Planning Commission
MEETING AGENDA

Thursday, December 21, 2023 - 1:00 PM
Council Chambers, Easton Town Office
14 S Harrison Street

1. Call to Order

2. Approval of Minutes.

a. Approval of the Decision Summary from the November 16, 2023 meeting.

b. Approval of the October 11, 2023 Comprehensive Plan Workshop Summary.

3. Old Business

a.

Applicant:	Rise Up Dover Road LLC
File No.:	2023-870
Location:	625 Dover Road Tax Map 103, Grid 0EA, Parcel 0990
Zoning District:	R-7A
Nature of Request:	Design review and approval of the graphics and mechanical equipment screening on a previously approved kitchen facility on the existing property located at 625 Dover Road, also known as Tax Map 103, Parcel 0990.

4. New Business

a.

Applicant:	Lane Engineering, LLC
File No.:	2023 - 1069
Location:	9158 and 9170 Mistletoe Drive Tax Map 025, Grid 0022, Parcel 0138, Lots 2 & 3
Zoning District:	I
Nature of Request:	Sketch Site Plan approval of a proposed manufacturing/wholesale building and a one-story office building with associated site improvements.

b.

Applicant:	Shoregate of Cannery Commercial LLC
File No.:	2023 - 996

Location:	503 North Street and 108 North East Street Tax Map 103, Grid 0EA, Parcel 0753 & 0756, Lot 3 & 4
Zoning District:	BC
Nature of Request:	Sketch Site Plan approval to construct three (3) multifamily residential buildings with a total of 96 units and an amenity building with associated site improvements, including the demolition of an existing garage and storage building.

5. Discussion Item

a. Zoning Requirements for Adult-Use Cannabis Dispensaries.

6. Adjournment.

Town of Easton Planning Commission
Draft Decision Summary
Thursday, November 16, 2023 at 1:00 p.m.
Town Hall Chamber 2
14 S. Harrison Street, Easton

Archived video of the meeting is available at:
Town of Easton Agendas and Minutes (eastonmd.gov)

Attendance:

Commission Members:
Jennifer Dindinger, Chairperson
Philip Toussaint, Vice Chairperson
Victoria McAndrews
William Ryall
Paul Weber
Tom Klein, Alternate

Staff:
Miguel Salinas, Planning and Zoning Director
Lynn B. Thomas, Town Planner - Long Range
Joseph Mayer, Plan Reviewer
Nicholas Johnson, Town Planner - Current
Sharon Van Emburgh Esq, Town Attorney
Rick Van Emburgh, Town Engineer
Samantha Smith, Administrative Specialist

1. **Call to Order** — Chairperson Dindinger called the meeting to order at 1:00 pm.

2. **Decision Summary Review** —
   a. October 19, 2023 - The Commission noted the following correction to the draft decision summary:

      i. Item 5.c.: Modify language to the motion for accuracy.

Vice Chairperson Toussant moved to approve the October 19, 2023 Decision Summary with amendments. Commissioner McAndrews seconded the motion.

Vote	5 - 0
FOR:	5 - Dindinger, Toussaint, McAndrews, Ryall, Weber
AGAINST:	0
ABSTAIN:	0
ABSENT:	0

3. **Old Business**

a. **Applicant:** **Shore Health System / University of Maryland Medical System**
File No.: **2023 - 1027**
Location: Longwoods Road Parcel 0129, Easton, MD 21601
Tax Map 017, Grid 023, Parcel 0129, Lot 3/5
Zoning: RH
Request: The applicant is seeking architectural approval of a proposed medical center with additional landscaping, screening, and associated connectivity for all emergency access points. This application received sketch site plan approval and a Supplemental waiver request by the Commission at their October 19, 2023 meeting subject to the following conditions:

1. The applicant shall address any remaining Easton Staff Development Review comments in conjunction with the submission of a Development Site Plan.
2. The applicant shall investigate appropriate measures to minimize bird strike.
3. The applicant shall explore all ingress and egress options of emergency access points with the Town Engineer and Vice Chairperson Toussaint.
4. The applicant shall return to the Planning Commission for architectural approval and to address the need for any additional landscaping and/or screening based upon its structural viewpoints.

Staff Presentation:
Joseph Mayer, Plan Reviewer
Lynn Thomas, Town Planner
Miguel Salinas, Director of Planning and Zoning

Applicant Presentation:
Kenneth Webb

Public Comment — None

Commissioner Weber moved to approve the architecture as submitted, with the finding that all prior conditions from the October 19, 2023 meeting have been satisfied by the applicant. Commissioner McAndrews seconded the motion.

Vote	5 - 0
FOR:	5 - Dindinger, Toussaint, McAndrews, Ryall, Weber
AGAINST:	0
ABSTAIN:	0
ABSENT:	0

4. New Business

a. Applicant: **Paquin Design**
File No.: **2023 - 1032**
Location: 123 S. Washington Street, Easton, MD 21601
Tax Map 104, Grid 000, Parcel 1987 and 1988
Zoning: CB
Request: The applicant is seeking site plan approval to construct a 11,400 square foot building shown as a three-story Live-Work Building with first floor commercial, and six (6) residential units on the second and third floors. Other associated improvements include fifteen (15) parking spaces, drive aisle and other stormwater management facilities and landscaping. On September 25, 2023, the Historic District Commission granted a Certificate of Appropriateness for the proposed architecture and demolition of the existing single-story.

Staff Presentation:
Joseph Mayer, Plan Reviewer
Lynn Thomas, Town Planner
Miguel Salinas, Director of Planning and Zoning

Applicant Presentation:
Brendan Mullaney, Esq.
Brent Paquin, Paquin Design
Brett Ewing, Lane Engineering

Public Comment — None

Commissioner Weber moved to approve the sketch site plan with the condition that the applicant shall add additional landscaping on the property facing West Street. Commissioner Ryall seconded the motion.

Vote	5 - 0
FOR:	5 - Dindinger, Toussaint, McAndrews, Ryall, Weber
AGAINST:	0
ABSTAIN:	0
ABSENT:	0

5. Discussion Items

a. Continue Discussion of the Comprehensive Plan Update — An ongoing review and discussion of the Comprehensive Plan resumed. This is a continuation of the October 11, 2023 Comprehensive Plan Workshop to discuss the first four (4) Draft chapters of the Comprehensive Plan including: the Introduction, Plan Background, Land Use, and Community Character Chapters.

i. 2023 Design Principles — The Commission revisited the language presented for the 2023 Design Principles in the Community Character chapter of the Plan. Commissioner Klein reiterated his request for proposed language to Design Principle # 4 - Ample Open Space to include: "*...any such required park areas may be provided as either active, passive, or natural park areas, as deemed appropriate by the Planning Commission and with consultation by the Park Board during project review*"; and proposed broader language to the Inclusionary Zoning section of Design Principle #7 - Neighborhoods Should Contain a Diversity of Housing Types.

ii. The Role of Infill and Redevelopment — The Role of Infill and Redevelopment in Easton's Growth Strategy is a newly drafted section of the Community Character chapter of the Plan that encourages infill on appropriate projects, and focuses on the compatibility for infill and redevelopment in existing neighborhoods. The Commission recommended removing the capitalization wherever "smart growth" is characterized; and to replace the language for other depictions of smart growth as: "*government mandated growth policies*" or "*State growth policies*".

iii. The Role of Major Retail — The language in the Role of Major Retail in Easton section of the Community Character chapter was recommended without any changes to Town's general policies. The Commission favored the language as presented.

iv. Land Use, and Community Character Goals and Objectives — The Commission deliberated on the appropriateness of the language as presented for the proposed goals and objectives referenced throughout the Land Use chapter and Community Character chapter of the Plan. The Commission generally favored the language as presented, and requested the future development of supplemental design guidelines for the Community Character section.

b. Zoning Requirements for Adult-Use Cannabis Dispensaries — Pursuant to a recommendation to the Council to adopt new and/or revised cannabis regulations, staff presented a draft of amendments to the Zoning Code to regulate the various cannabis-related uses. The Commission proposed a revision to all of the cannabis related uses listed under the Miscellaneous/Combination/Hybrid Uses in the Table of Permissible Uses. The Commission also recommended clarifying language to the odor control standards to be found under Cannabis Dispensary in the Commercial Uses section. Finally, the Commission recommended changes to supplemental standard requirements for Cannabis Grow Facilities to be classified as an Agriculture Controlled Environment.

Staff Presentation:
Lynn Thomas, Town Planner
Sharon Van Emburgh *Esq*., Town Attorney

c. Continued discussion of Amendments to Zoning Ordinance — At their October 19, 2023 meeting, the Commission respectfully recommended to the Council no changes to their original proposal pursuant to Missing Middle Housing types, and provided language and other visuals to the Council to supplement their findings. Considering the public's unfavorable reaction to this recommendation at the Council's November 6, 2023 Public Hearing, the Commission suggested the scheduling of a joint workshop to address concerns with the zoning text amendments, and to provide the Council a better understanding of the Commission's recommendation. This joint work session will be scheduled at a later time.

6. Adjournment — Chairperson Dindinger moved to adjourn. Commissioner McAndrews seconded the motion. The meeting was adjourned at 4:02 p.m.

Town of Easton Planning Commission
Comprehensive Plan Workshop Draft Summary
Tuesday, October 11, 2023 at 2:30 p.m.
Town Hall Chamber 2
14 S. Harrison Street, Easton

Archived video of the meeting is available at:
Town of Easton Agendas and Minutes (eastonmd.gov)

Attendance:

Commission Members:
Jennifer Dindinger, Chairperson
Philip Toussaint, Vice Chairperson
Victoria McAndrews
William Ryall
Paul Weber
Tom Klein, Alternate

Staff:
Lynn B. Thomas, Town Planner
Joseph A.Mayer, Plan Reviewer
Nicholas Johnson, Planner
Sharon Van Emburgh, Town Attorney
Samantha Smith, Administrative Specialist

Absent:

Staff:
Miguel Salinas, Planning and Zoning Director

1. **Introductions**— Chairperson Dindinger called the meeting to order at 2:30 p.m.

2. **Comprehensive Plan Work Session** — Mr. Lynn Thomas summarized the purpose of the workshop as an ongoing effort to review and discuss early Draft versions of sections presented in the Introduction, Plan Background, Land Use and Community Character chapters of the Town's Comprehensive Plan. This workshop is also for the purpose of seeking the Commission's feedback on the overall direction and consistency of these chapters throughout the Comprehensive Plan.

    a. Planned Growth Rate —

        i. The Commission considered the appropriateness of the projected growth rate in the Plan Background chapter. Particular goals and objectives for the 2010 Comprehensive Plan were designed to limit future residential growth to a 1% growth rate which has not been exceeded at this time. Considering

multiple sources of feedback, a projected growth rate increase to 1.75% was proposed. The Commission and staff discussed measures to control the growth rate including the granting of a maximum number of sewer permits and/or building permits per year, and the use of Annexation Policies to regulate the growth rate as consistent with the Comprehensive Plan. The Commission favored language that depicts the average annual compound growth rate over a ten (10) year period. Commissioner Weber recommended revisiting the parameters of the Urban Growth Boundary, and to prioritize creating incentives for infill and redevelopment to control density. The Commission favored the language as presented, and recommended additional language acknowledging that the needs of the community have shifted, and an adjustment to the growth rate was increased to a higher density as justification to address the significant need for attainable housing in Easton.

b. Traditional Neighborhood Development (TND) Zoning Classification —

i. The Commission deliberated over the suggested provisions for a new Traditional Neighborhood Development (TND) Zoning Classification in the Community Character chapter of the Comprehensive Plan that would encourage a more traditional neighborhood development design for all middle housing types, and fewer use restrictions on undeveloped parcels within the perimeter of the Town and future growth areas. Chairperson Dindinger raised a concern regarding the walkability outside of the traditional neighborhood design of these subdivisions. The Commission suggested clarifying language to the criteria to include all middle housing types, recommended language that increased the minimum and maximum density in the TND Zoning Classification, and suggested the addition of visuals and other example photos to supplement those new design principles.

c. Community Input and Outreach —

i. The Commission discussed the proposed language detailing the findings from recent community outreach efforts and the input received, and the appropriateness of those findings of the Growth Management strategy as addressed in the Plan Background chapter. The Commission suggested the relocation of the History of Surveys section and Community Questions section into an Appendix of the Comprehensive Plan.

d. Basic Growth Strategy —

i. Following a discussion regarding the language in the Growth Management strategy, the Commission further refined its details; building upon the components of the general growth strategy for the Town. The basic growth strategy in the 2010 Comprehensive Plan can be summarized as a five (5)

part growth strategy which: contains the outward extent of sprawl with an Urban Growth Boundary, increases density, builds neighborhoods, improves design, and restricts the rate of growth. The Commission recommended a revision to the language to replace "*...restricts the rate of growth*" with "*...managing the rate of growth*". The Commission also favored language that recognizes an adjustment of the strategy as a means to adapt to environmental changes and a higher sustainability. The adoption of an Adequate Public Facilities Ordinance (APFO) as referenced in the Land Use chapter was revisited however, the Commission was divided on the decision to further pursue and will consider the technical features of an APFO adoption at a later time. Finally, the Commission suggested the addition of a sixth component of an overall growth strategy. The new component should address sustainability and the adaptation of growth and development policies in consideration of the impacts of global climate change.

e. 2023 Design Principles —

i. The Commission considered the appropriateness of the language presented for the proposed goals and objectives of the 2023 Design Principles as referenced in the Land Use and Community Character chapters. The Commission indicated that certain descriptions of a "*traditional*" and "*old fashioned* " neighborhood are ambiguous, and can be interpreted by different meanings; citing the specific design principles to be found in the Historic District requirements. Commissioner Klein suggested additional language to Design Principle # 4 - Ample Open Space to include: "*...any such required park areas may be provided as either active, passive, or natural park areas, as deemed appropriate by the Planning Commission and with consultation by the Park Board during project review*".

3. Adjournment– The meeting was adjourned at 4:00 p.m.

TOWN OF EASTON
PLANNING & ZONING
14 S Harrison Street, Easton MD 21601

Date of Meeting: December 21, 2023

3a

PLANNING COMMISSION
SUPPLEMENTAL ITEM

SUBJECT:	**Rise Up Coffee Roasters - to review and/or determine if a redesign of the graphics and/or additional screening of mechanical components is necessary.**
ELECTION WARD:	Ward 4
CRITICAL ACTION DATE:	At the pleasure of the Commission
STAFF CONTACTS:	Joseph Mayer, Plan Reviewer Miguel Salinas, Director of Planning and Zoning
DOCUMENT CREATED ON:	December 13, 2023

PURPOSE: The applicant is seeking approval from the Planning Commission to address the need for any redesign of the graphics and/or additional screening of mechanical components is necessary.

RECOMMENDATION:

Planning Commission: The Commission, at their October 19, 2023 meeting, moved (5-0) to approve the application and forward a positive recommendation to the Town Council to amend the previously approved Planned Unit Development (PUD) for the addition of an 8' x 12' walk-in cooler to the existing kitchen unit, and the addition of a 12' x 24' storage shed to the existing property subject to conditions, with conditions that the Town Planner may determine that mechanical equipment screening at the top of the structure is necessary and shall retain the right to seek approval/denial from the Planning Commission and require the applicant to return to the Commission after November 30th (December 21, 2023 Planning Commission meeting) for review and/or determine if a redesign of the graphics and/or additional screening of mechanical components is necessary.

Staff: Staff supports Planning Commission approval of the proposed architecture.

UPDATE: On December 4, 2023, the Town Council approved the Planned Unit Development Amendment to include a Walk-in Cooler, Storage Shed, Tent, Kitchen Facility, Walk-Up Cafe, Kiosk, and Bathrooms. The Council voted 5-0 to approve the Amendment with the following conditions:

1. The shade structure shall be erected seasonally during the period of March 1st through November 30th, and shall be taken down and stored offsite on November 30th.
2. Upon disassembling, all tripping hazards shall be removed as deemed necessary by the Building Inspection Division.
3. Music or other amplified sounds from the loudspeakers shall not play prior to 8 a.m. or after 7 p.m.
4. The restroom, tables and chairs may all remain in place and ready for use.
5. The applicant shall obtain a building permit for the Mad-Eggs facility and walk-up cafe, walk-in cooler and storage shed and shall obtain additional approval from the Fire Marshal, Talbot County Health Department, and Easton Utilities Commission.
6. The applicant shall submit As-Builts for review with the Town's Engineering Department to close out the grading permit.
7. Upon installation of the "Mad Eggs" kitchen facility, the Town Planner may determine that mechanical equipment screening at the top of the structure is necessary and shall retain the right to seek approval/denial from the Planning Commission.
8. The applicant shall return to the Planning Commission after November 30th (December 21, 2023 Planning Commission meeting) to review and/or determine if a redesign of the graphics and/or additional screening of mechanical components is necessary.

On December 6, 2023, the applicant submitted a depiction of the proposed screening of the mechanical equipment for the Rise Up Coffee Roasters site at 625 Dover Road. The proposed screening will be made of metal, with adhered vinyl text. No change to the existing graphics on the shipping container is proposed.

On December 7, 2023, the staff reviewed the submitted documents and determined that, with the vinyl text, the metal screening facing Dover Road is technically a wall sign. Per Section 28-1101.7.A.1.c from the Town's Zoning Ordinance, *for each business on a separate property, wall-mounted signage for each street frontage is permitted with a maximum area of one square foot of signage per one lineal foot of street frontage of the building.* The total length of the Mad Egg's kitchen is approximately twenty (20) square feet (SF). The proposed wall sign area of 71 SF +/- far exceeds the maximum twenty (20) SF requirement. This would require a Variance from the Board of Zoning Appeals. Staff suggest that the screening, in keeping with the spirit and intent from the Planning Commission, should conceal the mechanical equipment and blend in with the overall structure.

ISSUES: There are no outstanding issues.

RECOMMENDED CONDITION:

Staff recommends that the screening, in keeping with the spirit and intent from the Planning Commission's previous discussions, should conceal the mechanical equipment and blend in with the overall structure. If the Planning Commission chooses to approve the proposed screening, staff suggests the approval is contingent upon the applicant obtaining a Variance from the Board of Zoning Appeals.

DRAFT MOTIONS:

1. I move that the Planning Commission approve the mechanical equipment screening, subject to staff's Conditions of Approval.

OR

2. I move that the Planning Commission continue the application to the January 18th Commission meeting for further discussion.

OR

3. I move an alternate motion.

ATTACHMENTS:
1. 2023-09-28 TOE P&Z Staff Report Rise Up (PC), paper copy & PDF
2. 2023-10-26 TOE P&Z Staff Report Rise Up (TC), paper copy & PDF
3. 2023-12-6 Rise Up Proposed Screening Depiction, paper copy & PDF
4. 2023-12-6 Rise Up Transmittal, paper copy & PDF
5. 2023-12-07 TOE P&Z review, paper copy & PDF
6. 2023-12-07 Town of Easton Mail - Rise Up - Proposed Screening of the Mechanical Equipment, paper copy & PDF
7. 2023-12-08 Public Comment_ J.Leanos, paper copy & PDF

TOWN OF EASTON
PLANNING & ZONING
14 S Harrison Street, Easton MD 21601

Date of Hearing: November 6, 2023

TOWN COUNCIL
PUBLIC HEARING
STAFF REPORT

SUBJECT: **Planned Unit Development Amendment to include a Walk-in Cooler, Storage Shed, Tent, Kitchen Facility, Walk-Up Cafe, Kiosk, and Bathrooms**

ELECTION WARD: Ward 4

CRITICAL ACTION DATE: At the pleasure of the Council

STAFF CONTACTS: Joseph Mayer, Plan Reviewer
Miguel Salinas, Director of Planning and Zoning

APPLICANT: Rise Up Coffee Roasters % Ozzie Jimenez

DOCUMENT CREATED ON: October 26, 2023

PURPOSE: Rise Up Coffee (Applicant) is requesting to amend their existing Planned Unit Development (PUD) to include a walk-in cooler, storage shed, tent, kitchen facility, walk-up Cafe, kiosk, and bathrooms.

RECOMMENDATIONS:

Planning Commission: At the Planning Commission Public Hearing on October 19, 2023 meeting, the Commission forwarded (5-0) the application to the Town Council with a recommendation of approval with recommended conditions.

Staff: Should the Town Council approve the PUD Amendment, staff recommends the proposed conditions (see below).

APPLICATION INFORMATION:	
APPLICANT: Armistead, Lee, Rust & Wright, P.A. % Zach Smith Rise Up Coffee Roasters % Ozzie Jimenez	**REPRESENTATIVE:** ALRW, P.A.: Zack Smith
PARCELS/ACREAGE:	

Parcel Information	Acreage
Map 103, Grid 0000, Parcels 0990	1.089

ACCEPTANCE DATE: September 28, 2023	**LOCATION:** 625 Dover Road
EXISTING ZONING PUD	**EXISTING LAND USE:** Commercial
HISTORIC DISTRICT: Not Applicable	**FUTURE LAND USE MAP:** Residential

CONTEXT:
Location/Site Access – The subject property is located on the north side of Dover Road.

Existing Conditions – The subject property is used for commercial purposes.

Surrounding Properties
- 705 Dover Road - R-7A
- 630 Dover Road - R-7A
- 628 Dover Road - R-7A
- 626 Dover Road - R-7A
- 624 Dover Road - R-7A
- 622 Dover Road - CB
- 618 Dover Road - CB
- 600 Dover Road - CB
- 615 Dover Road - R-7A
- Oswald Aley, Parcel 976 - R-7A
- 612 E. Dover Street - R-7A
- 614 E. Dover Street - R-7A

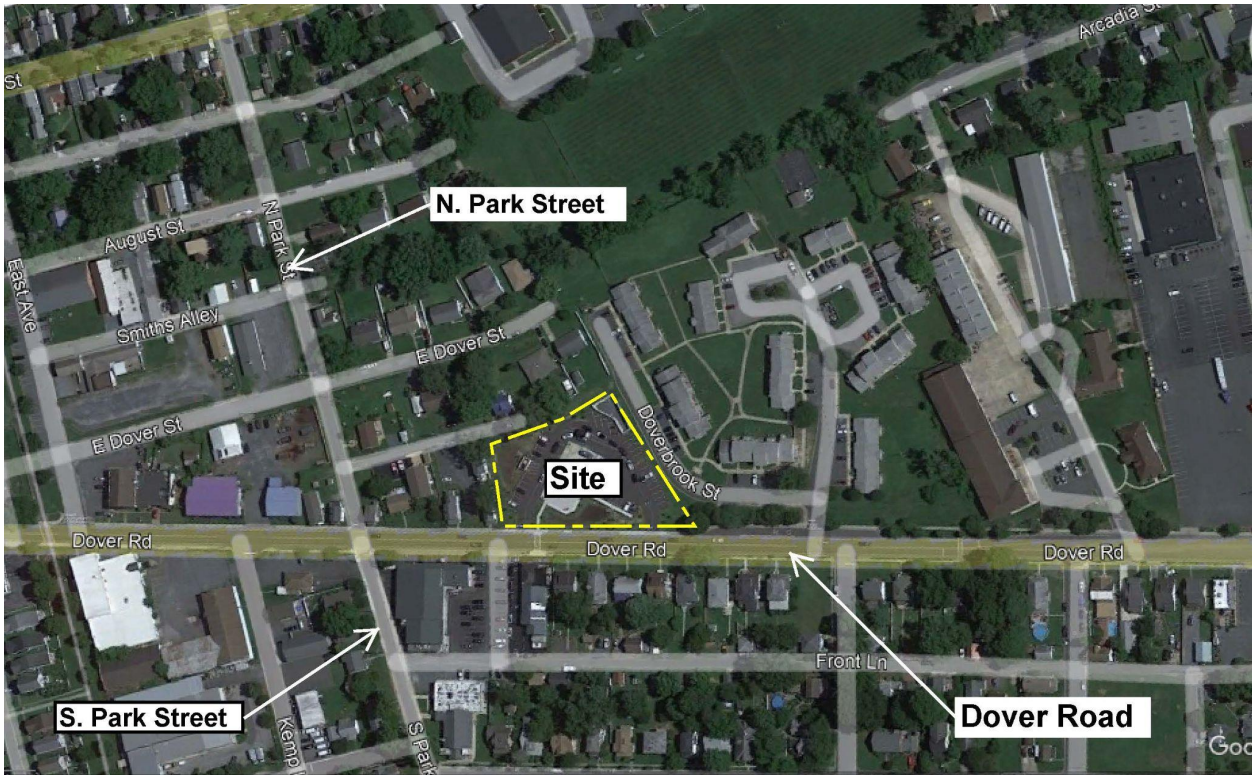

***Figure 1**: Vicinity Map*

PROPOSAL: Rise Up Coffee (Applicant) is requesting to amend their existing Planned Unit Development (PUD) to include a shade structure (tent) that's approximately 39' x 58' on a seasonal basis, the permanent use of the "Mad Eggs" kitchen facility that's approximately 8' x 12', a similarly sized walk-up cafe', a dual drive thru coffee kiosk that's 8' x 12.5' and a restroom trailer that's approximately 6' x 24' on a site located at 625 Dover Road. Please note, the walk-up cafe has not been installed at this time. The applicant was required by the Talbot County Health Department to install a small walk-in cooler unit at the site to provide additional refrigeration for the Mad Eggs kitchen unit and the existing coffee kiosk. The walk-in will be approximately 8' x 12'. Additionally, Rise Up needs to add a small storage shed to the property, to store dry goods that are required for on-site operations. The storage shed will be approximately 12' x 24'. Rise Up Coffee's request is to amend their existing PUD to include all the items listed above.

BACKGROUND:

<u>Ordinance No.715</u>

On October 2, 2017, the Town Council approved Ordinance No 715 granting the application of Rise Up Dover Road LLC for a Planned Unit Development ("PUD") under the provisions of the Easton Zoning Ordinance. The ordinance authorized the construction of an 8,000 square foot building to include a cafe, offices and community meeting space for Rise Up Coffee. The property is owned by Rise Up Dover Road LLC and is located across from the existing Rise up Coffee establishment. Roasting functions would remain at the existing location. On July 20,

2017, the Planning Commission approved the sketch plan with some conditions and issued a favorable recommendation regarding the PUD Plan's consistency with the Town's 2010 Comprehensive Plan. The Council determined that the Applicant met the minimum criteria for granting a PUD application and approved the PUD subject to conditions that are binding to the Applicant and any successor developer(s) of the land located on the PUD. The Applicant was required to provide a visual buffer between the rooftop deck on the southern facade of the proposed building and the existing single family residence located at 615 Dover Road to mitigate the potential impact on privacy of the adjacent residence from occupants of the roof top deck. Required buffering could be accomplished by either: (i) planting evergreen trees (min. 8' tall at installation) along the portion of the property line adjacent to the residence, or (ii) by constructing a vertical wall (6' min) on the western edge of the proposed rooftop deck. The Town Council incorporated the conditions imposed by the Planning Commission. The compliance with these conditions were at the discretion of the Planning Commission, and the Planning Commission was provided the authority to approve minor amendments to these conditions should they determine it reasonable to do so. The additional conditions were as follows: (a) the dumpster were required to be relocated to the interior of the Property, (b) the applicant shall install a "green barrier" along the rear of the Property to minimize visual impacts of the parking area upon adjacent properties, and (c) the micro-bio-retention area shall incorporate landscaping.

Temporary Use Approvals

Section 28-1306 of the Town's Code (Zoning Ordinance) states that temporary uses not listed as permissible on a temporary basis may be reviewed and permitted by the Planning and Zoning Commission (Commission). In June of 2021, Rise Up requested the erection of a tent similar to the Avalon Pavilion and a portable restroom trailer on the future building pad site of the future Rise Up Coffee Roaster restaurant. This request occurred after the kiosk was previously approved by the Commission as a temporary use. At their June 17, 2021 meeting, the Commission voted (4-0) to approve the request with three conditions: 1) the tent could remain until November 30, 2021, 2) the restrooms would be required to connect to the onsite water and sewer system, and 3) a pedestrian walkway on Dover Road was to be in place before the tent is installed. However, the tent and restroom facilities were not installed as permitted temporarily by the Commission. According to the applicant, there were issues with obtaining the building permit and Health Department approvals.

On March 17, 2022, the Commission again approved (5-0) a request for the temporary installation of the tent (along with the kiosk and portable bathrooms) with the condition that the tent could remain until November 30, 2022.

Rise Up Coffee (Applicant) obtained another temporary ase approval from the Town of Easton Planning Commission (4-0) on March 16, 2023 for the request to re-erect a tent and authorization for the tent to remain until November 30, 2023. The approval included three conditions: 1) all tripping hazards will be removed as deemed necessary by the Building Inspection Division, 2) music from the loudspeakers is not be be played prior to 8:00 a.m., and 3) the tent may remain up through November 30, 2023.

The Applicant returned to the Planning Commission on April 20, 2023. The applicant requested to amend their March 16, 2023 temporary approval to add a new kitchen facility, fabricated from a shipping container, that would eventually replace the food service functions provided by their existing"Mad Eggs) trolley unit located at 618 Dover Road. The applicant noted that they planned on submitting a request for permanent approval of the structures through a PUD amendment application. At their April meeting, the Commission granted (5-0) temporary approval for the addition of the "Mad Eggs" kitchen facility with six conditions: 1) at the end of the temporary approval period, the tent and kitchen facility shall be taken down and store off-site, 2) All tripping hazards shall be removed as deemed necessary by the Building Inspection Division, 3) Music and other amplified sounds from the loudspeakers shall not play prior to 8;00 a.m. or after 7:00 p.m., 4) the restroom, tables, and chairs shall remain in place and ready for use, 5) the applicant shall obtain a building permit for the temporary structures and approvals from the Fire Marshall, Talbot County Health Department, and Easton Utilities are required, and 6) plans for mechanical equipment screening at the top of the structure shall be demonstrated as deemed appropriate by the Commission and staff.

The Applicant subsequently submitted a Zoning Certificate for a Temporary Use for a request to amend the approved April 20, 2023 temporary use approval to permit a walk-in cooler and storage shed and to also remain until November 30, 2023 (see attached document). The applicant stated the improvements were accessory to the "Mad Eggs" kitchen facility that had already been approved for a temporary use on April 20, 2023. The request was reviewed administratively and approved by the Planning and Zoning Department on September 22, 2023.

PUD Amendment

Separate from their temporary use approvals, the applicant submitted a request on July 26, 2023 to amend their existing PUD to include a seasonal tent, the "Mad Eggs" kitchen facility, and a walk-up cafe on the property along with the restrooms and kiosk. According to the applicant, the changes would allow Rise Up to better serve customers and free up needed space at its roasting facility located at 618 Dover Road. The kitchen facility and walk-up cafe would be made from repurposed shipping containers.

Planning Commission, at their August 17, 2023 meeting, recommended (5-0) to the Town Council approval for an amendment to Rise Up Coffee's existing PUD (Zoning Ordinance No. 715) to grant permanent approval for the shade structure (tent), the "Mad Eggs" kitchen facility, and the walk-up cafe with the following recommended conditions:

1. The shade structure shall be erected seasonally during the period of March 1st through November 30th, and shall be taken down and stored offsite on November 30th.
2. Upon disassembling, all tripping hazards shall be removed as deemed necessary by the Building Inspection Division.
3. Music or other amplified sounds from the loudspeakers shall not play prior to 8 a.m. or after 7 p.m.
4. The restroom, tables and chairs may all remain in place and ready for use.
5. The applicant shall obtain a building permit for the Mad-Eggs facility and walk-up cafe, and shall obtain additional approval from the Fire Marshal, Talbot County Health Department, and Easton Utilities Commission.

6. The applicant shall submit As-builts for review with the Town's Engineering Department to close out the grading permit.
7. Upon installation of the "Mad Eggs" kitchen facility, the Town Planner may determine that mechanical equipment screening at the top of the structure is necessary and shall retain the right to seek approval/denial from the Planning Commission.
8. The applicant shall return to the Planning Commission after November 30th (December 21, 2023 Planning Commission meeting) to review and/or determine if a redesign of the graphics and/or additional screening of mechanical components is necessary.

On September 21, 2023, the Applicant requested to amend their PUD for further revisions to also include a walk-in cooler and storage shed. The applicant stated that the Talbot County Health Department required the additional refrigeration unit for the kitchen and kiosk. In addition, the storage shed was needed to store dry goods for the required on-site operations.

At their September 18, 2023 meeting, the Town Council scheduled a public hearing for the PUD amendment request for November 6, 2023 but requested the Planning Commission provide another recommendation to the Council since the applicant added the refrigerated and dry storage units to the application since the Commission's previous recommendation.

The Planning Commission, at their October 19, 2023 meeting, recommended (5-0) to the Town Council approval to further amend the previously approved Planned Unit Development (PUD) with the addition of an 8' x 12' walk-in cooler to the existing kitchen unit, and the addition of a 12' x 24' storage shed to the existing property. The Commission voted to forward a positive recommendation to the Town Council with the following recommended conditions:

1. The applicant shall receive staff approval for a more modern shed design that conforms to the architecture of surrounding buildings.
2. The shade structure shall be erected seasonally during the period of March 1st through November 30th, and shall be taken down and stored offsite on November 30th.
3. Upon disassembling, all tripping hazards shall be removed as deemed necessary by the Building Inspection Division.
4. Music or other amplified sounds from the loudspeakers shall not play prior to 8 a,m. or after 7 p.m.
5. The restroom, tables and chairs may all remain in place and ready for use.
6. The applicant shall obtain a building permit for the Mad-Eggs facility and walk-up cafe, and shall obtain additional approval from the Fire Marshal, Talbot County Health Department, and Easton Utilities Commission.
7. The applicant shall submit As-builts for review with the Town's Engineering Department to close out the grading permit.
8. Upon installation of the "Mad Eggs" kitchen facility, the Town Planner may determine that mechanical equipment screening at the top of the structure is necessary and shall retain the right to seek approval/denial from the Planning Commission.

9. The applicant shall return to the Planning Commission after November 30th (December 21, 2023 Planning Commission meeting) to review and/or determine a redesign of the graphics and additional screening.

Following the Commission meeting, the Applicant submitted to the Planning & Zoning Staff on October 20, 2023 a description of the revised items for the shed:

- Removal of the garage door on the side with a solid wall
- Removal of shutters
- Removal of barn detailing from entry doors (i.e. removal of 'x' framing)
- Change color of shed to black with white trim, and
- Change roof to corrugated metal (black)

The Staff determined that the spirit and intent of the Planning Commission's discussion leans towards the shed needing to be a modern design/style. Therefore, the staff supports the design of the shed with a slanted roof with transom windows. This modern design would complement the architecture of the structures already on site. The staff has no objection to the Applicants color selection of the shed to black with white trim and the roof to corrugated metal (black). In addition, the Staff determined that a solid wall on the side of the garage is acceptable.

OUTSTANDING ISSUES:
There are no outstanding issues.

ZONING ANALYSIS:

A. Purpose and Intent

Section 28-701 A.

> ***The purpose of a PUD District is to provide for carefully planned residential, mixed use and certain commercial developments at appropriate locations within the Town of Easton. It is the intent of this Section to allow all aspects of a PUD District to be subject to public review and control by the Town with specific provisions to be made on a case-by-case basis for adequate open space, architectural appearance, the height, bulk and location of buildings, required public facilities, and a variety of housing types, densities, and/or compatible commercial or industrial uses as a part of a detailed development plan.***
>
> ***Not all locations in the Town are suitable for PUD development and the nature, size, scale or intensity of proposed uses may cause a particular site not to be suitable for a specific PUD proposal. Therefore, there is no general presumption that an application for such a use at a particular location is valid, inures to the general benefit of the Town or is in compliance with the Town's Comprehensive Plan. Instead, each application will be evaluated according to its particular location and the degree to which the developer is willing or able to propose a development plan which furthers the goals and objectives of this Section and the Ordinance generally.***

B. Location

Section 28-701 B. The PUD is a floating zone. That means that while provisions and regulations are made to govern development within any PUD District, no such District will be pre-mapped on the Zoning Map. A PUD District may be established in any parent zoning district provided the requirements outlined in this subsection are met.

Analysis - According to § 28-701.I of the Zoning Ordinance, any proposed change which alters a condition of the PUD approval to an approved PUD is a material amendment, which is subject to review by the Planning Commission and Town Council according to the procedures set forth in § 28-701. The process for reviewing a material amendment to a PUD Amendment is similar to that for a site plan except that it requires approval of the Town Council. The plan that you review basically serves as the sketch-level submission.

The current process of the Town of Easton Zoning Ordinance is for the Planning and Zoning Commission to review the material submitted and forward a recommendation to the Mayor and Town Council. The Commission may include recommended changes to the PUD sketch plan or recommended conditions of approval that the Commission deems necessary to better insure compliance with the Comprehensive Plan. In reaching its conclusion, the Commission shall make recommendations addressing the factors in § 28-701.H(2) (see below).

C. Off-Street Parking

Analysis- The site has a maximum required thirty-five (35) parking spaces. The existing site currently has forty-three (43) parking spaces available due to the higher parking needs of the former proposed restaurant, sit-down/carry-out and office land use.

D. DEVELOPMENT STANDARDS

Section 28-701.G.
Applications for any type of Planned Unit Development shall meet the following requirements:

(1) The area proposed for a planned unit development shall be in one (1) ownership, or, if in several ownerships, the proposal shall be filed jointly by all the owners of the property included in the development plan.

Analysis - The property is owned by a single entity.

(2) The site shall be of a configuration suitable for the development proposed.

Analysis - The site includes 1.089 acres and has direct access onto Dover Road. The planned layout and site design proposed provide for a functionally designed commercial site.

(3) Public water and sewerage shall be available, although it may be made available in conjunction with the development of the PUD.

Analysis - There's adequate water and sewer service on-site to serve the proposed project. The Applicant will provide the utility extensions that are necessary to connect the project to Town services and will work with Easton Utilities to ensure that all permits and approvals are granted.

(4) The site shall be located adjacent to adequate transportation facilities capable of serving existing traffic and that expected to be generated by the proposed development. Private roads may only be approved in commercial and multifamily projects or portions of projects. Such roads shall be internal to the development. Private roads shall comply with any standards developed and adopted for such roads by the Town Council. The Town shall bear no responsibility for construction or maintenance of private roads. Development on private roads may not be entitled to all Town services.

Analysis - The project has two existing access points from Dover Road, a Town-owned street.

(5) The owners or developers must indicate that they plan to begin construction of the development within two (2) years after final approval. If there is no action on the part of the applicant at any point in the process for a period of two (2) years, the zoning of the site shall revert to its previous classification unless a time extension is requested by the developer and granted by the Planning and Zoning Commission. For projects constructed in parts or phases, the PUD approval applicable to any portion not improved in accordance with said PUD approval, shall expire if no development activity occurs for a period of five years.

Analysis - The Applicant intends to commence construction upon approval from the Town Council, in light of the time incurred in obtaining all necessary building permits.

(6) The setback, lot size, lot coverage, height, minimum frontage, minimum open space, and yard requirements shall be established for each individual project by the Town Council in the ordinance granting the application. The Planning and Zoning Commission shall make recommendations to the Town Council with regard to these requirements. The Town recognizes that it is necessary and encourages such uniquely established standards.

Analysis - The minimum bulk requirements for the project will remain consistent with the previously approved Rise Up Coffee's existing PUD (Zoning Ordinance No. 715).

(7) Off-street parking shall be provided for each individual use in the planned unit development in accordance with the requirements of Section 1001. Mixed-use PUD's that integrate coordinated pedestrian and bicycle circulation systems throughout the development, shall be permitted to reduce the required off-street parking by 20% of the required standard without the need for a parking variance, waiver, or deferral.

Analysis - The existing parking lot is designed to accommodate the approved December 1, 2020 Phase 1 Site Plan. The current design has a maximum required thirty-five (35) on-site

parking spaces. Though the existing parking spaces exceed the maximum requirement by eight (8) parking spaces, staff recommends the existing spaces remain for the potential construction of the originally proposed building.

(8) No more than 50% of the off-street parking area for the entire property of a major retail or shopping center use, shall be located between the front façade of the principal building(s) and the primary abutting street.

Analysis - Not Applicable.

In addition, some development standards will vary according to the type of PUD in accordance with the following Table:

Standard	**PUD Sub District**	
	PUD- Infill	**Rise Up Coffee**
Minimum Size*	**N/A**	N/A
Maximum Size	**5 acres**	1.098 acres
Maximum Residential Density (per gross residential acre)**	**60 du/acre********	N/A
Minimum Open Space Requirement***	**Open space shall be that which is deemed adequate by the Town Council. In addition, landscaping shall be provided to enhance the project and advance the degree to which the infill project blends in with surrounding properties.**	Required: 30% of total gross area = 0.327 acres. Proposed: 38.62% of total gross area = 0.420 acres.
Applicability	**Lands within the area indicated on Map 7-1**	Land qualifies as Infill

****Smaller sites may be permitted when it is found that the proposed PUD is compatible with existing development in the area and does not disrupt the orderly expansion of the transportation system of the Town.***

Analysis - Not Applicable.

*****The Town Council may consider projects with a density of up to 25% more than the maximum stated in this table upon a finding that such increased density is in keeping with the***

existing or intended character of the neighborhood (as expressed in the Comprehensive Plan or, if applicable, any adopted Small Area Plans) and that any potential detrimental impacts from such increased density are ameliorated to the satisfaction of the Council. Additionally, if residential use is part of a vertically-mixed use project (i.e., non-residential uses are present on the ground floor with residential units on non-ground floors), there shall be no limit on the residential density.

Analysis - Not Applicable.

******The Town Council may consider projects with less than the minimum open space required as specified in this Table, upon a finding that unique circumstances or conditions exist which warrant such a reduction and further provide that the applicant addresses the open space requirement in another acceptable means.***

Analysis - Applicant has designed the Project to provide significant open space. The Project will provide 0.42 acres of open space (38.62%, not including incidental parking lot areas).

*******In the PUD General sub district, for any residential units proposed in excess of the maximum residential density permitted in base residential zoning districts (3.5 du/ac), at least 25% must be devoted to affordable housing, or the developer may contribute a fee-in-lieu to an entity to be determined by the Town.***

Analysis - Not Applicable.

E. Forest Conservation

The Easton Forest Conservation Requirements of the Town Code, Article III, § 31-3.1, **Forest Conservation Ordinance,** ***Relevance, states that the requirements are applicable to any person making application for a subdivision, project plan, grading, or sediment and erosion control approval on units of land 40,000 square feet or greater after the effective date of the Ordinance.***

Analysis - The Forest Conservation plan was approved on June 3, 2020. Required Afforestation was achieved on site for 0.17 acres or 7,405.2 square feet of credited landscape plantings and protection of two specimen trees.

POLICY ANALYSIS:

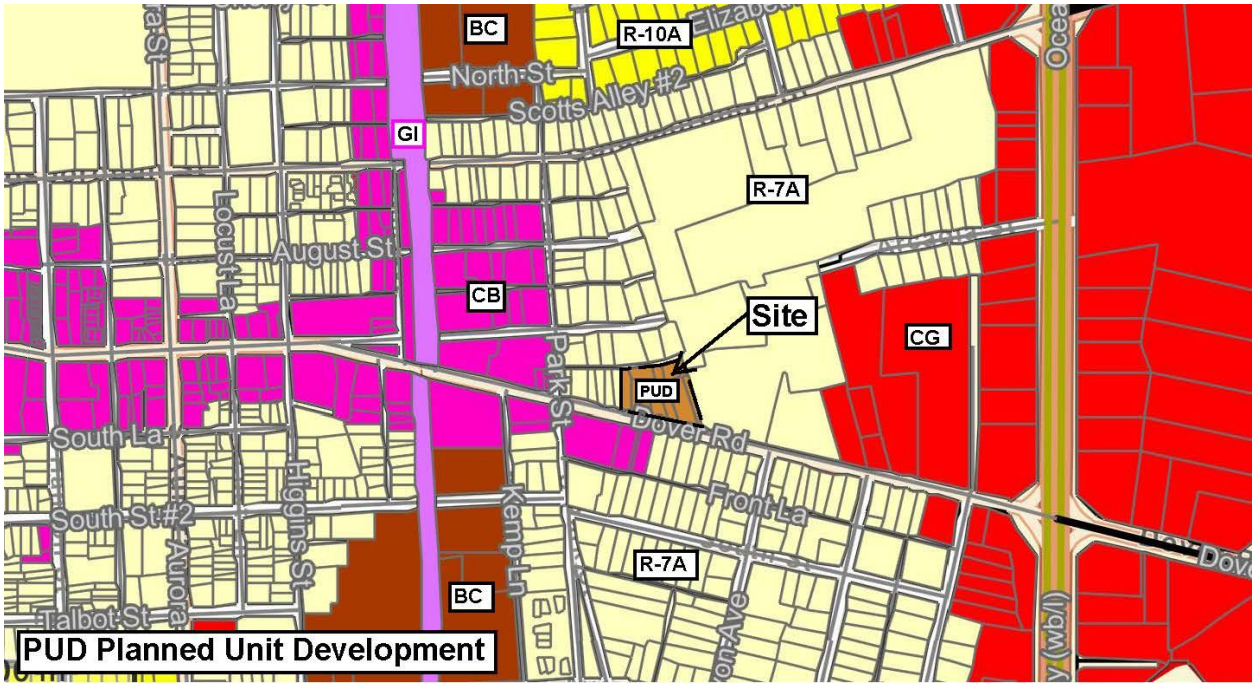

Figure 2: Zoning Map

Section 28-701.H.2
The Planning and Zoning Commission shall review the material submitted and following the presentation from the applicant, shall forward a recommendation to the Mayor and Town Council. The Planning and Zoning Commission's transmittal to the Town Council may include recommended changes to the PUD Sketch Plan or recommended conditions of approval that the Commission deems necessary to better insure compliance with the Comprehensive Plan. In reaching its conclusion as to the merits of the project, the Commission shall make recommendations addressing the following:

a. Whether the proposed PUD development conforms to the Town of Easton Comprehensive Plan;

Analysis - The proposed PUD revisions, a walk-in cooler, storage shed, tent, kitchen facility, walk-up Cafe, kiosk, and bathrooms, conform to the Town's Comprehensive Plan. The integrated use of this infill property offers a convenient commercial service to support the needs of the surrounding neighborhood. Natural features have been addressed with an approved Forest Conservation and Landscape Plan. There is adequate parking and dual drive-thru lanes to accommodate the kiosk. Open space has been provided. The architecture is compatible within the surrounding neighborhood in terms of size, scale, design and appearance. Though there are no monument signs that dominate the site, graphics are displayed on the "Mad-Eggs" kitchen facility and walk-up cafe. Neighborhood connectivity has been provided via sidewalk along Dover Road and internally onsite.

b. Whether the proposed PUD development conforms with all provisions of the Town of Easton Zoning Code which are not proposed for modification subject to the request;

Analysis - This PUD development conforms with all provisions of the Town of Easton Zoning Code which are not proposed for modification subject to the PUD request.

c. Whether the proposed PUD development complies with all Town engineering and design regulations and standards;

Analysis - The overall development conforms with Town engineering and design regulations and standards.

d. Whether the proposed PUD development complies with any other applicable Town, County, State, or Federal regulations, policies or plans, except those standards proposed for modification. If the standards of any jurisdiction other than the Town of Easton are proposed for modification, any PUD project approval, should it subsequently be granted by the Town Council, shall be subject to the applicant successfully obtaining approval of said modification and demonstrating proof of such approval to the Town's satisfaction.

Analysis - Currently, the proposed PUD amendment complies with the standards of any jurisdiction other than the Town of Easton.

e. Whether the proposed PUD will be superior to or more innovative than conventional development and how it will provide greater public benefit without additional probable significant adverse impacts to public health, safety or the environment, than would be available through the use of conventional zoning and/or development standards.

Analysis - The development's proximity to multiple use properties will provide greater public benefit without additional probable significant adverse impacts to public health, safety or the environment. The development provides a walkable design to support a pedestrian-oriented community, parking, landscaping, stormwater management and forest conservation.

RECOMMENDED CONDITIONS:
Staff believes the proposed PUD Amendment is consistent with the Town's Comprehensive Plan and recommends that you approve the PUD Amendment. If approved, staff recommends the following conditions:

- The shade structure shall be erected seasonally during the period of March 1st through November 30th, and shall be taken down and stored offsite on November 30th.
- Upon disassembling, all tripping hazards shall be removed as deemed necessary by the Building Inspection Division.
- Music or other amplified sounds from the loudspeakers shall not play prior to 8 a.m. or after 7 p.m.
- The restroom, tables and chairs may all remain in place and ready for use.

- The applicant shall obtain a building permit for the Mad-Eggs facility and walk-up cafe, walk-in cooler and storage shed and shall obtain additional approval from the Fire Marshal, Talbot County Health Department, and Easton Utilities Commission.
- The applicant shall submit As-Builts for review with the Town's Engineering Department to close out the grading permit.
- Upon installation of the "Mad Eggs" kitchen facility, the Town Planner may determine that mechanical equipment screening at the top of the structure is necessary and shall retain the right to seek approval/denial from the Planning Commission.
- The applicant shall return to the Planning Commission after November 30th (December 21, 2023 Planning Commission meeting) to review and/or determine if a redesign of the graphics and/or additional screening of mechanical components is necessary.

DRAFT MOTIONS:

1. I move that the Town Council approve the sketch site plan and the PUD Amendment, subject to staff's Conditions of Approval.

OR

2. I move that the Town Council forward the application to the November 20th Council meeting for further discussion.

OR

3. I move an alternate motion.

ATTACHMENTS:
1. 2023.09.22 Rise Up - Transmittal Letter, paper copy & PDF
2. 2023.09.22 Rise Up - Updated Site Plan, paper copy & PDF
3. Smith Ltr re: Exhibits for Shed & Walk-in (10-10-23) & Exhibits, paper copy & PDF
4. Rise Up - Interior & Exterior Elevations, paper copy & PDF
5. Rise Up - PUD Amendment Application, paper copy & PDF
6. Rise Up - Shade Photo, paper copy & PDF
7. Rise Up - Exterior Graphics, paper copy & PDF
8. 2017.10.03 Ordinance 715, paper copy & PDF
9. Ordinance 715, Exhibit A Item#1 PUD Sketch Plan of Rise Up Coffee, paper copy & PDF
10. Ordinance 715, Exhibit A Item#2 Architecture and Floor Plans, paper copy & PDF

TOWN OF EASTON
PLANNING & ZONING
14 S Harrison Street, Easton MD 21601

Date of Hearing: October 19, 2023

3b

PLANNING COMMISSION
PUBLIC HEARING
STAFF REPORT

SUBJECT: **PUD Amendment to include a Walk-in Cooler, Storage Shed, Tent, Kitchen Facility and Walk-Up Cafe' and provide a recommendation to the Town Council**

ELECTION WARD: Ward 4

CRITICAL ACTION DATE: At the pleasure of the Commission

STAFF CONTACTS: Joseph Mayer, Plan Reviewer
Miguel Salinas, Director of Planning and Zoning

APPLICANT: Rise Up Coffee Roasters % Ozzie Jimenez

DOCUMENT CREATED ON: October 2, 2023

PURPOSE: Rise Up Coffee is returning to you for the request to amend their PUD for further revisions. They are now proposing to also include a walk-in cooler and storage shed and to have these new additions reflected in your recommendation to the Town Council. The Council is expected to hold a public hearing on the PUD amendment at their November 6, 2023 meeting.

RECOMMENDATION: Should the Planning Commission approve the additional walk-in cooler and storage shed as well as make a positive recommendation to the Town Council, staff recommends proposed conditions (see below).

APPLICATION INFORMATION:	
APPLICANT: Armistead, Lee, Rust & Wright, P.A. % Zach Smith Rise Up Coffee Roasters % Ozzie Jimenez	**REPRESENTATIVE:** ALRW, P.A.: Zack Smith Rise Up Coffee Roasters: Ozzie Jimenez

PARCELS/ACREAGE:

Parcel Information	Acreage
Map 103, Grid 0000, Parcels 0990	1.089

ACCEPTANCE DATE: September 28, 2023	**LOCATION:** 625 Dover Road
EXISTING ZONING PUD	**EXISTING LAND USE:** Commercial
HISTORIC DISTRICT: Not Applicable	**FUTURE LAND USE MAP:** Residential

CONTEXT:
Location/Site Access – The subject property is located on the north side of Dover Road.

Existing Conditions – The subject property is used for commercial purposes.

Surrounding Properties
- 705 Dover Road - R-7A
- 630 Dover Road - R-7A
- 628 Dover Road - R-7A
- 626 Dover Road - R-7A
- 624 Dover Road - R-7A
- 622 Dover Road - CB
- 618 Dover Road - CB
- 600 Dover Road - CB
- 615 Dover Road - R-7A
- Oswald Aley, Parcel 976 - R-7A
- 612 E. Dover Street - R-7A
- 614 E. Dover Street - R-7A

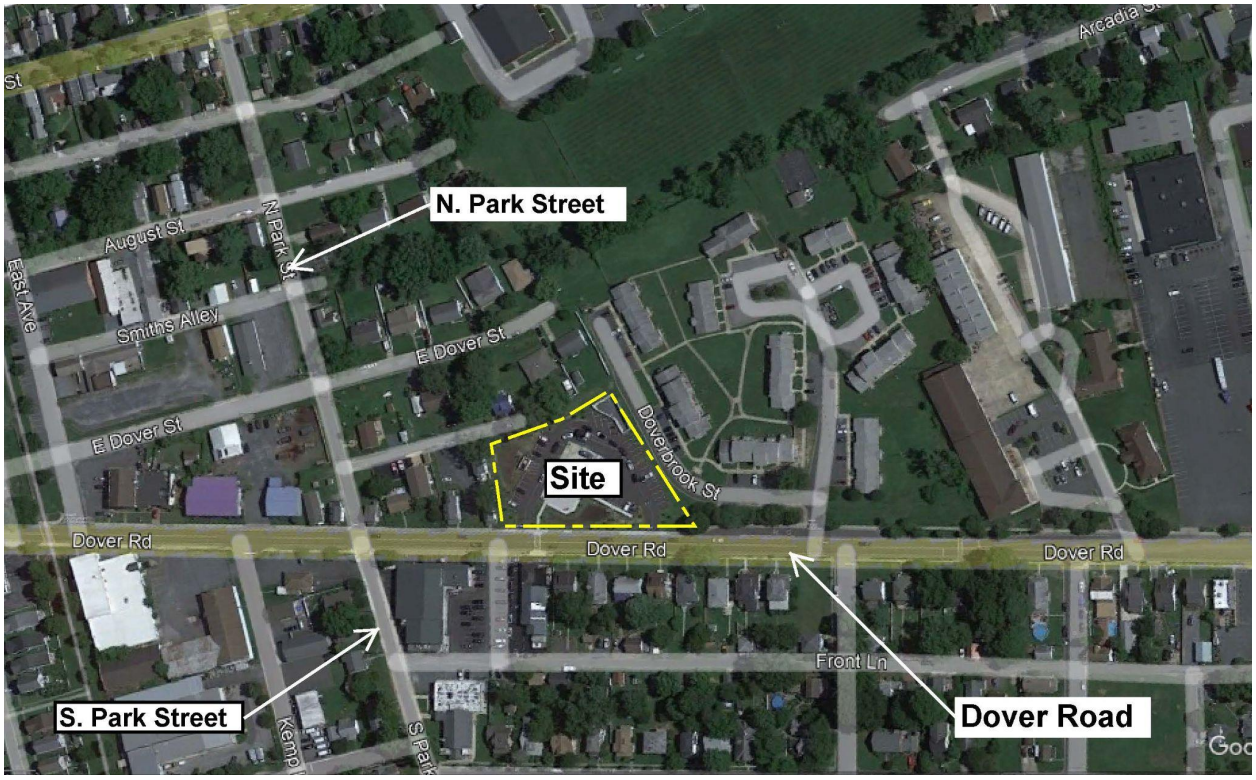

***Figure 1**: Vicinity Map*

PROPOSAL: The applicant was required by the Talbot County Health Department to install a small walk-in cooler unit at 625 Dover Road to provide additional refrigeration for the Mad Eggs kitchen unit and the existing coffee kiosk. The walk-in will be approximately 8' x 12'. Additionally, Rise Up needs to add a small storage shed to the property, to store dry goods that are required for on-site operations. The storage shed will be approximately 12' x 24'. Rise Up Coffee's request is to amend their PUD to also include the walk-in cooler and storage shed and provide a recommendation to the Town Council.

BACKGROUND: Rise Up Coffee (Applicant) obtained a Temporary Use approval from the Town of Easton Planning Commission on March 16, 2023 for the request to re-erect a tent and authorization for the tent to remain until November 30, 2023. The Applicant returned to the Planning Commission on April 20, 2023. They were granted temporary approval by the Planning Commission for the addition of the "Mad Eggs" kitchen facility and to remain until November 30, 2023.

The Applicant subsequently submitted a Zoning Certificate for a Temporary Use-Special Events on September 22, 2023 for a request to amend the previously approved Temporary Use to permit a walk-in cooler and storage shed and to also remain until November 30, 2023 (see attached document). Those improvements are accessory to the "Mad Eggs" kitchen facility that had already been approved for a temporary use on April 20, 2023. The request was conditioned upon obtaining all required building permits. The request was approved by the Planning and Zoning Department on September 22, 2023.

Separately from their temporary use approvals, the Planning Commission, at their August 17, 2023 meeting, recommended to the Town Council approval for an amendment to Rise Up Coffee's existing

PUD (Zoning Ordinance No. 715) to grant a permanent approval for the shade structure (tent), the "Mad Eggs" kitchen facility, and the walk-up cafe with the following recommended conditions:

1. The shade structure shall be erected seasonally during the period of March 1st through November 30th, and shall be taken down and stored offsite on November 30th.

2. Upon disassembling, all tripping hazards shall be removed as deemed necessary by the Building Inspection Division.

3. Music or other amplified sounds from the loudspeakers shall not play prior to 8 a.m. or after 7 p.m.

4. The restroom, tables and chairs may all remain in place and ready for use.

5. The applicant shall obtain a building permit for the Mad-Eggs facility and walk-up cafe, and shall obtain additional approval from the Fire Marshal, Talbot County Health Department, and Easton Utilities Commission.

6. The applicant shall submit As-builts for review with the Town's Engineering Department to close out the grading permit.

7. Upon installation of the "Mad Eggs" kitchen facility, the Town Planner may determine that mechanical equipment screening at the top of the structure is necessary and shall retain the right to seek approval/denial from the Planning Commission.

8. The applicant shall return to the Planning Commission after November 30th (December 21, 2023 Planning Commission meeting) to review and/or determine if a redesign of the graphics and/or additional screening of mechanical components is necessary.

OUTSTANDING ISSUES:

There are no outstanding issues.

ZONING ANALYSIS:

A. Purpose and Intent

Section 28-701 A.

The purpose of a PUD District is to provide for carefully planned residential, mixed use and certain commercial developments at appropriate locations within the Town of Easton. It is the intent of this Section to allow all aspects of a PUD District to be subject to public review and control by the Town with specific provisions to be made on a case-by-case basis for adequate open space, architectural appearance, the height, bulk and location of buildings, required public facilities, and a variety of housing types, densities, and/or compatible commercial or industrial uses as a part of a detailed development plan.

Not all locations in the Town are suitable for PUD development and the nature, size, scale or intensity of proposed uses may cause a particular site not to be suitable for a specific PUD proposal. Therefore, there is no general presumption that an application for such a use at a particular location is valid, inures to the general benefit of the Town or is in compliance with

the Town's Comprehensive Plan. Instead, each application will be evaluated according to its particular location and the degree to which the developer is willing or able to propose a development plan which furthers the goals and objectives of this Section and the Ordinance generally.

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Section 28-701 B. The PUD is a floating zone. That means that while provisions and regulations are made to govern development within any PUD District, no such District will be pre-mapped on the Zoning Map. A PUD District may be established in any parent zoning district provided the requirements outlined in this subsection are met.

Analysis - According to § 28-701.I of the Zoning Ordinance, any proposed change which alters a condition of the PUD approval to an approved PUD is a material amendment, which is subject to review by the Planning Commission and Town Council according to the procedures set forth in § 28-701. The process for reviewing a material amendment to a PUD Amendment is similar to that for a site plan except that it requires approval of the Town Council. The plan that you review basically serves as the sketch-level submission.

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Analysis- The site has a maximum required thirty-five (35) parking spaces. The existing site currently has forty-three (43) parking spaces available due to the higher parking needs of the former proposed restaurant, sit-down/carry-out and office land use.

D. DEVELOPMENT STANDARDS

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(1) The area proposed for a planned unit development shall be in one (1) ownership, or, if in several ownerships, the proposal shall be filed jointly by all the owners of the property included in the development plan.

Analysis - The Property is owned by a single entity.

(2) The site shall be of a configuration suitable for the development proposed.

Analysis - The site includes 1.089 acres and has direct access onto Dover Road. The planned layout and site design proposed provide for a functionally designed commercial site.

(3) Public water and sewerage shall be available, although it may be made available in conjunction with the development of the PUD.

Analysis - There's adequate water and sewer service on-site to serve the proposed Project. The Applicant will provide the utility extensions that are necessary to connect the Project to Town services and will work with Easton Utilities to ensure that all permits and approvals are granted.

(4) The site shall be located adjacent to adequate transportation facilities capable of serving existing traffic and that expected to be generated by the proposed development. Private roads may only be approved in commercial and multifamily projects or portions of projects. Such roads shall be internal to the development. Private roads shall comply with any standards developed and adopted for such roads by the Town Council. The Town shall bear no responsibility for construction or maintenance of private roads. Development on private roads may not be entitled to all Town services.

Analysis - The Project has two existing access points from Dover Road, a Town-owned street.

(5) The owners or developers must indicate that they plan to begin construction of the development within two (2) years after final approval. If there is no action on the part of the applicant at any point in the process for a period of two (2) years, the zoning of the site shall revert to its previous classification unless a time extension is requested by the developer and granted by the Planning and Zoning Commission. For projects constructed in parts or phases, the PUD approval applicable to any portion not improved in accordance with said PUD approval, shall expire if no development activity occurs for a period of five years.

Analysis - The Applicant intends to commence construction upon approval from the Town Council, in light of the time incurred in obtaining all necessary building permits.

(6) The setback, lot size, lot coverage, height, minimum frontage, minimum open space, and yard requirements shall be established for each individual project by the Town Council in the ordinance granting the application. The Planning and Zoning Commission shall make recommendations to the Town Council with regard to these requirements. The Town recognizes that it is necessary and encourages such uniquely established standards.

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Analysis - The existing parking lot is designed to accommodate the approved December 1, 2020 Phase 1 Site Plan. The current design on-site has a maximum required thirty-five (35) parking spaces. Though the existing parking spaces exceed the maximum requirement by eight (8) parking spaces, staff recommends the existing spaces remain for the potential construction of the originally proposed building.

(8) No more than 50% of the off-street parking area for the entire property of a major retail or shopping center use, shall be located between the front façade of the principal building(s) and the primary abutting street.

Analysis - Not Applicable.

In addition, some development standards will vary according to the type of PUD in accordance with the following Table:

Standard	**PUD Sub District**	
	PUD- Infill	**Rise Up Coffee**
Minimum Size*	**N/A**	1.089 acres
Maximum Size	**5 acres**	N/A
Maximum Residential Density (per gross residential acre)**	**60 du/acre********	N/A
Minimum Open Space Requirement***	**Open space shall be that which is deemed adequate by the Town Council. In addition, landscaping shall be provided to enhance the project and advance the degree to which the infill project blends in with surrounding properties.**	Required: 30% of total gross area = 0.327 acres. Proposed: 38.62% of total gross area = 0.42 acres.
Applicability	**Lands within the area indicated on Map 7-1**	Land qualifies as Infill

****Smaller sites may be permitted when it is found that the proposed PUD is compatible with existing development in the area and does not disrupt the orderly expansion of the transportation system of the Town.***

Analysis - Not Applicable.

*****The Town Council may consider projects with a density of up to 25% more than the maximum stated in this table upon a finding that such increased density is in keeping with the existing or intended character of the neighborhood (as expressed in the Comprehensive Plan or, if applicable, any adopted Small Area Plans) and that any potential detrimental impacts from such increased density are ameliorated to the satisfaction of the Council. Additionally, if residential use is part of a vertically-mixed use project (i.e., non-residential uses are present on the ground floor with residential units on non-ground floors), there shall be no limit on the residential density.***

Analysis - Not Applicable.

******The Town Council may consider projects with less than the minimum open space required as specified in this Table, upon a finding that unique circumstances or conditions exist which warrant such a reduction and further provide that the applicant addresses the open space requirement in another acceptable means.***

Analysis - Applicant has designed the Project to provide significant open space. The Project will provide 0.42 acres of open space (38.62%, not including incidental parking lot areas).

*******In the PUD General sub district, for any residential units proposed in excess of the maximum residential density permitted in base residential zoning districts (3.5 du/ac), at least 25% must be devoted to affordable housing, or the developer may contribute a fee-in-lieu to an entity to be determined by the Town.***

Analysis - Not Applicable.

E. Forest Conservation

The Easton Forest Conservation Requirements of the Town Code, Article III, § 31-3.1, **Forest Conservation Ordinance,** ***Relevance, states that the requirements are applicable to any person making application for a subdivision, project plan, grading, or sediment and erosion control approval on units of land 40,000 square feet or greater after the effective date of the Ordinance.***

Analysis - The Forest Conservation plan was approved on June 3, 2020. Required Afforestation was achieved on site for 0.17 acres or 7,405.2 square feet of credited landscape plantings and protection of two specimen trees.

POLICY ANALYSIS:

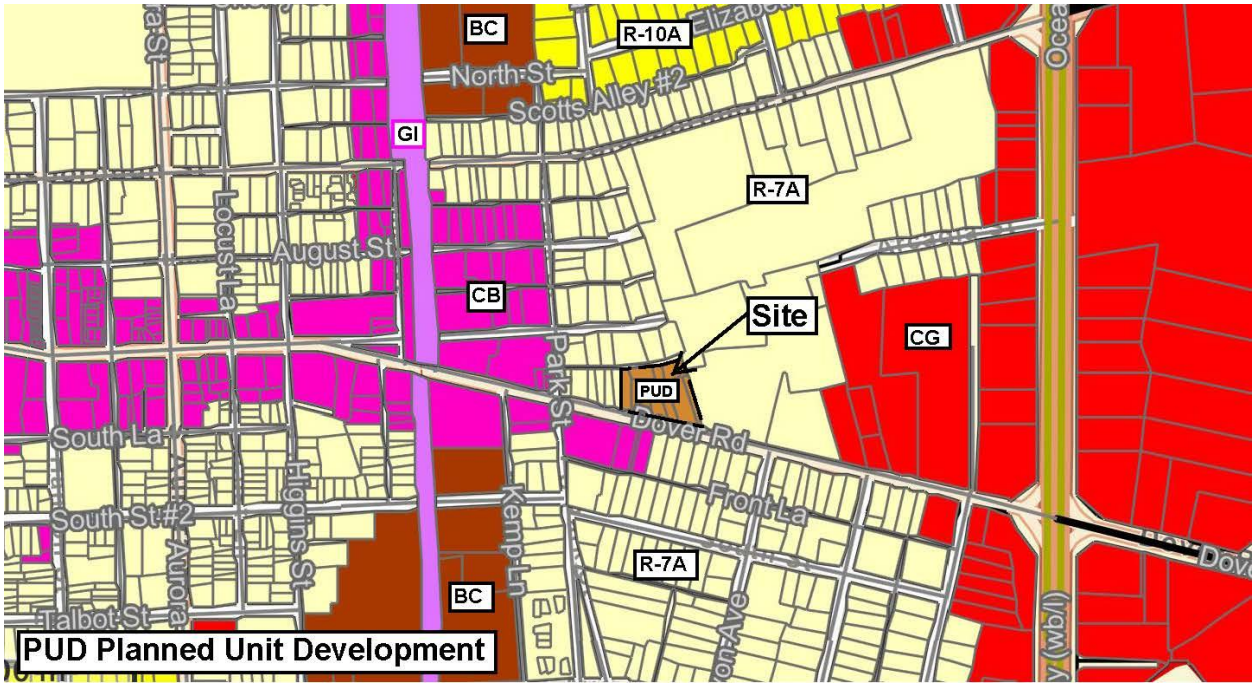


Figure 2: Zoning Map

Section 28-701.H.2
The Planning and Zoning Commission shall review the material submitted and following the presentation from the applicant, shall forward a recommendation to the Mayor and Town Council. The Planning and Zoning Commission's transmittal to the Town Council may include recommended changes to the PUD Sketch Plan or recommended conditions of approval that the Commission deems necessary to better insure compliance with the Comprehensive Plan. In reaching its conclusion as to the merits of the project, the Commission shall make recommendations addressing the following:

a. Whether the proposed PUD development conforms to the Town of Easton Comprehensive Plan;

Analysis - The proposed PUD revisions conform to the Town's Comprehensive Plan.

b. Whether the proposed PUD development conforms with all provisions of the Town of Easton Zoning Code which are not proposed for modification subject to the request;

Analysis - This PUD development conforms with all provisions of the Town of Easton Zoning Code which are not proposed for modification subject to the request.

c. Whether the proposed PUD development complies with all Town engineering and design regulations and standards;

Analysis - The overall development conforms with Town engineering and design regulations and standards.

d. Whether the proposed PUD development complies with any other applicable Town, County, State, or Federal regulations, policies or plans, except those standards proposed for modification. If the standards of any jurisdiction other than the Town of Easton are proposed for modification, any PUD project approval, should it subsequently be granted by the Town Council, shall be subject to the applicant successfully obtaining approval of said modification and demonstrating proof of such approval to the Town's satisfaction.

Analysis - Currently, this PUD development complies with the standards of any jurisdiction other than the Town of Easton.

e. Whether the proposed PUD will be superior to or more innovative than conventional development and how it will provide greater public benefit without additional probable significant adverse impacts to public health, safety or the environment, than would be available through the use of conventional zoning and/or development standards.

Analysis - The development's proximity to multiple use properties will provide greater public benefit without additional probable significant adverse impacts to public health, safety or the environment. The development provides a walkable design to support a pedestrian-oriented community, parking, landscaping, stormwater management and forest conservation.

RECOMMENDED CONDITIONS:

Staff believes the proposed PUD Amendment is consistent with the Town's Comprehensive Plan and recommends that you indicate such to the Town Council. In terms of suggestions relative to the revised site plan itself, Staff suggests the following:

- The shade structure shall be erected seasonally during the period of March 1st through November 30th, and shall be taken down and stored offsite on November 30th.
- Upon disassembling, all tripping hazards shall be removed as deemed necessary by the Building Inspection Division.
- Music or other amplified sounds from the loudspeakers shall not play prior to 8 a.m. or after 7 p.m.
- The restroom, tables and chairs may all remain in place and ready for use.
- The applicant shall obtain a building permit for the Mad-Eggs facility and walk-up cafe, walk-in cooler and storage shed and shall obtain additional approval from the Fire Marshal, Talbot County Health Department, and Easton Utilities Commission.
- The applicant shall submit As-builts for review with the Town's Engineering Department to close out the grading permit.

- Upon installation of the "Mad Eggs" kitchen facility, the Town Planner may determine that mechanical equipment screening at the top of the structure is necessary and shall retain the right to seek approval/denial from the Planning Commission.

- The applicant shall return to the Planning Commission after November 30th (December 21, 2023 Planning Commission meeting) to review and/or determine if a redesign of the graphics and/or additional screening of mechanical components is necessary.

DRAFT MOTIONS:

1. I move that the Planning Commission approve the sketch site plan and forward a positive recommendation of the PUD Amendment to the Town Council, subject to staff's Conditions of Approval.

OR

2. I move that the Planning Commission forward the application to the November 16th Commission meeting for further discussion.

OR

3. I move an alternate motion.

ATTACHMENTS:
1. 2023.09.22 Rise Up - Transmittal Letter, paper copy & PDF
2. 2023.09.22 Rise Up - Updated Site Plan, paper copy & PDF
3. Smith Ltr re Exhibits for Shed & Walk-in (10-10-23) & Exhibits, paper copy & PDF

MAD EGGS
SCAN FOR MENU
OR TO ORDER AHEAD

ARMISTEAD, LEE, RUST & WRIGHT, P.A.
ATTORNEYS AT LAW

114 Bay STREET, BUILDING C
EASTON, MARYLAND 21601

TELEPHONE: (410) 819-8989
FACSIMILE: (410) 822-4787

EMAIL ADDRESS
ZACHSMITH@ALRWLAW.COM

December 6, 2023

Planning and Zoning
Town of Easton
c/o Samantha Smith
14 S. Harrison Street
Easton Maryland 21601

Re: Proposed Screening for Mechanical Equipment
Rise Up Coffee Roasters - 625 Dover Road Easton, Maryland

Dear Samantha:

Enclosed please find a depiction of the proposed screening of the mechanical equipment for the Rise Up Coffee Roasters site at 625 Dover Road. The proposed screening will be made of metal, with adhered vinyl text. Rise Up believes this solution will provide the screening desired by the Town while ensuring an interesting and visually appealing façade. No change to the existing graphics on the shipping container is proposed.

Please distribute this material to the Planning Commission in advance of the December 21st meeting. If there are any questions, or if anything further may be required at this time, please contact me.

Sincerely,

Zach A. Smith

RECEIVED
DEC 0 6 2023
TOWN OF EASTON

MADE TO ORDER
BREAKFAST
BURRITOS
SCRATCH-MADE
BREAKFAST
Sandwiches
Award-Winning
AÇAÍ
BOWLS
CRAZY GOOD FOOD
MADE FRESH
MAD EGGS

Joe Mayer <jmayer@eastonmd.gov>

Rise Up - Proposed Screening of the Mechanical Equipment

1 message

Joe Mayer <jmayer@eastonmd.gov> Thu, Dec 7, 2023 at 11:56 AM
To: Zach Smith <zachsmith@alrwlaw.com>, Ozzie Jimenez <ozzie@riseupcoffee.com>, Alex Faller <alex@alrwlaw.com>, Miguel Salinas <msalinas@eastonmd.gov>, Lynn Thomas <lthomas@eastonmd.gov>, Nicholas Johnson <njohnson@eastonmd.gov>, Samantha Smith <ssmith@eastonmd.gov>, Sharon VanEmburgh <svanemburgh@ewingdietz.com>, Rick Van Emburgh <rvanemburgh@eastonmd.gov>

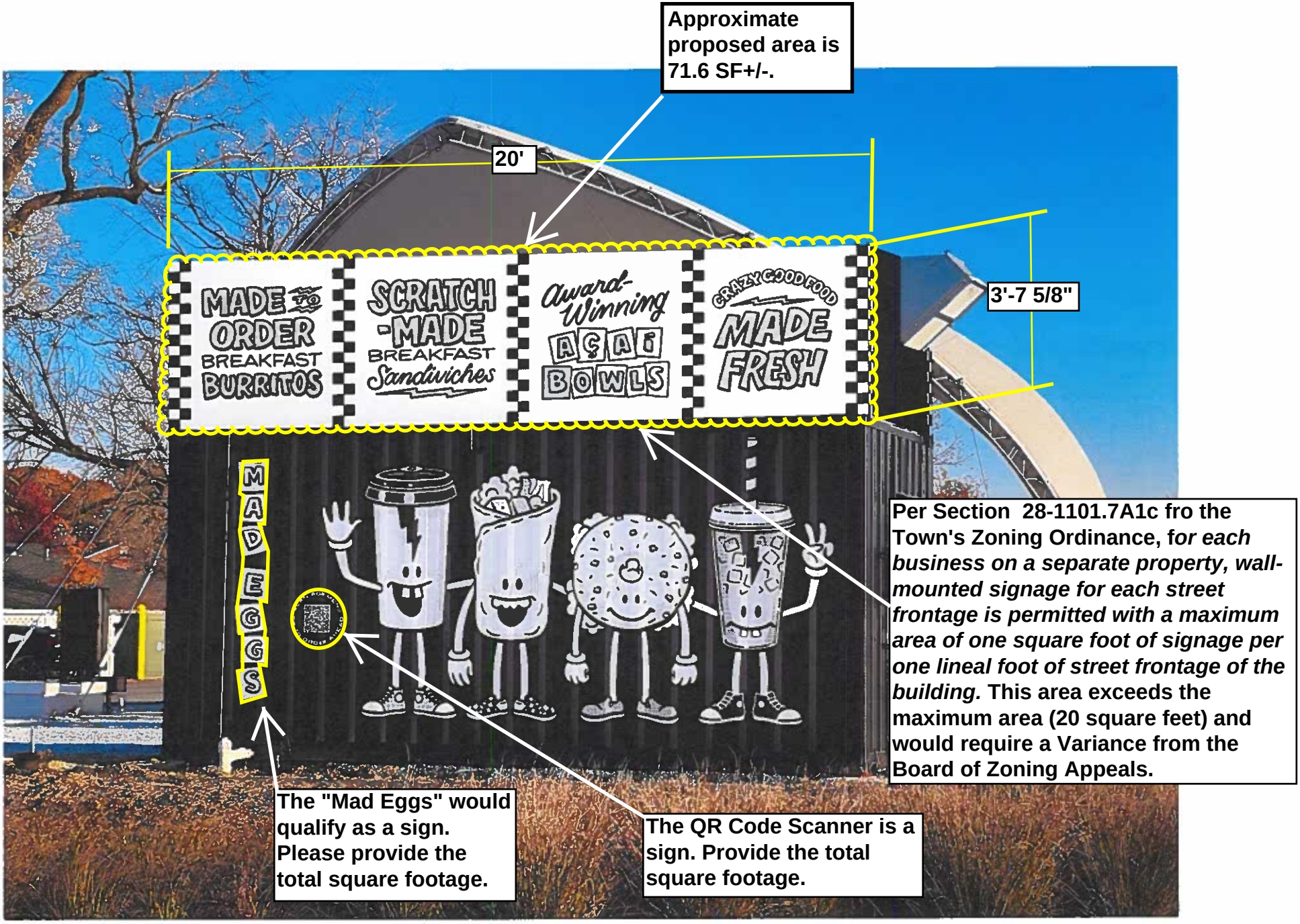
Zach,

Thank you for your application to the Planning Commissions in regards to the proposed screening of the mechanical equipment. The staff reviewed the submitted documents and determined that the metal screening facing Dover Road is a wall sign. Per Section 28-1101.7.A.1.c from the Town's Zoning Ordinance, *for each business on a separate property, wall-mounted signage for each street frontage is permitted with a maximum area of one square foot of signage per one lineal foot of street frontage of the building.* The total length of the Mad Egg's kitchen is approximately twenty (20) square feet. The proposed wall sign area of 71 SF +/- far exceeds the maximum twenty(20) SF requirement. This would require a Variance from the Board of Zoning Appeals. Staff suggest that the screening, in keeping with the spirit and intent from the Planning Commission, should conceal the mechanical equipment and blend in with the overall structure.

See the attached markup. The "Mad Eggs" and QR Code Scan on the facility would also be treated as a sign. Verify the total square foot area for each item. A sign application would be required for all signs placed onto the kitchen. Please advise.

Regards,
Joseph A. Mayer
Plan Reviewer
Town of Easton
14 South Harrison Street
Easton, MD 21601
410-822-1943

2023-12-6 Rise Up Proposed Screening Depiction.pdf
896K



Planning & Zoning Review: 12/7/2023

TOWN OF EASTON

14 South Harrison Street
Easton, Maryland 21601

December 6, 2023

Dear Resident,

The Easton Planning Commission (Commission) will hold a public meeting on **Thursday, December 21, 2023 at 1:00 p.m**. in the Easton Town Council Chambers located on the second floor of 14 South Harrison Street. The Town of Easton Zoning Ordinance requires that owners of property located within 400 feet of a parcel on which certain types of applications are pending be given notice of upcoming meetings or hearings. If you are a tenant in or an owner of a multi-unit building, please distribute or post this notice in a visible location for all other tenants or owners to view. If you are a tenant of a rental property, please notify the property owner that this notice letter has been distributed to their property. Notice has also been sent to the Star Democrat, a sign has been posted at the subject property and the hearing agenda has been posted on the Town of Easton website: http://eastonmd.gov/.

This letter is sent to inform you of a review of Application 2023 - 870, a requested Amendment to a previously-approved Planned Unit Development (PUD) on the property located at 625 Dover Road, also known as Tax Map 103, Parcel 0990. The applicant, Rise Up Dover Road LLC, is returning to the Planning Commission to review and/or determine if a redesign of the graphics and/or additional screening of mechanical components is necessary for their 8' x 12' "Mad Eggs" kitchen facility and walk-up cafe of a similar size. The addition of this kitchen facility and walk-up cafe, along with the addition of an 8' x 12' walk-in cooler, a 12' x 24' storage shed, a dual drive thru kiosk that is 8' x 12.5', a restroom trailer that is approximately 6' x 24', and a seasonal shade structure that is approximately 39' x 58', received a favorable recommendation by the Commission to the Town Council of the PUD amendment, along with recommended conditions, at their October 19, 2023 meeting.

Copies of the proposed application are on file and available for public review in the Town's Planning Office at 14 South Harrison Street between the hours of 8:30 a.m. and 4:00 p.m., Monday through Friday. **In addition, digital copies will be available for review one week prior to the scheduled meeting via the Town's website at** https://www.eastonmd.gov/129/Agendas-Minutes. If you have any questions regarding this application, please contact the Planning Office at (410) 822-1943 or via email at ssmith@eastonMD.gov.

Samantha N. Smith, Administrative Specialist
Planning & Zoning Department
410-822-1943 ssmith@eastonMD.gov

APG Media of Chesapeake, LLC **12/04/23**
29088 Airpark Drive
Easton, MD 21601

Phone: Fax:
http://www.chespub.com

Cust. AcctID:		Creation Date:	**12/04/23**
		Ad Date:	**12/06/23**
		Class:	
Name:	**Joanne Drummer**	Ad ID:	
Company:	**TOWN OF EASTON (L)**	Ad Taker:	**AHALL**
Address:	**PO Box 520**	Sales Person:	**503**
	EASTON, MD 21601	Words:	**287**
		Lines:	**47**
		Agate Lines:	**234**
Telephone:	**(410) 822-2525**	Depth:	**6.5**
Email:		Inserts:	**2**
Description:	**Planning Comm Meeting**	Blind Box:	

Other Charges:		Total:	
Discount:			
Surcharge:		Paid Amount:	
Credits:			
Bill Depth:		Amount Due:	

CREDIT CARD DETAILS

PT	CT	CN	Number	Exp.	Amnt.

Publication	Start	Stop	Inserts	Cost
The Star Democrat	12/06/23	12/06/23	1	

Ad Note:

Sign posted on December 5, 2023

Customer Note:

Planning Commission
MEETING AGENDA
Thursday, December 21, 2023 - 1:00 PM
Council Chambers, Easton Town Office
14 S Harrison Street

Please continue to check our website at:
https://eastonmd.gov/129/Agendas-Minutes
for agenda updates

1. **Call to Order**
2. **Approval of Minutes.**
   a. Approval of the Decision Summary from the November 16, 2023 meeting.
   b. Approval of the October 11, 2023 Comprehensive Plan Workshop Summary.
3. **Old Business**
   a. **Applicant:** Rise Up Dover Road LLC
      File No.: 2023-870
      Location: 625 Dover Road
      Tax Map 103, Grid 0EA, Parcel 0990
      Zoning District: R-7A
      Nature of Request: Design review and approval of the graphics and mechanical equipment screening on a previously approved kitchen facility on the existing property located at 625 Dover Road, also known as Tax Map 103, Parcel 0990.
4. **New Business**
   a. **Applicant:** Lane Engineering, LLC
      File No.: 2023 - 1069
      Location: 9158 and 9170 Mistletoe Drive
      Tax Map 025, Grid 0022, Parcel 0138, Lots 2 & 3
      Zoning District: I
      Nature of Request: Sketch Site Plan approval of a proposed manufacturing/ wholesale building and a 2-story office building with associated site improvements.
   b. **Applicant:** Shoregate of Cannery Commercial LLC
      File No.: 2023 - 996
      Location: 503 North Street and 108 North East Street
      Tax Map 103, Grid 0EA, Parcel 0753 & 0756, Lot 3 & 4
      Zoning District: BC
      Nature of Request: Sketch Site Plan approval to construct three (3) multifamily residential buildings with a total of 96 units and an amenity building with associated site improvements, including the demolition of an existing garage and storage building.
5. **Discussion Item**
   a. Zoning Requirements for Adult-Use Cannabis Dispensaries.
   b. Continue discussion of the Comprehensive Plan Update.
   c. Continue discussion of Amendments to Zoning Ordinance.
6. **Adjournment.**

3041198 SD 12/6/2023

We Appreciate Your Business!
Thank You Joanne Drummer!

Samantha Smith <ssmith@eastonmd.gov>

Planning and Zoning application

1 message

Joan Leanos Fri, Dec 8, 2023 at 8:11 AM
To: Samantha Smith <ssmith@eastonmd.gov>
Cc: Timothy Cureton

Dear Ms. Smith:

I live at 634 Dover Rd, Easton, MD 21601. This is the blue house across from the bus stop. Anything the RiseUp wants is fine with me. They have always been very considerate of other property owners on the block and their business has improved the values of our neighborhood.

Sincerely,
Joan Leanos

Joan Leanos CPA
Private Practice
cell 410-340-1067

Mailing Address and Easton Office
634 Dover Road Apt 1
Easton, MD 21601

Annapolis Office
839 Bestgate Rd
Suite 400
Annapolis, MD 21401

This email is covered by the Electronic Communications Privacy Act, 18 USC 2510-2521 and is legally privileged. This email and its attachments are confidential and may also be protected by Accountant/Client privilege, work product doctrine, or other nondisclosure protection. If you believe that it has been sent to you in error, you may not read, disclose, print, copy, store or disseminate the email or any attachments or the information in them. Please reply to the sender by email that you have received the message in error, then delete it. Thank you.

TOWN OF EASTON
PLANNING & ZONING
14 S Harrison Street, Easton MD 21601

Date of Hearing: December 21, 2023

4a

PLANNING COMMISSION
PUBLIC HEARING
STAFF REPORT

SUBJECT: **9158 Mistletoe Drive, Lot 2 & 3 – Vetagro**

ELECTION WARD: Ward 1

CRITICAL ACTION DATE: At the pleasure of the Commission

STAFF CONTACTS: Joseph Mayer, Plan Reviewer
Miguel Salinas, Director of Planning and Zoning

APPLICANT: APEG International. Inc.

DOCUMENT CREATED ON: December 7, 2023

PURPOSE: The applicant is seeking site plan approval from the Planning Commission to construct a 33,872 square foot (SF) manufacturing/wholesale building with a 6201 square foot (SF) one-story office building and associated improvements.

RECOMMENDATION: Staff supports Planning Commission approval of the proposed site plan subject to conditions (see below).

APPLICATION INFORMATION:	
APPLICANT: APEG International. Inc.	**REPRESENTATIVE:** Lane Engineering, LLC.: Brett Ewing APEG International. Inc.: Andrea Piva
PARCELS/ACREAGE:	

Parcel Information	Acreage
Map 025, Grid 0016, Parcel 0138, Lots 2 & 3	13.185

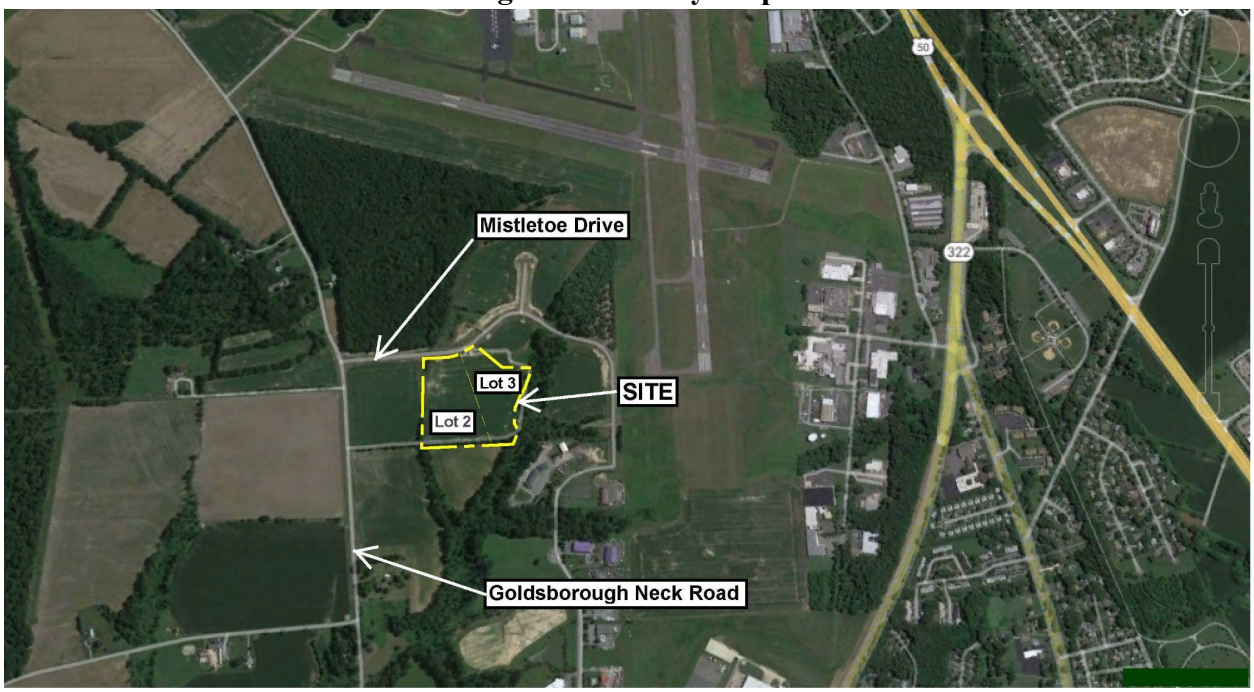
ACCEPTANCE DATE: November 27, 2023	**LOCATION:** 9158 & 9170 Mistletoe Drive
EXISTING ZONING I	**EXISTING LAND USE:** Vacant parcels within the Mistletoe Hall Commerce Business Park.
HISTORIC DISTRICT: Not Applicable	**FUTURE LAND USE MAP:** Industrial

CONTEXT:
Location/Site Access – The subject property is located within the "Mistletoe Hall Commerce Business Park", fronting on the south side of Mistletoe Drive.

Existing Conditions – The subject property is currently unimproved.

Surrounding Properties
- Parcel 158, Goldsborough Neck Road – Talbot County, MD
- 9155 Mistletoe Drive – I
- 9140 Mistletoe Drive – I
- 9196 Mistletoe Drive – I
- Parcel 100, Goldsborough Neck Road – Talbot County, MD
- Parcel 129, Goldsborough Neck Road – Talbot County, MD
- Parcel 139, Goldsborough Neck Road – Talbot County, MD
- 9293 Goldsborough Neck Road – Talbot County, MD

Figure 1: **Vicinity Map**



PROPOSAL: The applicant is seeking site plan approval for Phase 1 from the Planning Commission to construct a 33,872 SF manufacturing/wholesale building with a 6,201 SF one-story office building. Other improvements include associated parking for 55 parking spaces (including three ADA accessible parking spaces), stormwater management facilities and landscaping. Phase 2 is a proposed expansion to the manufacturing/wholesale and office building that will be submitted to the Planning Commission for site plan and architectural review/approval at a future time.

BACKGROUND: The applicant submitted an application to the Easton Staff Development Review Committee (ESDR) on November 22, 2023. Originally, the applicant was seeking a waiver from the required 80 parking spaces. They were proposing 55 parking spaces, resulting in a request to waive 25 spaces. Subsequent to the ESDR meeting, the applicant proposed to reduce the manufacturing/wholesale building from a 51,187 SF of ground floor area (GFA) to a smaller footprint being 33,872 SF GFA. The office building was also reduced from a two-story 13,390 SF GFA to a one-story 6,201 SF GFA. The applicant is still proposing 55 parking spaces which is within the minimum 41 parking space requirement and the maximum 241 parking space requirement based on the revised square footage. This revision was submitted to the Planning & Zoning Department and Engineering Department on December 6, 2023 for review and discussion with Lane Engineering. Staff agreed that the sketch site plan with the revisions could proceed to the Planning Commission without additional submittals which are anticipated to not substantially affect the appearance and characteristics of the proposed development and staff's ESDR comments. The applicant will describe in more detail those building modifications/reductions at the hearing.

ZONING ANALYSIS:

A. Permissible Land Uses

28-201 table 2.1 (5) 521 **I**

521	Wholesale and retail sales of products manufactured or stored on the premises in conjunction with any other principal permitted use	--	--	--	--	--	--	P	P	--		

28-201 table 2.1 (5) 505 **I**

505	Contractor's Office w/ no outside storage	--	--	--	--	P	P	P	P	P		

Analysis –The proposed project is presented and described by the Applicant as a one-story office building with an associated manufacturing/wholesale for an agricultural-related business. The project is categorized as a *"Wholesale and retail sales of products manufactured or stored on the premises in conjunction with any other principal permitted use"* and as a *"Contractor's Office with no outside storage"*. Both proposed uses are outright permitted within Table 2.1 Table of Permissible Uses. For the purpose of parking calculations, the use is considered a "Manufacturing Plant", "*Wholesale Trade and Storage*" and *"Construction-related business."*

B. Off-Street Parking

28-1001.3 Parking Requirements

	Use/Activity	Minimum Vehicle Spaces	Maximum Vehicle Spaces	Minimum Bicycle Spaces	Notes
	Industrial Buildings				
33	Manufacturing Plant	1 per 2,000 sf GFA	1 space per 300 sf GFA	--	

28-1001.3 Parking Requirements

	Use/Activity	Minimum Vehicle Spaces	Maximum Vehicle Spaces	Minimum Bicycle Spaces	Notes
	Commercial Buildings				
14	Office or Bank without Drive-Thru	1 per 250 sf GFA	1 space per 140 sf GFA	--	

Total Site Parking Required:

Manufacturing Plant: 1 Space /2,000 SF GFA; 17 Spaces Required- Minimum
1 Space /300 SF GFA; 113 Spaces Required- Maximum

Office: 1 Space /250 SF GFA; 25 Spaces Required- Minimum
1 Space /140 SF GFA; 44 Spaces Required- Maximum

Total spaces Required- Minimum: 42
Total spaces Required- Maximum: 157
Total spaces provided: 55

Analysis- The applicant has provided fifty-five (55) off-street parking spaces. If there was a demand for more parking spaces in the future, there's ample space to expand on the Southwest side of the site.

C. Industrial District Development Standards

Table 1. Development Standards		
I Zoning District	**Standard**	**Proposed**
Setbacks	Front = 25 feet Side = 10 feet Side = 25 feet if adjacent to residentially zoned properties. Rear = 30 feet	Front = 40 feet Side = 10 feet Side – Not applicable. Rear = 50 feet
Lot Size (min.)	40,000 square feet	574,338 square feet
Lot Frontage (min.)	100 feet	428.04 feet
Building Envelope (min.)	30 feet x 80 feet	408 feet X 625 feet
Lot Coverage (max.)	50% (Lot Area)	10% (Lot Area)
Height (max.)	40 feet	32 feet 52 feet in area for mechanical components, exempt per Section 28-1003 of the Town's Zoning Ordinance.
Bufferyard	Per the provisions of Section 28-1014 of the Zoning Ordinance.	Natural Bufferyard provided via Forest Conservation areas adjacent to the side and rear property lines.

Development within the Industrial District shall also meet these additional requirements:

- ***Off-street parking shall be provided in accordance with the provisions of Section 28 – 1001.***

- ***All storage areas shall be adequately screened and landscaped in accordance with provisions of Section 28 – 1014 of this Ordinance.***

- ***All on-site lighting unless approved otherwise by the Planning and Zoning Commission shall be low cut-off shielded luminaries at 18' height and light shall not shine off-site at levels greater than 1-foot candle.***

- ***All off-street loading and unloading areas shall be screened from view by permanent decorative screens or natural planting, either of which shall be a minimum of eight (8) feet in height, in accordance with the provisions of Section 28 – 1014 of this Ordinance.***

- ***All areas not devoted to buildings or parking areas shall be landscaped and maintained in a suitable manner, in accordance with the provisions of Section 28 – 1014 of this Ordinance.***

- ***Sidewalks shall be constructed along any public right-of-way (except for alleys) adjacent to the site along the entire frontage(s) of the property. To the extent practicable, walkways shall be constructed on the site to tie building entrances and/or pedestrian pathway systems into existing or proposed public sidewalk systems.***

Analysis - The site falls under the I - Industrial District Area and meets the 28-309 Development Standards. In addition to the Development Standards, the Applicant is required to adhere to the November 5, 2021 Declaration of Covenants for Mistletoe Hall Commerce-Business Park-Book: 2916, Page: 104. **Compliance with these covenants is summarized and analyzed below.**

C. Forest Conservation

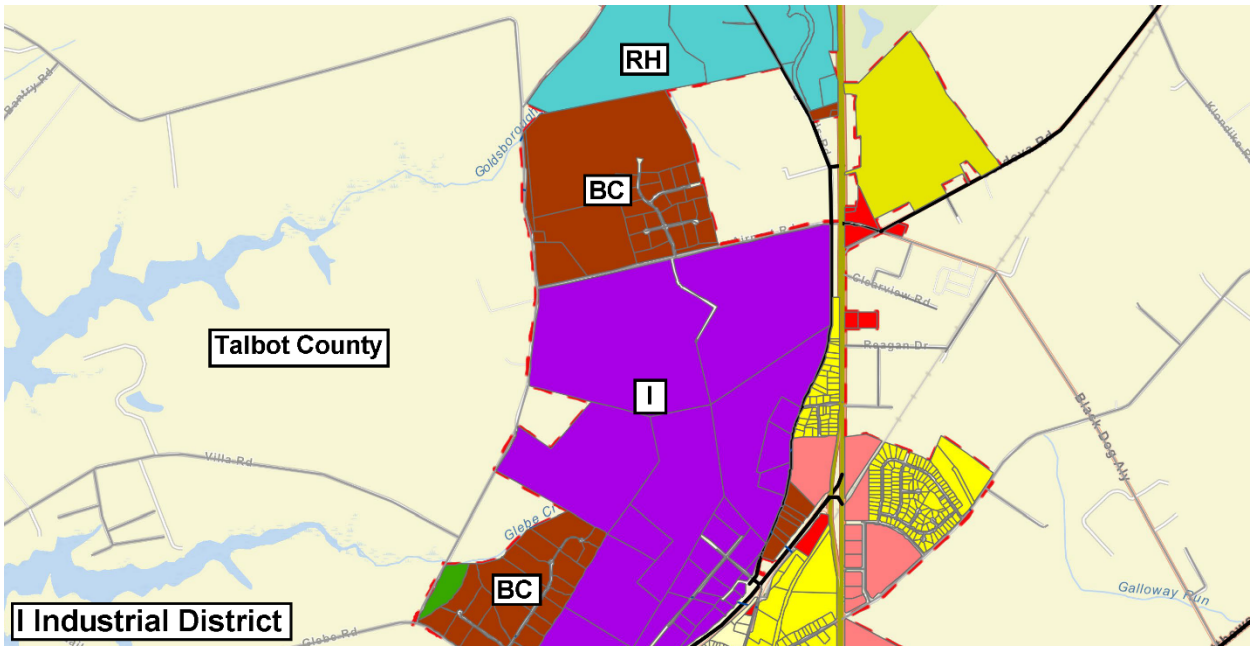
Easton Forest Conservation Ordinance #718, Article III,* § 31-3.1 *Relevance

A. Any person making an application for a subdivision, project plan, grading, or sediment and erosion control approval on units of land 40,000 square feet or greater after the effective date of this Ordinance.

Analysis - The site is located within the Mistletoe Hall Commerce-Business Park. Forest Conservation was approved at the original Subdivision Plat (Plat KMD 87/124).

POLICY ANALYSIS:

Figure 2: Zoning Map



The submission of a site plan for a proposed use or development activity shall not be approved unless it meets the factors below:

1. The site plan meets the design principles and standards and required improvements set forth in this Ordinance, the Town Comprehensive Plan, the Town of Easton Subdivision Regulations, and other ordinances, regulations, and policies established by the Town of Easton.

Analysis -

Town of Easton 2010 Comprehensive Plan Design Principles (Principle #1) - Integrated uses are desirable - *Applicant's response: This development proposal provides manufacturing/wholesale jobs in this mixed business park.*

Staff notes that the proposed development fits within the industrial nature of this business park.

(Principle #2) Natural features should determine design – *Applicant's response: No compelling natural features; site layout oriented to take advantage of natural drainage patterns and to orient "office" buildings front to street, loading docks to the rear.*

Staff notes that there are no compelling natural features on site. Forest Conservation was approved at the original Subdivision Plat (Plat KMD 87/124).

(Principle #3) Automobiles should not determine design – *Applicant's response: Parking for office users provided, waiver requested based on number of employees expected and historic data of operation in Italy.*

Staff notes that the applicant has reduced the office building and manufacturing/wholesale building square footages which reduced the number of required parking and provided off-street parking within the required range as specified in the Town Code. Therefore a parking waiver is not required.

(Principle #4) Ample Open Space should be provided within & around neighborhoods – *Applicant's response: Usable open space not applicable here.*

Staff notes that open space is provided within the business park and was approved at the original Subdivision Plat (Plat KMD 87/124).

(Principle #5) Architecture should respect Easton's Historical Development – *Applicant's response: This application proposes architecture compatible with Easton and the Mistletoe Hall Commerce-Business Park's architectural Palette.*

(Principle #6) Signs should inform but not dominate – *Applicant's response: Signage, simple and per code.*

Staff notes that any proposed monument sign will require a Signage Application to be submitted prior to installation. Signs should inform but not dominate the area.

(Principle #7) Neighborhoods should contain a diversity of housing types – *Applicant's response: Not applicable to this application.*

(Principle #8) Residential neighborhoods should be interesting places – *Applicant's response: Not applicable to this application.*

(Principle #9) Neighborhoods should connect – *Applicant's response: Not specifically applicable to this application.*

Staff notes that although this Principle generally applies to residential subdivisions, Mistletoe Hall does connect to the adjacent Talbot Commerce Park and provides two means of access.

2. The site plan avoids or minimizes adverse impacts upon features (whether on-site or off-site) of historical, cultural or ecological significance.

Analysis - The proposed site is not within the Historic District or the Critical Area. This project would provide an office and a manufacturing/wholesale building with improved amenities; adequate parking, stormwater management facilities and landscaping.

3. The proposed use or development activity will not substantially increase traffic hazards due to traffic generated by the proposed use, the location of curb cuts or the layout of internal traffic circulation.

Analysis - The proposed use and activity will not increase traffic hazards in the surrounding area. Adequate off-street parking is provided.

4. The site plan and the proposed use or uses do not cause any adverse impact upon the health or safety of persons residing or working in the area surrounding the site or upon the character of the neighborhood surrounding the site; and

Analysis - There would be no adverse impacts. The existing property is located within an industrial zoned commerce park. The proposed use would provide an office building with an associated manufacturing/wholesale building, adequate parking, landscaping features and stormwater management facilities.

5. ***The site plan improves the water quality of the Chesapeake Bay or its tributaries.***

Analysis - The proposed site would meet required design practices for stormwater management.

DECLARATION OF COVENANTS FOR MISTLETOE HALL COMMERCE-BUSINESS PARK ANALYSIS:

MISTLETOE HALL COMMERCE-BUSINESS PARK
COVENANTS

Checklist of Submission Requirements-April 26, 2022

Project Name: 9158 Mistletoe Drive Lot 2 & 3 - Vetagro

Allowable Uses	As permitted in the Zoning Code	☑	Contractor's Office without Outside Storage and Manufacturing/Wholesale are permitted by-right in the I zoning district
Prohibited Uses	**Prohibited Uses**		
	Uses and the manufacturing, processing, and storage of materials and products which cause an undue fire or health hazard to adjoining lots, or which constitute a nuisance or cause an emission of noxious odors, gasses or smoke	☑	

	Prohibited Operation or Use		
	No operation or uses which causes or produces the following effects outside any lot or portion of lots subject to the covenants: ● Smoke ● Noxious, toxic, or corrosive fumes or gasses ● Obnoxious odors ● Dust, dirt, or fly ash ● Unusual fire or explosive hazard ● Intense glare or heat ● Intense vibration ● Excavation, with the exception of excavation for the construction of improvements with proper protection of adjacent lots and, upon completion, shall be backfilled and disturbed ground shall be graded and stabilized	☑	
Development Standards	**Site Design**		
	Massing, scale, color, and circulation relates to adjacent buildings and to the total development	☑	

	Architectural Standards		
	Massing and scale of larger buildings are broken down into smaller and varied volumes	☑	

	Buildings exceeding 20 feet in height: ● Base capped with a molding or reveal placed between 2 ft. and 4 ft. in height with a depth of at least 2 inches and a height of at least 4 inches ● Middle may include multiple stories, windows, doors, and balconies capped with a molding or reveal which shall have a depth of at least 2 inches and a height of at least 4 inches ● Cap includes the area from the middle to the roof and includes a cornice, eave, parapet, or overhang	☑	Base consists of 4' high contrasting green wainscot paneling. Middle consists of windows set in the field color of off-white siding. Cap feature is a parapet.
	Major architectural expressions employed such as corner massing, oversized windows-entrances and roof form to demarcate and anchor key locations	☑	
	Solid walls to not exceed 60 feet in length without a minimum 10 foot facade return, offset, or change in plane	☑	
	Exterior Materials		
	Building finish applied to all publicly-visible sides and neighboring lots and streets	☑	Use of off-white steel panels with 4-foot-high wainscot of contrasting green panels.
	Traditional, durable, and environmentally sustainable materials. Examples include: ● Brick or or tile burned clay with color and texture to be approved	☑	Use off-white steel panels with 4-foot-high wainscot of contrasting green panels with sufficient return.

