs @ 12.06 hrs, Volume= 0.022 af
Outflow = 0.27 cfs @ 12.06 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach C: Analysis Point "C" East Property Line



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Type III 24-hr 100-Year Rainfall=6.50"

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Summary for Pond 2: Pr. Infiltration Basin

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=61)

Inflow Area = 2.042 ac, 73.10% Impervious, Inflow Depth = 4.45" for 100-Year event
 Inflow = 10.00 cfs @ 12.10 hrs, Volume= 0.757 af
 Outflow = 3.48 cfs @ 12.41 hrs, Volume= 0.758 af, Atten= 65%, Lag= 18.5 min
 Discarded = 1.17 cfs @ 12.41 hrs, Volume= 0.682 af
 Primary = 2.31 cfs @ 12.41 hrs, Volume= 0.076 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 94.04' @ 12.41 hrs Surf.Area= 6,077 sf Storage= 10,022 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 59.7 min (866.5 - 806.9)

Volume	Invert	Avail.Storage	Storage Description	
#1	92.00'	11,697 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)
92.00	3,857	0	0	3,857
93.00	4,890	4,363	4,363	4,916
94.00	5,986	5,429	9,792	6,043
94.30	6,720	1,905	11,697	6,782

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.00'	8.270 in/hr Exfiltration over Wetted area
#2	Primary	93.80'	27.0 deg x 6.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir Cv= 2.63 (C= 3.29)

Discarded OutFlow Max=1.17 cfs @ 12.41 hrs HW=94.04' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 1.17 cfs)

Primary OutFlow Max=2.29 cfs @ 12.41 hrs HW=94.04' TW=0.00' (Dynamic Tailwater)
 ↑**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 2.29 cfs @ 1.60 fps)

1154- Hydro CAD POST

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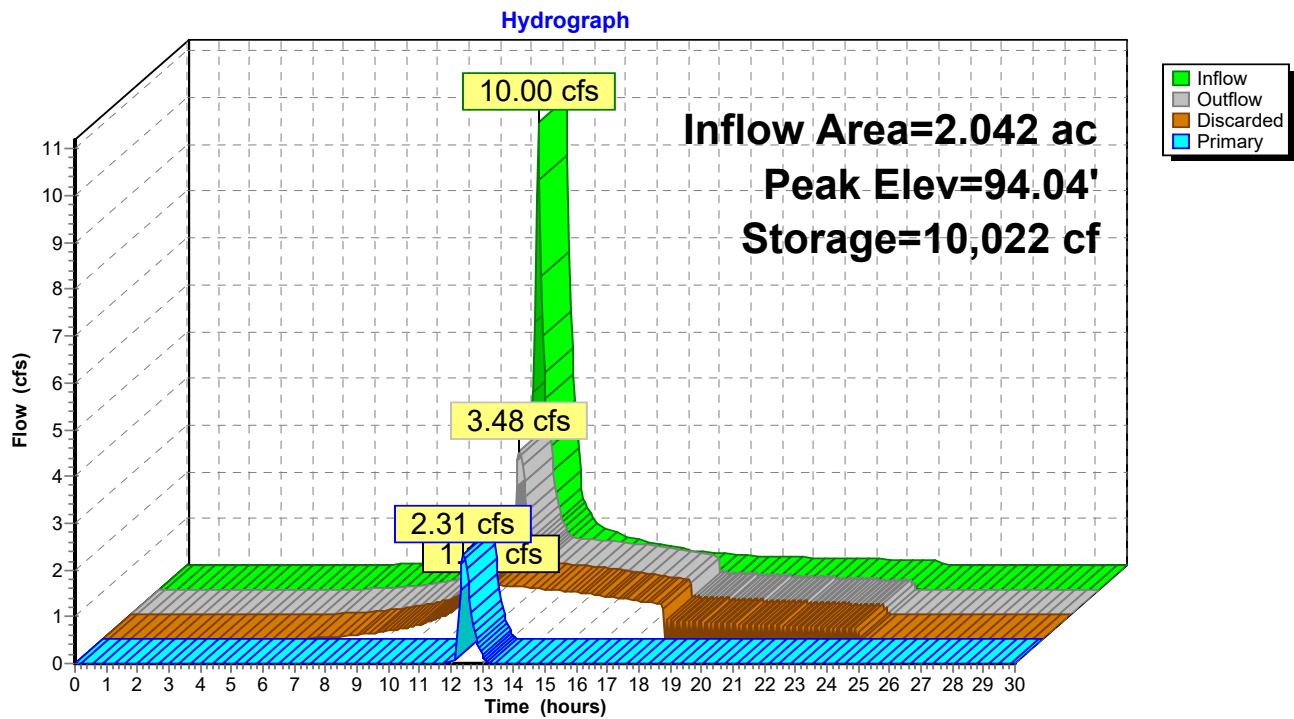
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Type III 24-hr 100-Year Rainfall=6.50"

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Pond 2: Pr. Infiltration Basin



LITRON MANUFACTURING ADDITION

PERMITTING SET 207 BOWLES ROAD AGAWAM, MA 01001

DATE: 1/31/2025

OWNER & PROFESSIONALS

APPLICANT:

RHM REALTY LLC
207 BOWLES ROAD
AGAWAM, MA 01001

RECORD OWNER:

RHM REALTY LLC
207 BOWLES ROAD
AGAWAM, MA 01001

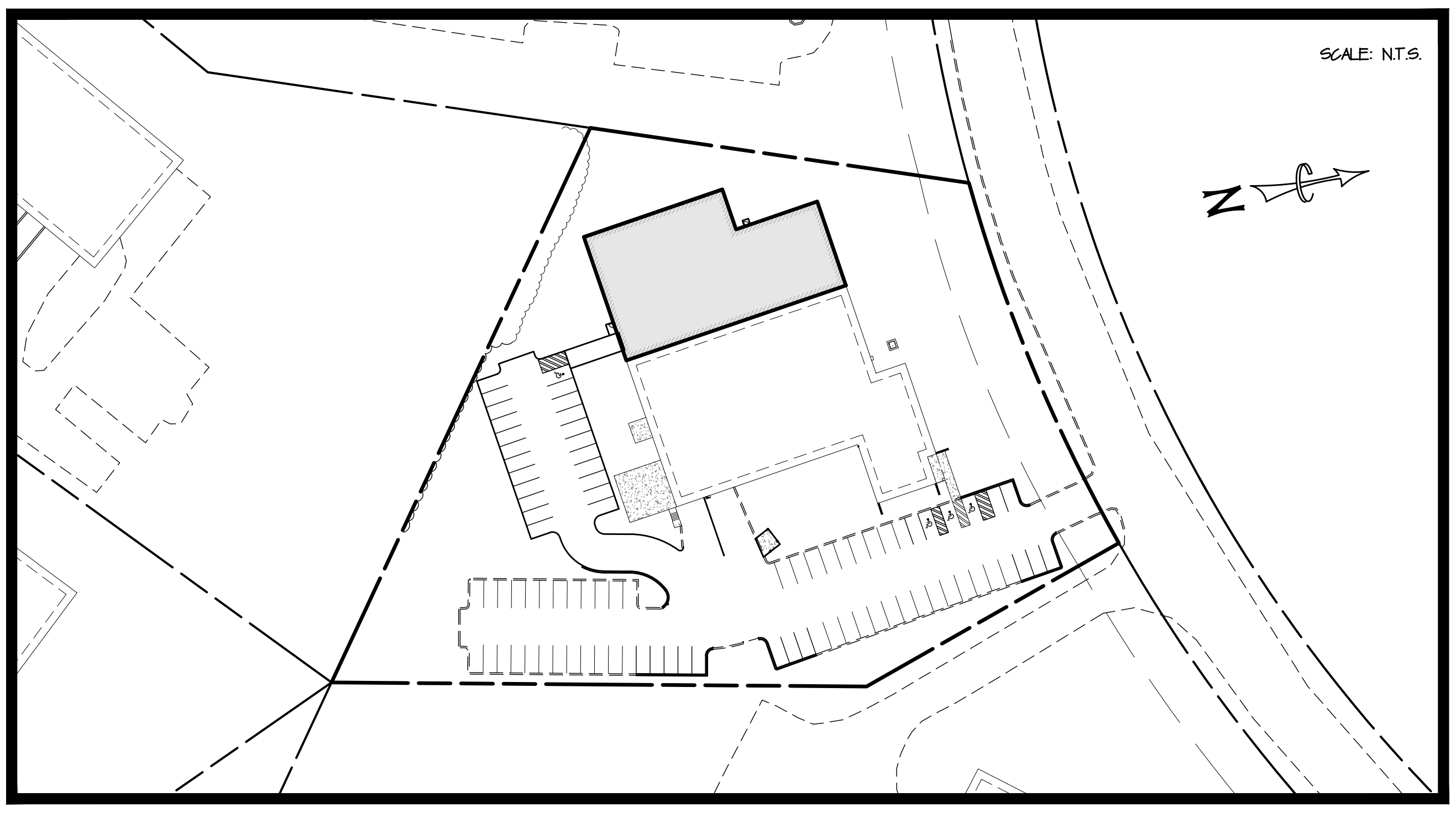
CIVIL ENGINEER:

FURROW ENGINEERING
199 SERVISTAR INDUSTRIAL WAY – SUITE 2
WESTFIELD, MASSACHUSETTS 01085

CONTRACTOR:

SAGE ENGINEERING & CONTRACTING, INC.
199 SERVISTAR INDUSTRIAL WAY – SUITE 2
WESTFIELD, MASSACHUSETTS 01085

PROJECT SITE PLAN

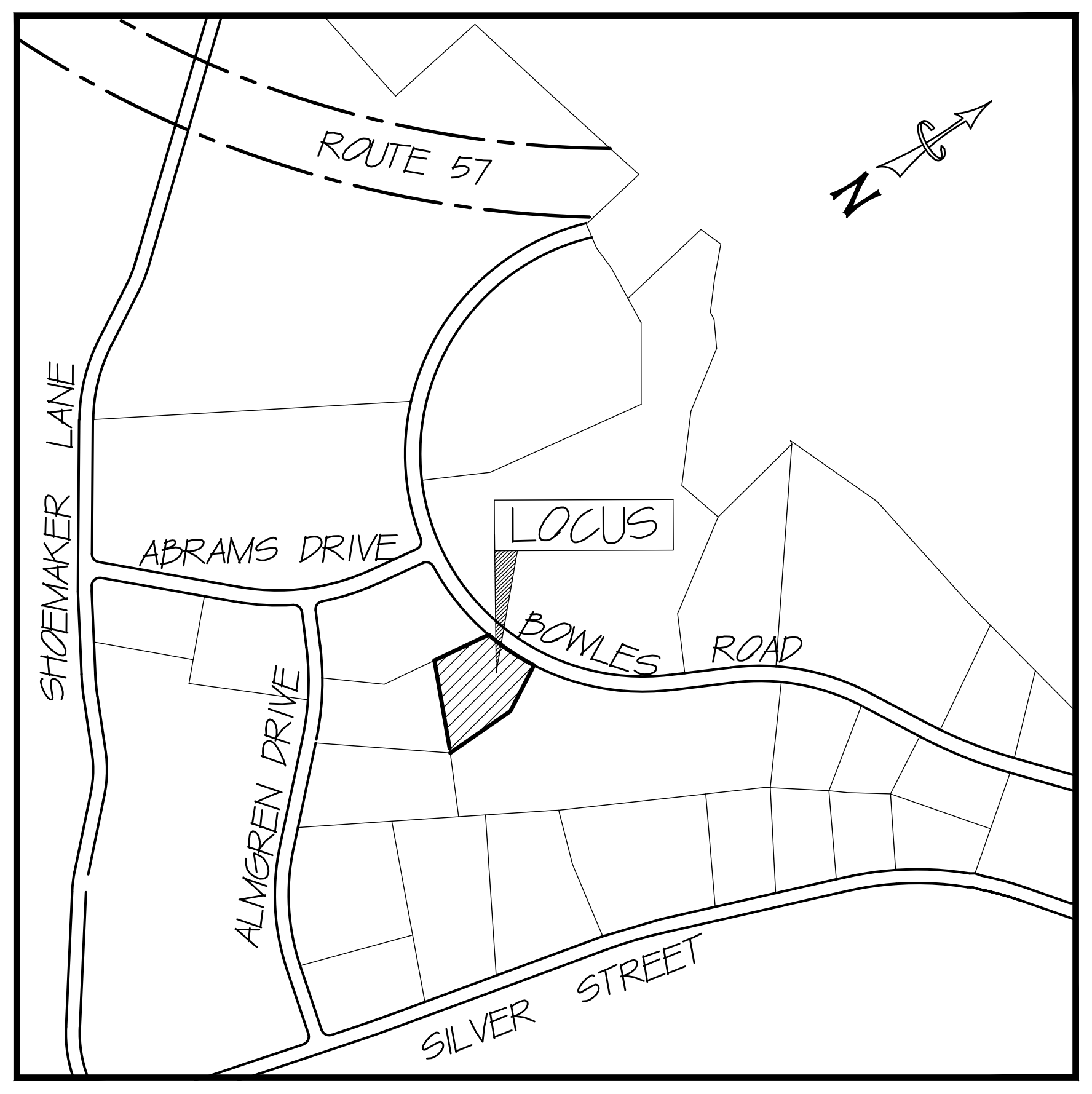


DRAWING LIST

T-1	TITLE SHEET	T-31-25
C-0	NOTES	T-31-25
C-1	EXISTING CONDITIONS PLAN	T-31-25
C-2	LAYOUT, LANDSCAPE, & LIGHTING PLAN	T-31-25
C-3	GRADING, UTILITIES, & STORMWATER MANAGEMENT PLAN	T-31-25
D-1	SITE DETAILS	T-31-25
A1.1	EXISTING FIRST FLOOR PLAN	T-31-25
A3.1	OVERALL PROPOSED FIRST FLOOR PLAN	T-31-25
A4.1	ELEVATIONS	T-31-25