	• Concrete masonry units with no plain concrete block on the front of any building, no exposed gray concrete block on any elevation, and gray cement color to be coated • Poured in place or tilt-up concrete walls with a finish of stone, a texture or coating • Coated precast concrete units which are not uniform in color • Concrete finishes for front elevations shall have a wainscot treatment with returns at least 4 feet on the adjacent side elevation • Concrete textured finishes • Cementitious-type or an epoxy-type concrete coating with a life expectancy of a minimum 10 years • Steel panels with a wainscot using dissimilar approved materials at least 4 feet in height when used for a front building elevation and a 4-foot return on adjacent side walls • Wood or wood products • Vinyl • Glass or glass block		
	Roofs		
	Minimum pitch of 5:12 unless 4:12 pitch or less and surrounded by a parapet wall	☑	Roof will be ½:12, however screened by integrated parapets
	Roof mounted equipment screened by a parapet wall integrated into the architecture	☑	
	Colors		
	Shall be approved by the Town Mayor	☐	***TBD***
	Temporary Improvements		
	Temporary buildings and other temporary improvements are prohibited	☑	
Automobile Parking	**Off-Site Parking**		

	Number of spaces in accordance with the ZO without overbuilding	☑	

	Employee and company vehicles designated in the side and back of the property and located as to not compete with patron parking	☑	Employee parking located on the west side of the potential future phase two expansion.
	Patron parking generally located in the front of the property	☑	
	Off-Site Parking		
	No parking within the street ROW within the property	☑	
	Parking Area Standards		
	Paved with asphalt, concrete, or pervious pavers	☑	
	Front ends of parking spaces shall consist of concrete curbs or curb stops	☐	***Applicant to note on plan.***
	Concrete curbing provided at the radius of all parking access entries off public roads	☐	***Applicant to note on plan.***
	Exposed edge of all curbs, parking areas, or walkways installed with grass, ground cover, or mulch	☑	
	Special paving materials may be used to accent special entrance areas or walkways	☑	
	No more than 7 consecutive, single-loaded spaces provided without a landscaped island measuring at least 6 feet in width	☑	
	Parking spaces lined or striped in accordance with the Town's required parking space size	☑	
	Screening		
	Parking screened from view as much as possible by depressing grades, landscaping, and/or berms	☑	

Truck Loading and Parking	Loading docks located in the rear and side of buildings	☑	
	Loading docks screened from view so that trucks using docks are not readily visible from public streets	☑	
	Loading docks screened from view by the building, landscaping, walls, or decorative fencing	☑	
	No overnight parking of trucks and commercial vehicles parked outside the building overnight except in the rear or in suitably screened areas	☑	
	Loading areas shall not encroach into setback areas unless approved by the Declarant in writing	☑	
	Loading areas located in side yards shall be set back and screened to minimize the effect from the street and from neighboring lots	☑	
	Loading doors and docks shall not be closer than 100 feet to the street property line, unless specifically approved by the Declarant in writing	☑	
	Loading areas are prohibited on the front of any building	☑	
Storage	No materials, supplies, or equipment stored for more than 24 hours in any area except inside a closed building or behind a visual barrier completely screened from view of adjoining lots or public streets (if screened from view by landscaping, buffer must be opaque within 5 years of installation)	☑	
	Garbage and refuse containers completely concealed from view by a screening wall constructed of material compatible with the building, landscaping materials or decorative fencing with screening located in a side or rear yards of the lot	☑	

Outdoor Work Areas	No work areas permitted on any lot except inside a closed building or behind a visual barrier completely screened from view of adjoining lots and public streets	☑	
Storage Tanks	Prohibited unless approved by the Declarant in writing	☑	
Trailers	Except for a temporary period during construction, prohibited when used for storage purposes	☑	

Landscaping	All open areas not occupied by buildings and paved areas **and** open areas between each lot's property boundaries and the edge of paving along the street frontage shall be suitably graded and drained and landscaped with lawns, trees, shrubs, and flower beds	☑	
	Each lot - landscaped areas no less than 12.5%	☑	
	Natural vegetation retained to the greatest extent possible	☑	
	Copy of the landscape plan showing preservation of natural areas; planting of trees, shrubs, flower beds, grass; and installation of earth berms, screens, and underground sprinkling systems (if applicable) submitted to the Declarant for approval in conjunction with the site plan	☑	
	Landscape plan showing components reflecting seasonal changes in the plans	☑	
	Plant material in conformance with the American Standard for Nursery Stock, latest edition	☑	
	Landscape Plan prepared by a registered landscape architect, certified by the State of Maryland	☐	***Applicant to verify and note on the plan.***

	Landscaping installed within the next planting season of occupancy or within 6 months of substantial completion (date on which the exterior walls and roofs have been installed) of any Building, whichever occurs first, provided that an extension may be granted by the Declarant	☑	
Tree Removal	No healthy tree with a diameter exceeding 4 inches may be approved without written approval from the Declarant unless removal is necessary in connection with the location of a building, loading area, driveway or other improvement	☑	
Exterior Lighting	Compatible and harmonious throughout the property	☑	

	Lighting sources screened from view or directed downward and shielded	☑	
	Automobile and truck parking areas, if illuminated, shall be directed downward and screened to reduce visible glare from the street	☑	
Signs	Permanent signs for identification only and may not be an advertising device	☑	***Any proposed signage must conform.***
	Text limited to company name or logo	☑	***Any proposed signage must conform.***
	No permanent, painted signs permitted	☑	***Any proposed signage must conform.***
Fencing	Natural areas are preferred for enclosing and screening	☑	
	Black or dark brown vinyl clad chain link fencing, CMU, concrete, brick, and stone walls permitted	☑	

RECOMMENDED CONDITIONS:

Staff recommends the Planning Commission approve the sketch site plan with the following conditions:

- The Applicant may reduce the floor area of the manufacturing/wholesale and office building so long as the general location and the elevations remain consistent as shown as submitted and on the elevation sheets dated October 27, 2023.
- The Applicant is required to adhere to the November 5, 2021 Declaration of Covenants for Mistletoe Hall Commerce-Business Park-Book: 2916, Page: 104.

DRAFT MOTIONS:

1. I move that the Planning Commission approve the sketch site plan subject to staff's Conditions of Approval.

OR

2. I move that the Planning Commission table the application to the January 18th Commission meeting for further discussion.

OR

3. I move an alternate motion.

ATTACHMENTS:
1. 2020-06-10 KMD 87_127 Final Plat, paper copy & PDF
2. 2023-10-26-Vetagro - Covenant Compliance Letter, paper copy & PDF
3. 2023-10-27-Vetagro Architecture - ESDR Submission (1), paper copy & PDF
4. 2023-10-31 Subdivision Property Line Adjust Application, paper copy & PDF
5. 2023-10-31-Waiver Request Application WITHDRAWN, paper copy & PDF
6. 2023-11-01 Deed, paper copy & PDF
7. 2023-11-01 Site Plan Application, paper copy & PDF
8. 2023-11-01-Concept Stormwater - Vetagro-230407 (1), paper copy & PDF
9. 2023-11-01-Vetagro-Tree-List, paper copy & PDF
10. 2023-11-22 ESDR Application & Determination Letter, paper copy & PDF
11. 2023-11-27-AerialContextPlan, paper copy & PDF
12. 2023-11-27-IllustrativePlan, paper copy & PDF
13. 2023-11-27-SketchSitePlan, paper copy & PDF
14. 2023-11-27-VetagroTransmittal, paper copy & PDF

TOWN OF
EASTON
ENGINEERING DEPARTMENT

DATE: **November 21st, 2023**

TO: **Brett Ewing – Lane Engineering**
Vetagro - Owner
Cc: **Rick Van Emburgh – Town Engineer**
Miguel Salinas – Planning and Zoning Department
Aaron Goller – EUC
FROM: **Sierra Clem – Engineering Department**
SUBJECT: **Mistletoe Drive Lots 2&3 Vetagro – Sketch Site Plan Review for ESDR**

Our office has reviewed the Application for the Subject project received on 11/1/2023 and have the following comments.

Site Plan

The **Sketch Site Plan** is **Acceptable to the Engineering Department with the following comments**:

1. **Sheet 1 of 2:** Include the total permanent proposed impervious surface in the proposed development note.
2. **Sheet 2 of 2:** Please complete the ESD Summary Chart to include the total values.
3. **Sheet 2 of 2:** Bollards, curb stops, or other protection devices are required where parking spaces are adjacent to a proposed SWM feature.
4. **Sheet 2 of 2:** Verify the drive aisle is unobstructed by the proposed dumpster location (proposed gate appears to open into drive aisle).

Please submit a Preliminary Site plan for review once Planning Commission approval is obtained.

Stormwater Management

The **Sketch Stormwater Management Plan** is **Approved with the following condition**:

1. Please complete the ESD Summary Chart to include the total values.

Please submit a Preliminary Stormwater Management Plan for review once Planning Commission approval is obtained.

Please contact me if you have any questions. Thank you.

P.O. Box 520, Easton, Maryland 21601
410-820-8822
Engineering@EastonMD.gov - www.EastonMD.gov

TOWN OF EASTON
Planning & Zoning Department
14 South Harrison Street
P.O. Box 520
Easton, Maryland 21601

Easton Staff Development Review Worksheet

Date: November 22, 2023
Project: 9158 Mistletoe Drive - Vetagro
To: Brett Ewing

The Easton Staff Development Review (ESDR) Committee meeting was held on November 22nd at 11:00 am. Staff reviewed the Site Sketch Plan for the proposed manufacturing/wholesale building and a two story office building on the property located at 9158 Mistletoe Drive, also known as Tax Map 25, Parcel 138, Lots 2 & 3.

The project will need to address all agency comments as specified in the attached review letters and at ESDR. In addition, Article VI in the Declaration of Covenants for Mistletoe Hall Commerce-Business Park (Declaration) requires the applicant to submit Plans to the Town of Easton Plans to include : 1) a master plan for full development of the site, 2) a site plan and schematic design of the area proposed for immediate development including all items required for approval of a site plan, and 3) architectural plans and construction drawings. The Town then reviews the Plans to determine whether they are in accordance with the Declaration.

Section D of Article VI requires the Town to approve, disapprove, or request additions or supplemental information relating to the Plans within thirty (30) days from the date of submission. The Plans were submitted to the Town on November 1, 2023. Staff asked for additions or supplemental information in the form of revisions to the Plans based on the attached Declaration Checklist of Submission Requirements and from the discussion at the ESDR Committee meeting.

The Committee determined that the application may be scheduled for Planning Commission review. Please submit all revised documents.

Further, please address and submit under separate cover the requested additions and supplemental information with a detailed narrative and response to the staff comments and “unchecked” items in the Declaration Checklist pertaining to the aforementioned covenants for further review.

The next Planning Commission meeting is scheduled for **Thursday, December 21, 2023 at 1:00 pm.** Submit all documentation to the Planning and Zoning Department no later than Monday, November 27th at 1:00 pm. Files for presentation at the Planning Commission need to be provided on a flash drive. In addition, provide a digital submittal (via email) of all supporting documents necessary for the Planning Commissions review, including **eight paper copies**.

Please contact the Planning & Zoning Department at 410 822-1943 with any questions.

Sincerely,

Joseph A. Mayer
Plan Reviewer - Planning and Zoning

TOWN OF EASTON
PLANNING & ZONING DEPARTMENT
P.O. Box 520
Easton, Maryland 21601
410-822-1943
www.EastonMD.gov

DATE: **November 20, 2023**
TO: **Brett Ewing –** Lane Engineering, LLC/APEG International, Inc.
Cc: **Miguel Salinas** – Director, Planning & Zoning Department
Rick VanEmburgh – Town Engineer, Department of Engineering

FROM: **Joseph A. Mayer -** Plan Reviewer, Planning & Zoning Department
SUBJECT: 9158 Mistletoe Drive - Vetagro

We reviewed the **November 1, 2023** Sketch Plan Submittal for the Subject Project and have the following comments:

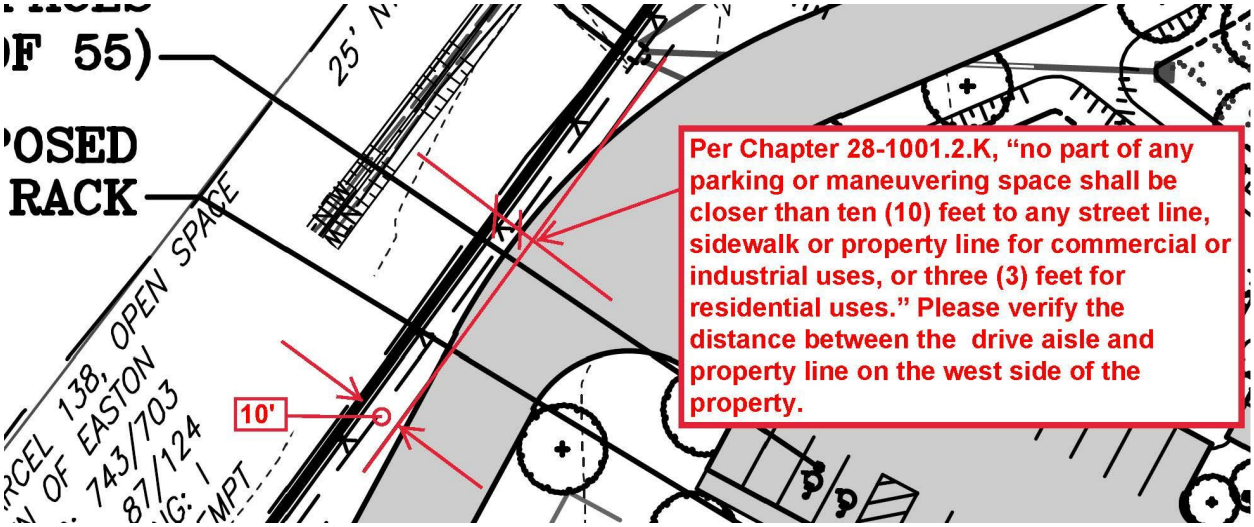
PLANNING & ZONING COMMENTS

Sketch Site Plan Review #1

1. Per Chapter 28-1001.2.K, *"no part of any parking or maneuvering space shall be closer than ten (10) feet to any street line, sidewalk or property line for commercial or industrial uses, or three (3) feet for residential uses."* Please verify the distance between the drive aisle and property line on the west side of the property. See redline below.

2. Indicate the use of curb & gutter and/or curb stops within the parking lots.

Review Comment #1



Plan Review Status

IMPROVEMENT PLAN REVIEW			Comments
Plans Approved	☐Y	☒ N	Please review the comments above. Revise and resubmit.

Forest Stand Delineation & Forest Conservation Plan	
☐ Required ☐ Submitted ☐Approved	**The development of this site has already been mitigated for Forest Conservation under the 2020 Forest Conservation Plan, recorded on record plat KMD 87/124. Any impact into the existing Forest Conservation area would require an updated plan.**
Other	
☒Required ☐ Submitted ☐ Approved	**Applicant to provide FAA Determination of no hazard to air shall be required prior to site plan approval.** **Please note, there will be a required Impact Fee for all proposed units. The Town's Impact Fees and Inspection Fees are to be paid upon the time you pick up your Building Permit. Please provide building square footage with appropriate use for calculation of Impact Fee.** **Talbot County Impact Fees are due prior to obtaining your Building Permit. Please provide receipt of payment to the Town's Building Inspection Division.** **Please add estimated Town Impact Fee calculations to cover sheet and add note below calculations; "*Note: The Impact Fee indicated in this notation shall not be construed as vested and until submission of the building application.*"** **<u>Line Abandonment Plat</u>** **To be submitted for review upon Sketch Plan approval.**

MISTLETOE HALL COMMERCE-BUSINESS PARK
COVENANTS

Checklist of Submission Requirements-April 26, 2022

Project Name: 9158 Mistletoe Drive Lot 2 & 3 - Vetagro

Allowable Uses	As permitted in the Zoning Code	☑	Contractor's Office without no Outside Storage and Manufacturing/Wholesale are permitted by-right in the I zoning district
Prohibited Uses	**Prohibited Uses**		
	Uses and the manufacturing, processing, and storage of materials and products which cause an undue fire or health hazard to adjoining lots, or which constitute a nuisance or cause an emission of noxious odors, gases or smoke	☑	
	Prohibited Operation or Use		
	No operation or uses which causes or produces the following effects outside any lot or portion of lots subject to the covenants: ● Smoke ● Noxious, toxic, or corrosive fumes or gases ● Obnoxious odors ● Dust, dirt, or fly ash ● Unusual fire or explosive hazard ● Intense glare or heat ● Intense vibration ● Excavation, with the exception of excavation for the construction of improvements with proper protection of adjacent lots and, upon completion, shall be backfilled and disturbed ground shall be graded and stabilized	☑	
Development Standards	**Site Design**		

	Massing, scale, color, and circulation relates to adjacent buildings and to the total development	☑	

	Architectural Standards		
	Massing and scale of larger buildings are broke down into smaller and varied volumes	☑	
	Buildings exceeding 20 feet in height: ● Base capped with a molding or reveal placed between 2 ft. and 4 ft. in height with a depth of at least 2 inches and a height of at least 4 inches ● Middle may include multiple stories, windows, doors, and balconies capped with a molding or reveal which shall have a depth of at least 2 inches and a height of at least 4 inches ● Cap includes the area from the middle to the roof and includes a cornice, eave, parapet, or overhang	☑	Base consists of 4' high contrasting green wainscot paneling. Middle consists of windows set in the field color of off-white siding. Cap feature is a parapet.
	Major architectural expressions employed such as corner massing, oversized windows-entrances and roof form to demarcate and anchor key locations	☑	
	Solid walls to not exceed 60 feet in length without a minimum 10 foot facade return, offset, or change in plane	☑	
	Exterior Materials		
	Building finish applied to all publicly-visible sides and neighboring lots and streets	☑	Use off-white steel panels with 4-foot-high wainscot of contrasting green panels.

	Traditional, durable, and environmentally sustainable materials. Examples include: ● Brick or or tile burned clay with color and texture to be approved	☑	Use off-white steel panels with 4-foot-high wainscot of contrasting green panels with sufficient return.

	● Concrete masonry units with no plain concrete block on the front of any building, no exposed gray concrete block on any elevation, and gray cement color to be coated ● Poured in place or tilt-up concrete walls with a finish of stone, a texture or coating ● Coated precast concrete units which are not uniform in color ● Concrete finishes for front elevations shall have a wainscot treatment with returns at least 4 feet on the adjacent side elevation ● Concrete textured finishes ● Cementitous-type or an epoxy-type concrete coating with a life expectancy of a minimum 10 years ● Steel panels with a wainscot using dissimilar approved materials at least 4 feet in height when used for a front building elevation and a 4-foot return on adjacent side walls ● Wood or wood products ● Vinyl ● Glass or glass block		
	Roofs		
	Minimum pitch of 5:12 unless 4:12 pitch or less and surrounded by a parapet wall	☑	Roof will be ½:12, however screened by integrated parapets
	Roof mounted equipment screened by a parapet wall integrated into the architecture	☑	
	Colors		
	Shall be approved by the Town Mayor	☐	***TBD***
	Temporary Improvements		

	Temporary buildings and other temporary improvements are prohibited	☑	
Automobile Parking	**Off-Site Parking**		
	Number of spaces in accordance with the ZO without overbuilding	☑	

	Employee and company vehicles designated in the side and back of the property and located as to not compete with patron parking	☑	Employee parking located on the west side of the potential future phase two expansion.
	Patron parking generally located in the front of the property	☑	
	Off-Site Parking		
	No parking within the street ROW within the property	☑	
	Parking Area Standards		
	Paved with asphalt, concrete, or pervious pavers	☑	
	Front ends of parking spaces shall consist of concrete curbs or curb stops	☐	***Applicant to note on plan.***
	Concrete curbing provided at the radius of all parking access entries off public roads	☐	***Applicant to note on plan.***
	Exposed edge of all curbs, parking areas, or walkways installed with grass, ground cover, or mulch	☑	
	Special paving materials may be used to accent special entrance areas or walkways	☑	
	No more than 7 consecutive, single-loaded spaces provided without a landscaped island measuring at least 6 feet in width	☑	
	Parking spaces lined or striped in accordance with the Town's required parking space size	☑	
	Screening		

	Parking screened from view as much as possible by depressing grades, landscaping, and/or berms	☑	
Truck Loading and Parking	Loading docks located in the rear and side of buildings	☑	
	Loading docks screened from view so that trucks using docks are not readily visible from public streets	☑	

	Loading docks screened from view by the building, landscaping, walls, or decorative fencing	☑	
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	Garbage and refuse containers completely concealed from view by a screening wall constructed of material compatible with the building, landscaping materials or decorative fencing with screening located in a side or rear yards of the lot	☑	

Outdoor Work Areas	No work areas permitted on any lot except inside a closed building or behind a visual barrier completely screened from view of adjoining lots and public streets	☑	
Storage Tanks	Prohibited unless approved by the Declarant in writing	☑	
Trailers	Except for a temporary period during construction, prohibited when used for storage purposes	☑	

Landscaping	All open areas not occupied by buildings and paved areas **and** open areas between each lot's property boundaries and the edge of paving along the street frontage shall be suitably graded and drained and landscaped with lawns, trees, shrubs, and flower beds	☑	
	Each lot - landscaped areas no less than 12.5%	☑	
	Natural vegetation retained to the greatest extent possible	☑	
	Copy of the landscape plan showing preservation of natural areas; planting of trees, shrubs, flower beds, grass; and installation of earth berms, screens, and underground sprinkling systems (if applicable) submitted to the Declarant for approval in conjunction with the site plan	☑	
	Landscape plan showing components reflecting seasonal changes in the plans	☑	
	Plant material in conformance with the American Standard for Nursery Stock, latest edition	☑	
	Landscape Plan prepared by a registered landscape architect, certified by the State of Maryland	☐	***Applicant to verify and note on the plan.***

	Landscaping installed within the next planting season of occupancy or within 6 months of substantial completion (date on which the exterior walls and roofs have been installed) of any Building, whichever occurs first, provided that an extension may be granted by the Declarant	☑	
Tree Removal	No healthy tree with a diameter exceeding 4 inches may be approved without written approval from the Declarant unless removal is necessary in connection with the location of a building, loading area, driveway or other improvement	☑	
Exterior Lighting	Compatible and harmonious throughout the property	☑	

	Lighting sources screened from view or directed downward and shielded	☑	
	Automobile and truck parking areas, if illuminated, shall be directed downward and screened to reduce visible glare from the street	☑	
Signs	Permanent signs for identification only and may not be an advertising device	☑	***Any proposed signage must conform.***
	Text limited to company name or logo	☑	***Any proposed signage must conform.***
	No permanent, painted signs permitted	☑	***Any proposed signage must conform.***
Fencing	Natural areas are preferred for enclosing and screening	☑	
	Black or dark brown vinyl clad chain link fencing, CMU, concrete, brick, and stone walls permitted	☑	

Please contact me if you have any questions. Thank you.

TOWN OF
EASTON
ENGINEERING DEPARTMENT

DATE: **November 21st, 2023**

TO: **Brett Ewing – Lane Engineering**
Vetagro - Owner
Cc: **Rick Van Emburgh – Town Engineer**
Miguel Salinas – Planning and Zoning Department
Aaron Goller – EUC
FROM: **Sierra Clem – Engineering Department**
SUBJECT: **Mistletoe Drive Lots 2&3 Vetagro – Sketch Site Plan Review for ESDR**

Our office has reviewed the Application for the Subject project received on 11/1/2023 and have the following comments.

Site Plan

The **Sketch Site Plan** is **Acceptable to the Engineering Department with the following comments**:

1. **Sheet 1 of 2:** Include the total permanent proposed impervious surface in the proposed development note.
2. **Sheet 2 of 2:** Please complete the ESD Summary Chart to include the total values.
3. **Sheet 2 of 2:** Bollards, curb stops, or other protection devices are required where parking spaces are adjacent to a proposed SWM feature.
4. **Sheet 2 of 2:** Verify the drive aisle is unobstructed by the proposed dumpster location (proposed gate appears to open into drive aisle).

Please submit a Preliminary Site plan for review once Planning Commission approval is obtained.

Stormwater Management

The **Sketch Stormwater Management Plan** is **Approved with the following condition**:

1. Please complete the ESD Summary Chart to include the total values.

Please submit a Preliminary Stormwater Management Plan for review once Planning Commission approval is obtained.

Please contact me if you have any questions. Thank you.

P.O. Box 520, Easton, Maryland 21601
410-820-8822
Engineering@EastonMD.gov - www.EastonMD.gov

EASTON UTILITIES

Life. Made better.™

Easton Utilities Commission

Plan Review Comments

Date: Thursday, November 16, 2023
To: Joe Mayer; Nicholas Johnson; Sierra Clem
From: Kia Gibbs on behalf of Aaron Goller, PE **No. of Pages:** 1
Regarding: Mistletoe Drive Lots 2 & 3 - Vetagro
Phase: Sketch Site Plan **SUBM:** 1 **Status:** **Approved as Noted**

Easton Utilities Commission has reviewed the above referenced plans and have provided the following comments. Please provide your corrections as listed below. Additional reviews will be required to ensure comments have been addressed. Items or documents not provided on initial submission will be subject to further review. Please contact Kia Gibbs, Admin Support at kgibbs@eucmail.com should you have any questions.

ITEM:	DRAWING / PAGE	COMMENTS:
1	1 of 1	Move existing utilities to the front layer.
2	General	Set up meeting with EU for utility usage
3	General	Instal 2" communications conduit to follow electric
4	General	Contact EUC for electric design to be incorporated in 60% plans.

201 N. Washington Street | Easton, Maryland 21601
Telephone: 410-822-6110 | Fax: 410-822-0743 | eastonutilities.com

TOWN OF EASTON

PO Box 520
Easton, Maryland 21601
(410)-822-2526 Fax (410)-822-8738
Office of Building Inspection.

ACCREDITED

ESDR- Building Inspection and Permit Department Comments

Date: November 16, 2023

Project; **APEG International, INC c/o Andrea Piva**
Mistletoe Drive

A Town of Easton Building Permit is required for all new construction. Contact this Department and verify current Building Codes including the Town of Easton's modifications prior to preparation of Building plans.

The following lists items required on the construction drawings in order to apply for a Building Permit.

- Construction Documents (3 sets) for any new construction will be required. Documents must be prepared by a Maryland Registered Architect, with original plans signed and sealed. A code analysis completed by the Maryland Registered Architect shall include, classification (use group), construction type, occupant loads, egress, fire separations and ADA compliance must be completed and included with the application materials.
- Items that must be addressed by the construction documents will be structural strength, means of egress (include travel distance), facilities, stability, sanitation, light and ventilation, energy conservation and safety to life and property from fire and other hazards attributed to the built environment, **Accessibility**, and other safety requirements for public access.
- If your project will be phased include a phasing plan in the Construction Documents.
- All mechanical, electrical, and plumbing permits as required must include 3 sets construction documents signed and sealed by a professional engineer and by a responsible party for the contractor receiving the permit. Be sure the Town of Easton modifications are included. Section 6-16 of the Town Code.
- The Town of Easton may require, in accordance with the International Building Code Chapter 17, a building inspections procedure that utilizes qualified, third-party professionals in addition to the Town's Building Inspectors. The purpose of this document is to establish the policy and guidelines for the construction process in accordance with the Building Code requirements and to:
    - Define the responsibility of all parties.
    - Standardize code application.
    - Provide for an orderly and systematic approach for updating standards that apply to the Special Inspections.
    - Set forth a guideline for Special Inspections.

A copy of " The Statement of Special Inspections" can be found on the Towns Web Site

- An appointment may be set up with this department to review your permit application materials prior to permit application submission.
- **State Fire Marshal,** (410-822-7609) plan review and inspections are required. It is your responsibility to contact them and make application.

Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

RECEIVED
OCT 3 0 2023
TOWN OF EASTON

Easton Staff Development Review

Property Information

Address	Mistletoe Drive, Easton MD						
Tax Map	25	Grid	22	Parcel	138	Lot	2 & 3
Deed Refernce:	Liber	743	Folio	703			
Plat Reference:	Liber	87	Folio	124			
Base Zoning District		I	Historic District Y ☐ N ☒		Planning Redevelopment Y ☐ N ☒		

Purpose of Application / Description of Work:

Proposed manufacturing/wholesale building, 2 story office building, associated site improvements, and interior property line abandonment.

~~Owner~~ Contract Purchaser

Name	APEG International, INC c/o Andrea Piva		
Mailing Address	17 East Monroe Street, Suite #179, Chicago, IL 60603		
Telephone No.		Email	

Applicant / Agent

Name	Lane Engineering, LLC c/o Brett Ewing		
Mailing Address	117 Bay Street, Easton MD 21601		
Telephone No.	410-822-8003	Email	bewing@leinc.com

Surveyor / Engineer

Name	Tim Glass	License No.	23152	Expiration Date	07/05/2025
Mailing Address	117 Bay Street, Easton MD 21601				
Telephone No.	410-822-8003	Email	tglass@leinc.com		

Any modifications during review shall warrant an updated application.

I do hereby solemnly declare and affirm that the information provided by this application and the documents attached hereto accurately represent the conditions of the request and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent		
Date	10/30/2023	
Printed Name of Applicant or Agent	Brett Ewing, Lane Engineering, LLC	

For Office Use Only

Easton Staff Development Review Meeting Required Y ☒ N ☐

Easton Staff Development Review Meeting Date 11/22/2023

ESDR 23-23 / 2023-1069

Completeness Check Date 11/13/2023

Revisions/Resubmissions Required Y ☐ N ☒

Resubmission Date

Documents Received Y ☐ N ☐

Staff Determination

Planning Commission Requir Y ☒ N ☐

Planning Commission Meeting Date 12/21/2023

BOZA Required Y ☐ N ☒

Historic District Commission Required Y ☐ N ☒

Resubmission for ESDR Required Y ☐ N ☐

Staff Signature Samantha N. Smith

Date 11/27/2023

Revised 02-2019

AWBENGINEERS

October 26, 2023
23-EMC-0367

Town of Easton
14 South Harrison Street
Easton, Maryland 21601

RE: Covenant Compliance Letter
Mistletoe Hall Commerce-Business Park
Vetagro
Easton, Maryland

To Whom It May Concern:

This letter serves to demonstrate that the proposed new building for Vetagro on Lot 2 within the Mistletoe Hall Commerce-Business Park complies with the Architectural Standards (Article 4, Section 4.03) of the Declaration of Covenants dated November 5, 2021.

Regarding Section A, Paragraph (1), the proposed building will exceed 20'-0" in height and will therefore include the following:

a) The base consists of a 4'-0" high base feature composed of contrasting green
b) the middle of the building consists of windows set in the field color of off-white siding
c) the cap feature is a parapet

We have bumped out the floor plan on the north and east sides of the building to comply with Paragraph (3). The bump-outs create a change of exterior plane so that no single length of wall plane exceeds 60'-0".

Our building complies with Section B by utilizing the steel panel option in Paragraph (4). We are proposing a 4'-0" high wainscot of contrasting green panels.

Regarding Section C, our roof slopes will be 1/2:12, however they will be screened from view by integrated parapets. There will be no roof mounted equipment.

ENGINEERS/ARCHITECTS
1942 NORTHWOOD DRIVE / SALISBURY, MARYLAND 21801-7824 PHONE (410) 742-7299 / FAX (410) 742-0273

Regarding Section D, we understand that the exterior colors of our building are subject to approval by the Town of Easton. our building is primarily off-white with a green wainscot. We will submit a rendered version of the building elevations for review and approval.

Thank you for your consideration. We look forward to the approval of this project and its completion for the benefit of Town of Easton.

Sincerely,

Eric M. Catellier, AIA
Project Architect

Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

RECEIVED
NOV 0 1 2023
TOWN OF EASTON

Site Plan, PUD, Planned Healthcare Application

Application Type

Planned Unit Development ☐ Amendment ☐ Health Care (HC) ☐ Site Plan ☒

Subdivision Information

Name	Mistletoe Hall Subdivision				
Original Property Size	Acres	83.662	Square Feet	3,644,317	
Telephone No.	N/A	Email	N/A		

Site Plan Information

Property Size	Acres	13.185	Square Feet	574,338
Structure's Floor Area	64,577	Structure's Square Feet	57,882	
Area of Disturbance	13.185 AC	Number of Dwelling Units	N/A	

Property Information

Address	Mistletoe Drive, Easton MD 21601						
Tax Map	25	Grid	22	Parcel	138	Lot	2 & 3
Deed Refernce:	Liber	743	Folio	703			
Plat Reference:	Liber	87	Folio	124			
Base Zoning District	I	Historic Y ☐ N ☒		Planned Redevelopment Y ☐ N ☒			
Source of Electricity	Easton Utilities Commission						

~~Owner~~ Contract Purchaser

Name	APEG International, INC c/o Andrea Piva		
Mailing Address	17 East Monroe Street, Suite #179, Chicago IL 60603		
Telephone No.		Email	

Applicant or Agent

Name	Lane Engineering, LLC c/o Brett Ewing		
Mailing Address	117 Bay Street, Easton MD 21601		
Telephone No.	410-822-8003	Email	bewing@leinc.com

Surveyor / Engineer

Name	Tim Glass	License No.	23152	Expiration Date	7/5/25
Mailing Address	117 Bay Street, Easton MD 21601				
Telephone No.	410-822-8003	Email	tglass@leinc.com		

Any modifications during review shall warrant an updated application.

I hereby certify that I have reviewed and satisfied the Town of Easton Development Standards and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent	
Date	10/31/23
Printed Name of Applicant or Agent	Brett Ewing

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Planning Commission Required	Y ☒ N ☐		
Planning Commission Meeting Date	12/21/2023		
Sketch Approval Date		Project No.	ESDR 23-23
Prelim/Dev. Approval Date		Application No.	2023-1069
Final Approval Date		Sketch Fee Paid	10/31/2023
Recordation Date		Develop. Fee Paid	

Revised 02-2019

Application Withdrawn on 12/6/2023

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TOWN OF EASTON

Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

ESDR 23-23 / 2023-1069

Supplemental Waiver Request Application

Waiver Request Type

Sidewalk ☐ Parking Spaces ☒ Parking/Aisle Dimension ☐

Landscaping & Buffering ☐ Signage ☐ Other ☐

Project Information

Address	9170 & 9158 Mistletoe Drive, Easton						
Tax Map	25	Grid	16	Parcel	138	Lot	2 & 3
Zoning District	I	PC Meeting Date	12-21-23	Historic District	Yes ☐	No	☒
Owner or Agent	Brett Ewing, Lane Engineering						
Mailing Address	117 Bay Street, Easton, MD 21601						
Telephone No.	410-822-8003	Email	bewing@leinc.com				

Request Details

Please attach a detailed description of the waiver request(s) being made and the justification(s) for requesting said waiver(s).

The contract purchaser of the subjects lots (APEG International) owns and operates a manufacturing wholesale company in Italy at a similar scale, and is proposing to expand the operations and open a facility in Easton. They anticipate hiring approximately 25 employees which is sufficient to operate the facility. The code requires a minimum of 80 parking spaces based on the building size and the uses. We are proposing 55 parking paces with phase 1 resulting in a request to waive 25 spaces. An additional 28 spaces is proposed as future with phase 2; The size and scope of phase 2 is TBD, with a maximum of an additional 20 employess hired at that time.

☒ Ordinance Section Supporting Waiver Request. 28-1001.3 C.

Any modifications during review shall warrant an updated application.

I do hereby solemnly declare and affirm that the information provided by this application and the documents attached hereto accurately represent the conditions of the request and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent

Date 10-31-23

Printed Name of Applicant or Agent Brett Ewing

The applicant has proposed to reduce the manufacturing/wholesale building from a 51,187 square foot (SF) ground floor area (GFA) to a smaller footprint being 33,872 square foot (SF) ground floor area (GFA). The office building was also reduced from a two-story 13,390 square foot (SF) ground floor area (GFA) to a one-story 6,201 square foot (SF) ground floor area (GFA). The applicant is still proposing 55 parking spaces which is within the minimum 41 parking space requirement and the maximum 241 parking space requirement. This revision was submitted to the Planning & Zoning Department and Engineering Department on December 6, 2023. **No parking space waiver is required.**

Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

RECEIVED
OCT 3 1 2023
TOWN OF EASTON

Subdivision & Property Line Adjustment Application

Application Type

Subdivision ☐ Minor Subdivision ☐ Lot Line Revision ☒

Subdivision Information

Name	APEG International				
Property Size	Acres	13.185	Square Feet	574,338	
Number of Lots Proposed	N/A				

Property Information

Address	9170 & 9158 Mistletoe Drive, Easton						
Tax Map	25	Grid	16	Parcel	138	Lot	2 & 3
Deed Refernce:	Liber	743	Folio	703			
Plat Reference:	Liber	87	Folio	124			
Zoning District	I	Planned Redevelopment Y ☐ N ☐		Historic District Y ☐ N ☒			
Source of Electricity	EUC						

Same as ESDR application

Name	Town of Easton		
Mailing Address	P.O. Box 520 Easton, MD 21601		
Telephone No.		Email	

Surveyor / Engineer

Name	Brett Ewing	License No.		Expiration Date	
Mailing Address	117 Bay Street, Easton MD 21601				
Telephone No.	410-822-8003	Email	bewing@leinc.com		

Applicant or Agent

Name	Brett Ewing		
Mailing Address	117 Bay Street, Easton MD 21601		
Telephone No.	410-822-8003	Email	bewing@leinc.com

Additional Comments:

Abandoning interior property line between lots 2 & 3.

Minimum Lot Size	40,000	Minimum Lot Frontage	100'
Minimum Lot Envelope	30' x 80'	Existing Lot Coverage	N/A
		Proposed Lot Coverage	57,882 sf (10%)

☐ ESDR Letter
☐ $200 Per Subdivided Lot Fee
☐ $500 Lot Line Revision Fee

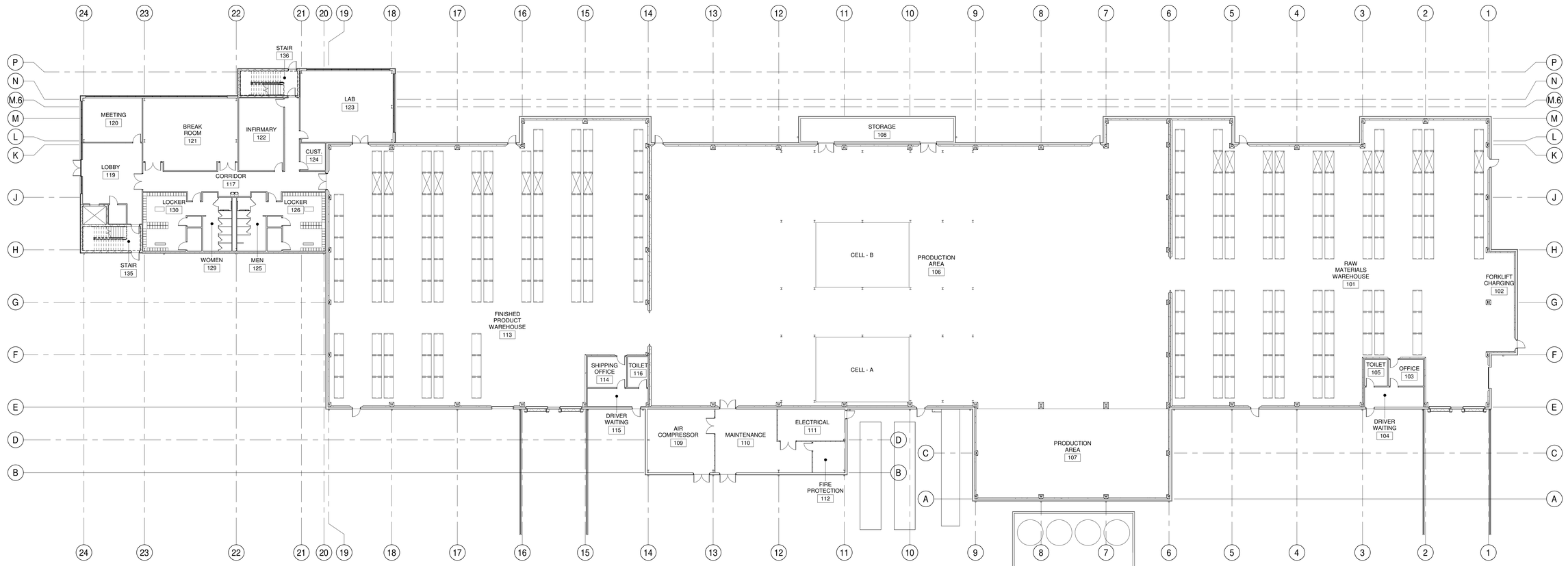
Any modifications during review shall warrant an updated application.

I hereby certify that I have reviewed and satisfied the Town of Easton Subdivision Regulations Article 4, Procedures and Requirements and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent	
Date	10/31/23
Printed Name of Applicant or Agent	Brett Ewing

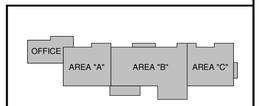
For Office Use Only

Planning Commission Y ☒ N ☐			
Planning Commission Meeting Date		12/21/2023	
PC Approval Date		Subdivision No.	
Conditions? Y / N		Application No. **ESDR 23-23**	2023-1069
Recordation Date		Fee Amount	$500.00
ESDR Y / N Date	11/22/2023	Review Fee Paid	10/31/2023
			Revised 02-2019



MASTER PLAN

SCALE: 1/16" = 1'-0"



KEY PLAN

THE INFORMATION PRESENTED ON THIS PLAN IS PRELIMINARY IN NATURE AND SHOULD NOT BE RELIED UPON FOR FINAL PRICING OR CONSTRUCTION. THE USER MUST RECOGNIZE THAT THE INFORMATION PRESENTED ON THIS DRAWING MAY CHANGE AS THE FINAL CONSTRUCTION PLANS ARE DEVELOPED. INCREASED PROJECT COSTS OR DELAYS IN EXECUTION OF THIS PROJECT DUE TO FUTURE DESIGN CHANGES ARE NOT THE RESPONSIBILITY OF AWB ENGINEERS OR ITS SUBCONTRACTORS

REV	DESCRIPTION	BY	DATE
	30% RELEASE	RMW	27 OCT 23
	ESDP SUBMISSION	RMW	27 OCT 23

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ENGINEERS / ARCHITECTS
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AWB ENGINEERS

WILLOW CONSTRUCTION

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MASTER PLAN

VETAGRO FACILITY

EASTON, MARYLAND

SCALE	1/16" = 1'-0"
DRAWN	RMW
PROJ.MGR.	MRS
JOB	230303
SHEET	A-100

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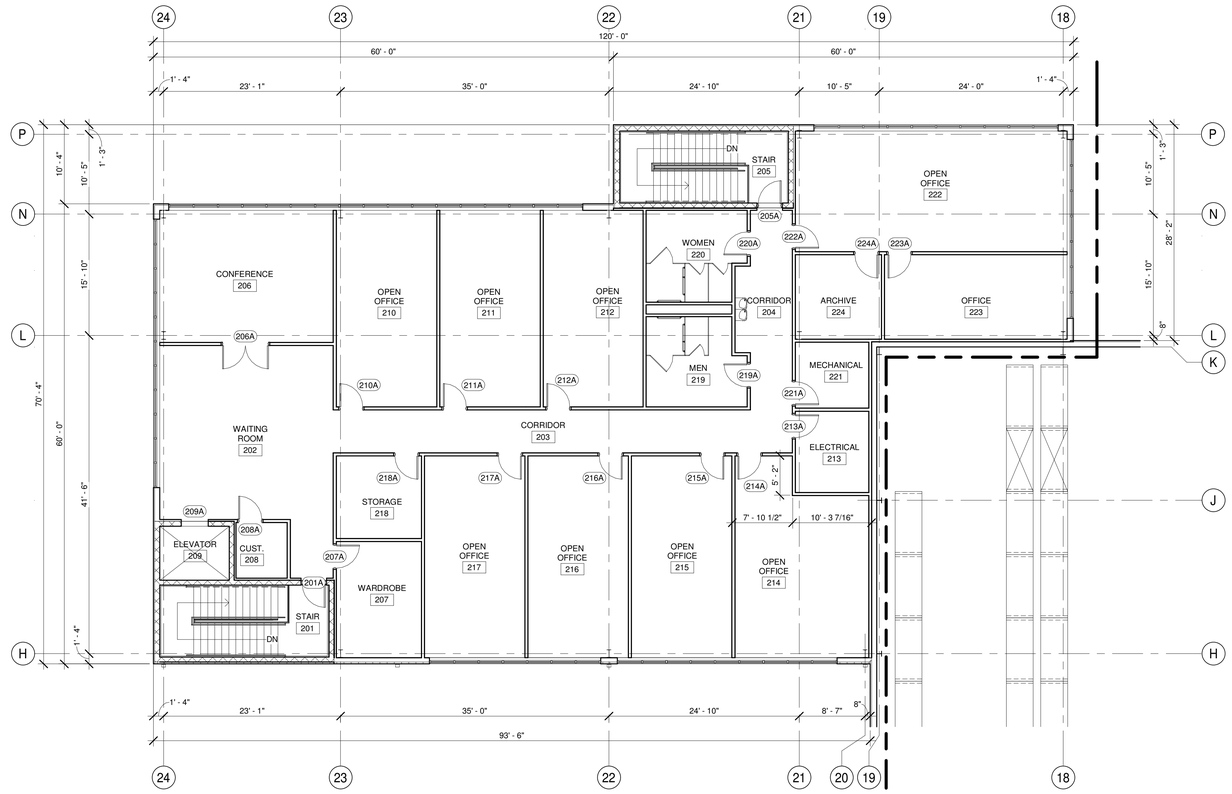
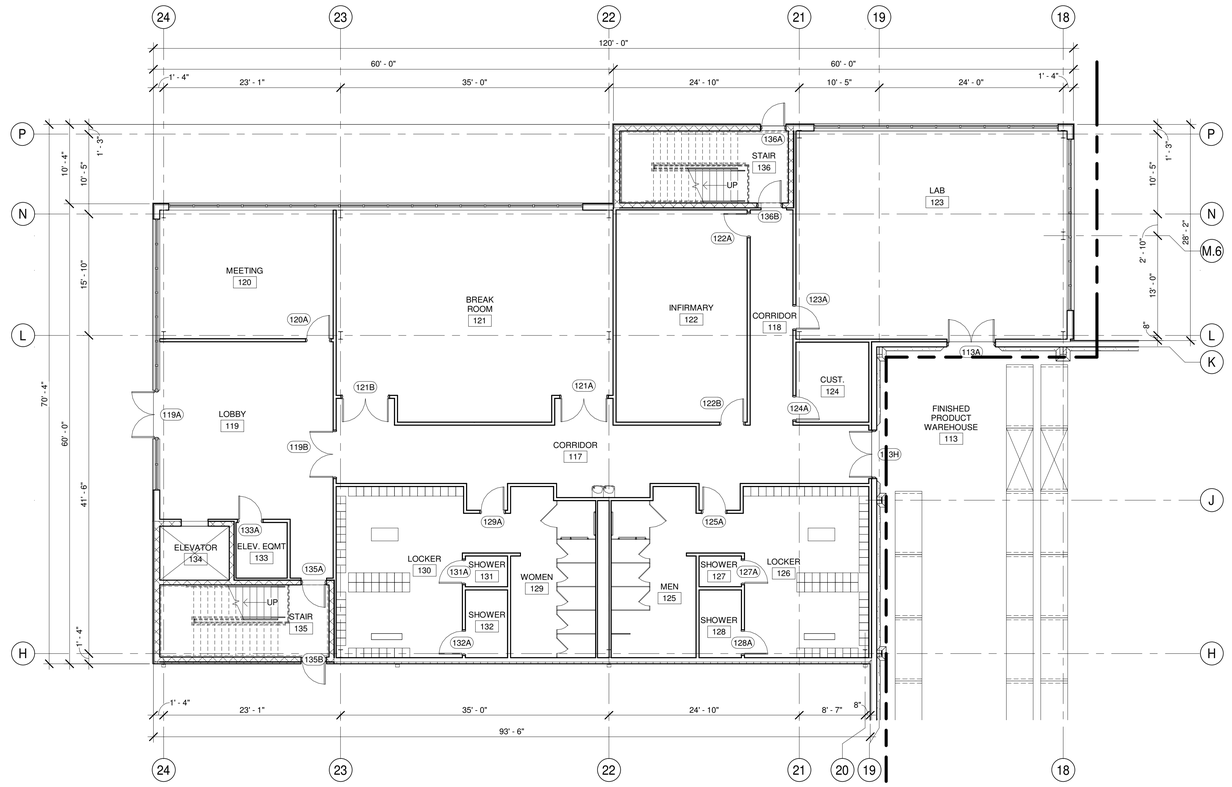


SECOND FLOOR PLAN - OFFICE

SCALE: 1/8" = 1'-0"



FIRST FLOOR PLAN - OFFICE

SCALE: 1/8" = 1'-0"

LEGEND

101A	DOOR NUMBER
101	ROOM NUMBER
A	WINDOW TYPE
1	FIRE BARRIER WALL - 1 HR. RATED GYP. BD. ASSEMBLY TO DECK ABOVE (U.L.DESIGN NO. U419)
1	FIRE BARRIER WALL - 1 HR. RATED C.M.U. TO DECK ABOVE (2015 VCC TABLE 721.1 (2) - CALCULATED EQUIVALENT THICKNESS)
2	FIRE BARRIER WALL - 2 HR. RATED C.M.U. TO DECK ABOVE (2015 VCC TABLE 721.1 (2) - CALCULATED EQUIVALENT THICKNESS)
	FIRE EXTINGUISHER - BRACKET MOUNTED
C	FIRE EXTINGUISHER - SEMI-RECESSED CABINET

NOTE: BASIC PLAN DIMENSIONS ARE TO FACE OF C.M.U., FACE OF CONCRETE, FACE OF METAL PANEL, FACE OF STUD, OR CENTERLINE OF COLUMNS AS APPLICABLE

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	ESDP SUBMISSION	RMW	27 OCT 23

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AWB ENGINEERS

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FLOOR PLANS - OFFICE

VETAGRO FACILITY

EASTON, MARYLAND

SCALE	1/8" = 1'-0"
DRAWN	RMW
PROJ.MGR.	MRS
JOB	230303
SHEET	A-101

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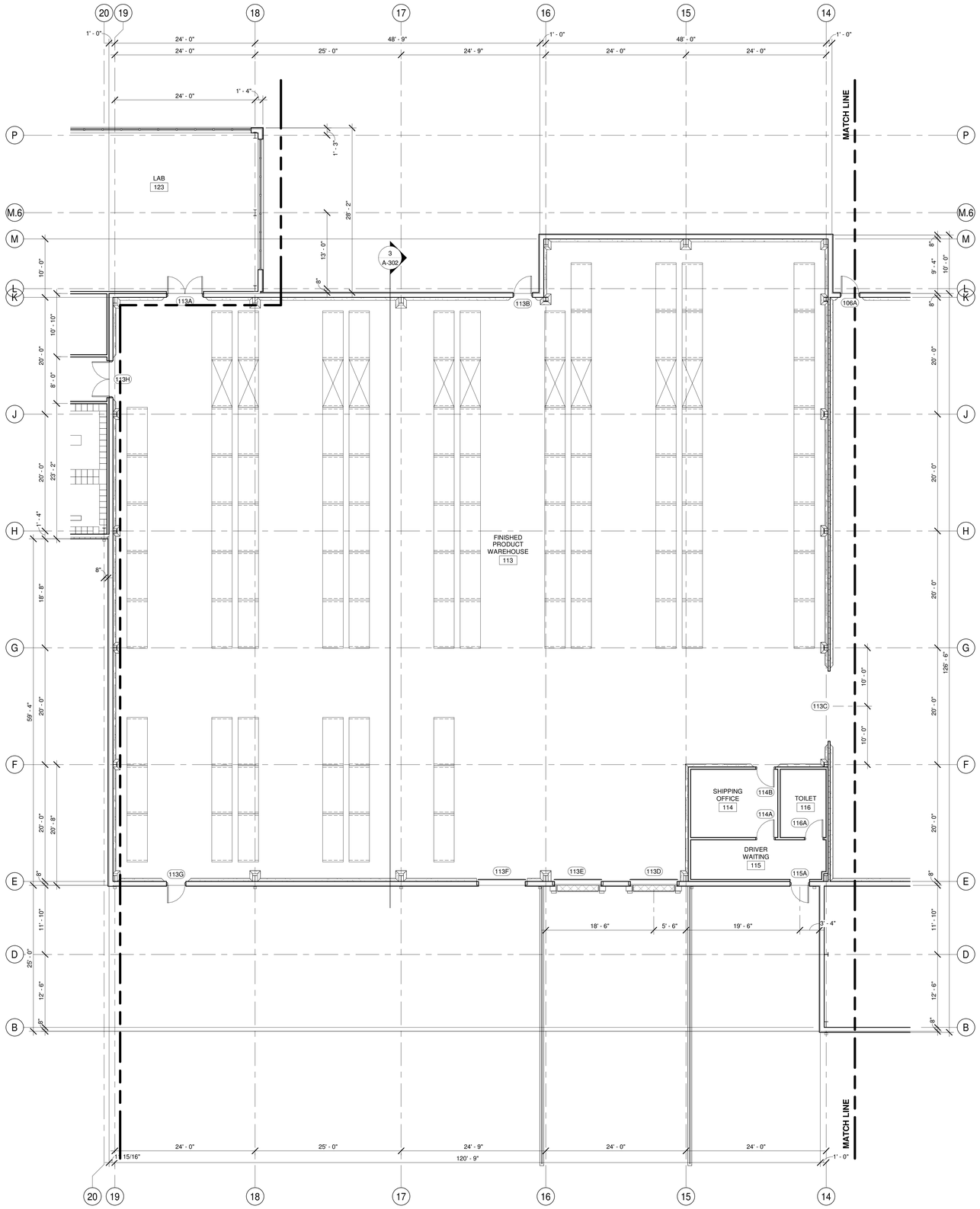

FIRST FLOOR PLAN - AREA "A"

SCALE: 1/8" = 1'-0"

LEGEND

101A	DOOR NUMBER
101	ROOM NUMBER
A	WINDOW TYPE
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	FIRE EXTINGUISHER - BRACKET MOUNTED
C	FIRE EXTINGUISHER - SEMI-RECESSED CABINET

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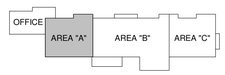

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	ESDR SUBMISSION	RMW	27 OCT 23

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WILLOW CONSTRUCTION

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FLOOR PLAN - AREA "A"

VETAGRO FACILITY

EASTON, MARYLAND

SCALE	1/8" = 1'-0"
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JOB	230303
SHEET	A-102

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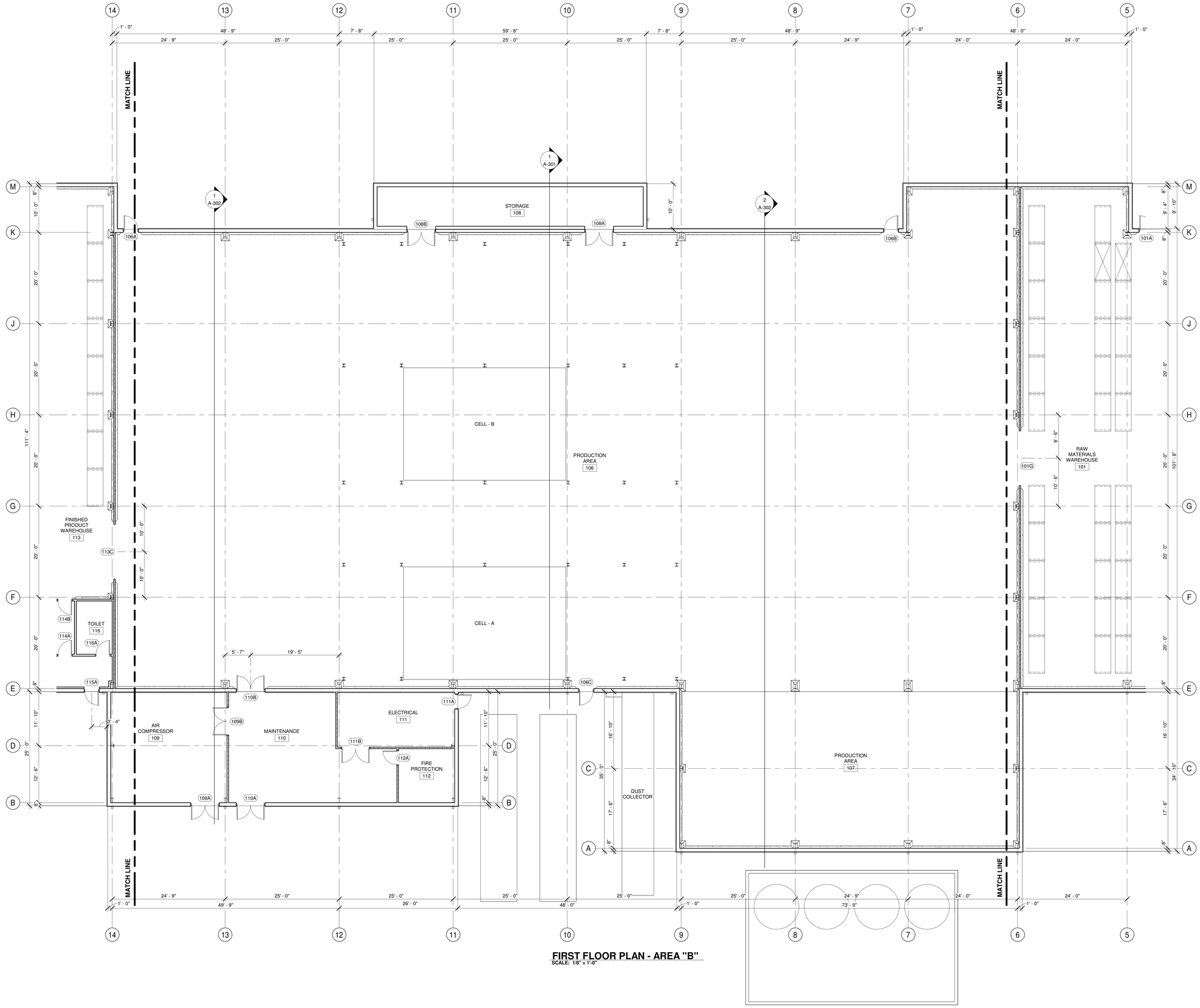

FIRST FLOOR PLAN - AREA "B"

SCALE: 1/8" = 1'-0"

LEGEND

101A	DOOR NUMBER
101	ROOM NUMBER
A	WINDOW TYPE
1	FIRE BARRIER WALL - 1 HR. RATED GYP. BD. ASSEMBLY TO DECK ABOVE (U.L.DESIGN NO. U419)
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C	FIRE EXTINGUISHER - SEMI-RECESSED CABINET

NOTE: BASIC PLAN DIMENSIONS ARE TO FACE OF C.M.U., FACE OF CONCRETE, FACE OF METAL PANEL, FACE OF STUD, OR CENTERLINE OF COLUMNS AS APPLICABLE

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	30% RELEASE	RMW	27 OCT 23
	ESDR SUBMISSION	RMW	27 OCT 23

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FLOOR PLAN - AREA "B"

VETAGRO FACILITY

EASTON, MARYLAND

SCALE	As indicated
DRAWN	RMW
PROJ.MGR.	MRS
JOB	230303
SHEET	A-103

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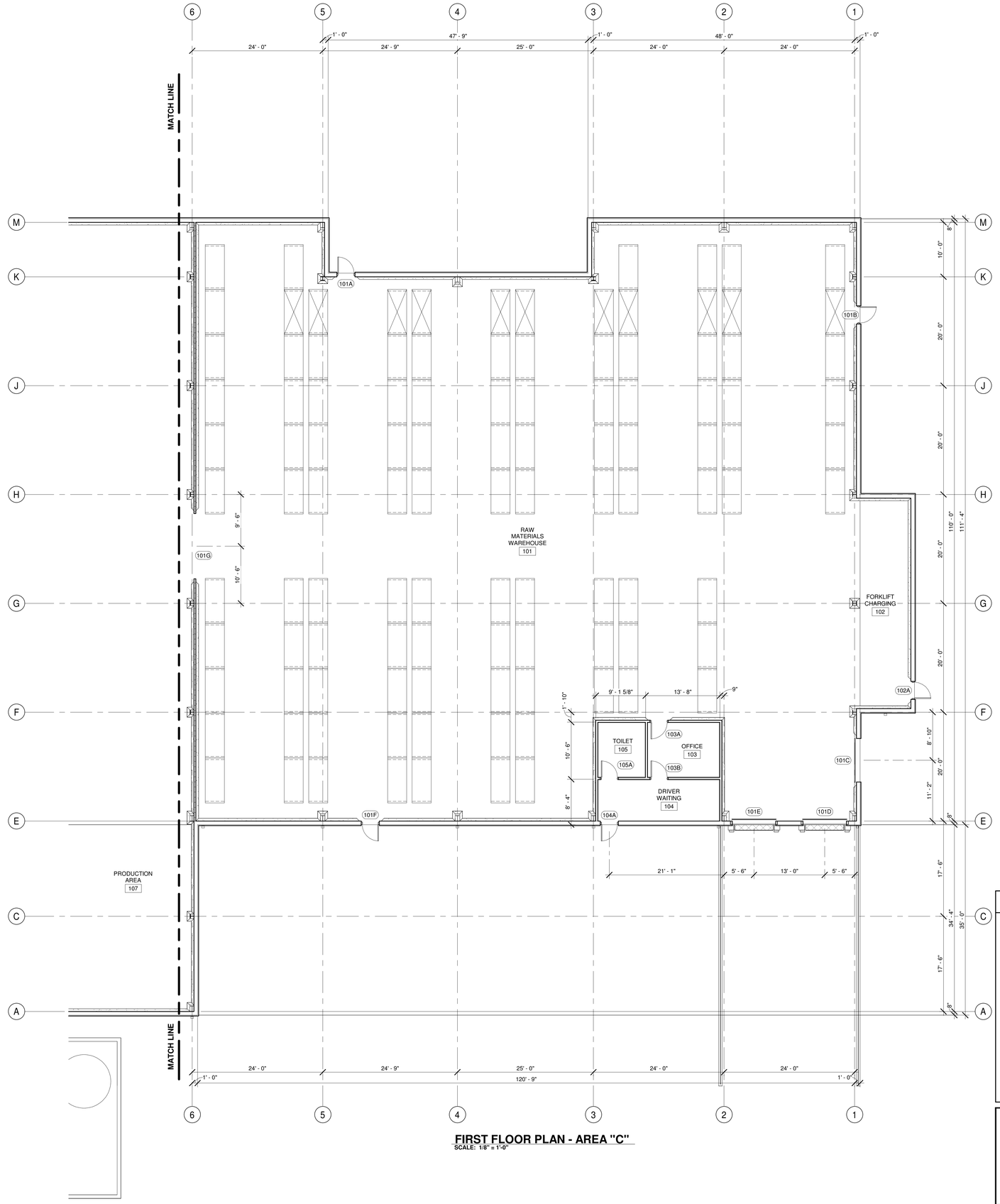

FIRST FLOOR PLAN - AREA "C"

SCALE: 1/8" = 1'-0"

LEGEND

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101	ROOM NUMBER
A	WINDOW TYPE
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C	FIRE EXTINGUISHER - SEMI-RECESSED CABINET

NOTE: BASIC PLAN DIMENSIONS ARE TO FACE OF C.M.U., FACE OF CONCRETE, FACE OF METAL PANEL, FACE OF STUD, OR CENTERLINE OF COLUMNS AS APPLICABLE

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FLOOR PLAN - AREA "C"

VETAGRO FACILITY

EASTON, MARYLAND

SCALE	1/8" = 1'-0"
DRAWN	RMW
PROJ.MGR.	MRS
JOB	230303
SHEET	A-104

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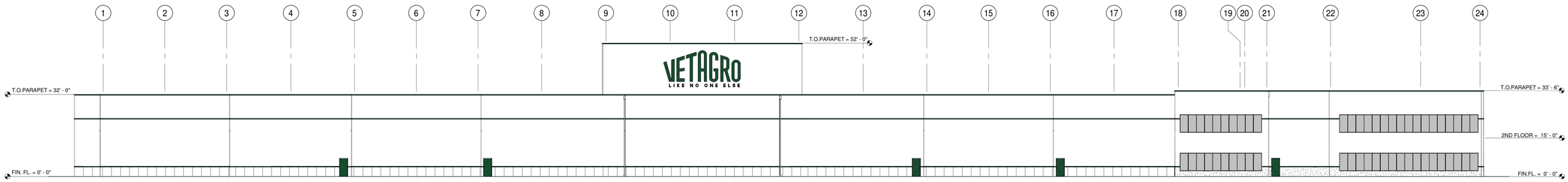
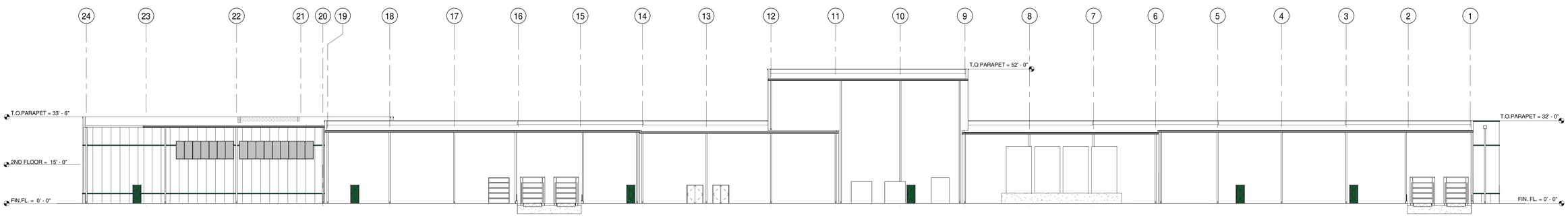
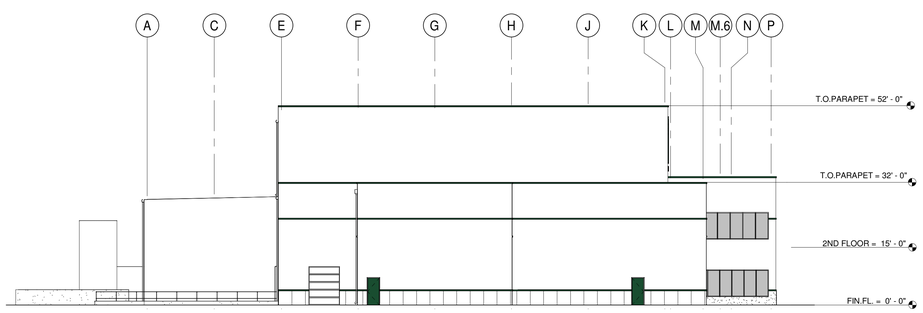


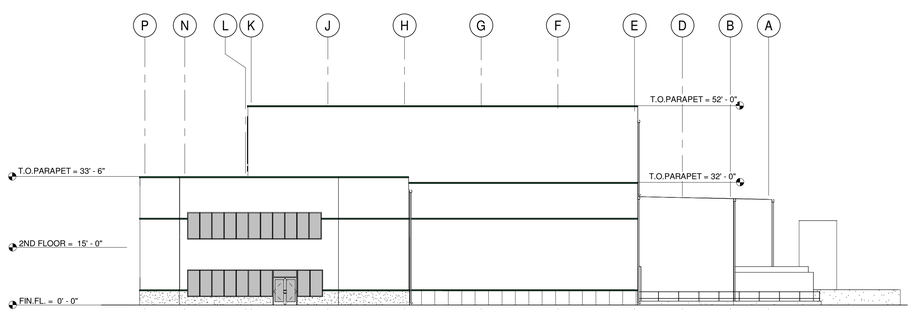
NORTH ELEVATION
SCALE: 1/16" = 1'-0"



SOUTH ELEVATION
SCALE: 1/16" = 1'-0"



EAST ELEVATION
SCALE: 1/16" = 1'-0"



WEST ELEVATION
SCALE: 1/16" = 1'-0"

THE INFORMATION PRESENTED ON THIS PLAN IS PRELIMINARY IN NATURE AND SHOULD NOT BE RELIED UPON FOR FINAL PRICING OR CONSTRUCTION. THE USER MUST RECOGNIZE THAT THE INFORMATION PRESENTED ON THIS DRAWING MAY CHANGE AS THE FINAL CONSTRUCTION PLANS ARE DEVELOPED. INCREASED PROJECT COSTS OR DELAYS IN EXECUTION OF THIS PROJECT DUE TO FUTURE DESIGN CHANGES ARE NOT THE RESPONSIBILITY OF AWB ENGINEERS OR ITS SUBCONTRACTORS

REV	DESCRIPTION	BY	DATE
	30% RELEASE	RMW	27 OCT 23
	ESDP SUBMISSION	RMW	27 OCT 23

ENGINEERS / ARCHITECTS
1942 NORTHWOOD DRIVE, SALISBURY, MARYLAND 21801-7824
PH. (410) 742-7599 FAX. (410) 742-0273
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AWB ENGINEERS

WILLOW CONSTRUCTION

VETAGRO LIKE NO ONE ELSE

BUILDING ELEVATIONS

VETAGRO FACILITY
EASTON, MARYLAND

SCALE	1/16" = 1'-0"
DRAWN	RMW
PROJ.MGR.	MRS
JOB	230303
SHEET	A-201

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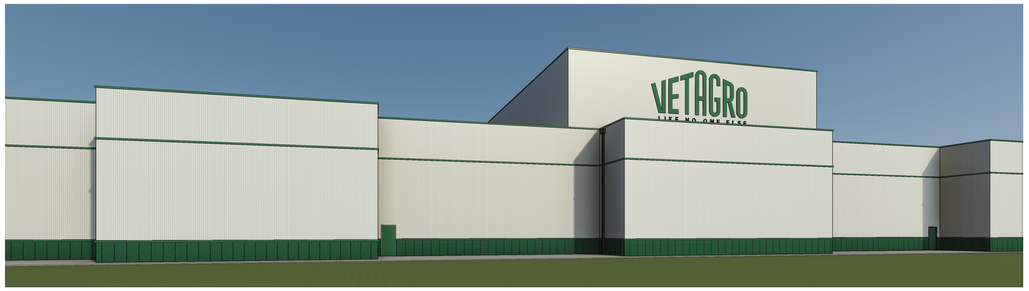
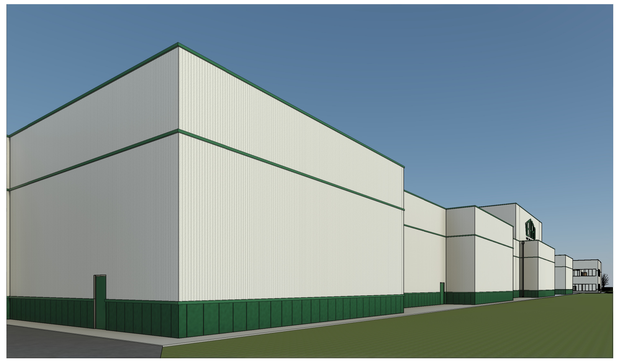
1 A-901 WEST 3D VIEW

2 A-901 NORTHWEST 3D VIEW

3 A-901 NORTH 3D VIEW

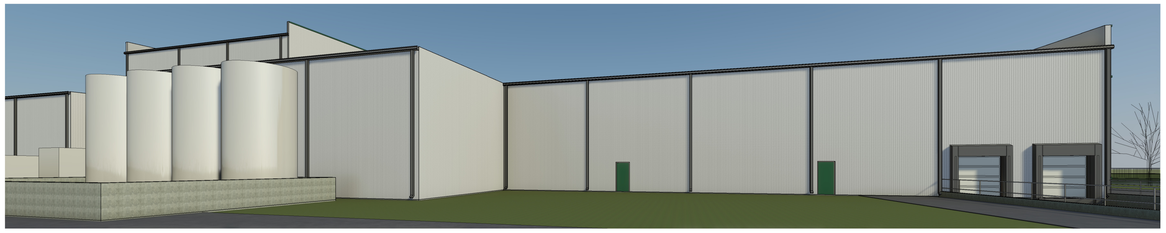


4 A-901 NORTH 3D VIEW

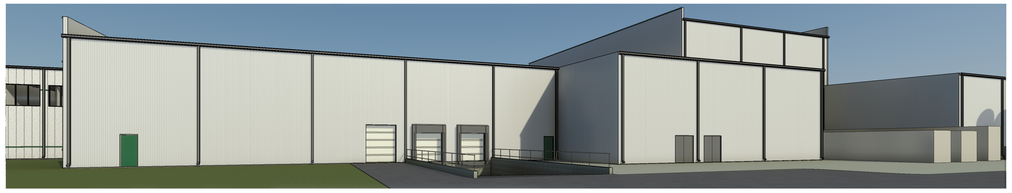


5 A-901 NORTHEAST 3D VIEW

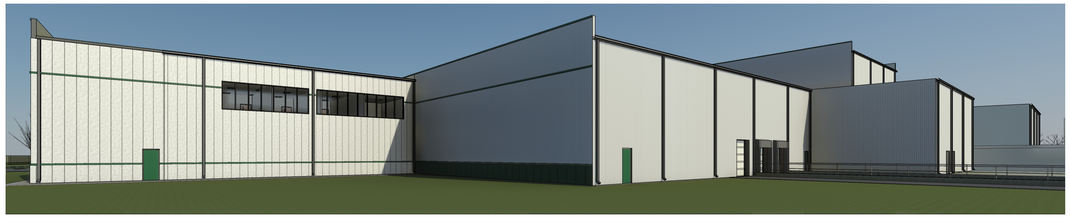
6 A-901 SOUTHEAST 3D VIEW



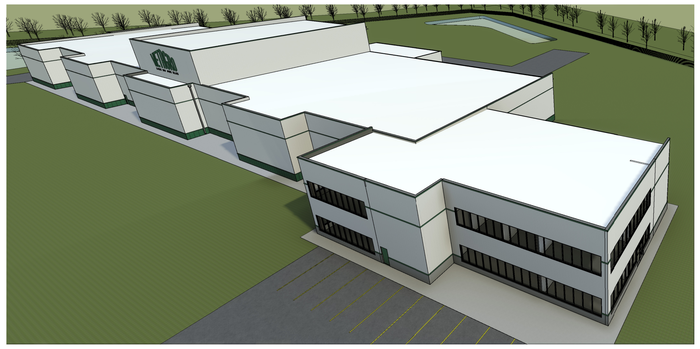
7 A-901 SOUTH 3D VIEW



8 A-901 SOUTH 3D VIEW



9 A-901 SOUTHWEST 3D VIEW



10 A-901 FRONT 3D VIEW

THE INFORMATION PRESENTED ON THIS PLAN IS PRELIMINARY IN NATURE AND SHOULD NOT BE RELIED UPON FOR FINAL PRICING OR CONSTRUCTION. THE USER MUST RECOGNIZE THAT THE INFORMATION PRESENTED ON THIS DRAWING MAY CHANGE AS THE FINAL CONSTRUCTION PLANS ARE DEVELOPED. INCREASED PROJECT COSTS OR DELAYS IN EXECUTION OF THIS PROJECT DUE TO FUTURE DESIGN CHANGES ARE NOT THE RESPONSIBILITY OF AWB ENGINEERS OR ITS SUBCONTRACTORS

REV	DESCRIPTION	BY	DATE
	30% RELEASE	RMW	27 OCT 23
	ESDP SUBMISSION	RMW	27 OCT 23

ENGINEERS / ARCHITECTS
1942 NORTHWOOD DRIVE, SALISBURY, MARYLAND 21801-7824
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AWB ENGINEERS

WILLOW CONSTRUCTION

VETAGRO LIKE NO ONE ELSE

ISOMETRIC VIEWS

VETAGRO FACILITY
EASTON, MARYLAND

SCALE	NONE
DRAWN	RMW
PROJ.MGR.	MRS
JOB	230303
SHEET	A-901

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SKETCH SITE PLAN
FOR
APEG INTERNATIONAL, INC
IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND

DEVELOPMENT DATA

PROPERTY: TAX MAP 25, PARCEL 138 – LOTS 2 & 3 (ELECTION WARD 1)

OWNER: TOWN OF EASTON
PO BOX 520
EASTON, MD 21601

DEVELOPER: APEG INTERNATIONAL, INC
C/O ANDREA PIVA
17 EAST MONROE STREET
SUITE #179
CHICAGO, IL 60603

DEED: 743/703

PLAT: 87/124

CURRENT ZONING: I (INDUSTRIAL DISTRICT)

SITE AREA: LOT 2: 7.592 AC±
LOT 3: 5.593 AC±

BUILDING SETBACKS:
FRONT– 25' (TOWN ZONING); 40' (PLAT 87/124)
SIDE– 10'
REAR– 50' (PLAT 87/124)

PROPOSED (PHASE 1):
OFFICE BUILDING:
FRONT– 301'
SIDE– 129'
REAR– 357'
MANUFACTURING/WHOLESALE:
FRONT– 330'
SIDE– 60'
REAR– 264'

MINIMUM LOT SIZE: 40,000 SF
MINIMUM LOT FRONTAGE: 100'
MAXIMUM HEIGHT: 40'
MINIMUM BUILDING ENVELOPE: 30' X 80'
LOT COVERAGE: 50% (ALL BUILDINGS & STRUCTURES); 10% COVERAGE PROPOSED

PROPOSED DEVELOPMENT: PROPOSED MANUFACTURING/WHOLESALE BUILDING (51,187 SF), 2 STORY OFFICE BUILDING (6,695 SF), ASSOCIATED SITE IMPROVEMENTS, AND INTERIOR PROPERTY LINE ABANDONMENT. PROPOSED TOTAL IMPERVIOUS: 4.40 AC± (191,535.59 SF)

BUILDING HEIGHT: ALLOWED – 40'; PROPOSED – 32'
NOTE: PROPOSED 52' HEIGHT IN AREA FOR MECHANICAL COMPONENTS, EXEMPT PER TOWN CODE SECTION 28–1003

TOTAL LOT COVERAGE: 50% PERMITTED (BUILDINGS & STRUCTURES ONLY)
MANUFACTURING/WHOLESALE BUILDING; 51,187 SF
2 STORY OFFICE BUILDING; 6,695 SF
TOTAL PROPOSED LOT COVERAGE: 57,882 SF (10%)

PHASING NOTE: ALL PHASE 2 IMPROVEMENTS SIZE AND LOCATION TO BE DETERMINED.

PARKING CALCULATIONS:

PHASE 1 SITE PARKING REQUIRED: MANUFACTURING/WHOLESALE BUILDING (51,187 GFA)
1 SPACE/2,000 GFA; 26 SPACES MINIMUM
1 SPACE/300 GFA; 171 SPACES MAXIMUM
OFFICE BUILDING (13,390 GFA)
1 SPACE/250 GFA; 54 SPACES MINIMUM
1 SPACE/140 GFA; 96 SPACES MAXIMUM
TOTAL SPACES REQUIRED: 80 SPACES (MINIMUM)
267 SPACES (MAXIMUM)
PHASE 1 SITE PARKING PROVIDED: 55 SPACES (INCLUDING 3 ADA ACCESSIBLE SPACES)

THE APPLICANT IS REQUESTING A PARKING WAIVER OF 25 SPACES FOR PHASE 1 CONSTRUCTION FROM THE TOWN OF EASTON PLANNING COMMISSION.

SIGNAGE: ONE FREE STANDING, ARCHITECTURALLY COMPATIBLE MONUMENT SIGN PER TOWN CODE; BUILDING SIGNAGE COMPLIANT PER CODE.

BIKE RACK REQUIRED: 1 BIKE SPACE/10 VEHICLE SPACES; 6 BIKE SPACES/BIKE RACK REQUIRED

STORMWATER: STORMWATER QUALITY AND QUANTITY WILL BE ADDRESSED THROUGH ESD FEATURES AS REQUIRED AND AS SHOWN HEREON APPROXIMATELY.

LANDSCAPE AREAS: REQUIRED: 12.5%; PROPOSED: 385,036 SF (67%)
(INCLUDES LANDSCAPE, STORMWATER MANAGEMENT, AND TURF AREAS)

LIGHTING: ALL LIGHTING WILL BE SCREENED FROM VIEW OR DIRECTED DOWNWARD AND SHIELDED, AT A MAXIMUM HEIGHT OF 18' AND NOT EXCEED LEVELS GREATER THAN 1–FOOT CANDLE AT PROPERTY LINES.

LANDSCAPE NOTE: LANDSCAPE PLANT MATERIAL SHALL CONFORM WITH THE AMERICAN STANDARD FOR NURSERY STOCK. LANDSCAPING SHALL BE INSTALLED WITHIN THE NEXT PLANTING SEASON OF OCCUPANCY OR WITHIN 6 MONTHS OF SUBSTANTIAL COMPLETION.

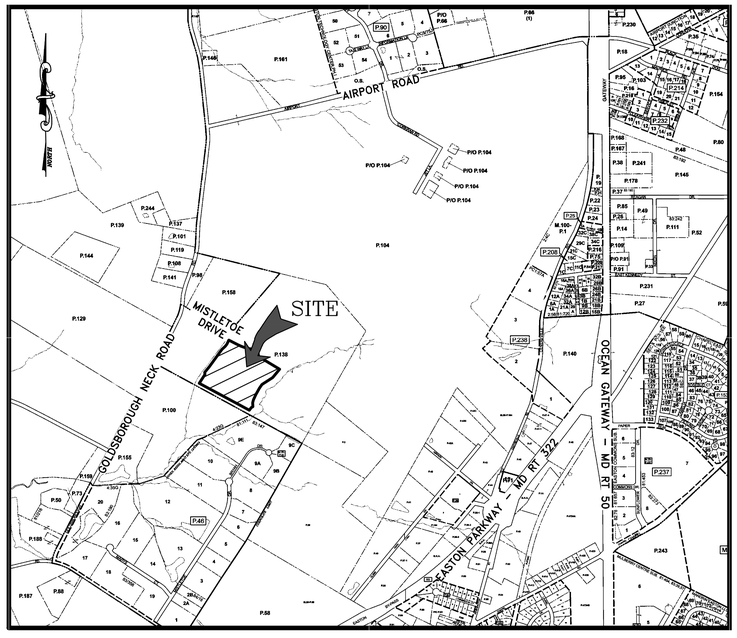
FOREST CONSERVATION: N/A– PREVIOUSLY SATISFIED UNDER ORIGINAL SUBDIVISION APPROVAL

PROJECT NOTES

1. PROPERTY BOUNDARY AND EXISTING CONDITIONS SURVEYED BY LANE ENGINEERING, LLC ON 09/15/2023. PROPERTY BEARING AND DISTANCES NOT SHOWN FOR PLAN CLARITY/LEGIBILITY.
2. SITE TOPOGRAPHY AS SHOWN HEREIN WAS DERIVED FROM A FIELD SURVEY BY LANE ENGINEERING, LLC DATED 09/15/2023.
3. ALL UNDERGROUND UTILITIES ARE SHOWN PER THE BEST AVAILABLE RECORDS AND ARE APPROXIMATE ONLY.
4. THE SITE IS LOCATED ENTIRELY OUTSIDE OF THE CHESAPEAKE BAY CRITICAL AREA.
5. THE PROPERTY SHOWN HEREON IS NOT LOCATED IN THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP) SPECIAL FLOOD HAZARD AREA (SFHA) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD. THE PROPERTY IS MAPPED IN THE X FLOOD ZONE(S) AS SHOWN ON THE FEDERAL INSURANCE RATE MAPS FOR COMMUNITY NO. 240067, MAP NO. 24041C0187D FOR TOWN OF EASTON, MARYLAND. THE 1% ANNUAL CHANCE FLOOD (100–YEAR FLOOD), ALSO KNOWN AS THE BASE FLOOD, IS THE FLOOD THAT HAS A 1% CHANCE OF BEING EQUALED OR EXCEEDED IN ANY GIVEN YEAR. THE SFHA IS THE AREA SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD. THE SFHA INCLUDE ZONES A, AE, AH, AO, AR, A99, V & VE. THE BASE FLOOD ELEVATION (BFE) IS THE WATER SURFACE ELEVATION OF THE 1% ANNUAL CHANCE FLOOD. FLOOD INSURANCE MAY BE REQUIRED FOR STRUCTURES LOCATED IN THE SPECIAL FLOOD HAZARD AREA.

   FLOOD ZONE LEGEND
   ZONES A, AE, AH, AO, AR, A99, V & VE – 1% ANNUAL CHANCE FLOOD
   ZONE X (SHADED) – 0.2% ANNUAL CHANCE FLOOD
   ZONE X – AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD

   THE FLOOD DATA SHOWN HEREON IS BASED ON AVAILABLE MAPPED AND/OR DIGITAL INFORMATION AND IS DEPICTED AS DIRECTED AND REQUIRED BY FEDERAL, STATE AND LOCAL REGULATIONS. IT IS SUBJECT TO DATA INACCURACIES AND REGULATORY CHANGE AND SHOULD BE VERIFIED PRIOR TO FINALIZING DEVELOPMENT OR IMPROVEMENT PLANS FOR THE SUBJECT LANDS.
6. PUBLIC WATER AND SEWER SERVICES ARE PROVIDED BY THE TOWN OF EASTON.
7. FAA DETERMINATION OF NO HAZARD TO AIR NAVIGATION SHALL BE REQUIRED.



VICINITY MAP

1,000' 500' 0' 500' 1,000' 2,000'
SCALE IN FEET

INDEX OF SHEETS

PDF SHEET	SHEET No.	TITLE
1	1 OF 2	TITLE SHEET
2	2 OF 2	SKETCH SITE PLAN

COMPREHENSIVE PLAN DESIGN PRINCIPLES RESPONSE NARRATIVE

PRINCIPLE #1– INTEGRATED USES ARE DESIRABLE– THIS DEVELOPMENT PROPOSAL PROVIDES MANUFACTURING/WHOLESALE JOBS IN THIS MIXED BUSINESS PARK.

PRINCIPLE #2– NATURAL FEATURES SHOULD DETERMINE DESIGN– NO COMPELLING NATURAL FEATURES; SITE LAYOUT ORIENTED TO TAKE ADVANTAGE OF NATURAL DRAINAGE PATTERNS AND TO ORIENT "OFFICE" BUILDINGS FRONT TO STREET, LOADING DOCKS TO THE REAR.

PRINCIPLE #3– AUTOMOBILES SHOULD NOT DETERMINE DESIGN– PARKING FOR OFFICE USERS PROVIDED, WAIVER REQUESTED BASED ON NUMBER OF EMPLOYEES EXPECTED AND HISTORIC DATA OF OPERATION IN ITALY.

PRINCIPLE #4– AMPLE OPEN SPACES SHOULD BE PROVIDED WITHIN & AROUND NEIGHBORHOODS– USABLE OPEN SPACE NOT APPLICABLE HERE.

PRINCIPLE #5– ARCHITECTURE SHOULD RESPECT EASTON'S HISTORICAL DEVELOPMENT– THIS APPLICATION PROPOSES ARCHITECTURE COMPATIBLE WITH EASTON AND THE COMMERCE PARK'S ARCHITECTURAL PALETTE.

PRINCIPLE #6– SIGNS SHOULD INFORM BUT NOT DOMINATE– SIGNAGE, SIMPLE AND PER CODE.

PRINCIPLE #7– NEIGHBORHOODS SHOULD CONTAIN A DIVERSITY OF HOUSING TYPES– NOT APPLICABLE TO THIS APPLICATION

PRINCIPLE #8– RESIDENTIAL NEIGHBORHOODS SHOULD BE INTERESTING PLACES– NOT APPLICABLE TO THIS APPLICATION

PRINCIPLE #9– NEIGHBORHOODS SHOULD CONNECT– NOT SPECIFICALLY APPLICABLE TO THIS APPLICATION.

DECLARATION OF COVENANTS FOR MISTLETOE HALL COMMERCE–BUSINESS PARK

ARTICLE 4 DEVELOPMENT STANDARDS

ARTICLE 4.03.(1): BUILDINGS EXCEEDING 20 FEET IN HEIGHT SHALL INCORPORATE A BASE, MIDDLE AND CAP

ARTICLE 4.04.(A): ON–SITE PARKING REQUIRED: IN ACCORDANCE WITH TOWN OF EASTON ZONING CODE WITHOUT OVERBUILDING PARKING, EMPLOYEE & COMPANY VEHICLES SHALL BE DESIGNATED GENERALLY IN THE SIDE AND OR BACK OF THE PROPERTY.

ARTICLE 4.04.(B): OFF–SITE PARKING: NO PARKING SHALL BE PERMITTED WITHIN THE STREET RIGHT–OF–WAY OF ANY STREETS WITHIN THE PROPERTY.

ARTICLE 4.04.(C): PARKING AREA STANDARDS: IN FRONT AND ON THE SIDE OF THE BUILDINGS, PAVED PARKING AREAS SHALL HAVE LANDSCAPED ISLANDS. NO MORE THAN SEVEN (7) CONSECUTIVE, SINGLE LOADED PARKING SPACES (14 SPACES IF TWO SEVEN–SPACE GROUPINGS OF PARKING SPACES (SHALL BE PROVIDED WITH A LANDSCAPED ISLAND MEASURING AT LEAST SIX (6) FEET IN WIDTH.

ARTICLE 4.04.(D): SCREENING: ALL PARKING SHALL BE SCREENED FROM VIEW AS MUCH AS POSSIBLE BY DEPRESSING GRADES, THE USE OF LANDSCAPE AND/OR BY EARTH BERMS.

ARTICLE 4.05: TRUCK LOADING & PARKING: ALL LOADING DOCKS SHALL BE LOCATED IN THE REAR OR SIDE OF THE BUILDINGS AND SCREENED FROM VIEW.

ARTICLE 4.06.(A): MATERIAL & EQUIPMENT STORAGE: NO MATERIALS, SUPPLIES OR EQUIPMENT (INCLUDING BOATS, RECREATIONAL VEHICLES, TRAILERS, OR COMPANY OWNED OR OPERATED VEHICLES) SHALL BE STORED FOR NO MORE OF TWENTY–FOUR (24) HOURS IN ANY AREA ON A LOT EXCEPT INSIDE A CLOSED BUILDING , OR BEHIND A VISUAL BARRIER COMPLETELY SCREENED FROM VIEW OF OF ADJOINING LOTS OR PUBLIC STREETS.

ARTICLE 4.06.(B): SCREENING OF REFUSE CONTAINERS: SHALL BE COMPLETELY CONCEALED FROM VIEW BY MEANS OF A SCREENING WALL CONSTRUCTED OF MATERIAL SIMILAR AND COMPATIBLE WITH THE BUILDING OR LANDSCAPE.

ARTICLE 4.09: EXTERIOR LIGHTING:LIGHTING SOURCES, EXCEPT FOR STREET LIGHTS SHALL BE SCREENED FROM VIEW OR DIRECTED DOWNWARD AND SHIELDED.

ARTICLE 4.11: FENCING: NATURAL BARRIERS ARE PREFERRED. BLACK OR DARK BROWN VINYL CLAD CHAIN FENCING, CMU, CONCRETE, BRICK AND STONE WALLS RE ALLOWED. GALVANIZED CHAIN LINK FENCE IS DISCOURAGED.

SITE ADDRESS
MISTLETOE DRIVE
EASTON, MD 21601

DEVELOPER
APEG INTERNATIONAL, INC
C/O ANDREA PIVA
17 EAST MONROE STREET
SUITE #179
CHICAGO, IL 60603

CIVIL ENGINEER
LANE ENGINEERING, LLC
C/O TIMOTHY W. GLASS, P.E.
117 BAY STREET
EASTON, MD 21601
(410) 822–8003

APPROVED: PLANS ARE ISSUED FOR REVIEW ONLY
TOWN OF EASTON – TOWN ENGINEER DATE

APPROVED: PLANS ARE NOT APPROVED FOR CONSTRUCTION
EASTON PLANNING COMMISSION DATE

REVISIONS TO APPROVED PLANS

No.	DATE	DESCRIPTION	BY

WARNING!!
THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE QUANTITIES SHOWN ON THIS PLAN ARE FOR INFORMATIONAL AND PERMITTING PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES TO HIS OWN SATISFACTION PRIOR TO BEGINNING CONSTRUCTION.

THE CONTRACTOR SHALL TEST PIT AND LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO THE BEGINNING OF ANY WORK ON–SITE. THE CONTRACTOR SHALL NOTIFY DEPT. OF PUBLIC WORKS OF ANY POSSIBLE CONFLICT AND REQUEST THE RELOCATION OF THE EXISTING UNDERGROUND UTILITIES BEFORE BEGINNING ANY WORK ON–SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RELOCATION EXPENSE.

MISS UTILITY
BEFORE YOU DIG CALL 1–800–441–8355 OR 811 PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

Lane Engineering, LLC
Established 1986
Civil Engineers • Land Planning • Land Surveyors
E–mail: general@leinc.com
117 Bay St. Easton, MD 21601 (410) 822–8003
15 Washington St. Cambridge, MD 21613 (410) 221–0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758–2095

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 23152, Expiration Date: 7/5/2025.

SEAL
11.27.23
DATE

TITLE SHEET

VETAGRO
LIKE NO ONE ELSE
IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 25 GRID 22 PARCEL 138 LOTS 2 & 3

ISSUED/REVISED FOR:	DATE:	BY:
ESDR SUBMITTAL	11/01/23	BCE
PLANNING COMMISSION SUBMITTAL	11/27/23	BCE

SHEET No. 1 OF 2
SCALE: AS NOTED
JOB No. 230407
FILE No. A037

Date: 11/27/2023 – 9:20am User: mphillips Project Manager: BCE
Drawing Path: J:\2023\0400\230407\Civil3D–230407\Dwg\Plats\CSK–PLTS–230407.dwg | COVER
XREF File(s): CBS–24X36–BASE–230407/XSF–BASE–230407/XLD–BASE–230407/CSK–BASE–230407/RLD–EUC–BASE–230407/RAR–BASE–230407/XRN–BASE–230407/CSD–BASE–230407/LLP–BASE–230407

ESD SUMMARY CHART

DRAINAGE AREA	TYPE OF ESD PRACTICE	TYPE OF ESD PRACTICE (STRUCTURE NAME)	ON-SITE OR OFF-SITE STRUCTURE	RUNOFF CURVE NUMBER (RCN) WEIGHTED	MARYLAND GRID COORDINATE NAD 83 METERS NORTHING	MARYLAND GRID COORDINATE NAD 83 METERS EASTING	ESD PRACTICE TOTAL DRAINAGE AREA (ACRES)	ESD PRACTICE IMPERVIOUS DRAINAGE AREA (ACRES)	SURFACE AREA OF ESD PRACTICE (ACRES)	TARGET PE (IN)	ACTUAL PE (IN)	TARGET ESDv (FT^3)	ACTUAL ESDv (FT^3)
PR-1	M-6	MICRO-BIORETENTION	ON-SITE	89	414,309.13	1,574,880.84	0.46	0.23	0.04	1.8	1.8	1529	2379
PR-2	M-6	MICRO-BIORETENTION	ON-SITE	91	414,343.10	1,574,923.62	0.46	0.27	0.03	1.8	1.8	1736	2701
PR-3	M-6	MICRO-BIORETENTION	ON-SITE	90	414046.71	1,574,731.30	0.45	0.25	0.03	1.8	1.8	1591	2464
PR-4	M-6	MICRO-BIORETENTION	ON-SITE	93	414,015.43	1,574,861.95	0.41	0.31	0.03	1.8	1.8	1931	2449
PR-5	M-6	MICRO-BIORETENTION	ON-SITE	93	413,893.71	1,574,769.77	0.46	0.33	0.04	1.8	1.8	2091	3253
PR-6	M-6	MICRO-BIORETENTION	ON-SITE	93	413,970.78	1,574,838.39	0.42	0.31	0.03	1.8	1.8	1962	2449
PR-7	M-6	MICRO-BIORETENTION	ON-SITE	95	413,812.52	1,574,916.36	0.46	0.38	0.03	1.8	1.8	2363	2800
PR-8	M-6	MICRO-BIORETENTION	ON-SITE	94	413,773.74	1,574,986.87	0.45	0.36	0.03	1.8	1.8	2240	2800
PR-9	M-6	MICRO-BIORETENTION	ON-SITE	95	413,735.03	1,575,057.61	0.46	0.38	0.03	1.8	1.8	2396	2800
PR-10	M-6	MICRO-BIORETENTION	ON-SITE	95	413,702.45	1,575,115.22	0.47	0.39	0.03	1.8	1.8	2431	2800
PR-11	M-6	MICRO-BIORETENTION	ON-SITE	95	413,667.65	1,575,181.20	0.45	0.37	0.03	1.8	1.8	2333	2800
PR-12	M-8	BIO-SWALE	ON-SITE	85	414,401.85	1,574,883.69	0.72	0.20	0.03	1.8	1.8	1387	2158
FT-13	M-2	SUBMERGED GRAVEL WETLAND	ON-SITE	92	414,257.03	1,575,202.89	4.37	2.83	0.26	1.8	1.8	18482	19796
FT-14	M-6	MICRO-BIORETENTION	ON-SITE	92	414,096.00	1,574,719.41	0.45	0.29	0.03	1.8	1.8	1882	2880
FT-15	M-6	MICRO-BIORETENTION	ON-SITE	90	413,946.03	1,574,669.65	0.41	0.23	0.04	1.8	1.8	1514	2354
TOTAL	--	--	ON-SITE	92	--	--	10.90	5.88	0.71	1.8	1.8	45868	56883

SWM QUANTITY SUMMARY CHART

POI	PRE 2 YEAR	POST 2 YEAR	WSE	PRE 10 YEAR	POST 10 YEAR	WSE	PRE 100 YEAR	POST 100 YEAR	WSE
1	8.35	1.50	20.55	17.12	13.34	21.04	28.24	33.42	21.58
2	2.82	1.20	20.55	6.38	6.15	21.04	11.10	28.32	21.58

LEGEND

- ELECTRIC TRANSFORMER
- ELECTRIC METER
- UNDERGROUND ELECTRIC LINE
- GAS MAIN
- LAMP POLE
- SANITARY SEWER CLEAN OUT
- SANITARY SEWER FORCEMAIN
- STORM DRAIN LINE
- WATER VALVE
- WATER MAIN
- APPROXIMATE TREE LINE
- NON-TIDAL WETLAND
- NON TIDAL WETLAND
- IRON ROD FOUND
- COMPUTED POINT

NOTE: THE LAYOUT AS SHOWN HEREON IS CONCEPTUAL ONLY AND NOT INTENDED TO BE UTILIZED FOR DESIGN OR CONSTRUCTION PURPOSES.

LANDSCAPE REQUIREMENTS § 1014.6.C. (STREET TREES)

1. 1 TREE PER 70' STREET FRONTAGE = 426'± (ALONG MISTLETOE DRIVE)/70' = 7 TREES REQUIRED

LANDSCAPE REQUIREMENTS § 1014.6.F. PHASE 1 (ON-SITE)

1. OVERALL TREES– 1 TREE/3000 SF OF DISTURBED AREA; 574,339 SF±/3000 SF = 192 TREES REQUIRED/PROVIDED

2A. INTERIOR PARKING LOT PLANTINGS– 1 TREE PER 10 SPACES; 55 SPACES/10 = 6 TREES REQUIRED/PROVIDED

2B. PARKING HEDGE– SHALL BE PROVIDED

2C. BUILDING FAÇADE PLANTINGS– 1 TREE/20' OF AFFECTED FAÇADE; 540'/20' = 27 TREES REQUIRED/PROVIDED

2D. SERVICE/ LOADING AREAS– TOWN COMPLIANT ENCLOSURE, SCREENED AS SHOWN HEREON.

2F. BUFFERYARDS: NONE REQUIRED

LANDSCAPE KEY

- 2" CALIPER MINIMUM CANOPY OR STREET TREES (OAK, MAPLE TYPES)
- 1.25" CALIPER OR 7' HEIGHT MINIMUM FLOWERING TREES (CHERRY, MAGNOLIA, RED BUD, SERVICEBERRY TYPES)
- 8' HEIGHT MINIMUM EVERGREEN TREES (WHITE PINE, SPRUCE, ARBORVITAE, HOLLY, LOBLOLLY TYPES)
- STORMWATER MANAGEMENT ESD LANDSCAPING MASS / PERENNIAL MIX WITH SHRUBS AND GRASSES

APPROVED: PLANS ARE ISSUED FOR REVIEW ONLY
TOWN OF EASTON – TOWN PLANNER DATE
APPROVED:
TOWN OF EASTON – TOWN ENGINEER DATE
APPROVED: PLANS ARE NOT APPROVED FOR CONSTRUCTION
EASTON DIRECTOR – PLANNING DATE

REVISIONS TO APPROVED PLANS

No.	DATE	DESCRIPTION	BY

WARNING!!
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MISS UTILITY
BEFORE YOU DIG CALL 1-800-441-8355 OR 811 PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

Lane Engineering, LLC
Established 1986
Civil Engineers • Land Planning • Land Surveyors
E-mail: general@leinc.com
117 Bay St. Easton, MD 21601 (410) 822-8003
15 Washington St. Cambridge, MD 21613 (410) 221-0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758-2095

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 23152 , Expiration Date: 7/5/2025.

SEAL
11.27.23
DATE

SKETCH SITE PLAN

VETAGRO
LIKE NO ONE ELSE

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 25 GRID 22 PARCEL 138 LOTS 2 & 3

ISSUED/REVISED FOR:	DATE:	BY:
ESDR SUBMITTAL	11/01/23	BCE
PLANNING COMMISSION SUBMITTAL	11/27/23	BCE

SHEET No. 2 OF 2
SCALE: AS NOTED
JOB No. 230407
FILE No. A037

Date: 11/27/2023 – 9:20am User: mphillips Project Manager: BCE
Drawing Path: J:\2023\0400\230407\Civil3D-230407\Dwg\Plats\CSK-PLTS-230407.dwg | SKETCH
XREF File(s): CBS-24X36-BASE-230407/VSF-BASE-230407/ALD-BASE-230407/CSK-BASE-230407/RLD-EUC-BASE-230407/RAR-BASE-230407/XRN-BASE-230407/CSD-BASE-230407/LIP-BASE-230407

NOTE: THE LAYOUT AS SHOWN HEREON IS CONCEPTUAL ONLY AND NOT INTENDED TO BE UTILIZED FOR DESIGN OR CONSTRUCTION PURPOSES.

200' 100' 0' 100' 200' 400'
SCALE IN FEET

NAD 83 (2011) MD COORDINATE SYSTEM

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TOWN OF EASTON – TOWN ENGINEER DATE
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REVISIONS TO APPROVED PLANS

No.	DATE	DESCRIPTION	BY

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SEAL

DATE

AERIAL CONTEXT PLAN

VETAGRO
LIKE NO ONE ELSE

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 25 GRID 22 PARCEL 138 LOTS 2 & 3

ISSUED/REVISED FOR:	DATE:	BY:
ESDR SUBMITTAL	11/01/23	BCE
PLANNING COMMISSION SUBMITTAL	11/27/23	BCE

SHEET No. 1 OF 1
SCALE: AS NOTED
JOB No. 230407
FILE No. A037

Date: 11/27/2023 – 9:21am User: mphillips Project Manager: BCE
Drawing Path: J:\2023\0400\230407\Civil3D-230407\Dwg\Plots\CSK-PLTS-230407.dwg | AERIAL
XREF File(s): CBS-24X36-BASE-230407/VSF-BASE-230407/WLD-BASE-230407/VSK-BASE-230407/RLD-EUC-BASE-230407/RAR-BASE-230407/XRN-BASE-230407/CSD-BASE-230407/LLP-BASE-230407

LANDSCAPE REQUIREMENTS § 1014.6.C. (STREET TREES)

1. 1 TREE PER 70' STREET FRONTAGE = 426'± (ALONG MISTLETOE DRIVE)/70' = 7 TREES REQUIRED

LANDSCAPE REQUIREMENTS § 1014.6.F. PHASE 1 (ON-SITE)

1.	OVERALL TREES–	1 TREE/3000 SF OF DISTURBED AREA; 574,339 SF±/3000 SF = 192 TREES REQUIRED/PROVIDED
2A.	INTERIOR PARKING LOT PLANTINGS–	1 TREE PER 10 SPACES; 55 SPACES/10 = 6 TREES REQUIRED/PROVIDED
2B.	PARKING HEDGE– SHALL BE PROVIDED	
2C.	BUILDING FAÇADE PLANTINGS–	1 TREE/20' OF AFFECTED FAÇADE; 540'/20' = 27 TREES REQUIRED/PROVIDED
2D.	SERVICE/ LOADING AREAS– TOWN COMPLIANT ENCLOSURE, SCREENED AS SHOWN HEREON.	
2F.	BUFFERYARDS: NONE REQUIRED	

LANDSCAPE KEY

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SEAL
11.27.23
DATE

ILLUSTRATIVE PLAN

VETAGRO
LIKE NO ONE ELSE

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 25 GRID 22 PARCEL 138 LOTS 2 & 3

ISSUED/REVISED FOR:	DATE:	BY:
ESDR SUBMITTAL	11/01/23	BCE
PLANNING COMMISSION SUBMITTAL	11/27/23	BCE

SHEET No. 1 OF 1
JOB No. 230407
SCALE: AS NOTED
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Date: 11/27/2023 – 9:22am User: mphillips Project Manager: BCE
Drawing Path: J:\2023\0400\230407\Civil3D-230407\Dwg\Plots\CSK-PLTS-230407.dwg | ILLUSTRATIVE
XREF File(s): CBS-24X36-BASE-230407/VSF-BASE-230407/VLD-BASE-230407/CSK-BASE-230407/RLD-EUC-BASE-230407/RAR-BASE-230407/NRN-BASE-230407/CSD-BASE-230407

MISTLETOE HALL FARM COMMERCE-BUSINESS PARK – Lot 2 and 3

All plant material shall be in conformance with the American Standard for Nursey Stock.

Approved Landscaping shall be installed within the next planting season of occupancy or within 6 months of substantial completion, (date on which the exterior walls and roofs have been installed), of any Building.

The Landscape Plan shall show components that reflect seasonal changes.

The Owner/ Applicant shall utilize a variety of species to reflect seasonal change as shown below:

Concept plant list

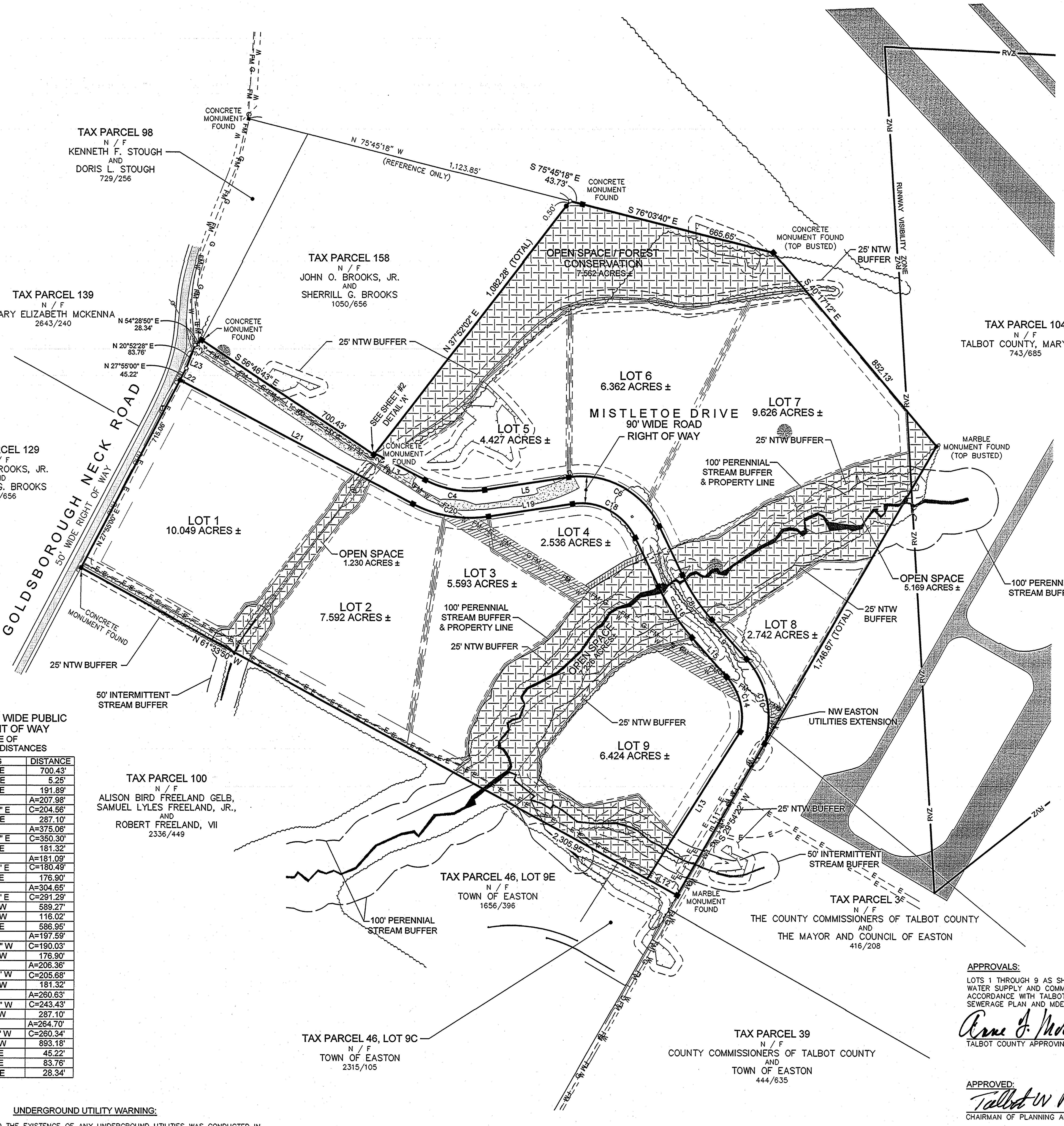
Scientific name	Common name	Bloom color	Bloom time	Fruit	Fall Color	
Canopy Trees						
Acer rubrum	Red Maple	red	March-April	Red to tan samaras	red	native
Betula nigra	River Birch	Brown & green catkins	April - May	Tan/brown aggregate	yellow	native
Carya Glabra	Pignut Hickory	Yellowish catkins	April - May	nut	Yellow	native
Celtis occidemtalis	Hackberry	green	April - May	Dark maroon berries	yellow	native
Gkeditsia tricanthos var. inermis 'skycole'	Skyline honeylocust	Greenish yellow to white	May - June	seedless	Yellow	native
Gymnocladus dioicus 'espresso'	Kentucky coffee tree	white	May - June	seedless	Yellow	native
Platanus x acerifolia 'columbia'	Columbia planetree	Yellow & red	April	Achene	yellow	hybrid
Quercus alba	White oak	Yellowish green	may	acorn	Dark reddish to brown	native
Quercus rubra	Red oak	Yellowish green	may	acorn	Red to scarlet	native
Quercus palustris	Pin oak	Yellowish green	April	acorn	Red to bronze	native
Quercus phellos	Willow oak	Yellowish green	April	acorn	Orangish yellow	native
Tilia americana x euchlora	Redmond linden	Pale yellow	june	Green pea-sized nutlet	yellow	native
Ulmus Americana 'Jefferson'	Jefferson Elm	green	March – April	Samara	yellow	native

Scientific name	Common name	Bloom color	Bloom time	Fruit	Fall Color	
Evergreen Trees						
Ilex opaca	American holly	white	May	Red berries	evergreen	native
Juniperus virginiana	Eastern red cedar	Non flowering		Silver blue berries	Evergreen	native
Thuja occidentalis	Eastern arborvitae	Non flowering		Small cone	Evergreen	native
Flowering/Understory Trees						
Amelanchier canadensis	Shadblow serviceberry	white	April – may	Red to purplish berries	Orange to red	native
Carpinus carolina	American hornbeam	Yellow green catkins	february	Small nut	Yellow to orange	native
Cercis canadensis	Eastern redbud	Pinkish purple	april	legume	yellow	native
Crataegus virdis	hawthorn	white	may	Red berries ripen in September and persist well into winter	Yellowish orange	native
Prunus americana	American plum	White	April - may	Small reddish purple plums	Yellow to reddish	native
Prunus pensylvanica	Pin cherry	white	April - june	Red drupe	Yellowish orange	native
Prunus virginiana	chokecherry	white	April - may	Purple drupe	Reddish purple	native
Shrubs						
Aronia arbutifolia	Red chokeberry	White	april	Red berries that persist well into winter	Scarlet orange	native
Callicarpa americana	beautyberry	Lavender, pink	June - august	Purple berries	yellow	native
Ceanothus americanus	New jersey tea	White	May - july	Black drupe	Yellow to tan	native
Cornus racemosa	Gray dogwood	white	May - june	White drupe	Reddish purple	native
Hypericum x ‘hidcote’	St. john’s wort	yellow	June - Septembe r	Red-orange berries	Orange yellow	native
Ilex glabra	Inkberry holly	white	May - june	Black berry	Evergreen	native
Juniperus virginiana ‘grey owl’	Grey owl juniper	Non flowering		Silver blue berries	evergreen	native
Itea virginica	sweetspire	white	June - july	Brown capsule	red	native
Morella pensylvanica	bayberry	Yellowish green	may	Pale blue – purple drupe	Semi - evergreen	native

Scientific name	Common name	Bloom color	Bloom time	Fruit	Fall Color	
Viburnum dentatum	Arrowwood viburnum	white	May - june	Black drupe	Yellow to reddish purple	native
Herbaceous Perennials						
Asclepias syriaca	Common milkweed	Pink mauve	June - july			native
Aster oblongifolius	Aromatic aster	Blue purple	August - september			native
Baptisia australis	Aromatic aster	Blue purple	August - september			native
Chasmanthium latifolium	Northern sea oats	Green	August - september	Seed (caryopsis)		native
Deschampia cespitosa	Tufted hairgrass	Tones of gold, silver, purple, and green	July - september	Seed (caryopsis)		native
Echinacea purpurea	Purple coneflower	Purplish pink	June - august	Seed (achene)		native
Nepeta x faassenii 'novanejun'	Junior walker catmint	Lavender blue	April - september			native
Panicum virgatum	switchgrass	Pink-tinged	July - february	Seed (caryopsis)		native
Rudbeckia hirta	Black-eyed susan	yellow	June - july	Seed capsule		native
Schizachyrium scoparium	Little bluestem	Purplish bronze	August - february	seed		native

TALBOT COUNTY CIRCUIT COURT (Plat Book) Plat Book KMD 87, pp. 124-128, MSA_C2399_14903. Date available 2020/06/10. Printed 01/23/2023.

KMD 87/124



PROPOSED 90' WIDE PUBLIC ROAD RIGHT OF WAY
TABLE OF COURSES & DISTANCES

LINE	BEARING	DISTANCE
L1	S 56°46'43" E	700.43'
L2	N 37°52'02" E	5.25'
L3	S 62°25'10" E	191.89'
C4	R=330.00'	A=207.98'
	B=S 80°28'29" E	C=204.56'
L5	N 81°28'13" E	287.10'
C6	R=295.00'	A=375.06'
	B=S 62°06'27" E	C=350.30'
L7	S 25°41'06" E	181.32'
C8	R=645.00'	A=181.09'
	B=S 33°43'41" E	C=180.49'
L9	S 41°46'16" E	176.90'
C10	R=295.00'	A=304.65'
	B=S 12°11'09" E	C=291.29'
L11	S 29°54'22" W	589.27'
L12	N 61°33'50" W	116.02'
L13	N 32°18'25" E	586.95'
C14	R=205.00'	A=197.59'
	B=N 14°09'34" W	C=190.03'
L15	N 41°46'16" W	176.90'
C16	R=735.00'	A=206.36'
	B=N 33°43'41" W	C=205.68'
L17	N 25°41'06" W	181.32'
C18	R=205.00'	A=260.63'
	B=N 62°06'27" W	C=243.43'
L19	S 81°28'13" W	287.10'
C20	R=420.00'	A=264.70'
	B=N 80°28'29" W	C=260.34'
L21	N 62°25'10" W	893.18'
L22	N 27°55'00" E	45.22'
L23	N 20°52'28" E	83.76'
L24	N 54°28'50" E	28.34'

UNDERGROUND UTILITY WARNING:

NO INVESTIGATION AS TO THE EXISTENCE OF ANY UNDERGROUND UTILITIES WAS CONDUCTED IN THE PREPARATION OF THIS PLAT. IT IS THE RESPONSIBILITY OF THE OWNER, SUCCESSORS, OR ASSIGNS, AND/OR ANY CONTRACTOR TO COMPLY WITH THE UNDERGROUND FACILITIES DAMAGE PREVENTION LAW AND THE REQUISITE PERMITS ARISING THEREFROM. FINK, WHITTEN & ASSOCIATES, LLC. IS NOT RESPONSIBLE FOR THE ACCURACY, OR THE EXTENT OF THE UNDERGROUND UTILITY MARKING PERFORMED BY MISS UTILITY AND SHOWN HEREON.

GENERAL NOTES:

ALL STREETS AND STREET WIDENINGS, PARKS AND OTHER LANDS INTENDED FOR PUBLIC USE ARE RESERVED BY THE TOWN OF EASTON.

ALL EASEMENTS SHOWN ARE HEREBY DEDICATED FOR PUBLIC USE.

A UTILITIES DISTRIBUTION RIGHT-OF-WAY AND EASEMENT IS HEREBY RESERVED TO THE TOWN OF EASTON IN AND OVER STRIPS OF LAND TEN (10) FEET IN WIDTH ALONG THOSE BOUNDARY LINES CONTIGUOUS TO ANY STREET OR ALLEY AND FIVE (5) FEET IN WIDTH ON EACH SIDE OF SIDE LOT LINES (UNLESS SHOWN OTHERWISE) AND AS SHOWN AS "UTILITY EASEMENT RESERVED UPON TRANSFER", SUCH EASEMENTS TO TAKE EFFECT ONLY AT SUCH TIME AS THE TOWN OF EASTON CONVEYS THE FEE SIMPLE INTEREST IN THE PROPERTY OR A PORTION OF THE PROPERTY AFFECTED THEREBY TO A THIRD PARTY ("PROPERTY OWNER"). SAID EASEMENT SHALL RUN WITH THE LAND AND SHALL INURE TO THE BENEFIT OF THE TOWN OF EASTON AND BE BINDING UPON PROPERTY OWNER AND ITS SUCCESSORS IN INTEREST WITH RESPECT TO THE PROPERTY.

THE PLANNING AND ZONING COMMISSION MAY WAIVE OR TERMINATE, UPON RESUBDIVISION, SUCH UTILITY EASEMENT WHICH HAS NOT BEEN ACCEPTED BY USE THEREOF. UPON RECEIVING APPROVAL FROM THE TOWN ENGINEER.

ALL OPEN SPACE AREAS SHOWN HEREON ARE RESERVED TO THE TOWN OF EASTON.

THIS SUBDIVISION IS SUBJECT TO A PUBLIC ACCESS EASEMENT RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER ________ , FOLIO ________.

BUILDING PERMITS SHALL BE ISSUED ONLY IF SUFFICIENT CAPACITY IS AVAILABLE IN THE COMMUNITY WATER SUPPLY SYSTEM, SEWERAGE SYSTEM, AND SOLID WASTE ACCEPTANCE FACILITY SERVING THE SUBDIVISION.

LAND SHOWN UPON THIS PLAT MAY CONTAIN NON-TIDAL WETLANDS REGULATED UNDER COMAR 08.0504; THE FEDERAL WATER POLLUTION ACT SECTION 404; OR THE RIVERS HARBOR ACT SECTION 10. DEVELOPMENT AND CONSTRUCTION WITHIN WETLANDS ARE SUBJECT TO FEDERAL AND STATE REGULATIONS AND MAY BE PROHIBITED OR RESTRICTED BY SUCH REGULATIONS.

NO STRUCTURES, INCLUDING PORCHES, STAIRS, OR STOOPS SHALL BE PERMITTED WITHIN A DRAINAGE/UTILITY EASEMENT. DRIVEWAYS, SUBJECT TO APPROVAL OF A LICENSE AGREEMENT WITH THE TOWN OF EASTON, MAY BE PERMITTED WITHIN A DRAINAGE/UTILITY EASEMENT.

PURPOSE AND INTENT

THIS PLAT IS TO ESTABLISH NINE (9) LOTS, ESTABLISH A 90' WIDE PUBLIC RIGHT OF WAY AND EXTEND THE EXISTING PUBLIC RIGHT OF WAY ACROSS LOT 9C (TALBOT COMMERCE PARK) TO ADJOIN THE NEWLY PROPOSED VARIABLE WIDTH PUBLIC RIGHT OF WAY.

STREET TREES:

STREET TREES ARE REQUIRED AT A RATIO OF 1 TREE PER EVERY 35' OF STREET CENTERLINE.

CENTERLINE OF THE PROPOSED 90' WIDE RIGHT OF WAY = 3,125'
REQUIRED NUMBER OF STREET TREES (3,125' / 35') = 90 TREES

STREET TREE TYPE AND PLANTING SPECIFICATIONS TO BE IN ACCORDANCE WITH TOWN OF EASTON ZONING ORDINANCE §28-1014.6.

BUFFER YARD:

A 25' WIDE BUFFER YARD IS REQUIRED ON LOT 1 HEREON, ALONG THE FRONTAGE OF GOLDSBOROUGH NECK ROAD.

LOT 1 FRONTAGE ON GOLDSBOROUGH NECK = 715.06'
REQUIRED BUFFER YARD PLANTING UNITS (715.06' / 50') = 15 PLANTING UNITS

1 PLANTING UNIT (BUFFER YARD "B") = 2 SHADE/CANOPY TREES AND 1 EVERGREEN TREE

TOTAL SHADE/CANOPY TREES: 30
TOTAL EVERGREEN TREES: 15

DESIGN PRINCIPLES:

PRINCIPLE #1 – INTEGRATED USES ARE DESIRABLE
AS THIS DEVELOPMENT IS LOCATED WITHIN AN INDUSTRIAL ZONED DISTRICT AND ADJACENT TO AN EXISTING INDUSTRIAL PARK, THE SUBDIVISION OF MISTLETOE FARM TO CREATE AN ADDITIONAL 9 LOT INDUSTRIAL PARK IS MOST DESIRABLE IN THIS AREA.

PRINCIPLE #2 – NATURAL FEATURES SHOULD DETERMINE DESIGN
THIS ELEMENT REFERS TO THE PLANNING OF SITES BASED ON THE ENVIRONMENTAL RESOURCES PRESENT. IN THIS CASE, THE SITE HAS BEEN DESIGNED AROUND AREAS OF EXISTING FOREST, STREAMS AND WETLAND AREAS. THESE SENSITIVE AREAS, WOODS, STREAMS, WETLANDS AND THEIR ASSOCIATED BUFFERS, HAVE BEEN PLACED IN OPEN SPACE TO AVOID ANY DEVELOPMENT. ALL AREAS SHOWN HAVE BEEN FIELD DELINEATED BY AN ENVIRONMENTAL PROFESSIONAL AND VERIFIED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT. THERE IS LITTLE TO NO TOPOGRAPHIC RELIEF. THE SITE IS DESIGNED TO COMPLIMENT THE SURROUNDING DEVELOPED LOTS.

PRINCIPLE #3 – AUTOMOBILES SHOULD NOT DETERMINE DESIGN
THIS PRINCIPLE WILL BE ADDRESSED UPON INDIVIDUAL LOT DEVELOPMENT. FOR THE SUBDIVISION, WE PROPOSE A 90' WIDE RIGHT OF WAY FOR INGRESS / EGRESS AS WELL AS AN EXTENSION OVER LOT 9E OF THE ADJOINING SUBDIVISION. ALL LOTS ARE ADEQUATELY SIZED FOR DEVELOPMENT, INCLUDING PARKING.

PRINCIPLE #4 – AMPLE OPEN SPACE SHOULD BE PROVIDED WITHIN AND AROUND NEIGHBORHOODS
AS THIS SITE IS LOCATED IN AN INDUSTRIAL ZONE AND IS NOT LOCATED NEAR TO NEIGHBORHOODS, THIS IS NOT GENERALLY APPLICABLE. HOWEVER, OPEN SPACES ARE PROVIDED TO PROTECT SENSITIVE ENVIRONMENTAL FEATURES.

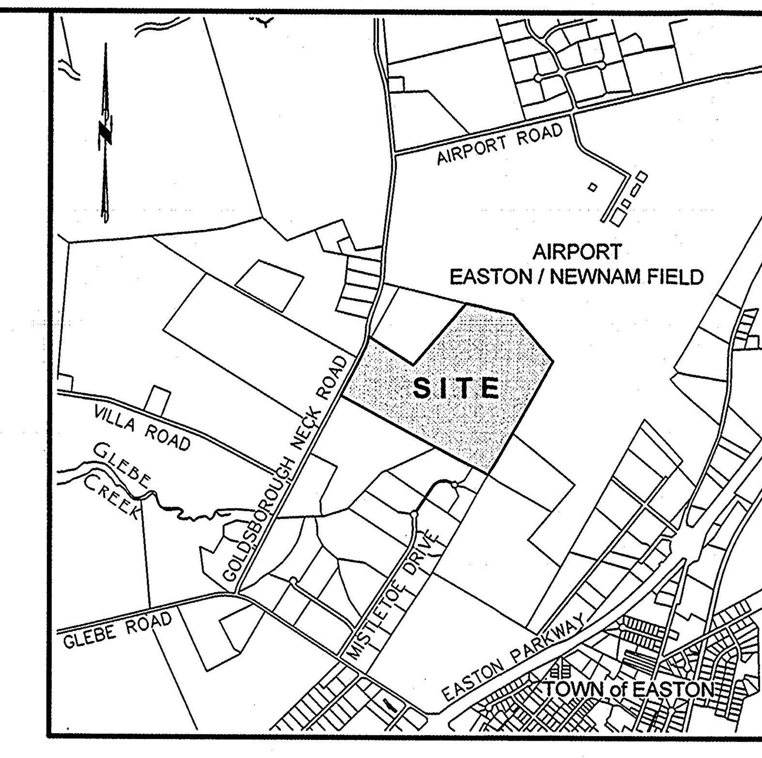
PRINCIPLE #5 – ARCHITECTURE SHOULD RESPECT EASTON'S HISTORICAL DEVELOPMENT
SUBDIVISION ONLY AT THIS TIME. THIS PRINCIPLE IS NOT APPLICABLE TO OUR REQUEST.

PRINCIPLE #6 – SIGNS SHOULD INFORM BUT NOT DOMINATE
NO SIGNS HAVE YET TO BE DISCUSSED, THOUGH IT IS ANTICIPATED THAT ONE FREESTANDING SIGN WILL BE PROPOSED AT THE ENTRY OF THE INDUSTRIAL PARK IN ACCORDANCE WITH THE CODE. AS REQUIRED THE BASE OF ANY SIGNAGE WILL BE LANDSCAPED.

PRINCIPLE #7 – NEIGHBORHOODS SHOULD CONTAIN A DIVERSITY OF HOUSING TYPES
THIS PRINCIPLE IS NOT APPLICABLE TO OUR REQUEST.

PRINCIPLE #8 – RESIDENTIAL DEVELOPMENT SHOULD BE INTERESTING PLACES
THIS PRINCIPLE IS NOT APPLICABLE TO OUR REQUEST.

PRINCIPLE #9 – NEIGHBORHOODS SHOULD CONNECT
THIS SUBDIVISION DOES NOT REPRESENT A NEIGHBORHOOD PER SAY, BUT IT DOES CONNECT TO THE ADJOINING INDUSTRIAL PARK VIA A PROPOSED EXTENSION AT THE END OF THE CUL DE SAC OF PARCEL 46, LOT 9E.



VICINITY MAP
SCALE: 1" = 2,000'

LR - Plat Fee - Subdivision 5.00
Subdivision Name: Mistletoe Hall Plat 1 Of 5
Ref: KMD 87/124
Total: 25.00
06/10/2020 01:11 CC20-MG
#13745831 CC0205 - Talbot County/CC02.05.02 - Register 02

STATE OF MARYLAND
Talbot County, TO WIT:
Recorded in the Land Records of Talbot County
[illegible]
[illegible]
[illegible]

125/61/2021

PROPERTY INFORMATION:

1. TAX PARCEL 138
OWNER/DEVELOPER: TOWN OF EASTON
SITE ADDRESS: GOLDSBOROUGH NECK ROAD EASTON, MARYLAND 21601
TAX MAP 25, GRID 16, PARCEL 138
TAX ACCOUNT No.: 01-045563
DEED REFERENCE: 743/703
PLAT REFERENCE: 33/54
2. ZONING: I-1 SELECT INDUSTRIAL DISTRICT
3. BUILDING SETBACKS: FRONT 40' (UNLESS NOTED OTHERWISE)
SIDE 10'
REAR 30' (UNLESS NOTED OTHERWISE)
4. SITE DATA:
TOTAL AREA PROPOSED LOTS: 55.351 AC±
TOTAL AREA PROPOSED ROAD: 7.124 AC±
TOTAL AREA PROPOSED OPEN SPACE: 21.187 AC±
TOTAL AREA TAX PARCEL 138: 83.662 AC±
WATER SUPPLY: TOWN OF EASTON
SEWAGE DISPOSAL: TOWN OF EASTON
5. THE SUBJECT PROPERTY SHOWN HEREON IS LOCATED WITHIN ZONE 'X' (AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS SHOWN ON THE FLOOD INSURANCE RATE MAPS COMMUNITY PANEL NO. 24041C0187D FOR TALBOT COUNTY, MARYLAND DATED JULY 20, 2016.
6. THE PROPERTY SHOWN HEREON IS LOCATED ENTIRELY OUTSIDE THE CHESAPEAKE BAY CRITICAL AREA.
7. A WAIVER WAS APPROVED BY THE TOWN OF EASTON PLANNING COMMISSION ON JANUARY 16, 2020, TO PERMIT THE SUBDIVISION OF LOTS 5 AND 8 WITH EXISTING NONTIDAL WETLANDS & NONTIDAL WETLAND BUFFERS, AS SHOWN HEREON.

LEGEND:

- = GRAVEL SURFACE
- = ASPHALT SURFACE
- = UTILITY EASEMENT RESERVED UPON TRANSFER
- = OPEN SPACE LOT
- = PERENNIAL STREAM
- —x— = FENCE
- BRL = BUILDING RESTRICTION LINE
- o = COMPUTED POINT
- — FM — = FORCE MAIN
- — W — = WATER
- — G — = GAS
- — T — = TELEPHONE
- — E — E — = UNDERGROUND ELECTRIC
- — OHU — = OVERHEAD UTILITY LINES
- = UTILITY POLE
- = TELEPHONE PEDESTAL
- = ELECTRIC TRANSFORMER
- = SANITARY SEWER MANHOLE
- SCO = SANITARY SEWER CLEANOUT
- = PERENNIAL STREAM BUFFER (100')
- = INTERMITTENT STREAM BUFFER (50')
- = NON-TIDAL WETLAND (NTW)
- = NON-TIDAL WETLAND BUFFER (25')
- ■ = CONCRETE MONUMENT SET (UNLESS OTHERWISE NOTED)
- ● = CAPPED REBAR SET (UNLESS OTHERWISE NOTED)
- = PROPOSED LOT LINE
- = UTILITY EASEMENT RESERVED UPON TRANSFER

APPROVALS:

LOTS 1 THROUGH 9 AS SHOWN HEREON ARE APPROVED FOR COMMUNITY WATER SUPPLY AND COMMUNITY SEWAGE AND THEIR USE IS IN ACCORDANCE WITH TALBOT COUNTY COMPREHENSIVE WATER AND SEWERAGE PLAN AND MDE REGULATION 26.04.03.

Anne J. Moore, REHS 6/9/20
TALBOT COUNTY APPROVING AUTHORITY DATE

APPROVED:

Talbot W Bone 6/10/20
CHAIRMAN OF PLANNING AND ZONING COMMISSION DATE

Lynn B. Thomas Jr 6/10/20
THE TOWN PLANNER DATE

OWNER'S CERTIFICATE:

WE, THE TOWN OF EASTON OWNER OF PROPERTY SHOWN AND DESCRIBED HEREON, HEREBY ADOPTS THIS REVISION PLAT.

COMMUNITY WATER AND COMMUNITY SEWER SERVICE WILL BE AVAILABLE TO ALL LOTS OFFERED FOR SALE.

Robert C. Willey 6/8/20
TOWN OF EASTON DATE

THE OWNER HAS SWORN TO AND SUBSCRIBED BEFORE ME THIS 9th DAY OF June, 2020.

Kathy M. Ruf
NOTARY

KATHY M RUF NOTARY PUBLIC DORCHESTER COUNTY, MD My Commission Expires 10-15-2023

SHEET INDEX:
#1: OUTLINE BOUNDARY & PR. ROAD R/W
#2: DETAIL LOTS 1-4, OPEN SPACE 1
#3: DETAIL LOTS 5-7, OPEN SPACE 3 & 4
#4: DETAIL LOTS 8-9, OPEN SPACE 2
#5: UTILITY EASEMENT DETAIL

SURVEYOR'S CERTIFICATION

I, STEVEN W. WHITTEN, HEREBY CERTIFY THAT THE FINAL PLAT HEREON IS CORRECT; THAT IT IS A REVISION OF THE LAND CONVEYED BY TALBOT COUNTY, MARYLAND TO THE TOWN OF EASTON BY DEED DATED JANUARY 26, 1993 AND RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER 743, FOLIO 703 AND THAT ALL MONUMENTS ARE IN PLACE. I ALSO CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION AND COMPLIES WITH SECTION 09.13.06.12 OF THE ANNOTATED CODE OF MARYLAND TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF. THIS PLAT WAS PREPARED WITHOUT BENEFIT OF REVIEW OF AN ABSTRACT OF TITLE.

Steve Whitten 6 / 8 / 2020
STEVEN W. WHITTEN DATE
PROFESSIONAL LAND SURVEYOR MD. NO. 21326
CURRENT LICENSE EXPIRES/RENEWS: 1 / 8 / 2021

STATE OF MARYLAND STEVEN W. WHITTEN No. 21326 PROFESSIONAL LAND SURVEYOR

FINK, WHITTEN & ASSOCIATES, LLC.
LAND SURVEYING LAND PLANNING
ENVIRONMENTAL CONSULTING
PERMITTING
EASTON 410-822-8484 113 E. Dover St., Unit C Easton, Maryland 21601
CAMBRIDGE 410-228-8885 504 Maryland Avenue Cambridge, Maryland 21613
www.FINKWHITTEN.com

DATE	REVISION
5-12-2020	PER 5-12-2020 TOWN COMMENTS
3-24-2020	PER 3-19-2020 TOWN COMMENTS

FINAL PLAT

SUBDIVISION OF THE LANDS OF TOWN OF EASTON

" MISTLETOE HALL "

TAX MAP 25, GRID 16, PARCEL 138
IN THE TOWN OF EASTON
TALBOT COUNTY MARYLAND

DRAWN	CHECKED
B.S.F.	S.W.W.
DATE 11/7/2019	
SCALE AS SHOWN	
JOB NO. T-25-16-138	
SHEET NO. 1 of 5	

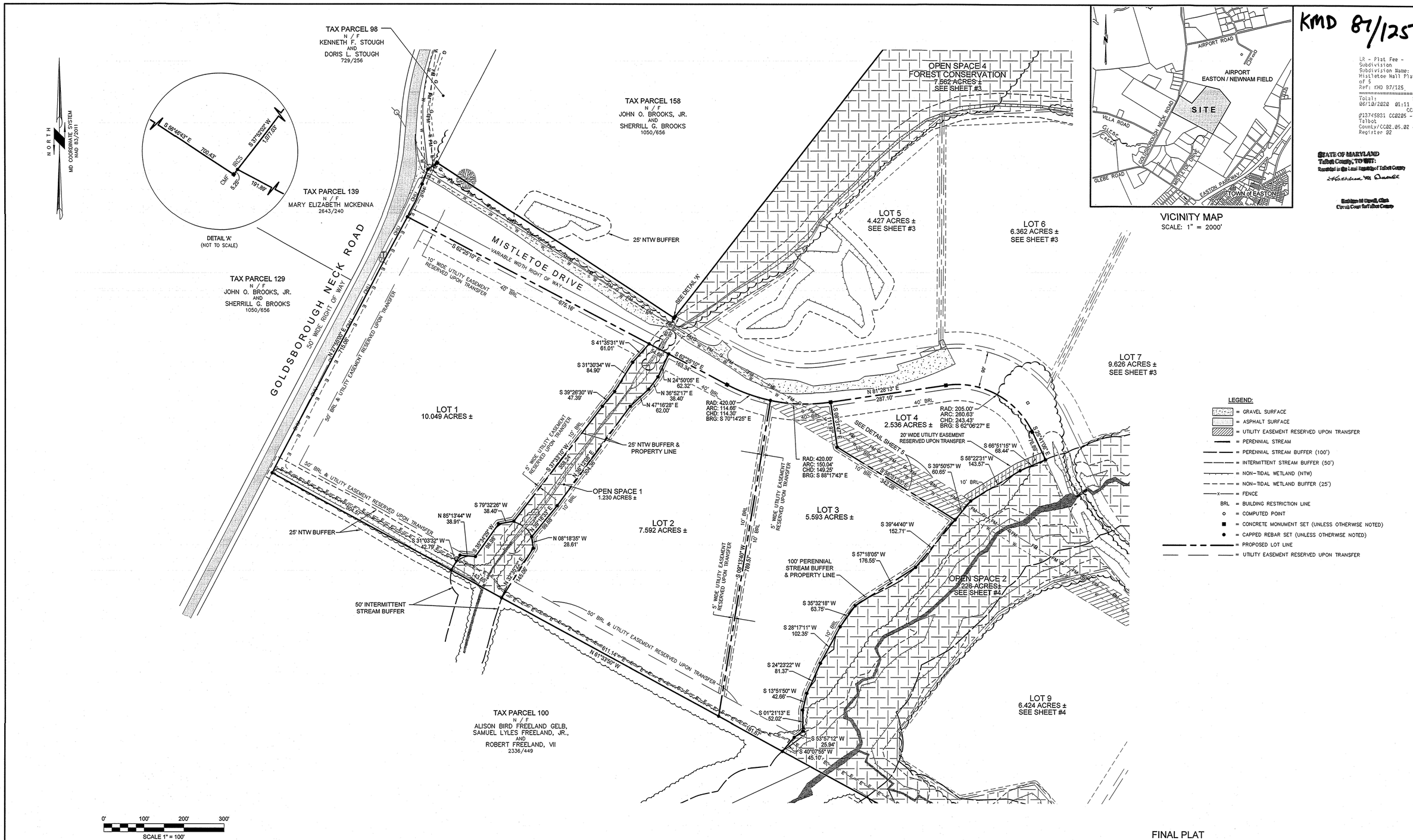
P237113

MSA C2399-14903-1

KMD 87/125

LR - Plat Fee - 50.00
Subdivision
Subdivision Name: Mistletoe Hall Plat of 5
Ref: KMD 87/125
Total: 25.00
06/10/2020 01:11 CC20-MG
#13745831 CC0205 - Talbot
County/CC02.05.02 - Register 02

STATE OF MARYLAND
Talbot County, TO WIT:
Recorded in the Land Records of Talbot County
Kathleen M. Darnell
Kathleen M. Darnell, Clerk
Circuit Court for Talbot County



FINAL PLAT
DETAIL LOTS 1-4 & OPEN SPACE 1

SURVEYOR'S CERTIFICATION

I, STEVEN W. WHITTEN, HEREBY CERTIFY THAT THE FINAL PLAT HEREON IS CORRECT; THAT IT IS A REVISION OF THE LAND CONVEYED BY TALBOT COUNTY, MARYLAND TO THE TOWN OF EASTON BY DEED DATED JANUARY 26, 1993 AND RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER 743, FOLIO 703 AND THAT ALL MONUMENTS ARE IN PLACE. I ALSO CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION AND COMPLIES WITH SECTION 09.13.06.12 OF THE ANNOTATED CODE OF MARYLAND TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF. THIS PLAT WAS PREPARED WITHOUT BENEFIT OF REVIEW OF AN ABSTRACT OF TITLE.

Steven W. Whitten 6 / 8 / 2020
STEVEN W. WHITTEN DATE
PROFESSIONAL LAND SURVEYOR MD. NO. 21326
CURRENT LICENSE EXPIRES/RENEWS: 1 / 8 / 2021

STATE OF MARYLAND
STEVEN W. WHITTEN
NO. 21326
PROFESSIONAL LAND SURVEYOR

FINK, WHITTEN & ASSOCIATES, LLC.
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CAMBRIDGE
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504 Maryland Avenue
Cambridge, Maryland 21613
www.FINKWHITTEN.com

DATE	REVISION
5-12-2020	PER 5-12-2020 TOWN COMMENTS
3-24-2020	PER 3-19-2020 TOWN COMMENTS

SUBDIVISION
OF THE LANDS OF
TOWN OF EASTON

" MISTLETOE HALL "

TAX MAP 25, GRID 16, PARCEL 138
IN THE TOWN OF EASTON
TALBOT COUNTY MARYLAND

DRAWN	CHECKED
B.S.F.	S.W.W.
DATE 11/7/2019	
SCALE AS SHOWN	
JOB NO. T-25-16-138	
SHEET NO. 2 of 5	

P237114

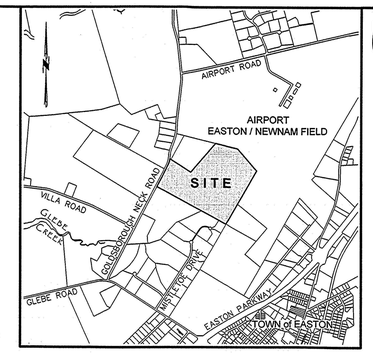
MSA C2399-14903-2

TALBOT COUNTY CIRCUIT COURT (Plat Book) Plat Book KMD 87, pp. 124-128, MSA_C2399_14903. Date available 2020/06/10. Printed 01/23/2023.

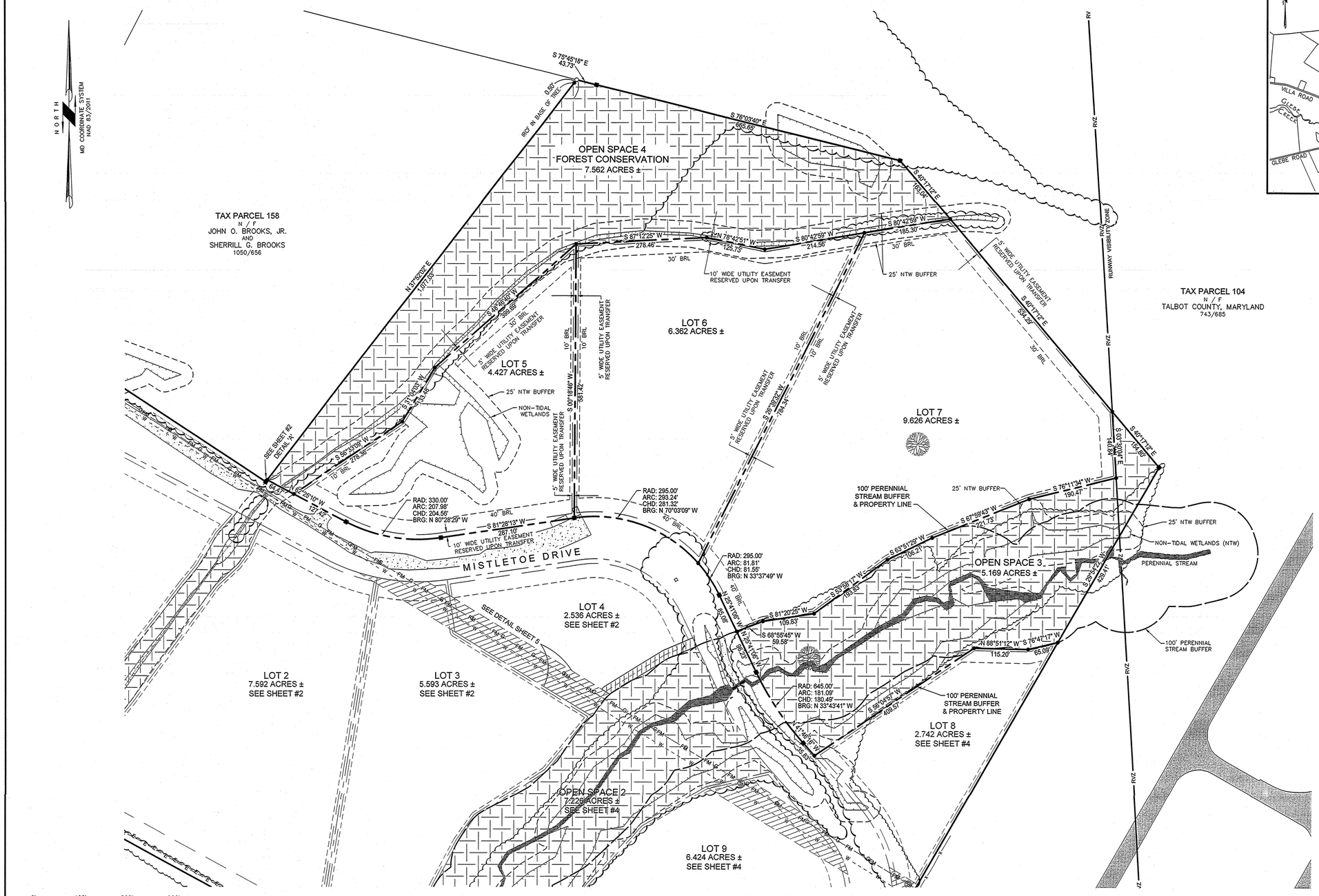
KMD 87/126

LR - Plat Fee - Subdivision 5.00
Subdivision Name: Mistletoe Hall Plat 3 of 5
Ref: KMD 87/126
Total: 25.00
06/10/2020 01:11 CC2C-MG
#13745831 CC0205 - Talbot County/CC02.05.02 - Register 02

STATE OF MARYLAND
TALBOT COUNTY, TO WIT:
Recorded in the Land Records of Talbot County
Katherine M. Quarles
Katherine M. Quarles, Clerk
Circuit Court for Talbot County



VICINITY MAP
SCALE: 1" = 2000'



LEGEND:

- = GRAVEL SURFACE
- = ASPHALT SURFACE
- = UTILITY EASEMENT RESERVED UPON TRANSFER
- = PERENNIAL STREAM
- = PERENNIAL STREAM BUFFER (100')
- = INTERMITTENT STREAM BUFFER (50')
- = NON-TIDAL WETLAND (NTW)
- = NON-TIDAL WETLAND BUFFER (25')
- = FENCE
- BRL = BUILDING RESTRICTION LINE
- = COMPUTED POINT
- = CONCRETE MONUMENT SET (UNLESS OTHERWISE NOTED)
- = CAPPED REBAR SET (UNLESS OTHERWISE NOTED)
- = PROPOSED LOT LINE
- = UTILITY EASEMENT RESERVED UPON TRANSFER

FINAL PLAT
DETAIL LOTS 5-7, OPEN SPACE 3 & 4

SURVEYOR'S CERTIFICATION

I, STEVEN W. WHITTEN, HEREBY CERTIFY THAT THE FINAL PLAT HEREON IS CORRECT; THAT IT IS A REVISION OF THE LAND CONVEYED BY TALBOT COUNTY, MARYLAND TO THE TOWN OF EASTON BY DEED DATED JANUARY 26, 1993 AND RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER 743, FOLIO 703 AND THAT ALL MONUMENTS ARE IN PLACE. I ALSO CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION AND COMPLIES WITH SECTION 09.13.06.12 OF THE ANNOTATED CODE OF MARYLAND TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF. THIS PLAT WAS PREPARED WITHOUT BENEFIT OF REVIEW OF AN ABSTRACT OF TITLE.

Steven W. Whitten
STEVEN W. WHITTEN
PROFESSIONAL LAND SURVEYOR MD. NO. 21326
CURRENT LICENSE EXPIRES/RENEWS: 1 / 8 / 2021

6 / 8 / 2020
DATE

STATE OF MARYLAND
STEVEN W. WHITTEN
No. 21326
PROFESSIONAL LAND SURVEYOR

FINK, WHITTEN & ASSOCIATES, LLC.
LAND SURVEYING LAND PLANNING
ENVIRONMENTAL CONSULTING
PERMITTING

EASTON
410-822-8484
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Easton, Maryland 21601

CAMBRIDGE
410-228-8885
504 Maryland Avenue
Cambridge, Maryland 21613

www.FINKWHITTEN.com

DATE	REVISION
5-12-2020	PER 5-12-2020 TOWN COMMENTS
3-24-2020	PER 3-19-2020 TOWN COMMENTS

SUBDIVISION
OF THE LANDS OF
TOWN OF EASTON

" MISTLETOE HALL "

TAX MAP 25, GRID 16, PARCEL 138
IN THE TOWN OF EASTON
TALBOT COUNTY MARYLAND

DRAWN	CHECKED
B.S.F.	S.W.W.
DATE 11/7/2019	
SCALE AS SHOWN	
JOB NO. T-25-16-138	
SHEET NO. 3 of 5	

P237115

MSA C2399-14903-3

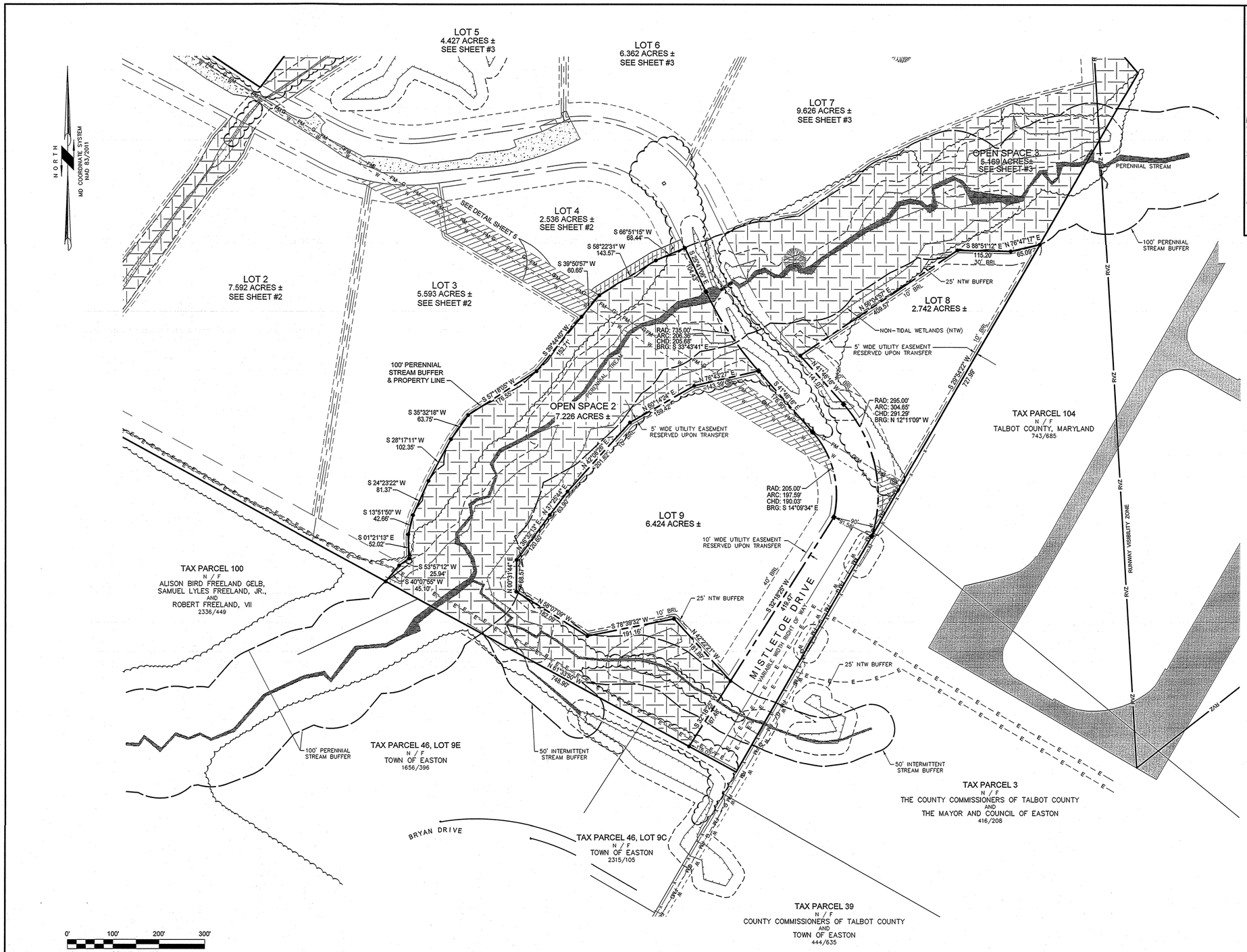
TALBOT COUNTY CIRCUIT COURT (Plat Book) Plat Book KMD 87, pp. 124-128, MSA_C2399_14903. Date available 2020/06/10. Printed 01/23/2023.

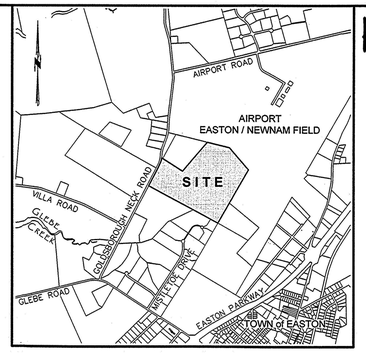
TALBOT COUNTY CIRCUIT COURT (Plat Book) Plat Book KMD 87, pp. 124-128, MSA_C2399_14903. Date available 2020/06/10. Printed 01/23/2023.

KMD 87/127

LR - Plat Fee - Subdivision 50.00
Subdivision Name: Mistletoe Hall Plat 4 of 5
Ref: KMD 87/127
Total: 25.00
06/10/2020 01:11 CCZH-HA
@13746831 CC0205 - Talbot County/CC02.05.02 - Register 02

STATE OF MARYLAND
Talbot County, TO WIT:
Recorded in the Land Records of Talbot County
Application for Records
Recorded and Examined
Clerk of the Circuit Court





VICINITY MAP
SCALE: 1" = 2000'

LEGEND:

- = GRAVEL SURFACE
- = ASPHALT SURFACE
- = UTILITY EASEMENT RESERVED UPON TRANSFER
- = PERENNIAL STREAM
- = PERENNIAL STREAM BUFFER (100')
- = INTERMITTENT STREAM BUFFER (50')
- = NON-TIDAL WETLAND (NTW)
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- = COMPUTED POINT
- = CONCRETE MONUMENT SET (UNLESS OTHERWISE NOTED)
- = CAPPED REBAR SET (UNLESS OTHERWISE NOTED)
- = PROPOSED LOT LINE
- = UTILITY EASEMENT RESERVED UPON TRANSFER

FINAL PLAT
DETAIL LOTS 8-9, OPEN SPACE 2

SURVEYOR'S CERTIFICATION

I, STEVEN W. WHITTEN, HEREBY CERTIFY THAT THE FINAL PLAT HEREON IS CORRECT; THAT IT IS A REVISION OF THE LAND CONVEYED BY TALBOT COUNTY, MARYLAND TO THE TOWN OF EASTON BY DEED DATED JANUARY 26, 1993 AND RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER 743, FOLIO 703 AND THAT ALL MONUMENTS ARE IN PLACE. I ALSO CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION AND COMPLIES WITH SECTION 09.13.06.12 OF THE ANNOTATED CODE OF MARYLAND TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF. THIS PLAT WAS PREPARED WITHOUT BENEFIT OF REVIEW OF AN ABSTRACT OF TITLE.

6 / 8 / 2020
DATE

STEVEN W. WHITTEN
PROFESSIONAL LAND SURVEYOR MD. NO. 21326
CURRENT LICENSE EXPIRES/RENEWS: 1 / 8 / 2021

STATE OF MARYLAND
STEVEN W. WHITTEN
No. 21326
PROFESSIONAL LAND SURVEYOR

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CAMBRIDGE
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504 Maryland Avenue
Cambridge, Maryland 21613
www.FINKWHITTEN.com

DATE	REVISION
5-12-2020	PER 5-12-2020 TOWN COMMENTS
3-24-2020	PER 3-19-2020 TOWN COMMENTS

SUBDIVISION
OF THE LANDS OF
TOWN OF EASTON

" MISTLETOE HALL "

TAX MAP 25, GRID 16, PARCEL 138
IN THE TOWN OF EASTON
TALBOT COUNTY MARYLAND

DRAWN	CHECKED
B.S.F.	S.W.W.

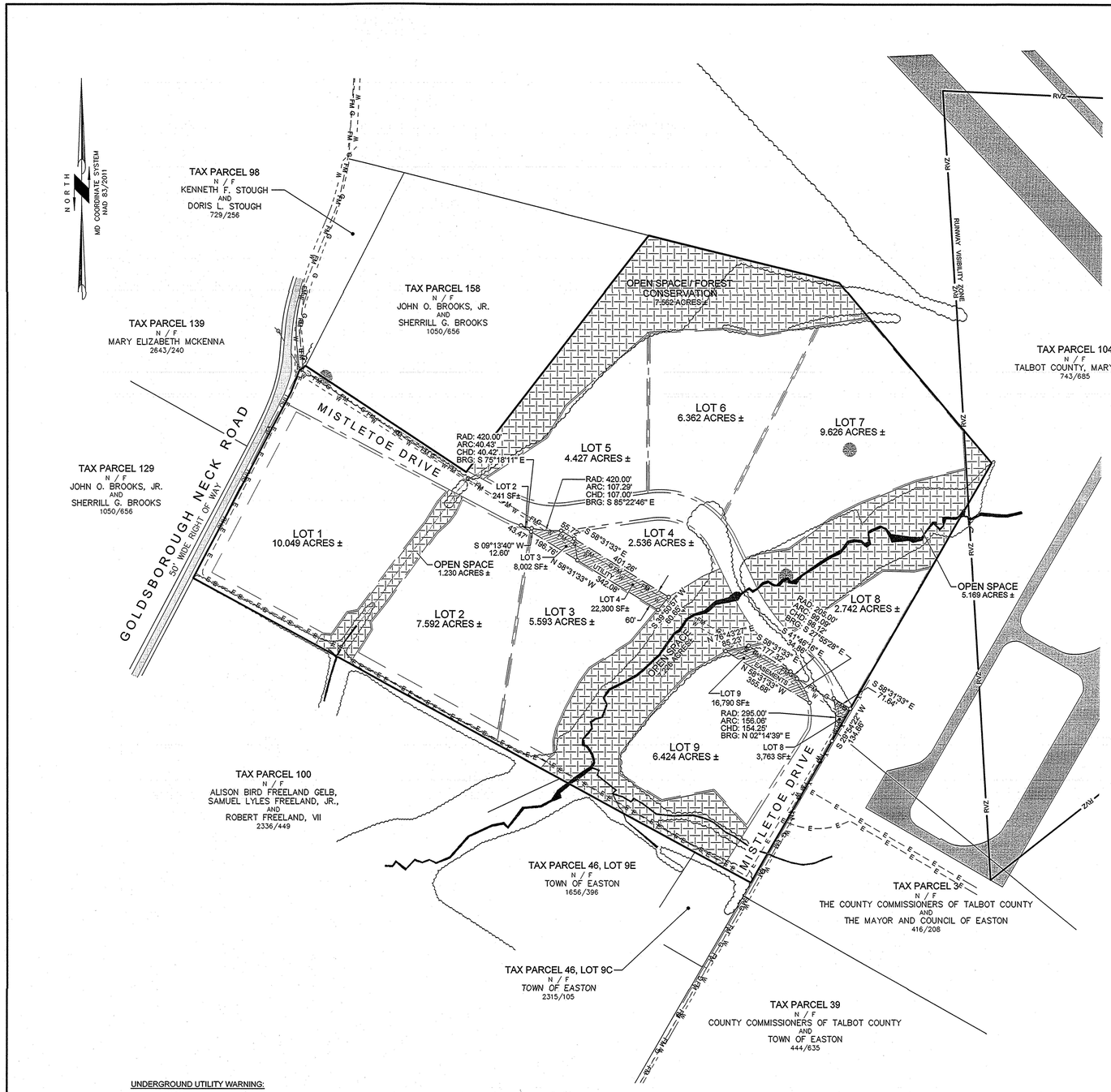
DATE 11/7/2019
SCALE AS SHOWN
JOB NO. T-25-16-138
SHEET NO. 4 of 5

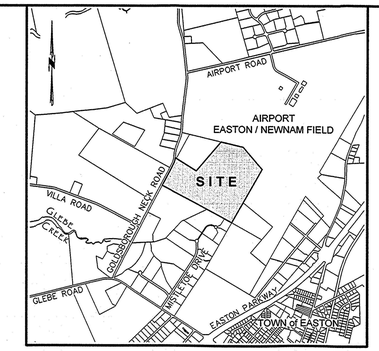
P237116

MSA C2399-14903-4

TALBOT COUNTY CIRCUIT COURT (Plat Book) Plat Book KMD 87, pp. 124-128, MSA_C2399_14903. Date available 2020/06/10. Printed 01/23/2023.

KMD 87/128





VICINITY MAP
SCALE: 1" = 2,000'

LR - Plat Fee - Subdivision 5.00
Subdivision Name: Mistletoe Hall Plat 5 of 5
Ref: KMD 87/128
Total: 5.00
06/10/2020 01:11 CC24-MB
21374583 CC0205 - Talbot County/CC02.05.02 - Register 02

STATE OF MARYLAND
Talbot County, TO WIT:
Recorded in the Land Records of Talbot County
Mistletoe Hall Plat 5

NOTE:

UTILITY EASEMENTS RESERVED TO TOWN OF EASTON UPON TRANSFER.

LEGEND:

- = GRAVEL SURFACE
- = ASPHALT SURFACE
- = UTILITY EASEMENT RESERVED UPON TRANSFER
- = OPEN SPACE LOT
- = PERENNIAL STREAM
- x = FENCE
- BRL = BUILDING RESTRICTION LINE
- = COMPUTED POINT (UTILITIES EASEMENT)
- FM = FORCE MAIN
- W = WATER
- G = GAS
- T = TELEPHONE
- E = ELECTRIC
- OHU = OVERHEAD UTILITY LINES
- = UTILITY POLE
- = TELEPHONE PEDESTAL
- = ELECTRIC TRANSFORMER
- = SANITARY SEWER MANHOLE
- SCO = SANITARY SEWER CLEANOUT
- = PROPOSED LOT LINE
- = UTILITY EASEMENT RESERVED UPON TRANSFER

UNDERGROUND UTILITY WARNING:

NO INVESTIGATION AS TO THE EXISTENCE OF ANY UNDERGROUND UTILITIES WAS CONDUCTED IN THE PREPARATION OF THIS PLAT. IT IS THE RESPONSIBILITY OF THE OWNER, SUCCESSORS, OR ASSIGNS, AND/OR ANY CONTRACTOR TO COMPLY WITH THE UNDERGROUND FACILITIES DAMAGE PREVENTION LAW AND THE REQUISITE PERMITS ARISING THEREFROM. FINK, WHITTEN & ASSOCIATES, LLC. IS NOT RESPONSIBLE FOR THE ACCURACY, OR THE EXTENT OF THE UNDERGROUND UTILITY MARKING PERFORMED BY MISS UTILITY AND SHOWN HEREON.

0' 200' 400' 600'
SCALE 1" = 200'

FINAL PLAT
UTILITY EASEMENT DETAIL

SURVEYOR'S CERTIFICATION

I, STEVEN W. WHITTEN, HEREBY CERTIFY THAT THE FINAL PLAT HEREON IS CORRECT; THAT IT IS A REVISION OF THE LAND CONVEYED BY TALBOT COUNTY, MARYLAND TO THE TOWN OF EASTON BY DEED DATED JANUARY 26, 1993 AND RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER 743, FOLIO 703 AND THAT ALL MONUMENTS ARE IN PLACE. I ALSO CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION AND COMPLIES WITH SECTION 09.13.06.12 OF THE ANNOTATED CODE OF MARYLAND TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF. THIS PLAT WAS PREPARED WITHOUT BENEFIT OF REVIEW OF AN ABSTRACT OF TITLE.

6 / 8 / 2020
DATE

STEVEN W. WHITTEN
PROFESSIONAL LAND SURVEYOR MD. NO. 21326
CURRENT LICENSE EXPIRES/RENEWS: 1 / 8 / 2021

STATE OF MARYLAND
STEVEN W. WHITTEN
No. 21326
PROFESSIONAL LAND SURVEYOR

FINK, WHITTEN & ASSOCIATES, LLC.

LAND SURVEYING LAND PLANNING
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504 Maryland Avenue
Cambridge, Maryland 21613

www.FINKWHITTEN.com

DATE	REVISION
5-12-2020	PER 5-12-2020 TOWN COMMENTS
3-24-2020	PER 3-19-2020 TOWN COMMENTS

SUBDIVISION
OF THE LANDS OF
TOWN OF EASTON

" MISTLETOE HALL "

TAX MAP 25, GRID 16, PARCEL 138
IN THE TOWN OF EASTON
TALBOT COUNTY MARYLAND

DRAWN	CHECKED
B.S.F.	S.W.W.
DATE 11/7/2019	
SCALE AS SHOWN	
JOB NO. T-25-16-138	
SHEET NO. 5 of 5	

P237117

MSA C2399-14903-5

RECFEE 18.00
SURCHG 5.00
TOTL 23.00
5095CHEK 23.00
02 01993 1-26A11:32

This instrument has been prepared by
Ewing, Dietz, Turner & Kehoe, P.A.
which makes no representation or
warranty whatsoever as to the title
of the property herein conveyed.

EWING, DIETZ, TURNER & KEHOE
P.O. BOX 1146
EASTON, MD. 21601
DATE RETURNED 1/26/93

THIS DEED, Made this 26th day of January, in the year one thousand nine hundred and ninety-three, by and between TALBOT COUNTY, MARYLAND, a political subdivision of the State of Maryland (the "Grantor") and the TOWN OF EASTON, a Maryland municipal corporation (the "Grantee").

WITNESSETH, that for good and valuable consideration but no monetary consideration, the Grantor does hereby grant and convey unto Grantee, its successors and assigns, in fee simple, all of its interests in those parcels or lots of land located in Talbot County, Maryland and more particularly described on Exhibit "A" attached hereto and incorporated by reference herein.

TOGETHER with the buildings and improvements thereon erected, made or being; and all and every, the rights, alleys, ways, waters, privileges, appurtenances and advantages, to the same belonging, or in any wise appertaining.

TO HAVE AND TO HOLD said property and premises above described and mentioned, and hereby intended to be conveyed; together with the rights, privileges, appurtenances and advantages thereto belonging or appertaining unto and to the proper use and benefit of the Grantee, its successors and assigns.

AND the Grantor does hereby warrant specially the property hereby granted and conveyed, and that it will execute such further assurances of the same as may be requisite.

TALBOT COUNTY CIRCUIT COURT (Land Records) MAS 743, p. 0703, MSA_CE91_680. Date available 10/20/2003. Printed 08/30/2023.

AS WITNESS the hand and seal of the Grantor.

ATTEST:

Patricia J. Rasinski,
Secretary

TALBOT COUNTY, MARYLAND, a
Maryland political subdivision

By: _____ (SEAL)
Clinton S. Bradley, III,
President, Talbot County Council

STATE OF MARYLAND, COUNTY OF TALBOT, TO WIT:

I HEREBY CERTIFY, That on this 26th day of January, 1993, before me, the subscriber, a Notary Public of the State of Maryland, County of Talbot, personally appeared CLINTON S. BRADLEY, III, who acknowledged himself to be the President of the Talbot County Council of TALBOT COUNTY, MARYLAND, a Maryland political subdivision, and that he as the President, being authorized so to do, acknowledged that he executed the foregoing instrument for the purposes therein contained, by signing the name of Talbot County by himself as the President of the Talbot County Council, and certified that this conveyance is not part of a transaction in which there is a sale, lease, exchange or other transfer of all or substantially all of the property and assets of the Grantor, and further made oath, under the penalties of perjury, that the consideration as recited herein is true and correct.

AS WITNESS my hand and Notarial seal.

Notary Public

My Commission expires: 12/1/93

CERTIFICATION

This is to certify that the within instrument was prepared by or under the supervision of the undersigned, an Attorney duly admitted to practice before the Court of Appeals of Maryland.

Anthony J. Mohan, Attorney At Law

TJKM\LS\AJM\AIRCO2.DEE

LIBER 0743 FOLIO 704

TALBOT COUNTY CIRCUIT COURT (Land Records) MAS 743, p. 0704, MSA_CE91_680. Date available 10/20/2003. Printed 08/30/2023.

EXHIBIT "A"
TO DEED BY AND BETWEEN TALBOT COUNTY, MARYLAND,
AS GRANTOR, AND THE TOWN OF EASTON, AS GRANTEE

ALL that tract or parcel of land on the Easterly side of Goldsborough Neck Road, known as "Mistletoe Hall" (formerly part of "Fausley") in Talbot County, Maryland, and described according to a certificate of survey made by James R. Kinnamon, Surveyor, dated June, 1974 and shown upon a plat entitled: "TOWN OF EASTON, MARYLAND - - MAP OF "MISTLETOE HALL" BELONGING TO J. DAVIDGE WARFIELD ADJACENT TO THE TOWN OF EASTON, TALBOT COUNTY, MARYLAND, SCALE: - 100' to 1", JUNE, 1974", which Plat is recorded among the Plat Records of Talbot County, Maryland at Liber 33, folio 54; said parcel of land containing eighty-six and twenty-five hundredths (86.25) acres of land, more or less.

SAVE AND EXCEPT THEREFROM a triangular portion of land situate on the northeast corner of Mistletoe Hall, as more particularly shown and designated by the number "21" on a plat entitled: "TOWN OF EASTON MARYLAND PLAT SHOWING EASTON MUNICIPAL AIRPORT", prepared by Brent K. Spicer, dated January, 1991 and recorded among the Plat Records of Talbot County, Maryland at Plat Cabinet 2, folio 4C; said triangular portion of land being more particularly described by metes and bounds, courses and distances, in a Certificate of Survey prepared by Brent K. Spicer, Surveyor, dated February, 1992, as follows:

> NOTE: The bearings are computed from the angles which have been observed precisely and are referred to the established runway azimuth of Easton Municipal Airport.

BEGINNING at a marble monument or marker stone found at the most easterly corner of Mistletoe Hall, said monument also being

TALBOT COUNTY CIRCUIT COURT (Land Records) MAS 743, p. 0705, MSA_CE91_680. Date available 10/20/2003. Printed 08/30/2023.

EXHIBIT "A"
TO DEED BY AND BETWEEN TALBOT COUNTY, MARYLAND,
AS GRANTOR, AND THE TOWN OF EASTON, AS GRANTEE

a corner of Easton Municipal Airport. Thence with the former boundary between Easton Municipal Airport and Mistletoe Hall, the following two courses: (1) North eleven degrees, nine minutes, thirty-six seconds West, five hundred fifty-two and eighty-eight one hundredths feet

(1) N 11° 09′ 36" W 552.88 ft.

to a concrete monument marked "EAP 28"; (2) North seventy-five degrees, twenty-seven minutes, twenty-four seconds West, four hundred fifty-one and thirty-five one hundredths feet

(2) N 75° 27′ 24" W 451.35 ft.

to a concrete monument set on the boundary line between Mistletoe Hall and Easton Municipal Airport at a distance of seven hundred fifty (750) feet, measured at right angles, from the centerline of runway 15-33; Thence: (3) with the newly established boundary line between Easton Municipal Airport and Mistletoe Hall, South thirty-nine degrees, forty minutes, twenty-one seconds East, eight hundred fifty-one and ninety-six one hundredths feet

(3) S 39° 40′ 21" E 851.96 ft.

to the place of beginning, containing two and five hundred eighty-one one thousandths (2.581) acres of land.

BEING a portion of the same property conveyed to Talbot County, Maryland by a Deed dated September 28, 1976 from the Town of Easton, and recorded among the Land Records of Talbot County, Maryland at Liber 506, folio 218.

CERTIFICATION IS MADE THAT ALL TAXES DUE ON THE PROPERTY INDICATED IN THIS DEED HAVE BEEN PAID.
FINANCE OFFICER OF TALBOT COUNTY
BLENDA W. ARMISTEAD, FIN. OFFICER
DATE 1/26/93

THIS IS TO CERTIFY THAT THE PROPERTY INDICATED HEREIN HAS BEEN TRANSFERED ON THE ASSESSOR'S RECORDS OF TALBOT COUNTY.
HENRY V. TRIPPE, JR.
SUPERVISOR OF ASSESSMENTS
PER BLENDA W. ARMISTEAD, FIN. OFFICER
1/26/93

LIBER 0743 FOLIO 706

TALBOT COUNTY CIRCUIT COURT (Land Records) MAS 743, p. 0706, MSA_CE91_680. Date available 10/20/2003. Printed 08/30/2023.

CONCEPT STORMWATER MANAGEMENT REPORT

For

Vetagro
Easton, Maryland

Developer

APEG International, Inc.
c/o Eugenia Helloni
17 East Monroe Street, Suite 179
Chicago, IL 60603

Design Professional

Lane Engineering, LLC
117 Bay Street
Easton, Maryland 21601
410-822-8003

Date Prepared

November 1, 2023

Date Revised

N/A

Prepared by

Alec F. Chosta, E.I.T.
Civil Engineer

Timothy W. Glass, P.E.

STATE OF MARYLAND
TIMOTHY WILSON GLASS
23152
PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION: I hereby certify that this document was prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 23152, Expiration Date: 7/5/25

TABLE OF CONTENTS

SECTIONS LIST

1. Introduction
2. General Site Information
3. Proposed Project
4. Environmental Site Design (ESD)
   4.1 Quantity
   4.2 Quality
      4.2.1 ESD Practices
5. Conclusion

APPENDIX LIST

APPENDIX A – Maryland Environmental Site Design (ESD) Calculations
APPENDIX B – HydroCAD Quantity Analysis
APPENDIX C – Drainage Area Maps

ATTACHMENT LIST

Stormwater Management Submittal Checklist

Vetagro
STORMWATER MANAGEMENT REPORT

1. INTRODUCTION

This report addresses stormwater management for development of the vacant property, Lots 2 & 3, of the Mistletoe Hall Commerce-Business Park. The stormwater management plan incorporates the requirements of the *2000 Maryland Stormwater Design Manual Volumes I and II* (Manual) as currently updated. Stormwater projects are required to be reviewed during the concept, preliminary site development and final design stages. This narrative addresses the requirements pertaining to the concept design stage and meets the intent of the guidelines and methodologies presented in the MDE document *Environmental Site Design (ESD) Process & Computations* dated July 2010.

2. GENERAL SITE INFORMATION

Lots 2 & 3 are to be consolidated into a single property and will be comprised of approximately 13.2 acres to be developed to house Vetagro, an international food & feed company. The proposed development is located entirely outside the Chesapeake Bay Critical Area. This vacant lot predominantly consists of agricultural fields, with onsite drainage patterns split between the surrounding regional drainage channel "Glebe Creek" and swales along the south and western portion of the property. The site is also subject to non-tidal wetlands, and various associated buffers.

The property is a constituent of the Town-owned Mistletoe Hall Industrial Park and is bounded to the north and south of the site by additional utility easements protecting water, gas, sewer, and electric transmission mains.

According to the USDA soil maps, site soils are a mixture of Elkton and Othello Silt Loams (Group C/D), Mattapex and Woodstown loams (Group C), and Hambrook (Group B). For more conservative calculations all predevelopment C/D soils are assumed to act in the drained, Group C, condition.

3. PROPOSED PROJECT

The proposed development will consist of phased activities. The initial phase will create a 51,187 SF warehouse & manufacturing space accompanied by 6,695 SF office space with 55 parking spaces. The parking provided is a reduction from the 80 spaces typically required by town standards as the company only anticipates between 25 to 45 employees with limited public access. An extensive truck loading and parking area will be included behind the warehouse to facilitate operations.

Future phases anticipate the creation of additional office space, parking, and warehouse & manufacturing. This report also addresses stormwater requirements for these improvements to current standards, however, depending on final permitting and construction, these structures may be subject to expanded treatment and/or quantitative targets as outlined in the draft "Proposed Stormwater Management Regulatory Requirements for New Development and Redevelopment in Maryland", dated July 26, 2023. It is unclear at the time of this report what portion of these draft regulations will become enforceable design standards.

4. ENVIRONMENTAL SITE DESIGN (ESD)

ESD requirements must be addressed for the project's limits of disturbance (LOD), which is conservatively assumed to consist of the entire property (574,339 SF) – there are small pockets of the property that will remain undisturbed around the perimeter that are not worth quantifying in this context.

The proposed buildings, parking, and loading areas in all phases result in approximately 309,798 SF (7.11 acres) of impervious cover (53.24%). Utilizing table 5.3 and onsite soil conditions, a target P_E of 1.8" results in an ESD target volume of **46,130 cf.**

In accordance with the Manual, available ESD techniques i.e. Alternative Surfaces, Non-Structural and Micro-Scale Practices were evaluated for use at the site. Considering the proposed site conditions, i.e. location, topography, facility orientation, soil properties, ground water elevation, traffic, economics, use of facility, construction constraints, neighboring properties and available stormwater discharge locations, the following ESD practices are proposed for the site:

- Micro-BioRetentions (MBR)
- Submerged Gravel Wetland (SGW)
- Bio-Swale (BSW)

See Appendix A for calculations.

4.1 STORMWATER QUANTITY

The existing site, consisting of agricultural use, breaks into two separate drainage areas and study points. These drainage areas ultimately discharge to either an existing drainage swale on the western property line or directly to Glebe Creek, located to the east of the project site.

Analysis verifies that management of the 2 and 10-year storms is achieved in the proposed stormwater features. These consist of a combination of micro-bioretentions, wet swales (for conveyance of micro-bioretention overflow only), a bio-swale, and a future submerged gravel wetland for the additional warehouse space.

In an effort to anticipate a portion of the draft requirements being discussed at the Maryland Department of the Environment and to simplify both quantitative and qualitative calculations all post-development soils are assumed to be Hydrologic Soil Group D.

	2 Year Storm (cfs)		**10 Year Storm (cfs)**		**100 Year Storm (cfs)**	
	Pre	**Post**	**Pre**	**Post**	**Pre**	**Post**
Study Point 1	8.35	1.50	17.12	13.34	28.24	33.42
Study Point 2	2.82	1.20	6.38	6.15	11.10	28.32
TOTAL	11 .17	2.70	23.50	19.49	39.34	61.74
NET REDUCTION	**8.47**		**4.01**		**(-22.40)**	

Please see Appendix B for HydroCAD calculations and Appendix C for Drainage Area Maps.

4.2 STORMWATER QUALITY

The project is broken into 15 primary drainage areas to be treated with downstream ESD practices and four “Residual” (RD-#) greenspace areas where grading is to be conducted to facilitate construction but no impervious surface is to be created, therefore no individual drainage area ESD targets are assessed in these locations. Drainage areas where future improvements are to be constructed are identified using (FT-#) while those that include strictly Phase 1 improvements are labeled as (PR-#). See appendix A for ESD calculations and Appendix B for HydroCAD diagram and analysis.

Due to regulatory restrictions on the allowable contributing drainage area to a single micro-bioretention (limited to 20,000 SF) a complex network of roof leaders & curbing will be utilized to break apart site drainage into compliant discrete cells. While more difficult for construction in this configuration, micro-bioretentions offer more effective and economical treatment of runoff per square foot as media voids are included in ESD volumes, typically between 24 and 36 inches. Such practices also more readily promote infiltration & recharge of the groundwater table. The micro-bioretention cells are designed to overflow and discharge to a shared wet swale for conveyance and additional attenuation to POI #1.

The future phase warehouse is of unknown configuration for downspouts and roofing layout, therefore a Submerged Gravel Wetland, without an overall contributing drainage area restriction, is proposed. While more flexible from a regulatory perspective, this practice may not represent the most cost-effective treatment method once additional building details are determined. Void space in the media does not contribute to ESD volumes and the washed aggregate (#57 stone or similar) media is cost intensive at this scale.

Finally, the primary site entrance will be treated using a Bio-Swale. This lineal practice will parallel the road surface, utilize 2' of micro-bioretention media, and provide 6 inches of temporary ponding compared to the 1' of ponding in all micro-bioretentions onsite.

Creating complaint, yet cost effective, ESD features represents a significant design challenge for projects of this scale where impervious surfaces in excess of an acre concentrate runoff to a single portion of the site. The current building and loading area configuration does not readily lend itself to the majority of practices currently described in Chapter 5 unless complex drainage schemes are employed.

4.2.1 ESD PRACTICES

ESD practices were evaluated for applicability to the site:

Alternative Surfaces

- Green Rooftops – the project economics do not readily allow for the use of green roofs; green roofs on multi-story structures may prove more difficult to access and maintain.
- Permeable Pavements – Alternative surfaces are ideal for in-town redevelopment scenarios or similar projects; however, at an industry quoted $25 per square foot of install, they do not represent the most cost effective form of treatment for projects where there is sufficient room to construct other practices.
- Reinforced Turf - Reinforced turf areas are commonly used for emergency equipment access or for areas that receive minimal vehicular use. Emergency equipment can service the building using the paved surfaces designed for the site needs, and additional access areas are not necessary.

Nonstructural practices

- Disconnection of Rooftop Runoff – Due to slopes exceeding 5% in adjacent open space areas adjacent to the building, the large size of the building roof, and the spatial limitations of the property, disconnection of rooftop runoff is not feasible.
- Disconnection of Non-Rooftop Runoff – As an in-town property with relatively high density, there is limited opportunity and space to implement this practice.
- Sheetflow to Conservation Area – Existing open space areas adjacent to the site do not meet slope constraints for the ideal implementation of this practice.

Micro-scale practices

- Rainwater Harvesting – Opportunities for on-site reuse of harvested rainwater is limited. Irrigation is not proposed for the site. Operations and maintenance, especially during cold-weather periods, is also a concern.
- **Submerged Gravel Wetlands –** This practice is best suited for sites with a high groundwater table and large drainage areas. Depending on future soil testing, a liner may be required. The future warehouse will utilize this practice subject to additional evaluation upon a refined building design.
- Landscape Infiltration – the soils on-site are predominantly mapped as group C at the surface level, and would not be ideal for this practice.
- Infiltration Berms – the soils on-site are mapped as group C at the surface level, and would not be ideal for this practice.

- Dry Wells – the proposed drainage areas exceed the 1,000 sf limit for dry wells.
- **Micro Bio-Retention** – This practice can be easily configured to fit the spatial constraints of the site, provides excellent water quality treatment, and quantity reduction. The 20,000 SF limitation can be met by utilizing curb openings to break apart large drainage surfaces into smaller, compliant, areas.
- Rain Gardens – Given the extensive impervious surfaces, this practice's drainage area restrictions (10,000 sf max) prevent effective implementation.
- **Grass & Bio-Swales** –Wet swales are proposed for quantity management and will dewater utilizing a low-flow orifice. These practices are not credited for ESD volume but rather are intended to serve as conveyance only. A Bio-Swale is also being proposed to treat a portion of the site's access road at the property entrance.

A combination of practices centered around the dominant use of Micro Bio-Retentions, a Submerged Gravel Wetland, Bio-Swales and Wet Swales are required for this site. The majority of the Micro Bio-Retentions are along the southern property boundary with curbing and roof leaders delivering runoff to the facilities in a complaint manner. The total ESD volume provided is **56,283 CF.**

5. CONCLUSION

This stormwater management analysis indicates that the proposed design will successfully meet stormwater quality and quantity requirements. Referring to the attached water quality calculations, the computed ESDv provided is greater than the ESDv required. Planning and design analysis indicates that stormwater quality and quantity management can be accomplished as described.

APPENDIX A

MARYLAND ENVIRONMENTAL SITE DESIGN (ESD) CALCULATIONS

Maryland Environmental Site Design (ESD) Computations

Project	Vetagro	By	AFC	Job #	230407
Location	Mistletoe Hall Farm - Lots 2 & 3	Date	10/27/2023	File #	A037

Determine if the Project is subject to Redevelopment Requirements:

Site Area =	13.2	ac
Net Site Area =	13.2	ac
Existing Imp. Area =	0	ac
Percent Impervious (I) =	0	%

I <40%. Project Not subject to Redevelopment requirements.

Step 1 - Determine Stormwater Management Requirements

Initial Site Assessment (Site Data):

Existing Conditions

Total Disturbance Area: 574,351 sf

Soil Types:

HSG	A	B	C	D
Area		256,660	317,690	
Percent		44.7	55.3	

Proposed Layout

Impervious Cover: 309,798 sf

Percent Impervious (I) 54 %

Determine RCNs for Wooded Conditions:

HSG	A	B	C	D
Area		256,660	317,690	
Percent		44.7	55.3	
RCN	38	55	70	77

Weighted RCN: **63**

Determine ESD Targets:

Rv = 0.05 +0.009(I)
= 0.54

From Table 5.3 and
%I = 54

HSG	A	B	C	D
Area		256,660	317,690	
Target P_E		1.8	1.8	

Composite Target P_E (in.): **1.80**

$$ESDv = \frac{(P_E)(Rv)(A)}{12}$$

= **46,130** **cf**

Step 2 - Preliminary ESD Options

Please refer to the Stormwater Management Report

Step 3 - ESD Design

Evaluation of specific ESD treatment practices for the project on the following sheets.

Drainage Area #1 MBR-1

Total Area	20,108	sf	Target ESDv = $\frac{(P_F)(Rv)(A)}{12}$	
Impervious Area	10,212	sf		
Percent Impervious (I)	51	%	=	1,529 cf
Rv = 0.05 +0.009(I)	0.51		75% of target=	1,147 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{2{,}379\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **3,767 cf**

Surface Area=	1,868	sf	Media Depth=	2	ft
Ponding Area=	2,678	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,379 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	246%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	9.3%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #2 MBR-2

Total Area	20,028	sf	Target ESDv =	$\frac{(P_F)(Rv)(A)}{12}$
Impervious Area	11,748	sf		
Percent Impervious (I)	59	%	=	1,736 cf
Rv = 0.05 +0.009(I)	0.58		75% of target=	1,302 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{2{,}701\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **2,878 cf**

Surface Area=	1,387	sf	Media Depth=	2	ft
Ponding Area=	2,150	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,701 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	166%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	6.9%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #3 MBR-3

Total Area	19,717	sf	Target ESDv =	$\frac{(P_F)(Rv)(A)}{12}$
Impervious Area	10,693	sf		
Percent Impervious (I)	54	%	=	1,591 cf
Rv = 0.05 +0.009(I)	0.54		75% of target=	1,194 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{2,476\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **2,464 cf**

Surface Area=	1,193	sf	Media Depth=	2	ft
Ponding Area=	1,826	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,464 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	155%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	6.1%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #4 MBR-4

Total Area	17,821	sf	Target ESDv =	$\frac{(P_F)(Rv)(A)}{12}$
Impervious Area	13,313	sf		
Percent Impervious (I)	75	%	=	1,931 cf
Rv = 0.05 +0.009(I)	0.72		75% of target=	1,448 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{3{,}004\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **2,449 cf**

Surface Area=	1,197	sf	Media Depth=	2	ft
Ponding Area=	1,786	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,449 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	127%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	6.7%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #5 MBR-5

Total Area	20,039	sf	Target ESDv =	$\frac{(P_F)(Rv)(A)}{12}$
Impervious Area	14,376	sf		
Percent Impervious (I)	72	%	=	2,091 cf
Rv = 0.05 +0.009(I)	0.70		75% of target=	1,568 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{3{,}253\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **3,795 cf**

Surface Area=	1,878	sf	Media Depth=	2	ft
Ponding Area=	2,708	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **3,253 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	182%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	9.4%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #6 MBR-6

Total Area	18,265	sf	Target ESDv =	$\frac{(P_F)(Rv)(A)}{12}$
Impervious Area	13,521	sf		
Percent Impervious (I)	74	%	=	1,962 cf
Rv = 0.05 +0.009(I)	0.72		75% of target=	1,472 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{3{,}053\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **2,449 cf**

Surface Area=	1,197	sf	Media Depth=	2	ft
Ponding Area=	1,786	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,449 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	125%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	6.6%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #7 MBR-7

Total Area	20,000	sf	Target ESDv =	$\frac{(P_E)(Rv)(A)}{12}$
Impervious Area	16,391	sf		
Percent Impervious (I)	82	%	=	2,363 cf
Rv = 0.05 +0.009(I)	0.79		75% of target=	1,772 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{3,675\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **2,800 cf**

Surface Area=	1,138	sf	Media Depth=	3	ft
Ponding Area=	1,731	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,800 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	119%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	5.7%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #8 MBR-8

Total Area	19,546	sf	Target ESDv =	$\frac{(P_F)(Rv)(A)}{12}$
Impervious Area	15,507	sf		
Percent Impervious (I)	79	%	=	2,240 cf
Rv = 0.05 +0.009(I)	0.76		75% of target=	1,680 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{3,485\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **2,800 cf**

Surface Area=	1,138	sf	Media Depth=	3	ft
Ponding Area=	1,731	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,800 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	125%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	5.8%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #9 MBR-9

Total Area	20,227	sf	Target ESDv =	$\frac{(P_F)(Rv)(A)}{12}$
Impervious Area	16,621	sf		
Percent Impervious (I)	82	%	=	2,396 cf
Rv = 0.05 +0.009(I)	0.79		75% of target=	1,797 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{3,726\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **2,800 cf**

Surface Area=	1,138	sf	Media Depth=	3	ft
Ponding Area=	1,731	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,800 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	117%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	5.6%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #10 MBR-10

Total Area	20,592	sf	Target ESDv =	$\frac{(P_F)(Rv)(A)}{12}$	
Impervious Area	16,865	sf			
Percent Impervious (I)	82	%	=	2,431	cf
Rv = 0.05 +0.009(I)	0.79		75% of target=	1,823	cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{3{,}782\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **2,800 cf**

Surface Area=	1,138	sf	Media Depth=	3	ft
Ponding Area=	1,731	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,800 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	115%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	5.5%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #11 MBR-11

Total Area	19,809	sf	Target ESDv =	$\frac{(P_F)(Rv)(A)}{12}$
Impervious Area	16,181	sf		
Percent Impervious (I)	82	%	=	2,333 cf
Rv = 0.05 +0.009(I)	0.79		75% of target=	1,750 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{3{,}629\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **2,800 cf**

Surface Area=	1,138	sf	Media Depth=	3	ft
Ponding Area=	1,731	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,800 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	120%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	5.7%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #12 BSW-12

Total Area	31,340	sf	Target ESDv =	$\frac{(P_F)(Rv)(A)}{12}$
Impervious Area	8,533	sf		
Percent Impervious (I)	27	%	=	1,387 cf
Rv = 0.05 +0.009(I)	0.30		75% of target=	1,040 cf

Site Development Design - BioSwale (M-8)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{2{,}158\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **2,279 cf**

Surface Area=	1,521	sf	Media Depth=	2	ft
Ponding Area=	2,728	sf			
Ponding depth=	0.5	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,158 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ BioSwale practices shall capture and store at least 75% of the ESDv.	164%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	4.9%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

FT-13 DRAINAGE AREA

Determine Stormwater Management Requirements

Initial Site Assessment (Site Data):

Total Drainage Area: 190,511 sf 4.37 ac

Soil Types:

HSG	A	B	C	D
Area				190,511
Percent				100.0

Proposed Layout

Pervious Cover: 67,299 sf

Impervious Cover: 123,212 sf 2.83 ac

Percent Impervious (I) 65 %

Determine RCNs for Wooded Conditions:

HSG	A	B	C	D
Area				190,511
Percent	0.0	0.0	0.0	100.0
RCN	38	55	70	77

Weighted RCN: **77**

Proposed Site Development Design - Submerged Gravel Wetland (M-2)

The computed ESD_v provided is:

Area at Surface of Filter Media = 11,511 sf

Media Depth = 1.50 ft

Porosity = 0

Area at Ponding Depth Surface for ESD_v = 14,884 sf

Ponding Depth = 1.50 ft

ESD_v = (Ponding storage)

= **19,796 cf** (Provided)

ESD REQ 18,482 **cf**

Check for compliance with design criteria:

Submerged Gravel Wetland Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to practice is large to maintain submerged flow	✓
_ Appropriate soils and/or high groundwater is present	✓
_ Section dimensions of soil media layers greater than minimum	✓
_ Distribution and collection piping / underdrains provided	✓
_ Flow paths through gravel greater than 15 ft	✓
_ Riser pipes provided and spaced at 15 ft or less apart	✓
_ Cleanouts provided	✓

Drainage Area #14 MBR-14

Total Area	19,592	sf	Target ESDv =	$\frac{(P_F)(Rv)(A)}{12}$
Impervious Area	12,850	sf		
Percent Impervious (I)	66	%	=	1,882 cf
Rv = 0.05 +0.009(I)	0.64		75% of target=	1,411 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{2{,}927\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **2,280 cf**

Surface Area=	1,100	sf	Media Depth=	2	ft
Ponding Area=	1,699	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,280 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	121%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	5.6%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #15 MBR-15

Total Area	17,905	sf	Target ESDv =	$\frac{(P_F)(Rv)(A)}{12}$
Impervious Area	10,217	sf		
Percent Impervious (I)	57	%	=	1,514 cf
Rv = 0.05 +0.009(I)	0.56		75% of target=	1,135 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{2{,}354\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **3,795 cf**

Surface Area=	1,878	sf	Media Depth=	2	ft
Ponding Area=	2,708	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,354 cf.**

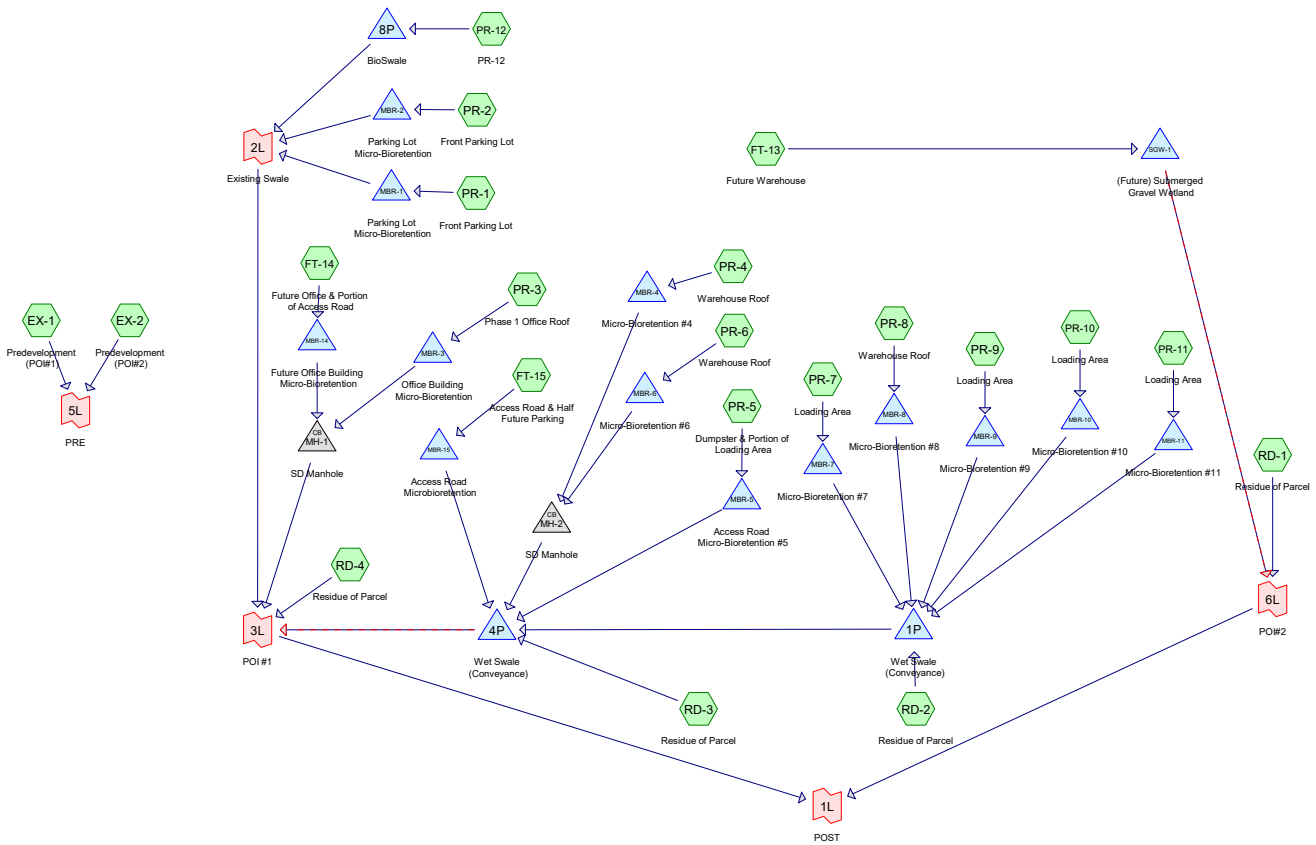
Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	251%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	10.5%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Feature #	Drainage Area (DA)	DA Target	DA Provided	Exceeded by
1	Drainage Area #1 MBR-1	1,529	2379	850
2	Drainage Area #2 MBR-2	1,736	2701	965
3	Drainage Area #3 MBR-3	1,591	2464	872
4	Drainage Area #4 MBR-4	1,931	2449	518
5	Drainage Area #5 MBR-5	2,091	3253	1162
6	Drainage Area #6 MBR-6	1,962	2449	487
7	Drainage Area #7 MBR-7	2,363	2800	437
8	Drainage Area #8 MBR-8	2,240	2800	560
9	Drainage Area #9 MBR-9	2,396	2800	405
10	Drainage Area #10 MBR-10	2,431	2800	369
11	Drainage Area #11 MBR-11	2,333	2800	467
12	Drainage Area #12 BSW-12	1,387	2158	771
13	Drainage Area #13 SGW-13	18,482	19796	1314
14	Drainage Area #14 MBR-14	1,882	2280	398
15	Drainage Area #15 MBR-15	1,514	2354	841
		Total Provided	**56,283**	
		Site Target	46,130	

APPENDIX B

HydroCAD Quantity Analysis



Subcat Reach Pond Link

Routing Diagram for 230407-Vetagro
Prepared by Lane Engineering, LLC, Printed 10/30/2023
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

Summary for Subcatchment EX-1: Predevelopment (POI#1)

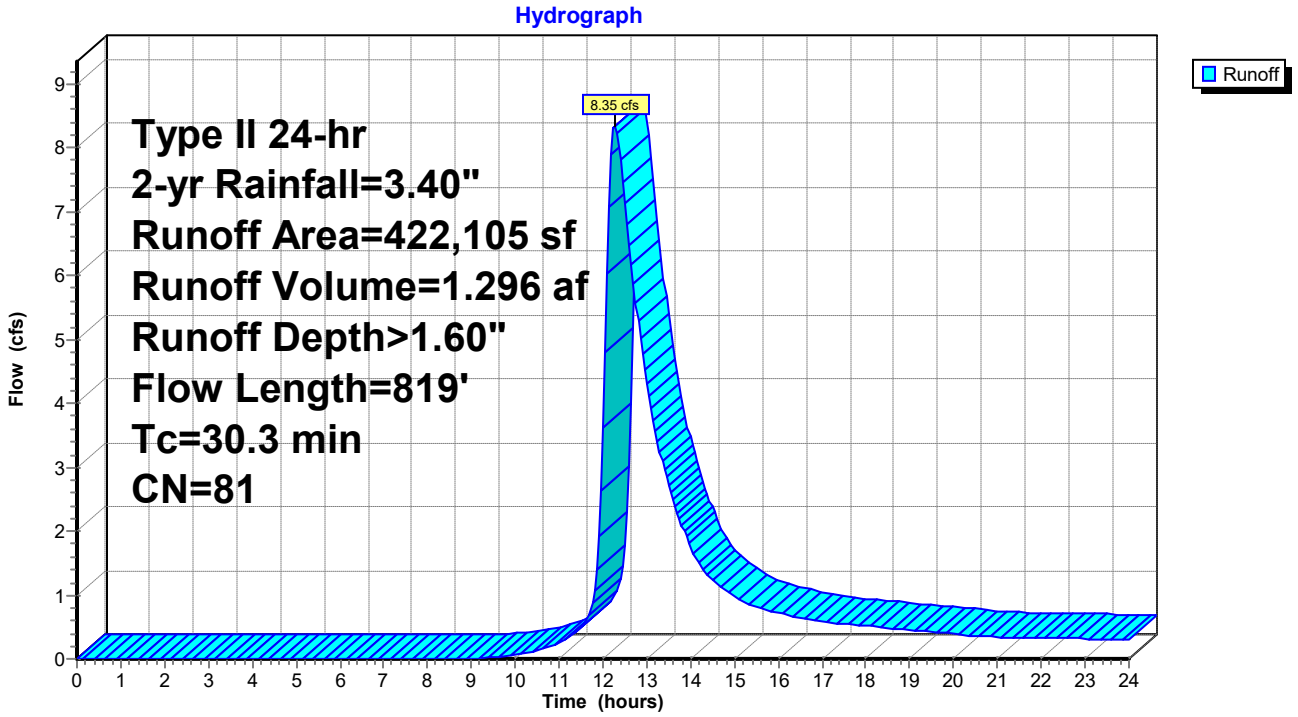
Runoff = 8.35 cfs @ 12.28 hrs, Volume= 1.296 af, Depth> 1.60"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

Area (sf)	CN	Description
300,286	83	Small grain, straight row, Good, HSG C
121,819	75	Small grain, straight row, Good, HSG B
422,105	81	Weighted Average
422,105		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	150	0.0085	0.12		**Sheet Flow, AG FIELD** Cultivated: Residue>20% n= 0.170 P2= 3.40"
9.8	669	0.0160	1.14		**Shallow Concentrated Flow, AG FIELD** Cultivated Straight Rows Kv= 9.0 fps
30.3	819	Total			

Subcatchment EX-1: Predevelopment (POI#1)



Summary for Subcatchment EX-2: Predevelopment (POI#2)

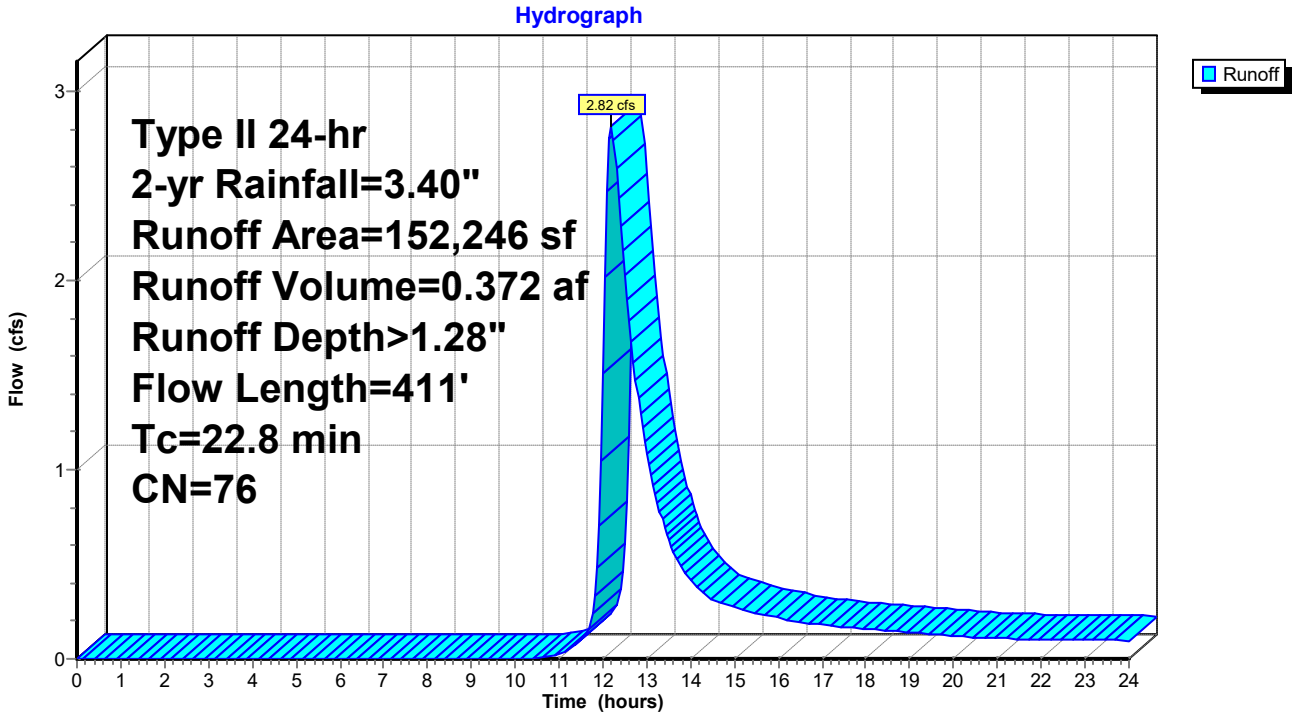
Runoff = 2.82 cfs @ 12.20 hrs, Volume= 0.372 af, Depth> 1.28"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

Area (sf)	CN	Description
17,404	83	Small grain, straight row, Good, HSG C
134,842	75	Small grain, straight row, Good, HSG B
152,246	76	Weighted Average
152,246		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	150	0.0100	0.13		**Sheet Flow, AG Field** Cultivated: Residue>20% n= 0.170 P2= 3.40"
3.6	261	0.0185	1.22		**Shallow Concentrated Flow, AG FIELD** Cultivated Straight Rows Kv= 9.0 fps
22.8	411	Total			

Subcatchment EX-2: Predevelopment (POI#2)



Summary for Subcatchment FT-13: Future Warehouse

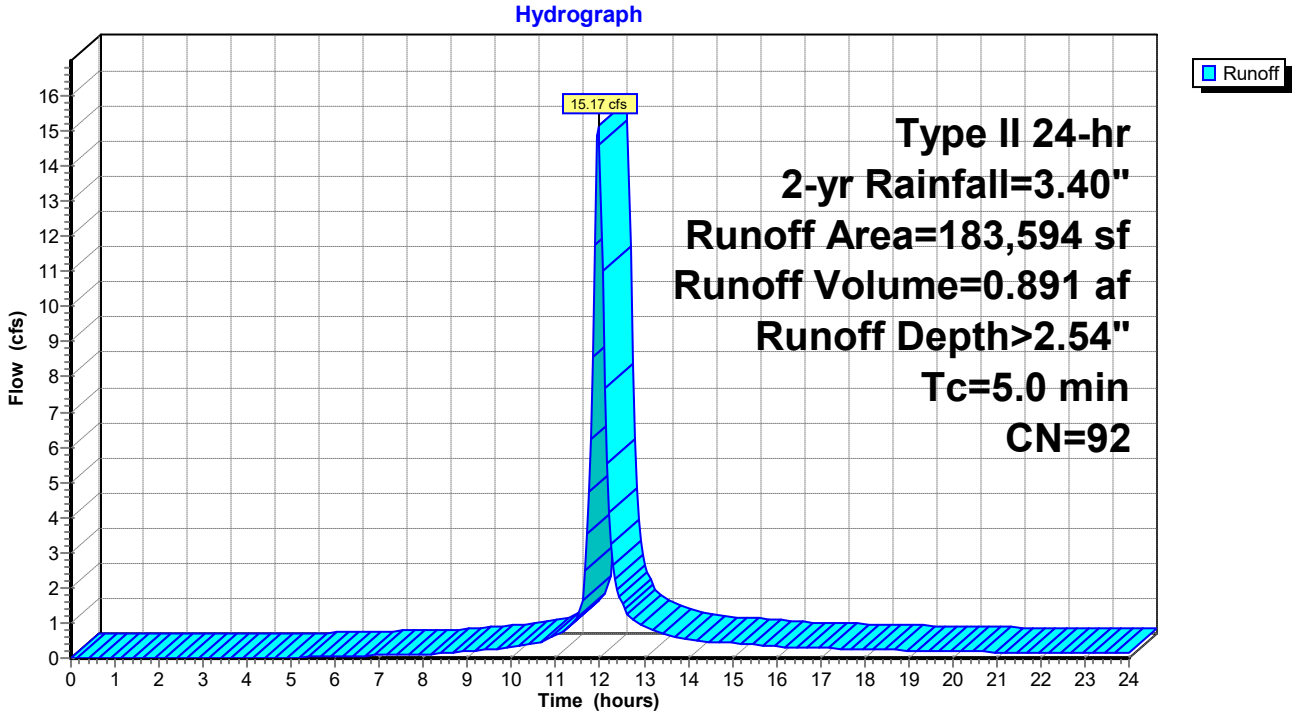
Runoff = 15.17 cfs @ 11.97 hrs, Volume= 0.891 af, Depth> 2.54"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	20,553	98	Access Road & Scale
*	80,328	98	Future Phase 2 Building
*	21,876	98	Future Phase 2 Truck Parking
	60,837	80	>75% Grass cover, Good, HSG D
	183,594	92	Weighted Average
	60,837		33.14% Pervious Area
	122,757		66.86% Impervious Area

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

Subcatchment FT-13: Future Warehouse



Summary for Subcatchment FT-14: Future Office & Portion of Access Road

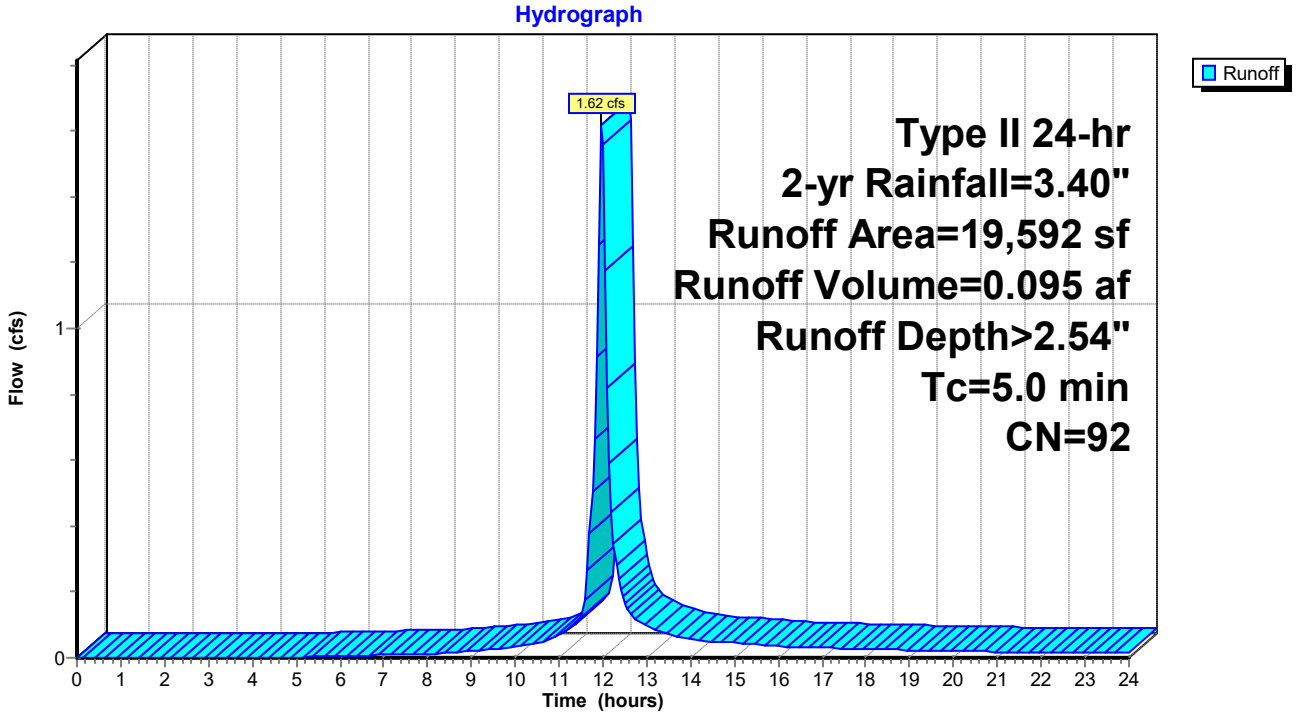
Runoff = 1.62 cfs @ 11.97 hrs, Volume= 0.095 af, Depth> 2.54"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	3,288	98	Access Road
*	9,562	98	Future Office Building
	6,742	80	>75% Grass cover, Good, HSG D
	19,592	92	Weighted Average
	6,742		34.41% Pervious Area
	12,850		65.59% Impervious Area