LOCUS PLAN

NOT TO SCALE



FOR PERMITTING ONLY

T-1 TITLE SHEET

Furrow
Engineering

199 Servistar Industrial Way - Suite 2
Westfield, MA 01085
Phone: (413) 562-4884

TOWN OF AGAWAM – ZONING REVIEW

CHAPTER 180 – ZONING

ARTICLE 1 – GENERAL PROVISIONS
SECTION 180-3 – DISTRICTS ENUMERATED; BUILDING ZONE MAP

ZONING DISTRICT:
FULL NAME: INDUSTRIAL DISTRICT A
SHORT NAME: IA

SECTION 180-13 – SITE PLANS
D. A SITE PLAN SHALL BE REQUIRED AND SHALL BE SUBMITTED IN EACH OF THE FOLLOWING SITUATIONS:
(1) ANY PROPOSED RESIDENTIAL, BUSINESS, INDUSTRIAL, INSTITUTIONAL OR OTHER USE OF A NEW OR RENOVATED STRUCTURE OR OF A PARCEL OF LAND, OR ANY CHANGE IN ANY SUCH USE, STRUCTURE OR PARCEL, EXCEPT FOR ONE-FAMILY DETACHED DWELLINGS AND DUPLEXES ON SEPARATE LOTS; PROVIDED, HOWEVER, THAT, UPON APPLICATION, THE INSPECTOR OF BUILDINGS MAY WAIVE THE SITE PLAN REVIEW AND APPROVAL REQUIREMENT FOR PROPOSALS INVOLVING A) A CHANGE IN USE ONLY; B) CONSTRUCTION OR ALTERATION OF NONRESIDENTIAL STRUCTURES NOT TO EXCEED 2,000 SQUARE FEET OF ADDITIONAL GROSS FLOOR AREA, OR C) CONSTRUCTION OR ALTERATION OF STRUCTURES THAT ARE ACCESSORY TO A NONRESIDENTIAL STRUCTURE FOR THE PURPOSES OF COMPUTING GROSS FLOOR AREA, THE INSPECTOR OF BUILDINGS MUST AGGREGATE ALL ALTERATIONS OR CONSTRUCTION COMPLETED WITHIN THE IMMEDIATELY PRECEDING FIVE YEARS.

SITE PLAN REVIEW IS REQUIRED

ARTICLE X – INDUSTRIAL DISTRICT A
SECTION 180-55 – PERMITTED USES
IN ANY INDUSTRIAL DISTRICT A AS INDICATED ON THE BUILDING ZONE MAP, NO BUILDING OR OTHER STRUCTURE SHALL BE ERECTED, ALTERED OR USED AND NO LAND SHALL BE USED OR OCCUPIED FOR ANY PURPOSE EXCEPT ONE OF THE FOLLOWING:
D. ANY INDUSTRIAL PURPOSE, EXCEPT THOSE CONTAINED IN THE FOLLOWING LIST, WHICH MAY BE ALLOWED, BY SPECIAL PERMIT, ONLY AFTER A PUBLIC HEARING BEFORE THE BOARD OF APPEALS:

PROPOSED BUILDING PURPOSE: MANUFACTURING INCLUDING LASER WELDING/CUTTING AND MACHINING
THE PROPOSED USE IS ALLOWED IN THE IA DISTRICT WITHOUT SPECIAL PERMIT

SECTION 180-56 TO 180-59
APPENDIX D: TABLE OF DIMENSION REGULATIONS

SUMMARY OF DIMENSIONAL & DENSITY REGULATIONS		
INDUSTRIAL DISTRICTS	IA	PROPOSED
MIN. LOT AREA (SF)	40,000 SF	125,452 SF
MIN. LOT FRONTAGE	100	252.92
MIN. FRONT YARD	40 FT	±75 FT
MIN. SIDE YARD	25 FT	±26 FT
MIN. REAR YARD	25 FT	±26 FT
MAX. BUILDING COVERAGE	50%	±23%
MAX. BUILDING HEIGHT (FT)	40 FT	<40 FT
MAX. STORIES	2	1

PARKING SUMMARY

TOWN OF AGAWAM – PARKING GUIDELINES

MANUFACTURING ESTABLISHMENT –
ONE (1) PARKING SPACE FOR EACH ONE AND ONE-HALF (1 1/2) EMPLOYEES ON MAJOR SHIFT, AND ONE (1) SPACE FOR EVERY VEHICLE USED IN CONNECTION WITH THE BUSINESS, PLUS SUFFICIENT ADDITIONAL PARKING FOR CUSTOMERS AND VISITORS AS REASONABLY DETERMINED BY THE PLANNING BOARD.

OFFICE, GENERAL OR PROFESSIONAL (EXCEPT MEDICAL OR DENTAL) –
ONE (1) PARKING SPACE FOR EACH THREE HUNDRED (300) SQUARE FEET OF GROSS FLOOR AREA, WHICH AREA SHALL INCLUDE CELLARS OR BASEMENTS DESIGNED AND AVAILABLE FOR TENANT USE OR OCCUPANCY, BUT SHALL NOT INCLUDE FLOOR AREA USED FOR OFF-STREET PARKING.

PARKING SUMMARY

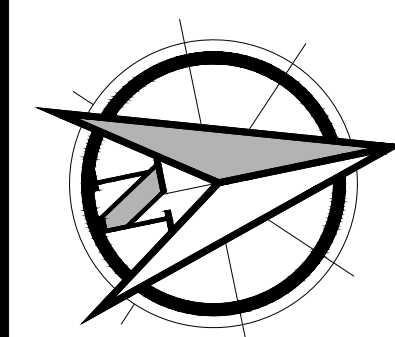
EXISTING BUILDING:
EMPLOYEES ON MAJOR SHIFT = 50
VEHICLES USED = NONE
OFFICE GFA = 2,750 SF

PROPOSED ADDITION:
EMPLOYEES ON MAJOR SHIFT = 20
VEHICLES USED = NONE
OFFICE GFA = NONE

PARKING REQUIRED CALCULATION:
(1 SPACE/ 1 1/2 EMP)X(10 EMP) + (1 SPACE/VEH)X(0 VEH) + (1 SPACE/300 SF)X(2,750 SF) = 56 SPACES