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

Subcatchment FT-14: Future Office & Portion of Access Road



Summary for Subcatchment FT-15: Access Road & Half Future Parking

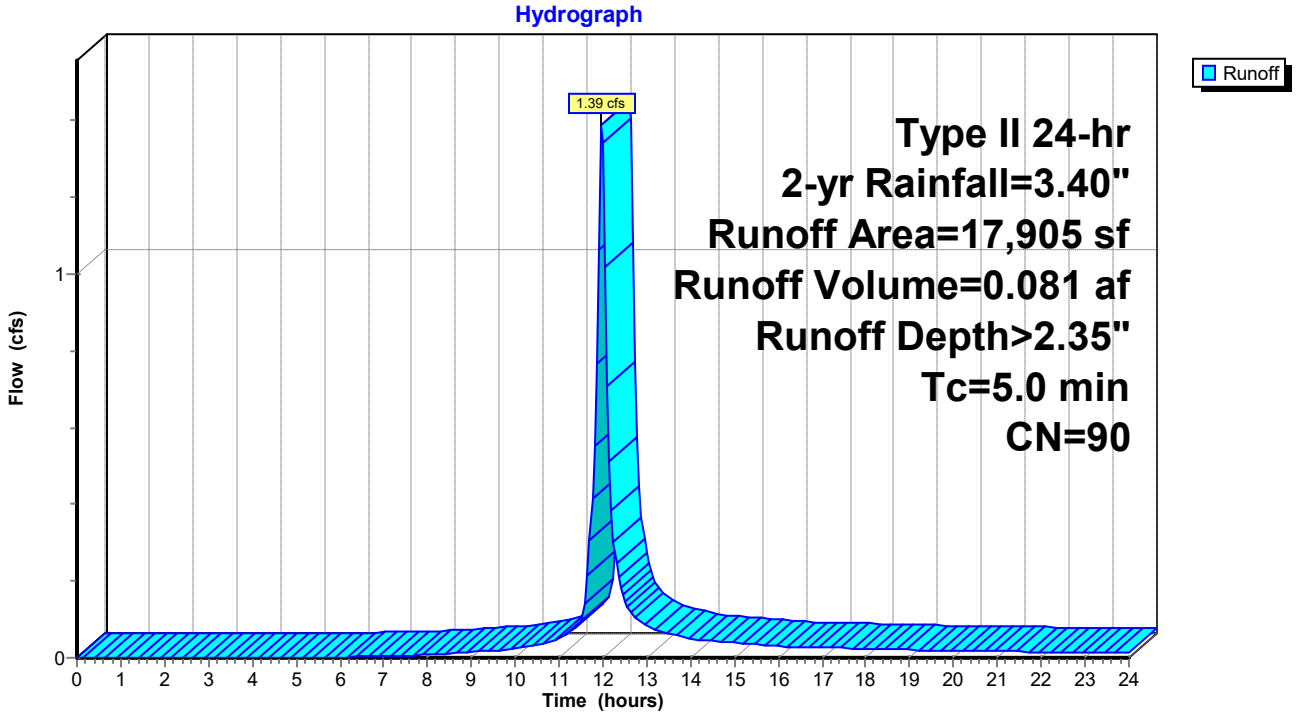
Runoff = 1.39 cfs @ 11.97 hrs, Volume= 0.081 af, Depth> 2.35"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	4,739	98	Half Future Parking
*	5,478	98	Access Road
	7,688	80	>75% Grass cover, Good, HSG D
	17,905	90	Weighted Average
	7,688		42.94% Pervious Area
	10,217		57.06% Impervious Area

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

Subcatchment FT-15: Access Road & Half Future Parking



Summary for Subcatchment PR-1: Front Parking Lot

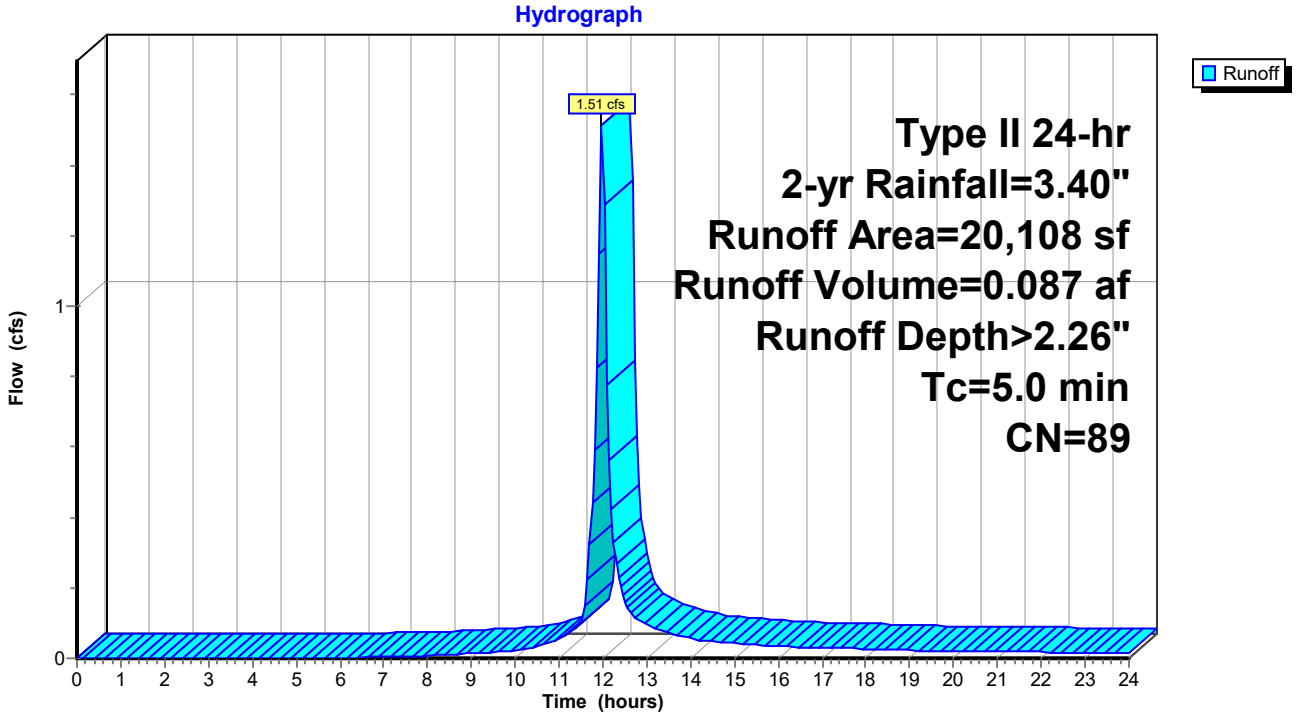
Runoff = 1.51 cfs @ 11.97 hrs, Volume= 0.087 af, Depth> 2.26"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	10,212	98	Parking Lot
	9,896	80	>75% Grass cover, Good, HSG D
	20,108	89	Weighted Average
	9,896		49.21% Pervious Area
	10,212		50.79% Impervious Area

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

Subcatchment PR-1: Front Parking Lot



Summary for Subcatchment PR-10: Loading Area

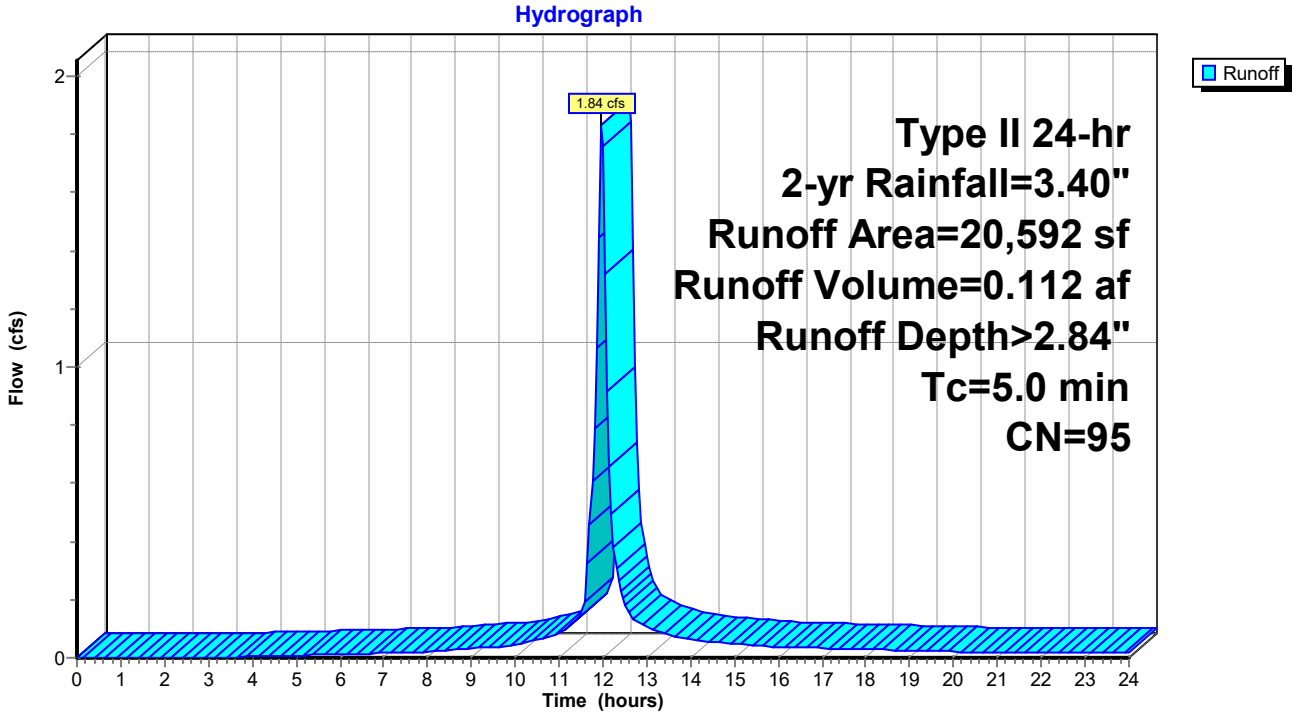
Runoff = 1.84 cfs @ 11.97 hrs, Volume= 0.112 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	7,672	98	Warehouse Roof
*	9,193	98	Loading Area
	3,727	80	>75% Grass cover, Good, HSG D
	20,592	95	Weighted Average
	3,727		18.10% Pervious Area
	16,865		81.90% Impervious Area

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

Subcatchment PR-10: Loading Area



Summary for Subcatchment PR-11: Loading Area

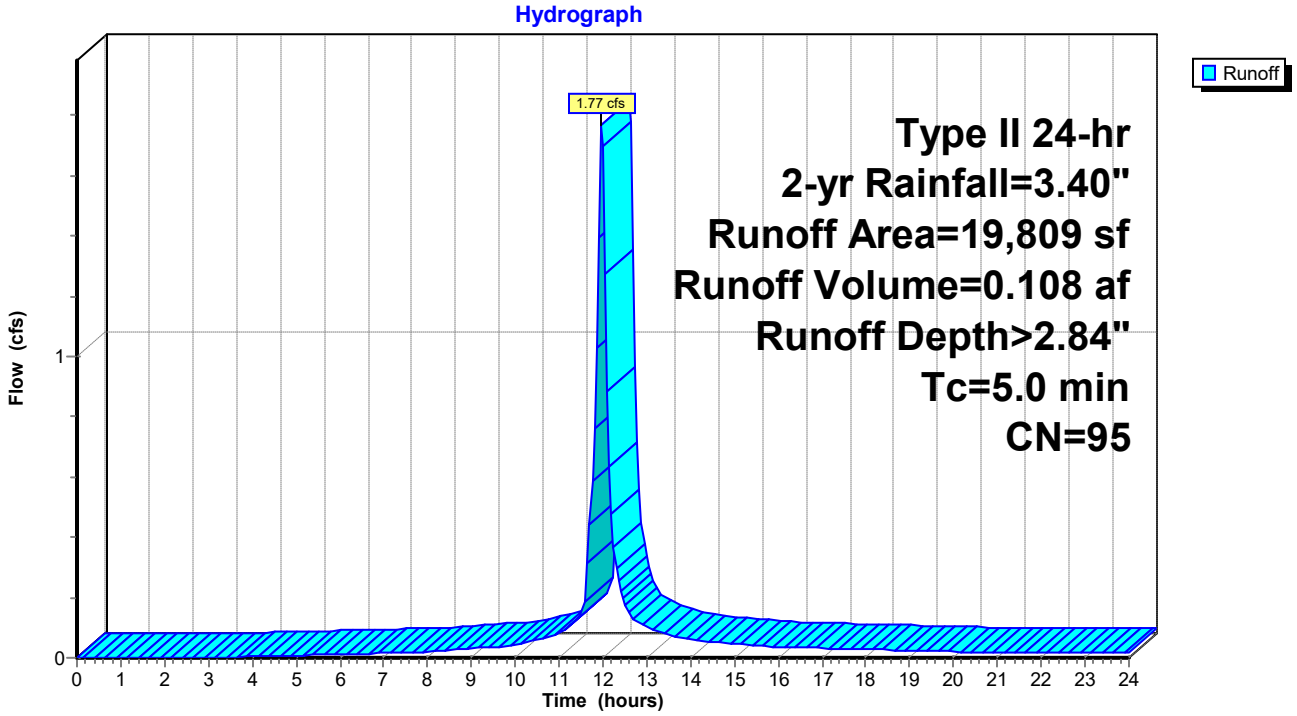
Runoff = 1.77 cfs @ 11.97 hrs, Volume= 0.108 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	1,792	98	Warehouse Roof
*	14,389	98	Loading Area
	3,628	80	>75% Grass cover, Good, HSG D
	19,809	95	Weighted Average
	3,628		18.31% Pervious Area
	16,181		81.69% Impervious Area

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

Subcatchment PR-11: Loading Area



Summary for Subcatchment PR-12: PR-12

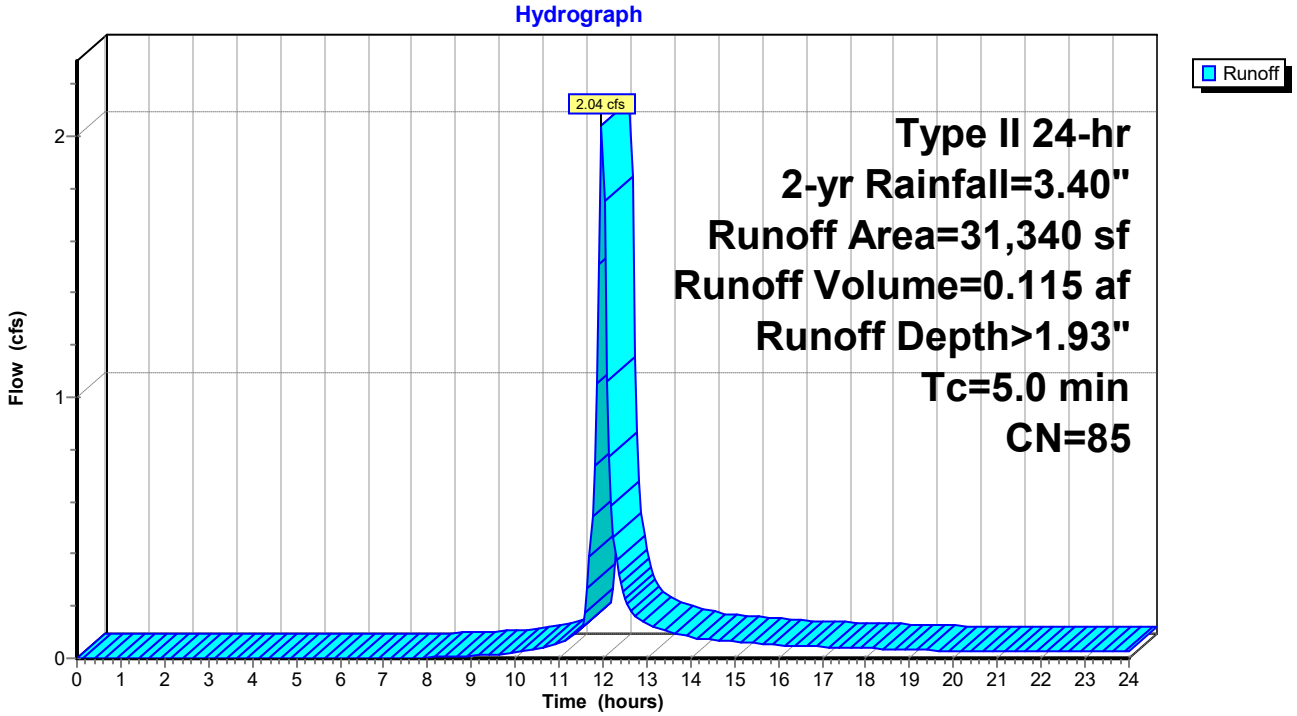
Runoff = 2.04 cfs @ 11.98 hrs, Volume= 0.115 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	22,807	80	>75% Grass cover, Good, HSG D
*	8,533	98	Access Aisle
	31,340	85	Weighted Average
	22,807		72.77% Pervious Area
	8,533		27.23% Impervious Area

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

Subcatchment PR-12: PR-12



Summary for Subcatchment PR-2: Front Parking Lot

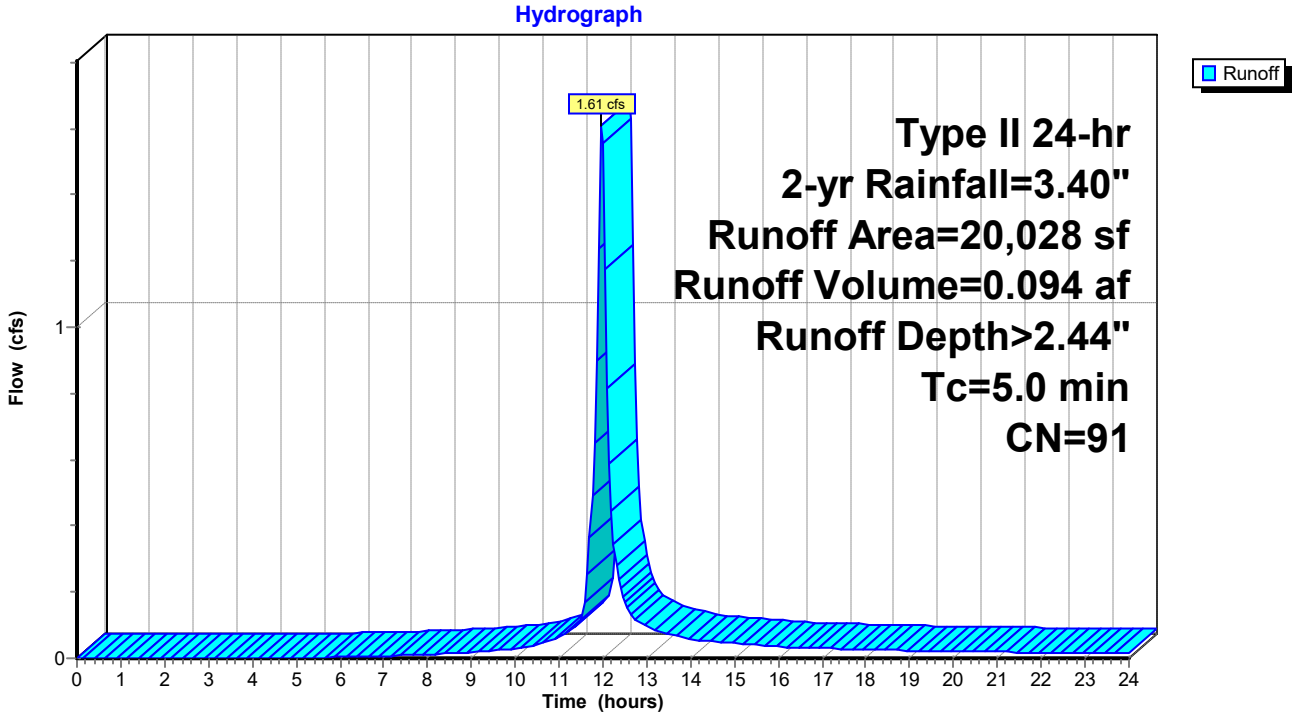
Runoff = 1.61 cfs @ 11.97 hrs, Volume= 0.094 af, Depth> 2.44"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	11,748	98	Parking Lot
	8,280	80	>75% Grass cover, Good, HSG D
	20,028	91	Weighted Average
	8,280		41.34% Pervious Area
	11,748		58.66% Impervious Area

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

Subcatchment PR-2: Front Parking Lot



Summary for Subcatchment PR-3: Phase 1 Office Roof

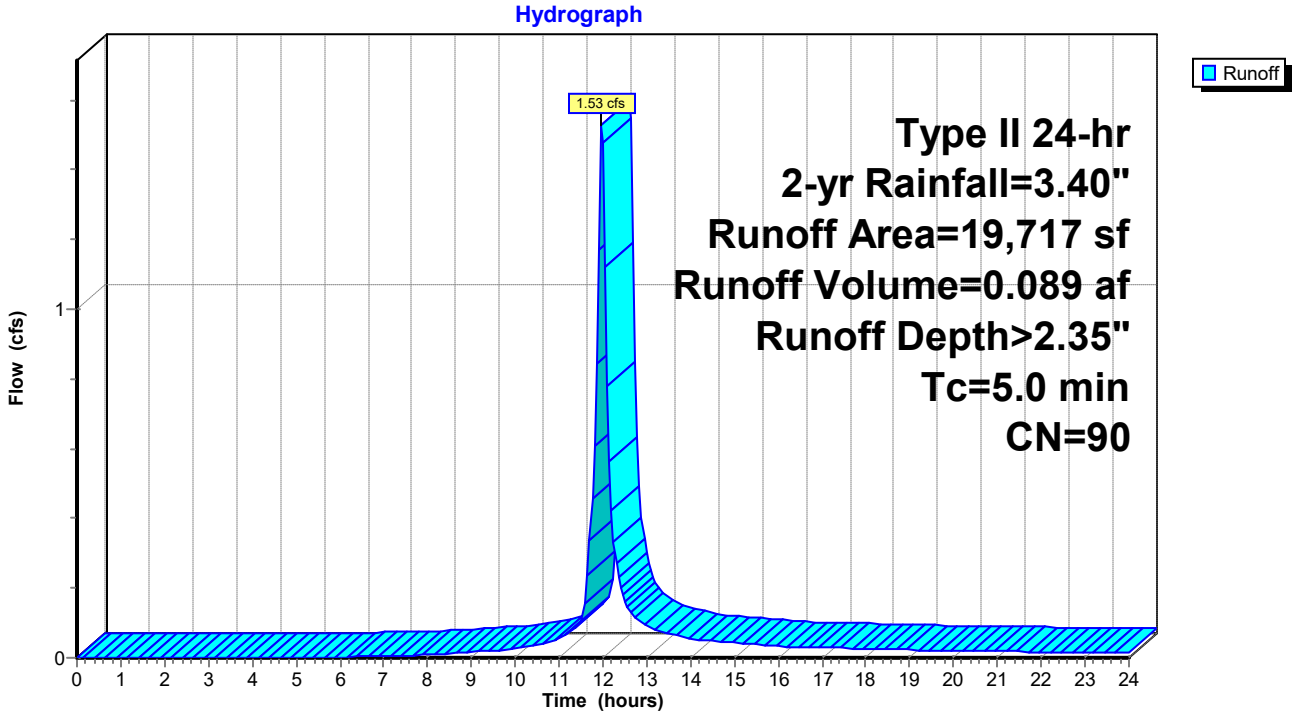
Runoff = 1.53 cfs @ 11.97 hrs, Volume= 0.089 af, Depth> 2.35"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	6,720	98	Office Building
*	3,973	98	Half Future Parking
	9,024	80	>75% Grass cover, Good, HSG D
	19,717	90	Weighted Average
	9,024		45.77% Pervious Area
	10,693		54.23% Impervious Area

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

Subcatchment PR-3: Phase 1 Office Roof



Summary for Subcatchment PR-4: Warehouse Roof

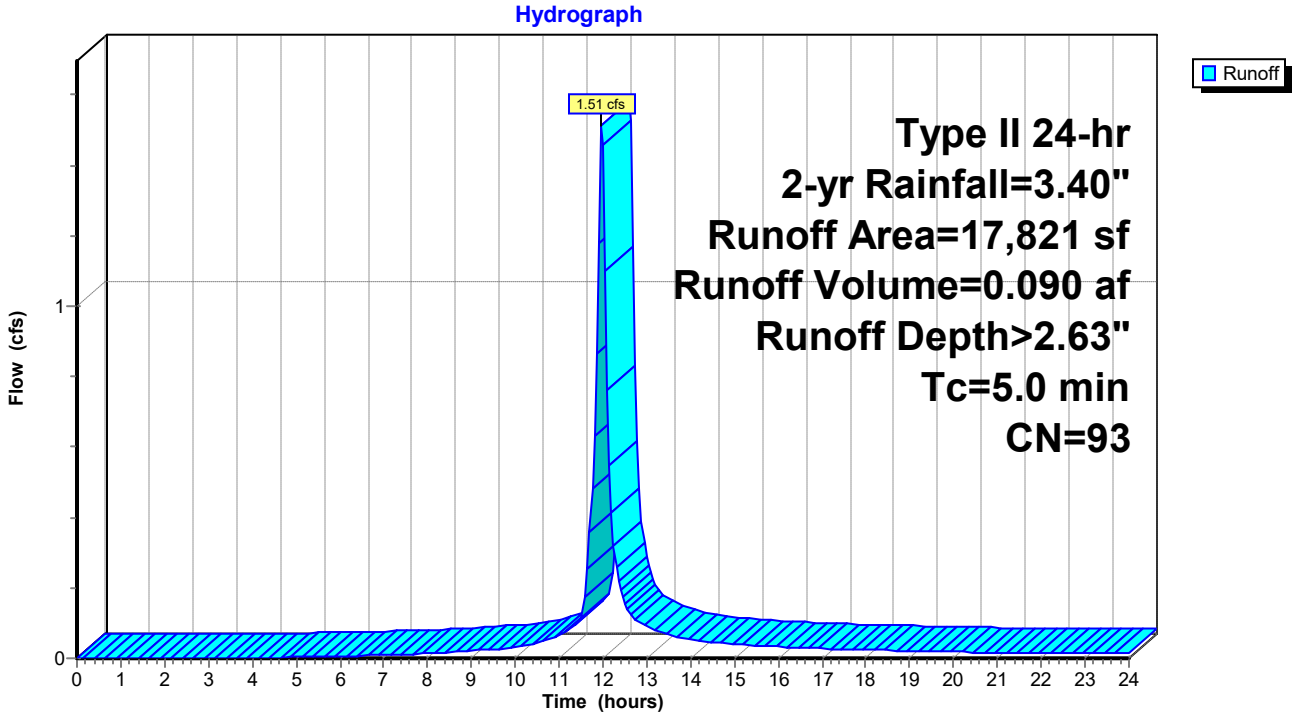
Runoff = 1.51 cfs @ 11.97 hrs, Volume= 0.090 af, Depth> 2.63"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	13,313	98	Roof
	4,508	80	>75% Grass cover, Good, HSG D
	17,821	93	Weighted Average
	4,508		25.30% Pervious Area
	13,313		74.70% Impervious Area

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

Subcatchment PR-4: Warehouse Roof



Summary for Subcatchment PR-5: Dumpster & Portion of Loading Area

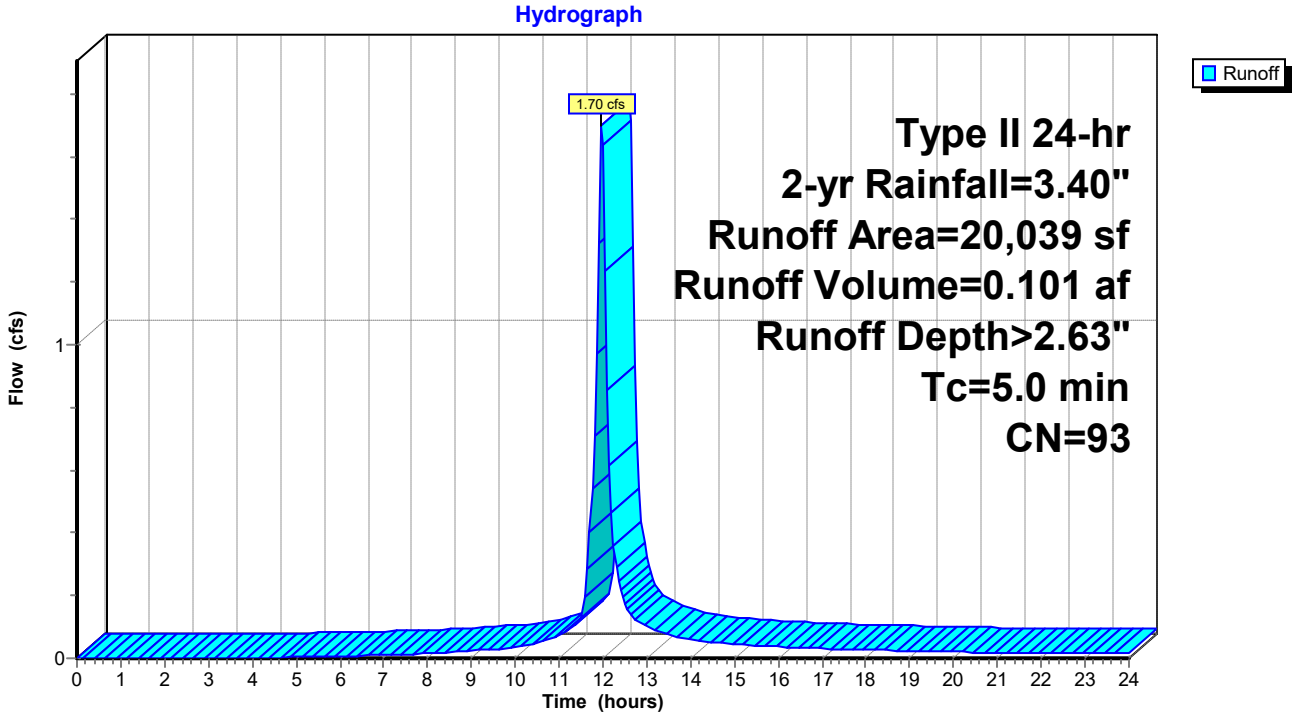
Runoff = 1.70 cfs @ 11.97 hrs, Volume= 0.101 af, Depth> 2.63"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	14,376	98	Loading Area & Dumpster
	5,663	80	>75% Grass cover, Good, HSG D
	20,039	93	Weighted Average
	5,663		28.26% Pervious Area
	14,376		71.74% Impervious Area

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

Subcatchment PR-5: Dumpster & Portion of Loading Area



Summary for Subcatchment PR-6: Warehouse Roof

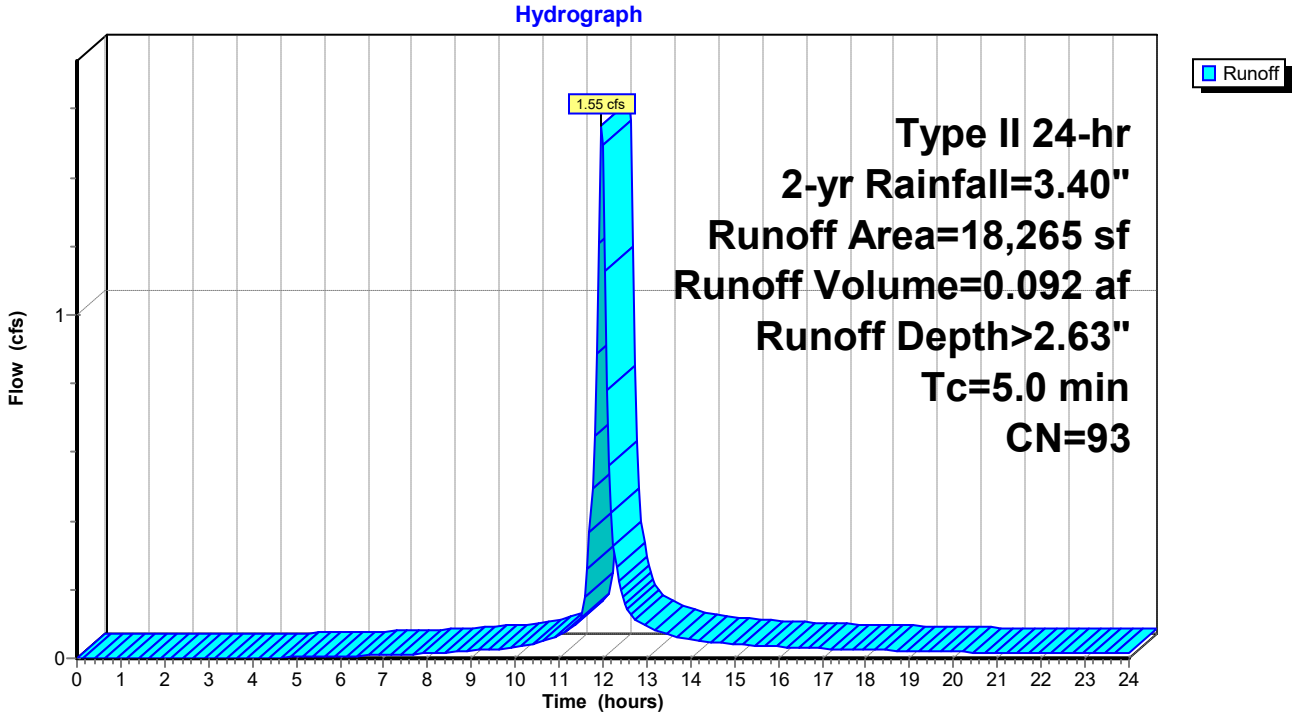
Runoff = 1.55 cfs @ 11.97 hrs, Volume= 0.092 af, Depth> 2.63"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	13,521	98	Roof
	4,744	80	>75% Grass cover, Good, HSG D
	18,265	93	Weighted Average
	4,744		25.97% Pervious Area
	13,521		74.03% Impervious Area

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

Subcatchment PR-6: Warehouse Roof



Summary for Subcatchment PR-7: Loading Area

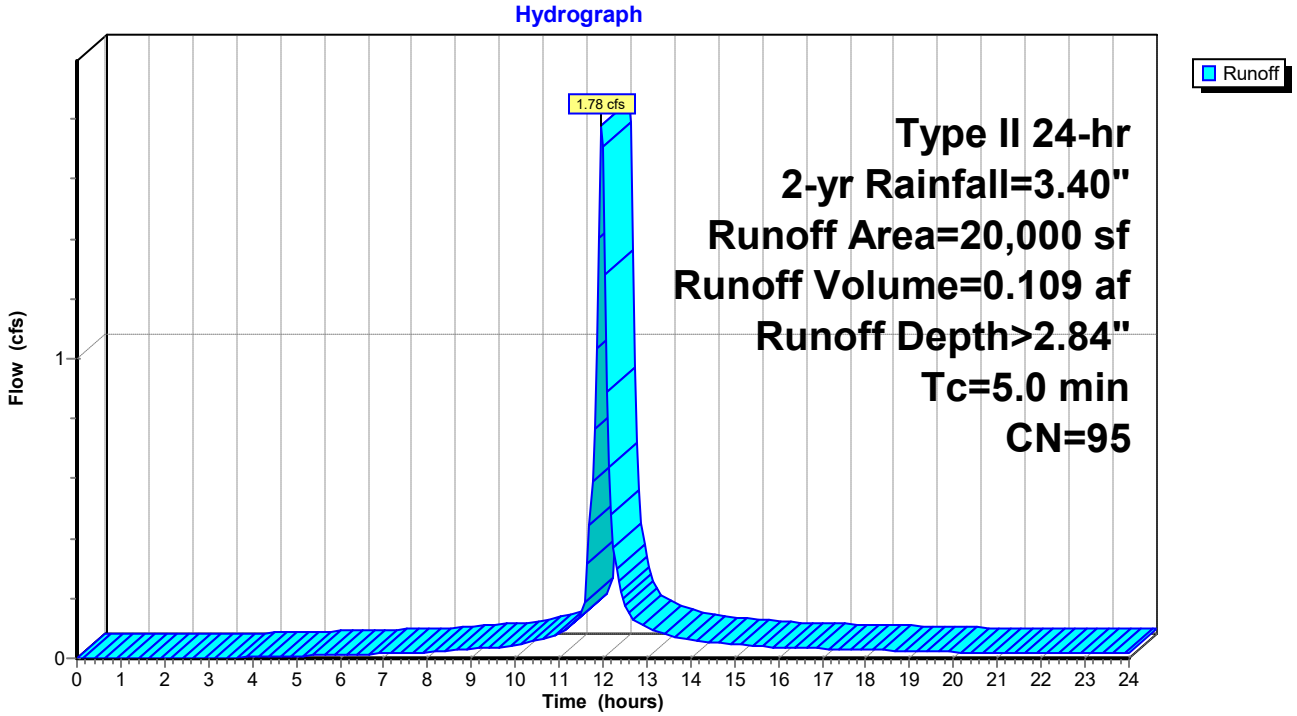
Runoff = 1.78 cfs @ 11.97 hrs, Volume= 0.109 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	16,391	98	Loading Area
	3,609	80	>75% Grass cover, Good, HSG D
	20,000	95	Weighted Average
	3,609		18.04% Pervious Area
	16,391		81.96% Impervious Area

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

Subcatchment PR-7: Loading Area



Summary for Subcatchment PR-8: Warehouse Roof

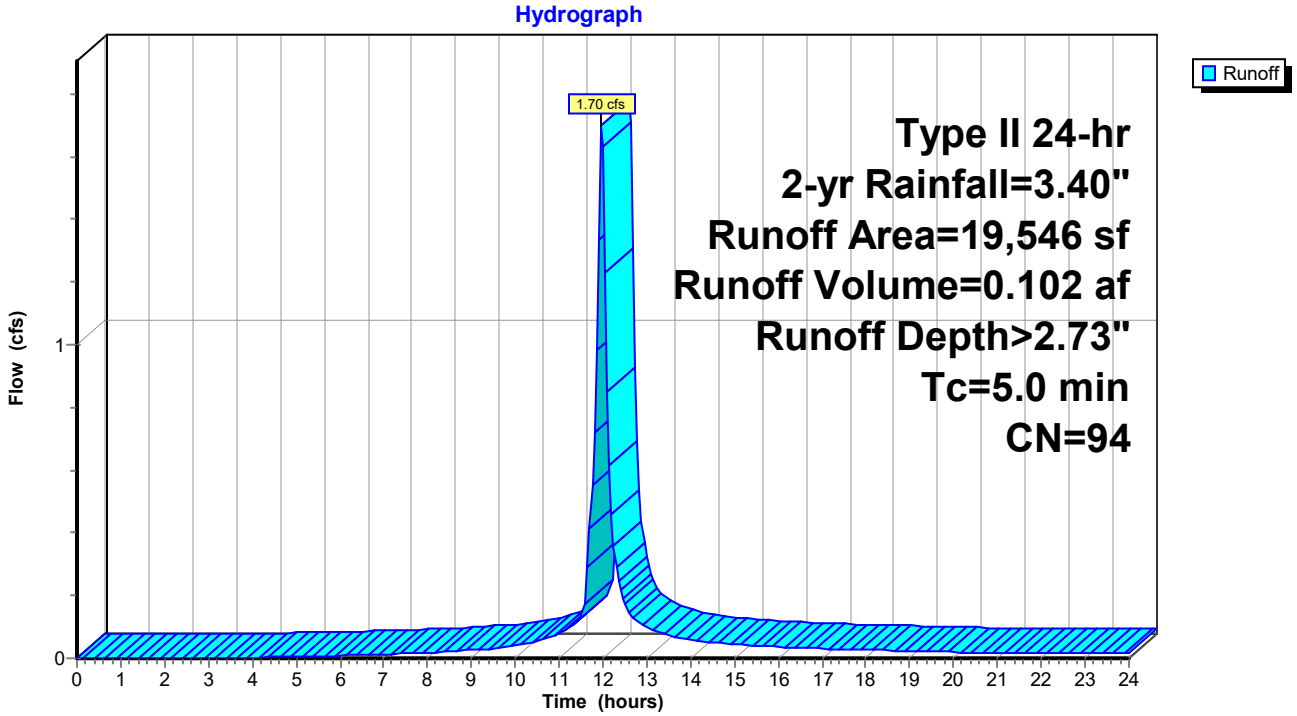
Runoff = 1.70 cfs @ 11.97 hrs, Volume= 0.102 af, Depth> 2.73"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	15,507	98	Warehouse Roof
	4,039	80	>75% Grass cover, Good, HSG D
	19,546	94	Weighted Average
	4,039		20.66% Pervious Area
	15,507		79.34% Impervious Area

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

Subcatchment PR-8: Warehouse Roof



Summary for Subcatchment PR-9: Loading Area

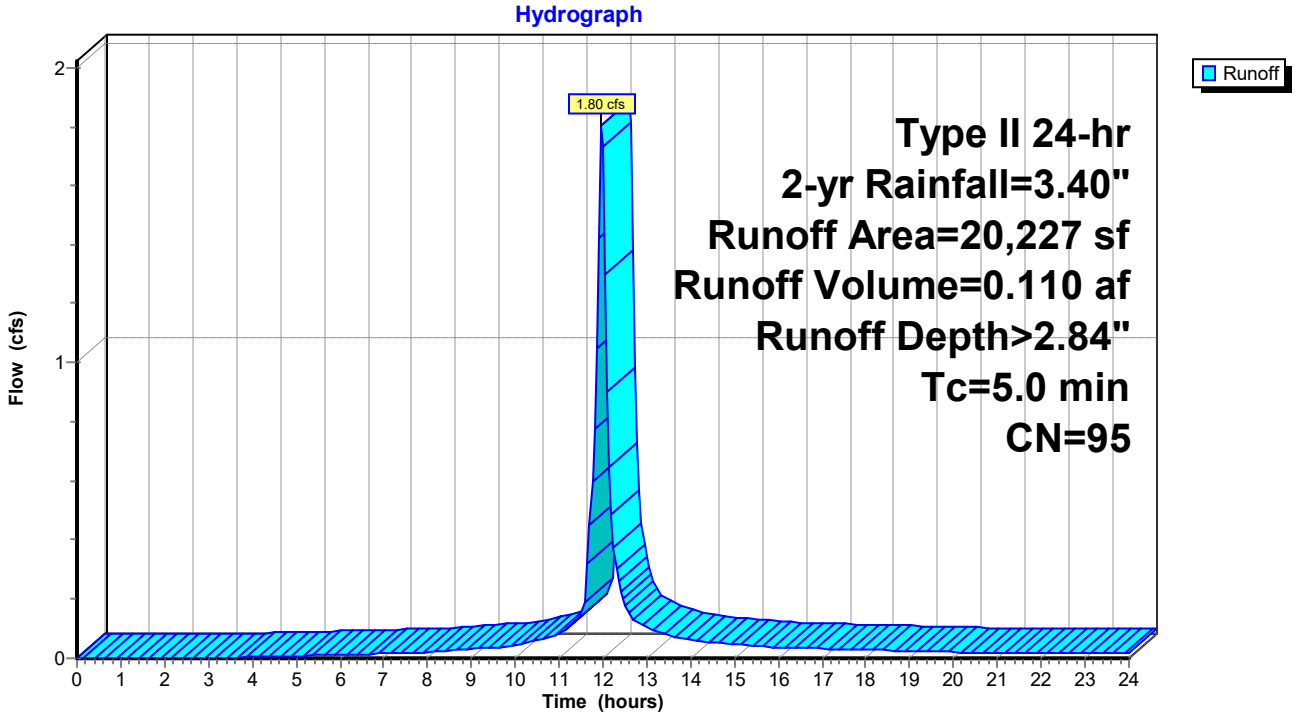
Runoff = 1.80 cfs @ 11.97 hrs, Volume= 0.110 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	16,621	98	Loading Area
	3,606	80	>75% Grass cover, Good, HSG D
	20,227	95	Weighted Average
	3,606		17.83% Pervious Area
	16,621		82.17% Impervious Area

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

Subcatchment PR-9: Loading Area



Summary for Subcatchment RD-1: Residue of Parcel

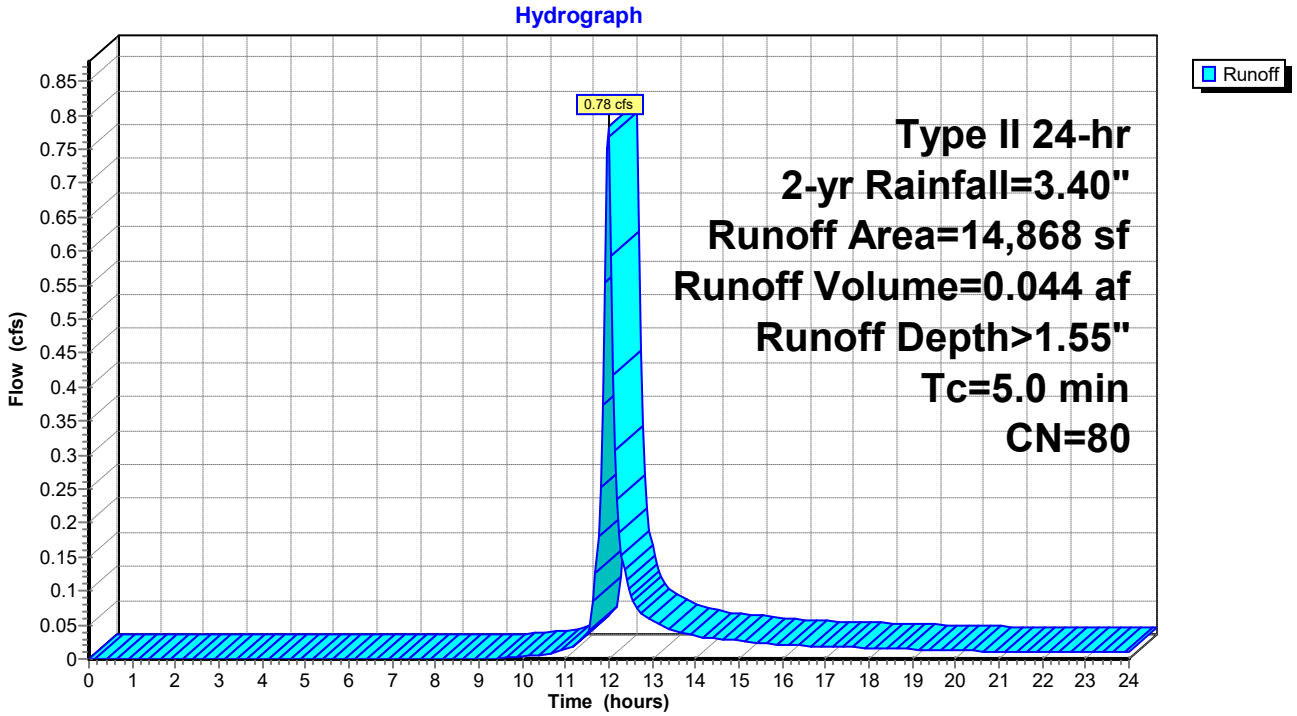
Runoff = 0.78 cfs @ 11.98 hrs, Volume= 0.044 af, Depth> 1.55"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

Area (sf)	CN	Description
14,868	80	>75% Grass cover, Good, HSG D
14,868		100.00% Pervious Area

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

Subcatchment RD-1: Residue of Parcel



Summary for Subcatchment RD-2: Residue of Parcel

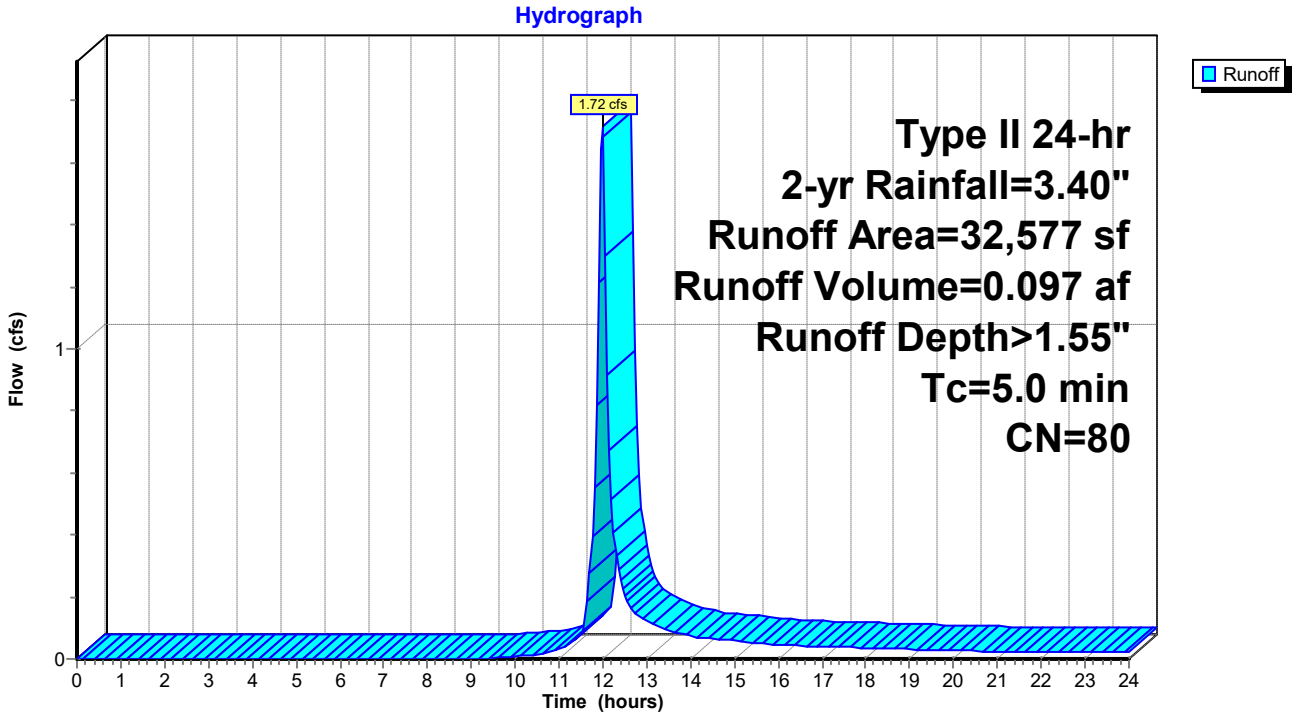
Runoff = 1.72 cfs @ 11.98 hrs, Volume= 0.097 af, Depth> 1.55"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

Area (sf)	CN	Description
32,577	80	>75% Grass cover, Good, HSG D
32,577		100.00% Pervious Area

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

Subcatchment RD-2: Residue of Parcel



Summary for Subcatchment RD-3: Residue of Parcel

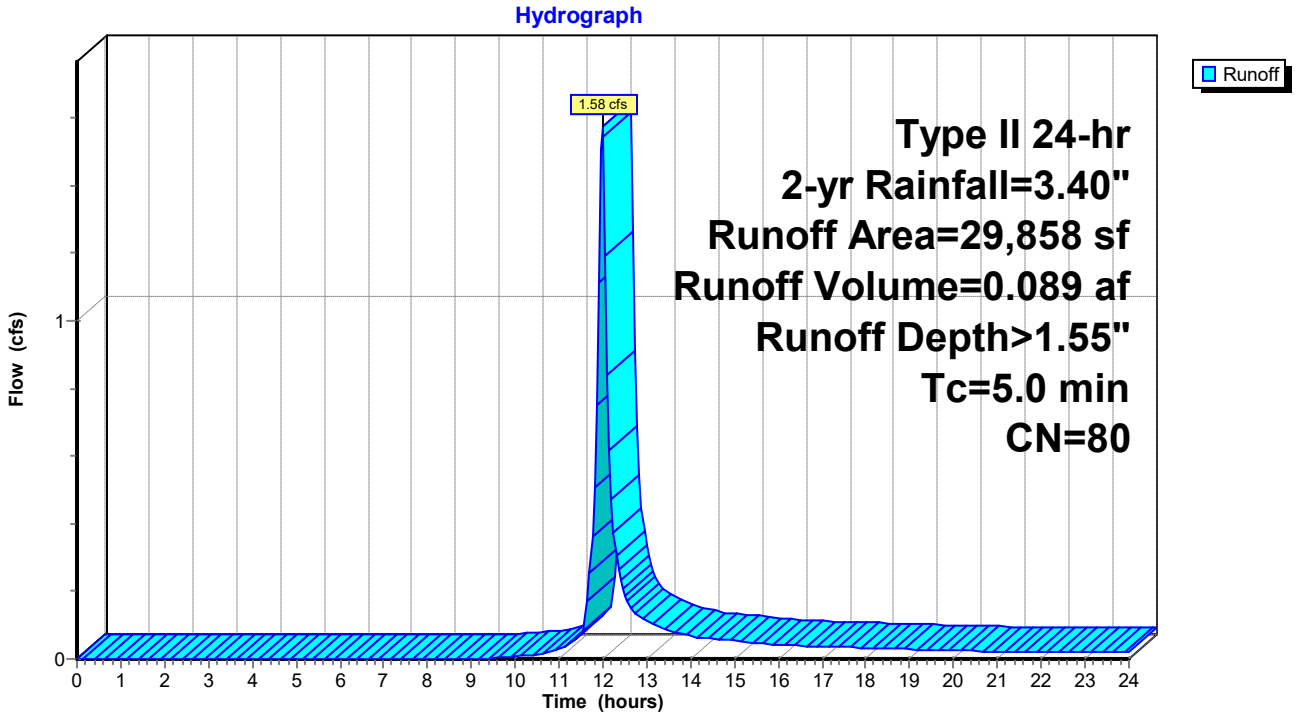
Runoff = 1.58 cfs @ 11.98 hrs, Volume= 0.089 af, Depth> 1.55"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

Area (sf)	CN	Description
29,858	80	>75% Grass cover, Good, HSG D
29,858		100.00% Pervious Area

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

Subcatchment RD-3: Residue of Parcel



Summary for Subcatchment RD-4: Residue of Parcel

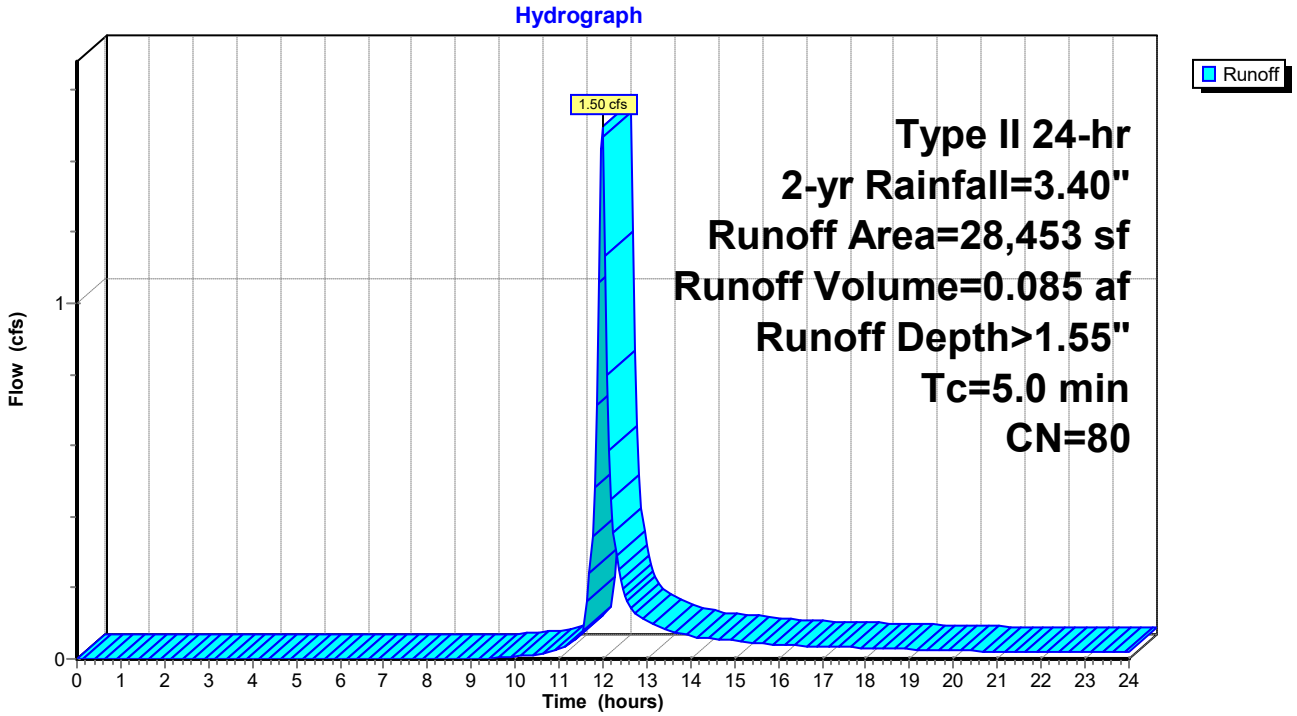
Runoff = 1.50 cfs @ 11.98 hrs, Volume= 0.085 af, Depth> 1.55"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

Area (sf)	CN	Description
28,453	80	>75% Grass cover, Good, HSG D
28,453		100.00% Pervious Area

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

Subcatchment RD-4: Residue of Parcel



Summary for Pond 1P: Wet Swale (Conveyance)

Inflow Area = 3.048 ac, 61.44% Impervious, Inflow Depth > 1.23" for 2-yr event
Inflow = 1.72 cfs @ 11.98 hrs, Volume= 0.313 af
Outflow = 1.10 cfs @ 12.58 hrs, Volume= 0.287 af, Atten= 36%, Lag= 35.9 min
Primary = 1.10 cfs @ 12.58 hrs, Volume= 0.287 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 20.76' @ 12.59 hrs Surf.Area= 3,684 sf Storage= 2,588 cf

Plug-Flow detention time= 97.3 min calculated for 0.287 af (92% of inflow)
Center-of-Mass det. time= 56.3 min (965.7 - 909.4)

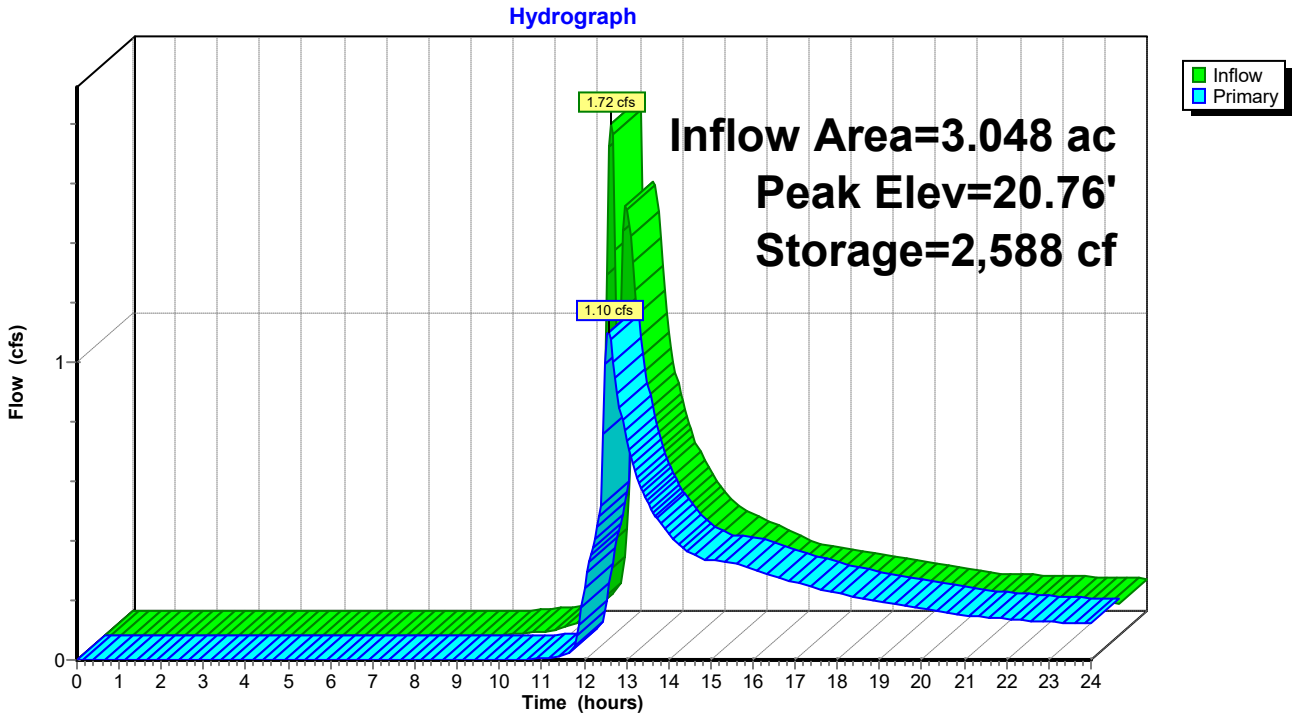
Volume	Invert	Avail.Storage	Storage Description
#1	19.70'	20,578 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
19.70	1,369	691.0	0	0	1,369
22.20	8,591	754.0	11,158	11,158	8,835
22.70	31,484	911.0	9,420	20,578	29,641

Device	Routing	Invert	Outlet Devices
#1	Primary	18.85'	**18.0" Round 18" N-12** L= 32.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.85' / 18.70' S= 0.0047 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	19.70'	**2.0" W x 12.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	20.70'	**10.7' long Rim MD 374.23** 0 End Contraction(s)

Primary OutFlow Max=1.09 cfs @ 12.58 hrs HW=20.76' TW=20.17' (Dynamic Tailwater)
└─**1=18" N-12** (Passes 1.09 cfs of 6.57 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.53 cfs @ 3.16 fps)
  └─**3=Rim MD 374.23** (Weir Controls 0.56 cfs @ 0.82 fps)

Pond 1P: Wet Swale (Conveyance)



Stage-Area-Storage for Pond 1P: Wet Swale (Conveyance)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
19.70	1,369	0
19.75	1,453	71
19.80	1,539	145
19.85	1,627	224
19.90	1,719	308
19.95	1,812	396
20.00	1,908	489
20.05	2,007	587
20.10	2,108	690
20.15	2,211	798
20.20	2,317	911
20.25	2,426	1,030
20.30	2,537	1,154
20.35	2,650	1,283
20.40	2,766	1,419
20.45	2,884	1,560
20.50	3,005	1,707
20.55	3,129	1,861
20.60	3,254	2,020
20.65	3,383	2,186
20.70	3,514	2,359
20.75	3,647	2,538
20.80	3,783	2,723
20.85	3,921	2,916
20.90	4,062	3,115
20.95	4,205	3,322
21.00	4,350	3,536
21.05	4,499	3,757
21.10	4,649	3,986
21.15	4,802	4,222
21.20	4,958	4,466
21.25	5,116	4,718
21.30	5,277	4,978
21.35	5,440	5,246
21.40	5,605	5,522
21.45	5,773	5,806
21.50	5,944	6,099
21.55	6,117	6,401
21.60	6,292	6,711
21.65	6,470	7,030
21.70	6,650	7,358
21.75	6,833	7,695
21.80	7,019	8,041
21.85	7,207	8,397
21.90	7,397	8,762
21.95	7,590	9,137
22.00	7,785	9,521
22.05	7,983	9,915
22.10	8,183	10,319
22.15	8,386	10,733
22.20	8,591	11,158
22.25	10,234	11,628
22.30	12,020	12,184
22.35	13,951	12,832
22.40	16,024	13,581
22.45	18,242	14,437
22.50	20,603	15,408
22.55	23,108	16,500
22.60	25,756	17,721
22.65	28,548	19,078
22.70	**31,484**	**20,578**

Summary for Pond 4P: Wet Swale (Conveyance)

Inflow Area = 5.432 ac, 56.20% Impervious, Inflow Depth > 0.99" for 2-yr event
Inflow = 1.80 cfs @ 11.99 hrs, Volume= 0.449 af
Outflow = 0.64 cfs @ 13.80 hrs, Volume= 0.367 af, Atten= 64%, Lag= 108.5 min
Primary = 0.64 cfs @ 13.80 hrs, Volume= 0.367 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 20.55' @ 13.80 hrs Surf.Area= 4,785 sf Storage= 4,992 cf

Plug-Flow detention time= 155.2 min calculated for 0.366 af (82% of inflow)
Center-of-Mass det. time= 78.1 min (1,034.5 - 956.3)

Volume	Invert	Avail.Storage	Storage Description
#1	18.70'	16,642 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

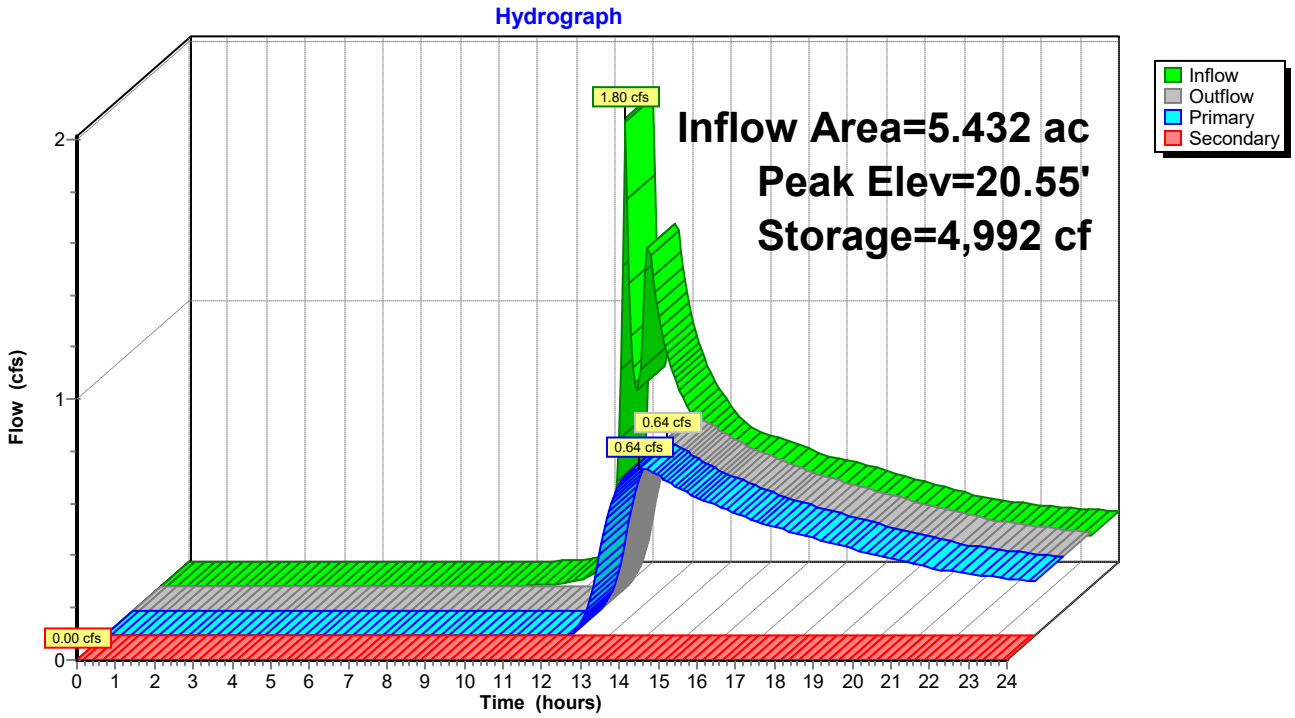
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
18.70	1,059	536.0	0	0	1,059
21.20	6,730	599.0	8,716	8,716	6,923
22.20	9,187	624.0	7,927	16,642	9,432

Device	Routing	Invert	Outlet Devices
#1	Primary	18.70'	**18.0" Round 18" N-12 Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.70' / 16.25' S= 0.0598 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	19.70'	**2.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	20.20'	**6.0" W x 6.0" H Vert. 6" Notch** C= 0.600
#4	Device 1	20.70'	**10.7' long Rim MD 374.23** 0 End Contraction(s)
#5	Secondary	21.70'	**32.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.64 cfs @ 13.80 hrs HW=20.55' TW=0.00' (Dynamic Tailwater)
└─**1=18" N-12 Culvert** (Passes 0.64 cfs of 8.92 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.31 cfs @ 3.70 fps)
  ├─**3=6" Notch** (Orifice Controls 0.33 cfs @ 1.90 fps)
  └─**4=Rim MD 374.23** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=18.70' TW=0.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: Wet Swale (Conveyance)



Stage-Area-Storage for Pond 4P: Wet Swale (Conveyance)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.70	1,059	0
18.75	1,124	55
18.80	1,192	112
18.85	1,261	174
18.90	1,332	239
18.95	1,406	307
19.00	1,481	379
19.05	1,558	455
19.10	1,637	535
19.15	1,718	619
19.20	1,801	707
19.25	1,886	799
19.30	1,973	896
19.35	2,062	996
19.40	2,153	1,102
19.45	2,246	1,212
19.50	2,341	1,326
19.55	2,437	1,446
19.60	2,536	1,570
19.65	2,637	1,700
19.70	2,739	1,834
19.75	2,844	1,973
19.80	2,951	2,118
19.85	3,059	2,269
19.90	3,170	2,424
19.95	3,282	2,586
20.00	3,396	2,753
20.05	3,513	2,925
20.10	3,631	3,104
20.15	3,751	3,288
20.20	3,874	3,479
20.25	3,998	3,676
20.30	4,124	3,879
20.35	4,252	4,088
20.40	4,382	4,304
20.45	4,514	4,527
20.50	4,648	4,756
20.55	4,784	4,991
20.60	4,922	5,234
20.65	5,062	5,484
20.70	5,204	5,740
20.75	5,348	6,004
20.80	5,493	6,275
20.85	5,641	6,553
20.90	5,791	6,839
20.95	5,942	7,133
21.00	6,096	7,433
21.05	6,252	7,742
21.10	6,409	8,059
21.15	6,569	8,383
21.20	6,730	8,716
21.25	6,844	9,055
21.30	6,959	9,400
21.35	7,074	9,751
21.40	7,191	10,107
21.45	7,308	10,470
21.50	7,427	10,838
21.55	7,547	11,213
21.60	7,667	11,593
21.65	7,788	11,979
21.70	7,911	12,372
21.75	8,034	12,770
21.80	8,158	13,175
21.85	8,284	13,586
21.90	8,410	14,004
21.95	8,537	14,427
22.00	8,665	14,857
22.05	8,794	15,294
22.10	8,924	15,737
22.15	9,055	16,186
22.20	**9,187**	**16,642**

Summary for Pond 8P: BioSwale

Inflow Area = 0.719 ac, 27.23% Impervious, Inflow Depth > 1.93" for 2-yr event
Inflow = 2.04 cfs @ 11.98 hrs, Volume= 0.115 af
Outflow = 0.09 cfs @ 13.76 hrs, Volume= 0.054 af, Atten= 96%, Lag= 106.8 min
Primary = 0.09 cfs @ 13.76 hrs, Volume= 0.054 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 23.80' @ 13.76 hrs Surf.Area= 3,087 sf Storage= 3,160 cf

Plug-Flow detention time= 315.9 min calculated for 0.054 af (47% of inflow)
Center-of-Mass det. time= 197.8 min (1,019.1 - 821.3)

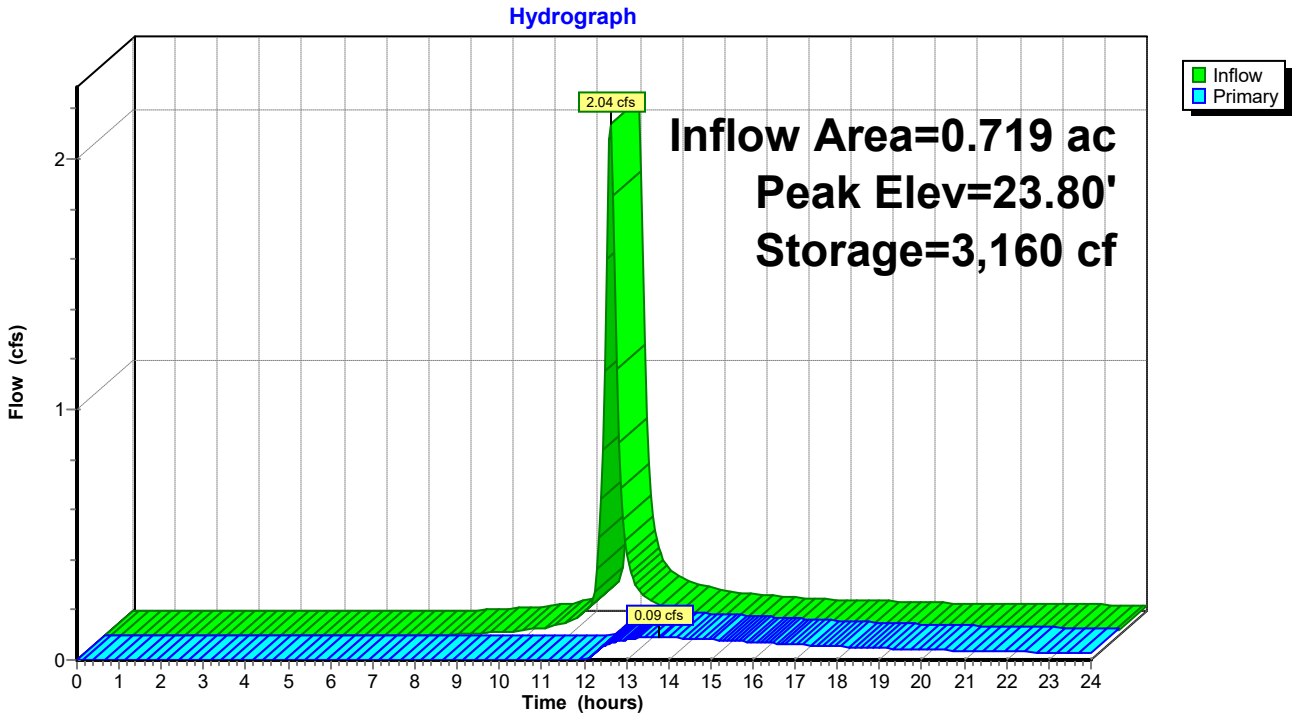
Volume	Invert	Avail.Storage	Storage Description
#1	20.99'	5,615 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.99	1,517	393.0	0.0	0	0	1,517
21.00	1,517	393.0	40.0	6	6	1,521
22.99	1,517	393.0	40.0	1,208	1,214	2,303
23.00	1,517	393.0	100.0	15	1,229	2,307
23.50	2,728	412.0	100.0	1,047	2,275	3,541
24.50	3,991	431.0	100.0	3,340	5,615	4,883

Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	**12.0" Round 12" N-12 Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.00' / 20.65' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	23.50'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.00'	**10.7' long Rim MD 374.23** 0 End Contraction(s)

Primary OutFlow Max=0.09 cfs @ 13.76 hrs HW=23.80' TW=0.00' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 0.09 cfs of 5.74 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.09 cfs @ 1.77 fps)
  └─**3=Rim MD 374.23** (Controls 0.00 cfs)

Pond 8P: BioSwale



Stage-Area-Storage for Pond 8P: BioSwale

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,517	0
21.04	1,517	30
21.09	1,517	61
21.14	1,517	91
21.19	1,517	121
21.24	1,517	152
21.29	1,517	182
21.34	1,517	212
21.39	1,517	243
21.44	1,517	273
21.49	1,517	303
21.54	1,517	334
21.59	1,517	364
21.64	1,517	394
21.69	1,517	425
21.74	1,517	455
21.79	1,517	485
21.84	1,517	516
21.89	1,517	546
21.94	1,517	576
21.99	1,517	607
22.04	1,517	637
22.09	1,517	667
22.14	1,517	698
22.19	1,517	728
22.24	1,517	759
22.29	1,517	789
22.34	1,517	819
22.39	1,517	850
22.44	1,517	880
22.49	1,517	910
22.54	1,517	941
22.59	1,517	971
22.64	1,517	1,001
22.69	1,517	1,032
22.74	1,517	1,062
22.79	1,517	1,092
22.84	1,517	1,123
22.89	1,517	1,153
22.94	1,517	1,183
22.99	1,517	1,214
23.04	1,601	1,291
23.09	1,709	1,374
23.14	1,821	1,462
23.19	1,936	1,556
23.24	2,054	1,656
23.29	2,176	1,761
23.34	2,302	1,873
23.39	2,431	1,992
23.44	2,564	2,117
23.49	2,700	2,248
23.54	2,774	2,385
23.59	2,832	2,525
23.64	2,890	2,669
23.69	2,950	2,815
23.74	3,009	2,964
23.79	3,070	3,115
23.84	3,131	3,270
23.89	3,192	3,429
23.94	3,254	3,590
23.99	3,317	3,754
24.04	3,380	3,921
24.09	3,444	4,092
24.14	3,509	4,266
24.19	3,574	4,443
24.24	3,640	4,623
24.29	3,706	4,807
24.34	3,773	4,994
24.39	3,840	5,184
24.44	3,908	5,378
24.49	**3,977**	**5,575**

Summary for Pond MBR-1: Parking Lot Micro-Bioretention

Inflow Area = 0.462 ac, 50.79% Impervious, Inflow Depth > 2.26" for 2-yr event
Inflow = 1.51 cfs @ 11.97 hrs, Volume= 0.087 af
Outflow = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 721.6 min
Primary = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 23.76' @ 24.00 hrs Surf.Area= 2,682 sf Storage= 3,788 cf

Plug-Flow detention time= 1,089.7 min calculated for 0.000 af (0% of inflow)
Center-of-Mass det. time= 630.1 min (1,436.9 - 806.7)

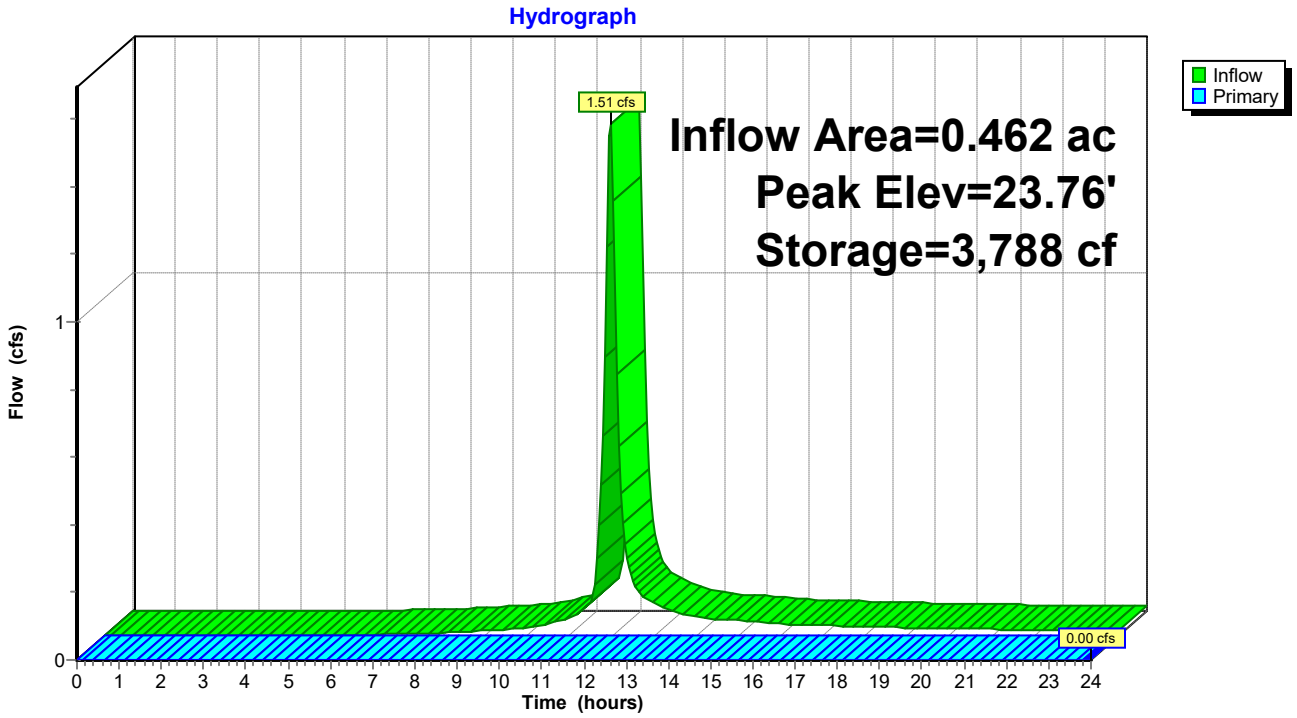
Volume	Invert	Avail.Storage	Storage Description
#1	20.74'	6,896 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.74	1,868	190.0	0.0	0	0	1,868
20.75	1,868	190.0	40.0	7	7	1,870
22.74	1,868	190.0	40.0	1,487	1,494	2,248
22.75	1,868	190.0	100.0	19	1,513	2,250
23.75	2,678	215.0	100.0	2,261	3,774	3,081
24.75	3,589	240.0	100.0	3,122	6,896	4,014

Device	Routing	Invert	Outlet Devices
#1	Primary	20.75'	**12.0" Round 12" N-12 Culvert** L= 69.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 20.75' / 20.65' S= 0.0014 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	23.75'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.25'	**10.7' long Rim MD374.23** 0 End Contraction(s)

Primary OutFlow Max=0.00 cfs @ 24.00 hrs HW=23.76' TW=0.00' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 0.00 cfs of 4.86 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.00 cfs @ 0.23 fps)
  └─**3=Rim MD374.23** (Controls 0.00 cfs)

Pond MBR-1: Parking Lot Micro-Bioretention



Stage-Area-Storage for Pond MBR-1: Parking Lot Micro-Bioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.74	1,868	0
20.79	1,868	37
20.84	1,868	75
20.89	1,868	112
20.94	1,868	149
20.99	1,868	187
21.04	1,868	224
21.09	1,868	262
21.14	1,868	299
21.19	1,868	336
21.24	1,868	374
21.29	1,868	411
21.34	1,868	448
21.39	1,868	486
21.44	1,868	523
21.49	1,868	560
21.54	1,868	598
21.59	1,868	635
21.64	1,868	672
21.69	1,868	710
21.74	1,868	747
21.79	1,868	785
21.84	1,868	822
21.89	1,868	859
21.94	1,868	897
21.99	1,868	934
22.04	1,868	971
22.09	1,868	1,009
22.14	1,868	1,046
22.19	1,868	1,083
22.24	1,868	1,121
22.29	1,868	1,158
22.34	1,868	1,196
22.39	1,868	1,233
22.44	1,868	1,270
22.49	1,868	1,308
22.54	1,868	1,345
22.59	1,868	1,382
22.64	1,868	1,420
22.69	1,868	1,457
22.74	1,868	1,494
22.79	1,898	1,588
22.84	1,935	1,684
22.89	1,973	1,782
22.94	2,011	1,881
22.99	2,049	1,983
23.04	2,088	2,086
23.09	2,127	2,192
23.14	2,167	2,299
23.19	2,206	2,408
23.24	2,247	2,520
23.29	2,287	2,633
23.34	2,328	2,748
23.39	2,370	2,866
23.44	2,411	2,985
23.49	2,453	3,107
23.54	2,496	3,231
23.59	2,539	3,357
23.64	2,582	3,485
23.69	2,625	3,615
23.74	2,669	3,747
23.79	2,712	3,882
23.84	2,755	4,018
23.89	2,798	4,157
23.94	2,841	4,298
23.99	2,884	4,441
24.04	2,928	4,587
24.09	2,973	4,734
24.14	3,017	4,884
24.19	3,062	5,036
24.24	3,108	5,190
24.29	3,153	5,347
24.34	3,199	5,506
24.39	3,246	5,667
24.44	3,292	5,830
24.49	3,339	5,996
24.54	3,387	6,164
24.59	3,434	6,335
24.64	3,482	6,507
24.69	3,531	6,683
24.74	**3,579**	**6,861**

Summary for Pond MBR-10: Micro-Bioretention #10

Inflow Area = 0.473 ac, 81.90% Impervious, Inflow Depth > 2.84" for 2-yr event
Inflow = 1.84 cfs @ 11.97 hrs, Volume= 0.112 af
Outflow = 0.33 cfs @ 12.30 hrs, Volume= 0.047 af, Atten= 82%, Lag= 19.6 min
Primary = 0.33 cfs @ 12.30 hrs, Volume= 0.047 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.30' @ 12.30 hrs Surf.Area= 1,794 sf Storage= 2,974 cf

Plug-Flow detention time= 279.5 min calculated for 0.047 af (42% of inflow)
Center-of-Mass det. time= 153.9 min (930.8 - 776.9)

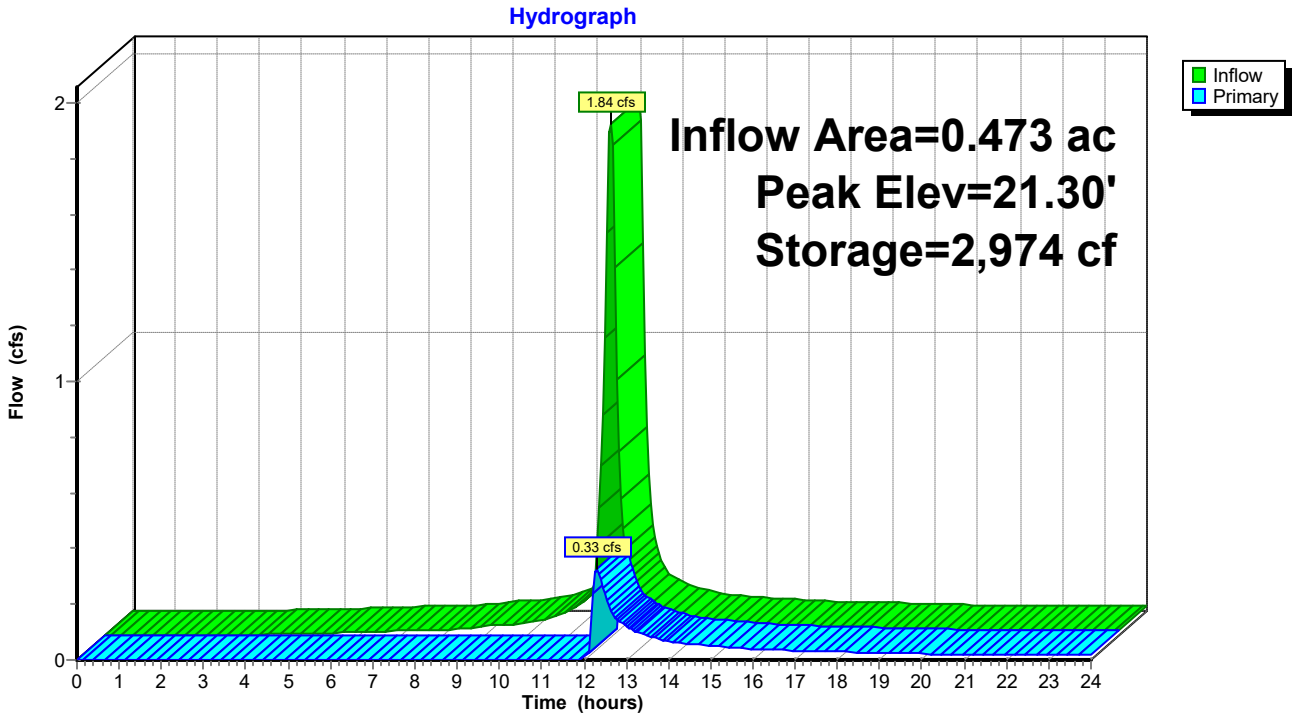
Volume	Invert	Avail.Storage	Storage Description
#1	17.19'	6,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.19	1,136	136.0	0.0	0	0	1,136
17.20	1,136	136.0	40.0	5	5	1,137
20.19	1,136	136.0	40.0	1,359	1,363	1,544
20.20	1,136	136.0	100.0	11	1,375	1,545
21.20	1,730	161.0	100.0	1,423	2,797	2,155
22.20	2,424	186.0	100.0	2,067	4,864	2,866
22.70	2,808	198.0	100.0	1,307	6,171	3,245

Device	Routing	Invert	Outlet Devices
#1	Primary	19.80'	**6.0" Round 6" PVC X 2.00** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.80' / 19.70' S= 0.0050 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.33 cfs @ 12.30 hrs HW=21.30' TW=20.59' (Dynamic Tailwater)
└─**1=6" PVC** (Passes 0.33 cfs of 1.41 cfs potential flow)
└─**2=6" Atrium Grate** (Weir Controls 0.33 cfs @ 1.04 fps)

Pond MBR-10: Micro-Bioretention #10



Stage-Area-Storage for Pond MBR-10: Micro-Bioretention #10

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0
17.29	1,136	45
17.39	1,136	91
17.49	1,136	136
17.59	1,136	182
17.69	1,136	227
17.79	1,136	273
17.89	1,136	318
17.99	1,136	364
18.09	1,136	409
18.19	1,136	454
18.29	1,136	500
18.39	1,136	545
18.49	1,136	591
18.59	1,136	636
18.69	1,136	682
18.79	1,136	727
18.89	1,136	772
18.99	1,136	818
19.09	1,136	863
19.19	1,136	909
19.29	1,136	954
19.39	1,136	1,000
19.49	1,136	1,045
19.59	1,136	1,091
19.69	1,136	1,136
19.79	1,136	1,181
19.89	1,136	1,227
19.99	1,136	1,272
20.09	1,136	1,318
20.19	1,136	1,363
20.29	1,184	1,479
20.39	1,239	1,600
20.49	1,295	1,727
20.59	1,353	1,859
20.69	1,412	1,997
20.79	1,471	2,142
20.89	1,533	2,292
20.99	1,595	2,448
21.09	1,659	2,611
21.19	1,723	2,780
21.29	1,788	2,955
21.39	1,853	3,137
21.49	1,919	3,326
21.59	1,987	3,521
21.69	2,055	3,723
21.79	2,125	3,933
21.89	2,196	4,149
21.99	2,269	4,372
22.09	2,342	4,602
22.19	2,416	4,840
22.29	2,491	5,086
22.39	2,567	5,338
22.49	2,643	5,599
22.59	2,721	5,867
22.69	**2,800**	**6,143**

Summary for Pond MBR-11: Micro-Bioretention #11

Inflow Area = 0.455 ac, 81.69% Impervious, Inflow Depth > 2.84" for 2-yr event
Inflow = 1.77 cfs @ 11.97 hrs, Volume= 0.108 af
Outflow = 0.25 cfs @ 12.37 hrs, Volume= 0.043 af, Atten= 86%, Lag= 23.9 min
Primary = 0.25 cfs @ 12.37 hrs, Volume= 0.043 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.28' @ 12.37 hrs Surf.Area= 1,783 sf Storage= 2,943 cf

Plug-Flow detention time= 293.7 min calculated for 0.043 af (40% of inflow)
Center-of-Mass det. time= 165.1 min (942.1 - 776.9)

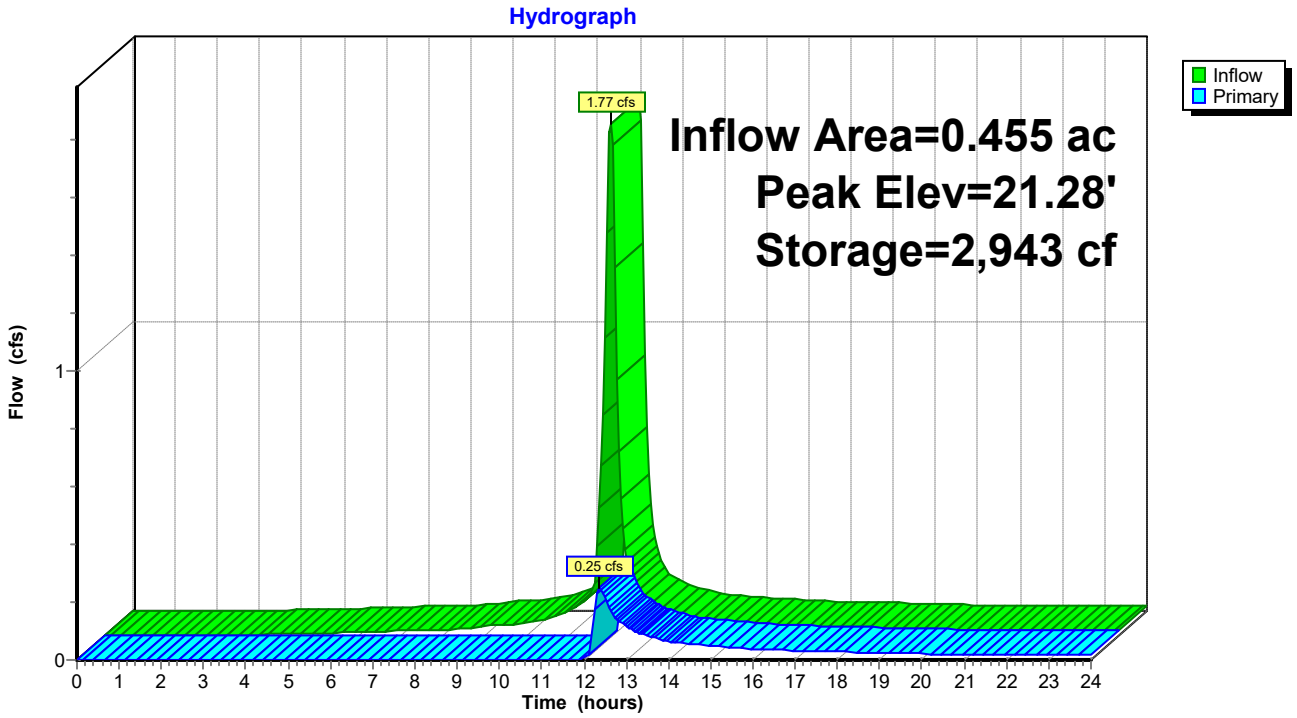
Volume	Invert	Avail.Storage	Storage Description
#1	17.19'	6,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.19	1,136	136.0	0.0	0	0	1,136
17.20	1,136	136.0	40.0	5	5	1,137
20.19	1,136	136.0	40.0	1,359	1,363	1,544
20.20	1,136	136.0	100.0	11	1,375	1,545
21.20	1,730	161.0	100.0	1,423	2,797	2,155
22.20	2,424	186.0	100.0	2,067	4,864	2,866
22.70	2,808	198.0	100.0	1,307	6,171	3,245

Device	Routing	Invert	Outlet Devices
#1	Primary	19.80'	**6.0" Round 6" PVC X 2.00** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.80' / 19.70' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.24 cfs @ 12.37 hrs HW=21.28' TW=20.67' (Dynamic Tailwater)
└─**1=6" PVC** (Passes 0.24 cfs of 1.31 cfs potential flow)
  └─**2=6" Atrium Grate** (Weir Controls 0.24 cfs @ 0.94 fps)

Pond MBR-11: Micro-Bioretention #11



Stage-Area-Storage for Pond MBR-11: Micro-Bioretention #11

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0
17.29	1,136	45
17.39	1,136	91
17.49	1,136	136
17.59	1,136	182
17.69	1,136	227
17.79	1,136	273
17.89	1,136	318
17.99	1,136	364
18.09	1,136	409
18.19	1,136	454
18.29	1,136	500
18.39	1,136	545
18.49	1,136	591
18.59	1,136	636
18.69	1,136	682
18.79	1,136	727
18.89	1,136	772
18.99	1,136	818
19.09	1,136	863
19.19	1,136	909
19.29	1,136	954
19.39	1,136	1,000
19.49	1,136	1,045
19.59	1,136	1,091
19.69	1,136	1,136
19.79	1,136	1,181
19.89	1,136	1,227
19.99	1,136	1,272
20.09	1,136	1,318
20.19	1,136	1,363
20.29	1,184	1,479
20.39	1,239	1,600
20.49	1,295	1,727
20.59	1,353	1,859
20.69	1,412	1,997
20.79	1,471	2,142
20.89	1,533	2,292
20.99	1,595	2,448
21.09	1,659	2,611
21.19	1,723	2,780
21.29	1,788	2,955
21.39	1,853	3,137
21.49	1,919	3,326
21.59	1,987	3,521
21.69	2,055	3,723
21.79	2,125	3,933
21.89	2,196	4,149
21.99	2,269	4,372
22.09	2,342	4,602
22.19	2,416	4,840
22.29	2,491	5,086
22.39	2,567	5,338
22.49	2,643	5,599
22.59	2,721	5,867
22.69	**2,800**	**6,143**

Summary for Pond MBR-14: Future Office Building Micro-Bioretention

Inflow Area = 0.450 ac, 65.59% Impervious, Inflow Depth > 2.54" for 2-yr event
Inflow = 1.62 cfs @ 11.97 hrs, Volume= 0.095 af
Outflow = 0.08 cfs @ 13.40 hrs, Volume= 0.039 af, Atten= 95%, Lag= 85.9 min
Primary = 0.08 cfs @ 13.40 hrs, Volume= 0.039 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 24.27' @ 13.40 hrs Surf.Area= 1,878 sf Storage= 2,768 cf

Plug-Flow detention time= 326.1 min calculated for 0.039 af (41% of inflow)
Center-of-Mass det. time= 204.6 min (998.2 - 793.6)

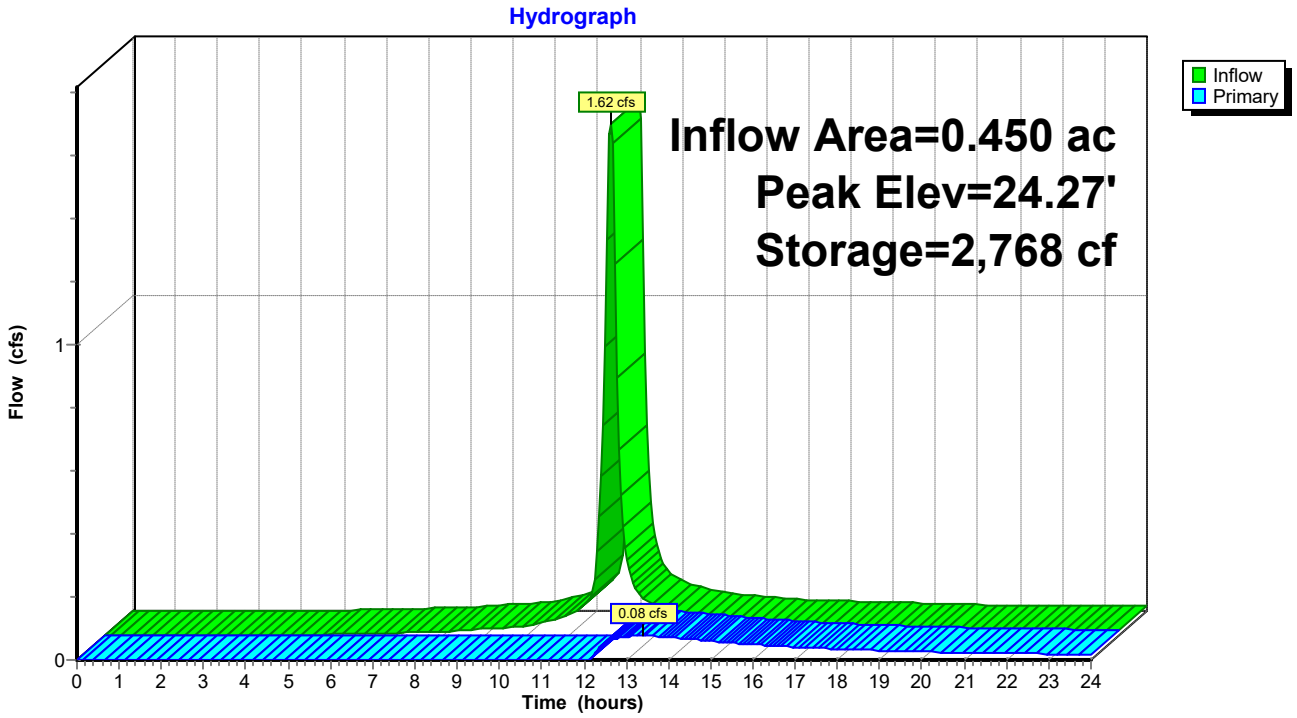
Volume	Invert	Avail.Storage	Storage Description
#1	20.99'	4,316 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.99	1,099	137.0	0.0	0	0	1,099
21.00	1,099	137.0	40.0	4	4	1,100
22.99	1,099	137.0	40.0	875	879	1,373
23.00	1,099	137.0	100.0	11	890	1,374
24.00	1,699	162.0	100.0	1,388	2,278	1,988
25.00	2,397	187.0	100.0	2,038	4,316	2,704

Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	**12.0" Round 12" N-12 Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.00' / 20.31' S= 0.0197 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.00'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.50'	**10.7' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.08 cfs @ 13.40 hrs HW=24.27' TW=20.47' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 0.08 cfs of 6.30 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.08 cfs @ 1.68 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond MBR-14: Future Office Building Micro-Bioretention



Stage-Area-Storage for Pond MBR-14: Future Office Building Micro-Bioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,099	0
21.04	1,099	22
21.09	1,099	44
21.14	1,099	66
21.19	1,099	88
21.24	1,099	110
21.29	1,099	132
21.34	1,099	154
21.39	1,099	176
21.44	1,099	198
21.49	1,099	220
21.54	1,099	242
21.59	1,099	264
21.64	1,099	286
21.69	1,099	308
21.74	1,099	330
21.79	1,099	352
21.84	1,099	374
21.89	1,099	396
21.94	1,099	418
21.99	1,099	440
22.04	1,099	462
22.09	1,099	484
22.14	1,099	506
22.19	1,099	528
22.24	1,099	549
22.29	1,099	571
22.34	1,099	593
22.39	1,099	615
22.44	1,099	637
22.49	1,099	659
22.54	1,099	681
22.59	1,099	703
22.64	1,099	725
22.69	1,099	747
22.74	1,099	769
22.79	1,099	791
22.84	1,099	813
22.89	1,099	835
22.94	1,099	857
22.99	1,099	879
23.04	1,121	935
23.09	1,148	991
23.14	1,175	1,049
23.19	1,203	1,109
23.24	1,231	1,170
23.29	1,260	1,232
23.34	1,288	1,296
23.39	1,318	1,361
23.44	1,347	1,427
23.49	1,377	1,495
23.54	1,407	1,565
23.59	1,437	1,636
23.64	1,468	1,709
23.69	1,499	1,783
23.74	1,530	1,859
23.79	1,562	1,936
23.84	1,594	2,015
23.89	1,627	2,095
23.94	1,659	2,178
23.99	1,692	2,261
24.04	1,725	2,347
24.09	1,757	2,434
24.14	1,790	2,523
24.19	1,822	2,613
24.24	1,856	2,705
24.29	1,889	2,798
24.34	1,923	2,894
24.39	1,957	2,991
24.44	1,991	3,089
24.49	2,026	3,190
24.54	2,061	3,292
24.59	2,096	3,396
24.64	2,132	3,502
24.69	2,168	3,609
24.74	2,204	3,718
24.79	2,240	3,830
24.84	2,277	3,942
24.89	2,314	4,057
24.94	2,352	4,174
24.99	**2,389**	**4,292**

Summary for Pond MBR-15: Access Road Microbioretention

Inflow Area = 0.411 ac, 57.06% Impervious, Inflow Depth > 2.35" for 2-yr event
Inflow = 1.39 cfs @ 11.97 hrs, Volume= 0.081 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.09' @ 24.00 hrs Surf.Area= 2,608 sf Storage= 3,506 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

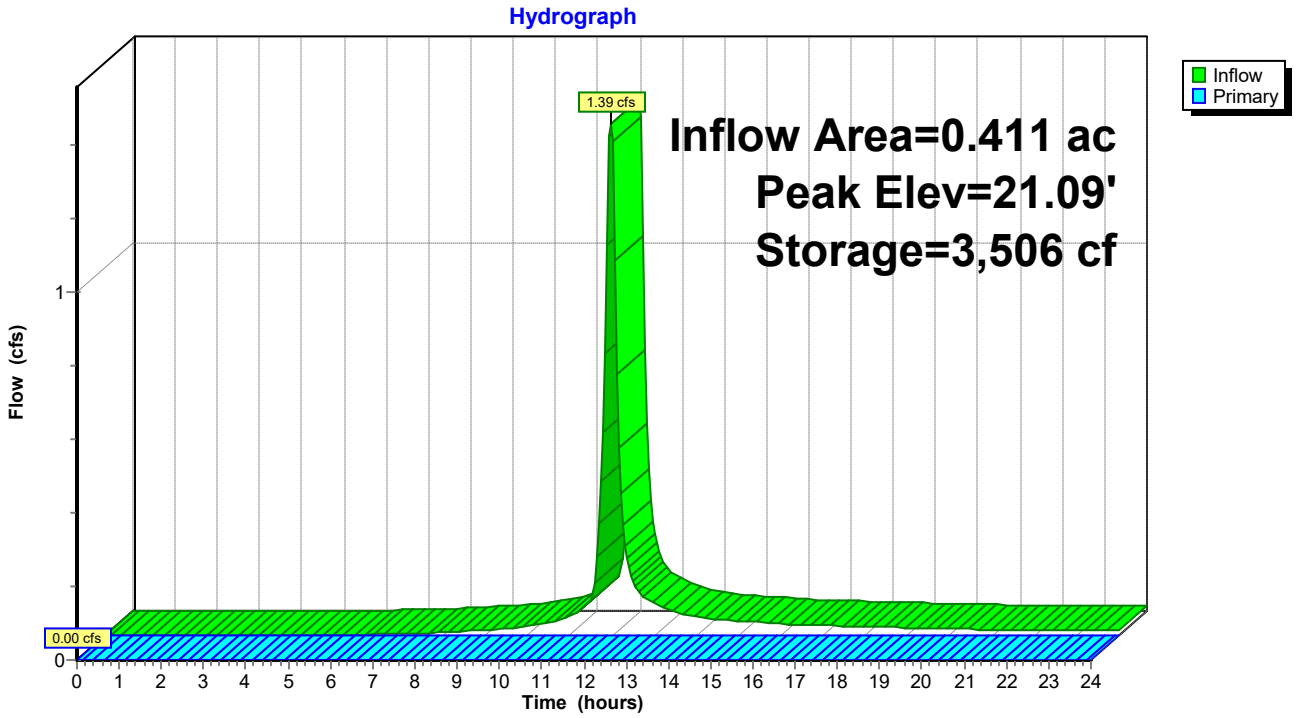
Volume	Invert	Avail.Storage	Storage Description
#1	18.19'	6,964 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
18.19	1,878	195.0	0.0	0	0	1,878
18.20	1,878	195.0	40.0	8	8	1,880
20.19	1,878	195.0	40.0	1,495	1,502	2,268
20.20	1,878	195.0	100.0	19	1,521	2,270
21.20	2,708	220.0	100.0	2,280	3,802	3,121
22.20	3,639	245.0	100.0	3,162	6,964	4,075

Device	Routing	Invert	Outlet Devices
#1	Primary	19.50'	**6.0" Round 6" PVC X 2.00** L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.50' / 18.70' S= 0.0267 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=18.19' TW=18.70' (Dynamic Tailwater)
└─**1=6" PVC** (Controls 0.00 cfs)
  └─**2=6" Atrium Grate** (Controls 0.00 cfs)

Pond MBR-15: Access Road Microbioretention



Stage-Area-Storage for Pond MBR-15: Access Road Microbioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.19	1,878	0
18.24	1,878	38
18.29	1,878	75
18.34	1,878	113
18.39	1,878	150
18.44	1,878	188
18.49	1,878	225
18.54	1,878	263
18.59	1,878	300
18.64	1,878	338
18.69	1,878	376
18.74	1,878	413
18.79	1,878	451
18.84	1,878	488
18.89	1,878	526
18.94	1,878	563
18.99	1,878	601
19.04	1,878	639
19.09	1,878	676
19.14	1,878	714
19.19	1,878	751
19.24	1,878	789
19.29	1,878	826
19.34	1,878	864
19.39	1,878	901
19.44	1,878	939
19.49	1,878	977
19.54	1,878	1,014
19.59	1,878	1,052
19.64	1,878	1,089
19.69	1,878	1,127
19.74	1,878	1,164
19.79	1,878	1,202
19.84	1,878	1,239
19.89	1,878	1,277
19.94	1,878	1,315
19.99	1,878	1,352
20.04	1,878	1,390
20.09	1,878	1,427
20.14	1,878	1,465
20.19	1,878	1,502
20.24	1,908	1,597
20.29	1,946	1,693
20.34	1,985	1,792
20.39	2,024	1,892
20.44	2,063	1,994
20.49	2,103	2,098
20.54	2,143	2,204
20.59	2,184	2,312
20.64	2,225	2,423
20.69	2,266	2,535
20.74	2,307	2,649
20.79	2,349	2,766
20.84	2,392	2,884
20.89	2,435	3,005
20.94	2,478	3,128
20.99	2,521	3,253
21.04	2,565	3,380
21.09	2,609	3,509
21.14	2,654	3,641
21.19	2,699	3,775
21.24	2,743	3,911
21.29	2,786	4,049
21.34	2,830	4,189
21.39	2,874	4,332
21.44	2,919	4,477
21.49	2,964	4,624
21.54	3,009	4,773
21.59	3,055	4,925
21.64	3,101	5,079
21.69	3,147	5,235
21.74	3,194	5,393
21.79	3,241	5,554
21.84	3,288	5,717
21.89	3,336	5,883
21.94	3,384	6,051
21.99	3,432	6,221
22.04	3,481	6,394
22.09	3,530	6,569
22.14	3,579	6,747
22.19	**3,629**	**6,927**

Summary for Pond MBR-2: Parking Lot Micro-Bioretention

Inflow Area = 0.460 ac, 58.66% Impervious, Inflow Depth > 2.44" for 2-yr event
Inflow = 1.61 cfs @ 11.97 hrs, Volume= 0.094 af
Outflow = 0.03 cfs @ 16.46 hrs, Volume= 0.022 af, Atten= 98%, Lag= 269.6 min
Primary = 0.03 cfs @ 16.46 hrs, Volume= 0.022 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 23.90' @ 16.46 hrs Surf.Area= 2,274 sf Storage= 3,218 cf

Plug-Flow detention time= 463.7 min calculated for 0.022 af (24% of inflow)
Center-of-Mass det. time= 316.3 min (1,114.6 - 798.3)

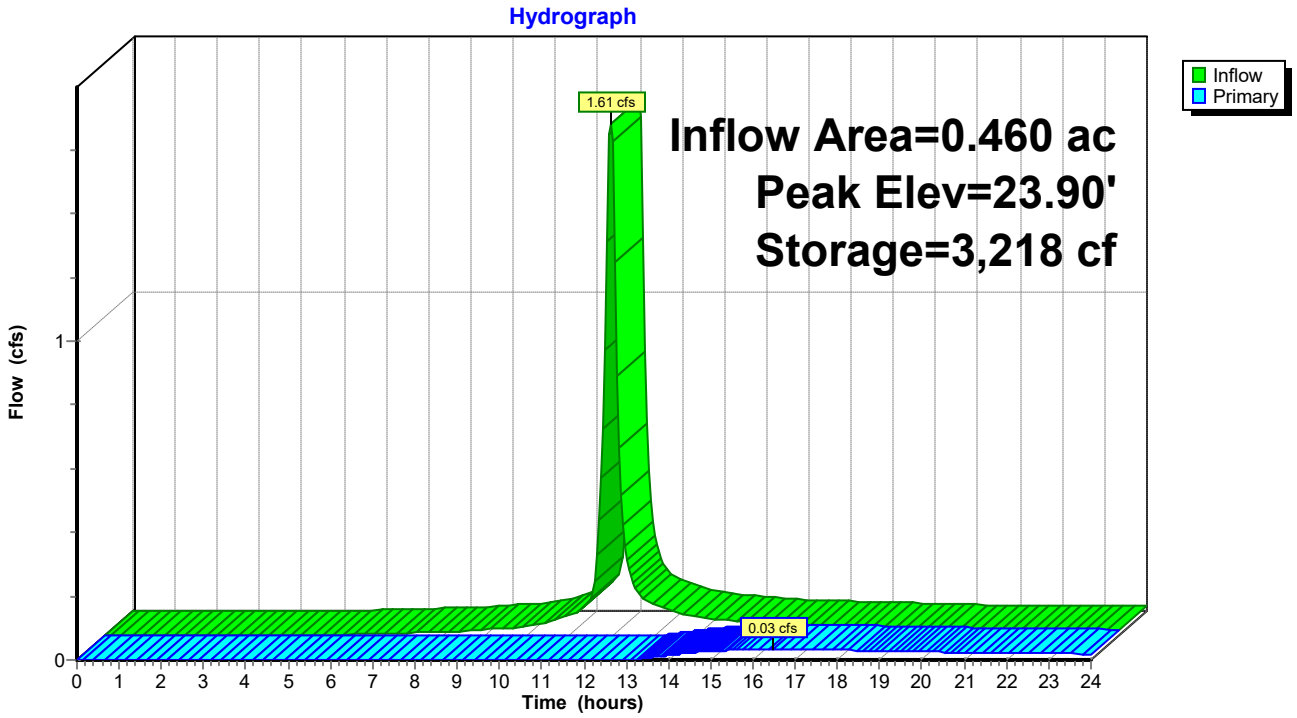
Volume	Invert	Avail.Storage	Storage Description
#1	20.74'	5,446 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.74	1,385	178.0	0.0	0	0	1,385
20.75	1,385	178.0	40.0	6	6	1,387
22.74	1,385	178.0	40.0	1,102	1,108	1,741
22.75	1,385	178.0	100.0	14	1,122	1,743
23.75	2,150	203.0	100.0	1,754	2,875	2,524
24.75	3,015	229.0	100.0	2,570	5,446	3,444

Device	Routing	Invert	Outlet Devices
#1	Primary	20.75'	**12.0" Round 12" N-12 Culvert** L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 20.75' / 20.65' S= 0.0008 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	23.75'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.25'	**10.7' long Rim MD374.23** 0 End Contraction(s)

Primary OutFlow Max=0.03 cfs @ 16.46 hrs HW=23.90' TW=0.00' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 0.03 cfs of 4.27 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.03 cfs @ 1.26 fps)
  └─**3=Rim MD374.23** (Controls 0.00 cfs)

Pond MBR-2: Parking Lot Micro-Bioretention



Stage-Area-Storage for Pond MBR-2: Parking Lot Micro-Bioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.74	1,385	0
20.79	1,385	28
20.84	1,385	55
20.89	1,385	83
20.94	1,385	111
20.99	1,385	139
21.04	1,385	166
21.09	1,385	194
21.14	1,385	222
21.19	1,385	249
21.24	1,385	277
21.29	1,385	305
21.34	1,385	332
21.39	1,385	360
21.44	1,385	388
21.49	1,385	416
21.54	1,385	443
21.59	1,385	471
21.64	1,385	499
21.69	1,385	526
21.74	1,385	554
21.79	1,385	582
21.84	1,385	609
21.89	1,385	637
21.94	1,385	665
21.99	1,385	693
22.04	1,385	720
22.09	1,385	748
22.14	1,385	776
22.19	1,385	803
22.24	1,385	831
22.29	1,385	859
22.34	1,385	886
22.39	1,385	914
22.44	1,385	942
22.49	1,385	970
22.54	1,385	997
22.59	1,385	1,025
22.64	1,385	1,053
22.69	1,385	1,080
22.74	1,385	1,108
22.79	1,412	1,178
22.84	1,447	1,249
22.89	1,482	1,323
22.94	1,517	1,397
22.99	1,553	1,474
23.04	1,590	1,553
23.09	1,626	1,633
23.14	1,663	1,715
23.19	1,701	1,800
23.24	1,739	1,886
23.29	1,777	1,973
23.34	1,816	2,063
23.39	1,855	2,155
23.44	1,895	2,249
23.49	1,935	2,345
23.54	1,975	2,442
23.59	2,016	2,542
23.64	2,058	2,644
23.69	2,099	2,748
23.74	2,142	2,854
23.79	2,182	2,962
23.84	2,222	3,072
23.89	2,262	3,184
23.94	2,303	3,298
23.99	2,344	3,415
24.04	2,386	3,533
24.09	2,428	3,653
24.14	2,470	3,776
24.19	2,513	3,900
24.24	2,556	4,027
24.29	2,599	4,156
24.34	2,643	4,287
24.39	2,687	4,420
24.44	2,731	4,555
24.49	2,776	4,693
24.54	2,821	4,833
24.59	2,867	4,975
24.64	2,913	5,120
24.69	2,959	5,267
24.74	**3,006**	**5,416**

Summary for Pond MBR-3: Office Building Micro-Bioretention

Inflow Area = 0.453 ac, 54.23% Impervious, Inflow Depth > 2.35" for 2-yr event
Inflow = 1.53 cfs @ 11.97 hrs, Volume= 0.089 af
Outflow = 0.04 cfs @ 15.02 hrs, Volume= 0.028 af, Atten= 97%, Lag= 183.1 min
Primary = 0.04 cfs @ 15.02 hrs, Volume= 0.028 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 24.19' @ 15.02 hrs Surf.Area= 1,954 sf Storage= 2,820 cf

Plug-Flow detention time= 390.7 min calculated for 0.028 af (31% of inflow)
Center-of-Mass det. time= 260.0 min (1,062.6 - 802.6)

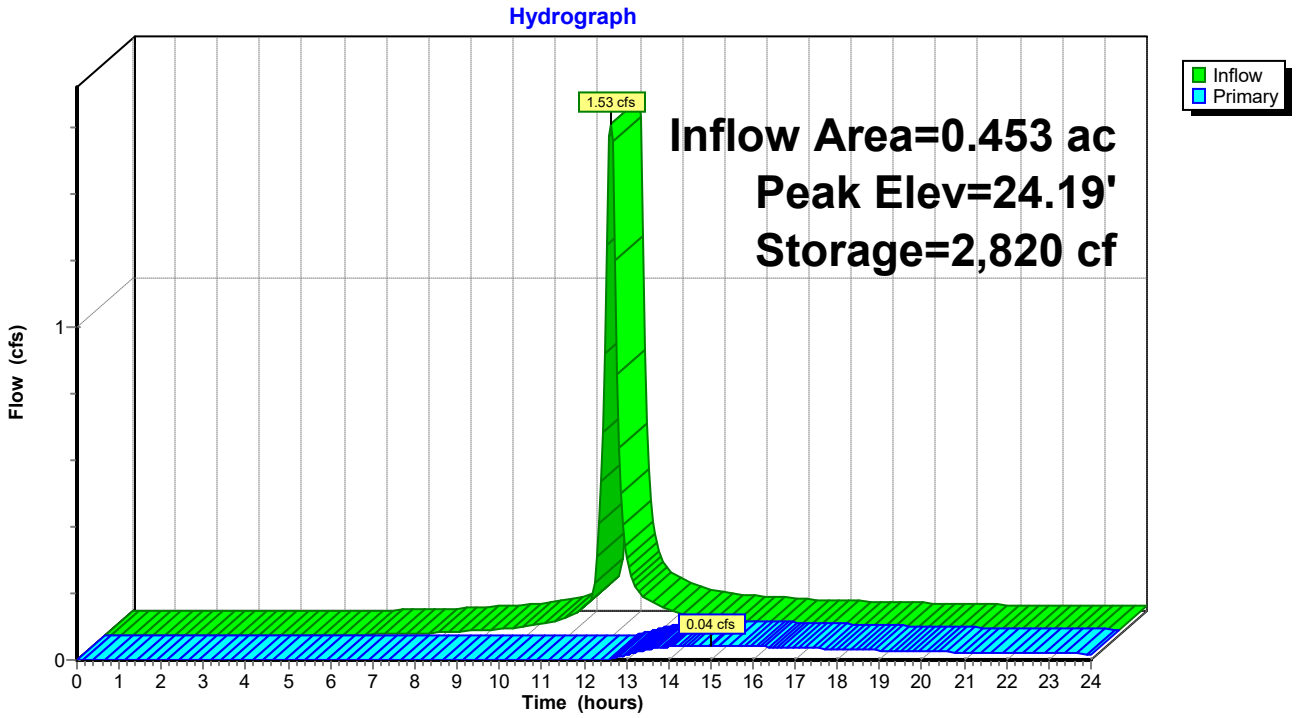
Volume	Invert	Avail.Storage	Storage Description
#1	20.99'	4,647 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.99	1,193	146.0	0.0	0	0	1,193
21.00	1,193	146.0	40.0	5	5	1,194
22.99	1,193	146.0	40.0	950	954	1,485
23.00	1,193	146.0	100.0	12	966	1,486
24.00	1,826	171.0	100.0	1,498	2,465	2,137
25.00	2,559	196.0	100.0	2,182	4,647	2,890

Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	**12.0" Round 12" N-12 Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.00' / 20.31' S= 0.0197 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.00'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.50'	**10.7' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.04 cfs @ 15.02 hrs HW=24.19' TW=20.46' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 0.04 cfs of 6.20 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.04 cfs @ 1.39 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond MBR-3: Office Building Micro-Bioretention



Stage-Area-Storage for Pond MBR-3: Office Building Micro-Bioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,193	0
21.04	1,193	24
21.09	1,193	48
21.14	1,193	72
21.19	1,193	95
21.24	1,193	119
21.29	1,193	143
21.34	1,193	167
21.39	1,193	191
21.44	1,193	215
21.49	1,193	239
21.54	1,193	262
21.59	1,193	286
21.64	1,193	310
21.69	1,193	334
21.74	1,193	358
21.79	1,193	382
21.84	1,193	406
21.89	1,193	429
21.94	1,193	453
21.99	1,193	477
22.04	1,193	501
22.09	1,193	525
22.14	1,193	549
22.19	1,193	573
22.24	1,193	597
22.29	1,193	620
22.34	1,193	644
22.39	1,193	668
22.44	1,193	692
22.49	1,193	716
22.54	1,193	740
22.59	1,193	764
22.64	1,193	787
22.69	1,193	811
22.74	1,193	835
22.79	1,193	859
22.84	1,193	883
22.89	1,193	907
22.94	1,193	931
22.99	1,193	954
23.04	1,216	1,015
23.09	1,244	1,076
23.14	1,274	1,139
23.19	1,303	1,203
23.24	1,333	1,269
23.29	1,363	1,337
23.34	1,393	1,406
23.39	1,424	1,476
23.44	1,455	1,548
23.49	1,486	1,621
23.54	1,518	1,697
23.59	1,550	1,773
23.64	1,583	1,852
23.69	1,615	1,932
23.74	1,649	2,013
23.79	1,682	2,096
23.84	1,716	2,181
23.89	1,750	2,268
23.94	1,784	2,356
23.99	1,819	2,446
24.04	1,853	2,538
24.09	1,887	2,632
24.14	1,921	2,727
24.19	1,956	2,824
24.24	1,991	2,923
24.29	2,026	3,023
24.34	2,061	3,125
24.39	2,097	3,229
24.44	2,133	3,335
24.49	2,170	3,442
24.54	2,206	3,552
24.59	2,244	3,663
24.64	2,281	3,776
24.69	2,319	3,891
24.74	2,357	4,008
24.79	2,395	4,127
24.84	2,433	4,248
24.89	2,472	4,370
24.94	2,512	4,495
24.99	**2,551**	**4,621**

Summary for Pond MBR-4: Micro-Bioretention #4

Inflow Area = 0.409 ac, 74.70% Impervious, Inflow Depth > 2.63" for 2-yr event
Inflow = 1.51 cfs @ 11.97 hrs, Volume= 0.090 af
Outflow = 0.05 cfs @ 14.20 hrs, Volume= 0.029 af, Atten= 97%, Lag= 133.5 min
Primary = 0.05 cfs @ 14.20 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 25.20' @ 14.20 hrs Surf.Area= 1,917 sf Storage= 2,826 cf

Plug-Flow detention time= 384.5 min calculated for 0.029 af (33% of inflow)
Center-of-Mass det. time= 249.1 min (1,037.7 - 788.6)

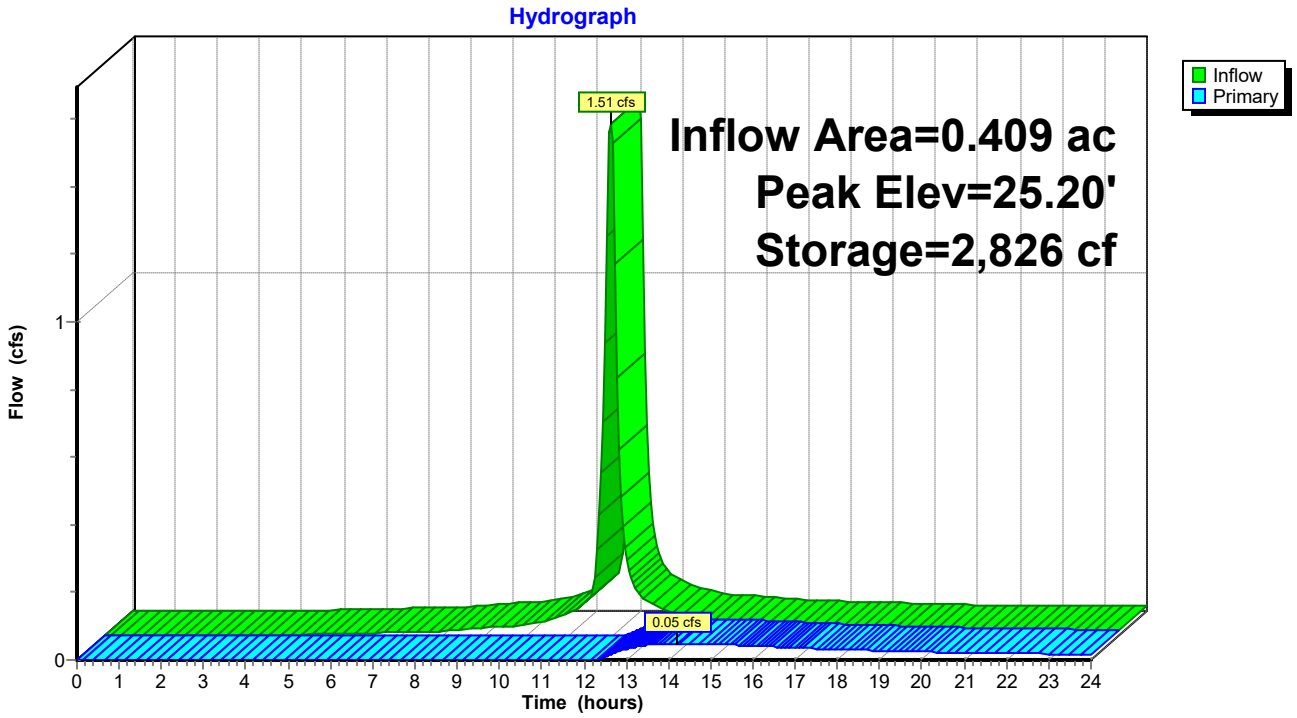
Volume	Invert	Avail.Storage	Storage Description
#1	21.99'	4,571 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
21.99	1,196	135.0	0.0	0	0	1,196
22.00	1,196	135.0	40.0	5	5	1,197
23.99	1,196	135.0	40.0	952	957	1,466
24.00	1,196	135.0	100.0	12	969	1,467
25.00	1,786	160.0	100.0	1,481	2,450	2,072
26.00	2,475	185.0	100.0	2,121	4,571	2,780

Device	Routing	Invert	Outlet Devices
#1	Primary	22.00'	**12.0" Round 12" N-12** L= 62.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 22.00' / 20.45' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	25.00'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	25.50'	**10.7' long Rim MD 374.23** 0 End Contraction(s)

Primary OutFlow Max=0.05 cfs @ 14.20 hrs HW=25.20' TW=20.69' (Dynamic Tailwater)
└─**1=12" N-12** (Passes 0.05 cfs of 6.22 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.05 cfs @ 1.45 fps)
  └─**3=Rim MD 374.23** (Controls 0.00 cfs)

Pond MBR-4: Micro-Bioretention #4



Stage-Area-Storage for Pond MBR-4: Micro-Bioretention #4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
21.99	1,196	0
22.04	1,196	24
22.09	1,196	48
22.14	1,196	72
22.19	1,196	96
22.24	1,196	120
22.29	1,196	144
22.34	1,196	167
22.39	1,196	191
22.44	1,196	215
22.49	1,196	239
22.54	1,196	263
22.59	1,196	287
22.64	1,196	311
22.69	1,196	335
22.74	1,196	359
22.79	1,196	383
22.84	1,196	407
22.89	1,196	431
22.94	1,196	454
22.99	1,196	478
23.04	1,196	502
23.09	1,196	526
23.14	1,196	550
23.19	1,196	574
23.24	1,196	598
23.29	1,196	622
23.34	1,196	646
23.39	1,196	670
23.44	1,196	694
23.49	1,196	718
23.54	1,196	742
23.59	1,196	765
23.64	1,196	789
23.69	1,196	813
23.74	1,196	837
23.79	1,196	861
23.84	1,196	885
23.89	1,196	909
23.94	1,196	933
23.99	1,196	957
24.04	1,217	1,017
24.09	1,244	1,079
24.14	1,272	1,141
24.19	1,299	1,206
24.24	1,327	1,271
24.29	1,355	1,338
24.34	1,383	1,407
24.39	1,412	1,477
24.44	1,441	1,548
24.49	1,470	1,621
24.54	1,500	1,695
24.59	1,530	1,771
24.64	1,560	1,848
24.69	1,590	1,927
24.74	1,621	2,007
24.79	1,652	2,089
24.84	1,684	2,172
24.89	1,715	2,257
24.94	1,747	2,344
24.99	1,780	2,432
25.04	1,811	2,522
25.09	1,843	2,613
25.14	1,876	2,706
25.19	1,908	2,801
25.24	1,941	2,897
25.29	1,974	2,995
25.34	2,008	3,094
25.39	2,041	3,196
25.44	2,075	3,299
25.49	2,110	3,403
25.54	2,144	3,510
25.59	2,179	3,618
25.64	2,214	3,727
25.69	2,249	3,839
25.74	2,285	3,952
25.79	2,321	4,068
25.84	2,357	4,185
25.89	2,394	4,303
25.94	2,430	4,424
25.99	**2,468**	**4,546**

Summary for Pond MBR-5: Access Road Micro-Bioretention #5

Inflow Area = 0.460 ac, 71.74% Impervious, Inflow Depth > 2.63" for 2-yr event
Inflow = 1.70 cfs @ 11.97 hrs, Volume= 0.101 af
Outflow = 0.03 cfs @ 17.88 hrs, Volume= 0.013 af, Atten= 98%, Lag= 354.5 min
Primary = 0.03 cfs @ 17.88 hrs, Volume= 0.013 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.22' @ 17.88 hrs Surf.Area= 2,725 sf Storage= 3,855 cf

Plug-Flow detention time= 636.1 min calculated for 0.013 af (13% of inflow)
Center-of-Mass det. time= 418.6 min (1,207.1 - 788.6)

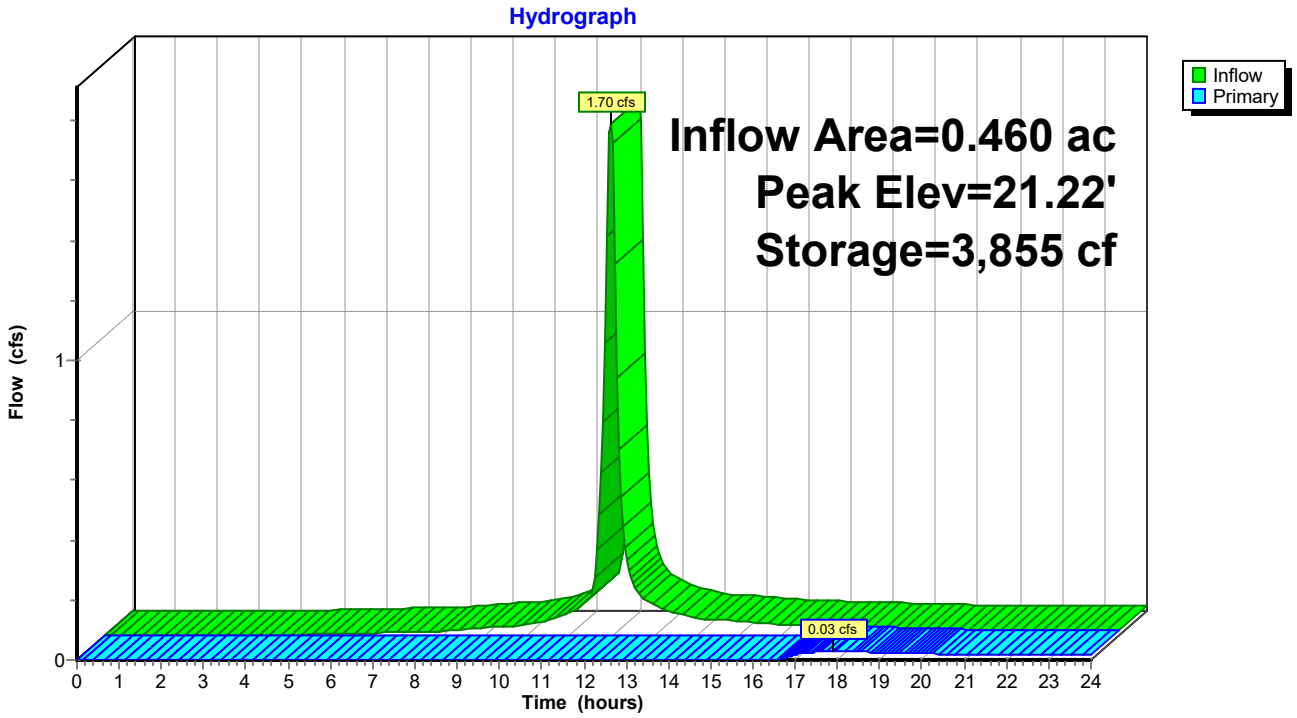
Volume	Invert	Avail.Storage	Storage Description
#1	18.19'	6,964 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
18.19	1,878	195.0	0.0	0	0	1,878
18.20	1,878	195.0	40.0	8	8	1,880
20.19	1,878	195.0	40.0	1,495	1,502	2,268
20.20	1,878	195.0	100.0	19	1,521	2,270
21.20	2,708	220.0	100.0	2,280	3,802	3,121
22.20	3,639	245.0	100.0	3,162	6,964	4,075

Device	Routing	Invert	Outlet Devices
#1	Primary	19.50'	**6.0" Round 6" PVC X 2.00** L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.50' / 18.70' S= 0.0267 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.03 cfs @ 17.88 hrs HW=21.22' TW=20.39' (Dynamic Tailwater)
└─**1=6" PVC** (Passes 0.03 cfs of 1.52 cfs potential flow)
  └─**2=6" Atrium Grate** (Weir Controls 0.03 cfs @ 0.46 fps)

Pond MBR-5: Access Road Micro-Bioretention #5



Stage-Area-Storage for Pond MBR-5: Access Road Micro-Bioretention #5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.19	1,878	0
18.24	1,878	38
18.29	1,878	75
18.34	1,878	113
18.39	1,878	150
18.44	1,878	188
18.49	1,878	225
18.54	1,878	263
18.59	1,878	300
18.64	1,878	338
18.69	1,878	376
18.74	1,878	413
18.79	1,878	451
18.84	1,878	488
18.89	1,878	526
18.94	1,878	563
18.99	1,878	601
19.04	1,878	639
19.09	1,878	676
19.14	1,878	714
19.19	1,878	751
19.24	1,878	789
19.29	1,878	826
19.34	1,878	864
19.39	1,878	901
19.44	1,878	939
19.49	1,878	977
19.54	1,878	1,014
19.59	1,878	1,052
19.64	1,878	1,089
19.69	1,878	1,127
19.74	1,878	1,164
19.79	1,878	1,202
19.84	1,878	1,239
19.89	1,878	1,277
19.94	1,878	1,315
19.99	1,878	1,352
20.04	1,878	1,390
20.09	1,878	1,427
20.14	1,878	1,465
20.19	1,878	1,502
20.24	1,908	1,597
20.29	1,946	1,693
20.34	1,985	1,792
20.39	2,024	1,892
20.44	2,063	1,994
20.49	2,103	2,098
20.54	2,143	2,204
20.59	2,184	2,312
20.64	2,225	2,423
20.69	2,266	2,535
20.74	2,307	2,649
20.79	2,349	2,766
20.84	2,392	2,884
20.89	2,435	3,005
20.94	2,478	3,128
20.99	2,521	3,253
21.04	2,565	3,380
21.09	2,609	3,509
21.14	2,654	3,641
21.19	2,699	3,775
21.24	2,743	3,911
21.29	2,786	4,049
21.34	2,830	4,189
21.39	2,874	4,332
21.44	2,919	4,477
21.49	2,964	4,624
21.54	3,009	4,773
21.59	3,055	4,925
21.64	3,101	5,079
21.69	3,147	5,235
21.74	3,194	5,393
21.79	3,241	5,554
21.84	3,288	5,717
21.89	3,336	5,883
21.94	3,384	6,051
21.99	3,432	6,221
22.04	3,481	6,394
22.09	3,530	6,569
22.14	3,579	6,747
22.19	**3,629**	**6,927**

Summary for Pond MBR-6: Micro-Bioretention #6

Inflow Area = 0.419 ac, 74.03% Impervious, Inflow Depth > 2.63" for 2-yr event
Inflow = 1.55 cfs @ 11.97 hrs, Volume= 0.092 af
Outflow = 0.05 cfs @ 13.98 hrs, Volume= 0.032 af, Atten= 96%, Lag= 120.8 min
Primary = 0.05 cfs @ 13.98 hrs, Volume= 0.032 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 24.22' @ 13.98 hrs Surf.Area= 1,927 sf Storage= 2,855 cf

Plug-Flow detention time= 371.5 min calculated for 0.032 af (34% of inflow)
Center-of-Mass det. time= 239.7 min (1,028.3 - 788.6)

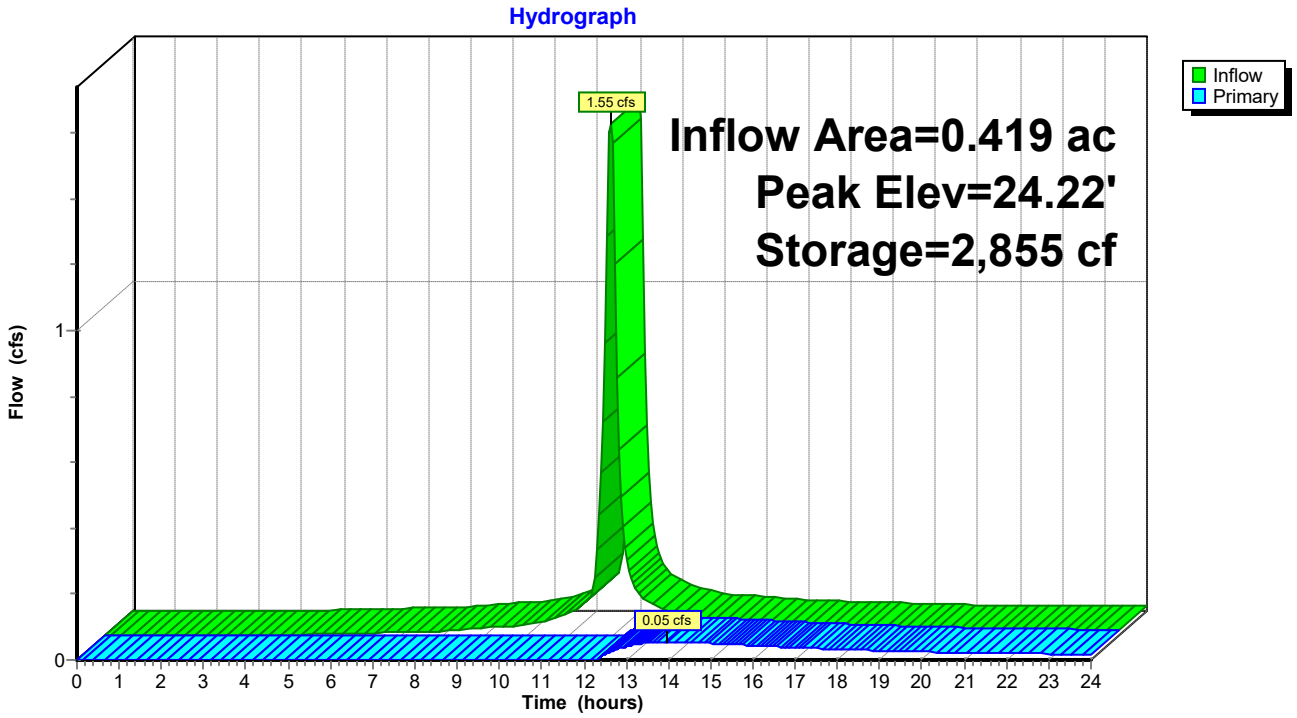
Volume	Invert	Avail.Storage	Storage Description
#1	20.99'	4,571 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.99	1,196	135.0	0.0	0	0	1,196
21.00	1,196	135.0	40.0	5	5	1,197
22.99	1,196	135.0	40.0	952	957	1,466
23.00	1,196	135.0	100.0	12	969	1,467
24.00	1,786	160.0	100.0	1,481	2,450	2,072
25.00	2,475	185.0	100.0	2,121	4,571	2,780

Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	**12.0" Round 12" N-12 Culvert** L= 26.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.00' / 20.45' S= 0.0205 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.00'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.50'	**10.7' long Rim MD 374.23** 2 End Contraction(s)

Primary OutFlow Max=0.05 cfs @ 13.98 hrs HW=24.22' TW=20.69' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 0.05 cfs of 6.23 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.05 cfs @ 1.50 fps)
  └─**3=Rim MD 374.23** (Controls 0.00 cfs)

Pond MBR-6: Micro-Bioretention #6



Stage-Area-Storage for Pond MBR-6: Micro-Bioretention #6

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,196	0
21.04	1,196	24
21.09	1,196	48
21.14	1,196	72
21.19	1,196	96
21.24	1,196	120
21.29	1,196	144
21.34	1,196	167
21.39	1,196	191
21.44	1,196	215
21.49	1,196	239
21.54	1,196	263
21.59	1,196	287
21.64	1,196	311
21.69	1,196	335
21.74	1,196	359
21.79	1,196	383
21.84	1,196	407
21.89	1,196	431
21.94	1,196	454
21.99	1,196	478
22.04	1,196	502
22.09	1,196	526
22.14	1,196	550
22.19	1,196	574
22.24	1,196	598
22.29	1,196	622
22.34	1,196	646
22.39	1,196	670
22.44	1,196	694
22.49	1,196	718
22.54	1,196	742
22.59	1,196	765
22.64	1,196	789
22.69	1,196	813
22.74	1,196	837
22.79	1,196	861
22.84	1,196	885
22.89	1,196	909
22.94	1,196	933
22.99	1,196	957
23.04	1,217	1,017
23.09	1,244	1,079
23.14	1,272	1,141
23.19	1,299	1,206
23.24	1,327	1,271
23.29	1,355	1,338
23.34	1,383	1,407
23.39	1,412	1,477
23.44	1,441	1,548
23.49	1,470	1,621
23.54	1,500	1,695
23.59	1,530	1,771
23.64	1,560	1,848
23.69	1,590	1,927
23.74	1,621	2,007
23.79	1,652	2,089
23.84	1,684	2,172
23.89	1,715	2,257
23.94	1,747	2,344
23.99	1,780	2,432
24.04	1,811	2,522
24.09	1,843	2,613
24.14	1,876	2,706
24.19	1,908	2,801
24.24	1,941	2,897
24.29	1,974	2,995
24.34	2,008	3,094
24.39	2,041	3,196
24.44	2,075	3,299
24.49	2,110	3,403
24.54	2,144	3,510
24.59	2,179	3,618
24.64	2,214	3,727
24.69	2,249	3,839
24.74	2,285	3,952
24.79	2,321	4,068
24.84	2,357	4,185
24.89	2,394	4,303
24.94	2,430	4,424
24.99	**2,468**	**4,546**

Summary for Pond MBR-7: Micro-Bioretention #7

Inflow Area = 0.459 ac, 81.96% Impervious, Inflow Depth > 2.84" for 2-yr event
Inflow = 1.78 cfs @ 11.97 hrs, Volume= 0.109 af
Outflow = 0.26 cfs @ 12.35 hrs, Volume= 0.044 af, Atten= 85%, Lag= 22.7 min
Primary = 0.26 cfs @ 12.35 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.29' @ 12.35 hrs Surf.Area= 1,786 sf Storage= 2,951 cf

Plug-Flow detention time= 290.7 min calculated for 0.044 af (40% of inflow)
Center-of-Mass det. time= 162.2 min (939.1 - 776.9)

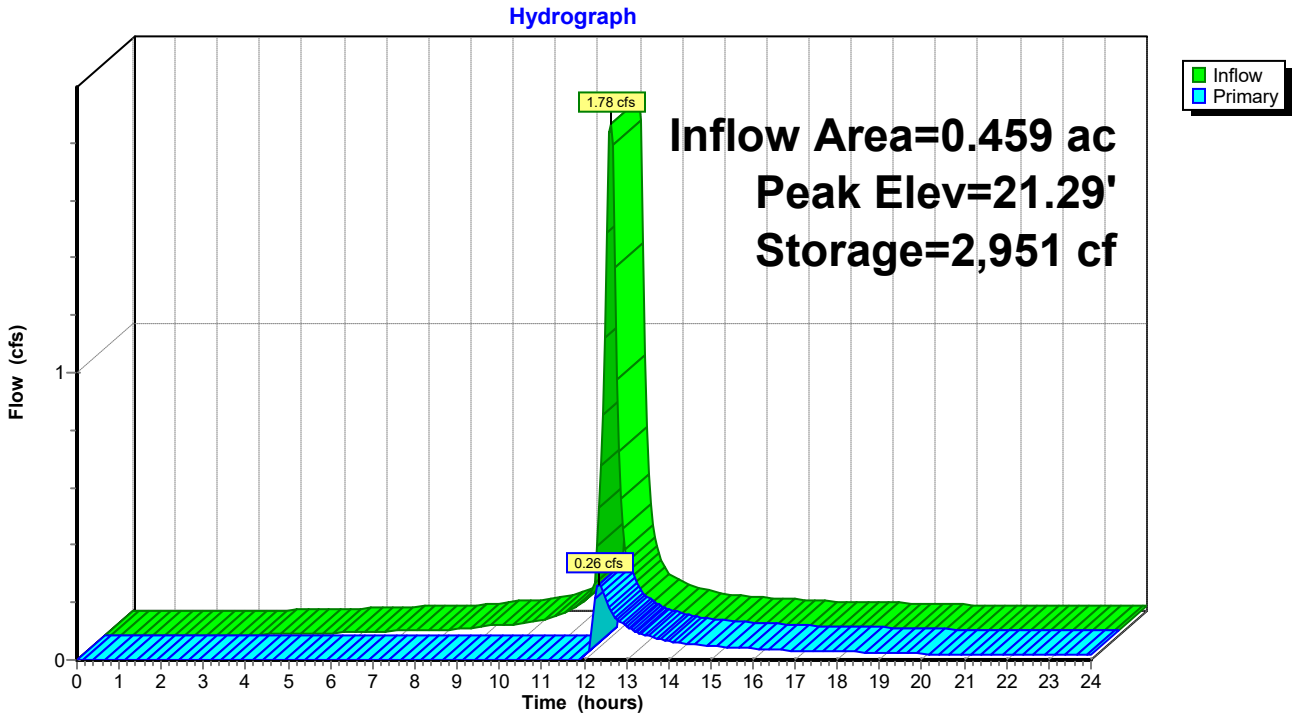
Volume	Invert	Avail.Storage	Storage Description
#1	17.19'	6,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.19	1,136	136.0	0.0	0	0	1,136
17.20	1,136	136.0	40.0	5	5	1,137
20.19	1,136	136.0	40.0	1,359	1,363	1,544
20.20	1,136	136.0	100.0	11	1,375	1,545
21.20	1,730	161.0	100.0	1,423	2,797	2,155
22.20	2,424	186.0	100.0	2,067	4,864	2,866
22.70	2,808	198.0	100.0	1,307	6,171	3,245

Device	Routing	Invert	Outlet Devices
#1	Primary	19.80'	**6.0" Round 6" PVC X 2.00** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.80' / 19.70' S= 0.0050 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.26 cfs @ 12.35 hrs HW=21.29' TW=20.65' (Dynamic Tailwater)
└─**1=6" PVC** (Passes 0.26 cfs of 1.34 cfs potential flow)
└─**2=6" Atrium Grate** (Weir Controls 0.26 cfs @ 0.97 fps)

Pond MBR-7: Micro-Bioretention #7



Stage-Area-Storage for Pond MBR-7: Micro-Bioretention #7

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0
17.29	1,136	45
17.39	1,136	91
17.49	1,136	136
17.59	1,136	182
17.69	1,136	227
17.79	1,136	273
17.89	1,136	318
17.99	1,136	364
18.09	1,136	409
18.19	1,136	454
18.29	1,136	500
18.39	1,136	545
18.49	1,136	591
18.59	1,136	636
18.69	1,136	682
18.79	1,136	727
18.89	1,136	772
18.99	1,136	818
19.09	1,136	863
19.19	1,136	909
19.29	1,136	954
19.39	1,136	1,000
19.49	1,136	1,045
19.59	1,136	1,091
19.69	1,136	1,136
19.79	1,136	1,181
19.89	1,136	1,227
19.99	1,136	1,272
20.09	1,136	1,318
20.19	1,136	1,363
20.29	1,184	1,479
20.39	1,239	1,600
20.49	1,295	1,727
20.59	1,353	1,859
20.69	1,412	1,997
20.79	1,471	2,142
20.89	1,533	2,292
20.99	1,595	2,448
21.09	1,659	2,611
21.19	1,723	2,780
21.29	1,788	2,955
21.39	1,853	3,137
21.49	1,919	3,326
21.59	1,987	3,521
21.69	2,055	3,723
21.79	2,125	3,933
21.89	2,196	4,149
21.99	2,269	4,372
22.09	2,342	4,602
22.19	2,416	4,840
22.29	2,491	5,086
22.39	2,567	5,338
22.49	2,643	5,599
22.59	2,721	5,867
22.69	**2,800**	**6,143**

Summary for Pond MBR-8: Micro-Bioretention #8

Inflow Area = 0.449 ac, 79.34% Impervious, Inflow Depth > 2.73" for 2-yr event
Inflow = 1.70 cfs @ 11.97 hrs, Volume= 0.102 af
Outflow = 0.15 cfs @ 12.56 hrs, Volume= 0.037 af, Atten= 91%, Lag= 35.4 min
Primary = 0.15 cfs @ 12.56 hrs, Volume= 0.037 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.26' @ 12.56 hrs Surf.Area= 1,769 sf Storage= 2,904 cf

Plug-Flow detention time= 312.7 min calculated for 0.037 af (37% of inflow)
Center-of-Mass det. time= 182.0 min (965.1 - 783.0)

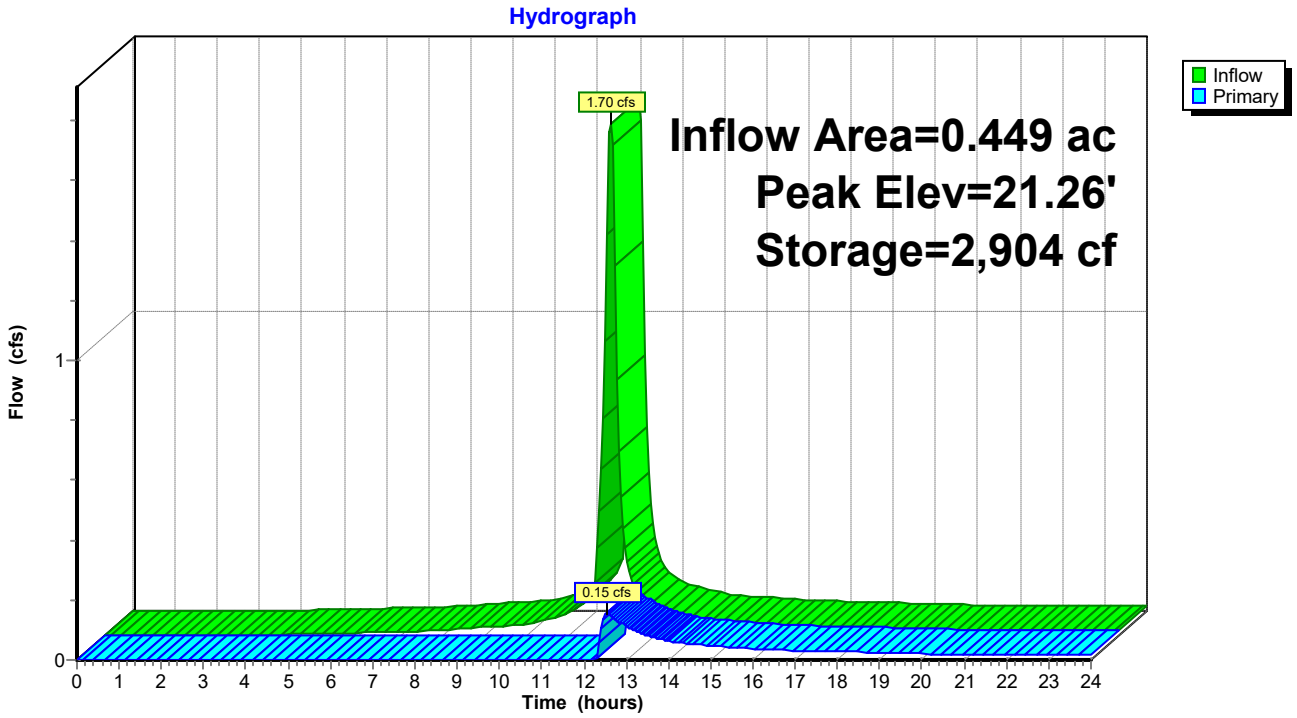
Volume	Invert	Avail.Storage	Storage Description
#1	17.19'	6,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.19	1,136	136.0	0.0	0	0	1,136
17.20	1,136	136.0	40.0	5	5	1,137
20.19	1,136	136.0	40.0	1,359	1,363	1,544
20.20	1,136	136.0	100.0	11	1,375	1,545
21.20	1,730	161.0	100.0	1,423	2,797	2,155
22.20	2,424	186.0	100.0	2,067	4,864	2,866
22.70	2,808	198.0	100.0	1,307	6,171	3,245

Device	Routing	Invert	Outlet Devices
#1	Primary	19.80'	**6.0" Round 6" PVC X 2.00** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.80' / 19.70' S= 0.0050 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.15 cfs @ 12.56 hrs HW=21.26' TW=20.76' (Dynamic Tailwater)
└─**1=6" PVC** (Passes 0.15 cfs of 1.18 cfs potential flow)
  └─**2=6" Atrium Grate** (Weir Controls 0.15 cfs @ 0.81 fps)

Pond MBR-8: Micro-Bioretention #8



Stage-Area-Storage for Pond MBR-8: Micro-Bioretention #8

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0
17.29	1,136	45
17.39	1,136	91
17.49	1,136	136
17.59	1,136	182
17.69	1,136	227
17.79	1,136	273
17.89	1,136	318
17.99	1,136	364
18.09	1,136	409
18.19	1,136	454
18.29	1,136	500
18.39	1,136	545
18.49	1,136	591
18.59	1,136	636
18.69	1,136	682
18.79	1,136	727
18.89	1,136	772
18.99	1,136	818
19.09	1,136	863
19.19	1,136	909
19.29	1,136	954
19.39	1,136	1,000
19.49	1,136	1,045
19.59	1,136	1,091
19.69	1,136	1,136
19.79	1,136	1,181
19.89	1,136	1,227
19.99	1,136	1,272
20.09	1,136	1,318
20.19	1,136	1,363
20.29	1,184	1,479
20.39	1,239	1,600
20.49	1,295	1,727
20.59	1,353	1,859
20.69	1,412	1,997
20.79	1,471	2,142
20.89	1,533	2,292
20.99	1,595	2,448
21.09	1,659	2,611
21.19	1,723	2,780
21.29	1,788	2,955
21.39	1,853	3,137
21.49	1,919	3,326
21.59	1,987	3,521
21.69	2,055	3,723
21.79	2,125	3,933
21.89	2,196	4,149
21.99	2,269	4,372
22.09	2,342	4,602
22.19	2,416	4,840
22.29	2,491	5,086
22.39	2,567	5,338
22.49	2,643	5,599
22.59	2,721	5,867
22.69	**2,800**	**6,143**

Summary for Pond MBR-9: Micro-Bioretention #9

Inflow Area = 0.464 ac, 82.17% Impervious, Inflow Depth > 2.84" for 2-yr event
Inflow = 1.80 cfs @ 11.97 hrs, Volume= 0.110 af
Outflow = 0.29 cfs @ 12.32 hrs, Volume= 0.045 af, Atten= 84%, Lag= 21.1 min
Primary = 0.29 cfs @ 12.32 hrs, Volume= 0.045 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.29' @ 12.32 hrs Surf.Area= 1,789 sf Storage= 2,960 cf

Plug-Flow detention time= 286.2 min calculated for 0.045 af (41% of inflow)
Center-of-Mass det. time= 158.9 min (935.8 - 776.9)

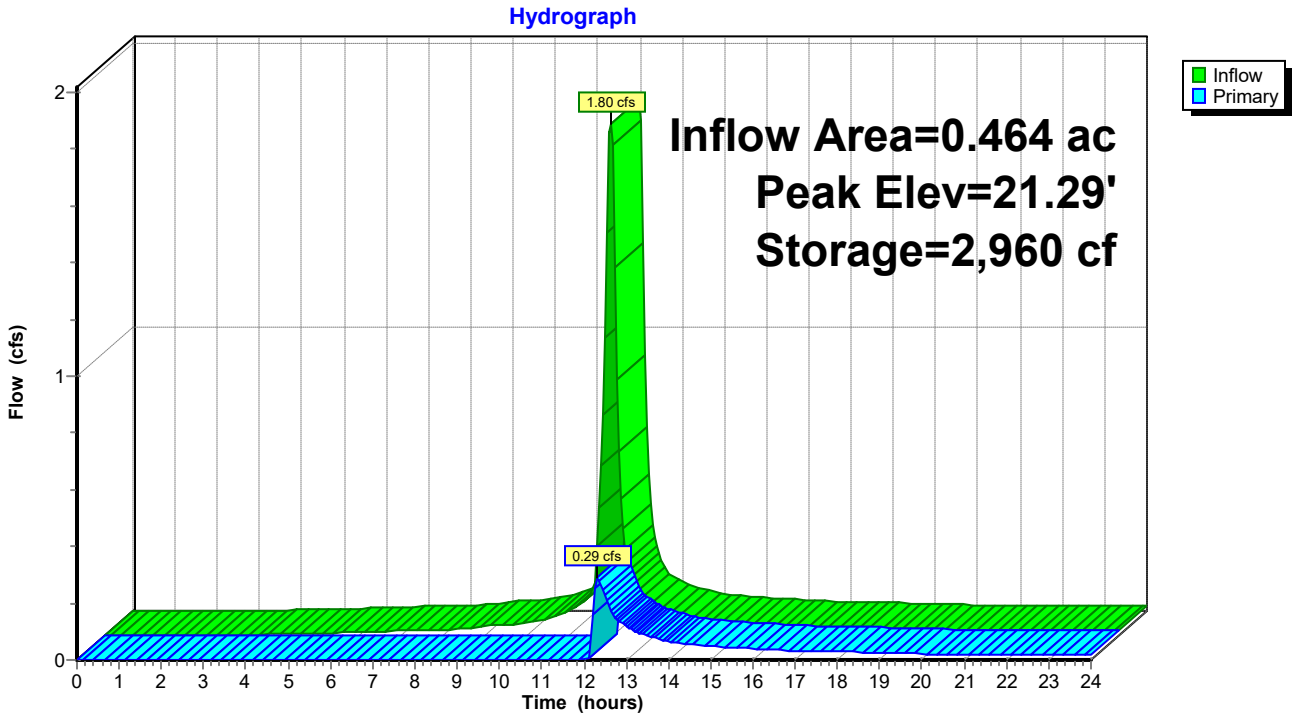
Volume	Invert	Avail.Storage	Storage Description
#1	17.19'	6,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.19	1,136	136.0	0.0	0	0	1,136
17.20	1,136	136.0	40.0	5	5	1,137
20.19	1,136	136.0	40.0	1,359	1,363	1,544
20.20	1,136	136.0	100.0	11	1,375	1,545
21.20	1,730	161.0	100.0	1,423	2,797	2,155
22.20	2,424	186.0	100.0	2,067	4,864	2,866
22.70	2,808	198.0	100.0	1,307	6,171	3,245

Device	Routing	Invert	Outlet Devices
#1	Primary	19.80'	**6.0" Round 6" PVC X 2.00** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.80' / 19.70' S= 0.0050 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.29 cfs @ 12.32 hrs HW=21.29' TW=20.62' (Dynamic Tailwater)
└─**1=6" PVC** (Passes 0.29 cfs of 1.37 cfs potential flow)
  └─**2=6" Atrium Grate** (Weir Controls 0.29 cfs @ 0.99 fps)

Pond MBR-9: Micro-Bioretention #9



Stage-Area-Storage for Pond MBR-9: Micro-Bioretention #9

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0
17.29	1,136	45
17.39	1,136	91
17.49	1,136	136
17.59	1,136	182
17.69	1,136	227
17.79	1,136	273
17.89	1,136	318
17.99	1,136	364
18.09	1,136	409
18.19	1,136	454
18.29	1,136	500
18.39	1,136	545
18.49	1,136	591
18.59	1,136	636
18.69	1,136	682
18.79	1,136	727
18.89	1,136	772
18.99	1,136	818
19.09	1,136	863
19.19	1,136	909
19.29	1,136	954
19.39	1,136	1,000
19.49	1,136	1,045
19.59	1,136	1,091
19.69	1,136	1,136
19.79	1,136	1,181
19.89	1,136	1,227
19.99	1,136	1,272
20.09	1,136	1,318
20.19	1,136	1,363
20.29	1,184	1,479
20.39	1,239	1,600
20.49	1,295	1,727
20.59	1,353	1,859
20.69	1,412	1,997
20.79	1,471	2,142
20.89	1,533	2,292
20.99	1,595	2,448
21.09	1,659	2,611
21.19	1,723	2,780
21.29	1,788	2,955
21.39	1,853	3,137
21.49	1,919	3,326
21.59	1,987	3,521
21.69	2,055	3,723
21.79	2,125	3,933
21.89	2,196	4,149
21.99	2,269	4,372
22.09	2,342	4,602
22.19	2,416	4,840
22.29	2,491	5,086
22.39	2,567	5,338
22.49	2,643	5,599
22.59	2,721	5,867
22.69	**2,800**	**6,143**

Summary for Pond MH-1: SD Manhole

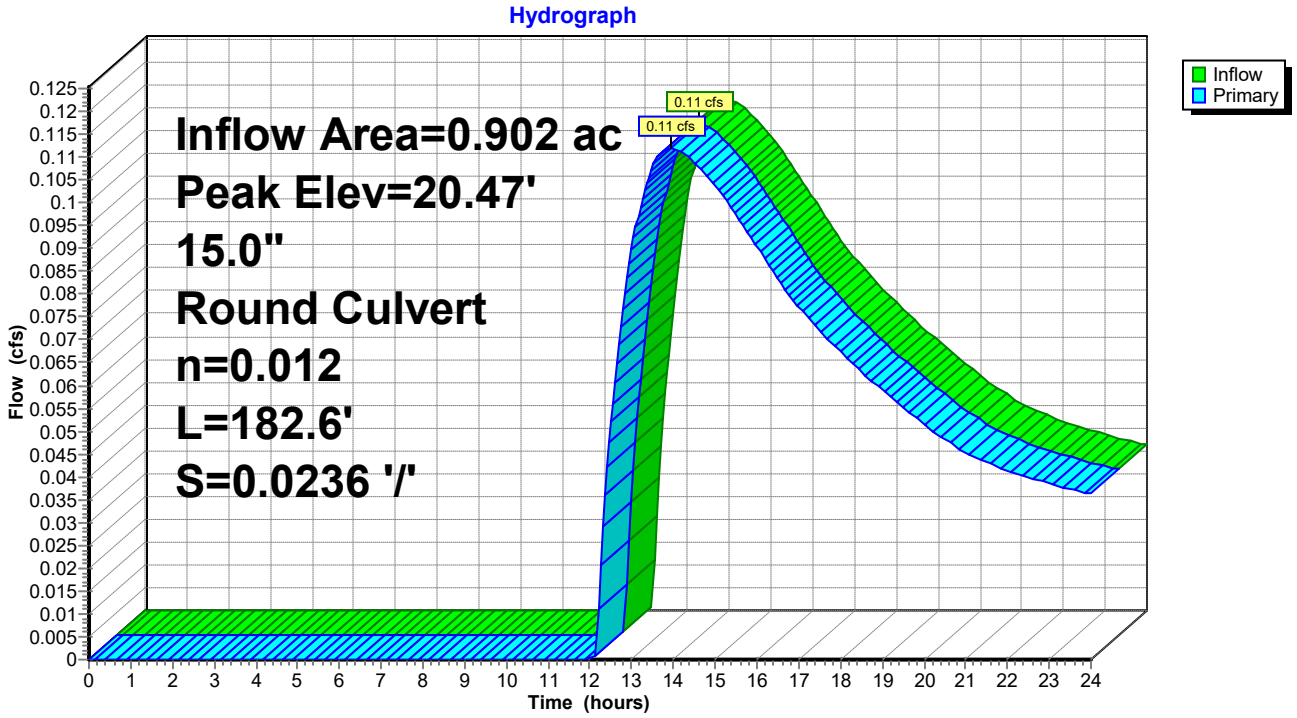
Inflow Area = 0.902 ac, 59.89% Impervious, Inflow Depth > 0.88" for 2-yr event
Inflow = 0.11 cfs @ 13.95 hrs, Volume= 0.066 af
Outflow = 0.11 cfs @ 13.95 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min
Primary = 0.11 cfs @ 13.95 hrs, Volume= 0.066 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 20.47' @ 13.95 hrs
Flood Elev= 25.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.31'	**15.0" Round 18" N-12** L= 182.6' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 20.31' / 16.00' S= 0.0236 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.11 cfs @ 13.95 hrs HW=20.47' TW=0.00' (Dynamic Tailwater)
└─**1=18" N-12** (Inlet Controls 0.11 cfs @ 1.21 fps)

Pond MH-1: SD Manhole



Stage-Area-Storage for Pond MH-1: SD Manhole

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
20.31	**0**	22.86	0
20.36	0	22.91	0
20.41	0	22.96	0
20.46	0	23.01	0
20.51	0	23.06	0
20.56	0	23.11	0
20.61	0	23.16	0
20.66	0	23.21	0
20.71	0	23.26	0
20.76	0	23.31	0
20.81	0	23.36	0
20.86	0	23.41	0
20.91	0	23.46	0
20.96	0	23.51	0
21.01	0	23.56	0
21.06	0	23.61	0
21.11	0	23.66	0
21.16	0	23.71	0
21.21	0	23.76	0
21.26	0	23.81	0
21.31	0	23.86	0
21.36	0	23.91	0
21.41	0	23.96	0
21.46	0	24.01	0
21.51	0	24.06	0
21.56	0	24.11	0
21.61	0	24.16	0
21.66	0	24.21	0
21.71	0	24.26	0
21.76	0	24.31	0
21.81	0	24.36	0
21.86	0	24.41	0
21.91	0	24.46	0
21.96	0	24.51	0
22.01	0	24.56	0
22.06	0	24.61	0
22.11	0	24.66	0
22.16	0	24.71	0
22.21	0	24.76	0
22.26	0	24.81	0
22.31	0	24.86	0
22.36	0	24.91	0
22.41	0	24.96	0
22.46	0		
22.51	0		
22.56	0		
22.61	0		
22.66	0		
22.71	0		
22.76	0		
22.81	0		

Summary for Pond MH-2: SD Manhole

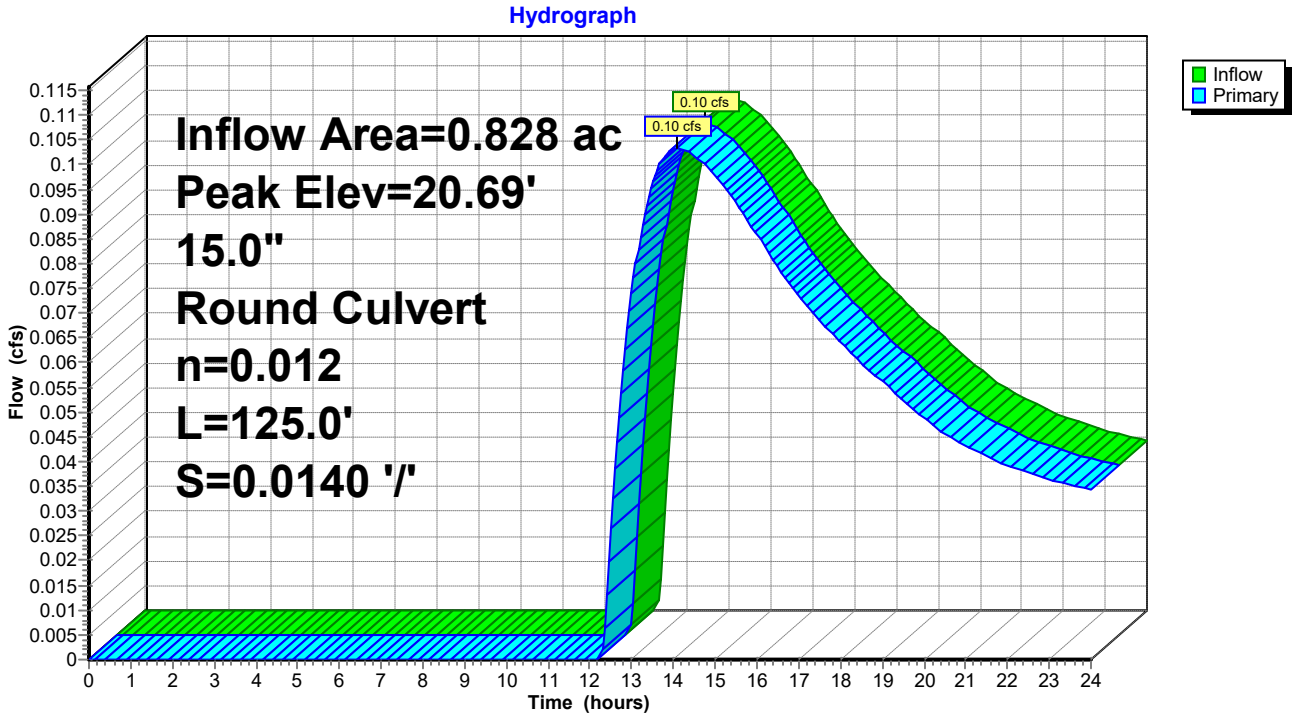
Inflow Area = 0.828 ac, 74.36% Impervious, Inflow Depth > 0.88" for 2-yr event
Inflow = 0.10 cfs @ 14.07 hrs, Volume= 0.061 af
Outflow = 0.10 cfs @ 14.07 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min
Primary = 0.10 cfs @ 14.07 hrs, Volume= 0.061 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 20.69' @ 13.93 hrs
Flood Elev= 23.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.45'	**15.0" Round 15" N-12 Culvert** L= 125.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.45' / 18.70' S= 0.0140 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.10 cfs @ 14.07 hrs HW=20.69' TW=20.54' (Dynamic Tailwater)
└─**1=15" N-12 Culvert** (Outlet Controls 0.10 cfs @ 0.93 fps)

Pond MH-2: SD Manhole



Stage-Area-Storage for Pond MH-2: SD Manhole

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
20.45	**0**	21.47	0	22.49	0
20.47	0	21.49	0	22.51	0
20.49	0	21.51	0	22.53	0
20.51	0	21.53	0	22.55	0
20.53	0	21.55	0	22.57	0
20.55	0	21.57	0	22.59	0
20.57	0	21.59	0	22.61	0
20.59	0	21.61	0	22.63	0
20.61	0	21.63	0	22.65	0
20.63	0	21.65	0	22.67	0
20.65	0	21.67	0	22.69	0
20.67	0	21.69	0	22.71	0
20.69	0	21.71	0	22.73	0
20.71	0	21.73	0	22.75	0
20.73	0	21.75	0	22.77	0
20.75	0	21.77	0	22.79	0
20.77	0	21.79	0	22.81	0
20.79	0	21.81	0	22.83	0
20.81	0	21.83	0	22.85	0
20.83	0	21.85	0	22.87	0
20.85	0	21.87	0	22.89	0
20.87	0	21.89	0	22.91	0
20.89	0	21.91	0	22.93	0
20.91	0	21.93	0	22.95	0
20.93	0	21.95	0	22.97	0
20.95	0	21.97	0	22.99	0
20.97	0	21.99	0	23.01	0
20.99	0	22.01	0	23.03	0
21.01	0	22.03	0	23.05	0
21.03	0	22.05	0	23.07	0
21.05	0	22.07	0	23.09	0
21.07	0	22.09	0	23.11	0
21.09	0	22.11	0	23.13	0
21.11	0	22.13	0	23.15	0
21.13	0	22.15	0	23.17	0
21.15	0	22.17	0	23.19	0
21.17	0	22.19	0	23.21	0
21.19	0	22.21	0	23.23	0
21.21	0	22.23	0	23.25	0
21.23	0	22.25	0	23.27	0
21.25	0	22.27	0	23.29	0
21.27	0	22.29	0	23.31	0
21.29	0	22.31	0	23.33	0
21.31	0	22.33	0	23.35	0
21.33	0	22.35	0	23.37	0
21.35	0	22.37	0	23.39	0
21.37	0	22.39	0	23.41	0
21.39	0	22.41	0	23.43	0
21.41	0	22.43	0	23.45	0
21.43	0	22.45	0	23.47	0
21.45	0	22.47	0	23.49	0

Summary for Pond SGW-1: (Future) Submerged Gravel Wetland

Inflow Area =	4.215 ac, 66.86% Impervious, Inflow Depth > 2.54" for 2-yr event				
Inflow =	15.17 cfs @	11.97 hrs,	Volume=	0.891 af	
Outflow =	0.63 cfs @	13.64 hrs,	Volume=	0.543 af,	Atten= 96%, Lag= 100.3 min
Primary =	0.63 cfs @	13.64 hrs,	Volume=	0.543 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 25.37' @ 13.64 hrs Surf.Area= 15,653 sf Storage= 25,238 cf

Plug-Flow detention time= 360.5 min calculated for 0.542 af (61% of inflow)
Center-of-Mass det. time= 257.6 min (1,051.2 - 793.6)

Volume	Invert	Avail.Storage	Storage Description
#1	23.50'	44,580 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

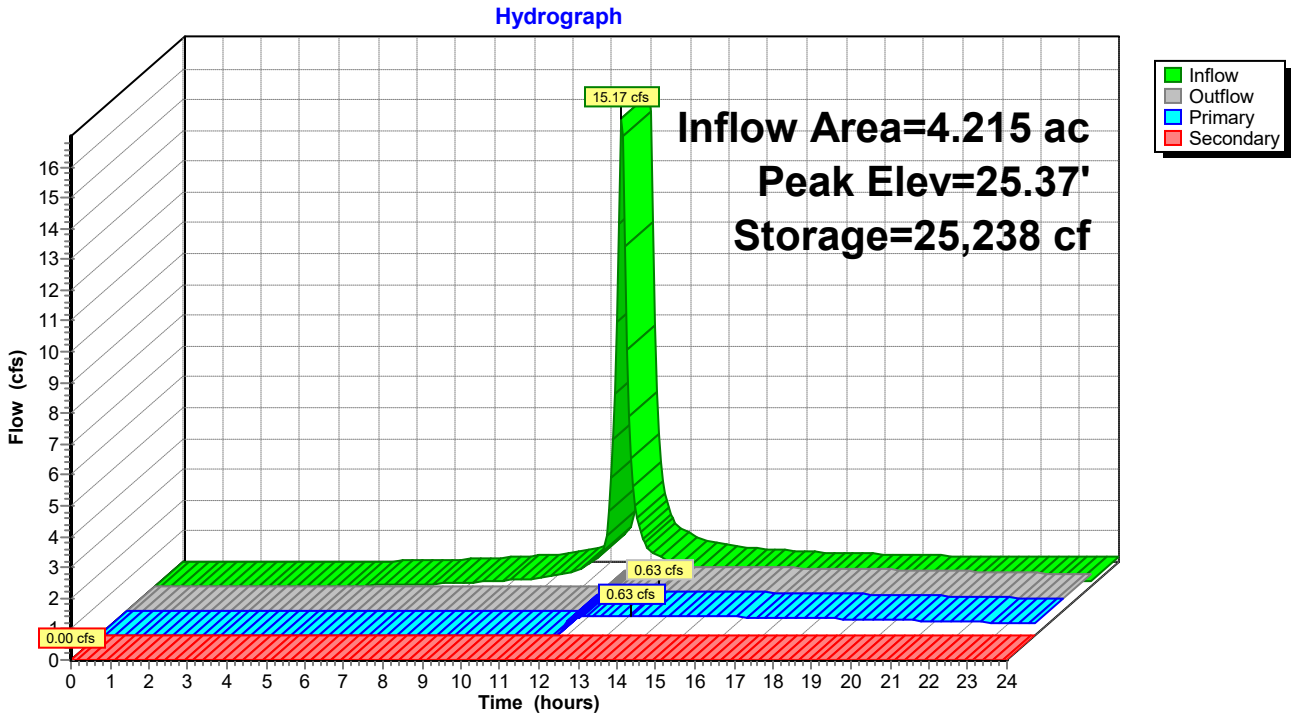
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
23.50	11,511	543.0	0	0	11,511
26.50	18,483	619.0	44,580	44,580	18,752

Device	Routing	Invert	Outlet Devices
#1	Primary	23.00'	**18.0" Round 18" N-12 Culvert** L= 324.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.00' / 21.95' S= 0.0032 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	24.00'	**3.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	26.00'	**10.7' long Rim MD 374.23** 0 End Contraction(s)
#4	Secondary	26.00'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.63 cfs @ 13.64 hrs HW=25.37' TW=0.00' (Dynamic Tailwater)
└─**1=18" N-12 Culvert** (Passes 0.63 cfs of 7.67 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.63 cfs @ 5.07 fps)
  └─**3=Rim MD 374.23** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=23.50' TW=0.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SGW-1: (Future) Submerged Gravel Wetland



Stage-Area-Storage for Pond SGW-1: (Future) Submerged Gravel Wetland

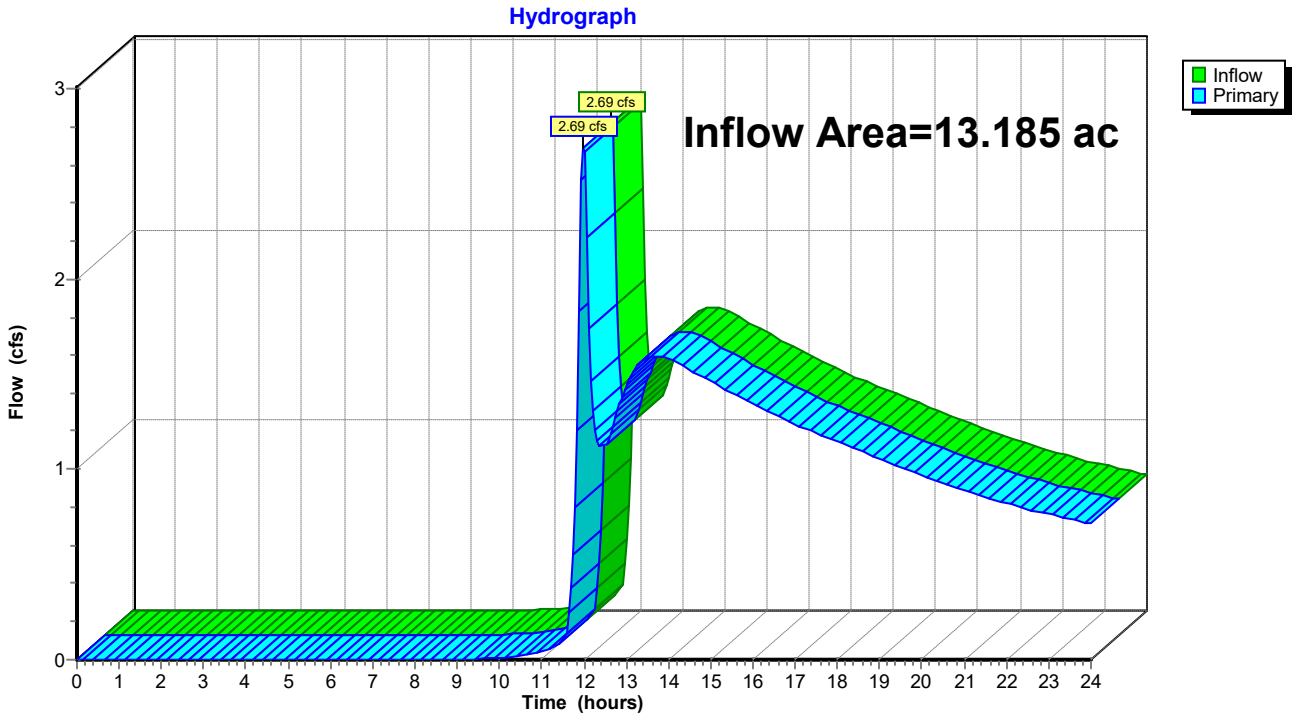
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
23.50	11,511	0
23.55	11,614	578
23.60	11,717	1,161
23.65	11,821	1,750
23.70	11,925	2,343
23.75	12,029	2,942
23.80	12,134	3,546
23.85	12,240	4,156
23.90	12,346	4,770
23.95	12,452	5,390
24.00	12,559	6,016
24.05	12,666	6,646
24.10	12,774	7,282
24.15	12,882	7,924
24.20	12,991	8,570
24.25	13,100	9,223
24.30	13,210	9,880
24.35	13,320	10,544
24.40	13,430	11,212
24.45	13,541	11,887
24.50	13,652	12,567
24.55	13,764	13,252
24.60	13,877	13,943
24.65	13,989	14,640
24.70	14,103	15,342
24.75	14,216	16,050
24.80	14,330	16,764
24.85	14,445	17,483
24.90	14,560	18,208
24.95	14,676	18,939
25.00	14,792	19,676
25.05	14,908	20,418
25.10	15,025	21,166
25.15	15,142	21,921
25.20	15,260	22,681
25.25	15,378	23,447
25.30	15,497	24,218
25.35	15,616	24,996
25.40	15,736	25,780
25.45	15,856	26,570
25.50	15,976	27,366
25.55	16,097	28,168
25.60	16,219	28,975
25.65	16,341	29,789
25.70	16,463	30,610
25.75	16,586	31,436
25.80	16,709	32,268
25.85	16,833	33,107
25.90	16,957	33,951
25.95	17,082	34,802
26.00	17,207	35,660
26.05	17,332	36,523
26.10	17,458	37,393
26.15	17,585	38,269
26.20	17,712	39,151
26.25	17,839	40,040
26.30	17,967	40,935
26.35	18,095	41,837
26.40	18,224	42,745
26.45	18,353	43,659
26.50	**18,483**	**44,580**

Summary for Link 1L: POST

Inflow Area = 13.185 ac, 53.94% Impervious, Inflow Depth > 1.08" for 2-yr event
Inflow = 2.69 cfs @ 11.99 hrs, Volume= 1.182 af
Primary = 2.69 cfs @ 11.99 hrs, Volume= 1.182 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 1L: POST

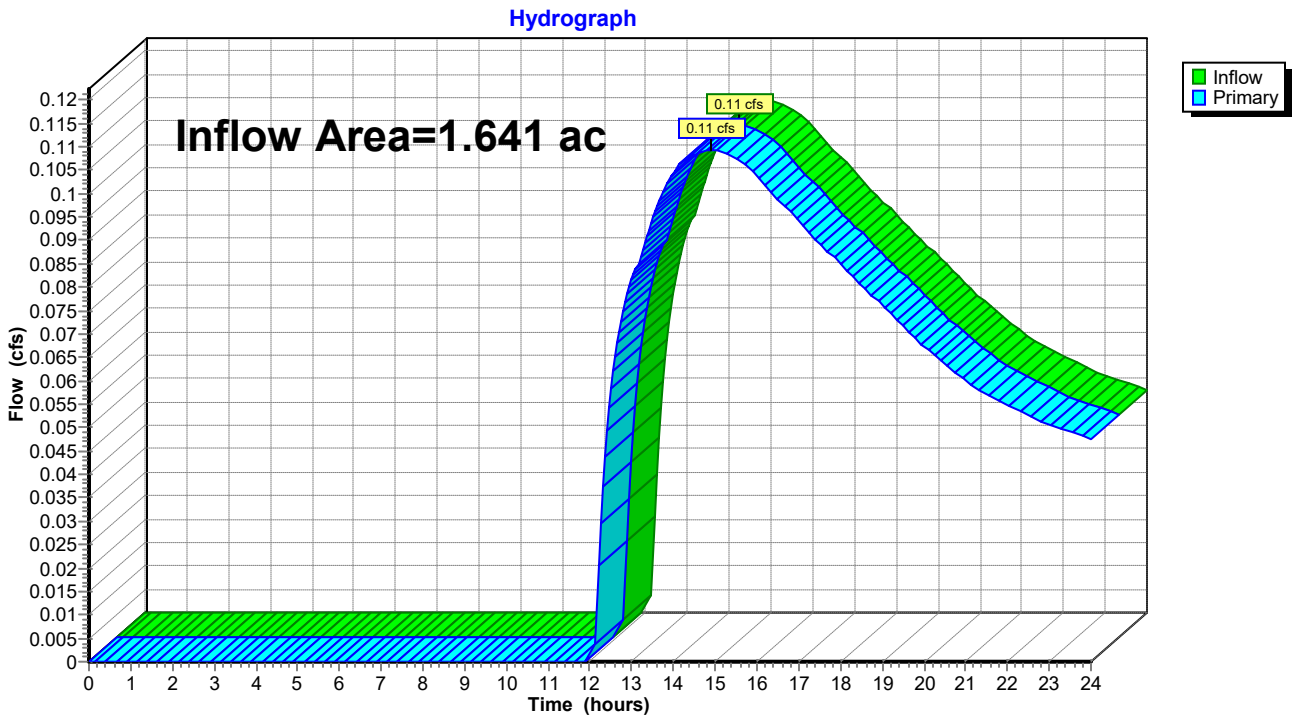


Summary for Link 2L: Existing Swale

Inflow Area = 1.641 ac, 42.66% Impervious, Inflow Depth > 0.56" for 2-yr event
Inflow = 0.11 cfs @ 14.92 hrs, Volume= 0.076 af
Primary = 0.11 cfs @ 14.92 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 2L: Existing Swale

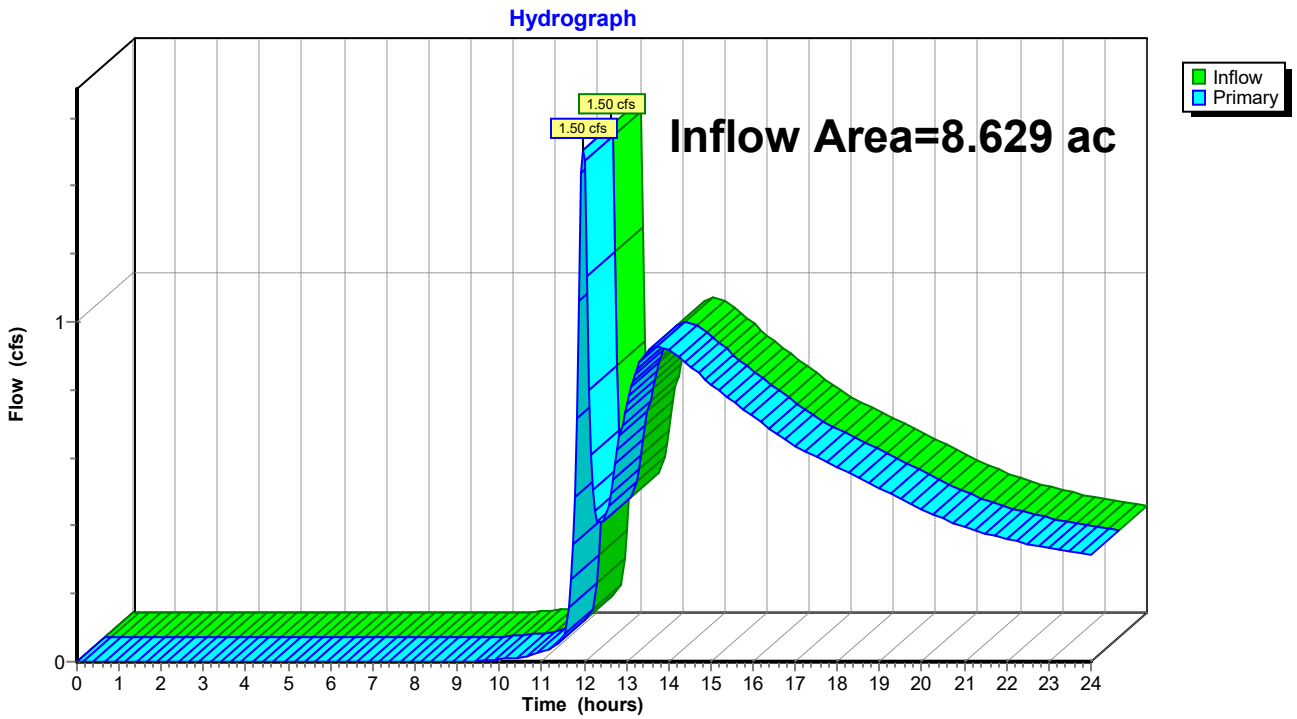


Summary for Link 3L: POI #1

Inflow Area = 8.629 ac, 49.76% Impervious, Inflow Depth > 0.83" for 2-yr event
Inflow = 1.50 cfs @ 11.98 hrs, Volume= 0.594 af
Primary = 1.50 cfs @ 11.98 hrs, Volume= 0.594 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 3L: POI #1

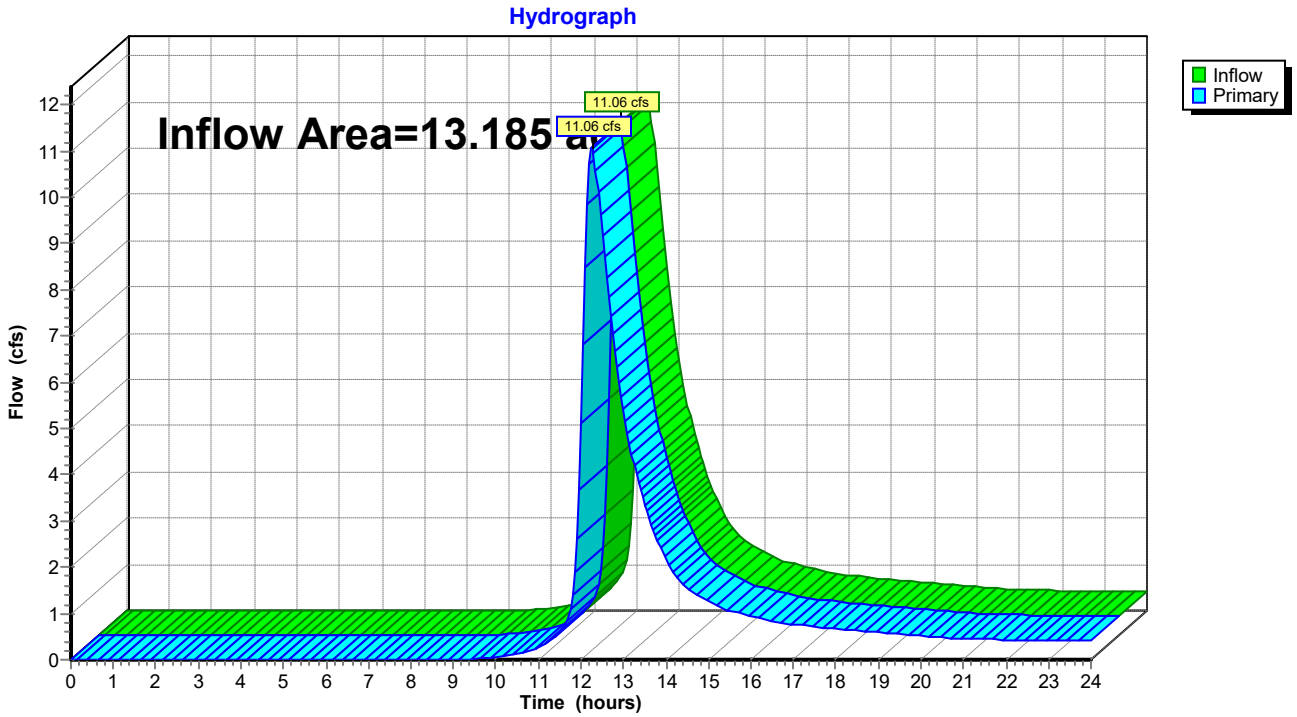


Summary for Link 5L: PRE

Inflow Area = 13.185 ac, 0.00% Impervious, Inflow Depth > 1.52" for 2-yr event
Inflow = 11.06 cfs @ 12.26 hrs, Volume= 1.668 af
Primary = 11.06 cfs @ 12.26 hrs, Volume= 1.668 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 5L: PRE

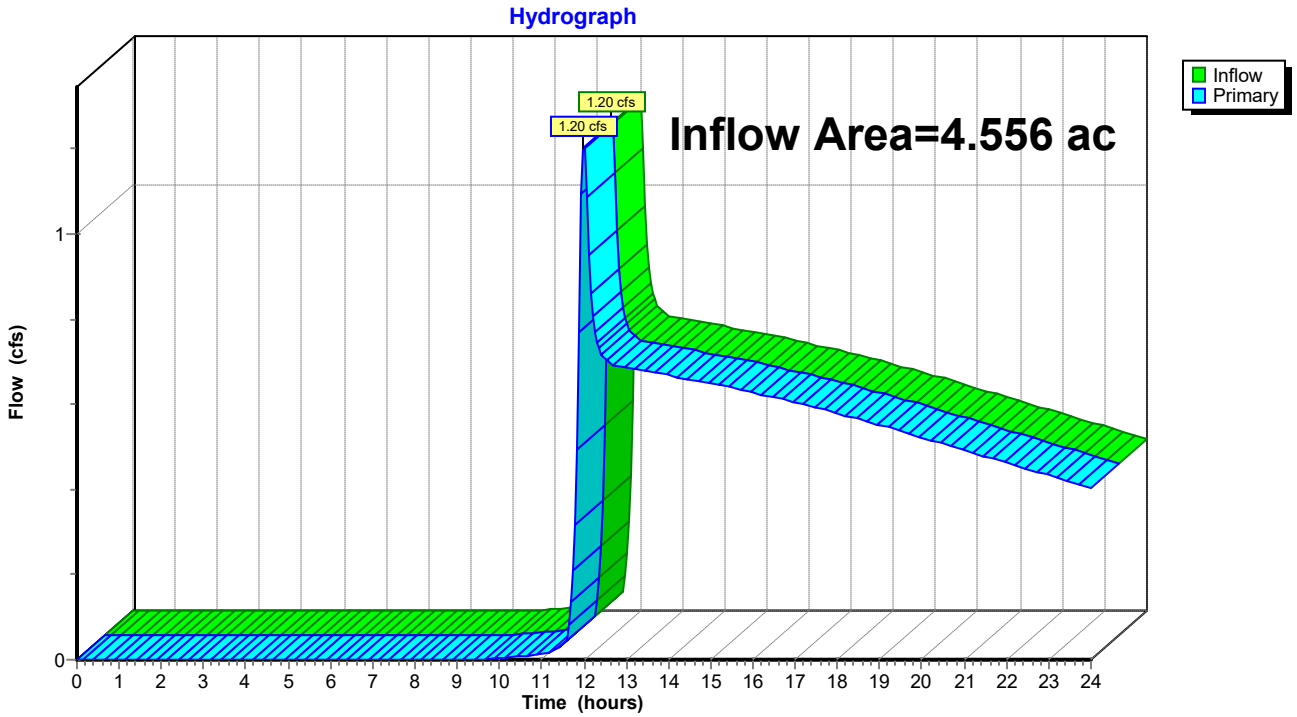


Summary for Link 6L: POI#2

Inflow Area = 4.556 ac, 61.85% Impervious, Inflow Depth > 1.55" for 2-yr event
Inflow = 1.20 cfs @ 12.00 hrs, Volume= 0.588 af
Primary = 1.20 cfs @ 12.00 hrs, Volume= 0.588 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 6L: POI#2



Summary for Subcatchment EX-1: Predevelopment (POI#1)

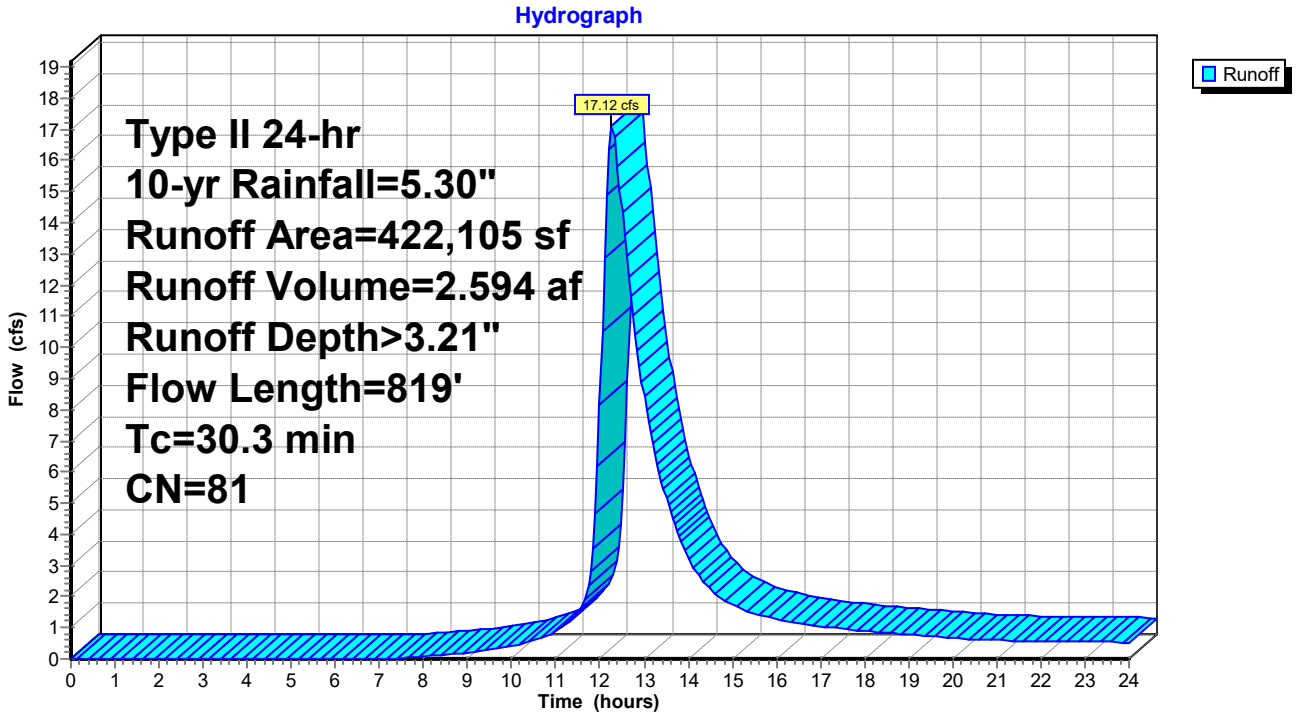
Runoff = 17.12 cfs @ 12.27 hrs, Volume= 2.594 af, Depth> 3.21"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

Area (sf)	CN	Description
300,286	83	Small grain, straight row, Good, HSG C
121,819	75	Small grain, straight row, Good, HSG B
422,105	81	Weighted Average
422,105		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	150	0.0085	0.12		**Sheet Flow, AG FIELD** Cultivated: Residue>20% n= 0.170 P2= 3.40"
9.8	669	0.0160	1.14		**Shallow Concentrated Flow, AG FIELD** Cultivated Straight Rows Kv= 9.0 fps
30.3	819	Total			

Subcatchment EX-1: Predevelopment (POI#1)



Summary for Subcatchment EX-2: Predevelopment (POI#2)

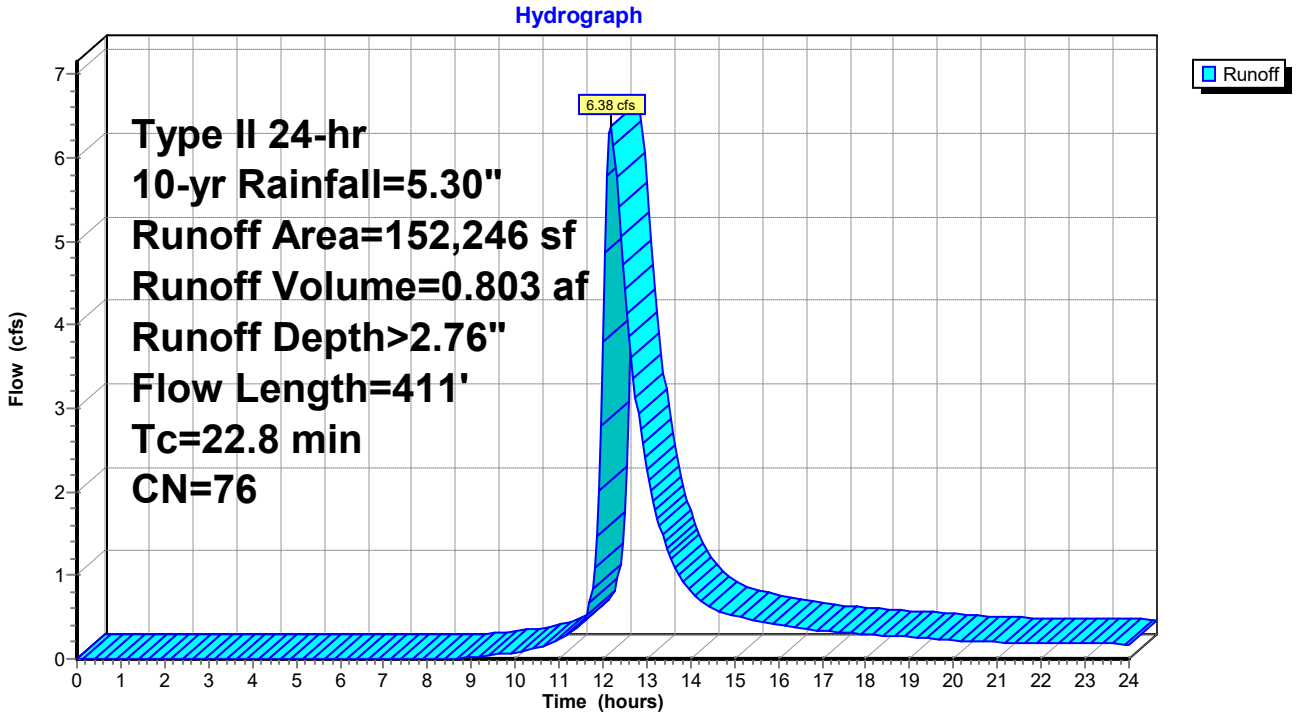
Runoff = 6.38 cfs @ 12.19 hrs, Volume= 0.803 af, Depth> 2.76"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

Area (sf)	CN	Description
17,404	83	Small grain, straight row, Good, HSG C
134,842	75	Small grain, straight row, Good, HSG B
152,246	76	Weighted Average
152,246		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	150	0.0100	0.13		**Sheet Flow, AG Field** Cultivated: Residue>20% n= 0.170 P2= 3.40"
3.6	261	0.0185	1.22		**Shallow Concentrated Flow, AG FIELD** Cultivated Straight Rows Kv= 9.0 fps
22.8	411	Total			

Subcatchment EX-2: Predevelopment (POI#2)



Summary for Subcatchment FT-13: Future Warehouse

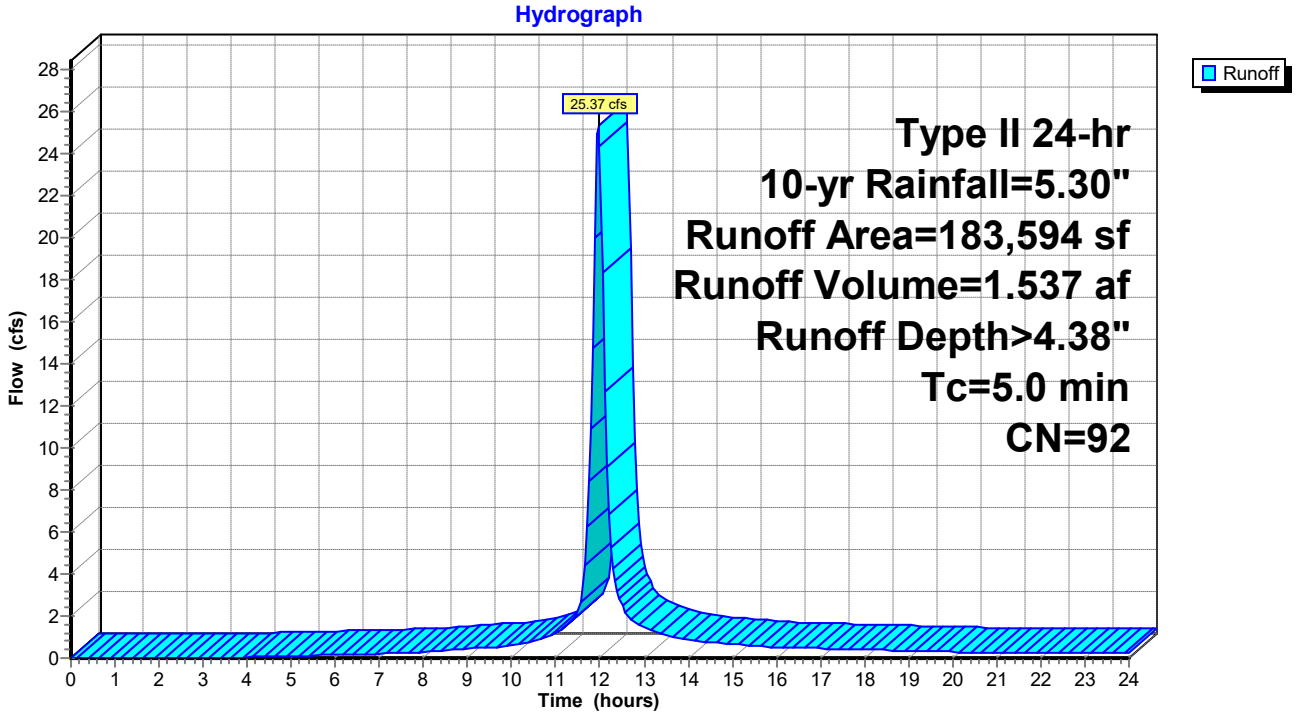
Runoff = 25.37 cfs @ 11.97 hrs, Volume= 1.537 af, Depth> 4.38"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	20,553	98	Access Road & Scale
*	80,328	98	Future Phase 2 Building
*	21,876	98	Future Phase 2 Truck Parking
	60,837	80	>75% Grass cover, Good, HSG D
	183,594	92	Weighted Average
	60,837		33.14% Pervious Area
	122,757		66.86% Impervious Area

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

Subcatchment FT-13: Future Warehouse



Summary for Subcatchment FT-14: Future Office & Portion of Access Road

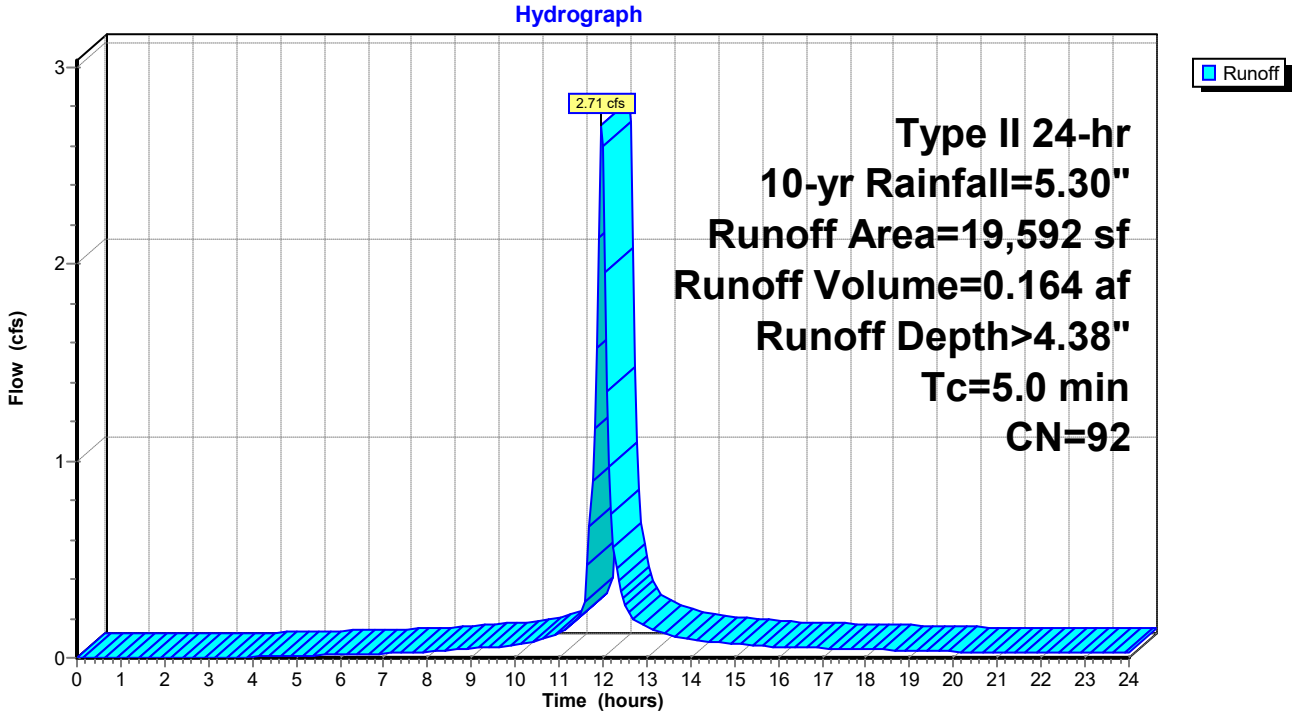
Runoff = 2.71 cfs @ 11.97 hrs, Volume= 0.164 af, Depth> 4.38"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	3,288	98	Access Road
*	9,562	98	Future Office Building
	6,742	80	>75% Grass cover, Good, HSG D
	19,592	92	Weighted Average
	6,742		34.41% Pervious Area
	12,850		65.59% Impervious Area

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

Subcatchment FT-14: Future Office & Portion of Access Road



Summary for Subcatchment FT-15: Access Road & Half Future Parking

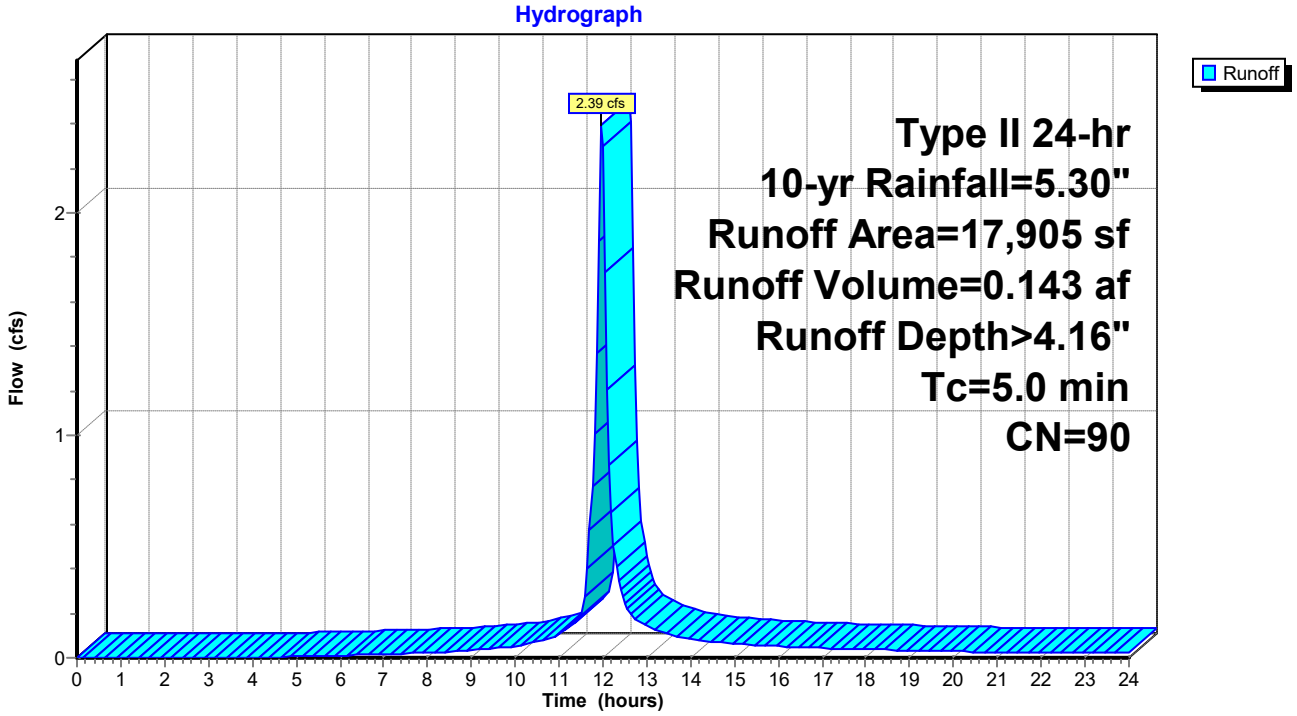
Runoff = 2.39 cfs @ 11.97 hrs, Volume= 0.143 af, Depth> 4.16"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	4,739	98	Half Future Parking
*	5,478	98	Access Road
	7,688	80	>75% Grass cover, Good, HSG D
	17,905	90	Weighted Average
	7,688		42.94% Pervious Area
	10,217		57.06% Impervious Area