PARKING REQUIRED = 56 SPACES
PARKING PROPOSED = 81 SPACES

SYMBOL & LINE LEGEND		
	IRON PIPE FOUND	IRON PIPE TO BE SET
	CONCRETE BOUND FOUND	CONCRETE BOUND TO BE SET
	EX. UTILITY POLE	PR. UTILITY POLE
	EX. HYDRANT	PR. HYDRANT
	EX. GAS VALVE	PR. GAS VALVE
	EX. WATER VALVE	PR. WATER VALVE
	EX. MONITORING WELL	PR. MONITORING WELL
	EX. CATCH BASIN	PR. CATCH BASIN
	EX. DRAINAGE MANHOLE	PR. MANHOLE
	EX. SANITARY MANHOLE	EX. WATER SHUT-OFF
	EX. ELECTRIC MANHOLE	BORING
	EX. WELL	
	EX. MANHOLE (UNMARKED)	
	EX. LIGHT POLE	
	PERCOLATION TEST	x 500.00 EX. SPOT GRADE
	DEEP HOLE OBSERVATION	x 500.00 PR. SPOT GRADE
		WF-1 WETLAND FLAG
	LIMIT OF BVM W/ FLAGS	
	TOP OF BANK	
	25' RIVERFRONT BUFFER ZONE	
	RAILROAD TRACKS	
	EX. CONTOUR 5' INTERVALS	
	EX. CONTOUR 1' INTERVALS	
	PR. CONTOUR	
	EX. FENCE	
	PR. FENCE	
	GUARDRAIL	
	TREE LINE	
	GAS	EX. GAS LINE
	W	EX. WATER LINE
	OHE	EX. OVERHEAD ELECTRIC WIRES
	UE	EX. UNDERGROUND ELECTIC
	UGT	EX. UNDERGROUND TEL-CATV--DATA
	SD	EX. STORM WATER DRAIN
	SS	EX. SANITARY SEWER
	GAS	PR. GAS LINE
	W	PR. WATER LINE
	OHE	PR. OVERHEAD ELECTRIC WIRES
	UE	PR. UNDERGROUND ELECTIC
	UGT	PR. UNDERGROUND TEL-CATV--DATA
	SD	PR. STORM WATER DRAIN
	SS	PR. SANITARY SEWER



PROJECT DESCRIPTION: NEW MANUFACTURING ADDITION 207 BOWLES ROAD AGAWAM, MASSACHUSETTS 01001	APPLICANT: RHM REALTY LLC 207 BOWLES ROAD AGAWAM, MASSACHUSETTS 01001

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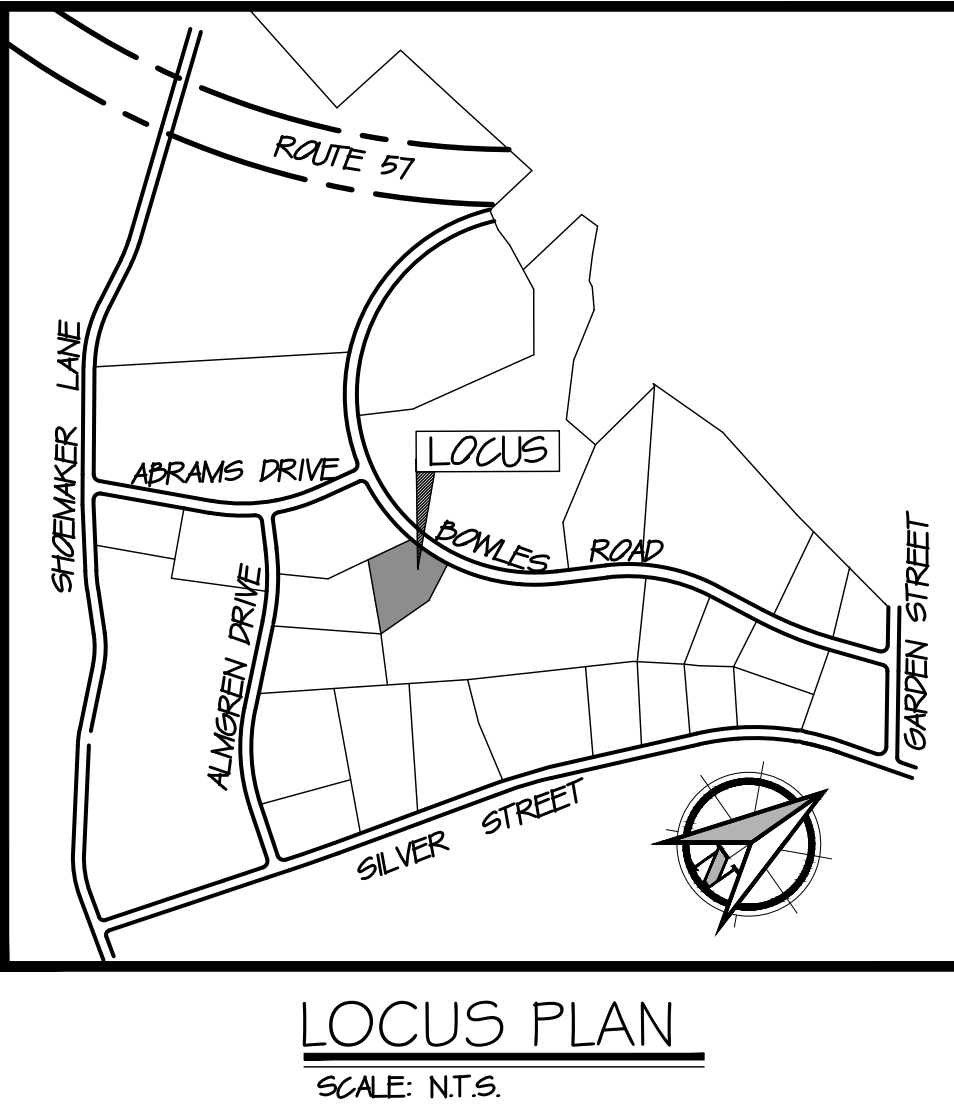
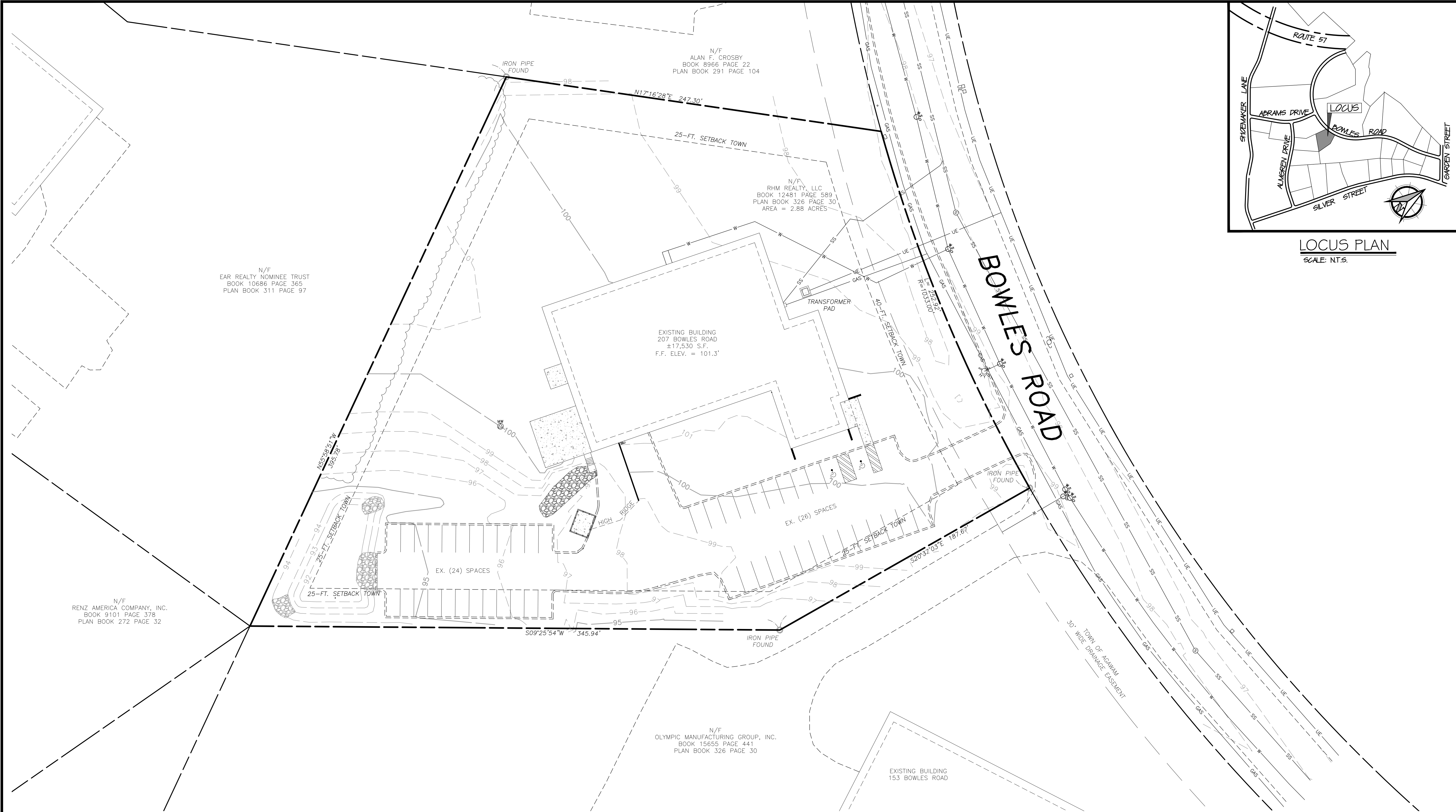
Engineering