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

Subcatchment FT-15: Access Road & Half Future Parking



Summary for Subcatchment PR-1: Front Parking Lot

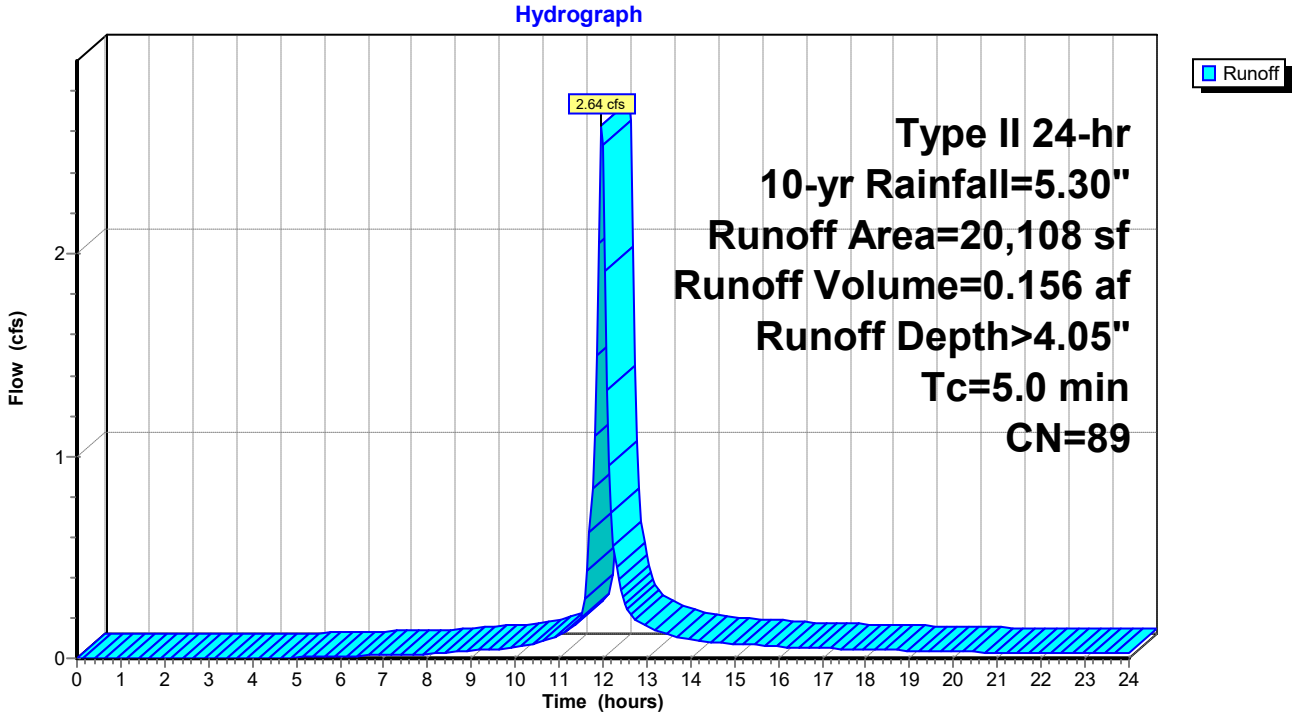
Runoff = 2.64 cfs @ 11.97 hrs, Volume= 0.156 af, Depth> 4.05"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	10,212	98	Parking Lot
	9,896	80	>75% Grass cover, Good, HSG D
	20,108	89	Weighted Average
	9,896		49.21% Pervious Area
	10,212		50.79% Impervious Area

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

Subcatchment PR-1: Front Parking Lot



Summary for Subcatchment PR-10: Loading Area

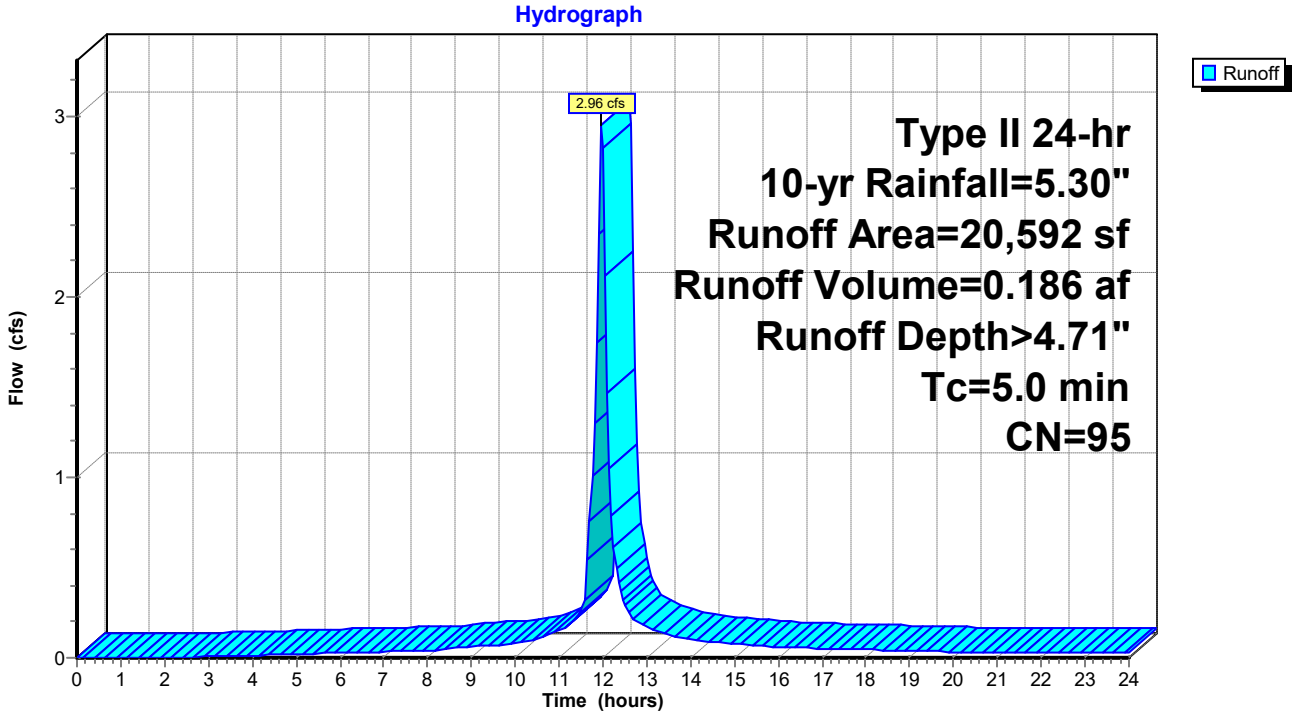
Runoff = 2.96 cfs @ 11.97 hrs, Volume= 0.186 af, Depth> 4.71"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	7,672	98	Warehouse Roof
*	9,193	98	Loading Area
	3,727	80	>75% Grass cover, Good, HSG D
	20,592	95	Weighted Average
	3,727		18.10% Pervious Area
	16,865		81.90% Impervious Area

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

Subcatchment PR-10: Loading Area



Summary for Subcatchment PR-11: Loading Area

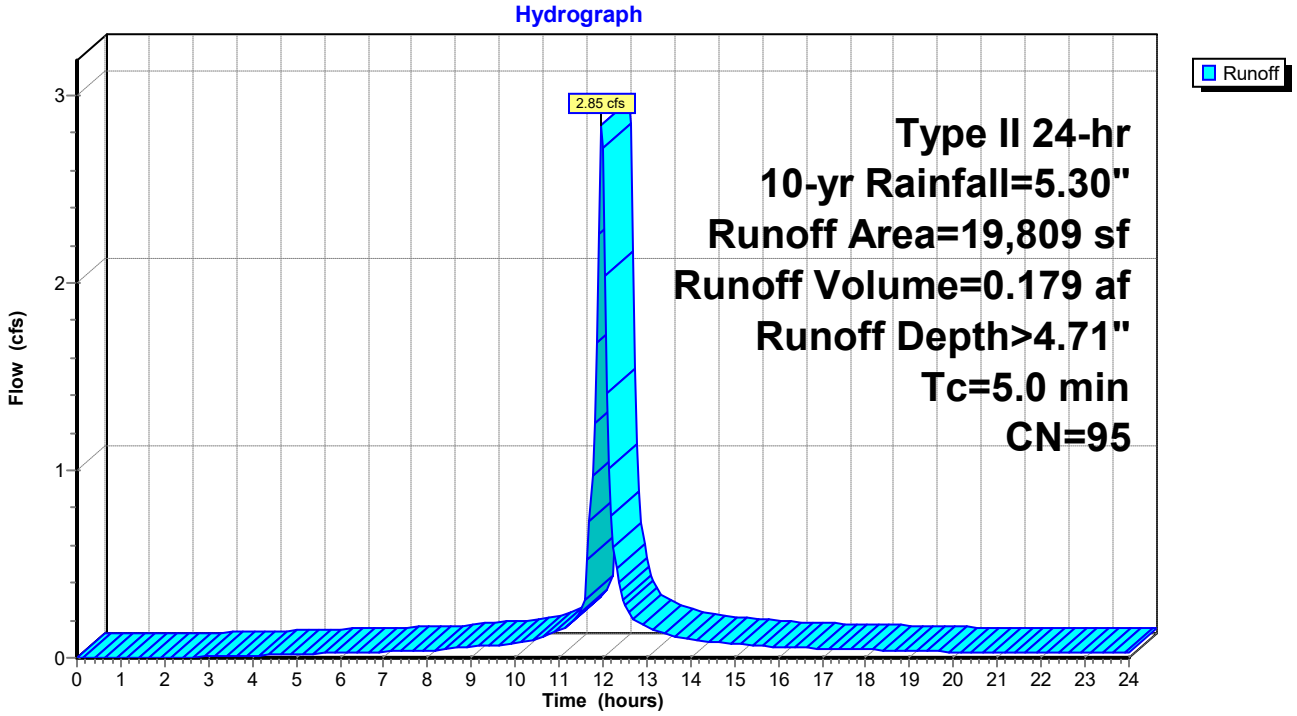
Runoff = 2.85 cfs @ 11.97 hrs, Volume= 0.179 af, Depth> 4.71"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	1,792	98	Warehouse Roof
*	14,389	98	Loading Area
	3,628	80	>75% Grass cover, Good, HSG D
	19,809	95	Weighted Average
	3,628		18.31% Pervious Area
	16,181		81.69% Impervious Area

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

Subcatchment PR-11: Loading Area



Summary for Subcatchment PR-12: PR-12

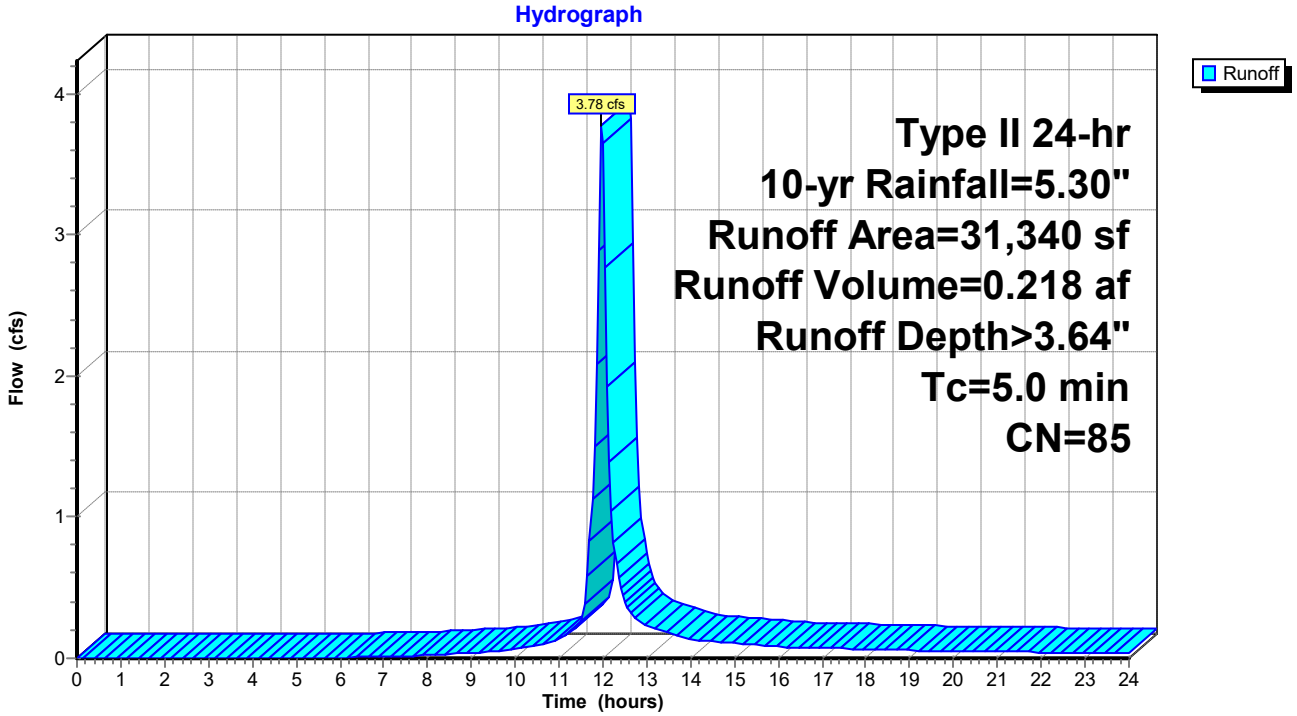
Runoff = 3.78 cfs @ 11.97 hrs, Volume= 0.218 af, Depth> 3.64"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
	22,807	80	>75% Grass cover, Good, HSG D
*	8,533	98	Access Aisle
	31,340	85	Weighted Average
	22,807		72.77% Pervious Area
	8,533		27.23% Impervious Area

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

Subcatchment PR-12: PR-12



Summary for Subcatchment PR-2: Front Parking Lot

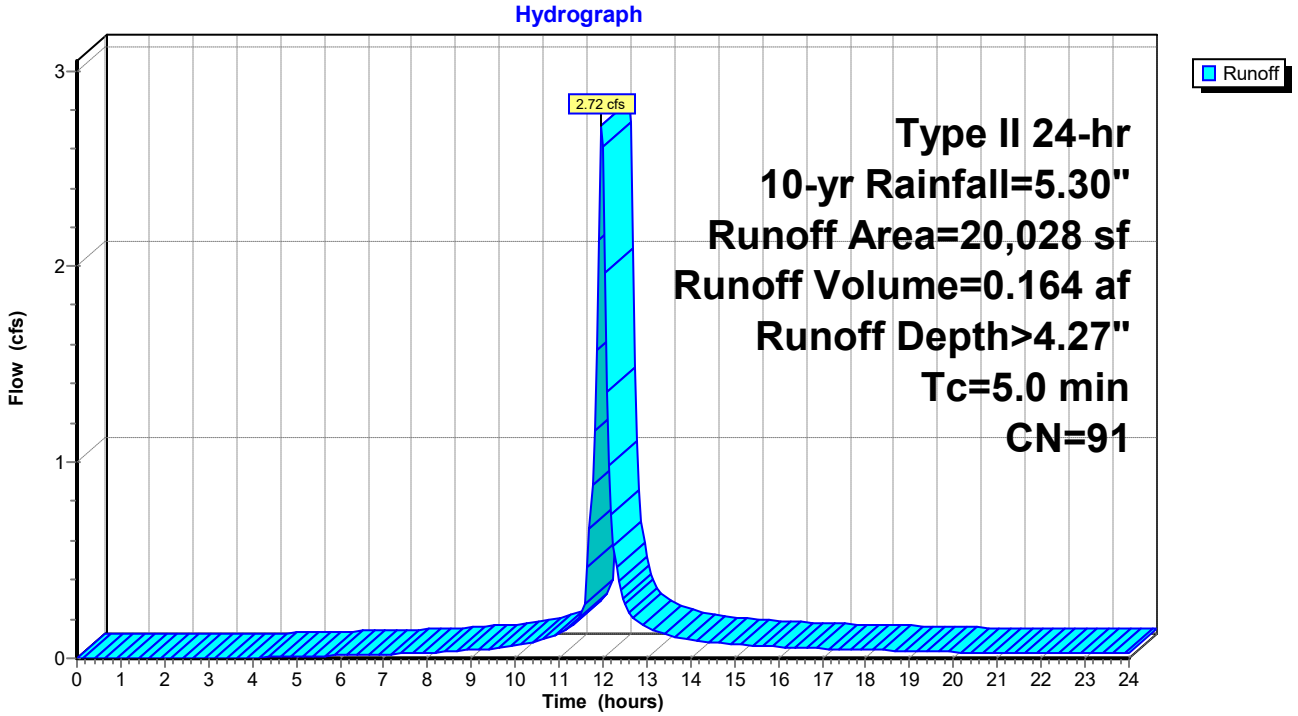
Runoff = 2.72 cfs @ 11.97 hrs, Volume= 0.164 af, Depth> 4.27"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	11,748	98	Parking Lot
	8,280	80	>75% Grass cover, Good, HSG D
	20,028	91	Weighted Average
	8,280		41.34% Pervious Area
	11,748		58.66% Impervious Area

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

Subcatchment PR-2: Front Parking Lot



Summary for Subcatchment PR-3: Phase 1 Office Roof

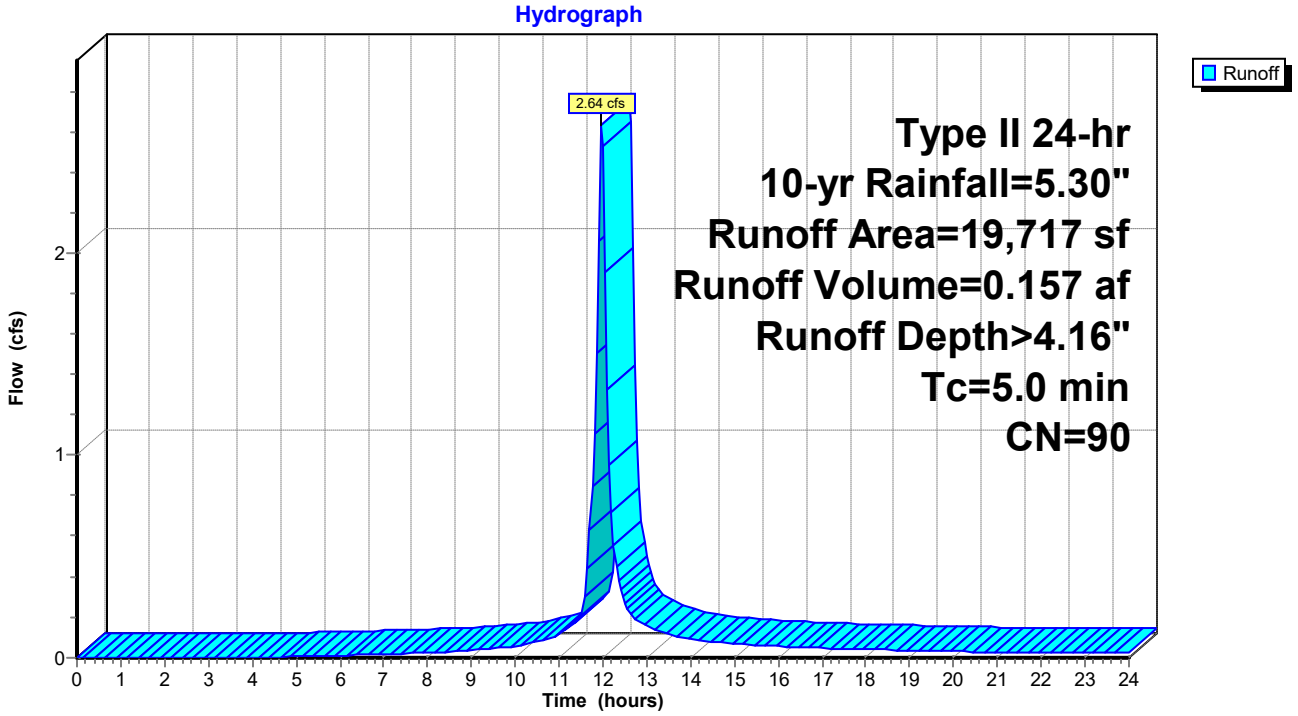
Runoff = 2.64 cfs @ 11.97 hrs, Volume= 0.157 af, Depth> 4.16"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	6,720	98	Office Building
*	3,973	98	Half Future Parking
	9,024	80	>75% Grass cover, Good, HSG D
	19,717	90	Weighted Average
	9,024		45.77% Pervious Area
	10,693		54.23% Impervious Area

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

Subcatchment PR-3: Phase 1 Office Roof



Summary for Subcatchment PR-4: Warehouse Roof

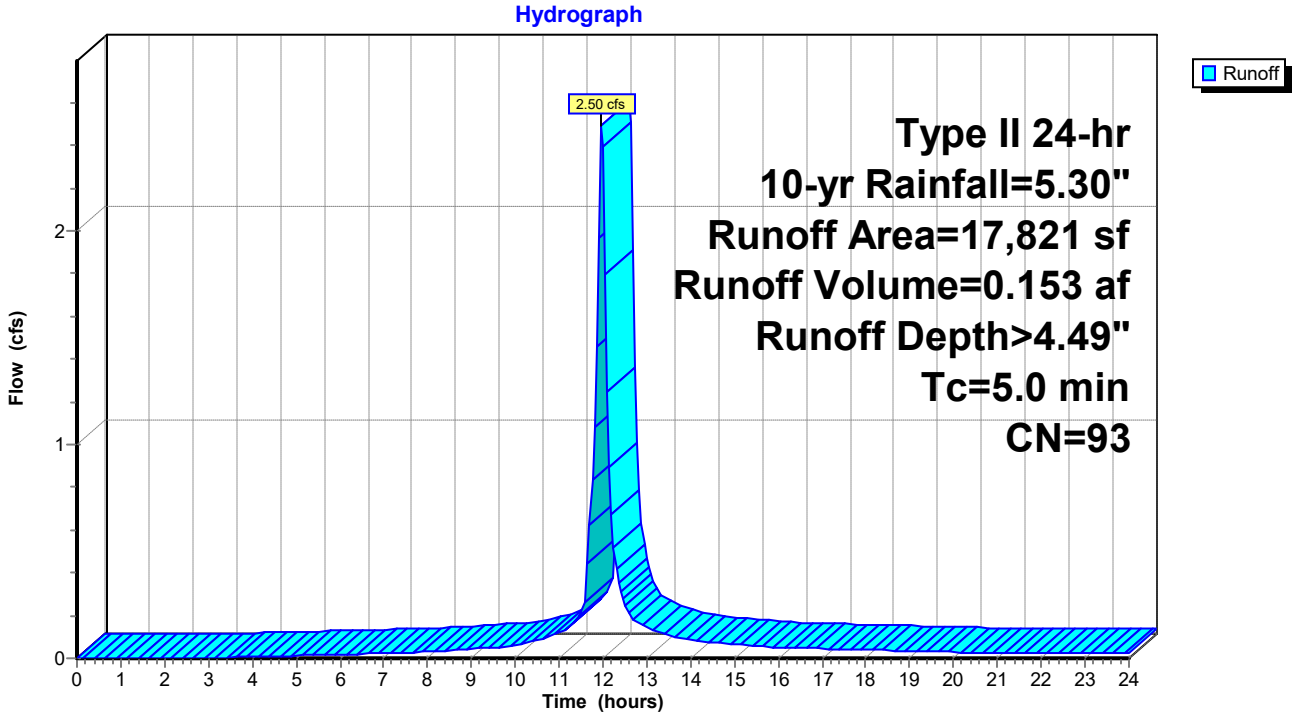
Runoff = 2.50 cfs @ 11.97 hrs, Volume= 0.153 af, Depth> 4.49"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	13,313	98	Roof
	4,508	80	>75% Grass cover, Good, HSG D
	17,821	93	Weighted Average
	4,508		25.30% Pervious Area
	13,313		74.70% Impervious Area

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

Subcatchment PR-4: Warehouse Roof



Summary for Subcatchment PR-5: Dumpster & Portion of Loading Area

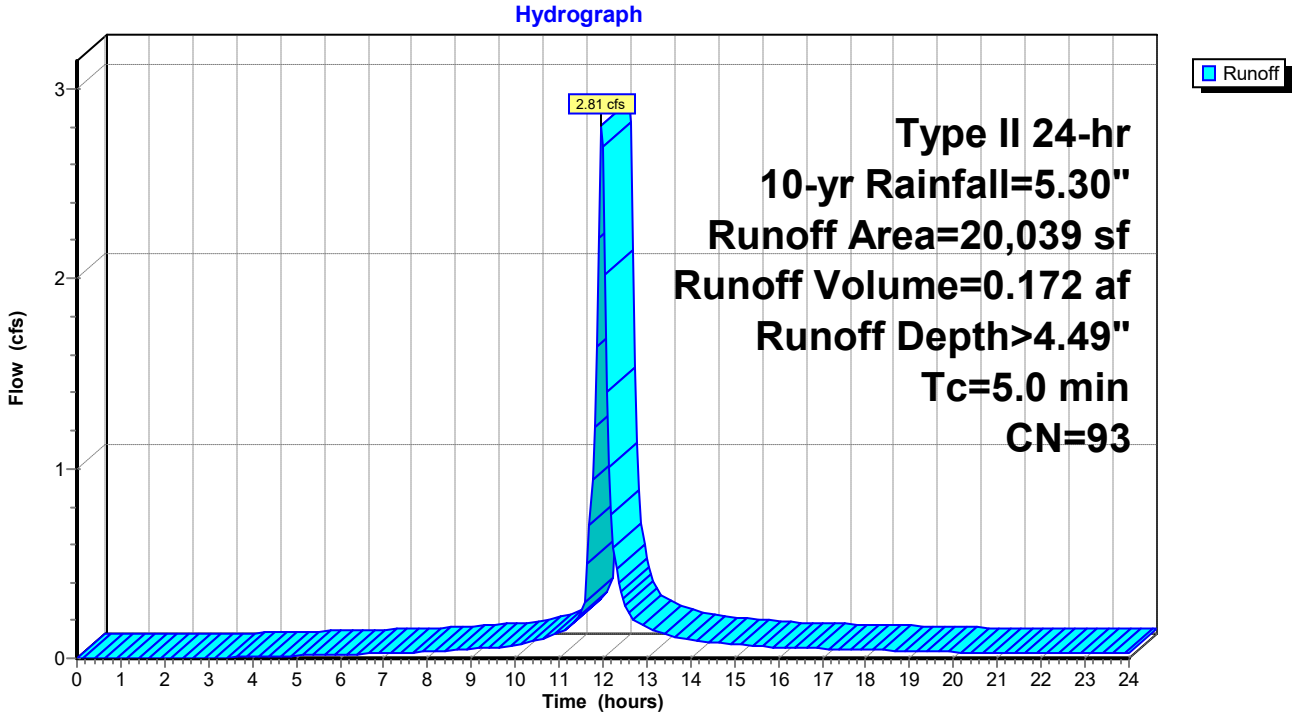
Runoff = 2.81 cfs @ 11.97 hrs, Volume= 0.172 af, Depth> 4.49"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	14,376	98	Loading Area & Dumpster
	5,663	80	>75% Grass cover, Good, HSG D
	20,039	93	Weighted Average
	5,663		28.26% Pervious Area
	14,376		71.74% Impervious Area

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

Subcatchment PR-5: Dumpster & Portion of Loading Area



Summary for Subcatchment PR-6: Warehouse Roof

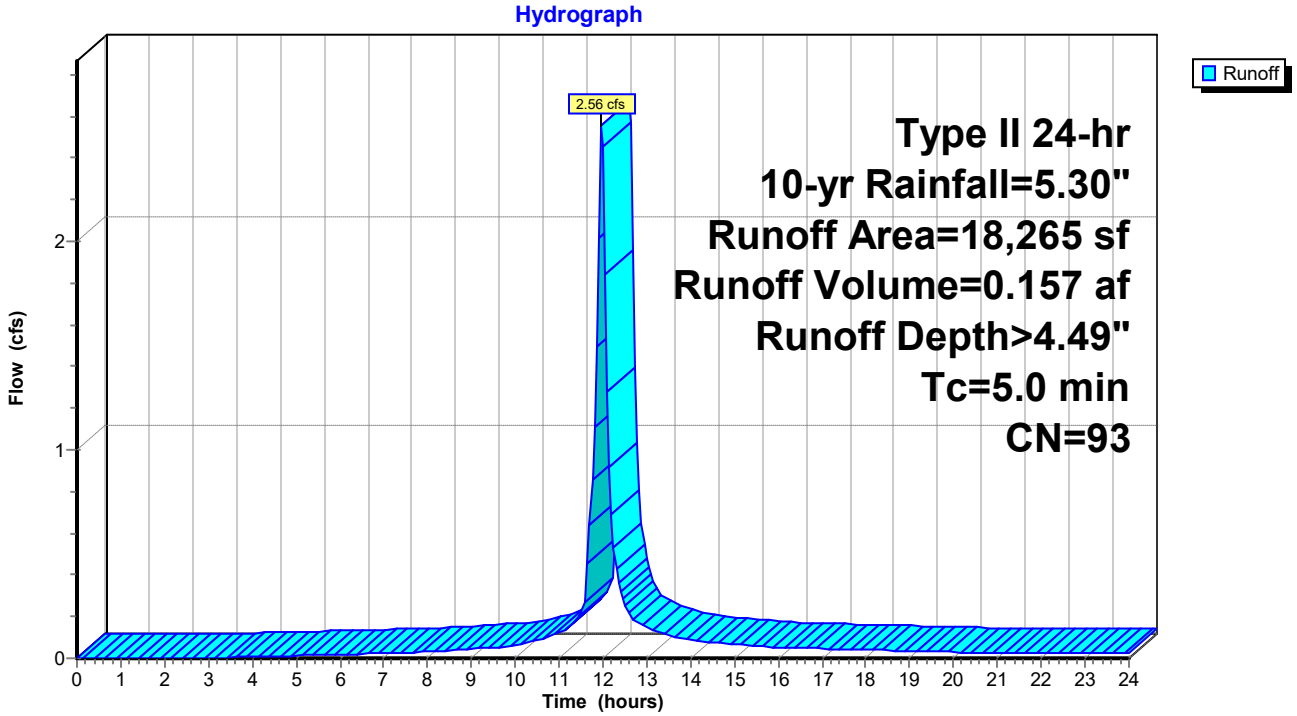
Runoff = 2.56 cfs @ 11.97 hrs, Volume= 0.157 af, Depth> 4.49"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	13,521	98	Roof
	4,744	80	>75% Grass cover, Good, HSG D
	18,265	93	Weighted Average
	4,744		25.97% Pervious Area
	13,521		74.03% Impervious Area

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

Subcatchment PR-6: Warehouse Roof



Summary for Subcatchment PR-7: Loading Area

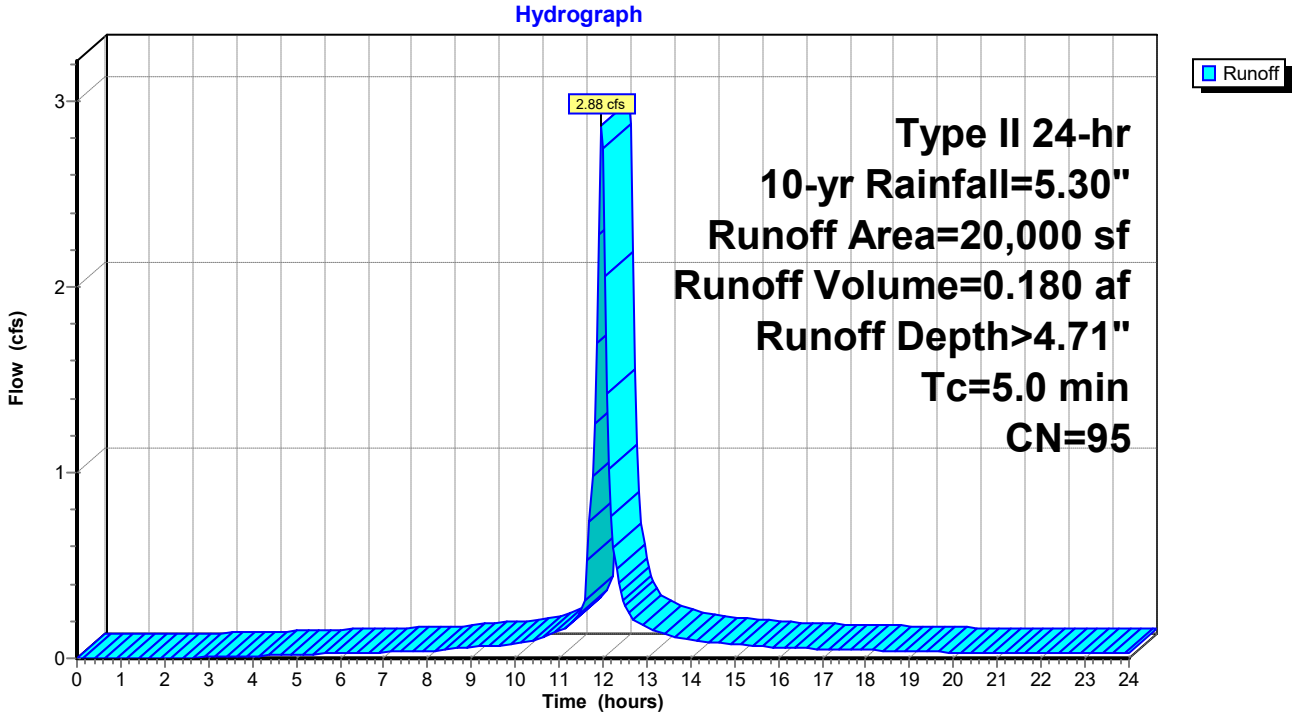
Runoff = 2.88 cfs @ 11.97 hrs, Volume= 0.180 af, Depth> 4.71"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	16,391	98	Loading Area
	3,609	80	>75% Grass cover, Good, HSG D
	20,000	95	Weighted Average
	3,609		18.04% Pervious Area
	16,391		81.96% Impervious Area

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

Subcatchment PR-7: Loading Area



Summary for Subcatchment PR-8: Warehouse Roof

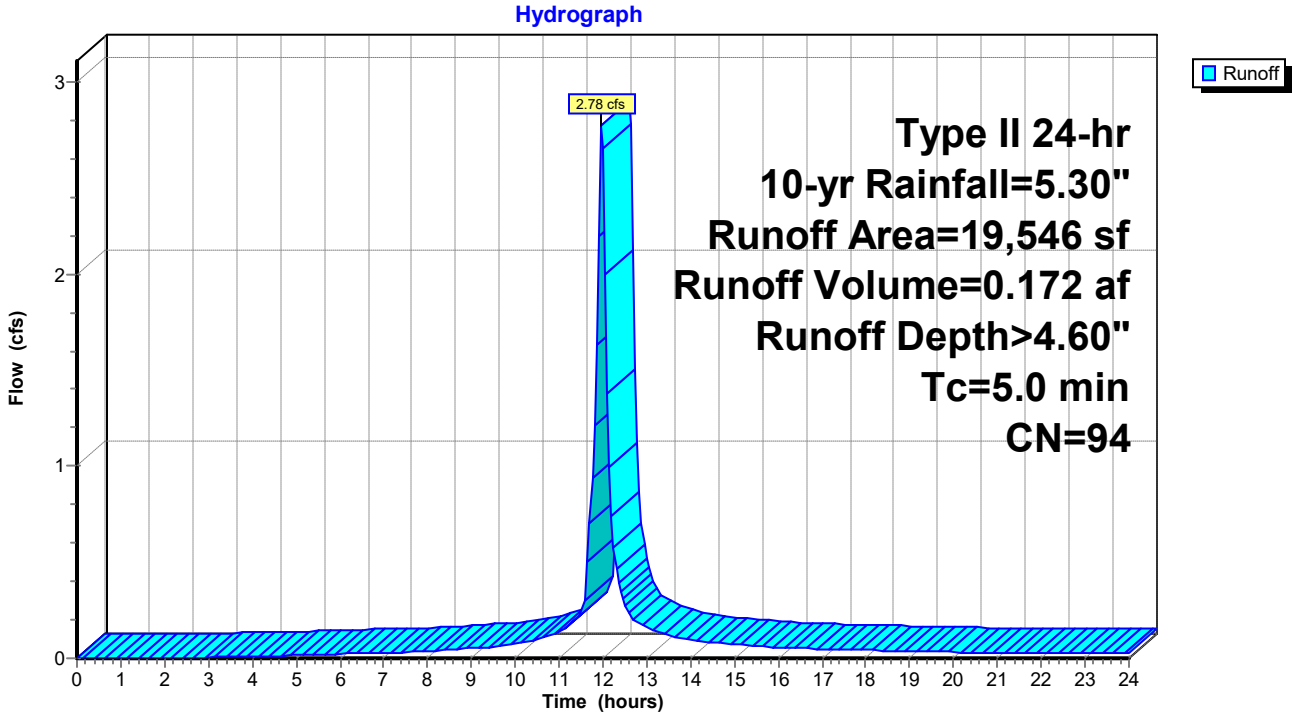
Runoff = 2.78 cfs @ 11.97 hrs, Volume= 0.172 af, Depth> 4.60"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	15,507	98	Warehouse Roof
	4,039	80	>75% Grass cover, Good, HSG D
	19,546	94	Weighted Average
	4,039		20.66% Pervious Area
	15,507		79.34% Impervious Area

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

Subcatchment PR-8: Warehouse Roof



Summary for Subcatchment PR-9: Loading Area

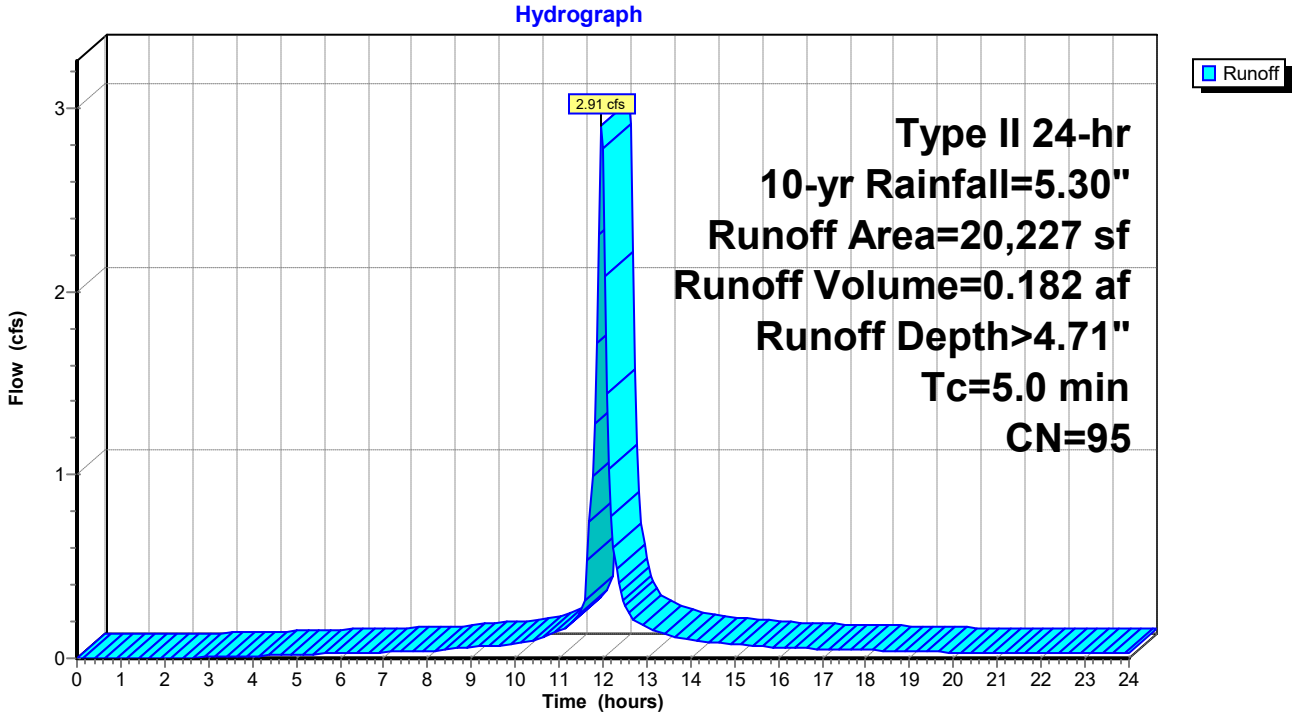
Runoff = 2.91 cfs @ 11.97 hrs, Volume= 0.182 af, Depth> 4.71"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	16,621	98	Loading Area
	3,606	80	>75% Grass cover, Good, HSG D
	20,227	95	Weighted Average
	3,606		17.83% Pervious Area
	16,621		82.17% Impervious Area

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

Subcatchment PR-9: Loading Area



Summary for Subcatchment RD-1: Residue of Parcel

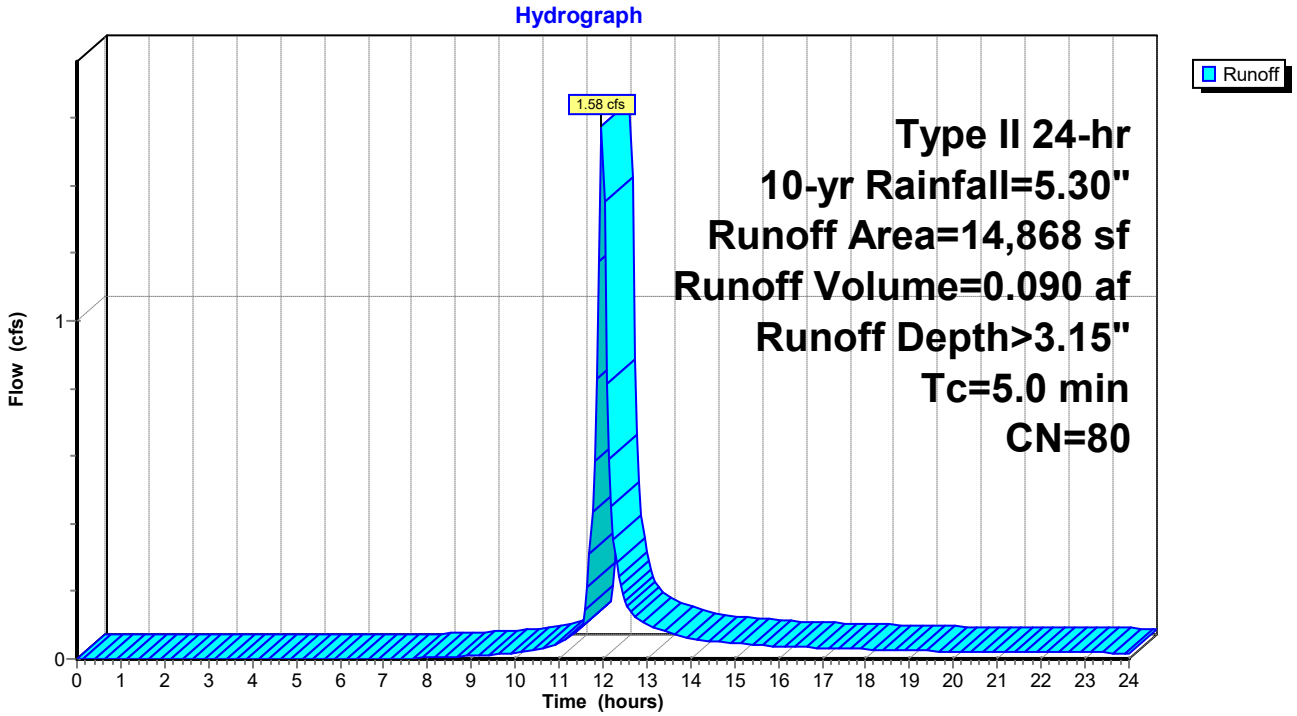
Runoff = 1.58 cfs @ 11.98 hrs, Volume= 0.090 af, Depth> 3.15"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

Area (sf)	CN	Description
14,868	80	>75% Grass cover, Good, HSG D
14,868		100.00% Pervious Area

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

Subcatchment RD-1: Residue of Parcel



Summary for Subcatchment RD-2: Residue of Parcel

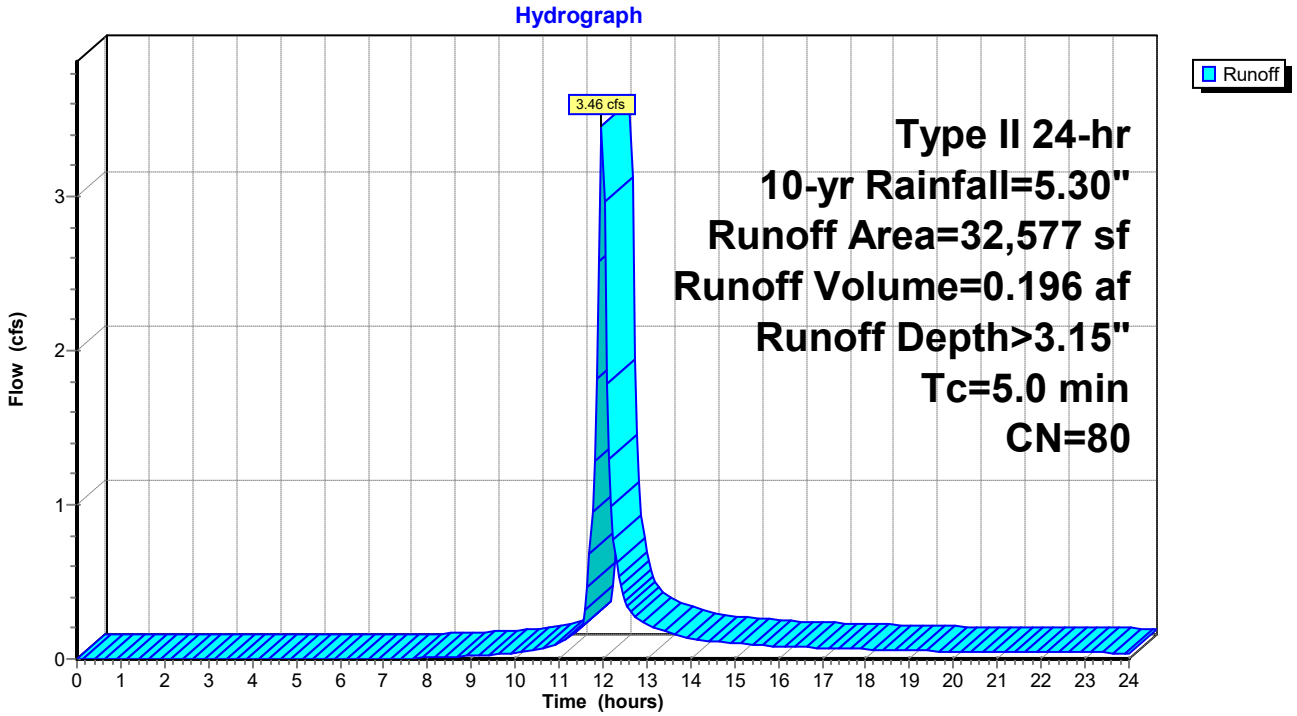
Runoff = 3.46 cfs @ 11.98 hrs, Volume= 0.196 af, Depth> 3.15"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

Area (sf)	CN	Description
32,577	80	>75% Grass cover, Good, HSG D
32,577		100.00% Pervious Area

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

Subcatchment RD-2: Residue of Parcel



Summary for Subcatchment RD-3: Residue of Parcel

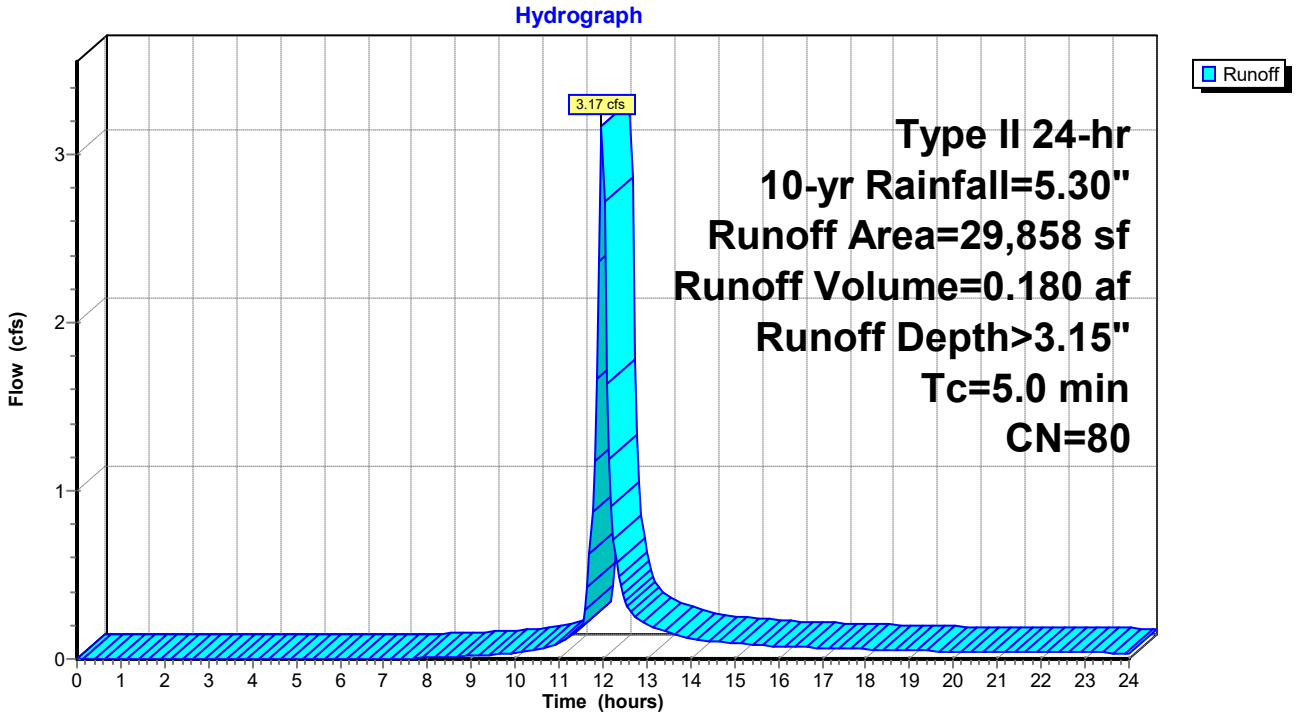
Runoff = 3.17 cfs @ 11.98 hrs, Volume= 0.180 af, Depth> 3.15"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

Area (sf)	CN	Description
29,858	80	>75% Grass cover, Good, HSG D
29,858		100.00% Pervious Area

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

Subcatchment RD-3: Residue of Parcel



Summary for Subcatchment RD-4: Residue of Parcel

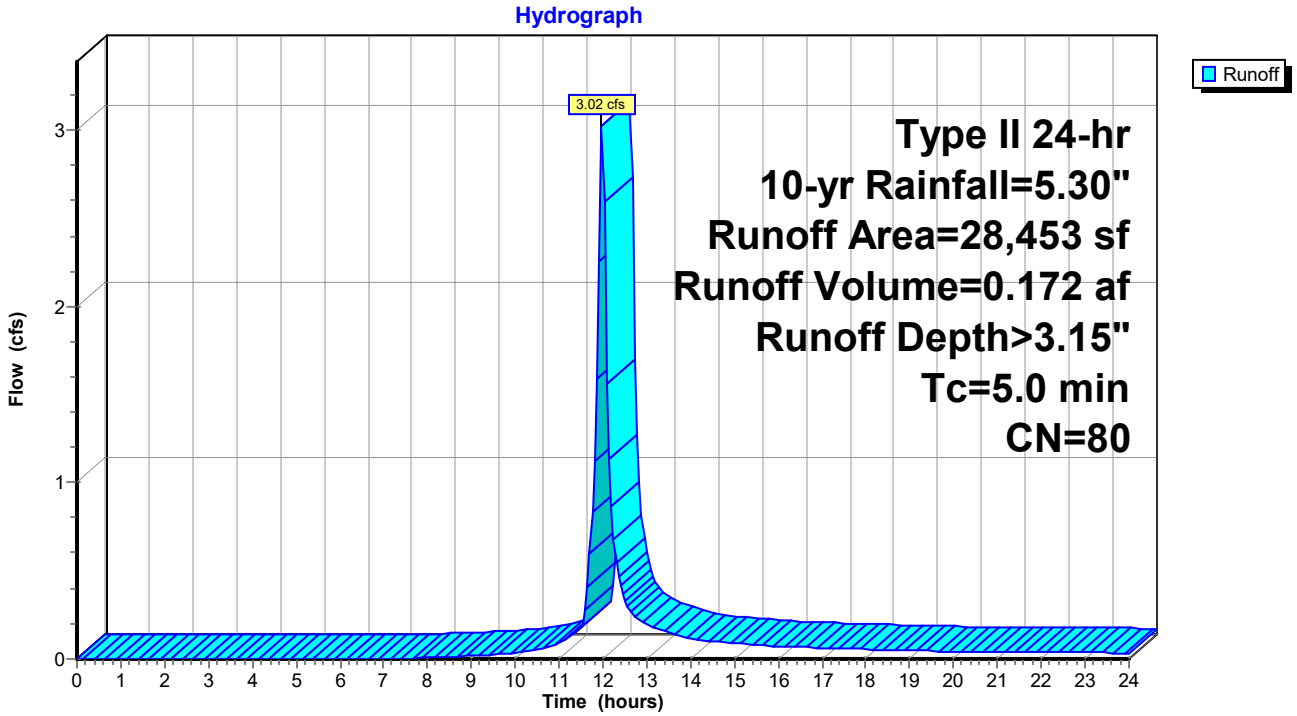
Runoff = 3.02 cfs @ 11.98 hrs, Volume= 0.172 af, Depth> 3.15"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

Area (sf)	CN	Description
28,453	80	>75% Grass cover, Good, HSG D
28,453		100.00% Pervious Area

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

Subcatchment RD-4: Residue of Parcel



Summary for Pond 1P: Wet Swale (Conveyance)

Inflow Area = 3.048 ac, 61.44% Impervious, Inflow Depth > 3.03" for 10-yr event
Inflow = 9.43 cfs @ 12.02 hrs, Volume= 0.770 af
Outflow = 7.48 cfs @ 12.05 hrs, Volume= 0.733 af, Atten= 21%, Lag= 1.9 min
Primary = 7.48 cfs @ 12.05 hrs, Volume= 0.733 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.38' @ 12.30 hrs Surf.Area= 5,539 sf Storage= 5,410 cf

Plug-Flow detention time= 52.4 min calculated for 0.733 af (95% of inflow)
Center-of-Mass det. time= 26.2 min (873.1 - 846.9)

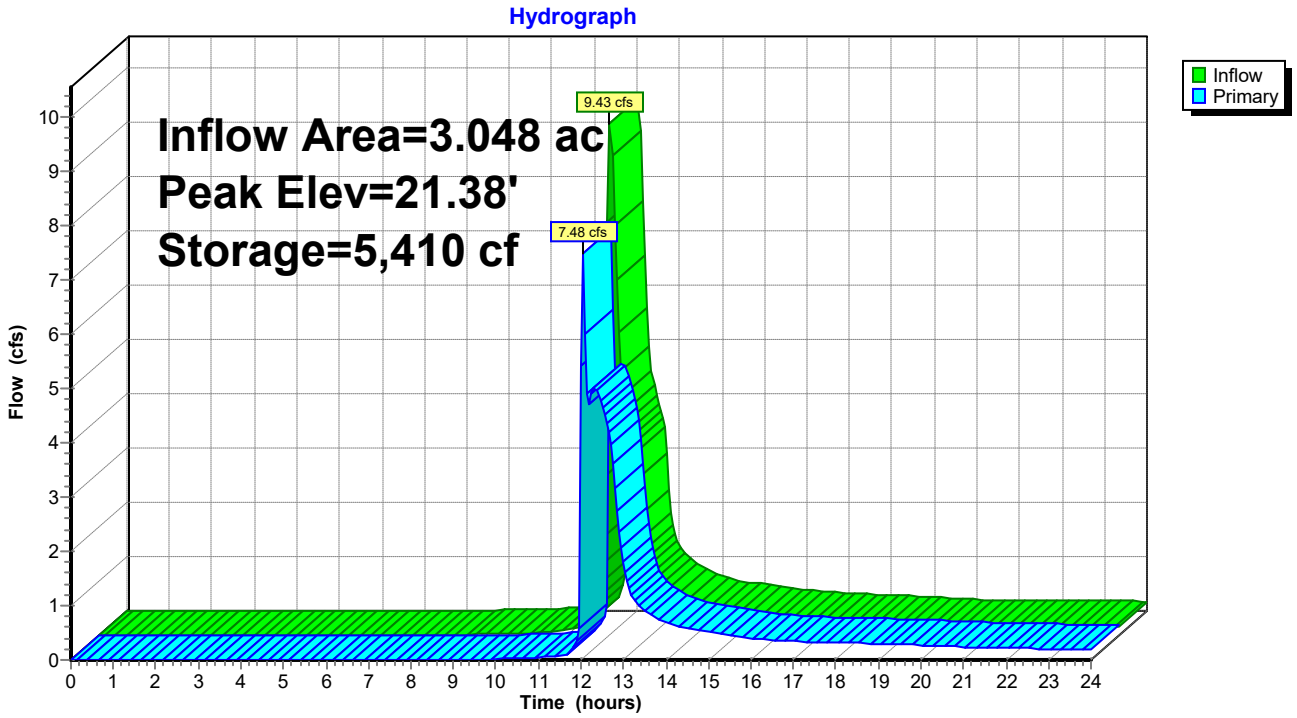
Volume	Invert	Avail.Storage	Storage Description
#1	19.70'	20,578 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
19.70	1,369	691.0	0	0	1,369
22.20	8,591	754.0	11,158	11,158	8,835
22.70	31,484	911.0	9,420	20,578	29,641

Device	Routing	Invert	Outlet Devices
#1	Primary	18.85'	**18.0" Round 18" N-12** L= 32.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.85' / 18.70' S= 0.0047 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	19.70'	**2.0" W x 12.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	20.70'	**10.7' long Rim MD 374.23** 0 End Contraction(s)

Primary OutFlow Max=5.38 cfs @ 12.05 hrs HW=21.08' TW=20.68' (Dynamic Tailwater)
└─**1=18" N-12** (Inlet Controls 5.38 cfs @ 3.05 fps)
  ├─**2=2" Notch** (Passes < 0.51 cfs potential flow)
  └─**3=Rim MD 374.23** (Passes < 8.32 cfs potential flow)

Pond 1P: Wet Swale (Conveyance)



Stage-Area-Storage for Pond 1P: Wet Swale (Conveyance)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
19.70	1,369	0
19.75	1,453	71
19.80	1,539	145
19.85	1,627	224
19.90	1,719	308
19.95	1,812	396
20.00	1,908	489
20.05	2,007	587
20.10	2,108	690
20.15	2,211	798
20.20	2,317	911
20.25	2,426	1,030
20.30	2,537	1,154
20.35	2,650	1,283
20.40	2,766	1,419
20.45	2,884	1,560
20.50	3,005	1,707
20.55	3,129	1,861
20.60	3,254	2,020
20.65	3,383	2,186
20.70	3,514	2,359
20.75	3,647	2,538
20.80	3,783	2,723
20.85	3,921	2,916
20.90	4,062	3,115
20.95	4,205	3,322
21.00	4,350	3,536
21.05	4,499	3,757
21.10	4,649	3,986
21.15	4,802	4,222
21.20	4,958	4,466
21.25	5,116	4,718
21.30	5,277	4,978
21.35	5,440	5,246
21.40	5,605	5,522
21.45	5,773	5,806
21.50	5,944	6,099
21.55	6,117	6,401
21.60	6,292	6,711
21.65	6,470	7,030
21.70	6,650	7,358
21.75	6,833	7,695
21.80	7,019	8,041
21.85	7,207	8,397
21.90	7,397	8,762
21.95	7,590	9,137
22.00	7,785	9,521
22.05	7,983	9,915
22.10	8,183	10,319
22.15	8,386	10,733
22.20	8,591	11,158
22.25	10,234	11,628
22.30	12,020	12,184
22.35	13,951	12,832
22.40	16,024	13,581
22.45	18,242	14,437
22.50	20,603	15,408
22.55	23,108	16,500
22.60	25,756	17,721
22.65	28,548	19,078
22.70	**31,484**	**20,578**

Summary for Pond 4P: Wet Swale (Conveyance)

Inflow Area = 5.432 ac, 56.20% Impervious, Inflow Depth > 2.73" for 10-yr event
Inflow = 10.83 cfs @ 12.07 hrs, Volume= 1.237 af
Outflow = 8.28 cfs @ 12.21 hrs, Volume= 1.142 af, Atten= 24%, Lag= 8.3 min
Primary = 8.28 cfs @ 12.21 hrs, Volume= 1.142 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.04' @ 12.21 hrs Surf.Area= 6,221 sf Storage= 7,681 cf

Plug-Flow detention time= 68.7 min calculated for 1.142 af (92% of inflow)
Center-of-Mass det. time= 30.1 min (905.9 - 875.8)

Volume	Invert	Avail.Storage	Storage Description
#1	18.70'	16,642 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

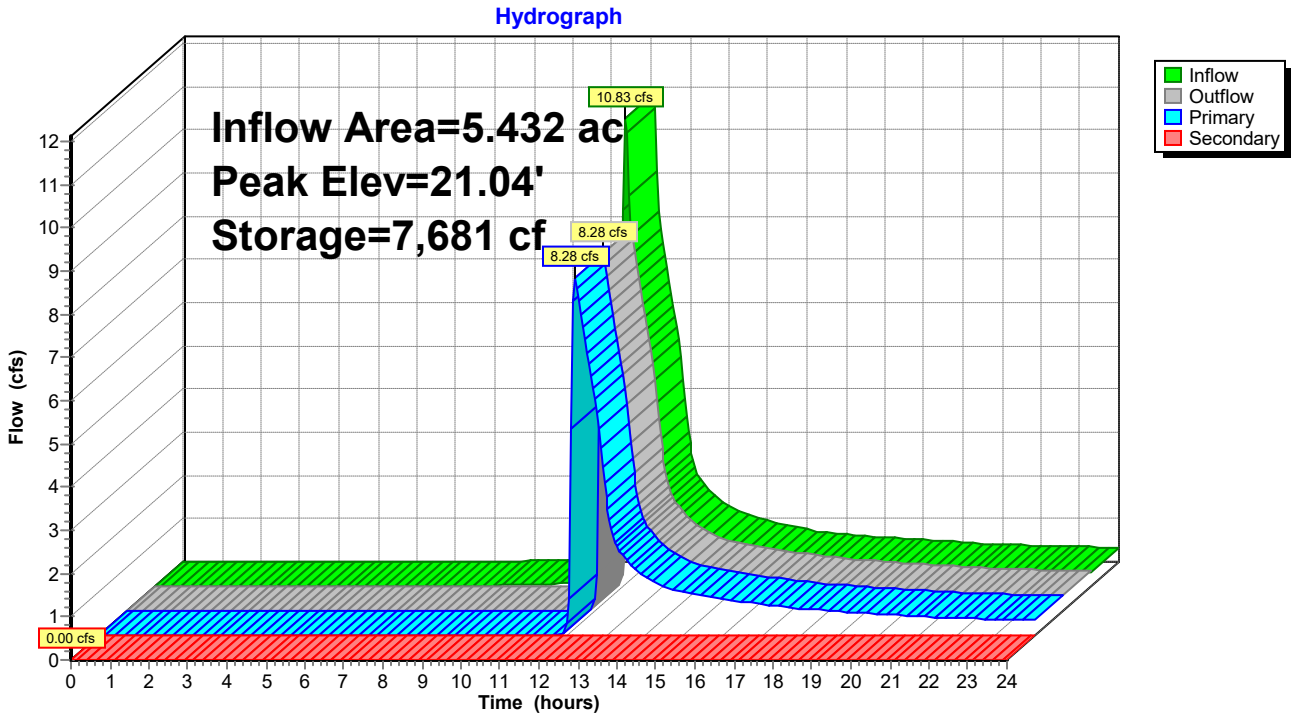
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
18.70	1,059	536.0	0	0	1,059
21.20	6,730	599.0	8,716	8,716	6,923
22.20	9,187	624.0	7,927	16,642	9,432

Device	Routing	Invert	Outlet Devices
#1	Primary	18.70'	**18.0" Round 18" N-12 Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.70' / 16.25' S= 0.0598 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	19.70'	**2.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	20.20'	**6.0" W x 6.0" H Vert. 6" Notch** C= 0.600
#4	Device 1	20.70'	**10.7' long Rim MD 374.23** 0 End Contraction(s)
#5	Secondary	21.70'	**32.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=8.22 cfs @ 12.21 hrs HW=21.04' TW=0.00' (Dynamic Tailwater)
└─**1=18" N-12 Culvert** (Passes 8.22 cfs of 10.72 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.42 cfs @ 5.01 fps)
  ├─**3=6" Notch** (Orifice Controls 0.92 cfs @ 3.66 fps)
  └─**4=Rim MD 374.23** (Weir Controls 6.89 cfs @ 1.90 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=18.70' TW=0.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: Wet Swale (Conveyance)



Stage-Area-Storage for Pond 4P: Wet Swale (Conveyance)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.70	1,059	0
18.75	1,124	55
18.80	1,192	112
18.85	1,261	174
18.90	1,332	239
18.95	1,406	307
19.00	1,481	379
19.05	1,558	455
19.10	1,637	535
19.15	1,718	619
19.20	1,801	707
19.25	1,886	799
19.30	1,973	896
19.35	2,062	996
19.40	2,153	1,102
19.45	2,246	1,212
19.50	2,341	1,326
19.55	2,437	1,446
19.60	2,536	1,570
19.65	2,637	1,700
19.70	2,739	1,834
19.75	2,844	1,973
19.80	2,951	2,118
19.85	3,059	2,269
19.90	3,170	2,424
19.95	3,282	2,586
20.00	3,396	2,753
20.05	3,513	2,925
20.10	3,631	3,104
20.15	3,751	3,288
20.20	3,874	3,479
20.25	3,998	3,676
20.30	4,124	3,879
20.35	4,252	4,088
20.40	4,382	4,304
20.45	4,514	4,527
20.50	4,648	4,756
20.55	4,784	4,991
20.60	4,922	5,234
20.65	5,062	5,484
20.70	5,204	5,740
20.75	5,348	6,004
20.80	5,493	6,275
20.85	5,641	6,553
20.90	5,791	6,839
20.95	5,942	7,133
21.00	6,096	7,433
21.05	6,252	7,742
21.10	6,409	8,059
21.15	6,569	8,383
21.20	6,730	8,716
21.25	6,844	9,055
21.30	6,959	9,400
21.35	7,074	9,751
21.40	7,191	10,107
21.45	7,308	10,470
21.50	7,427	10,838
21.55	7,547	11,213
21.60	7,667	11,593
21.65	7,788	11,979
21.70	7,911	12,372
21.75	8,034	12,770
21.80	8,158	13,175
21.85	8,284	13,586
21.90	8,410	14,004
21.95	8,537	14,427
22.00	8,665	14,857
22.05	8,794	15,294
22.10	8,924	15,737
22.15	9,055	16,186
22.20	**9,187**	**16,642**

Summary for Pond 8P: BioSwale

Inflow Area = 0.719 ac, 27.23% Impervious, Inflow Depth > 3.64" for 10-yr event
Inflow = 3.78 cfs @ 11.97 hrs, Volume= 0.218 af
Outflow = 2.12 cfs @ 12.10 hrs, Volume= 0.153 af, Atten= 44%, Lag= 7.9 min
Primary = 2.12 cfs @ 12.10 hrs, Volume= 0.153 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 24.14' @ 12.10 hrs Surf.Area= 3,512 sf Storage= 4,273 cf

Plug-Flow detention time= 199.5 min calculated for 0.153 af (70% of inflow)
Center-of-Mass det. time= 104.1 min (907.4 - 803.3)

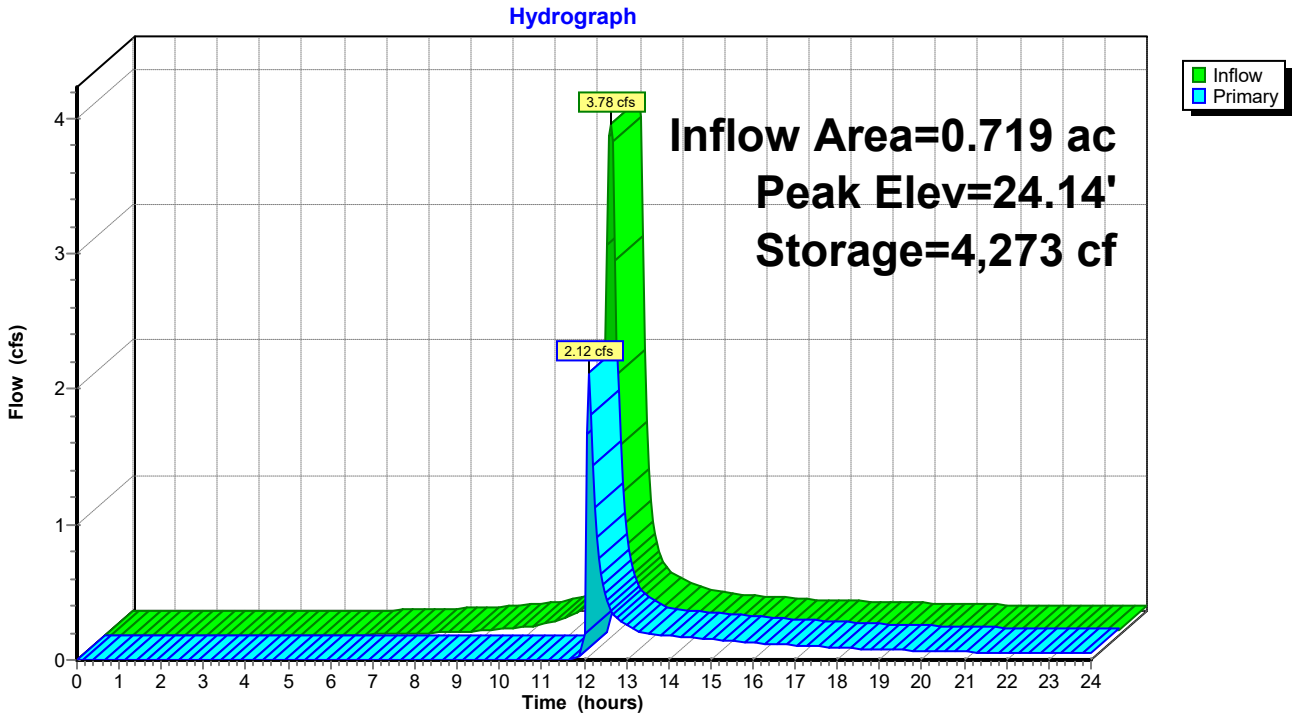
Volume	Invert	Avail.Storage	Storage Description
#1	20.99'	5,615 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.99	1,517	393.0	0.0	0	0	1,517
21.00	1,517	393.0	40.0	6	6	1,521
22.99	1,517	393.0	40.0	1,208	1,214	2,303
23.00	1,517	393.0	100.0	15	1,229	2,307
23.50	2,728	412.0	100.0	1,047	2,275	3,541
24.50	3,991	431.0	100.0	3,340	5,615	4,883

Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	**12.0" Round 12" N-12 Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.00' / 20.65' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	23.50'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.00'	**10.7' long Rim MD 374.23** 0 End Contraction(s)

Primary OutFlow Max=2.09 cfs @ 12.10 hrs HW=24.14' TW=0.00' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 2.09 cfs of 6.15 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.25 cfs @ 2.95 fps)
  └─**3=Rim MD 374.23** (Weir Controls 1.84 cfs @ 1.23 fps)

Pond 8P: BioSwale



Stage-Area-Storage for Pond 8P: BioSwale

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,517	0
21.04	1,517	30
21.09	1,517	61
21.14	1,517	91
21.19	1,517	121
21.24	1,517	152
21.29	1,517	182
21.34	1,517	212
21.39	1,517	243
21.44	1,517	273
21.49	1,517	303
21.54	1,517	334
21.59	1,517	364
21.64	1,517	394
21.69	1,517	425
21.74	1,517	455
21.79	1,517	485
21.84	1,517	516
21.89	1,517	546
21.94	1,517	576
21.99	1,517	607
22.04	1,517	637
22.09	1,517	667
22.14	1,517	698
22.19	1,517	728
22.24	1,517	759
22.29	1,517	789
22.34	1,517	819
22.39	1,517	850
22.44	1,517	880
22.49	1,517	910
22.54	1,517	941
22.59	1,517	971
22.64	1,517	1,001
22.69	1,517	1,032
22.74	1,517	1,062
22.79	1,517	1,092
22.84	1,517	1,123
22.89	1,517	1,153
22.94	1,517	1,183
22.99	1,517	1,214
23.04	1,601	1,291
23.09	1,709	1,374
23.14	1,821	1,462
23.19	1,936	1,556
23.24	2,054	1,656
23.29	2,176	1,761
23.34	2,302	1,873
23.39	2,431	1,992
23.44	2,564	2,117
23.49	2,700	2,248
23.54	2,774	2,385
23.59	2,832	2,525
23.64	2,890	2,669
23.69	2,950	2,815
23.74	3,009	2,964
23.79	3,070	3,115
23.84	3,131	3,270
23.89	3,192	3,429
23.94	3,254	3,590
23.99	3,317	3,754
24.04	3,380	3,921
24.09	3,444	4,092
24.14	3,509	4,266
24.19	3,574	4,443
24.24	3,640	4,623
24.29	3,706	4,807
24.34	3,773	4,994
24.39	3,840	5,184
24.44	3,908	5,378
24.49	**3,977**	**5,575**

Summary for Pond MBR-1: Parking Lot Micro-Bioretention

Inflow Area = 0.462 ac, 50.79% Impervious, Inflow Depth > 4.05" for 10-yr event
Inflow = 2.64 cfs @ 11.97 hrs, Volume= 0.156 af
Outflow = 0.10 cfs @ 13.81 hrs, Volume= 0.060 af, Atten= 96%, Lag= 110.1 min
Primary = 0.10 cfs @ 13.81 hrs, Volume= 0.060 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 24.08' @ 13.81 hrs Surf.Area= 2,964 sf Storage= 4,704 cf

Plug-Flow detention time= 353.8 min calculated for 0.060 af (38% of inflow)
Center-of-Mass det. time= 229.2 min (1,019.5 - 790.3)

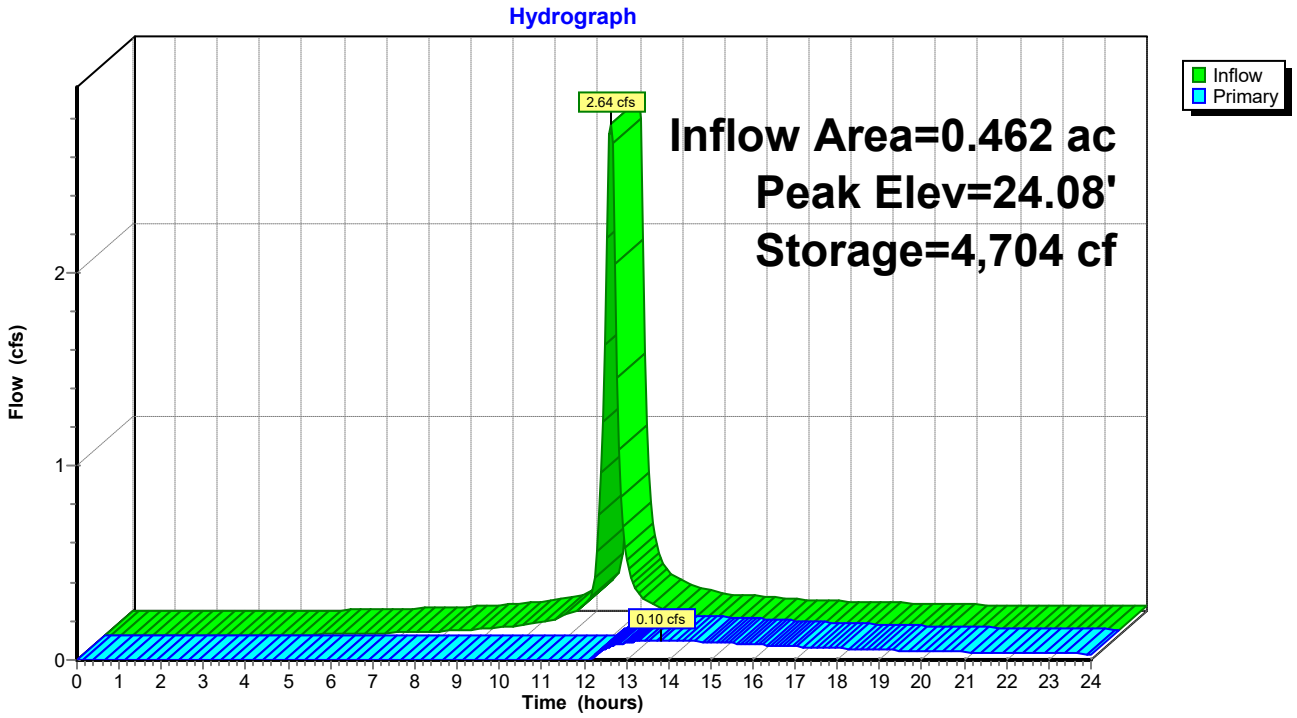
Volume	Invert	Avail.Storage	Storage Description
#1	20.74'	6,896 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.74	1,868	190.0	0.0	0	0	1,868
20.75	1,868	190.0	40.0	7	7	1,870
22.74	1,868	190.0	40.0	1,487	1,494	2,248
22.75	1,868	190.0	100.0	19	1,513	2,250
23.75	2,678	215.0	100.0	2,261	3,774	3,081
24.75	3,589	240.0	100.0	3,122	6,896	4,014

Device	Routing	Invert	Outlet Devices
#1	Primary	20.75'	**12.0" Round 12" N-12 Culvert** L= 69.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 20.75' / 20.65' S= 0.0014 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	23.75'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.25'	**10.7' long Rim MD374.23** 0 End Contraction(s)

Primary OutFlow Max=0.10 cfs @ 13.81 hrs HW=24.08' TW=0.00' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 0.10 cfs of 5.22 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.10 cfs @ 1.84 fps)
  └─**3=Rim MD374.23** (Controls 0.00 cfs)

Pond MBR-1: Parking Lot Micro-Bioretention



Stage-Area-Storage for Pond MBR-1: Parking Lot Micro-Bioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.74	1,868	0
20.79	1,868	37
20.84	1,868	75
20.89	1,868	112
20.94	1,868	149
20.99	1,868	187
21.04	1,868	224
21.09	1,868	262
21.14	1,868	299
21.19	1,868	336
21.24	1,868	374
21.29	1,868	411
21.34	1,868	448
21.39	1,868	486
21.44	1,868	523
21.49	1,868	560
21.54	1,868	598
21.59	1,868	635
21.64	1,868	672
21.69	1,868	710
21.74	1,868	747
21.79	1,868	785
21.84	1,868	822
21.89	1,868	859
21.94	1,868	897
21.99	1,868	934
22.04	1,868	971
22.09	1,868	1,009
22.14	1,868	1,046
22.19	1,868	1,083
22.24	1,868	1,121
22.29	1,868	1,158
22.34	1,868	1,196
22.39	1,868	1,233
22.44	1,868	1,270
22.49	1,868	1,308
22.54	1,868	1,345
22.59	1,868	1,382
22.64	1,868	1,420
22.69	1,868	1,457
22.74	1,868	1,494
22.79	1,898	1,588
22.84	1,935	1,684
22.89	1,973	1,782
22.94	2,011	1,881
22.99	2,049	1,983
23.04	2,088	2,086
23.09	2,127	2,192
23.14	2,167	2,299
23.19	2,206	2,408
23.24	2,247	2,520
23.29	2,287	2,633
23.34	2,328	2,748
23.39	2,370	2,866
23.44	2,411	2,985
23.49	2,453	3,107
23.54	2,496	3,231
23.59	2,539	3,357
23.64	2,582	3,485
23.69	2,625	3,615
23.74	2,669	3,747
23.79	2,712	3,882
23.84	2,755	4,018
23.89	2,798	4,157
23.94	2,841	4,298
23.99	2,884	4,441
24.04	2,928	4,587
24.09	2,973	4,734
24.14	3,017	4,884
24.19	3,062	5,036
24.24	3,108	5,190
24.29	3,153	5,347
24.34	3,199	5,506
24.39	3,246	5,667
24.44	3,292	5,830
24.49	3,339	5,996
24.54	3,387	6,164
24.59	3,434	6,335
24.64	3,482	6,507
24.69	3,531	6,683
24.74	**3,579**	**6,861**

Summary for Pond MBR-10: Micro-Bioretention #10

Inflow Area = 0.473 ac, 81.90% Impervious, Inflow Depth > 4.71" for 10-yr event
Inflow = 2.96 cfs @ 11.97 hrs, Volume= 0.186 af
Outflow = 1.40 cfs @ 12.08 hrs, Volume= 0.121 af, Atten= 53%, Lag= 6.6 min
Primary = 1.40 cfs @ 12.08 hrs, Volume= 0.121 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.77' @ 12.12 hrs Surf.Area= 2,113 sf Storage= 3,894 cf

Plug-Flow detention time= 189.0 min calculated for 0.120 af (65% of inflow)
Center-of-Mass det. time= 90.0 min (854.4 - 764.3)

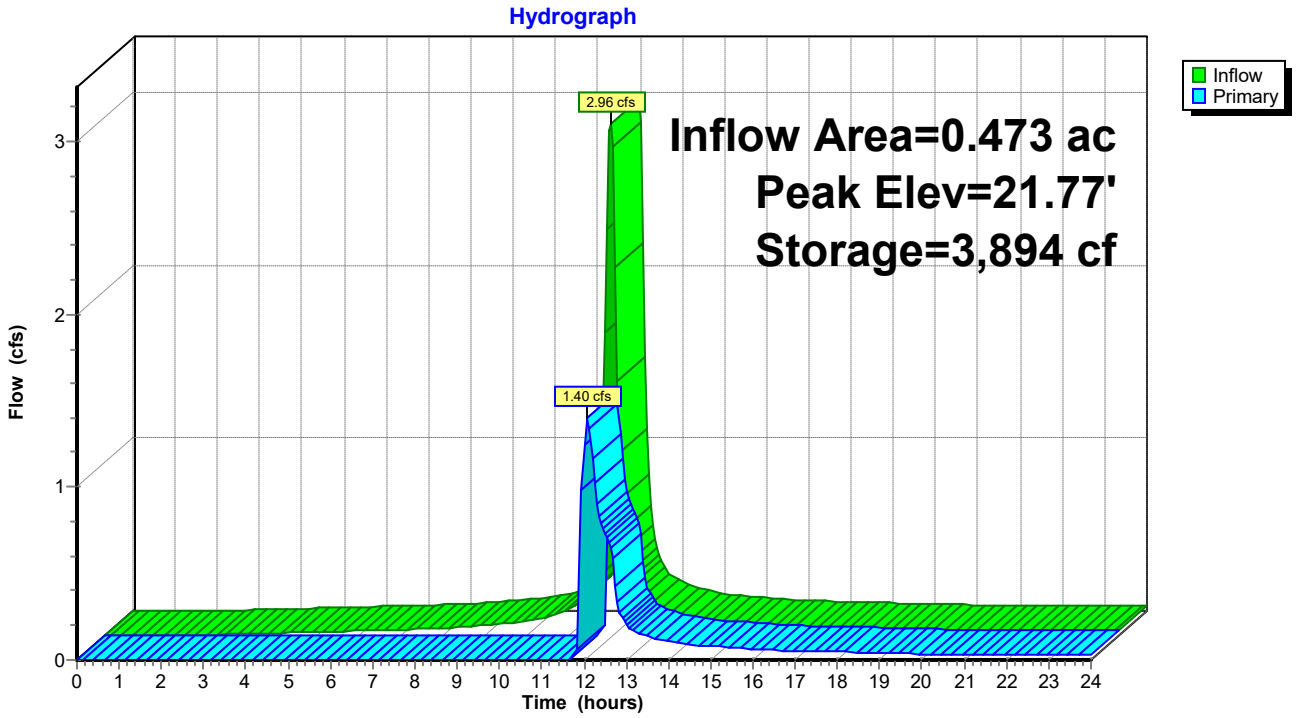
Volume	Invert	Avail.Storage	Storage Description
#1	17.19'	6,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.19	1,136	136.0	0.0	0	0	1,136
17.20	1,136	136.0	40.0	5	5	1,137
20.19	1,136	136.0	40.0	1,359	1,363	1,544
20.20	1,136	136.0	100.0	11	1,375	1,545
21.20	1,730	161.0	100.0	1,423	2,797	2,155
22.20	2,424	186.0	100.0	2,067	4,864	2,866
22.70	2,808	198.0	100.0	1,307	6,171	3,245

Device	Routing	Invert	Outlet Devices
#1	Primary	19.80'	**6.0" Round 6" PVC X 2.00** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.80' / 19.70' S= 0.0050 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.33 cfs @ 12.08 hrs HW=21.75' TW=21.12' (Dynamic Tailwater)
└─**1=6" PVC** (Inlet Controls 1.33 cfs @ 3.38 fps)
  └─**2=6" Atrium Grate** (Passes 1.33 cfs of 1.41 cfs potential flow)

Pond MBR-10: Micro-Bioretention #10



Stage-Area-Storage for Pond MBR-10: Micro-Bioretention #10

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0
17.29	1,136	45
17.39	1,136	91
17.49	1,136	136
17.59	1,136	182
17.69	1,136	227
17.79	1,136	273
17.89	1,136	318
17.99	1,136	364
18.09	1,136	409
18.19	1,136	454
18.29	1,136	500
18.39	1,136	545
18.49	1,136	591
18.59	1,136	636
18.69	1,136	682
18.79	1,136	727
18.89	1,136	772
18.99	1,136	818
19.09	1,136	863
19.19	1,136	909
19.29	1,136	954
19.39	1,136	1,000
19.49	1,136	1,045
19.59	1,136	1,091
19.69	1,136	1,136
19.79	1,136	1,181
19.89	1,136	1,227
19.99	1,136	1,272
20.09	1,136	1,318
20.19	1,136	1,363
20.29	1,184	1,479
20.39	1,239	1,600
20.49	1,295	1,727
20.59	1,353	1,859
20.69	1,412	1,997
20.79	1,471	2,142
20.89	1,533	2,292
20.99	1,595	2,448
21.09	1,659	2,611
21.19	1,723	2,780
21.29	1,788	2,955
21.39	1,853	3,137
21.49	1,919	3,326
21.59	1,987	3,521
21.69	2,055	3,723
21.79	2,125	3,933
21.89	2,196	4,149
21.99	2,269	4,372
22.09	2,342	4,602
22.19	2,416	4,840
22.29	2,491	5,086
22.39	2,567	5,338
22.49	2,643	5,599
22.59	2,721	5,867
22.69	**2,800**	**6,143**

Summary for Pond MBR-11: Micro-Bioretention #11

Inflow Area = 0.455 ac, 81.69% Impervious, Inflow Depth > 4.71" for 10-yr event
Inflow = 2.85 cfs @ 11.97 hrs, Volume= 0.179 af
Outflow = 1.34 cfs @ 12.08 hrs, Volume= 0.114 af, Atten= 53%, Lag= 6.9 min
Primary = 1.34 cfs @ 12.08 hrs, Volume= 0.114 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.72' @ 12.12 hrs Surf.Area= 2,078 sf Storage= 3,792 cf

Plug-Flow detention time= 194.2 min calculated for 0.114 af (64% of inflow)
Center-of-Mass det. time= 92.6 min (857.0 - 764.3)

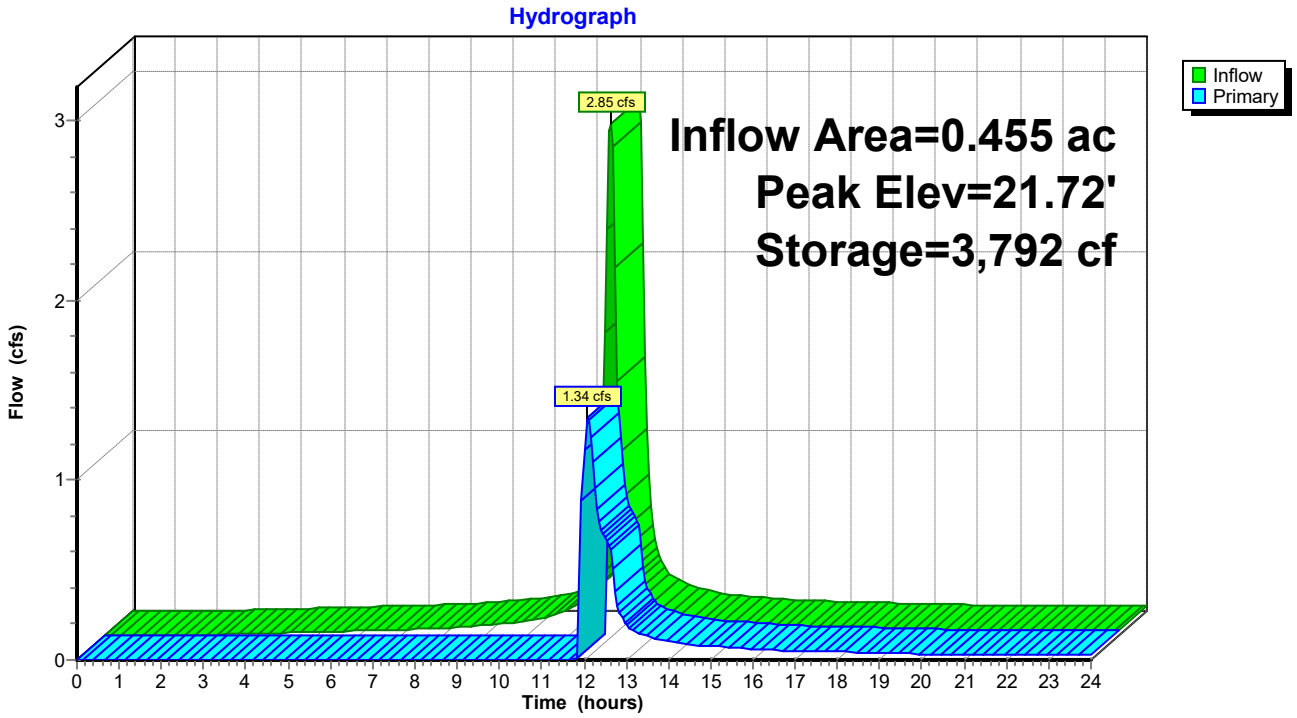
Volume	Invert	Avail.Storage	Storage Description
#1	17.19'	6,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.19	1,136	136.0	0.0	0	0	1,136
17.20	1,136	136.0	40.0	5	5	1,137
20.19	1,136	136.0	40.0	1,359	1,363	1,544
20.20	1,136	136.0	100.0	11	1,375	1,545
21.20	1,730	161.0	100.0	1,423	2,797	2,155
22.20	2,424	186.0	100.0	2,067	4,864	2,866
22.70	2,808	198.0	100.0	1,307	6,171	3,245

Device	Routing	Invert	Outlet Devices
#1	Primary	19.80'	**6.0" Round 6" PVC X 2.00** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.80' / 19.70' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.27 cfs @ 12.08 hrs HW=21.71' TW=21.13' (Dynamic Tailwater)
└─**1=6" PVC** (Inlet Controls 1.27 cfs @ 3.23 fps)
  └─**2=6" Atrium Grate** (Passes 1.27 cfs of 1.35 cfs potential flow)

Pond MBR-11: Micro-Bioretention #11



Stage-Area-Storage for Pond MBR-11: Micro-Bioretention #11

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0
17.29	1,136	45
17.39	1,136	91
17.49	1,136	136
17.59	1,136	182
17.69	1,136	227
17.79	1,136	273
17.89	1,136	318
17.99	1,136	364
18.09	1,136	409
18.19	1,136	454
18.29	1,136	500
18.39	1,136	545
18.49	1,136	591
18.59	1,136	636
18.69	1,136	682
18.79	1,136	727
18.89	1,136	772
18.99	1,136	818
19.09	1,136	863
19.19	1,136	909
19.29	1,136	954
19.39	1,136	1,000
19.49	1,136	1,045
19.59	1,136	1,091
19.69	1,136	1,136
19.79	1,136	1,181
19.89	1,136	1,227
19.99	1,136	1,272
20.09	1,136	1,318
20.19	1,136	1,363
20.29	1,184	1,479
20.39	1,239	1,600
20.49	1,295	1,727
20.59	1,353	1,859
20.69	1,412	1,997
20.79	1,471	2,142
20.89	1,533	2,292
20.99	1,595	2,448
21.09	1,659	2,611
21.19	1,723	2,780
21.29	1,788	2,955
21.39	1,853	3,137
21.49	1,919	3,326
21.59	1,987	3,521
21.69	2,055	3,723
21.79	2,125	3,933
21.89	2,196	4,149
21.99	2,269	4,372
22.09	2,342	4,602
22.19	2,416	4,840
22.29	2,491	5,086
22.39	2,567	5,338
22.49	2,643	5,599
22.59	2,721	5,867
22.69	**2,800**	**6,143**

Summary for Pond MBR-14: Future Office Building Micro-Bioretention

Inflow Area = 0.450 ac, 65.59% Impervious, Inflow Depth > 4.38" for 10-yr event
Inflow = 2.71 cfs @ 11.97 hrs, Volume= 0.164 af
Outflow = 1.92 cfs @ 12.07 hrs, Volume= 0.106 af, Atten= 29%, Lag= 6.2 min
Primary = 1.92 cfs @ 12.07 hrs, Volume= 0.106 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 24.64' @ 12.07 hrs Surf.Area= 2,129 sf Storage= 3,493 cf

Plug-Flow detention time= 211.3 min calculated for 0.106 af (65% of inflow)
Center-of-Mass det. time= 111.8 min (890.5 - 778.7)

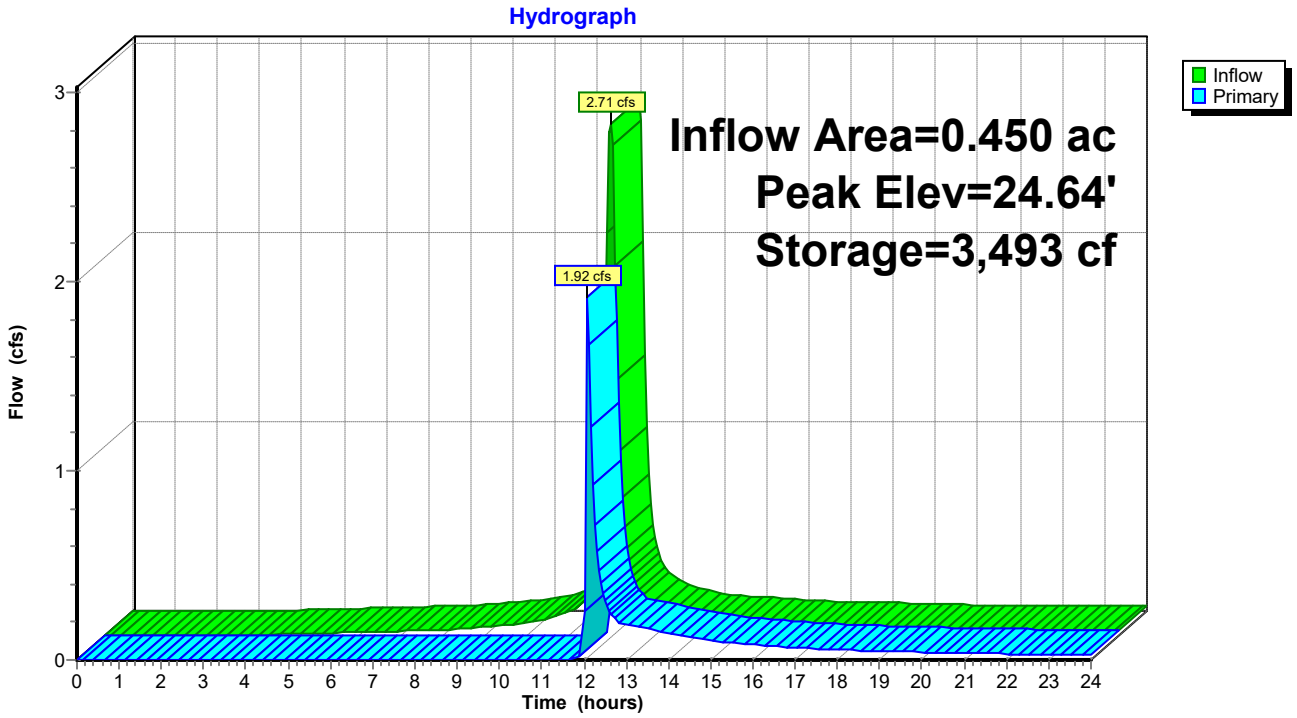
Volume	Invert	Avail.Storage	Storage Description
#1	20.99'	4,316 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.99	1,099	137.0	0.0	0	0	1,099
21.00	1,099	137.0	40.0	4	4	1,100
22.99	1,099	137.0	40.0	875	879	1,373
23.00	1,099	137.0	100.0	11	890	1,374
24.00	1,699	162.0	100.0	1,388	2,278	1,988
25.00	2,397	187.0	100.0	2,038	4,316	2,704

Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	**12.0" Round 12" N-12 Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.00' / 20.31' S= 0.0197 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.00'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.50'	**10.7' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=1.72 cfs @ 12.07 hrs HW=24.62' TW=21.09' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 1.72 cfs of 6.68 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.24 cfs @ 2.87 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 1.48 cfs @ 1.14 fps)

Pond MBR-14: Future Office Building Micro-Bioretention



Stage-Area-Storage for Pond MBR-14: Future Office Building Micro-Bioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,099	0
21.04	1,099	22
21.09	1,099	44
21.14	1,099	66
21.19	1,099	88
21.24	1,099	110
21.29	1,099	132
21.34	1,099	154
21.39	1,099	176
21.44	1,099	198
21.49	1,099	220
21.54	1,099	242
21.59	1,099	264
21.64	1,099	286
21.69	1,099	308
21.74	1,099	330
21.79	1,099	352
21.84	1,099	374
21.89	1,099	396
21.94	1,099	418
21.99	1,099	440
22.04	1,099	462
22.09	1,099	484
22.14	1,099	506
22.19	1,099	528
22.24	1,099	549
22.29	1,099	571
22.34	1,099	593
22.39	1,099	615
22.44	1,099	637
22.49	1,099	659
22.54	1,099	681
22.59	1,099	703
22.64	1,099	725
22.69	1,099	747
22.74	1,099	769
22.79	1,099	791
22.84	1,099	813
22.89	1,099	835
22.94	1,099	857
22.99	1,099	879
23.04	1,121	935
23.09	1,148	991
23.14	1,175	1,049
23.19	1,203	1,109
23.24	1,231	1,170
23.29	1,260	1,232
23.34	1,288	1,296
23.39	1,318	1,361
23.44	1,347	1,427
23.49	1,377	1,495
23.54	1,407	1,565
23.59	1,437	1,636
23.64	1,468	1,709
23.69	1,499	1,783
23.74	1,530	1,859
23.79	1,562	1,936
23.84	1,594	2,015
23.89	1,627	2,095
23.94	1,659	2,178
23.99	1,692	2,261
24.04	1,725	2,347
24.09	1,757	2,434
24.14	1,790	2,523
24.19	1,822	2,613
24.24	1,856	2,705
24.29	1,889	2,798
24.34	1,923	2,894
24.39	1,957	2,991
24.44	1,991	3,089
24.49	2,026	3,190
24.54	2,061	3,292
24.59	2,096	3,396
24.64	2,132	3,502
24.69	2,168	3,609
24.74	2,204	3,718
24.79	2,240	3,830
24.84	2,277	3,942
24.89	2,314	4,057
24.94	2,352	4,174
24.99	**2,389**	**4,292**

Summary for Pond MBR-15: Access Road Microbioretention

Inflow Area = 0.411 ac, 57.06% Impervious, Inflow Depth > 4.16" for 10-yr event
Inflow = 2.39 cfs @ 11.97 hrs, Volume= 0.143 af
Outflow = 0.21 cfs @ 12.58 hrs, Volume= 0.054 af, Atten= 91%, Lag= 36.8 min
Primary = 0.21 cfs @ 12.58 hrs, Volume= 0.054 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.27' @ 12.58 hrs Surf.Area= 2,772 sf Storage= 4,005 cf

Plug-Flow detention time= 303.7 min calculated for 0.054 af (38% of inflow)
Center-of-Mass det. time= 177.2 min (963.9 - 786.7)

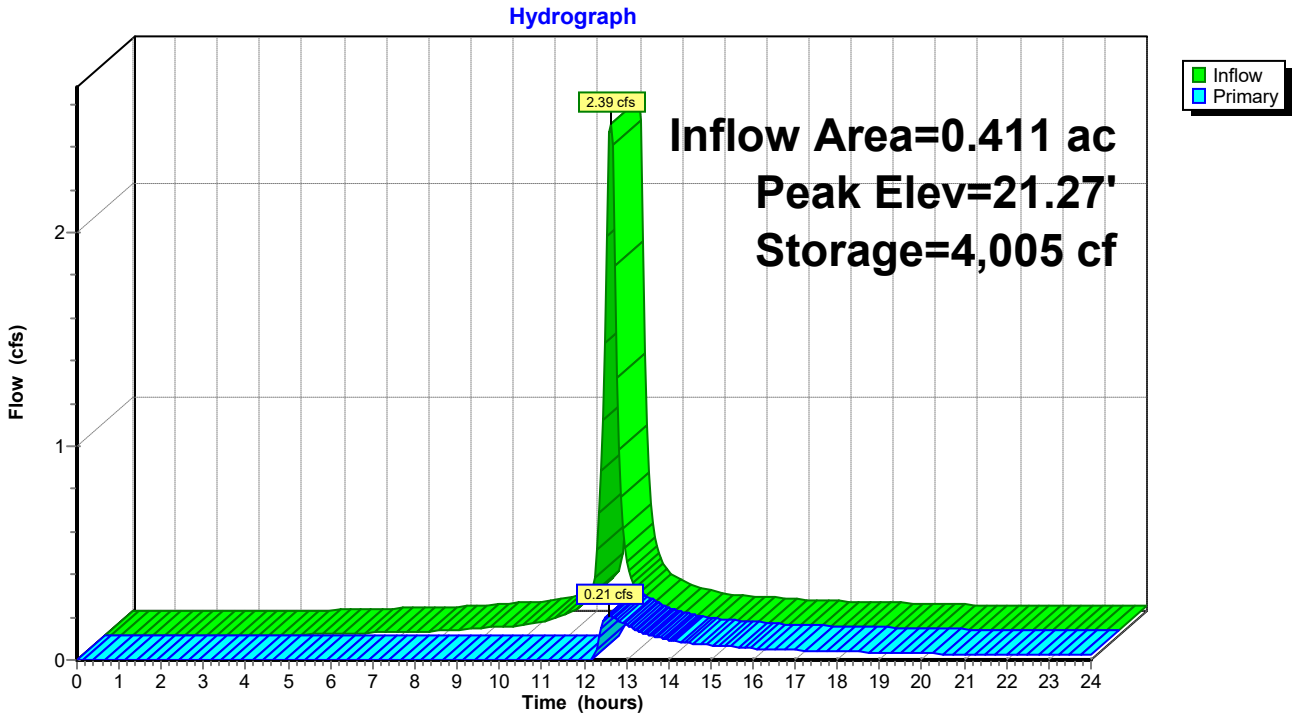
Volume	Invert	Avail.Storage	Storage Description
#1	18.19'	6,964 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
18.19	1,878	195.0	0.0	0	0	1,878
18.20	1,878	195.0	40.0	8	8	1,880
20.19	1,878	195.0	40.0	1,495	1,502	2,268
20.20	1,878	195.0	100.0	19	1,521	2,270
21.20	2,708	220.0	100.0	2,280	3,802	3,121
22.20	3,639	245.0	100.0	3,162	6,964	4,075

Device	Routing	Invert	Outlet Devices
#1	Primary	19.50'	**6.0" Round 6" PVC X 2.00** L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.50' / 18.70' S= 0.0267 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 12.58 hrs HW=21.27' TW=20.97' (Dynamic Tailwater)
└─**1=6" PVC** (Passes 0.21 cfs of 0.92 cfs potential flow)
  └─**2=6" Atrium Grate** (Weir Controls 0.21 cfs @ 0.89 fps)