199 Servistar Industrial Way - Suite 2
Westfield, MA 01085
Phone: (413) 562-4884

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REVISION DESCRIPTION		BY:	DATE:	NO.
SUBMITTED FOR PRE-FILE MEETING		LDS	1/7/25	1
SUBMITTED SITE PLAN APPROVAL		LDS	1/9/25	2
		—	—	3
		—	—	4
		—	—	5
PROJECT # 154-11-23				
DRAWN BY: LDS				
DATE: 9-19-2024				
SCALE: 1" = 30'				
SHEET: C-0				

C-0 NOTES



PROJECT DESCRIPTION:
NEW MANUFACTURING ADDITION
207 BOWLES ROAD
AGAWAM, MASSACHUSETTS 01001

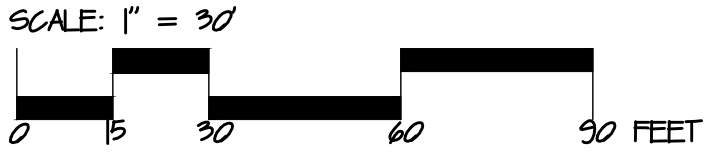
APPLICANT:
RHM REALTY LLC
207 BOWLES ROAD
AGAWAM, MASSACHUSETTS 01001

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Westfield, MA 01085
Phone: (413) 562-4884

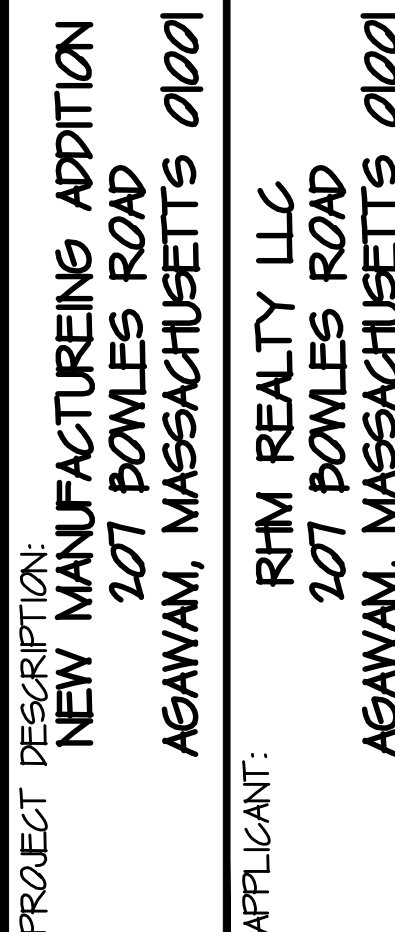
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NO.	DATE	BY	REVISION DESCRIPTION				
			1	2	3	4	5
1	1/7/25	LDS	SUBMITTED FOR PRE-FILE MEETING				
2	1/9/25	LDS	SUBMITTED SITE PLAN APPROVAL				
3							
4							
5							
PROJECT #			1154-11-23				
DRAWN BY:			LDS				
DATE:			9-19-2024				
SCALE:			1" = 30'				
SHEET:			C-1				

- GENERAL NOTES
- FOR REFERENCE TO ENCLOSED PERIMETER SEE HAMPDEN COUNTY REGISTRY OF DEEDS BOOK 12481 PAGE 589, AND PLAN BY DURKEE, WHITE, TOWNE AND CHAPDELAIN CIVIL ENGINEERS AND LAND SURVEYORS, 356 FRONT STREEET, CHICOPEE, MASSACHUSETTS 01013 TITLED "PLAN OF LAND IN THE TOWN OF AGAWAM, MASSACHUSETTS" DATED APRIL 4, 2009
 - UNDERGROUND UTILITY LOCATIONS ARE BASED ON SURFACE FEATURES AS LOCATED BY A FIELD SURVEY PERFORMED BY SAGE ENGINEERING AND CONTRACTING, INC. DURING THE MONTH OF JULY, 2010 AND AVAILABLE RECORD DATA. LOCATIONS ARE APPROXIMATE AND ACTUAL LOCATIONS SHOULD BE VERIFIED WITH THE APPROPRIATE UTILITY COMPANY AND/OR MUNICIPAL DEPARTMENT PRIOR TO FINAL DESIGN AND/OR CONSTRUCTION.
 - THE EXISTING BUILDING AND PROPERTY LINE LOCATION WAS LOCATED BY A FIELD SURVEY PERFORMED BY SAGE ENGINEERING & CONTRACTING, INC. DURING THE MONTH OF JULY, 2010. ABUTTING PROPERTY LINE INFORMATION AND BUILDING LOCATIONS ARE APPROXIMATE ONLY AND THIS INFORMATION WAS OBTAINED FROM AGAWAM GIS.
 - THE TOPOGRAPHIC INFORMATION SHOWN IS THE RESULT OF A FIELD SURVEY PERFORMED BY SAGE ENGINEERING & CONTRACTING, INC. DURING THE MONTH OF JULY, 2010.



C-1 EXISTING CONDITIONS PLAN



Furrow Engineering
199 Servistar Industrial Way - Suite 2
Westfield, MA 01085
Phone: (413) 562-4884

ORIGINAL SEAL IS IN BLUE
INK COPIES ARE NOT VALID

NO.	DATE:	BY:	REVISION DESCRIPTION
①	1/7/75	LDS	SUBMITTED FOR PRE-FILE MEETING
②	1/31/75	LDS	SUBMITTED SITE PLAN APPROVAL
③	—	—	—
④	—	—	—
⑤	—	—	—

PROJECT #: 1154-11-23
DRAWN BY: LDS
DATE: 9-19-2024
SCALE: 1" = 30'
SHEET:

C-2



ALL DISTURBED AREAS SHALL BE LOAMED,
PREPARED, AND SEEDING AS FOLLOWS:

CSM CONSERVATION SEED MIX
25% CREEPING RED FESCUE
35% CROWN FETCH
35% TALL FESCUE
5% REDTOP

PSM PREMIUM SEED MIX
50% RYEGRASS
20% CHEWINGS FESCUE
15% CREEPING RED FESCUE
15% KENTUCKY BLUEGRASS

IC TEMPORARY COVERS, "TC"
100% WINTER RYES

NOTE: IRRIGATION SYSTEM N.I.C.

TOPSOIL NOTES:

1. ALL DISTURBED AREAS TO BE SEEDING OR PLANTED SHALL RECEIVE TOPSOIL (6" MINIMUM DEPTH).
2. TOPSOIL SHALL CONSIST OF FERTILE, FRIABLE, NATURAL LOAM FREE OF SUBSOIL, CLAY LUMPS, BRUSH, STONES OR OTHER DELETERIOUS MATERIALS LARGER THAN 2" IN GREATEST DIMENSION AND MEETING THE FOLLOWING GRADATION, pH AND ORGANIC CONTENT REQUIREMENTS:

PERCENT PASSING SIEVE	
2"	100
1"	85-100
¾"	65-100
NO.200	20-60

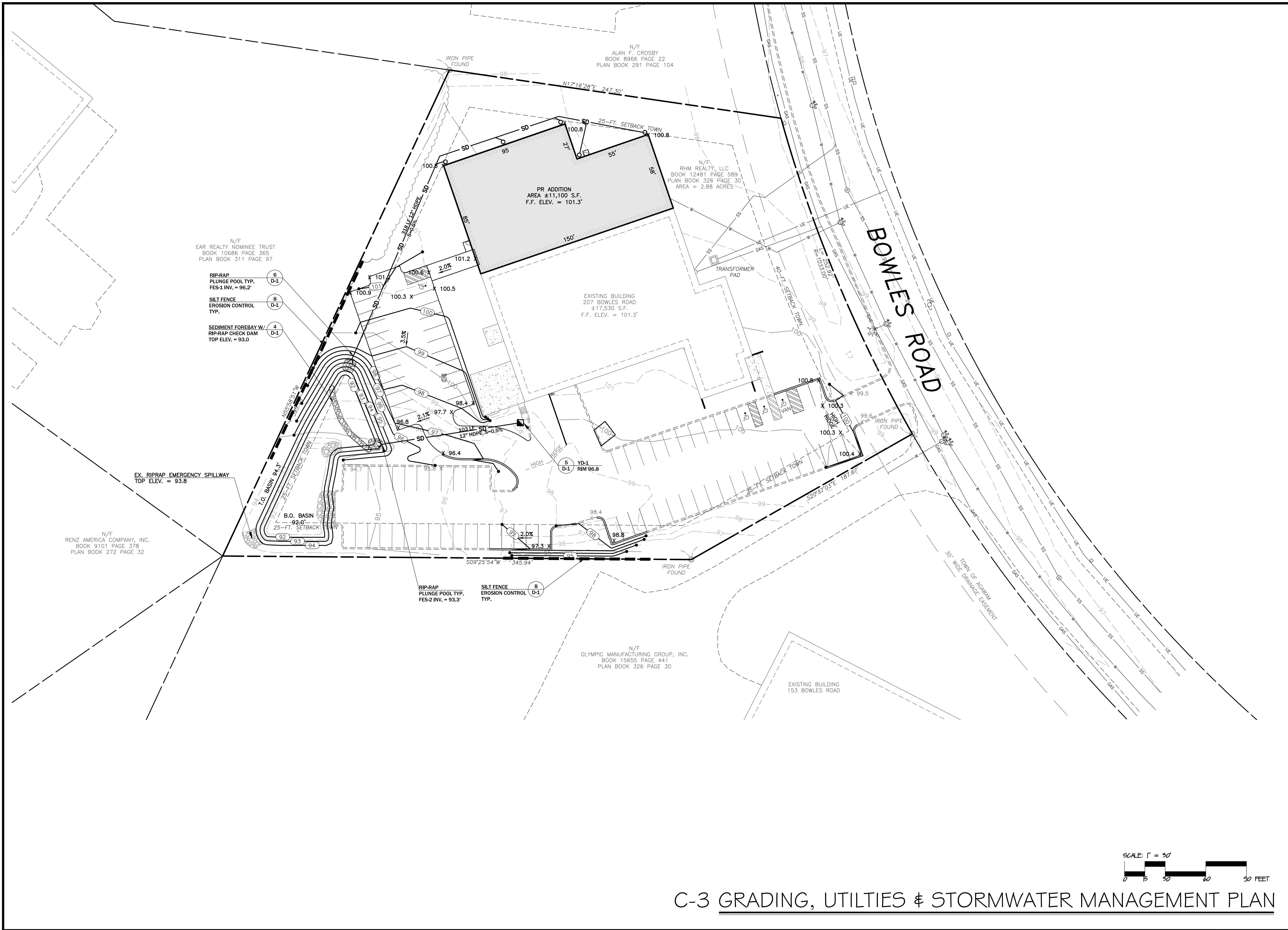
PH RANGE: 5.5 - 7.6
ORGANIC CONTENT: 2 % - 20 %

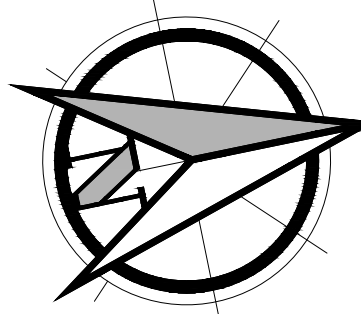
3. PROPOSED TOPSOIL SHALL BE TESTED BY INDEPENDENT TESTING FACILITY WITH TEST RESULTS SUBMITTED TO THE ENGINEER FOR APPROVAL. CONTRACTOR SHALL PAY FOR ALL TESTING. ACCEPTANCE OF TOPSOIL SHALL BE BASED UPON TEST RESULTS. ONE TEST SHALL BE PERFORMED PER 100 C.Y. OF TOPSOIL.
4. NATURAL TOPSOIL MAY BE AMENDED WITH APPROVED MATERIALS, BY APPROVED METHODS TO MEET THE ABOVE SPECIFICATIONS.