Pond MBR-15: Access Road Microbioretention



Stage-Area-Storage for Pond MBR-15: Access Road Microbioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.19	1,878	0
18.24	1,878	38
18.29	1,878	75
18.34	1,878	113
18.39	1,878	150
18.44	1,878	188
18.49	1,878	225
18.54	1,878	263
18.59	1,878	300
18.64	1,878	338
18.69	1,878	376
18.74	1,878	413
18.79	1,878	451
18.84	1,878	488
18.89	1,878	526
18.94	1,878	563
18.99	1,878	601
19.04	1,878	639
19.09	1,878	676
19.14	1,878	714
19.19	1,878	751
19.24	1,878	789
19.29	1,878	826
19.34	1,878	864
19.39	1,878	901
19.44	1,878	939
19.49	1,878	977
19.54	1,878	1,014
19.59	1,878	1,052
19.64	1,878	1,089
19.69	1,878	1,127
19.74	1,878	1,164
19.79	1,878	1,202
19.84	1,878	1,239
19.89	1,878	1,277
19.94	1,878	1,315
19.99	1,878	1,352
20.04	1,878	1,390
20.09	1,878	1,427
20.14	1,878	1,465
20.19	1,878	1,502
20.24	1,908	1,597
20.29	1,946	1,693
20.34	1,985	1,792
20.39	2,024	1,892
20.44	2,063	1,994
20.49	2,103	2,098
20.54	2,143	2,204
20.59	2,184	2,312
20.64	2,225	2,423
20.69	2,266	2,535
20.74	2,307	2,649
20.79	2,349	2,766
20.84	2,392	2,884
20.89	2,435	3,005
20.94	2,478	3,128
20.99	2,521	3,253
21.04	2,565	3,380
21.09	2,609	3,509
21.14	2,654	3,641
21.19	2,699	3,775
21.24	2,743	3,911
21.29	2,786	4,049
21.34	2,830	4,189
21.39	2,874	4,332
21.44	2,919	4,477
21.49	2,964	4,624
21.54	3,009	4,773
21.59	3,055	4,925
21.64	3,101	5,079
21.69	3,147	5,235
21.74	3,194	5,393
21.79	3,241	5,554
21.84	3,288	5,717
21.89	3,336	5,883
21.94	3,384	6,051
21.99	3,432	6,221
22.04	3,481	6,394
22.09	3,530	6,569
22.14	3,579	6,747
22.19	**3,629**	**6,927**

Summary for Pond MBR-2: Parking Lot Micro-Bioretention

Inflow Area = 0.460 ac, 58.66% Impervious, Inflow Depth > 4.27" for 10-yr event
Inflow = 2.72 cfs @ 11.97 hrs, Volume= 0.164 af
Outflow = 0.58 cfs @ 12.26 hrs, Volume= 0.090 af, Atten= 79%, Lag= 17.4 min
Primary = 0.58 cfs @ 12.26 hrs, Volume= 0.090 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 24.30' @ 12.26 hrs Surf.Area= 2,606 sf Storage= 4,178 cf

Plug-Flow detention time= 260.3 min calculated for 0.090 af (55% of inflow)
Center-of-Mass det. time= 152.9 min (935.8 - 782.8)

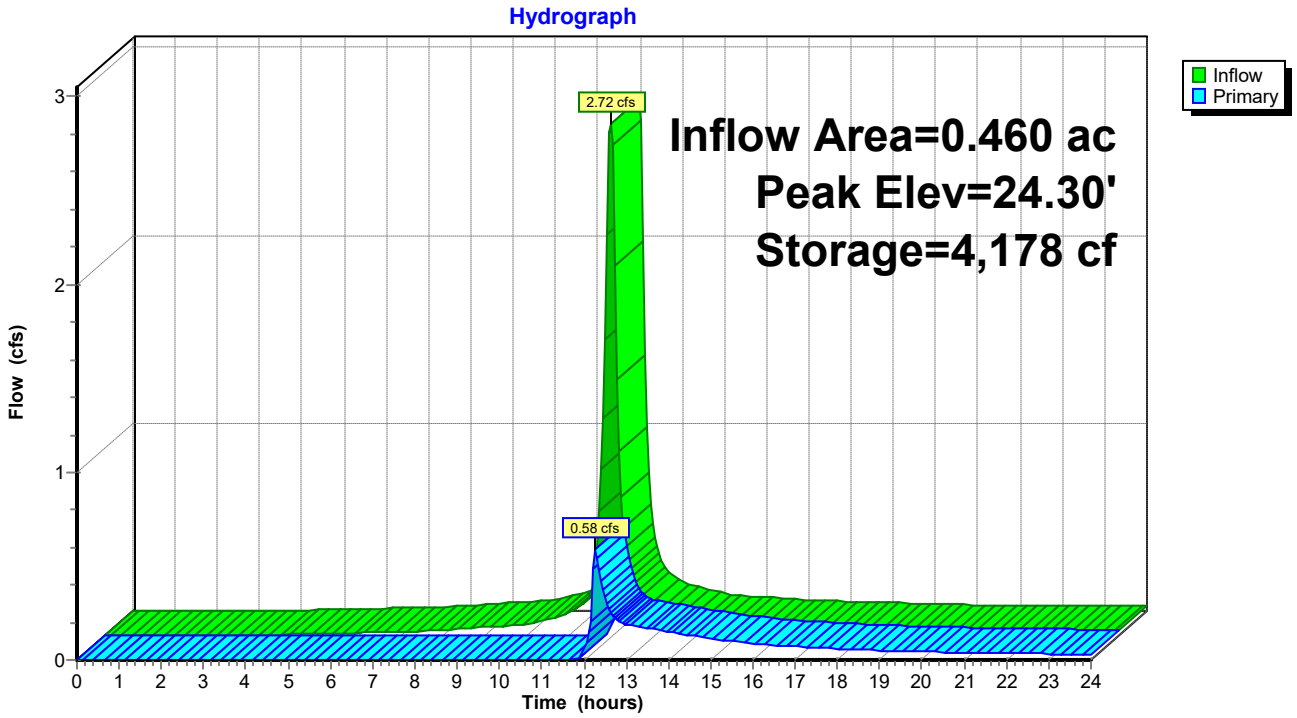
Volume	Invert	Avail.Storage	Storage Description
#1	20.74'	5,446 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.74	1,385	178.0	0.0	0	0	1,385
20.75	1,385	178.0	40.0	6	6	1,387
22.74	1,385	178.0	40.0	1,102	1,108	1,741
22.75	1,385	178.0	100.0	14	1,122	1,743
23.75	2,150	203.0	100.0	1,754	2,875	2,524
24.75	3,015	229.0	100.0	2,570	5,446	3,444

Device	Routing	Invert	Outlet Devices
#1	Primary	20.75'	**12.0" Round 12" N-12 Culvert** L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 20.75' / 20.65' S= 0.0008 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	23.75'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.25'	**10.7' long Rim MD374.23** 0 End Contraction(s)

Primary OutFlow Max=0.57 cfs @ 12.26 hrs HW=24.30' TW=0.00' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 0.57 cfs of 4.63 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.21 cfs @ 2.53 fps)
  └─**3=Rim MD374.23** (Weir Controls 0.36 cfs @ 0.71 fps)

Pond MBR-2: Parking Lot Micro-Bioretention



Stage-Area-Storage for Pond MBR-2: Parking Lot Micro-Bioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.74	1,385	0
20.79	1,385	28
20.84	1,385	55
20.89	1,385	83
20.94	1,385	111
20.99	1,385	139
21.04	1,385	166
21.09	1,385	194
21.14	1,385	222
21.19	1,385	249
21.24	1,385	277
21.29	1,385	305
21.34	1,385	332
21.39	1,385	360
21.44	1,385	388
21.49	1,385	416
21.54	1,385	443
21.59	1,385	471
21.64	1,385	499
21.69	1,385	526
21.74	1,385	554
21.79	1,385	582
21.84	1,385	609
21.89	1,385	637
21.94	1,385	665
21.99	1,385	693
22.04	1,385	720
22.09	1,385	748
22.14	1,385	776
22.19	1,385	803
22.24	1,385	831
22.29	1,385	859
22.34	1,385	886
22.39	1,385	914
22.44	1,385	942
22.49	1,385	970
22.54	1,385	997
22.59	1,385	1,025
22.64	1,385	1,053
22.69	1,385	1,080
22.74	1,385	1,108
22.79	1,412	1,178
22.84	1,447	1,249
22.89	1,482	1,323
22.94	1,517	1,397
22.99	1,553	1,474
23.04	1,590	1,553
23.09	1,626	1,633
23.14	1,663	1,715
23.19	1,701	1,800
23.24	1,739	1,886
23.29	1,777	1,973
23.34	1,816	2,063
23.39	1,855	2,155
23.44	1,895	2,249
23.49	1,935	2,345
23.54	1,975	2,442
23.59	2,016	2,542
23.64	2,058	2,644
23.69	2,099	2,748
23.74	2,142	2,854
23.79	2,182	2,962
23.84	2,222	3,072
23.89	2,262	3,184
23.94	2,303	3,298
23.99	2,344	3,415
24.04	2,386	3,533
24.09	2,428	3,653
24.14	2,470	3,776
24.19	2,513	3,900
24.24	2,556	4,027
24.29	2,599	4,156
24.34	2,643	4,287
24.39	2,687	4,420
24.44	2,731	4,555
24.49	2,776	4,693
24.54	2,821	4,833
24.59	2,867	4,975
24.64	2,913	5,120
24.69	2,959	5,267
24.74	**3,006**	**5,416**

Summary for Pond MBR-3: Office Building Micro-Bioretention

Inflow Area = 0.453 ac, 54.23% Impervious, Inflow Depth > 4.16" for 10-yr event
Inflow = 2.64 cfs @ 11.97 hrs, Volume= 0.157 af
Outflow = 1.04 cfs @ 12.16 hrs, Volume= 0.094 af, Atten= 61%, Lag= 11.3 min
Primary = 1.04 cfs @ 12.16 hrs, Volume= 0.094 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 24.58' @ 12.16 hrs Surf.Area= 2,237 sf Storage= 3,644 cf

Plug-Flow detention time= 230.8 min calculated for 0.094 af (60% of inflow)
Center-of-Mass det. time= 127.0 min (913.7 - 786.7)

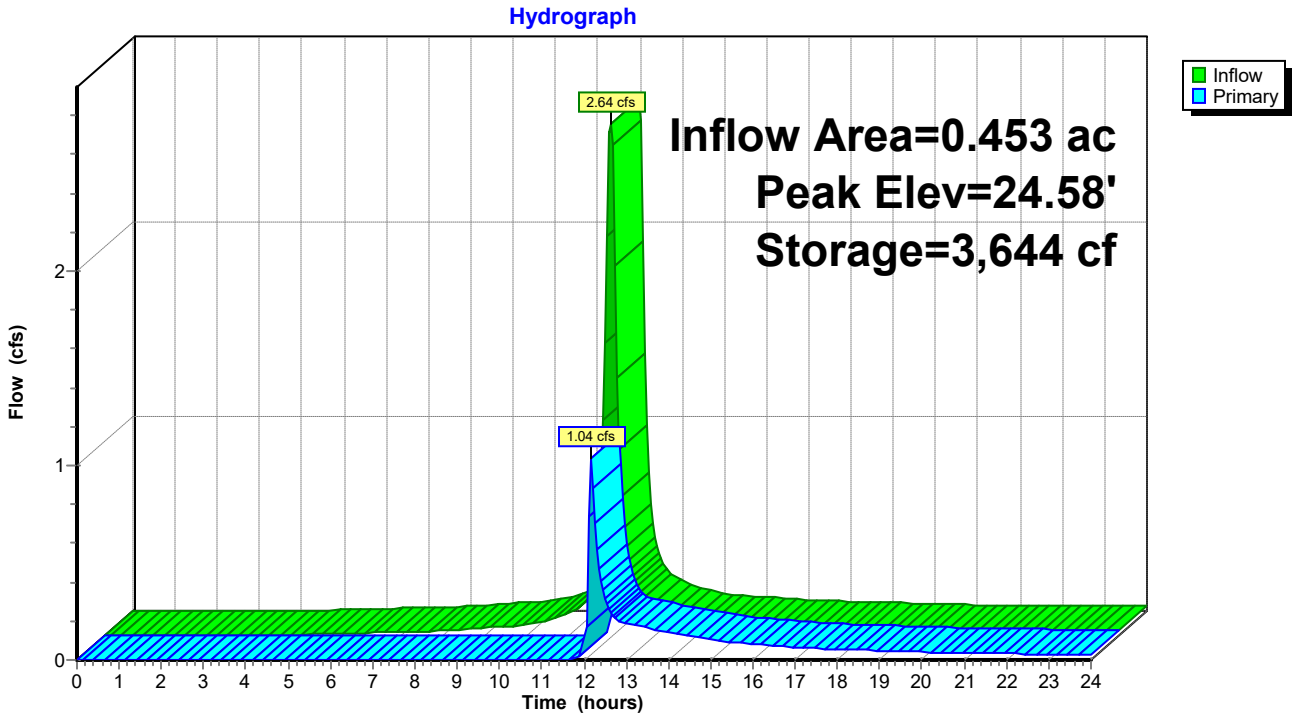
Volume	Invert	Avail.Storage	Storage Description
#1	20.99'	4,647 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.99	1,193	146.0	0.0	0	0	1,193
21.00	1,193	146.0	40.0	5	5	1,194
22.99	1,193	146.0	40.0	950	954	1,485
23.00	1,193	146.0	100.0	12	966	1,486
24.00	1,826	171.0	100.0	1,498	2,465	2,137
25.00	2,559	196.0	100.0	2,182	4,647	2,890

Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	**12.0" Round 12" N-12 Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.00' / 20.31' S= 0.0197 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.00'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.50'	**10.7' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=1.01 cfs @ 12.16 hrs HW=24.58' TW=21.10' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 1.01 cfs of 6.64 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.22 cfs @ 2.69 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 0.78 cfs @ 0.92 fps)

Pond MBR-3: Office Building Micro-Bioretention



Stage-Area-Storage for Pond MBR-3: Office Building Micro-Bioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,193	0
21.04	1,193	24
21.09	1,193	48
21.14	1,193	72
21.19	1,193	95
21.24	1,193	119
21.29	1,193	143
21.34	1,193	167
21.39	1,193	191
21.44	1,193	215
21.49	1,193	239
21.54	1,193	262
21.59	1,193	286
21.64	1,193	310
21.69	1,193	334
21.74	1,193	358
21.79	1,193	382
21.84	1,193	406
21.89	1,193	429
21.94	1,193	453
21.99	1,193	477
22.04	1,193	501
22.09	1,193	525
22.14	1,193	549
22.19	1,193	573
22.24	1,193	597
22.29	1,193	620
22.34	1,193	644
22.39	1,193	668
22.44	1,193	692
22.49	1,193	716
22.54	1,193	740
22.59	1,193	764
22.64	1,193	787
22.69	1,193	811
22.74	1,193	835
22.79	1,193	859
22.84	1,193	883
22.89	1,193	907
22.94	1,193	931
22.99	1,193	954
23.04	1,216	1,015
23.09	1,244	1,076
23.14	1,274	1,139
23.19	1,303	1,203
23.24	1,333	1,269
23.29	1,363	1,337
23.34	1,393	1,406
23.39	1,424	1,476
23.44	1,455	1,548
23.49	1,486	1,621
23.54	1,518	1,697
23.59	1,550	1,773
23.64	1,583	1,852
23.69	1,615	1,932
23.74	1,649	2,013
23.79	1,682	2,096
23.84	1,716	2,181
23.89	1,750	2,268
23.94	1,784	2,356
23.99	1,819	2,446
24.04	1,853	2,538
24.09	1,887	2,632
24.14	1,921	2,727
24.19	1,956	2,824
24.24	1,991	2,923
24.29	2,026	3,023
24.34	2,061	3,125
24.39	2,097	3,229
24.44	2,133	3,335
24.49	2,170	3,442
24.54	2,206	3,552
24.59	2,244	3,663
24.64	2,281	3,776
24.69	2,319	3,891
24.74	2,357	4,008
24.79	2,395	4,127
24.84	2,433	4,248
24.89	2,472	4,370
24.94	2,512	4,495
24.99	**2,551**	**4,621**

Summary for Pond MBR-4: Micro-Bioretention #4

Inflow Area = 0.409 ac, 74.70% Impervious, Inflow Depth > 4.49" for 10-yr event
Inflow = 2.50 cfs @ 11.97 hrs, Volume= 0.153 af
Outflow = 1.18 cfs @ 12.12 hrs, Volume= 0.091 af, Atten= 53%, Lag= 9.3 min
Primary = 1.18 cfs @ 12.12 hrs, Volume= 0.091 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 25.59' @ 12.12 hrs Surf.Area= 2,181 sf Storage= 3,624 cf

Plug-Flow detention time= 236.7 min calculated for 0.091 af (60% of inflow)
Center-of-Mass det. time= 132.0 min (906.3 - 774.3)

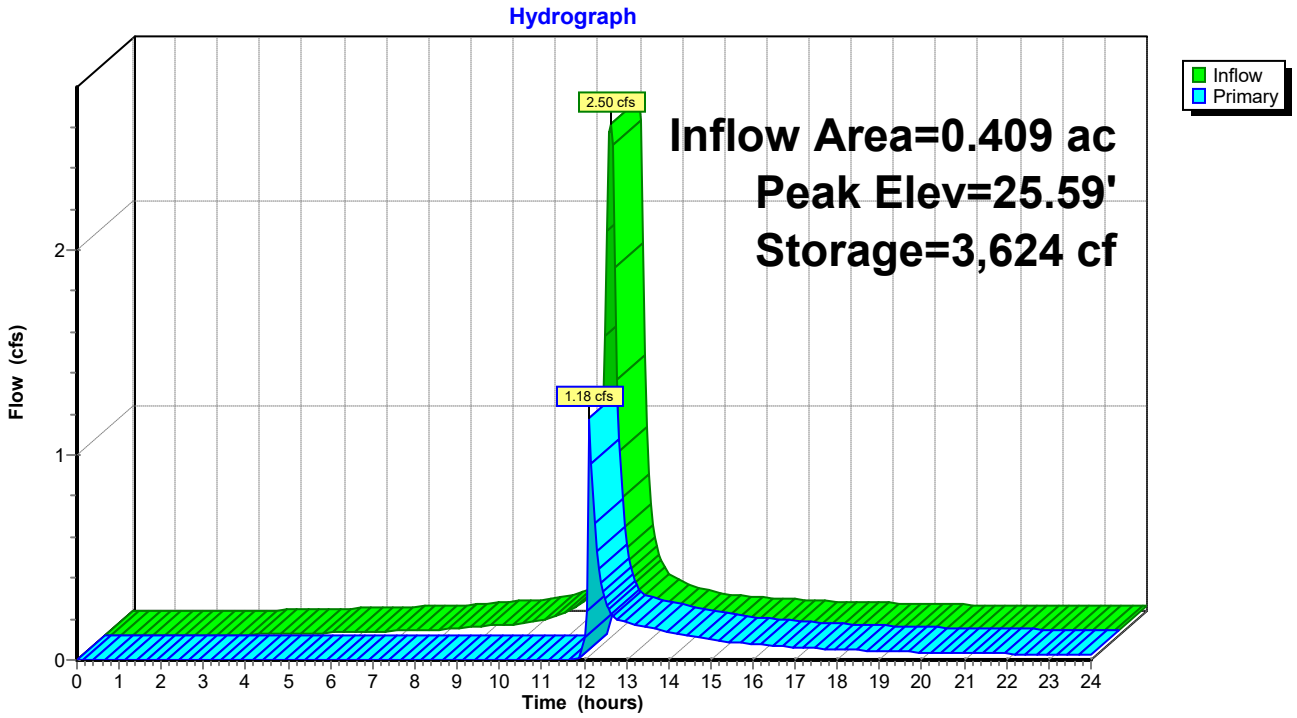
Volume	Invert	Avail.Storage	Storage Description
#1	21.99'	4,571 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
21.99	1,196	135.0	0.0	0	0	1,196
22.00	1,196	135.0	40.0	5	5	1,197
23.99	1,196	135.0	40.0	952	957	1,466
24.00	1,196	135.0	100.0	12	969	1,467
25.00	1,786	160.0	100.0	1,481	2,450	2,072
26.00	2,475	185.0	100.0	2,121	4,571	2,780

Device	Routing	Invert	Outlet Devices
#1	Primary	22.00'	**12.0" Round 12" N-12** L= 62.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 22.00' / 20.45' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	25.00'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	25.50'	**10.7' long Rim MD 374.23** 0 End Contraction(s)

Primary OutFlow Max=1.08 cfs @ 12.12 hrs HW=25.58' TW=21.39' (Dynamic Tailwater)
└─**1=12" N-12** (Passes 1.08 cfs of 6.64 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.23 cfs @ 2.71 fps)
  └─**3=Rim MD 374.23** (Weir Controls 0.85 cfs @ 0.95 fps)

Pond MBR-4: Micro-Bioretention #4



Stage-Area-Storage for Pond MBR-4: Micro-Bioretention #4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
21.99	1,196	0
22.04	1,196	24
22.09	1,196	48
22.14	1,196	72
22.19	1,196	96
22.24	1,196	120
22.29	1,196	144
22.34	1,196	167
22.39	1,196	191
22.44	1,196	215
22.49	1,196	239
22.54	1,196	263
22.59	1,196	287
22.64	1,196	311
22.69	1,196	335
22.74	1,196	359
22.79	1,196	383
22.84	1,196	407
22.89	1,196	431
22.94	1,196	454
22.99	1,196	478
23.04	1,196	502
23.09	1,196	526
23.14	1,196	550
23.19	1,196	574
23.24	1,196	598
23.29	1,196	622
23.34	1,196	646
23.39	1,196	670
23.44	1,196	694
23.49	1,196	718
23.54	1,196	742
23.59	1,196	765
23.64	1,196	789
23.69	1,196	813
23.74	1,196	837
23.79	1,196	861
23.84	1,196	885
23.89	1,196	909
23.94	1,196	933
23.99	1,196	957
24.04	1,217	1,017
24.09	1,244	1,079
24.14	1,272	1,141
24.19	1,299	1,206
24.24	1,327	1,271
24.29	1,355	1,338
24.34	1,383	1,407
24.39	1,412	1,477
24.44	1,441	1,548
24.49	1,470	1,621
24.54	1,500	1,695
24.59	1,530	1,771
24.64	1,560	1,848
24.69	1,590	1,927
24.74	1,621	2,007
24.79	1,652	2,089
24.84	1,684	2,172
24.89	1,715	2,257
24.94	1,747	2,344
24.99	1,780	2,432
25.04	1,811	2,522
25.09	1,843	2,613
25.14	1,876	2,706
25.19	1,908	2,801
25.24	1,941	2,897
25.29	1,974	2,995
25.34	2,008	3,094
25.39	2,041	3,196
25.44	2,075	3,299
25.49	2,110	3,403
25.54	2,144	3,510
25.59	2,179	3,618
25.64	2,214	3,727
25.69	2,249	3,839
25.74	2,285	3,952
25.79	2,321	4,068
25.84	2,357	4,185
25.89	2,394	4,303
25.94	2,430	4,424
25.99	**2,468**	**4,546**

Summary for Pond MBR-5: Access Road Micro-Bioretention #5

Inflow Area = 0.460 ac, 71.74% Impervious, Inflow Depth > 4.49" for 10-yr event
Inflow = 2.81 cfs @ 11.97 hrs, Volume= 0.172 af
Outflow = 0.78 cfs @ 12.20 hrs, Volume= 0.084 af, Atten= 72%, Lag= 14.1 min
Primary = 0.78 cfs @ 12.20 hrs, Volume= 0.084 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.38' @ 12.20 hrs Surf.Area= 2,865 sf Storage= 4,302 cf

Plug-Flow detention time= 247.5 min calculated for 0.084 af (49% of inflow)
Center-of-Mass det. time= 130.3 min (904.6 - 774.3)

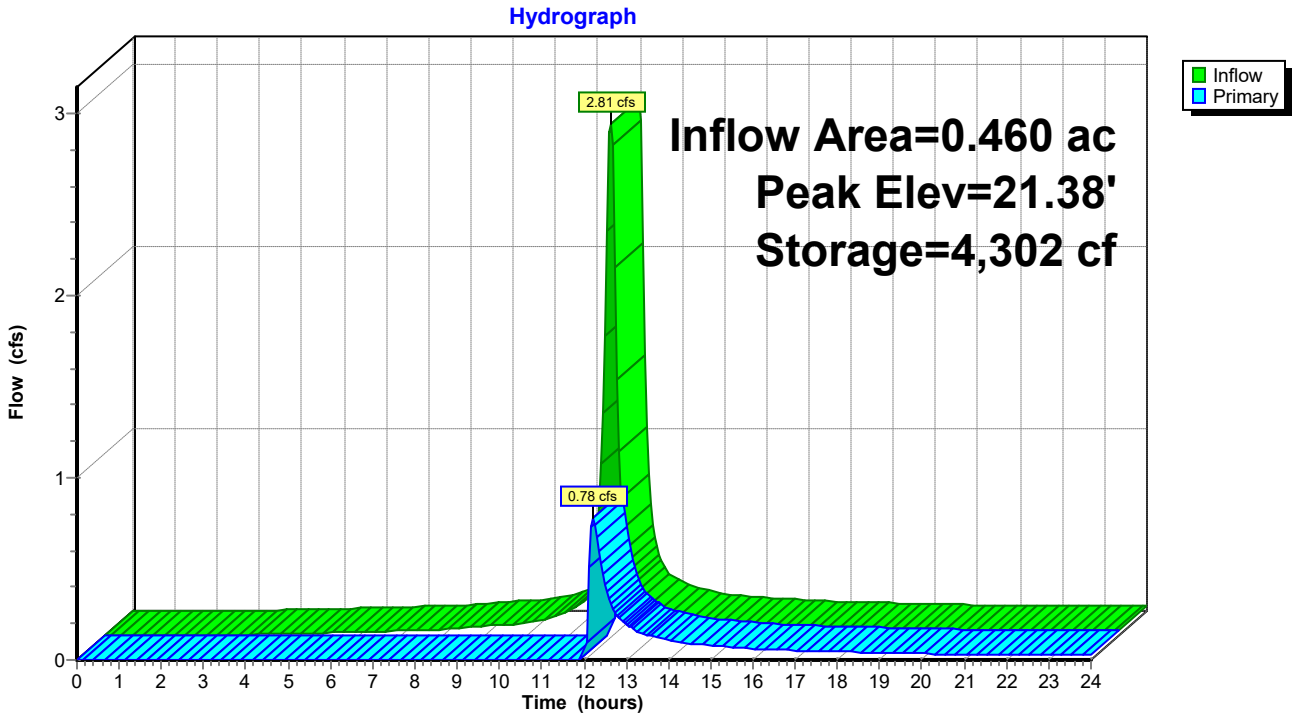
Volume	Invert	Avail.Storage	Storage Description
#1	18.19'	6,964 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
18.19	1,878	195.0	0.0	0	0	1,878
18.20	1,878	195.0	40.0	8	8	1,880
20.19	1,878	195.0	40.0	1,495	1,502	2,268
20.20	1,878	195.0	100.0	19	1,521	2,270
21.20	2,708	220.0	100.0	2,280	3,802	3,121
22.20	3,639	245.0	100.0	3,162	6,964	4,075

Device	Routing	Invert	Outlet Devices
#1	Primary	19.50'	**6.0" Round 6" PVC X 2.00** L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.50' / 18.70' S= 0.0267 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.78 cfs @ 12.20 hrs HW=21.38' TW=21.04' (Dynamic Tailwater)
└─**1=6" PVC** (Passes 0.78 cfs of 0.97 cfs potential flow)
  └─**2=6" Atrium Grate** (Weir Controls 0.78 cfs @ 1.38 fps)

Pond MBR-5: Access Road Micro-Bioretention #5



Stage-Area-Storage for Pond MBR-5: Access Road Micro-Bioretention #5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.19	1,878	0
18.24	1,878	38
18.29	1,878	75
18.34	1,878	113
18.39	1,878	150
18.44	1,878	188
18.49	1,878	225
18.54	1,878	263
18.59	1,878	300
18.64	1,878	338
18.69	1,878	376
18.74	1,878	413
18.79	1,878	451
18.84	1,878	488
18.89	1,878	526
18.94	1,878	563
18.99	1,878	601
19.04	1,878	639
19.09	1,878	676
19.14	1,878	714
19.19	1,878	751
19.24	1,878	789
19.29	1,878	826
19.34	1,878	864
19.39	1,878	901
19.44	1,878	939
19.49	1,878	977
19.54	1,878	1,014
19.59	1,878	1,052
19.64	1,878	1,089
19.69	1,878	1,127
19.74	1,878	1,164
19.79	1,878	1,202
19.84	1,878	1,239
19.89	1,878	1,277
19.94	1,878	1,315
19.99	1,878	1,352
20.04	1,878	1,390
20.09	1,878	1,427
20.14	1,878	1,465
20.19	1,878	1,502
20.24	1,908	1,597
20.29	1,946	1,693
20.34	1,985	1,792
20.39	2,024	1,892
20.44	2,063	1,994
20.49	2,103	2,098
20.54	2,143	2,204
20.59	2,184	2,312
20.64	2,225	2,423
20.69	2,266	2,535
20.74	2,307	2,649
20.79	2,349	2,766
20.84	2,392	2,884
20.89	2,435	3,005
20.94	2,478	3,128
20.99	2,521	3,253
21.04	2,565	3,380
21.09	2,609	3,509
21.14	2,654	3,641
21.19	2,699	3,775
21.24	2,743	3,911
21.29	2,786	4,049
21.34	2,830	4,189
21.39	2,874	4,332
21.44	2,919	4,477
21.49	2,964	4,624
21.54	3,009	4,773
21.59	3,055	4,925
21.64	3,101	5,079
21.69	3,147	5,235
21.74	3,194	5,393
21.79	3,241	5,554
21.84	3,288	5,717
21.89	3,336	5,883
21.94	3,384	6,051
21.99	3,432	6,221
22.04	3,481	6,394
22.09	3,530	6,569
22.14	3,579	6,747
22.19	**3,629**	**6,927**

Summary for Pond MBR-6: Micro-Bioretention #6

Inflow Area = 0.419 ac, 74.03% Impervious, Inflow Depth > 4.49" for 10-yr event
Inflow = 2.56 cfs @ 11.97 hrs, Volume= 0.157 af
Outflow = 1.33 cfs @ 12.12 hrs, Volume= 0.095 af, Atten= 48%, Lag= 8.9 min
Primary = 1.33 cfs @ 12.12 hrs, Volume= 0.095 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 24.60' @ 12.12 hrs Surf.Area= 2,186 sf Storage= 3,641 cf

Plug-Flow detention time= 232.2 min calculated for 0.095 af (60% of inflow)
Center-of-Mass det. time= 128.4 min (902.8 - 774.3)

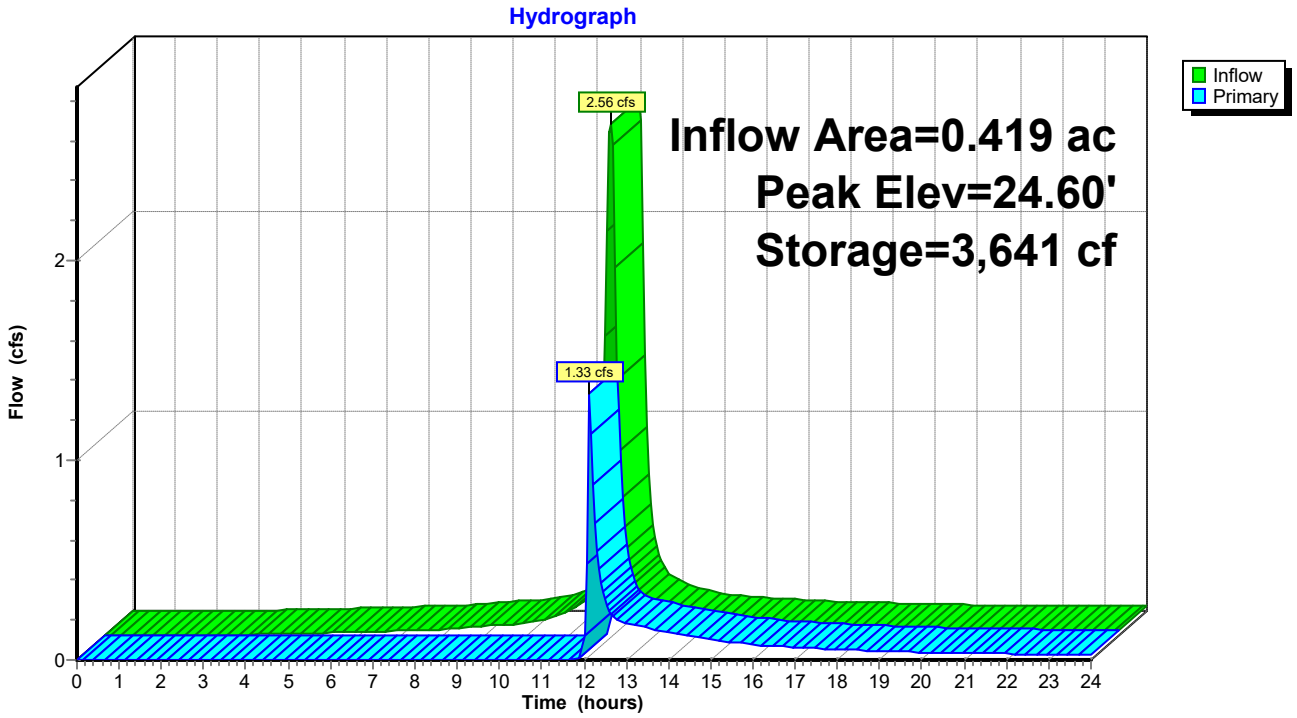
Volume	Invert	Avail.Storage	Storage Description
#1	20.99'	4,571 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.99	1,196	135.0	0.0	0	0	1,196
21.00	1,196	135.0	40.0	5	5	1,197
22.99	1,196	135.0	40.0	952	957	1,466
23.00	1,196	135.0	100.0	12	969	1,467
24.00	1,786	160.0	100.0	1,481	2,450	2,072
25.00	2,475	185.0	100.0	2,121	4,571	2,780

Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	**12.0" Round 12" N-12 Culvert** L= 26.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.00' / 20.45' S= 0.0205 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.00'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.50'	**10.7' long Rim MD 374.23** 2 End Contraction(s)

Primary OutFlow Max=1.22 cfs @ 12.12 hrs HW=24.59' TW=21.38' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 1.22 cfs of 6.65 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.23 cfs @ 2.75 fps)
  └─**3=Rim MD 374.23** (Weir Controls 1.00 cfs @ 1.00 fps)

Pond MBR-6: Micro-Bioretention #6



Stage-Area-Storage for Pond MBR-6: Micro-Bioretention #6

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,196	0
21.04	1,196	24
21.09	1,196	48
21.14	1,196	72
21.19	1,196	96
21.24	1,196	120
21.29	1,196	144
21.34	1,196	167
21.39	1,196	191
21.44	1,196	215
21.49	1,196	239
21.54	1,196	263
21.59	1,196	287
21.64	1,196	311
21.69	1,196	335
21.74	1,196	359
21.79	1,196	383
21.84	1,196	407
21.89	1,196	431
21.94	1,196	454
21.99	1,196	478
22.04	1,196	502
22.09	1,196	526
22.14	1,196	550
22.19	1,196	574
22.24	1,196	598
22.29	1,196	622
22.34	1,196	646
22.39	1,196	670
22.44	1,196	694
22.49	1,196	718
22.54	1,196	742
22.59	1,196	765
22.64	1,196	789
22.69	1,196	813
22.74	1,196	837
22.79	1,196	861
22.84	1,196	885
22.89	1,196	909
22.94	1,196	933
22.99	1,196	957
23.04	1,217	1,017
23.09	1,244	1,079
23.14	1,272	1,141
23.19	1,299	1,206
23.24	1,327	1,271
23.29	1,355	1,338
23.34	1,383	1,407
23.39	1,412	1,477
23.44	1,441	1,548
23.49	1,470	1,621
23.54	1,500	1,695
23.59	1,530	1,771
23.64	1,560	1,848
23.69	1,590	1,927
23.74	1,621	2,007
23.79	1,652	2,089
23.84	1,684	2,172
23.89	1,715	2,257
23.94	1,747	2,344
23.99	1,780	2,432
24.04	1,811	2,522
24.09	1,843	2,613
24.14	1,876	2,706
24.19	1,908	2,801
24.24	1,941	2,897
24.29	1,974	2,995
24.34	2,008	3,094
24.39	2,041	3,196
24.44	2,075	3,299
24.49	2,110	3,403
24.54	2,144	3,510
24.59	2,179	3,618
24.64	2,214	3,727
24.69	2,249	3,839
24.74	2,285	3,952
24.79	2,321	4,068
24.84	2,357	4,185
24.89	2,394	4,303
24.94	2,430	4,424
24.99	**2,468**	**4,546**

Summary for Pond MBR-7: Micro-Bioretention #7

Inflow Area = 0.459 ac, 81.96% Impervious, Inflow Depth > 4.71" for 10-yr event
Inflow = 2.88 cfs @ 11.97 hrs, Volume= 0.180 af
Outflow = 1.36 cfs @ 12.08 hrs, Volume= 0.115 af, Atten= 53%, Lag= 6.9 min
Primary = 1.36 cfs @ 12.08 hrs, Volume= 0.115 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.74' @ 12.12 hrs Surf.Area= 2,087 sf Storage= 3,817 cf

Plug-Flow detention time= 193.2 min calculated for 0.115 af (64% of inflow)
Center-of-Mass det. time= 92.0 min (856.3 - 764.3)

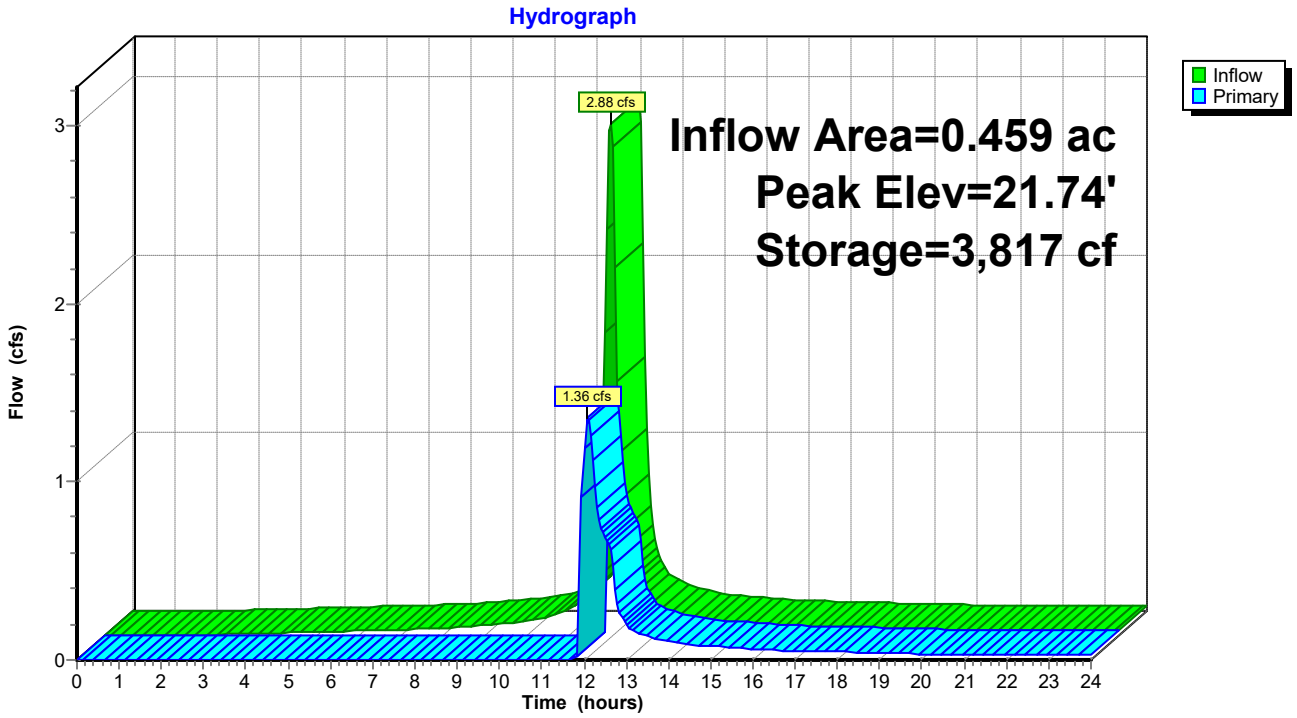
Volume	Invert	Avail.Storage	Storage Description
#1	17.19'	6,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.19	1,136	136.0	0.0	0	0	1,136
17.20	1,136	136.0	40.0	5	5	1,137
20.19	1,136	136.0	40.0	1,359	1,363	1,544
20.20	1,136	136.0	100.0	11	1,375	1,545
21.20	1,730	161.0	100.0	1,423	2,797	2,155
22.20	2,424	186.0	100.0	2,067	4,864	2,866
22.70	2,808	198.0	100.0	1,307	6,171	3,245

Device	Routing	Invert	Outlet Devices
#1	Primary	19.80'	**6.0" Round 6" PVC X 2.00** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.80' / 19.70' S= 0.0050 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.28 cfs @ 12.08 hrs HW=21.72' TW=21.13' (Dynamic Tailwater)
└─**1=6" PVC** (Inlet Controls 1.28 cfs @ 3.27 fps)
  └─**2=6" Atrium Grate** (Passes 1.28 cfs of 1.36 cfs potential flow)

Pond MBR-7: Micro-Bioretention #7



Stage-Area-Storage for Pond MBR-7: Micro-Bioretention #7

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0
17.29	1,136	45
17.39	1,136	91
17.49	1,136	136
17.59	1,136	182
17.69	1,136	227
17.79	1,136	273
17.89	1,136	318
17.99	1,136	364
18.09	1,136	409
18.19	1,136	454
18.29	1,136	500
18.39	1,136	545
18.49	1,136	591
18.59	1,136	636
18.69	1,136	682
18.79	1,136	727
18.89	1,136	772
18.99	1,136	818
19.09	1,136	863
19.19	1,136	909
19.29	1,136	954
19.39	1,136	1,000
19.49	1,136	1,045
19.59	1,136	1,091
19.69	1,136	1,136
19.79	1,136	1,181
19.89	1,136	1,227
19.99	1,136	1,272
20.09	1,136	1,318
20.19	1,136	1,363
20.29	1,184	1,479
20.39	1,239	1,600
20.49	1,295	1,727
20.59	1,353	1,859
20.69	1,412	1,997
20.79	1,471	2,142
20.89	1,533	2,292
20.99	1,595	2,448
21.09	1,659	2,611
21.19	1,723	2,780
21.29	1,788	2,955
21.39	1,853	3,137
21.49	1,919	3,326
21.59	1,987	3,521
21.69	2,055	3,723
21.79	2,125	3,933
21.89	2,196	4,149
21.99	2,269	4,372
22.09	2,342	4,602
22.19	2,416	4,840
22.29	2,491	5,086
22.39	2,567	5,338
22.49	2,643	5,599
22.59	2,721	5,867
22.69	**2,800**	**6,143**

Summary for Pond MBR-8: Micro-Bioretention #8

Inflow Area = 0.449 ac, 79.34% Impervious, Inflow Depth > 4.60" for 10-yr event
Inflow = 2.78 cfs @ 11.97 hrs, Volume= 0.172 af
Outflow = 1.28 cfs @ 12.09 hrs, Volume= 0.107 af, Atten= 54%, Lag= 7.3 min
Primary = 1.28 cfs @ 12.09 hrs, Volume= 0.107 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.67' @ 12.12 hrs Surf.Area= 2,040 sf Storage= 3,678 cf

Plug-Flow detention time= 195.2 min calculated for 0.107 af (62% of inflow)
Center-of-Mass det. time= 92.8 min (862.3 - 769.6)

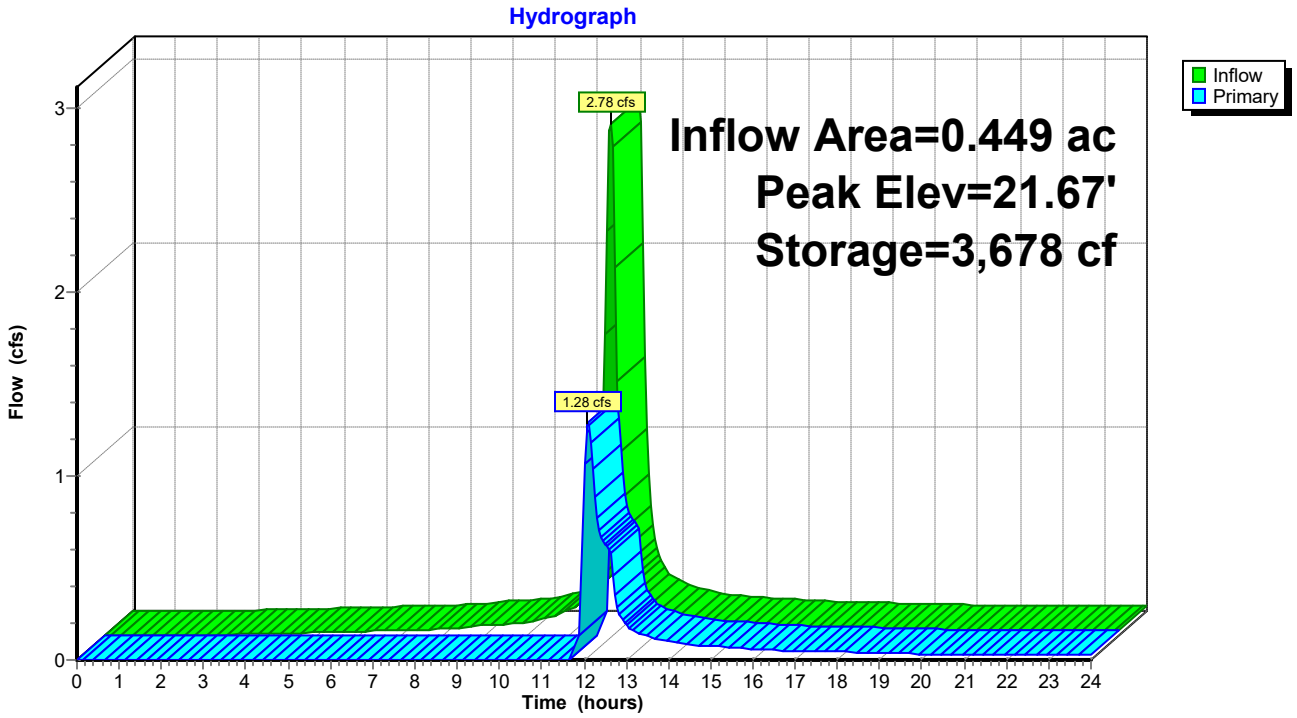
Volume	Invert	Avail.Storage	Storage Description
#1	17.19'	6,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.19	1,136	136.0	0.0	0	0	1,136
17.20	1,136	136.0	40.0	5	5	1,137
20.19	1,136	136.0	40.0	1,359	1,363	1,544
20.20	1,136	136.0	100.0	11	1,375	1,545
21.20	1,730	161.0	100.0	1,423	2,797	2,155
22.20	2,424	186.0	100.0	2,067	4,864	2,866
22.70	2,808	198.0	100.0	1,307	6,171	3,245

Device	Routing	Invert	Outlet Devices
#1	Primary	19.80'	**6.0" Round 6" PVC X 2.00** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.80' / 19.70' S= 0.0050 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.20 cfs @ 12.09 hrs HW=21.66' TW=21.14' (Dynamic Tailwater)
└─**1=6" PVC** (Inlet Controls 1.20 cfs @ 3.05 fps)
  └─**2=6" Atrium Grate** (Passes 1.20 cfs of 1.28 cfs potential flow)

Pond MBR-8: Micro-Bioretention #8



Stage-Area-Storage for Pond MBR-8: Micro-Bioretention #8

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0
17.29	1,136	45
17.39	1,136	91
17.49	1,136	136
17.59	1,136	182
17.69	1,136	227
17.79	1,136	273
17.89	1,136	318
17.99	1,136	364
18.09	1,136	409
18.19	1,136	454
18.29	1,136	500
18.39	1,136	545
18.49	1,136	591
18.59	1,136	636
18.69	1,136	682
18.79	1,136	727
18.89	1,136	772
18.99	1,136	818
19.09	1,136	863
19.19	1,136	909
19.29	1,136	954
19.39	1,136	1,000
19.49	1,136	1,045
19.59	1,136	1,091
19.69	1,136	1,136
19.79	1,136	1,181
19.89	1,136	1,227
19.99	1,136	1,272
20.09	1,136	1,318
20.19	1,136	1,363
20.29	1,184	1,479
20.39	1,239	1,600
20.49	1,295	1,727
20.59	1,353	1,859
20.69	1,412	1,997
20.79	1,471	2,142
20.89	1,533	2,292
20.99	1,595	2,448
21.09	1,659	2,611
21.19	1,723	2,780
21.29	1,788	2,955
21.39	1,853	3,137
21.49	1,919	3,326
21.59	1,987	3,521
21.69	2,055	3,723
21.79	2,125	3,933
21.89	2,196	4,149
21.99	2,269	4,372
22.09	2,342	4,602
22.19	2,416	4,840
22.29	2,491	5,086
22.39	2,567	5,338
22.49	2,643	5,599
22.59	2,721	5,867
22.69	**2,800**	**6,143**

Summary for Pond MBR-9: Micro-Bioretention #9

Inflow Area = 0.464 ac, 82.17% Impervious, Inflow Depth > 4.71" for 10-yr event
Inflow = 2.91 cfs @ 11.97 hrs, Volume= 0.182 af
Outflow = 1.37 cfs @ 12.08 hrs, Volume= 0.117 af, Atten= 53%, Lag= 6.8 min
Primary = 1.37 cfs @ 12.08 hrs, Volume= 0.117 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.75' @ 12.12 hrs Surf.Area= 2,097 sf Storage= 3,847 cf

Plug-Flow detention time= 190.9 min calculated for 0.117 af (64% of inflow)
Center-of-Mass det. time= 91.2 min (855.5 - 764.3)

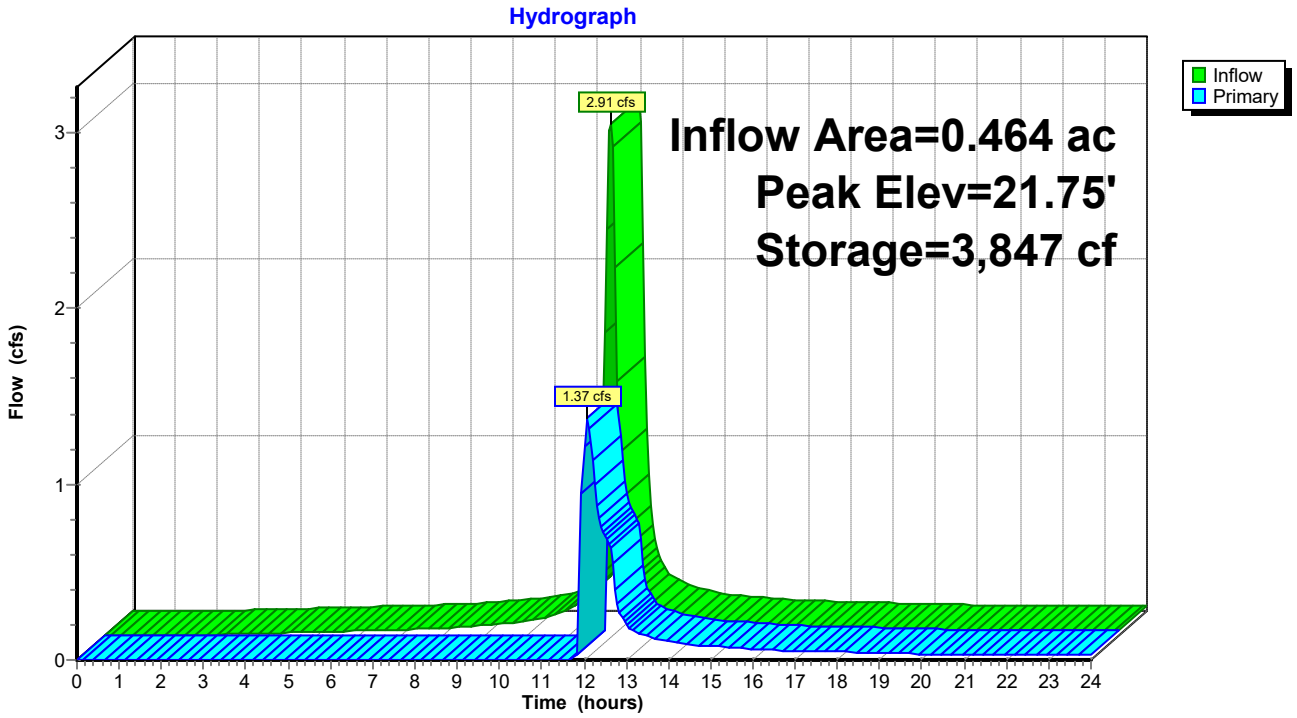
Volume	Invert	Avail.Storage	Storage Description
#1	17.19'	6,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.19	1,136	136.0	0.0	0	0	1,136
17.20	1,136	136.0	40.0	5	5	1,137
20.19	1,136	136.0	40.0	1,359	1,363	1,544
20.20	1,136	136.0	100.0	11	1,375	1,545
21.20	1,730	161.0	100.0	1,423	2,797	2,155
22.20	2,424	186.0	100.0	2,067	4,864	2,866
22.70	2,808	198.0	100.0	1,307	6,171	3,245

Device	Routing	Invert	Outlet Devices
#1	Primary	19.80'	**6.0" Round 6" PVC X 2.00** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.80' / 19.70' S= 0.0050 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.30 cfs @ 12.08 hrs HW=21.73' TW=21.13' (Dynamic Tailwater)
└─**1=6" PVC** (Inlet Controls 1.30 cfs @ 3.31 fps)
  └─**2=6" Atrium Grate** (Passes 1.30 cfs of 1.38 cfs potential flow)

Pond MBR-9: Micro-Bioretention #9



Stage-Area-Storage for Pond MBR-9: Micro-Bioretention #9

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0
17.29	1,136	45
17.39	1,136	91
17.49	1,136	136
17.59	1,136	182
17.69	1,136	227
17.79	1,136	273
17.89	1,136	318
17.99	1,136	364
18.09	1,136	409
18.19	1,136	454
18.29	1,136	500
18.39	1,136	545
18.49	1,136	591
18.59	1,136	636
18.69	1,136	682
18.79	1,136	727
18.89	1,136	772
18.99	1,136	818
19.09	1,136	863
19.19	1,136	909
19.29	1,136	954
19.39	1,136	1,000
19.49	1,136	1,045
19.59	1,136	1,091
19.69	1,136	1,136
19.79	1,136	1,181
19.89	1,136	1,227
19.99	1,136	1,272
20.09	1,136	1,318
20.19	1,136	1,363
20.29	1,184	1,479
20.39	1,239	1,600
20.49	1,295	1,727
20.59	1,353	1,859
20.69	1,412	1,997
20.79	1,471	2,142
20.89	1,533	2,292
20.99	1,595	2,448
21.09	1,659	2,611
21.19	1,723	2,780
21.29	1,788	2,955
21.39	1,853	3,137
21.49	1,919	3,326
21.59	1,987	3,521
21.69	2,055	3,723
21.79	2,125	3,933
21.89	2,196	4,149
21.99	2,269	4,372
22.09	2,342	4,602
22.19	2,416	4,840
22.29	2,491	5,086
22.39	2,567	5,338
22.49	2,643	5,599
22.59	2,721	5,867
22.69	**2,800**	**6,143**

Summary for Pond MH-1: SD Manhole

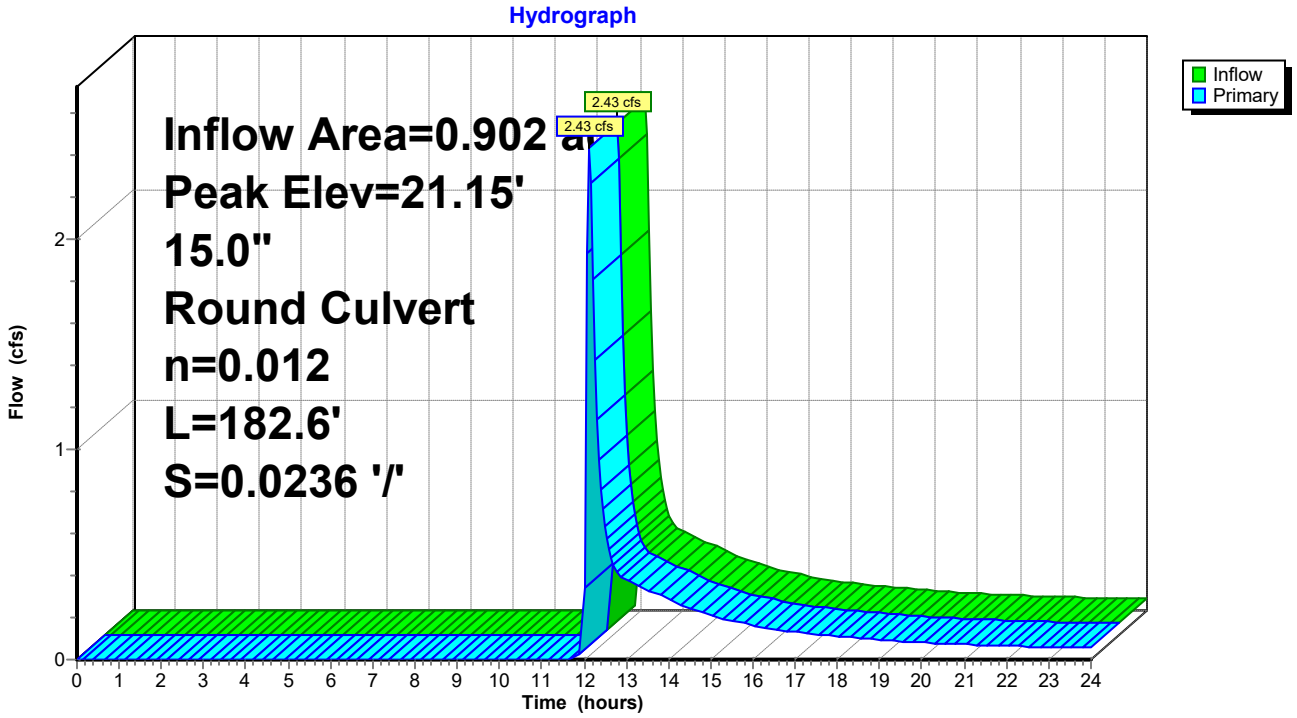
Inflow Area = 0.902 ac, 59.89% Impervious, Inflow Depth > 2.66" for 10-yr event
Inflow = 2.43 cfs @ 12.11 hrs, Volume= 0.200 af
Outflow = 2.43 cfs @ 12.11 hrs, Volume= 0.200 af, Atten= 0%, Lag= 0.0 min
Primary = 2.43 cfs @ 12.11 hrs, Volume= 0.200 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.15' @ 12.11 hrs
Flood Elev= 25.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.31'	**15.0" Round 18" N-12** L= 182.6' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 20.31' / 16.00' S= 0.0236 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.37 cfs @ 12.11 hrs HW=21.14' TW=0.00' (Dynamic Tailwater)
└─**1=18" N-12** (Inlet Controls 2.37 cfs @ 2.74 fps)

Pond MH-1: SD Manhole



Stage-Area-Storage for Pond MH-1: SD Manhole

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
20.31	**0**	22.86	0
20.36	0	22.91	0
20.41	0	22.96	0
20.46	0	23.01	0
20.51	0	23.06	0
20.56	0	23.11	0
20.61	0	23.16	0
20.66	0	23.21	0
20.71	0	23.26	0
20.76	0	23.31	0
20.81	0	23.36	0
20.86	0	23.41	0
20.91	0	23.46	0
20.96	0	23.51	0
21.01	0	23.56	0
21.06	0	23.61	0
21.11	0	23.66	0
21.16	0	23.71	0
21.21	0	23.76	0
21.26	0	23.81	0
21.31	0	23.86	0
21.36	0	23.91	0
21.41	0	23.96	0
21.46	0	24.01	0
21.51	0	24.06	0
21.56	0	24.11	0
21.61	0	24.16	0
21.66	0	24.21	0
21.71	0	24.26	0
21.76	0	24.31	0
21.81	0	24.36	0
21.86	0	24.41	0
21.91	0	24.46	0
21.96	0	24.51	0
22.01	0	24.56	0
22.06	0	24.61	0
22.11	0	24.66	0
22.16	0	24.71	0
22.21	0	24.76	0
22.26	0	24.81	0
22.31	0	24.86	0
22.36	0	24.91	0
22.41	0	24.96	0
22.46	0		
22.51	0		
22.56	0		
22.61	0		
22.66	0		
22.71	0		
22.76	0		
22.81	0		

Summary for Pond MH-2: SD Manhole

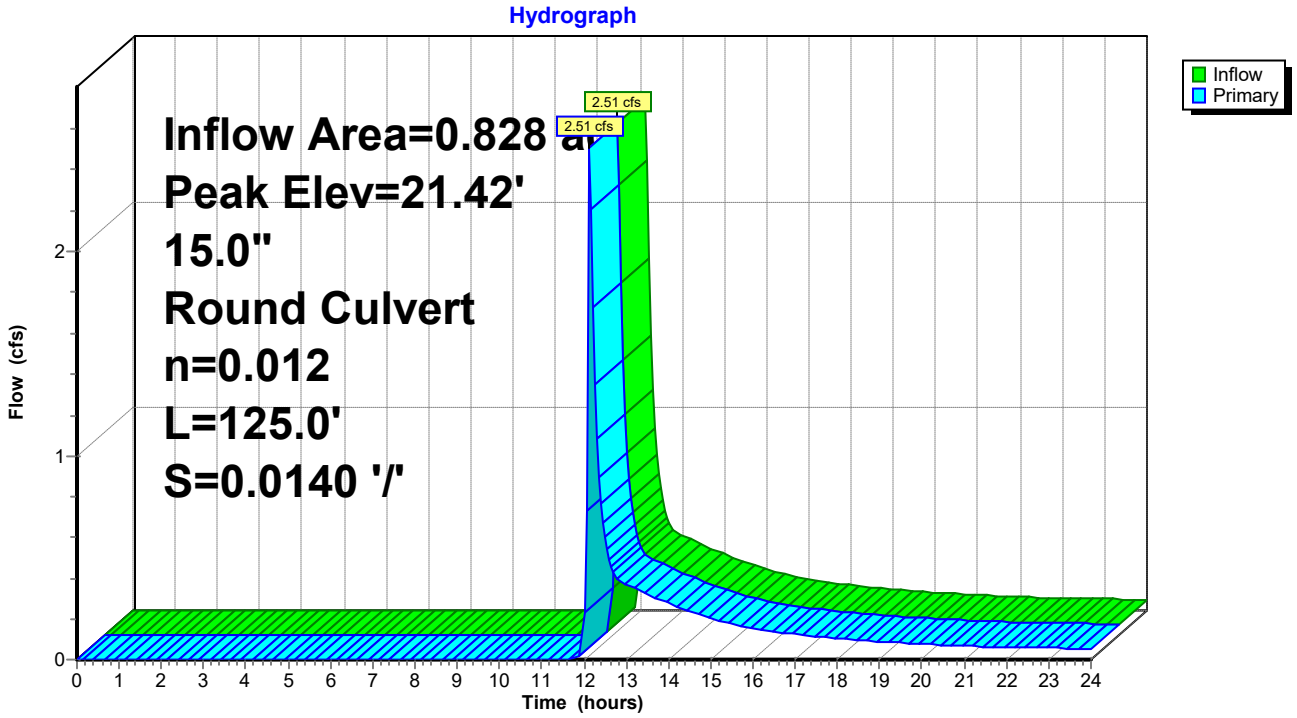
Inflow Area = 0.828 ac, 74.36% Impervious, Inflow Depth > 2.69" for 10-yr event
Inflow = 2.51 cfs @ 12.12 hrs, Volume= 0.186 af
Outflow = 2.51 cfs @ 12.12 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.0 min
Primary = 2.51 cfs @ 12.12 hrs, Volume= 0.186 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.42' @ 12.15 hrs
Flood Elev= 23.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.45'	**15.0" Round 15" N-12 Culvert** L= 125.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.45' / 18.70' S= 0.0140 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.91 cfs @ 12.12 hrs HW=21.39' TW=20.96' (Dynamic Tailwater)
└─**1=15" N-12 Culvert** (Outlet Controls 1.91 cfs @ 2.70 fps)

Pond MH-2: SD Manhole



Stage-Area-Storage for Pond MH-2: SD Manhole

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
20.45	**0**	21.47	0	22.49	0
20.47	0	21.49	0	22.51	0
20.49	0	21.51	0	22.53	0
20.51	0	21.53	0	22.55	0
20.53	0	21.55	0	22.57	0
20.55	0	21.57	0	22.59	0
20.57	0	21.59	0	22.61	0
20.59	0	21.61	0	22.63	0
20.61	0	21.63	0	22.65	0
20.63	0	21.65	0	22.67	0
20.65	0	21.67	0	22.69	0
20.67	0	21.69	0	22.71	0
20.69	0	21.71	0	22.73	0
20.71	0	21.73	0	22.75	0
20.73	0	21.75	0	22.77	0
20.75	0	21.77	0	22.79	0
20.77	0	21.79	0	22.81	0
20.79	0	21.81	0	22.83	0
20.81	0	21.83	0	22.85	0
20.83	0	21.85	0	22.87	0
20.85	0	21.87	0	22.89	0
20.87	0	21.89	0	22.91	0
20.89	0	21.91	0	22.93	0
20.91	0	21.93	0	22.95	0
20.93	0	21.95	0	22.97	0
20.95	0	21.97	0	22.99	0
20.97	0	21.99	0	23.01	0
20.99	0	22.01	0	23.03	0
21.01	0	22.03	0	23.05	0
21.03	0	22.05	0	23.07	0
21.05	0	22.07	0	23.09	0
21.07	0	22.09	0	23.11	0
21.09	0	22.11	0	23.13	0
21.11	0	22.13	0	23.15	0
21.13	0	22.15	0	23.17	0
21.15	0	22.17	0	23.19	0
21.17	0	22.19	0	23.21	0
21.19	0	22.21	0	23.23	0
21.21	0	22.23	0	23.25	0
21.23	0	22.25	0	23.27	0
21.25	0	22.27	0	23.29	0
21.27	0	22.29	0	23.31	0
21.29	0	22.31	0	23.33	0
21.31	0	22.33	0	23.35	0
21.33	0	22.35	0	23.37	0
21.35	0	22.37	0	23.39	0
21.37	0	22.39	0	23.41	0
21.39	0	22.41	0	23.43	0
21.41	0	22.43	0	23.45	0
21.43	0	22.45	0	23.47	0
21.45	0	22.47	0	23.49	0

Summary for Pond SGW-1: (Future) Submerged Gravel Wetland

Inflow Area =	4.215 ac, 66.86% Impervious, Inflow Depth > 4.38" for 10-yr event				
Inflow =	25.37 cfs @	11.97 hrs,	Volume=	1.537 af	
Outflow =	5.78 cfs @	12.24 hrs,	Volume=	0.984 af,	Atten= 77%, Lag= 16.3 min
Primary =	2.78 cfs @	12.24 hrs,	Volume=	0.846 af	
Secondary =	3.00 cfs @	12.24 hrs,	Volume=	0.137 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 26.15' @ 12.24 hrs Surf.Area= 17,575 sf Storage= 38,202 cf

Plug-Flow detention time= 306.5 min calculated for 0.984 af (64% of inflow)
Center-of-Mass det. time= 206.2 min (985.0 - 778.7)

Volume	Invert	Avail.Storage	Storage Description
#1	23.50'	44,580 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

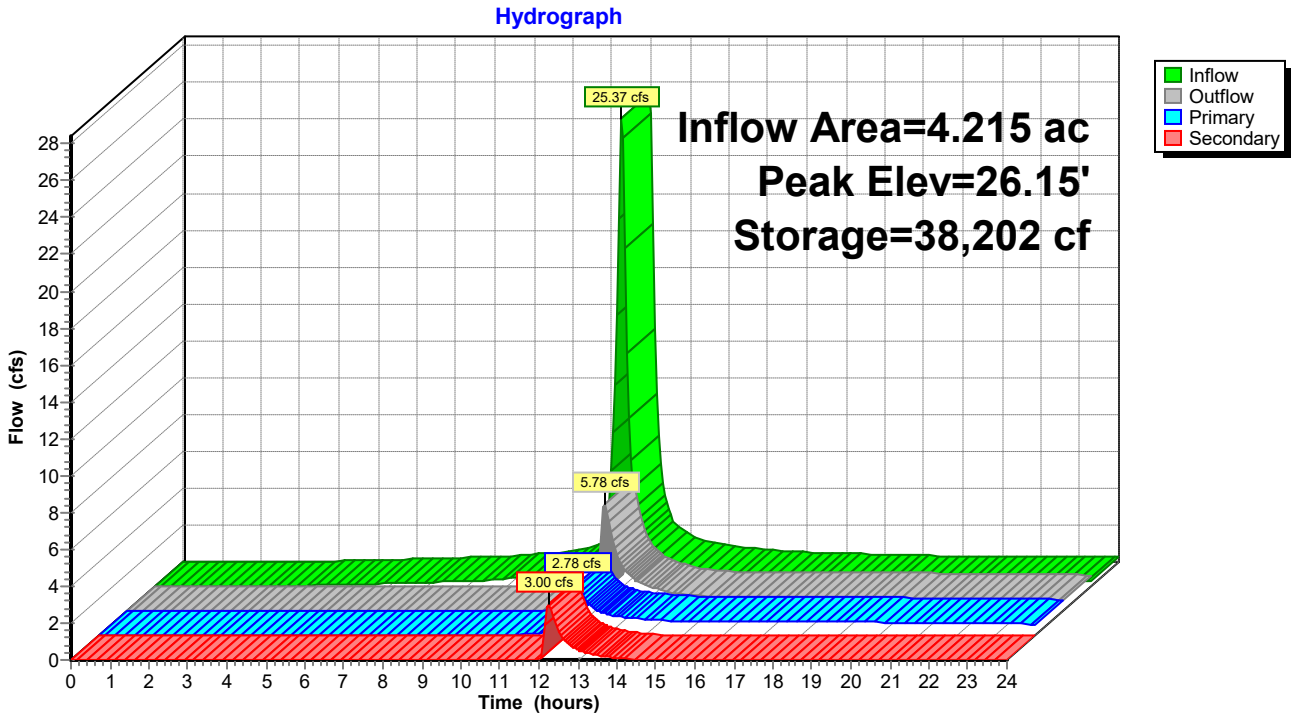
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
23.50	11,511	543.0	0	0	11,511
26.50	18,483	619.0	44,580	44,580	18,752

Device	Routing	Invert	Outlet Devices
#1	Primary	23.00'	**18.0" Round 18" N-12 Culvert** L= 324.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.00' / 21.95' S= 0.0032 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	24.00'	**3.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	26.00'	**10.7' long Rim MD 374.23** 0 End Contraction(s)
#4	Secondary	26.00'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.77 cfs @ 12.24 hrs HW=26.15' TW=0.00' (Dynamic Tailwater)
└─**1=18" N-12 Culvert** (Passes 2.77 cfs of 9.10 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.83 cfs @ 6.62 fps)
  └─**3=Rim MD 374.23** (Weir Controls 1.94 cfs @ 1.25 fps)

Secondary OutFlow Max=2.97 cfs @ 12.24 hrs HW=26.15' TW=0.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 2.97 cfs @ 1.02 fps)

Pond SGW-1: (Future) Submerged Gravel Wetland



Stage-Area-Storage for Pond SGW-1: (Future) Submerged Gravel Wetland

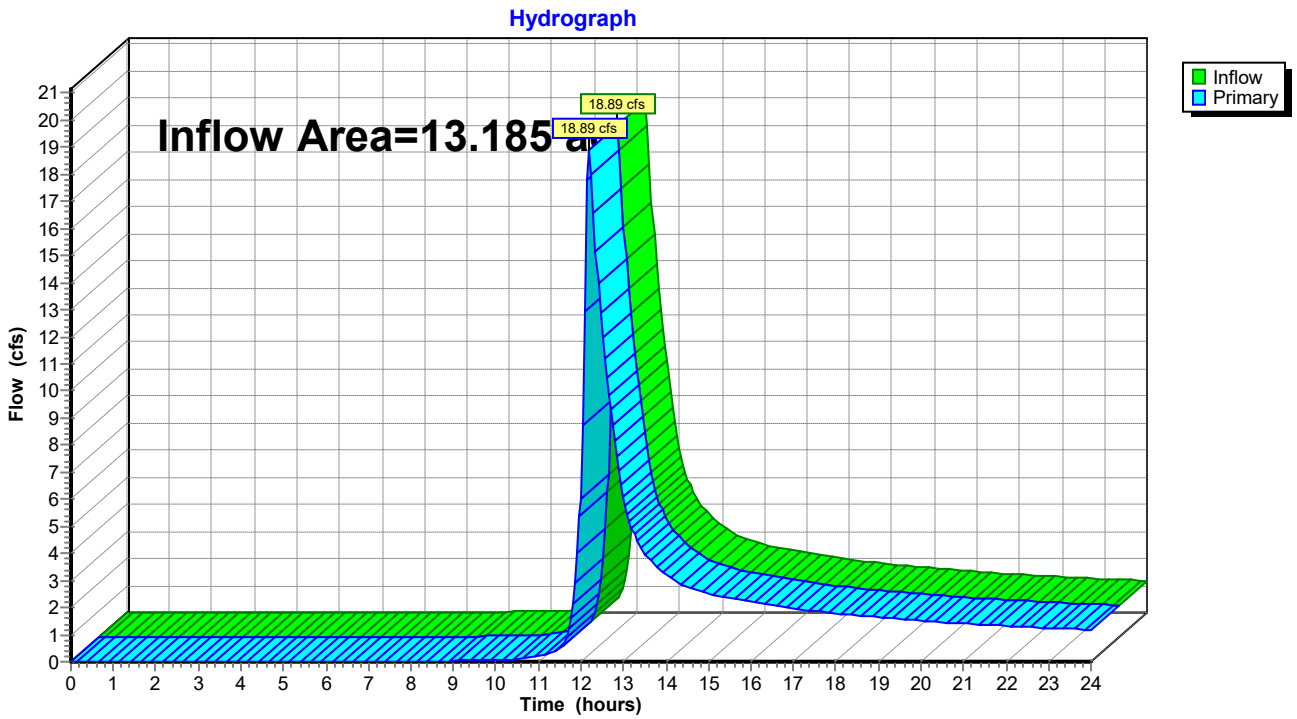
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
23.50	11,511	0
23.55	11,614	578
23.60	11,717	1,161
23.65	11,821	1,750
23.70	11,925	2,343
23.75	12,029	2,942
23.80	12,134	3,546
23.85	12,240	4,156
23.90	12,346	4,770
23.95	12,452	5,390
24.00	12,559	6,016
24.05	12,666	6,646
24.10	12,774	7,282
24.15	12,882	7,924
24.20	12,991	8,570
24.25	13,100	9,223
24.30	13,210	9,880
24.35	13,320	10,544
24.40	13,430	11,212
24.45	13,541	11,887
24.50	13,652	12,567
24.55	13,764	13,252
24.60	13,877	13,943
24.65	13,989	14,640
24.70	14,103	15,342
24.75	14,216	16,050
24.80	14,330	16,764
24.85	14,445	17,483
24.90	14,560	18,208
24.95	14,676	18,939
25.00	14,792	19,676
25.05	14,908	20,418
25.10	15,025	21,166
25.15	15,142	21,921
25.20	15,260	22,681
25.25	15,378	23,447
25.30	15,497	24,218
25.35	15,616	24,996
25.40	15,736	25,780
25.45	15,856	26,570
25.50	15,976	27,366
25.55	16,097	28,168
25.60	16,219	28,975
25.65	16,341	29,789
25.70	16,463	30,610
25.75	16,586	31,436
25.80	16,709	32,268
25.85	16,833	33,107
25.90	16,957	33,951
25.95	17,082	34,802
26.00	17,207	35,660
26.05	17,332	36,523
26.10	17,458	37,393
26.15	17,585	38,269
26.20	17,712	39,151
26.25	17,839	40,040
26.30	17,967	40,935
26.35	18,095	41,837
26.40	18,224	42,745
26.45	18,353	43,659
26.50	**18,483**	**44,580**

Summary for Link 1L: POST

Inflow Area = 13.185 ac, 53.94% Impervious, Inflow Depth > 2.63" for 10-yr event
Inflow = 18.89 cfs @ 12.20 hrs, Volume= 2.890 af
Primary = 18.89 cfs @ 12.20 hrs, Volume= 2.890 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 1L: POST

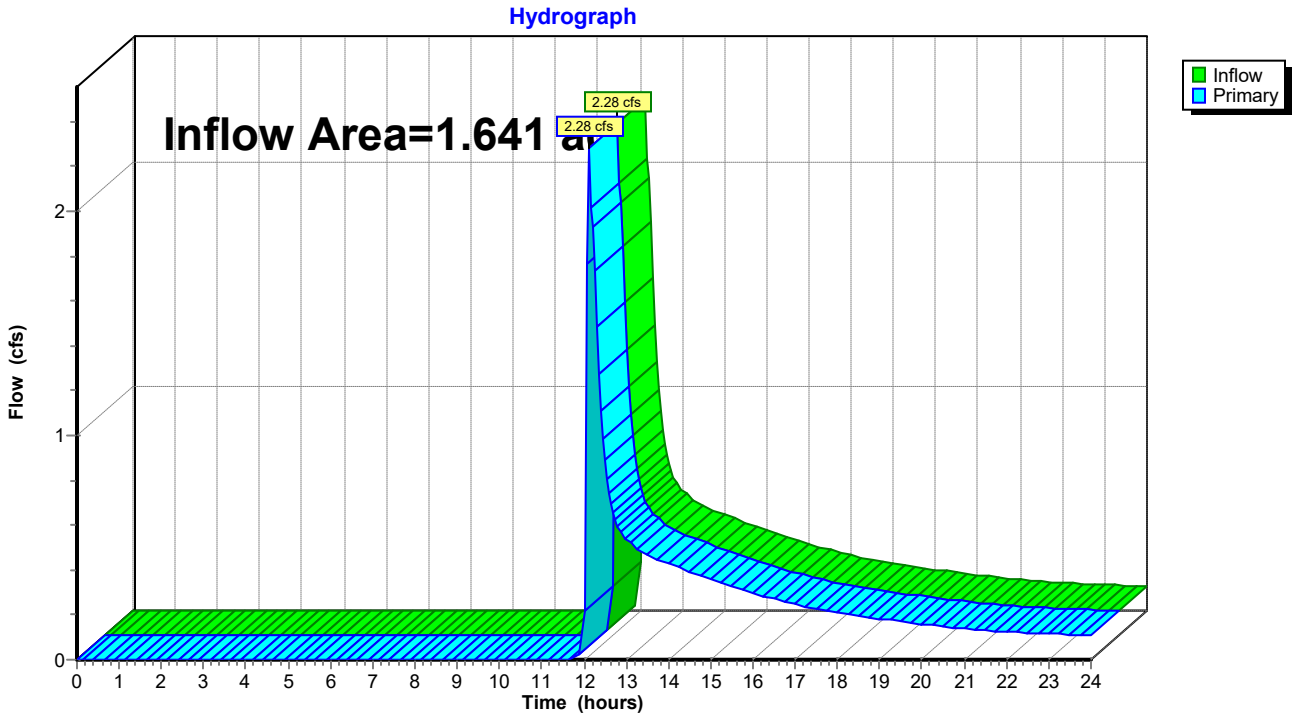


Summary for Link 2L: Existing Swale

Inflow Area = 1.641 ac, 42.66% Impervious, Inflow Depth > 2.22" for 10-yr event
Inflow = 2.28 cfs @ 12.11 hrs, Volume= 0.303 af
Primary = 2.28 cfs @ 12.11 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 2L: Existing Swale

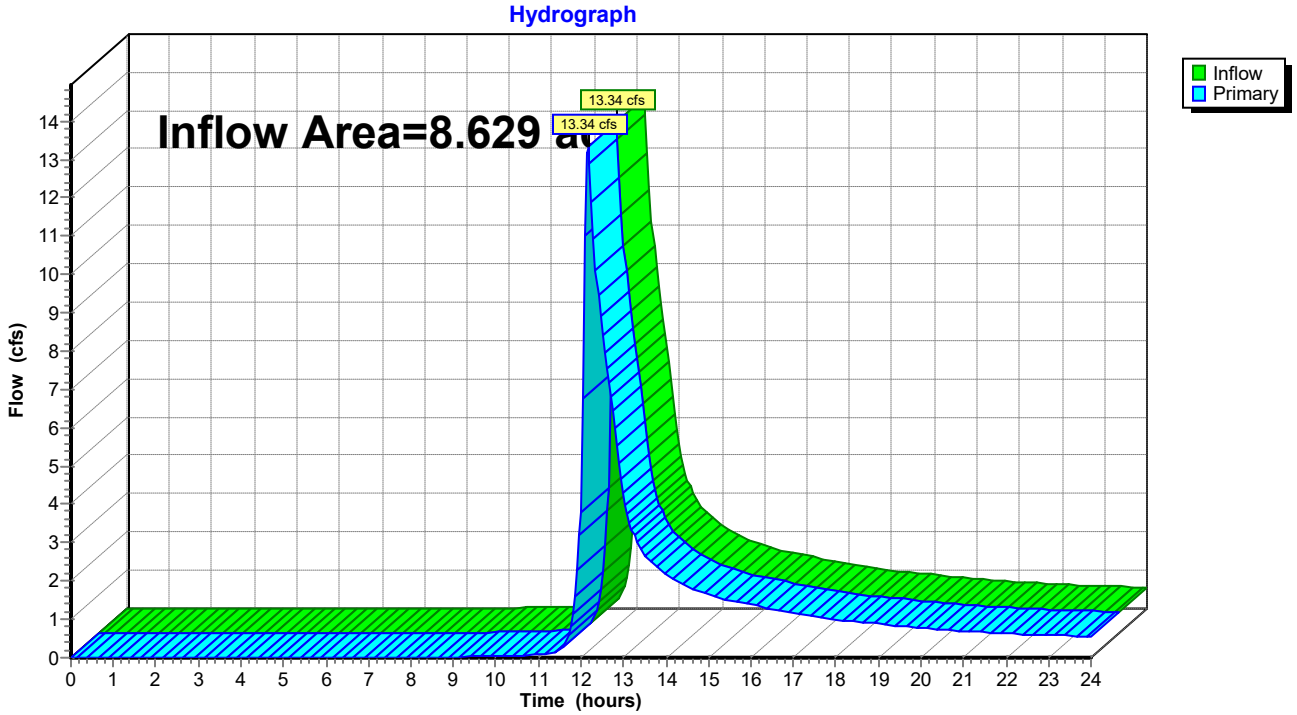


Summary for Link 3L: POI #1

Inflow Area = 8.629 ac, 49.76% Impervious, Inflow Depth > 2.53" for 10-yr event
Inflow = 13.34 cfs @ 12.17 hrs, Volume= 1.817 af
Primary = 13.34 cfs @ 12.17 hrs, Volume= 1.817 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 3L: POI #1

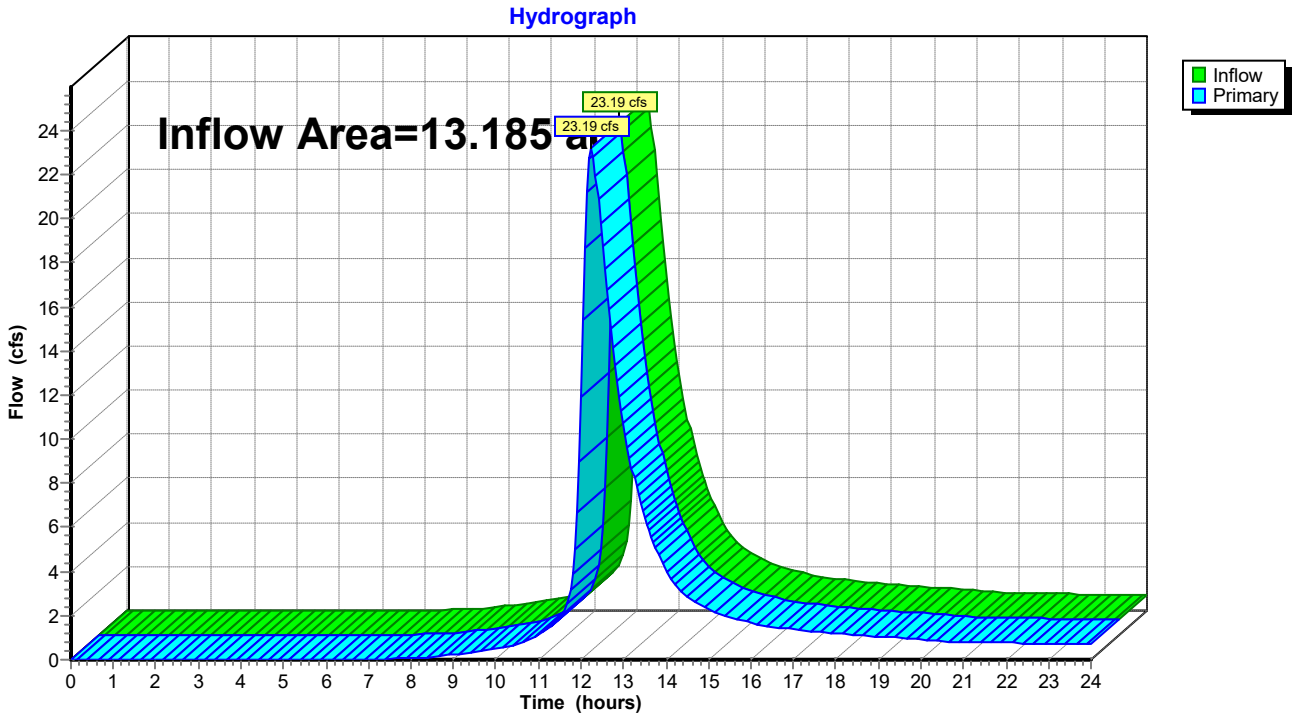


Summary for Link 5L: PRE

Inflow Area = 13.185 ac, 0.00% Impervious, Inflow Depth > 3.09" for 10-yr event
Inflow = 23.19 cfs @ 12.25 hrs, Volume= 3.397 af
Primary = 23.19 cfs @ 12.25 hrs, Volume= 3.397 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 5L: PRE

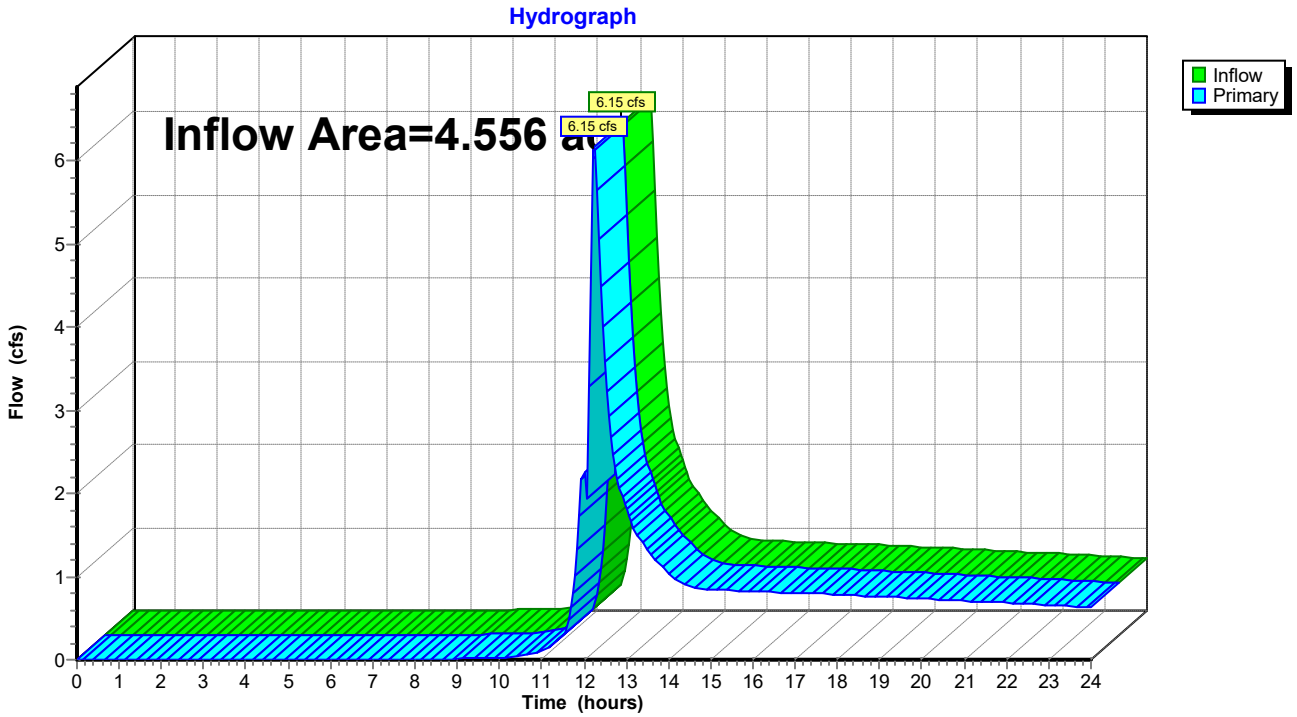


Summary for Link 6L: POI#2

Inflow Area = 4.556 ac, 61.85% Impervious, Inflow Depth > 2.83" for 10-yr event
Inflow = 6.15 cfs @ 12.23 hrs, Volume= 1.073 af
Primary = 6.15 cfs @ 12.23 hrs, Volume= 1.073 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 6L: POI#2



Summary for Subcatchment EX-1: Predevelopment (POI#1)

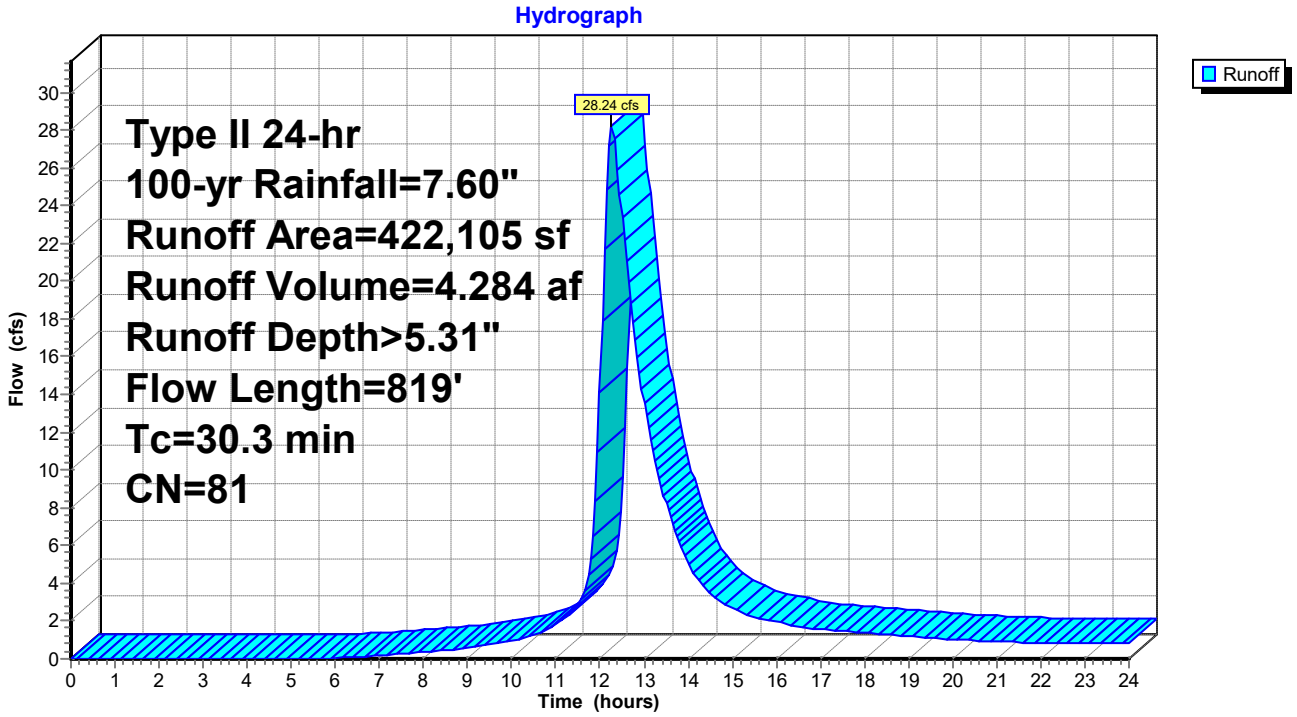
Runoff = 28.24 cfs @ 12.27 hrs, Volume= 4.284 af, Depth> 5.31"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

Area (sf)	CN	Description
300,286	83	Small grain, straight row, Good, HSG C
121,819	75	Small grain, straight row, Good, HSG B
422,105	81	Weighted Average
422,105		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	150	0.0085	0.12		**Sheet Flow, AG FIELD** Cultivated: Residue>20% n= 0.170 P2= 3.40"
9.8	669	0.0160	1.14		**Shallow Concentrated Flow, AG FIELD** Cultivated Straight Rows Kv= 9.0 fps
30.3	819	Total			

Subcatchment EX-1: Predevelopment (POI#1)



Summary for Subcatchment EX-2: Predevelopment (POI#2)

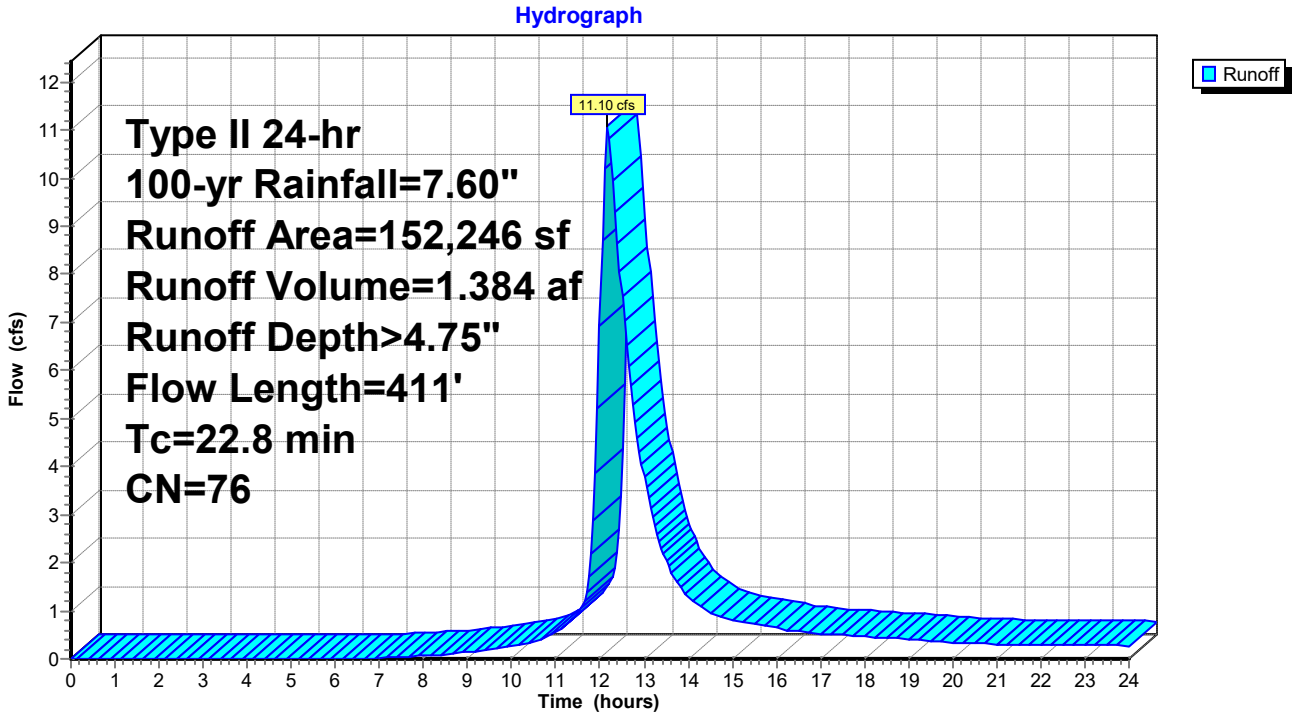
Runoff = 11.10 cfs @ 12.18 hrs, Volume= 1.384 af, Depth> 4.75"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

Area (sf)	CN	Description
17,404	83	Small grain, straight row, Good, HSG C
134,842	75	Small grain, straight row, Good, HSG B
152,246	76	Weighted Average
152,246		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	150	0.0100	0.13		**Sheet Flow, AG Field** Cultivated: Residue>20% n= 0.170 P2= 3.40"
3.6	261	0.0185	1.22		**Shallow Concentrated Flow, AG FIELD** Cultivated Straight Rows Kv= 9.0 fps
22.8	411	Total			

Subcatchment EX-2: Predevelopment (POI#2)



Summary for Subcatchment FT-13: Future Warehouse

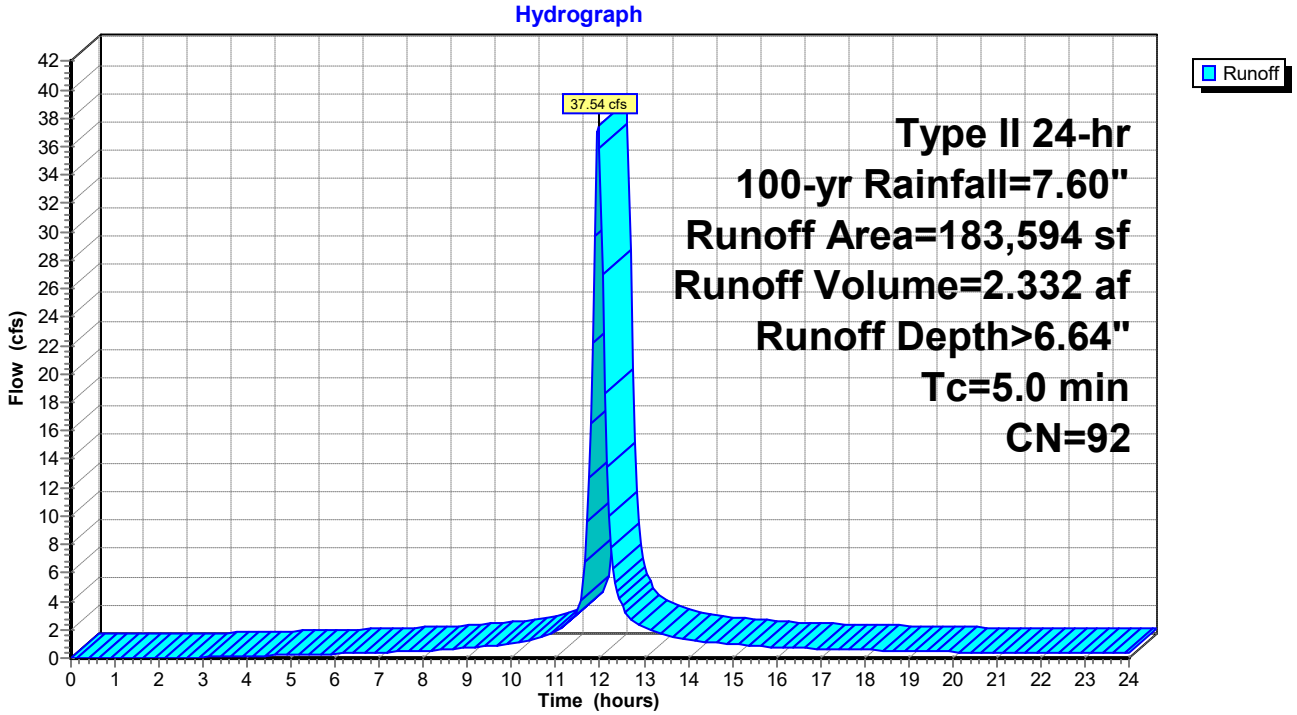
Runoff = 37.54 cfs @ 11.97 hrs, Volume= 2.332 af, Depth> 6.64"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	20,553	98	Access Road & Scale
*	80,328	98	Future Phase 2 Building
*	21,876	98	Future Phase 2 Truck Parking
	60,837	80	>75% Grass cover, Good, HSG D
	183,594	92	Weighted Average
	60,837		33.14% Pervious Area
	122,757		66.86% Impervious Area

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

Subcatchment FT-13: Future Warehouse



Summary for Subcatchment FT-14: Future Office & Portion of Access Road

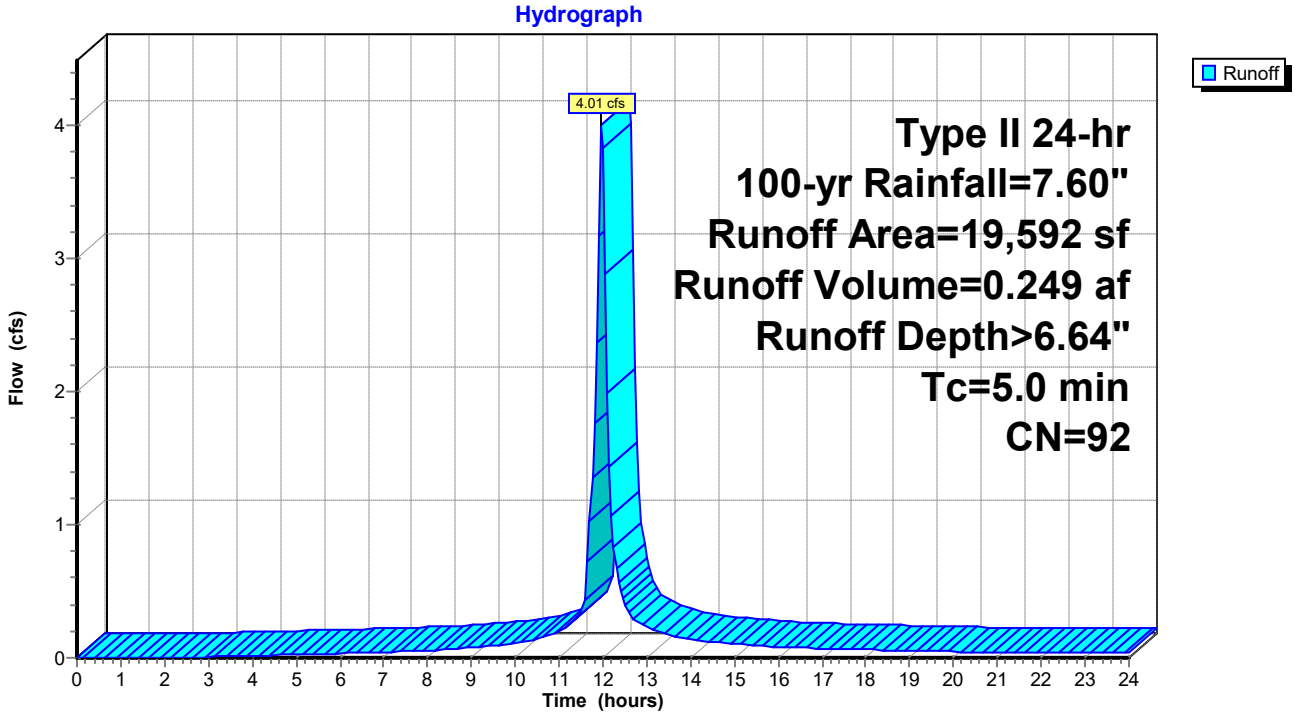
Runoff = 4.01 cfs @ 11.97 hrs, Volume= 0.249 af, Depth> 6.64"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	3,288	98	Access Road
*	9,562	98	Future Office Building
	6,742	80	>75% Grass cover, Good, HSG D
	19,592	92	Weighted Average
	6,742		34.41% Pervious Area
	12,850		65.59% Impervious Area

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

Subcatchment FT-14: Future Office & Portion of Access Road



Summary for Subcatchment FT-15: Access Road & Half Future Parking

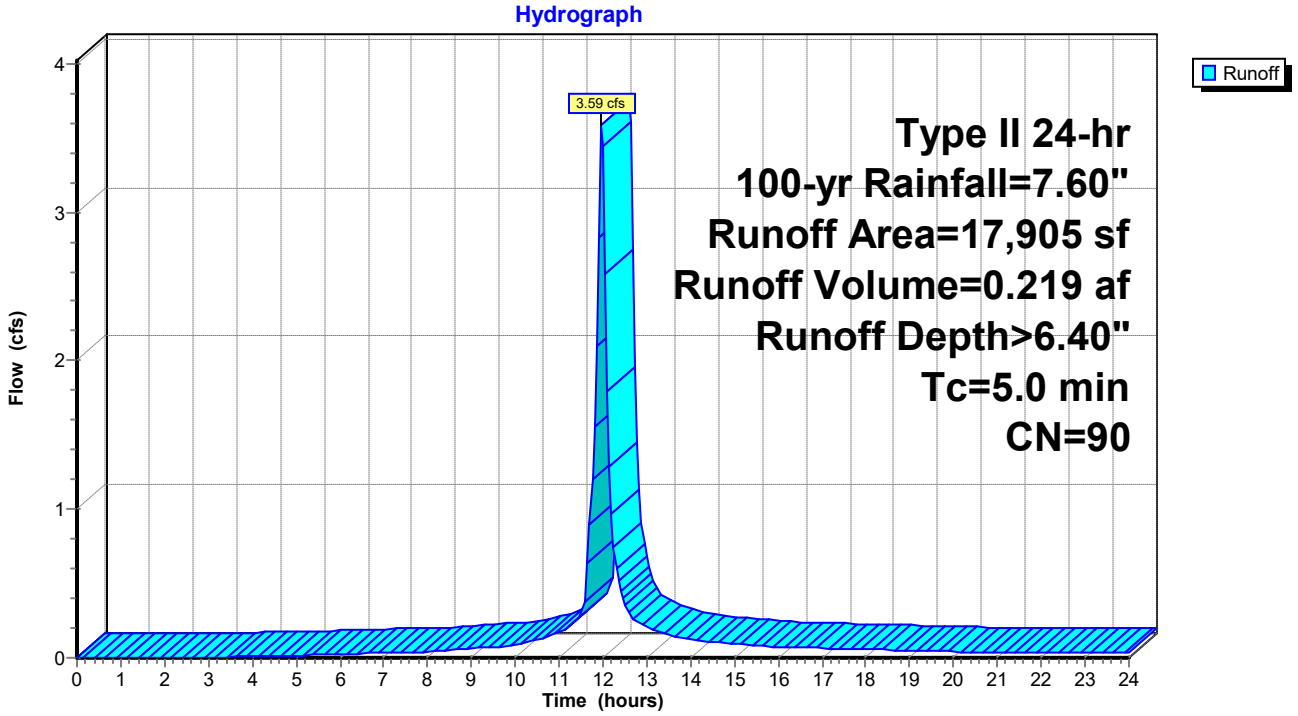
Runoff = 3.59 cfs @ 11.97 hrs, Volume= 0.219 af, Depth> 6.40"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	4,739	98	Half Future Parking
*	5,478	98	Access Road
	7,688	80	>75% Grass cover, Good, HSG D
	17,905	90	Weighted Average
	7,688		42.94% Pervious Area
	10,217		57.06% Impervious Area