LUMINAIRE SCHEDULE					
SYMBOL	LAMP	DESCRIPTION	MODEL	WATTS	QUANTITY
	WALL PACK	WALL MOUNTED LED AREA LIGHT MOUNT HEIGHT 15'-0"	LED FULL CUTOFF WALL PACK COOPER LIGHTING SOLUTIONS LUMARK (FORMERLY EATON), 3000K, AXCS4A-W-GRF	44	1



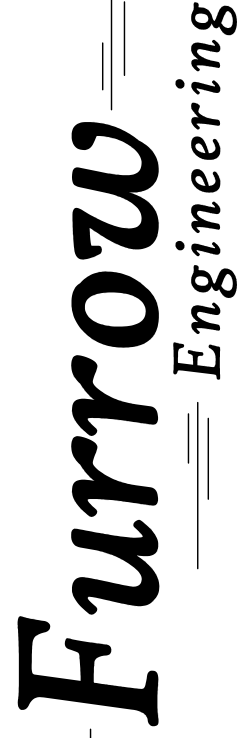
C-2 SITE LAYOUT, LANDSCAPE, & LIGHTING PLAN





PROJECT DESCRIPTION:
NEW MANUFACTURING ADDITION
207 BOWLES ROAD
AGAWAM, MASSACHUSETTS 01001

APPLICANT:
RHM REALTY LLC
207 BOWLES ROAD
AGAWAM, MASSACHUSETTS 01001



Furrow
Engineering

199 Servistar Industrial Way - Suite 2
Westfield, MA 01085
Phone: (413) 562-4884

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NO.	REVISION DESCRIPTION	DATE	BY
1	SUBMITTED FOR PRE-FILE MEETING	1/7/25	LDS
2	SUBMITTED SITE PLAN APPROVAL	1/9/25	LDS
3			
4			
5			

PROJECT #
1154-11-23

DRAWN BY:
LDS

DATE:
9-19-2024

SCALE:
1" = 30'

SHEET:
C-3



D-1 SITE DETAILS

PROJECT DESCRIPTION:	NEW MANUFACTURING ADDITION 207 BOWLES ROAD AGAWAM, MASSACHUSETTS 01001
APPLICANT:	RHM REALTY LLC 207 BOWLES ROAD AGAWAM, MASSACHUSETTS 01001

Furrow Engineering

109 Servistar Industrial Way - Suite 2
Westfield, MA 01085
Phone: (413) 562-4884

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NO.	DATE:	BY:	REVISION DESCRIPTION
1	1/7/25	LD5	SUBMITTED FOR PRE-FILE MEETING
2	1/31/25	LD5	SUBMITTED SITE PLAN APPROVAL
3	—	—	—
4	—	—	—
5	—	—	—

PROJECT # **1154-11-23**

DRAWN BY: **LD5**

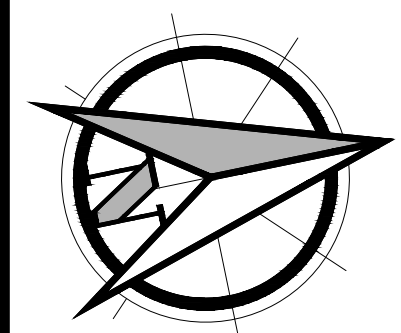
DATE: **12-3-2024**

SCALE: **AS NOTED**

SHEET: **D-1**



A1.1 EXISTING FIRST FLOOR PLAN



PROJECT: NEW MANUFACTURING ADDITION
207 BOWLES ROAD
AGAWAM, MASSACHUSETTS 01001

APPLICANT: LITRON
207 BOWLES ROAD
AGAWAM, MASSACHUSETTS 01001

Furrow Engineering

199 Servistar Industrial Way - Suite 2
Westfield, MA 01085
Phone: (413) 562-4884

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NO.	REVISION DESCRIPTION	BY:	DATE:
1	SUBMITTED SITE PLAN APPROVAL	LDS	1/9/25
2			
3			
4			
5			

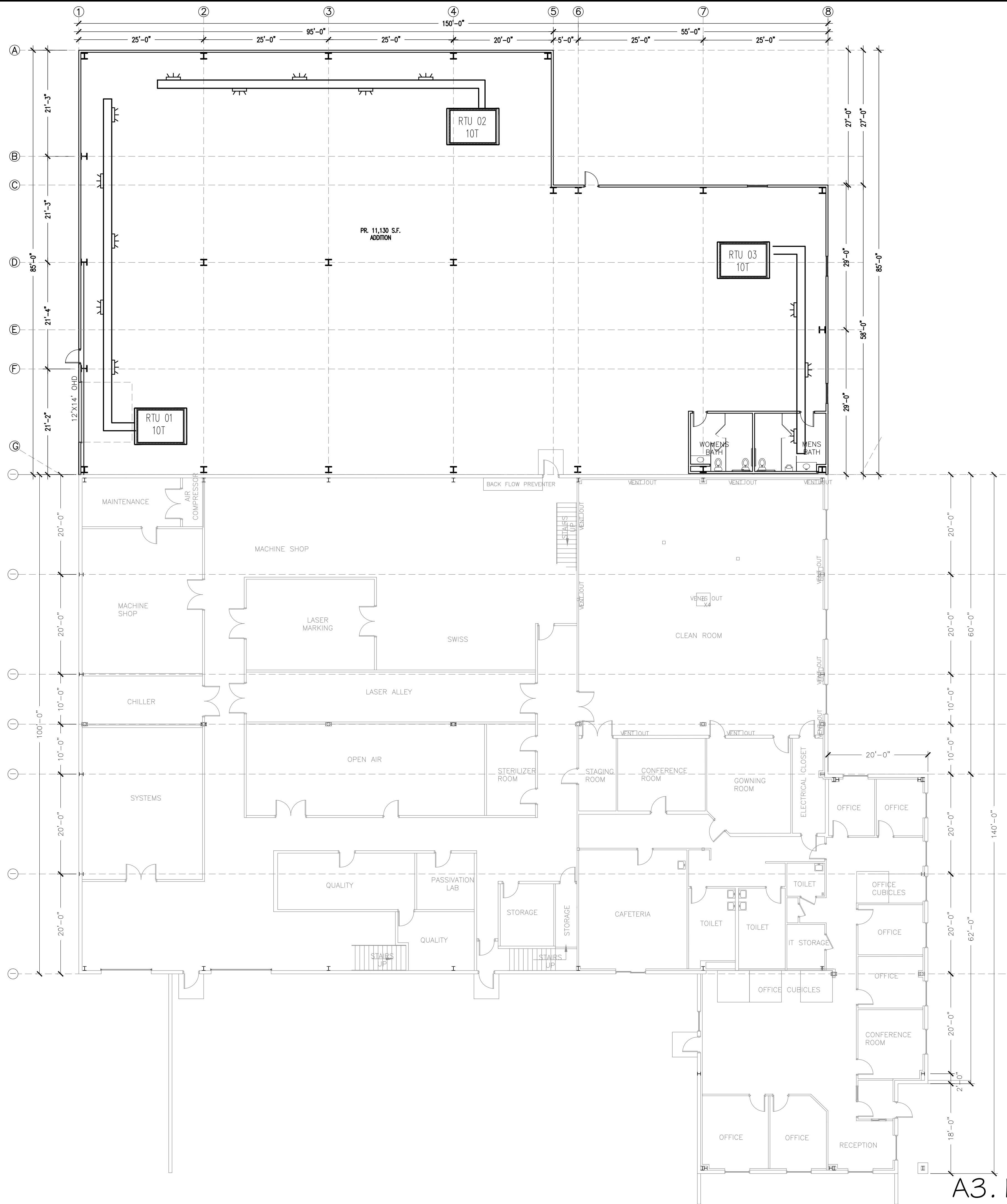
PROJECT # 154-11-23

DRAWN BY: HM

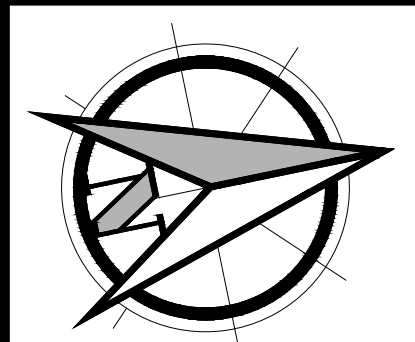
DATE: 9-20-24

SCALE: 1/8" = 1'-0"

SHEET: A1.1



A3.1 OVERALL PROPOSED FIRST FLOOR PLAN



PROJECT: NEW MANUFACTURING ADDITION
207 BOWLES ROAD
AGAWAM, MASSACHUSETTS 01001

APPLICANT: LITRON
207 BOWLES ROAD
AGAWAM, MASSACHUSETTS 01001

Furrow
Engineering

199 Servistar Industrial Way - Suite 2
Westfield, MA 01085
Phone: (413) 562-4884

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NO.	DATE	BY	REVISION DESCRIPTION
1	1/21/25	LPS	SUBMITTED SITE PLAN APPROVAL
2			
3			
4			
5			

PROJECT # 154-11-23

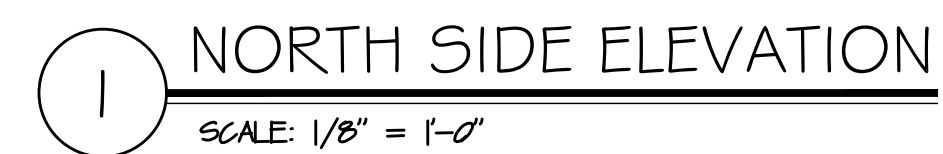
DRAWN BY: HJM

DATE: 9-20-24

SCALE: 3/32" = 1'-0"

SHEET:

A3.1



APPLICANT: LITRON
207 BOWLES ROAD
AGAWAM, MASSACHUSETTS 01001

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REVISION DESCRIPTION		DATE:	DY:	SUBMITTED SITE PLAN APPROVAL
☐		1/9/15	UDS	
☒		—	—	—
☒		—	—	—
☒		—	—	—
☒		—	—	—
☒		—	—	—

PROJECT #:
154-11-23

DRAWN BY:
HJM

DATE:
1-30-25

SCALE:
1/8" = 1'-0"

SHEET:

SHEET: A4.1

A4.1 ELEVATIONS



Town of Agawam
Inspection Services Department
1000 Suffield Street, Agawam, Massachusetts 01001
Telephone - (413) 821-0632

Kevin Duquette
Inspector of Buildings
inspections@agawam.ma.us

February 11, 2025

To: Office of Planning and Community Development:

Re: Site Plan Review Comments- 207 Bowles Road Agawam, MA;

Inspection Services has the following comment for the proposed site plan review for the above referenced address:

- Massachusetts State Building code 780 CMR requires any newly created parking spaces to comply with the requirements of the International Energy Code 2021 Edition with Massachusetts amendments for “EV Ready Spaces” (Electric Vehicle). See below for code requirement.

2021 IECC Massachusetts Amendment- “Section C405.13 Add new text as follows:”

C405.13 Electric Vehicle Ready Parking Spaces (“EV Ready Spaces”) (Mandatory). New parking spaces shall provide EV Ready Spaces in accordance with Table C405.13. Installed wiring suitable for 6.6kW or higher SAE J1772-2017 AC Level II EVSE shall be connected to the service panel and run to within 6 feet (1828mm) of any qualifying parking space. Conductors and outlets for EVSE shall be sized and installed in accordance with the MA electrical code.

TABLE C405.13 EV-READY SPACE REQUIREMENTS

Occupancy Classification	Minimum percentage of EV-Ready Spaces	EV Charging Performance Requirements
Group R and Group B	20%	40-amp dedicated branch circuit or larger branch circuit with ALMS in accordance with Table C405.13.1
All Other Occupancies	10%	40-amp dedicated branch circuit or larger branch circuit with ALMS in accordance with Table C405.13.1

The proposed site plan shows the creation of 37 new parking spaces. The Massachusetts State Stretch Energy code would require 4 spaces to be “EV” ready. These “EV” ready spaces do not specifically have to be located within the newly created parking spaces and could be installed within any existing parking space. The approved site plan should have these designated spaces labeled for reference.

Respectfully,

Kevin Duquette

Kevin Duquette
Inspector of Buildings
Town of Agawam

Agawam Planning Board February 6, 2025

MEMBERS PRESENT:

Frank DeStefano, Vice Chair
Michael DiLullo
Michael Cleavall

MEMBERS ABSENT:

Charles Elfman
Violet Baldwin, Chair

ALSO PRESENT:

Taryn Egerton

Mr. DeStefano called the meeting to order at 6:00pm.

1. FORM A – 131 Coronet Circle – Savonin

Viktor Savonin, applicant, and Gary Liquori were in attendance to present this agenda item. Mr. Liquori stated that 131 Coronet Circle was granted a zone change to Residence A-1 which requires 125 feet of frontage and a lot area of 17,000 square feet. He stated they are proposing to split the property to create a second lot, which meets the zoning requirements. Mr. DeStefano stated that Inspection Services and the Town Engineering Department reviewed the plan and did not have any comments.

Motion was made by Mr. Cleavall and seconded by Mr. DiLullo to approve the plan for 131 Coronet Circle – Savonin under “Subdivision Control Law Not Required.”

VOTE 3 – 0

2. DISCUSSION & POSSIBLE VOTE – Planning Board Representative for Housing Committee

The members agreed that a full board should be present to discuss this agenda item.

Motion was made by Mr. Cleavall and seconded by Mr. DiLullo to table this agenda item until the February 20, 2025 meeting.

VOTE 3 – 0

3. APPROVAL OF MINUTES December 19, 2024

Motion was made by Mr. DiLullo and seconded by Mr. Cleavall to table the December 19, 2024 minutes.

VOTE 3 – 0

Agawam Planning Board February 6, 2025

4. Correspondences

Ms. Egerton informed the Board that the City Council has received two zoning amendments that were referred to the Planning Board. The public hearings are scheduled for the February 20th meeting.

Motion was made by Mr. Cleavall and seconded by Mr. DiLullo to adjourn the meeting.

VOTE 3 – 0

Meeting adjourned at 6:15pm.

DRAFT