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

Subcatchment FT-15: Access Road & Half Future Parking



Summary for Subcatchment PR-1: Front Parking Lot

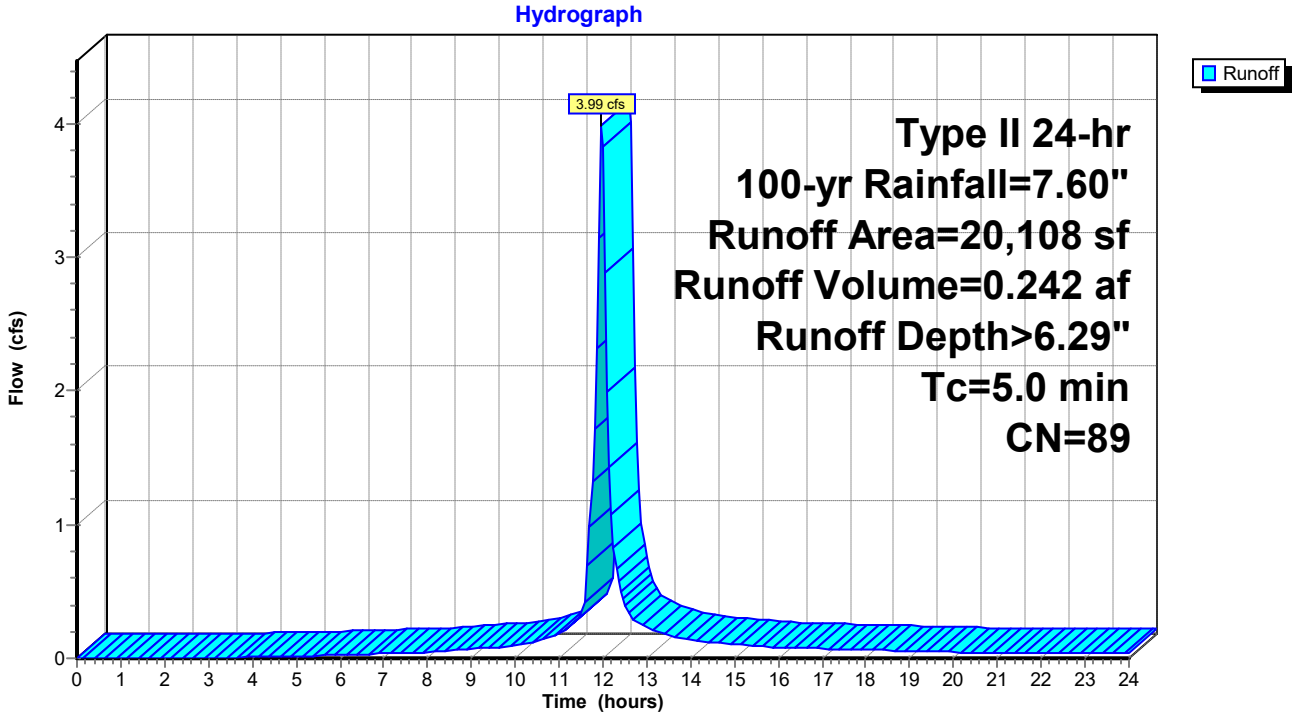
Runoff = 3.99 cfs @ 11.97 hrs, Volume= 0.242 af, Depth> 6.29"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	10,212	98	Parking Lot
	9,896	80	>75% Grass cover, Good, HSG D
	20,108	89	Weighted Average
	9,896		49.21% Pervious Area
	10,212		50.79% Impervious Area

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

Subcatchment PR-1: Front Parking Lot



Summary for Subcatchment PR-10: Loading Area

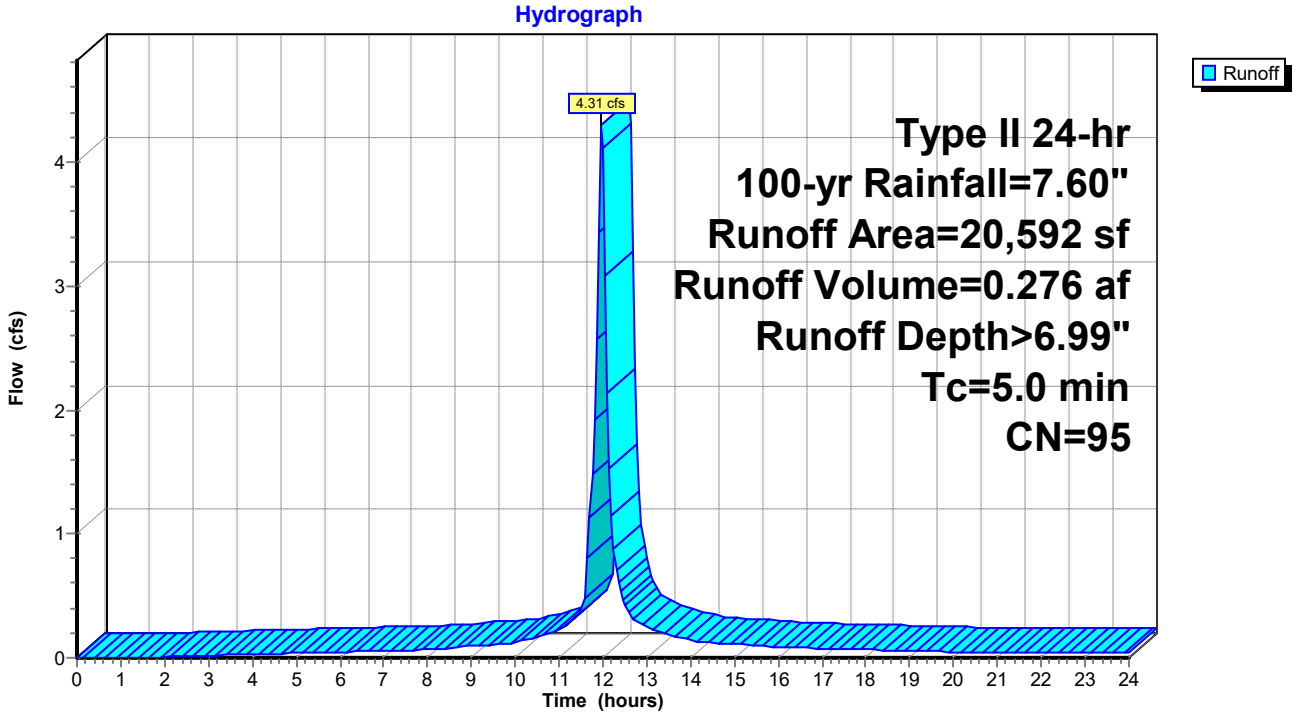
Runoff = 4.31 cfs @ 11.97 hrs, Volume= 0.276 af, Depth> 6.99"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	7,672	98	Warehouse Roof
*	9,193	98	Loading Area
	3,727	80	>75% Grass cover, Good, HSG D
	20,592	95	Weighted Average
	3,727		18.10% Pervious Area
	16,865		81.90% Impervious Area

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

Subcatchment PR-10: Loading Area



Summary for Subcatchment PR-11: Loading Area

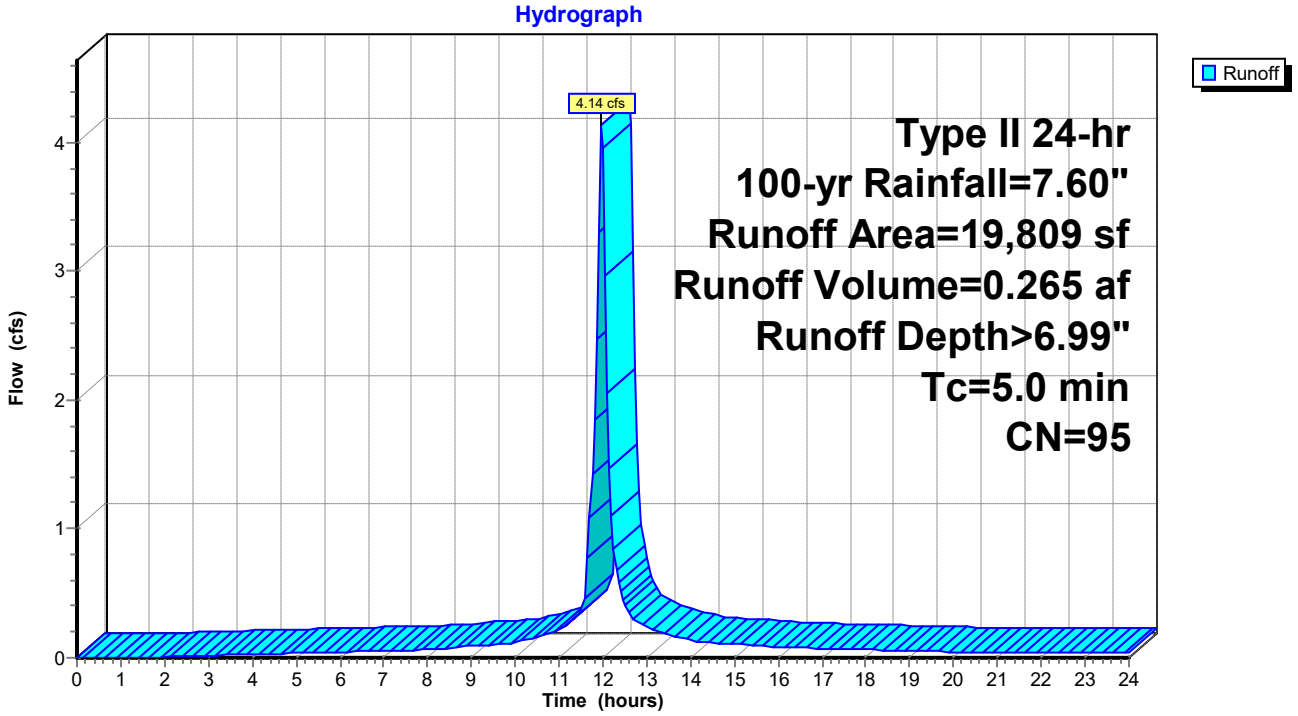
Runoff = 4.14 cfs @ 11.97 hrs, Volume= 0.265 af, Depth> 6.99"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	1,792	98	Warehouse Roof
*	14,389	98	Loading Area
	3,628	80	>75% Grass cover, Good, HSG D
	19,809	95	Weighted Average
	3,628		18.31% Pervious Area
	16,181		81.69% Impervious Area

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

Subcatchment PR-11: Loading Area



Summary for Subcatchment PR-12: PR-12

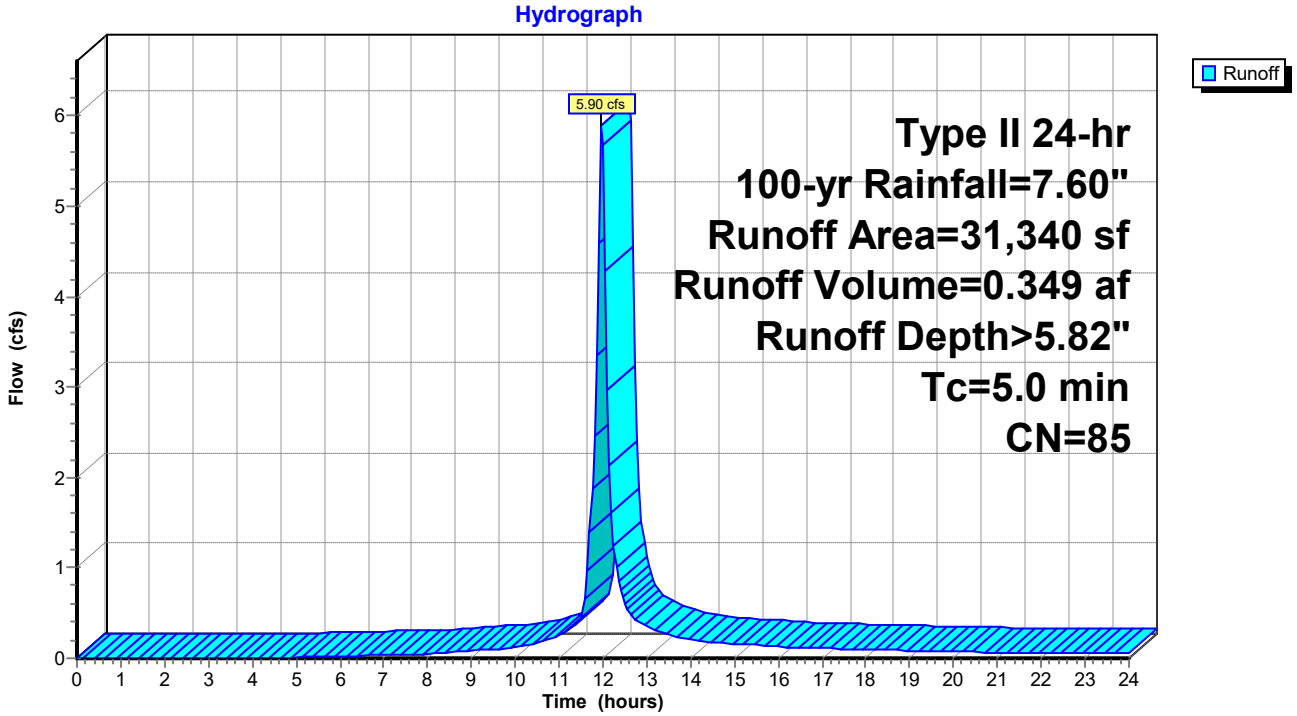
Runoff = 5.90 cfs @ 11.97 hrs, Volume= 0.349 af, Depth> 5.82"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
	22,807	80	>75% Grass cover, Good, HSG D
*	8,533	98	Access Aisle
	31,340	85	Weighted Average
	22,807		72.77% Pervious Area
	8,533		27.23% Impervious Area

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

Subcatchment PR-12: PR-12



Summary for Subcatchment PR-2: Front Parking Lot

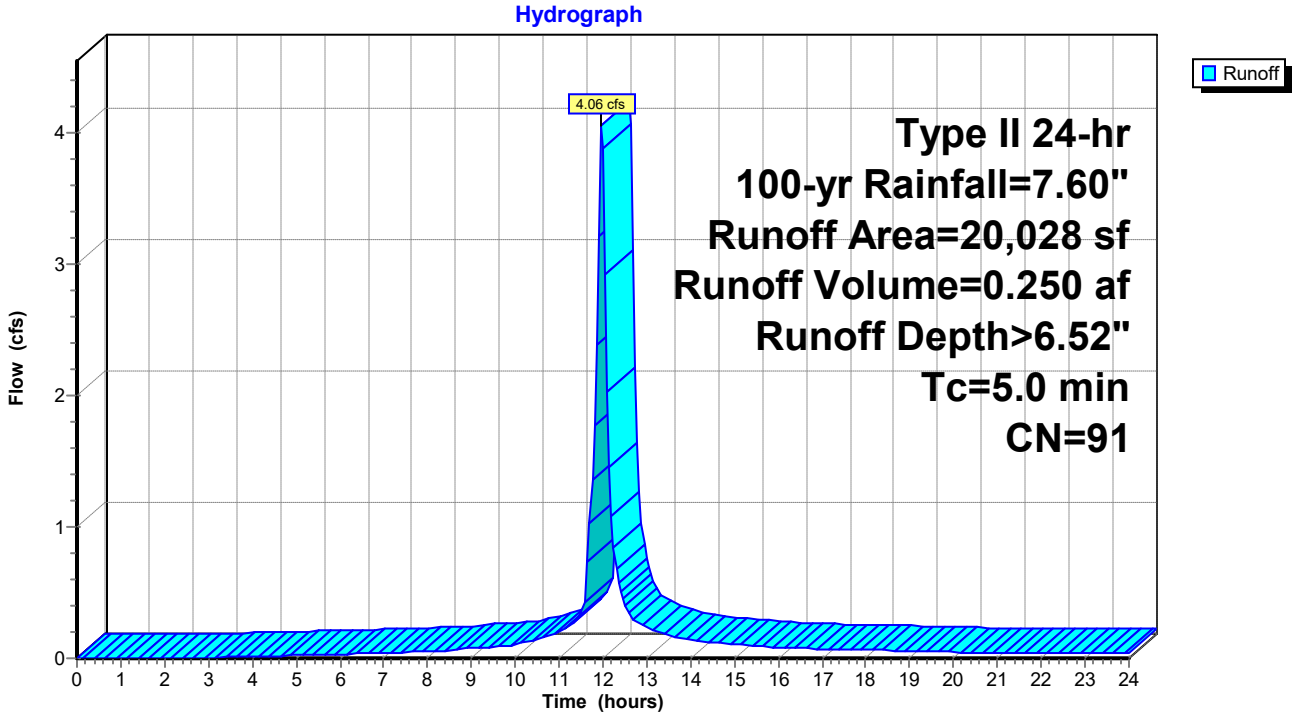
Runoff = 4.06 cfs @ 11.97 hrs, Volume= 0.250 af, Depth> 6.52"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	11,748	98	Parking Lot
	8,280	80	>75% Grass cover, Good, HSG D
	20,028	91	Weighted Average
	8,280		41.34% Pervious Area
	11,748		58.66% Impervious Area

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

Subcatchment PR-2: Front Parking Lot



Summary for Subcatchment PR-3: Phase 1 Office Roof

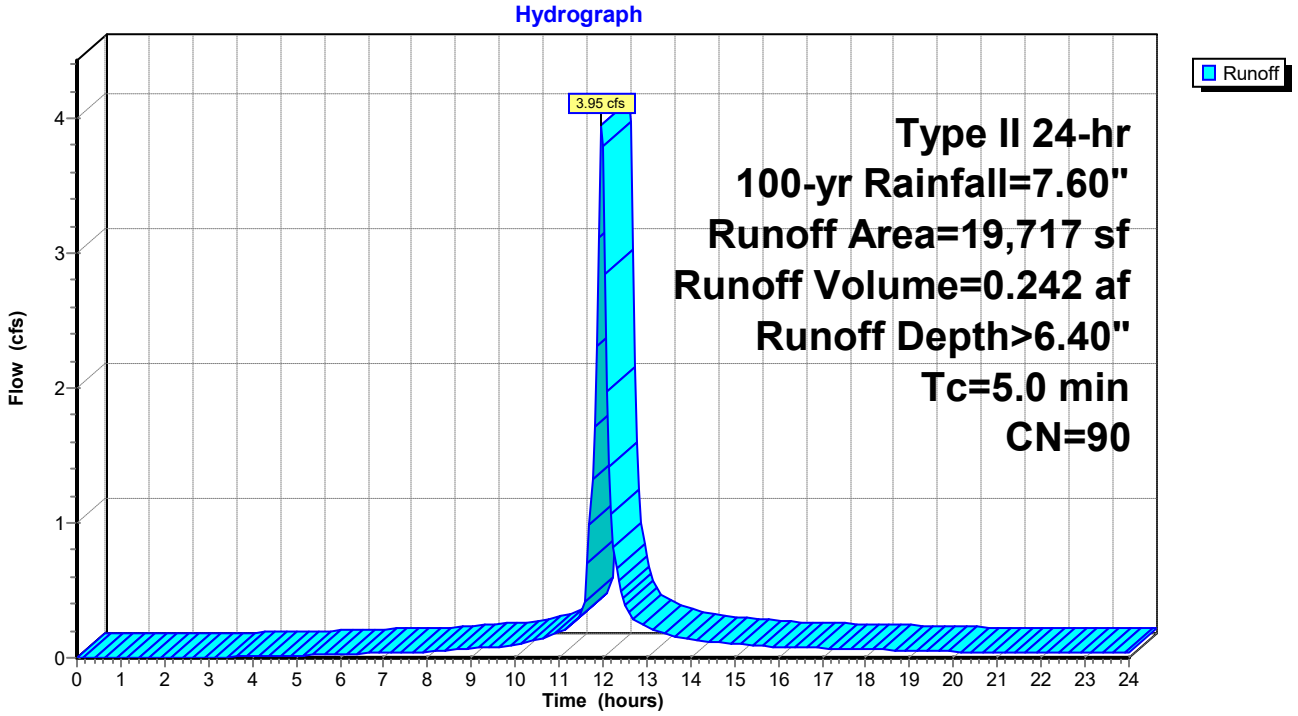
Runoff = 3.95 cfs @ 11.97 hrs, Volume= 0.242 af, Depth> 6.40"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	6,720	98	Office Building
*	3,973	98	Half Future Parking
	9,024	80	>75% Grass cover, Good, HSG D
	19,717	90	Weighted Average
	9,024		45.77% Pervious Area
	10,693		54.23% Impervious Area

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

Subcatchment PR-3: Phase 1 Office Roof



Summary for Subcatchment PR-4: Warehouse Roof

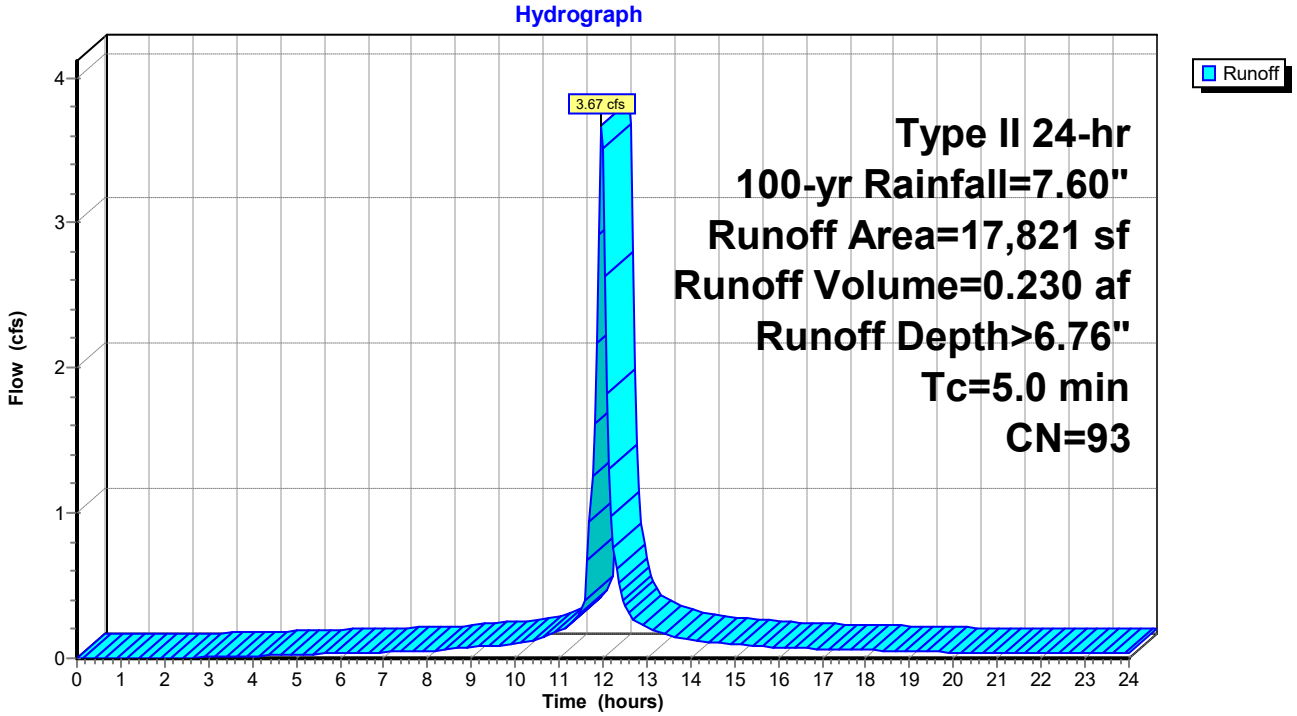
Runoff = 3.67 cfs @ 11.97 hrs, Volume= 0.230 af, Depth> 6.76"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	13,313	98	Roof
	4,508	80	>75% Grass cover, Good, HSG D
	17,821	93	Weighted Average
	4,508		25.30% Pervious Area
	13,313		74.70% Impervious Area

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

Subcatchment PR-4: Warehouse Roof



Summary for Subcatchment PR-5: Dumpster & Portion of Loading Area

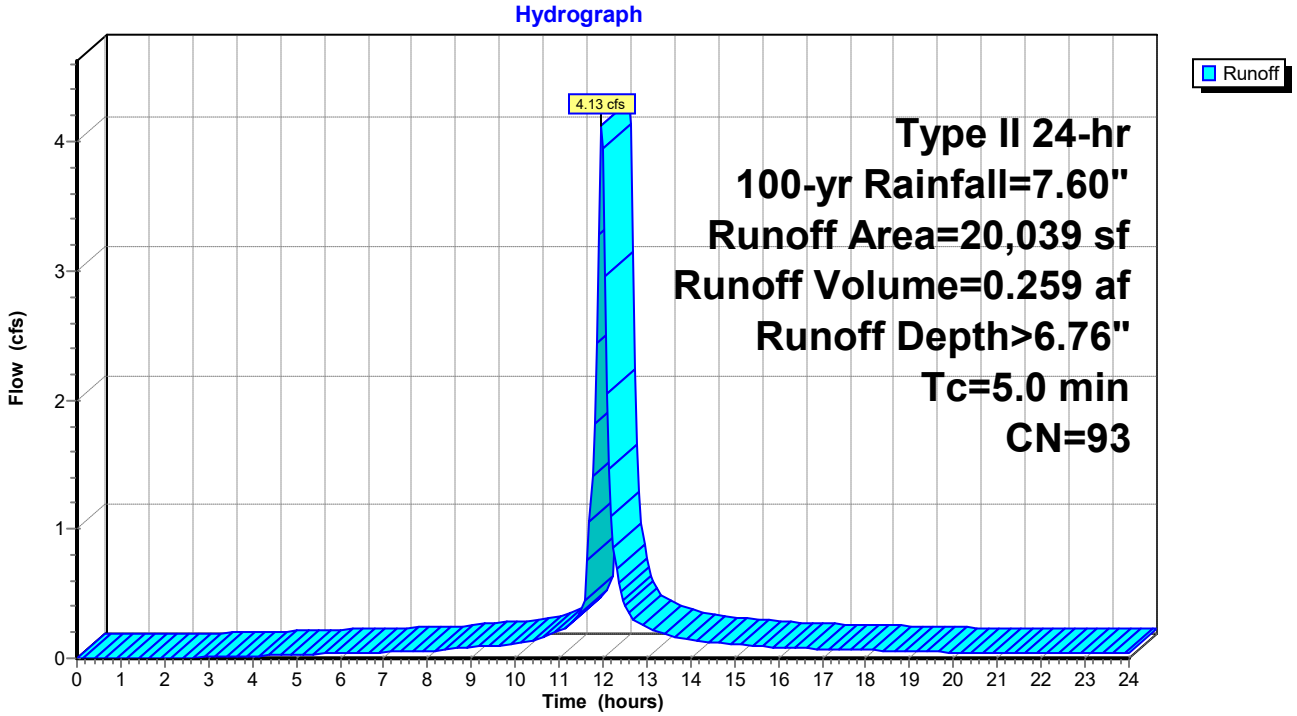
Runoff = 4.13 cfs @ 11.97 hrs, Volume= 0.259 af, Depth> 6.76"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	14,376	98	Loading Area & Dumpster
	5,663	80	>75% Grass cover, Good, HSG D
	20,039	93	Weighted Average
	5,663		28.26% Pervious Area
	14,376		71.74% Impervious Area

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

Subcatchment PR-5: Dumpster & Portion of Loading Area



Summary for Subcatchment PR-6: Warehouse Roof

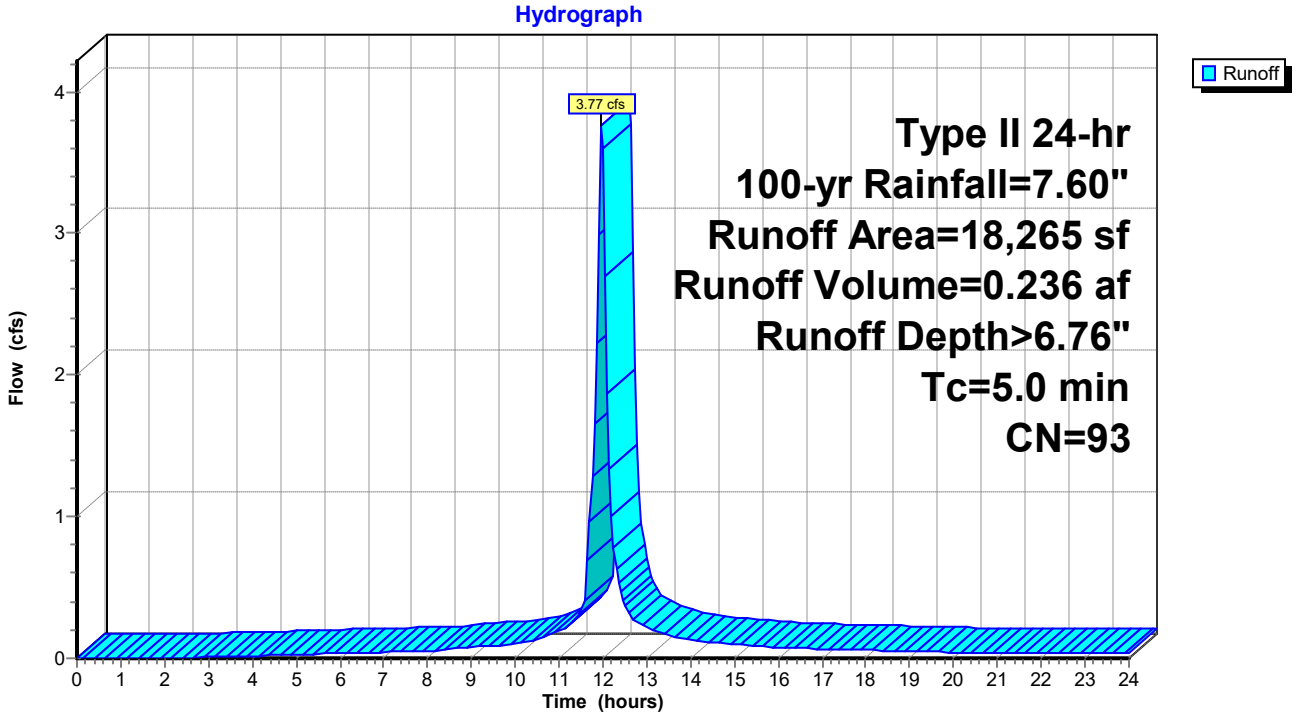
Runoff = 3.77 cfs @ 11.97 hrs, Volume= 0.236 af, Depth> 6.76"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	13,521	98	Roof
	4,744	80	>75% Grass cover, Good, HSG D
	18,265	93	Weighted Average
	4,744		25.97% Pervious Area
	13,521		74.03% Impervious Area

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

Subcatchment PR-6: Warehouse Roof



Summary for Subcatchment PR-7: Loading Area

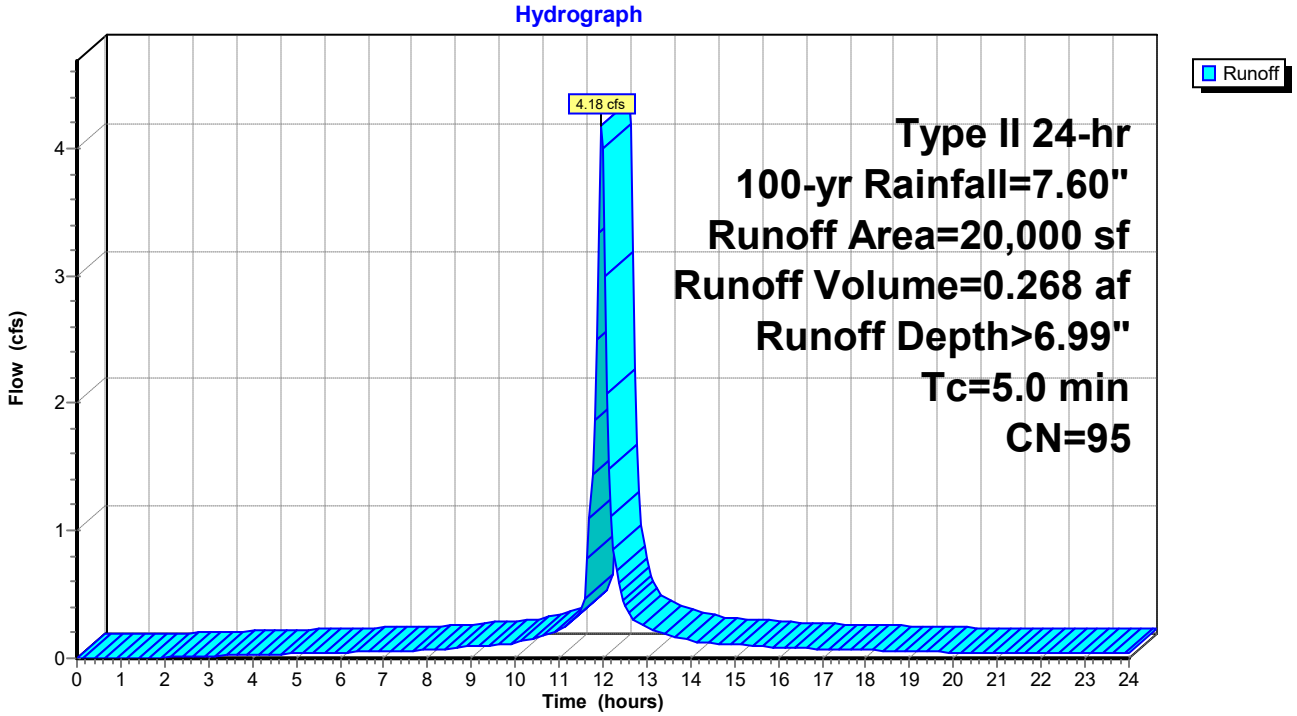
Runoff = 4.18 cfs @ 11.97 hrs, Volume= 0.268 af, Depth> 6.99"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	16,391	98	Loading Area
	3,609	80	>75% Grass cover, Good, HSG D
	20,000	95	Weighted Average
	3,609		18.04% Pervious Area
	16,391		81.96% Impervious Area

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

Subcatchment PR-7: Loading Area



Summary for Subcatchment PR-8: Warehouse Roof

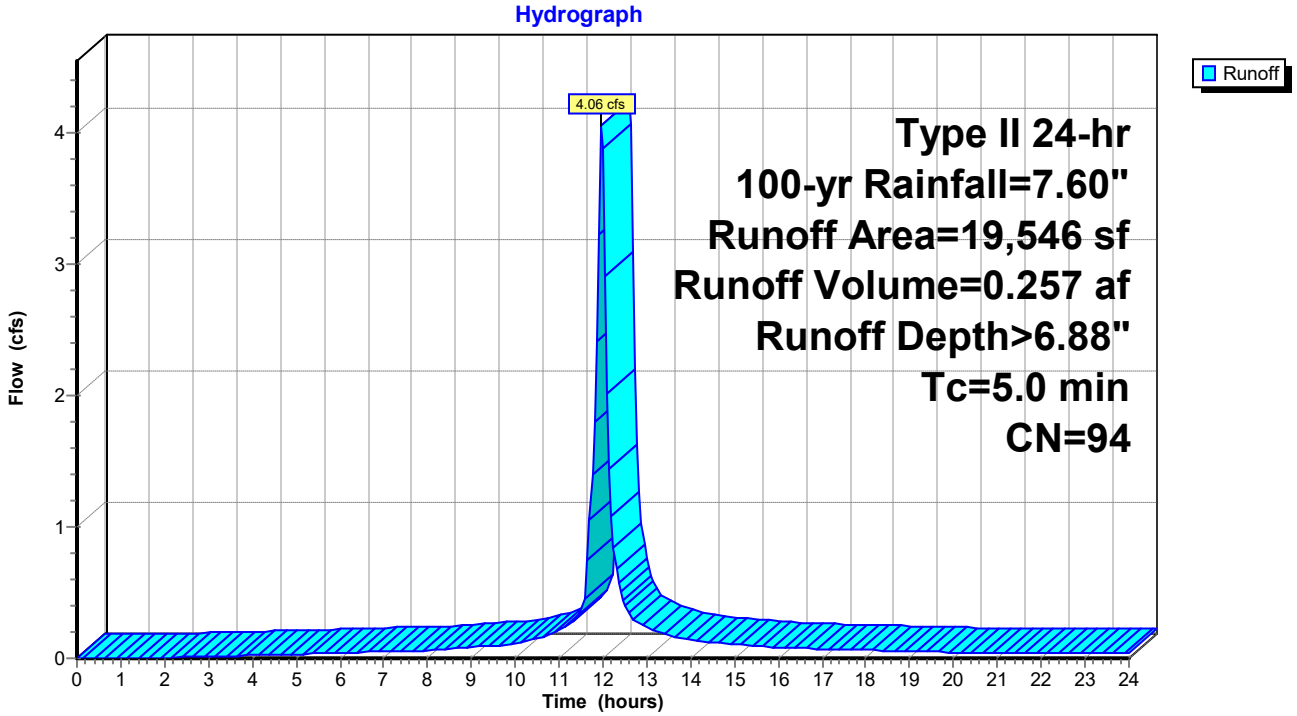
Runoff = 4.06 cfs @ 11.97 hrs, Volume= 0.257 af, Depth> 6.88"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	15,507	98	Warehouse Roof
	4,039	80	>75% Grass cover, Good, HSG D
	19,546	94	Weighted Average
	4,039		20.66% Pervious Area
	15,507		79.34% Impervious Area

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

Subcatchment PR-8: Warehouse Roof



Summary for Subcatchment PR-9: Loading Area

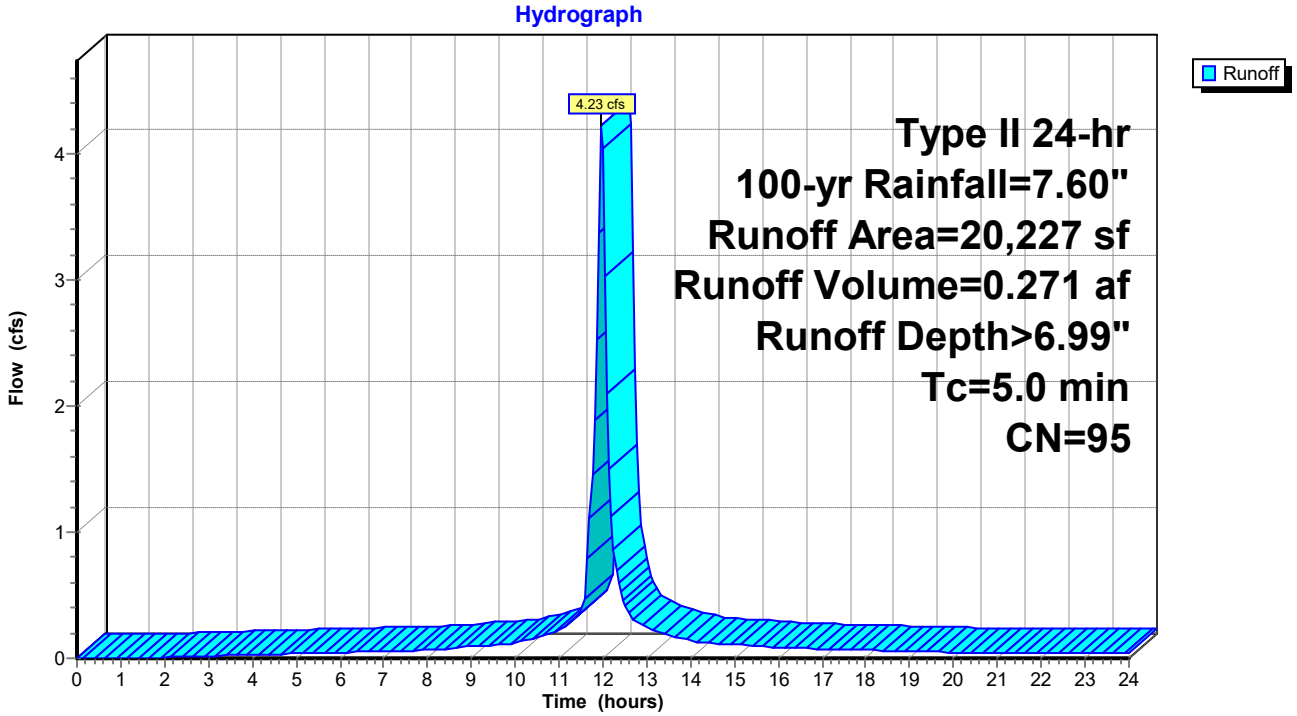
Runoff = 4.23 cfs @ 11.97 hrs, Volume= 0.271 af, Depth> 6.99"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	16,621	98	Loading Area
	3,606	80	>75% Grass cover, Good, HSG D
	20,227	95	Weighted Average
	3,606		17.83% Pervious Area
	16,621		82.17% Impervious Area

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

Subcatchment PR-9: Loading Area



Summary for Subcatchment RD-1: Residue of Parcel

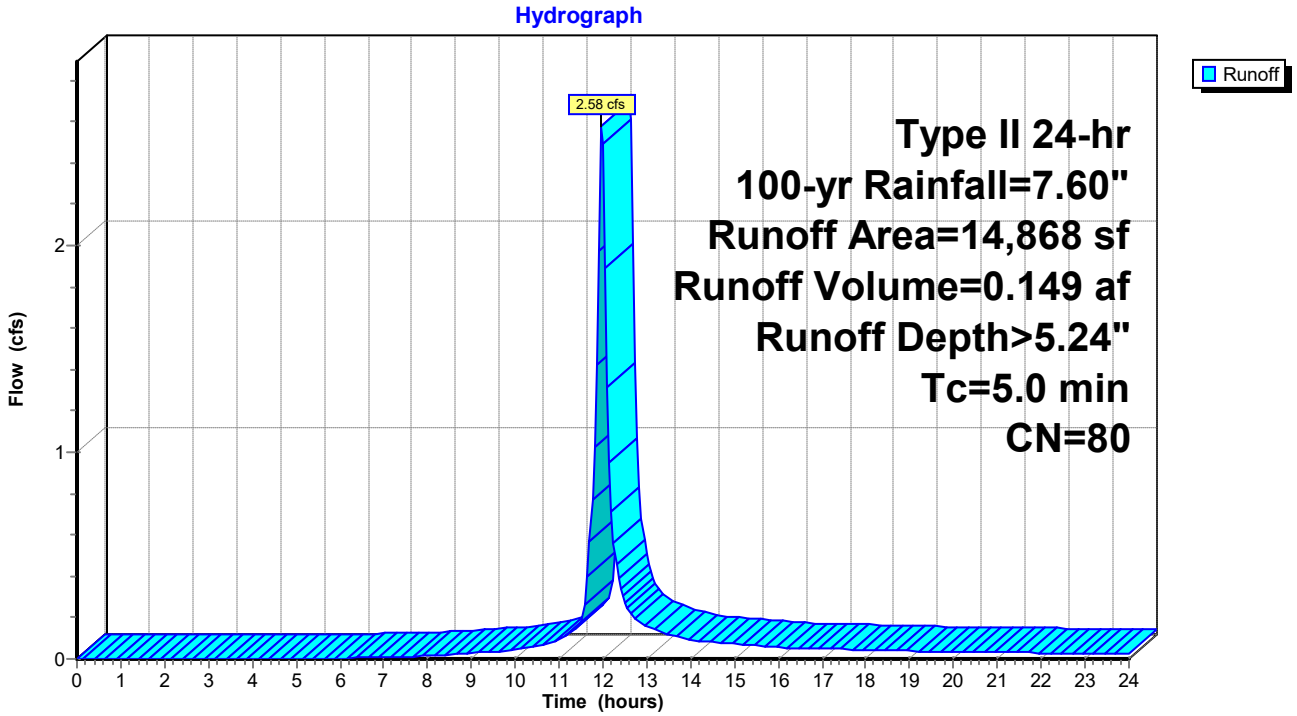
Runoff = 2.58 cfs @ 11.97 hrs, Volume= 0.149 af, Depth> 5.24"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

Area (sf)	CN	Description
14,868	80	>75% Grass cover, Good, HSG D
14,868		100.00% Pervious Area

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

Subcatchment RD-1: Residue of Parcel



Summary for Subcatchment RD-2: Residue of Parcel

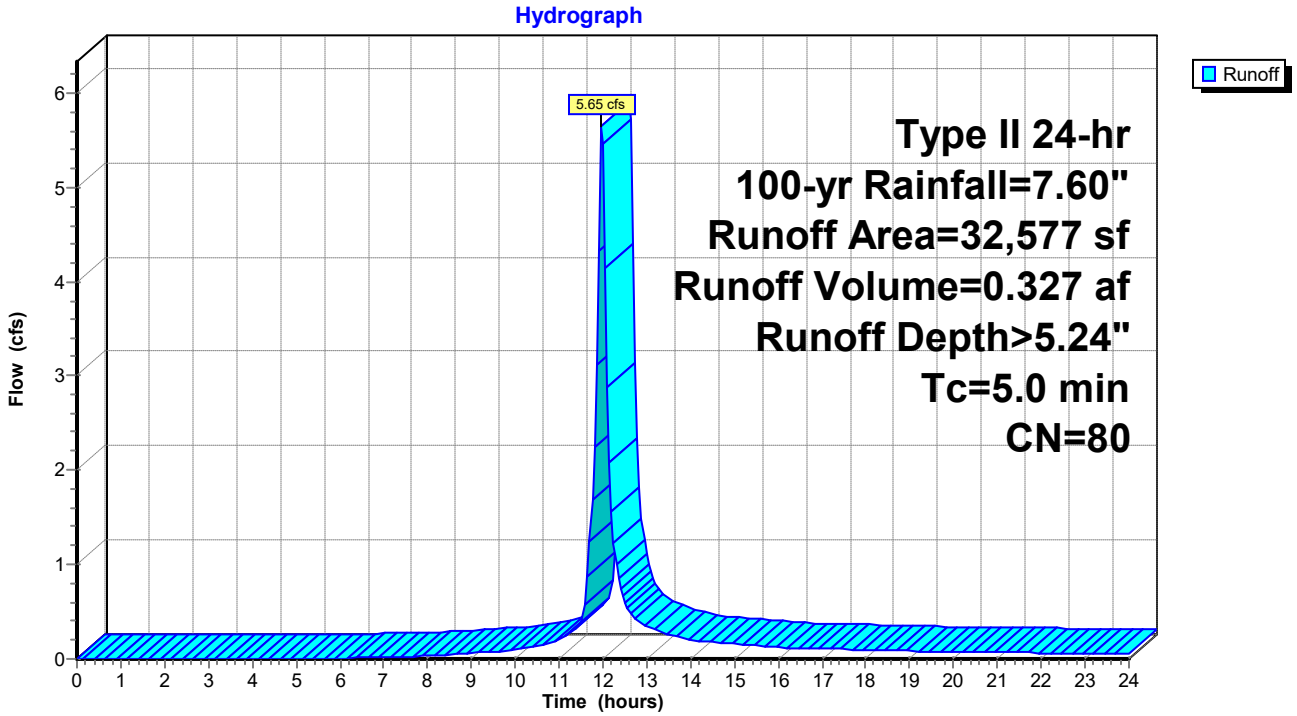
Runoff = 5.65 cfs @ 11.97 hrs, Volume= 0.327 af, Depth> 5.24"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

Area (sf)	CN	Description
32,577	80	>75% Grass cover, Good, HSG D
32,577		100.00% Pervious Area

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

Subcatchment RD-2: Residue of Parcel



Summary for Subcatchment RD-3: Residue of Parcel

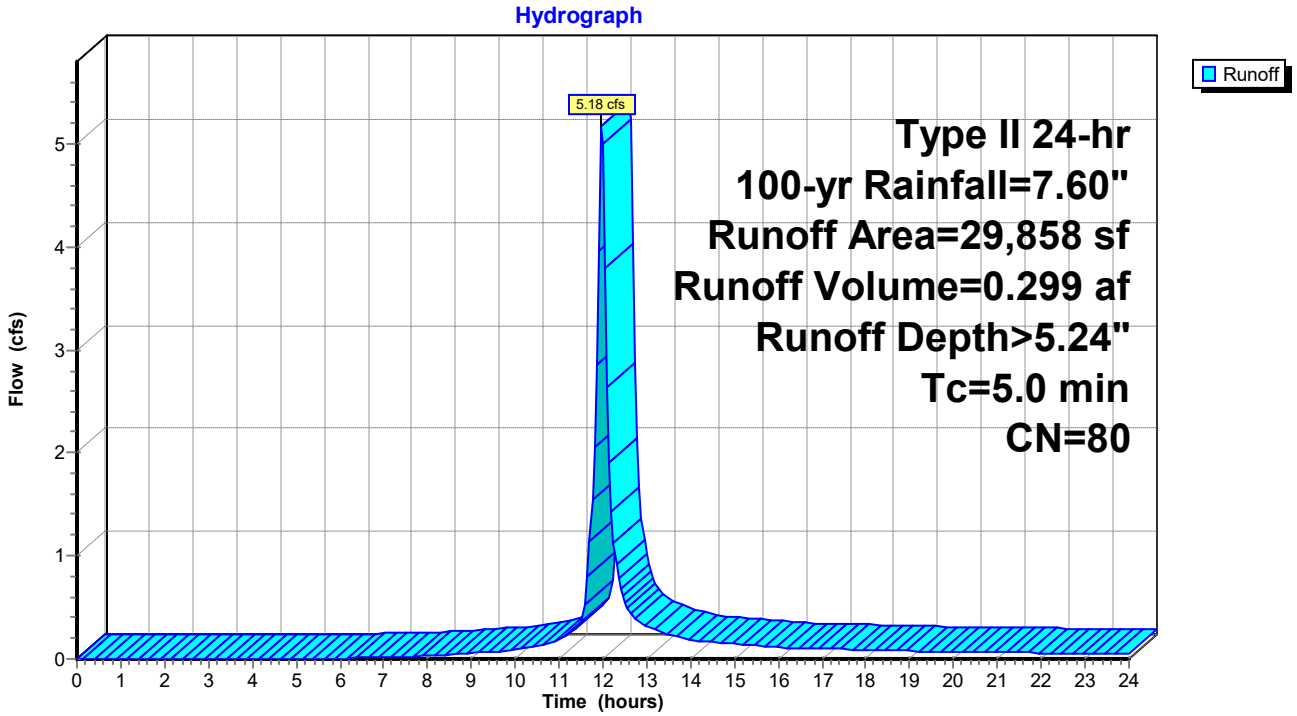
Runoff = 5.18 cfs @ 11.97 hrs, Volume= 0.299 af, Depth> 5.24"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

Area (sf)	CN	Description
29,858	80	>75% Grass cover, Good, HSG D
29,858		100.00% Pervious Area

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

Subcatchment RD-3: Residue of Parcel



Summary for Subcatchment RD-4: Residue of Parcel

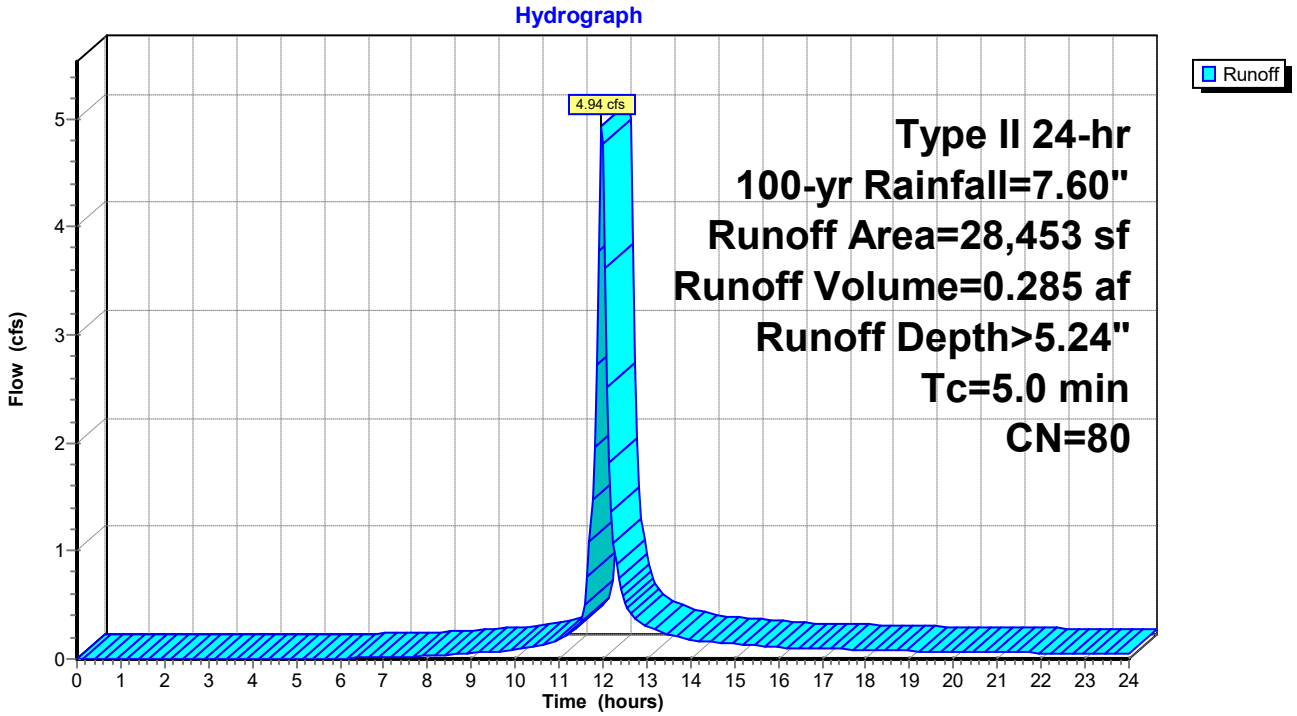
Runoff = 4.94 cfs @ 11.97 hrs, Volume= 0.285 af, Depth> 5.24"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

Area (sf)	CN	Description
28,453	80	>75% Grass cover, Good, HSG D
28,453		100.00% Pervious Area

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

Subcatchment RD-4: Residue of Parcel



Summary for Pond 1P: Wet Swale (Conveyance)

Inflow Area = 3.048 ac, 61.44% Impervious, Inflow Depth > 5.26" for 100-yr event
Inflow = 13.08 cfs @ 11.97 hrs, Volume= 1.337 af
Outflow = 6.79 cfs @ 11.90 hrs, Volume= 1.289 af, Atten= 48%, Lag= 0.0 min
Primary = 6.79 cfs @ 11.90 hrs, Volume= 1.289 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 22.03' @ 12.29 hrs Surf.Area= 7,889 sf Storage= 9,727 cf

Plug-Flow detention time= 39.6 min calculated for 1.289 af (96% of inflow)
Center-of-Mass det. time= 19.5 min (851.6 - 832.1)

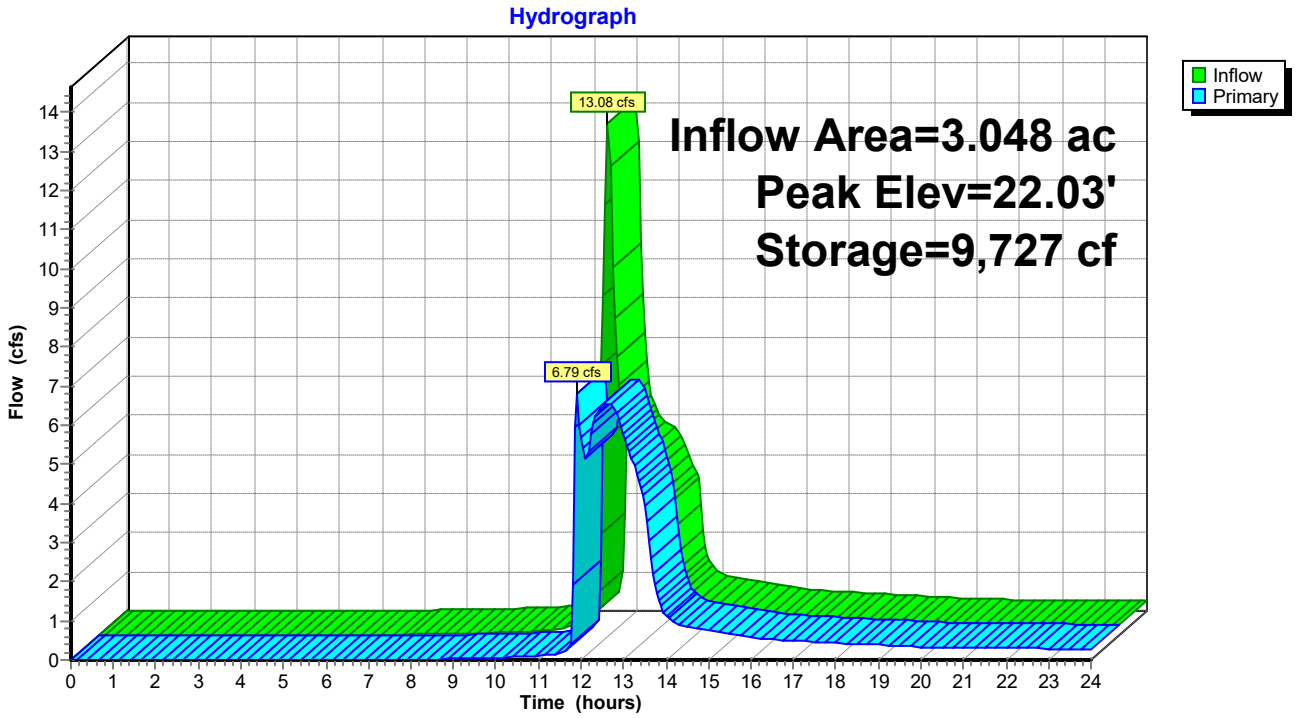
Volume	Invert	Avail.Storage	Storage Description
#1	19.70'	20,578 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
19.70	1,369	691.0	0	0	1,369
22.20	8,591	754.0	11,158	11,158	8,835
22.70	31,484	911.0	9,420	20,578	29,641

Device	Routing	Invert	Outlet Devices
#1	Primary	18.85'	**18.0" Round 18" N-12** L= 32.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.85' / 18.70' S= 0.0047 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	19.70'	**2.0" W x 12.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	20.70'	**10.7' long Rim MD 374.23** 0 End Contraction(s)

Primary OutFlow Max=4.67 cfs @ 11.90 hrs HW=21.13' TW=20.83' (Dynamic Tailwater)
└─**1=18" N-12** (Inlet Controls 4.67 cfs @ 2.64 fps)
  ├─**2=2" Notch** (Passes < 0.44 cfs potential flow)
  └─**3=Rim MD 374.23** (Passes < 9.15 cfs potential flow)

Pond 1P: Wet Swale (Conveyance)



Stage-Area-Storage for Pond 1P: Wet Swale (Conveyance)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
19.70	1,369	0
19.75	1,453	71
19.80	1,539	145
19.85	1,627	224
19.90	1,719	308
19.95	1,812	396
20.00	1,908	489
20.05	2,007	587
20.10	2,108	690
20.15	2,211	798
20.20	2,317	911
20.25	2,426	1,030
20.30	2,537	1,154
20.35	2,650	1,283
20.40	2,766	1,419
20.45	2,884	1,560
20.50	3,005	1,707
20.55	3,129	1,861
20.60	3,254	2,020
20.65	3,383	2,186
20.70	3,514	2,359
20.75	3,647	2,538
20.80	3,783	2,723
20.85	3,921	2,916
20.90	4,062	3,115
20.95	4,205	3,322
21.00	4,350	3,536
21.05	4,499	3,757
21.10	4,649	3,986
21.15	4,802	4,222
21.20	4,958	4,466
21.25	5,116	4,718
21.30	5,277	4,978
21.35	5,440	5,246
21.40	5,605	5,522
21.45	5,773	5,806
21.50	5,944	6,099
21.55	6,117	6,401
21.60	6,292	6,711
21.65	6,470	7,030
21.70	6,650	7,358
21.75	6,833	7,695
21.80	7,019	8,041
21.85	7,207	8,397
21.90	7,397	8,762
21.95	7,590	9,137
22.00	7,785	9,521
22.05	7,983	9,915
22.10	8,183	10,319
22.15	8,386	10,733
22.20	8,591	11,158
22.25	10,234	11,628
22.30	12,020	12,184
22.35	13,951	12,832
22.40	16,024	13,581
22.45	18,242	14,437
22.50	20,603	15,408
22.55	23,108	16,500
22.60	25,756	17,721
22.65	28,548	19,078
22.70	**31,484**	**20,578**

Summary for Pond 4P: Wet Swale (Conveyance)

Inflow Area =	5.432 ac, 56.20% Impervious, Inflow Depth > 4.92" for 100-yr event				
Inflow =	19.99 cfs @	12.00 hrs,	Volume=	2.229 af	
Outflow =	12.43 cfs @	12.14 hrs,	Volume=	2.124 af,	Atten= 38%, Lag= 8.9 min
Primary =	12.43 cfs @	12.14 hrs,	Volume=	2.124 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.58' @ 12.14 hrs Surf.Area= 7,627 sf Storage= 11,466 cf

Plug-Flow detention time= 44.4 min calculated for 2.124 af (95% of inflow)
Center-of-Mass det. time= 19.2 min (867.3 - 848.1)

Volume	Invert	Avail.Storage	Storage Description
#1	18.70'	16,642 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

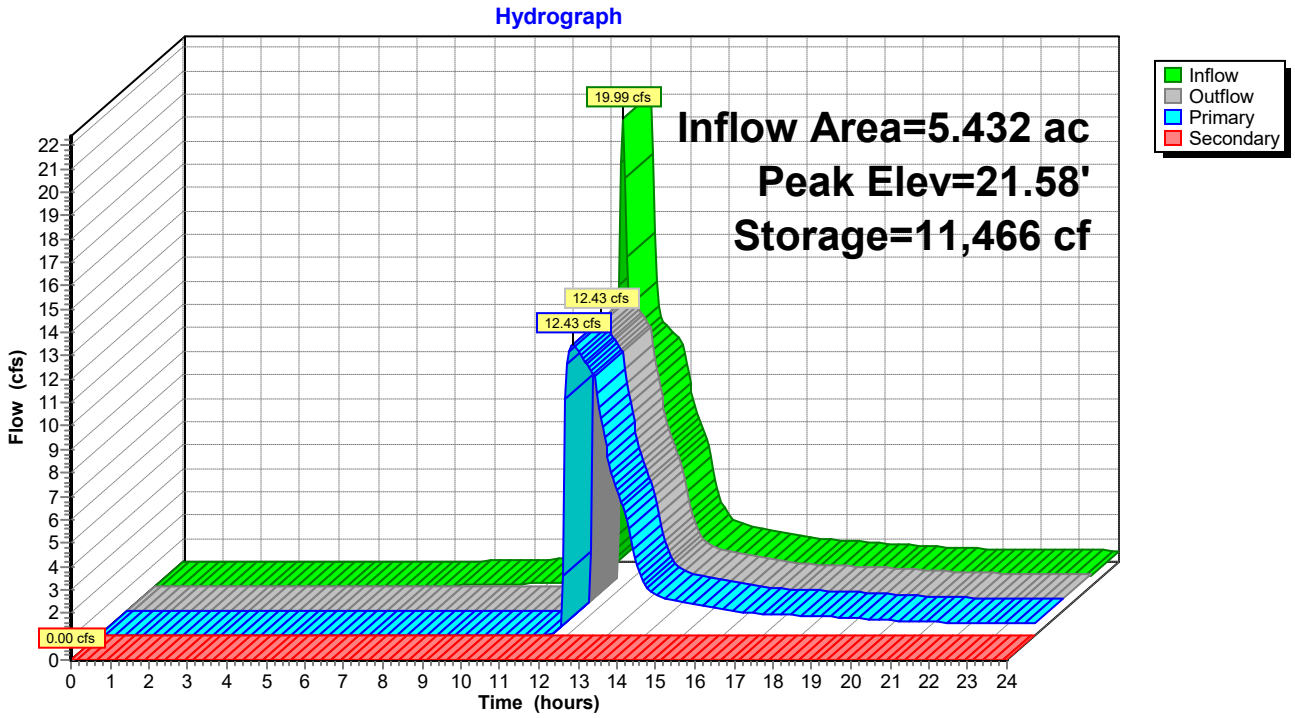
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
18.70	1,059	536.0	0	0	1,059
21.20	6,730	599.0	8,716	8,716	6,923
22.20	9,187	624.0	7,927	16,642	9,432

Device	Routing	Invert	Outlet Devices
#1	Primary	18.70'	**18.0" Round 18" N-12 Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.70' / 16.25' S= 0.0598 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	19.70'	**2.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	20.20'	**6.0" W x 6.0" H Vert. 6" Notch** C= 0.600
#4	Device 1	20.70'	**10.7' long Rim MD 374.23** 0 End Contraction(s)
#5	Secondary	21.70'	**32.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=12.42 cfs @ 12.14 hrs HW=21.58' TW=0.00' (Dynamic Tailwater)
└─**1=18" N-12 Culvert** (Inlet Controls 12.42 cfs @ 7.03 fps)
  ├─**2=Orifice/Grate** (Passes < 0.51 cfs potential flow)
  ├─**3=6" Notch** (Passes < 1.28 cfs potential flow)
  └─**4=Rim MD 374.23** (Passes < 28.96 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=18.70' TW=0.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: Wet Swale (Conveyance)



Stage-Area-Storage for Pond 4P: Wet Swale (Conveyance)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.70	1,059	0
18.75	1,124	55
18.80	1,192	112
18.85	1,261	174
18.90	1,332	239
18.95	1,406	307
19.00	1,481	379
19.05	1,558	455
19.10	1,637	535
19.15	1,718	619
19.20	1,801	707
19.25	1,886	799
19.30	1,973	896
19.35	2,062	996
19.40	2,153	1,102
19.45	2,246	1,212
19.50	2,341	1,326
19.55	2,437	1,446
19.60	2,536	1,570
19.65	2,637	1,700
19.70	2,739	1,834
19.75	2,844	1,973
19.80	2,951	2,118
19.85	3,059	2,269
19.90	3,170	2,424
19.95	3,282	2,586
20.00	3,396	2,753
20.05	3,513	2,925
20.10	3,631	3,104
20.15	3,751	3,288
20.20	3,874	3,479
20.25	3,998	3,676
20.30	4,124	3,879
20.35	4,252	4,088
20.40	4,382	4,304
20.45	4,514	4,527
20.50	4,648	4,756
20.55	4,784	4,991
20.60	4,922	5,234
20.65	5,062	5,484
20.70	5,204	5,740
20.75	5,348	6,004
20.80	5,493	6,275
20.85	5,641	6,553
20.90	5,791	6,839
20.95	5,942	7,133
21.00	6,096	7,433
21.05	6,252	7,742
21.10	6,409	8,059
21.15	6,569	8,383
21.20	6,730	8,716
21.25	6,844	9,055
21.30	6,959	9,400
21.35	7,074	9,751
21.40	7,191	10,107
21.45	7,308	10,470
21.50	7,427	10,838
21.55	7,547	11,213
21.60	7,667	11,593
21.65	7,788	11,979
21.70	7,911	12,372
21.75	8,034	12,770
21.80	8,158	13,175
21.85	8,284	13,586
21.90	8,410	14,004
21.95	8,537	14,427
22.00	8,665	14,857
22.05	8,794	15,294
22.10	8,924	15,737
22.15	9,055	16,186
22.20	**9,187**	**16,642**

Summary for Pond 8P: BioSwale

Inflow Area = 0.719 ac, 27.23% Impervious, Inflow Depth > 5.82" for 100-yr event
Inflow = 5.90 cfs @ 11.97 hrs, Volume= 0.349 af
Outflow = 5.51 cfs @ 12.01 hrs, Volume= 0.280 af, Atten= 7%, Lag= 2.4 min
Primary = 5.51 cfs @ 12.01 hrs, Volume= 0.280 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 24.28' @ 12.01 hrs Surf.Area= 3,695 sf Storage= 4,775 cf

Plug-Flow detention time= 147.9 min calculated for 0.280 af (80% of inflow)
Center-of-Mass det. time= 70.2 min (860.4 - 790.2)

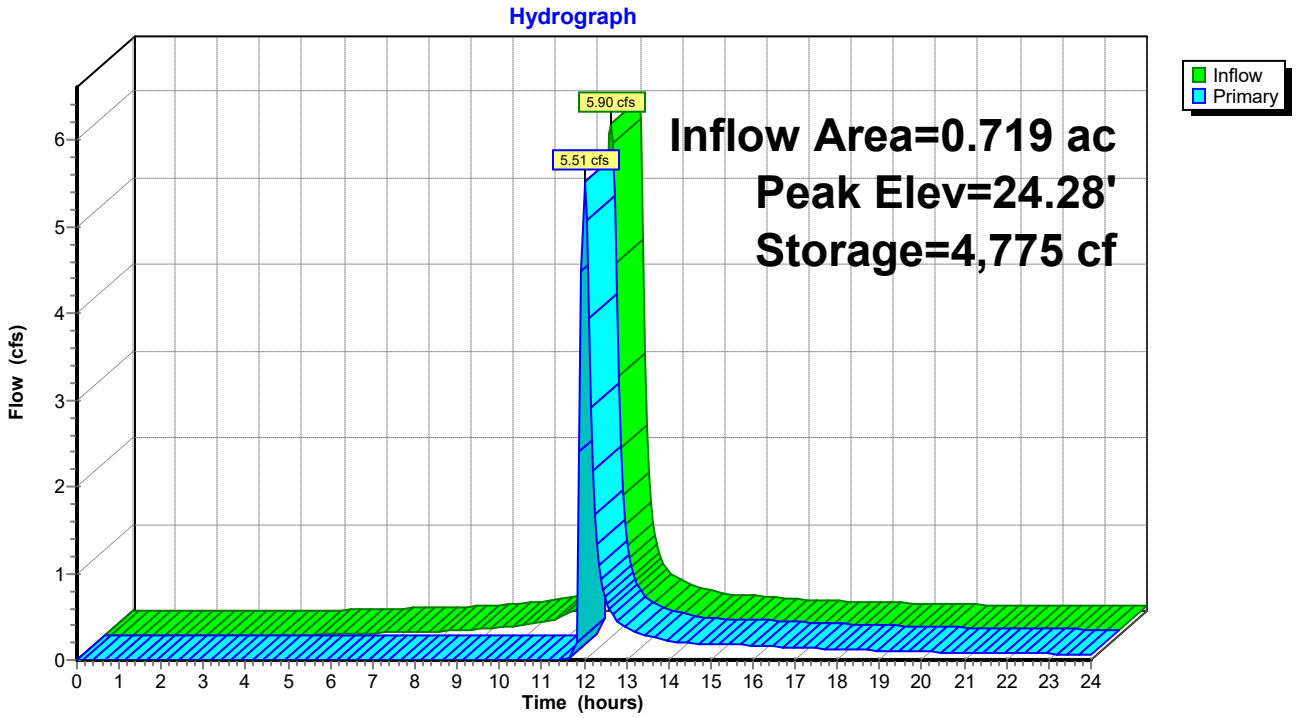
Volume	Invert	Avail.Storage	Storage Description
#1	20.99'	5,615 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.99	1,517	393.0	0.0	0	0	1,517
21.00	1,517	393.0	40.0	6	6	1,521
22.99	1,517	393.0	40.0	1,208	1,214	2,303
23.00	1,517	393.0	100.0	15	1,229	2,307
23.50	2,728	412.0	100.0	1,047	2,275	3,541
24.50	3,991	431.0	100.0	3,340	5,615	4,883

Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	**12.0" Round 12" N-12 Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.00' / 20.65' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	23.50'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.00'	**10.7' long Rim MD 374.23** 0 End Contraction(s)

Primary OutFlow Max=5.40 cfs @ 12.01 hrs HW=24.28' TW=0.00' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 5.40 cfs of 6.30 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.29 cfs @ 3.46 fps)
  └─**3=Rim MD 374.23** (Weir Controls 5.11 cfs @ 1.72 fps)

Pond 8P: BioSwale



Stage-Area-Storage for Pond 8P: BioSwale

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,517	0
21.04	1,517	30
21.09	1,517	61
21.14	1,517	91
21.19	1,517	121
21.24	1,517	152
21.29	1,517	182
21.34	1,517	212
21.39	1,517	243
21.44	1,517	273
21.49	1,517	303
21.54	1,517	334
21.59	1,517	364
21.64	1,517	394
21.69	1,517	425
21.74	1,517	455
21.79	1,517	485
21.84	1,517	516
21.89	1,517	546
21.94	1,517	576
21.99	1,517	607
22.04	1,517	637
22.09	1,517	667
22.14	1,517	698
22.19	1,517	728
22.24	1,517	759
22.29	1,517	789
22.34	1,517	819
22.39	1,517	850
22.44	1,517	880
22.49	1,517	910
22.54	1,517	941
22.59	1,517	971
22.64	1,517	1,001
22.69	1,517	1,032
22.74	1,517	1,062
22.79	1,517	1,092
22.84	1,517	1,123
22.89	1,517	1,153
22.94	1,517	1,183
22.99	1,517	1,214
23.04	1,601	1,291
23.09	1,709	1,374
23.14	1,821	1,462
23.19	1,936	1,556
23.24	2,054	1,656
23.29	2,176	1,761
23.34	2,302	1,873
23.39	2,431	1,992
23.44	2,564	2,117
23.49	2,700	2,248
23.54	2,774	2,385
23.59	2,832	2,525
23.64	2,890	2,669
23.69	2,950	2,815
23.74	3,009	2,964
23.79	3,070	3,115
23.84	3,131	3,270
23.89	3,192	3,429
23.94	3,254	3,590
23.99	3,317	3,754
24.04	3,380	3,921
24.09	3,444	4,092
24.14	3,509	4,266
24.19	3,574	4,443
24.24	3,640	4,623
24.29	3,706	4,807
24.34	3,773	4,994
24.39	3,840	5,184
24.44	3,908	5,378
24.49	**3,977**	**5,575**

Summary for Pond MBR-1: Parking Lot Micro-Bioretention

Inflow Area = 0.462 ac, 50.79% Impervious, Inflow Depth > 6.29" for 100-yr event
Inflow = 3.99 cfs @ 11.97 hrs, Volume= 0.242 af
Outflow = 1.74 cfs @ 12.13 hrs, Volume= 0.143 af, Atten= 56%, Lag= 9.4 min
Primary = 1.74 cfs @ 12.13 hrs, Volume= 0.143 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 24.37' @ 12.13 hrs Surf.Area= 3,230 sf Storage= 5,610 cf

Plug-Flow detention time= 239.6 min calculated for 0.143 af (59% of inflow)
Center-of-Mass det. time= 135.9 min (914.3 - 778.5)

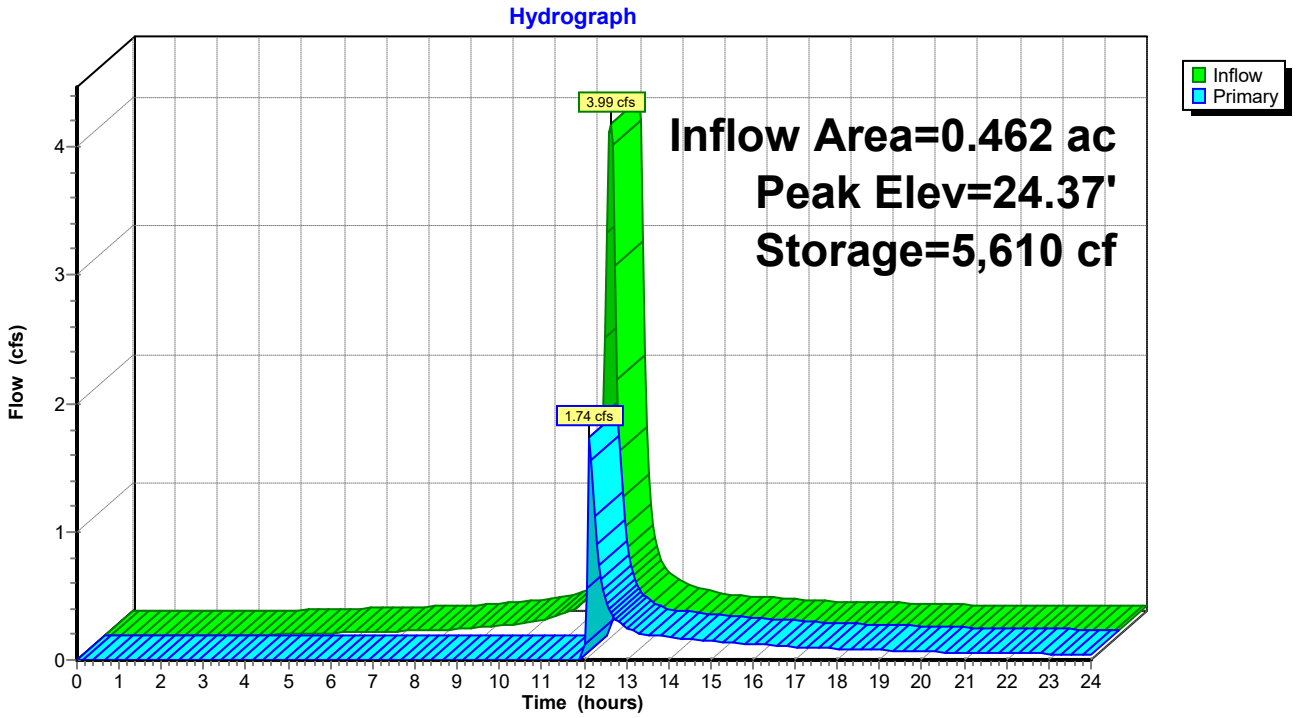
Volume	Invert	Avail.Storage	Storage Description
#1	20.74'	6,896 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.74	1,868	190.0	0.0	0	0	1,868
20.75	1,868	190.0	40.0	7	7	1,870
22.74	1,868	190.0	40.0	1,487	1,494	2,248
22.75	1,868	190.0	100.0	19	1,513	2,250
23.75	2,678	215.0	100.0	2,261	3,774	3,081
24.75	3,589	240.0	100.0	3,122	6,896	4,014

Device	Routing	Invert	Outlet Devices
#1	Primary	20.75'	**12.0" Round 12" N-12 Culvert** L= 69.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 20.75' / 20.65' S= 0.0014 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	23.75'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.25'	**10.7' long Rim MD374.23** 0 End Contraction(s)

Primary OutFlow Max=1.70 cfs @ 12.13 hrs HW=24.37' TW=0.00' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 1.70 cfs of 5.52 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.24 cfs @ 2.87 fps)
  └─**3=Rim MD374.23** (Weir Controls 1.46 cfs @ 1.13 fps)

Pond MBR-1: Parking Lot Micro-Bioretention



Stage-Area-Storage for Pond MBR-1: Parking Lot Micro-Bioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.74	1,868	0
20.79	1,868	37
20.84	1,868	75
20.89	1,868	112
20.94	1,868	149
20.99	1,868	187
21.04	1,868	224
21.09	1,868	262
21.14	1,868	299
21.19	1,868	336
21.24	1,868	374
21.29	1,868	411
21.34	1,868	448
21.39	1,868	486
21.44	1,868	523
21.49	1,868	560
21.54	1,868	598
21.59	1,868	635
21.64	1,868	672
21.69	1,868	710
21.74	1,868	747
21.79	1,868	785
21.84	1,868	822
21.89	1,868	859
21.94	1,868	897
21.99	1,868	934
22.04	1,868	971
22.09	1,868	1,009
22.14	1,868	1,046
22.19	1,868	1,083
22.24	1,868	1,121
22.29	1,868	1,158
22.34	1,868	1,196
22.39	1,868	1,233
22.44	1,868	1,270
22.49	1,868	1,308
22.54	1,868	1,345
22.59	1,868	1,382
22.64	1,868	1,420
22.69	1,868	1,457
22.74	1,868	1,494
22.79	1,898	1,588
22.84	1,935	1,684
22.89	1,973	1,782
22.94	2,011	1,881
22.99	2,049	1,983
23.04	2,088	2,086
23.09	2,127	2,192
23.14	2,167	2,299
23.19	2,206	2,408
23.24	2,247	2,520
23.29	2,287	2,633
23.34	2,328	2,748
23.39	2,370	2,866
23.44	2,411	2,985
23.49	2,453	3,107
23.54	2,496	3,231
23.59	2,539	3,357
23.64	2,582	3,485
23.69	2,625	3,615
23.74	2,669	3,747
23.79	2,712	3,882
23.84	2,755	4,018
23.89	2,798	4,157
23.94	2,841	4,298
23.99	2,884	4,441
24.04	2,928	4,587
24.09	2,973	4,734
24.14	3,017	4,884
24.19	3,062	5,036
24.24	3,108	5,190
24.29	3,153	5,347
24.34	3,199	5,506
24.39	3,246	5,667
24.44	3,292	5,830
24.49	3,339	5,996
24.54	3,387	6,164
24.59	3,434	6,335
24.64	3,482	6,507
24.69	3,531	6,683
24.74	**3,579**	**6,861**

Summary for Pond MBR-10: Micro-Bioretention #10

Inflow Area = 0.473 ac, 81.90% Impervious, Inflow Depth > 6.99" for 100-yr event
Inflow = 4.31 cfs @ 11.97 hrs, Volume= 0.276 af
Outflow = 1.51 cfs @ 11.98 hrs, Volume= 0.210 af, Atten= 65%, Lag= 0.9 min
Primary = 1.51 cfs @ 11.98 hrs, Volume= 0.210 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 22.43' @ 12.20 hrs Surf.Area= 2,594 sf Storage= 5,433 cf

Plug-Flow detention time= 169.3 min calculated for 0.210 af (76% of inflow)
Center-of-Mass det. time= 84.4 min (840.0 - 755.6)

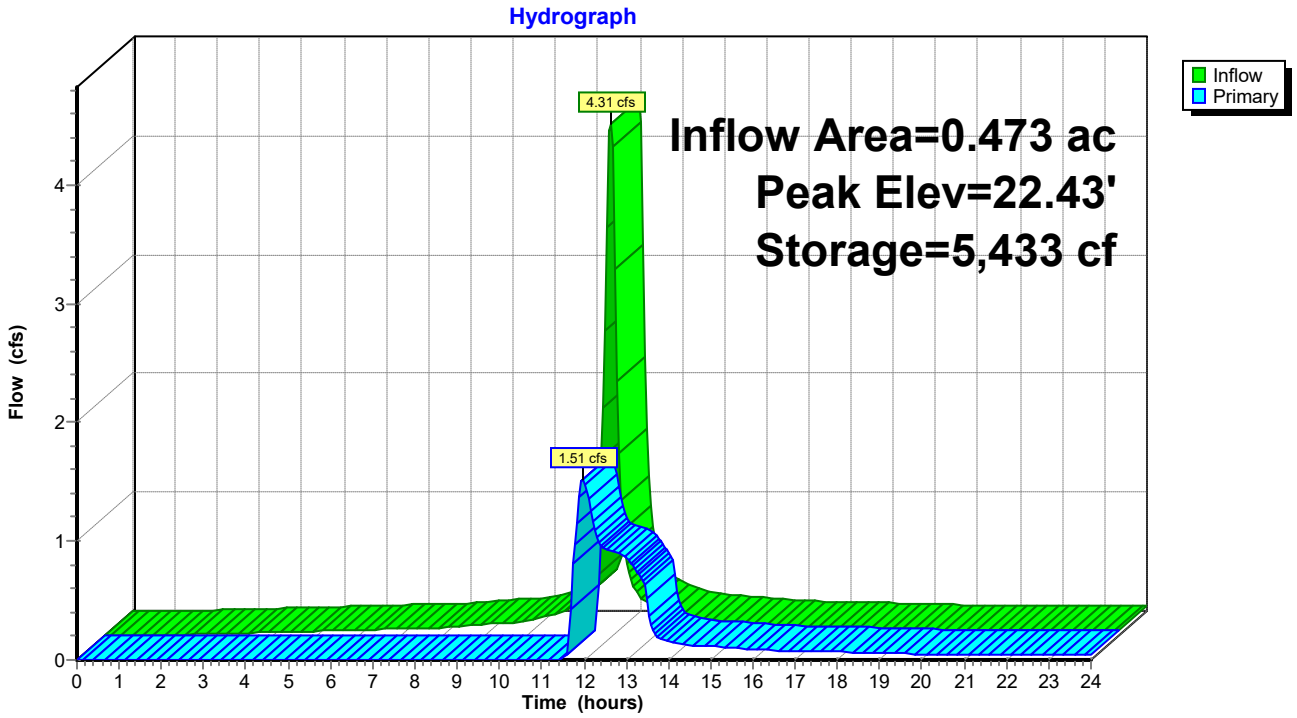
Volume	Invert	Avail.Storage	Storage Description
#1	17.19'	6,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.19	1,136	136.0	0.0	0	0	1,136
17.20	1,136	136.0	40.0	5	5	1,137
20.19	1,136	136.0	40.0	1,359	1,363	1,544
20.20	1,136	136.0	100.0	11	1,375	1,545
21.20	1,730	161.0	100.0	1,423	2,797	2,155
22.20	2,424	186.0	100.0	2,067	4,864	2,866
22.70	2,808	198.0	100.0	1,307	6,171	3,245

Device	Routing	Invert	Outlet Devices
#1	Primary	19.80'	**6.0" Round 6" PVC X 2.00** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.80' / 19.70' S= 0.0050 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.29 cfs @ 11.98 hrs HW=22.07' TW=21.46' (Dynamic Tailwater)
└─**1=6" PVC** (Inlet Controls 1.29 cfs @ 3.29 fps)
  └─**2=6" Atrium Grate** (Passes 1.29 cfs of 1.47 cfs potential flow)

Pond MBR-10: Micro-Bioretention #10



Stage-Area-Storage for Pond MBR-10: Micro-Bioretention #10

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0
17.29	1,136	45
17.39	1,136	91
17.49	1,136	136
17.59	1,136	182
17.69	1,136	227
17.79	1,136	273
17.89	1,136	318
17.99	1,136	364
18.09	1,136	409
18.19	1,136	454
18.29	1,136	500
18.39	1,136	545
18.49	1,136	591
18.59	1,136	636
18.69	1,136	682
18.79	1,136	727
18.89	1,136	772
18.99	1,136	818
19.09	1,136	863
19.19	1,136	909
19.29	1,136	954
19.39	1,136	1,000
19.49	1,136	1,045
19.59	1,136	1,091
19.69	1,136	1,136
19.79	1,136	1,181
19.89	1,136	1,227
19.99	1,136	1,272
20.09	1,136	1,318
20.19	1,136	1,363
20.29	1,184	1,479
20.39	1,239	1,600
20.49	1,295	1,727
20.59	1,353	1,859
20.69	1,412	1,997
20.79	1,471	2,142
20.89	1,533	2,292
20.99	1,595	2,448
21.09	1,659	2,611
21.19	1,723	2,780
21.29	1,788	2,955
21.39	1,853	3,137
21.49	1,919	3,326
21.59	1,987	3,521
21.69	2,055	3,723
21.79	2,125	3,933
21.89	2,196	4,149
21.99	2,269	4,372
22.09	2,342	4,602
22.19	2,416	4,840
22.29	2,491	5,086
22.39	2,567	5,338
22.49	2,643	5,599
22.59	2,721	5,867
22.69	**2,800**	**6,143**

Summary for Pond MBR-11: Micro-Bioretention #11

Inflow Area = 0.455 ac, 81.69% Impervious, Inflow Depth > 6.99" for 100-yr event
Inflow = 4.14 cfs @ 11.97 hrs, Volume= 0.265 af
Outflow = 1.47 cfs @ 11.98 hrs, Volume= 0.200 af, Atten= 64%, Lag= 0.6 min
Primary = 1.47 cfs @ 11.98 hrs, Volume= 0.200 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 22.38' @ 12.21 hrs Surf.Area= 2,555 sf Storage= 5,301 cf

Plug-Flow detention time= 173.4 min calculated for 0.200 af (75% of inflow)
Center-of-Mass det. time= 86.0 min (841.6 - 755.6)

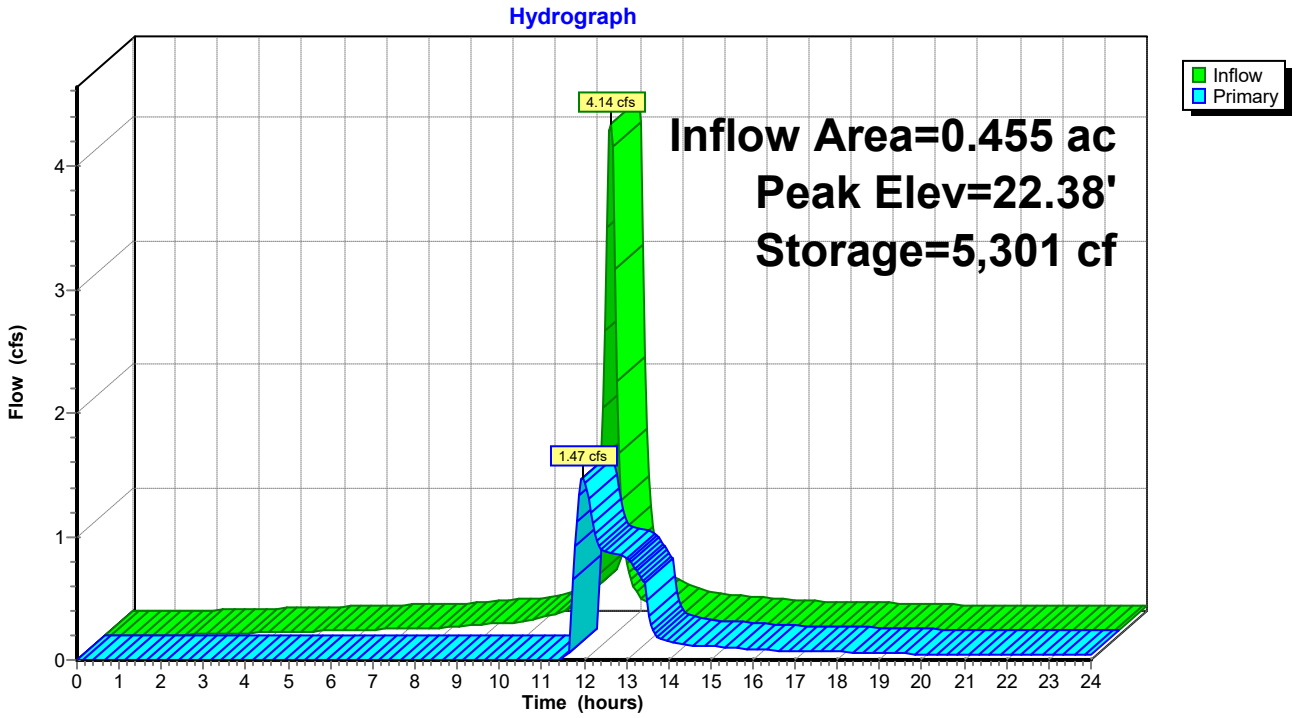
Volume	Invert	Avail.Storage	Storage Description
#1	17.19'	6,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.19	1,136	136.0	0.0	0	0	1,136
17.20	1,136	136.0	40.0	5	5	1,137
20.19	1,136	136.0	40.0	1,359	1,363	1,544
20.20	1,136	136.0	100.0	11	1,375	1,545
21.20	1,730	161.0	100.0	1,423	2,797	2,155
22.20	2,424	186.0	100.0	2,067	4,864	2,866
22.70	2,808	198.0	100.0	1,307	6,171	3,245

Device	Routing	Invert	Outlet Devices
#1	Primary	19.80'	**6.0" Round 6" PVC X 2.00** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.80' / 19.70' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.25 cfs @ 11.98 hrs HW=22.01' TW=21.45' (Dynamic Tailwater)
└─**1=6" PVC** (Inlet Controls 1.25 cfs @ 3.18 fps)
  └─**2=6" Atrium Grate** (Passes 1.25 cfs of 1.41 cfs potential flow)

Pond MBR-11: Micro-Bioretention #11



Stage-Area-Storage for Pond MBR-11: Micro-Bioretention #11

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0
17.29	1,136	45
17.39	1,136	91
17.49	1,136	136
17.59	1,136	182
17.69	1,136	227
17.79	1,136	273
17.89	1,136	318
17.99	1,136	364
18.09	1,136	409
18.19	1,136	454
18.29	1,136	500
18.39	1,136	545
18.49	1,136	591
18.59	1,136	636
18.69	1,136	682
18.79	1,136	727
18.89	1,136	772
18.99	1,136	818
19.09	1,136	863
19.19	1,136	909
19.29	1,136	954
19.39	1,136	1,000
19.49	1,136	1,045
19.59	1,136	1,091
19.69	1,136	1,136
19.79	1,136	1,181
19.89	1,136	1,227
19.99	1,136	1,272
20.09	1,136	1,318
20.19	1,136	1,363
20.29	1,184	1,479
20.39	1,239	1,600
20.49	1,295	1,727
20.59	1,353	1,859
20.69	1,412	1,997
20.79	1,471	2,142
20.89	1,533	2,292
20.99	1,595	2,448
21.09	1,659	2,611
21.19	1,723	2,780
21.29	1,788	2,955
21.39	1,853	3,137
21.49	1,919	3,326
21.59	1,987	3,521
21.69	2,055	3,723
21.79	2,125	3,933
21.89	2,196	4,149
21.99	2,269	4,372
22.09	2,342	4,602
22.19	2,416	4,840
22.29	2,491	5,086
22.39	2,567	5,338
22.49	2,643	5,599
22.59	2,721	5,867
22.69	**2,800**	**6,143**

Summary for Pond MBR-14: Future Office Building Micro-Bioretention

Inflow Area = 0.450 ac, 65.59% Impervious, Inflow Depth > 6.64" for 100-yr event
Inflow = 4.01 cfs @ 11.97 hrs, Volume= 0.249 af
Outflow = 3.89 cfs @ 12.00 hrs, Volume= 0.189 af, Atten= 3%, Lag= 1.6 min
Primary = 3.89 cfs @ 12.00 hrs, Volume= 0.189 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 24.72' @ 12.00 hrs Surf.Area= 2,190 sf Storage= 3,677 cf

Plug-Flow detention time= 167.4 min calculated for 0.189 af (76% of inflow)
Center-of-Mass det. time= 82.6 min (850.7 - 768.1)

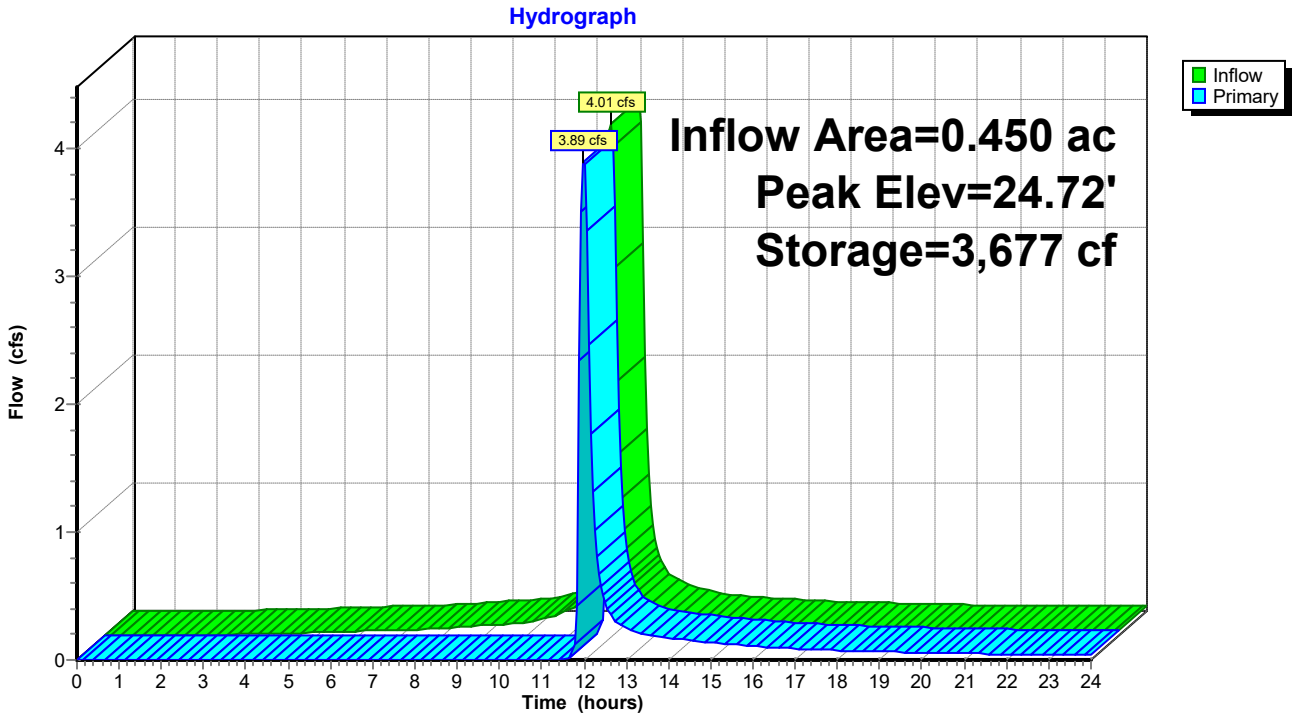
Volume	Invert	Avail.Storage	Storage Description
#1	20.99'	4,316 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.99	1,099	137.0	0.0	0	0	1,099
21.00	1,099	137.0	40.0	4	4	1,100
22.99	1,099	137.0	40.0	875	879	1,373
23.00	1,099	137.0	100.0	11	890	1,374
24.00	1,699	162.0	100.0	1,388	2,278	1,988
25.00	2,397	187.0	100.0	2,038	4,316	2,704

Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	**12.0" Round 12" N-12 Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.00' / 20.31' S= 0.0197 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.00'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.50'	**10.7' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=3.85 cfs @ 12.00 hrs HW=24.72' TW=23.05' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 3.85 cfs of 4.89 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.27 cfs @ 3.26 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 3.58 cfs @ 1.53 fps)

Pond MBR-14: Future Office Building Micro-Bioretention



Stage-Area-Storage for Pond MBR-14: Future Office Building Micro-Bioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,099	0
21.04	1,099	22
21.09	1,099	44
21.14	1,099	66
21.19	1,099	88
21.24	1,099	110
21.29	1,099	132
21.34	1,099	154
21.39	1,099	176
21.44	1,099	198
21.49	1,099	220
21.54	1,099	242
21.59	1,099	264
21.64	1,099	286
21.69	1,099	308
21.74	1,099	330
21.79	1,099	352
21.84	1,099	374
21.89	1,099	396
21.94	1,099	418
21.99	1,099	440
22.04	1,099	462
22.09	1,099	484
22.14	1,099	506
22.19	1,099	528
22.24	1,099	549
22.29	1,099	571
22.34	1,099	593
22.39	1,099	615
22.44	1,099	637
22.49	1,099	659
22.54	1,099	681
22.59	1,099	703
22.64	1,099	725
22.69	1,099	747
22.74	1,099	769
22.79	1,099	791
22.84	1,099	813
22.89	1,099	835
22.94	1,099	857
22.99	1,099	879
23.04	1,121	935
23.09	1,148	991
23.14	1,175	1,049
23.19	1,203	1,109
23.24	1,231	1,170
23.29	1,260	1,232
23.34	1,288	1,296
23.39	1,318	1,361
23.44	1,347	1,427
23.49	1,377	1,495
23.54	1,407	1,565
23.59	1,437	1,636
23.64	1,468	1,709
23.69	1,499	1,783
23.74	1,530	1,859
23.79	1,562	1,936
23.84	1,594	2,015
23.89	1,627	2,095
23.94	1,659	2,178
23.99	1,692	2,261
24.04	1,725	2,347
24.09	1,757	2,434
24.14	1,790	2,523
24.19	1,822	2,613
24.24	1,856	2,705
24.29	1,889	2,798
24.34	1,923	2,894
24.39	1,957	2,991
24.44	1,991	3,089
24.49	2,026	3,190
24.54	2,061	3,292
24.59	2,096	3,396
24.64	2,132	3,502
24.69	2,168	3,609
24.74	2,204	3,718
24.79	2,240	3,830
24.84	2,277	3,942
24.89	2,314	4,057
24.94	2,352	4,174
24.99	**2,389**	**4,292**

Summary for Pond MBR-15: Access Road Microbioretention

Inflow Area = 0.411 ac, 57.06% Impervious, Inflow Depth > 6.40" for 100-yr event
Inflow = 3.59 cfs @ 11.97 hrs, Volume= 0.219 af
Outflow = 0.93 cfs @ 12.71 hrs, Volume= 0.131 af, Atten= 74%, Lag= 44.4 min
Primary = 0.93 cfs @ 12.71 hrs, Volume= 0.131 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.73' @ 12.27 hrs Surf.Area= 3,180 sf Storage= 5,346 cf

Plug-Flow detention time= 207.1 min calculated for 0.131 af (60% of inflow)
Center-of-Mass det. time= 102.5 min (877.7 - 775.2)

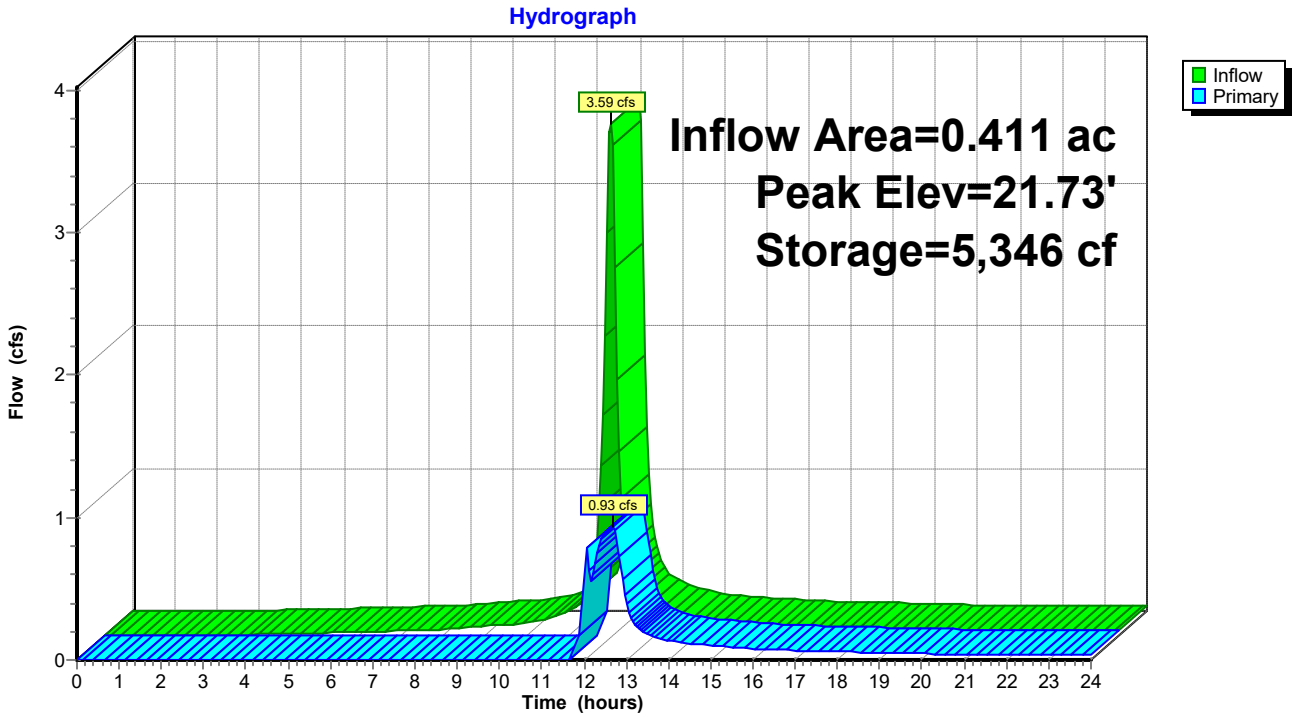
Volume	Invert	Avail.Storage	Storage Description
#1	18.19'	6,964 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
18.19	1,878	195.0	0.0	0	0	1,878
18.20	1,878	195.0	40.0	8	8	1,880
20.19	1,878	195.0	40.0	1,495	1,502	2,268
20.20	1,878	195.0	100.0	19	1,521	2,270
21.20	2,708	220.0	100.0	2,280	3,802	3,121
22.20	3,639	245.0	100.0	3,162	6,964	4,075

Device	Routing	Invert	Outlet Devices
#1	Primary	19.50'	**6.0" Round 6" PVC X 2.00** L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.50' / 18.70' S= 0.0267 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.99 cfs @ 12.71 hrs HW=21.48' TW=21.13' (Dynamic Tailwater)
└─**1=6" PVC** (Inlet Controls 0.99 cfs @ 2.52 fps)
  └─**2=6" Atrium Grate** (Passes 0.99 cfs of 1.00 cfs potential flow)

Pond MBR-15: Access Road Microbioretention



Stage-Area-Storage for Pond MBR-15: Access Road Microbioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.19	1,878	0
18.24	1,878	38
18.29	1,878	75
18.34	1,878	113
18.39	1,878	150
18.44	1,878	188
18.49	1,878	225
18.54	1,878	263
18.59	1,878	300
18.64	1,878	338
18.69	1,878	376
18.74	1,878	413
18.79	1,878	451
18.84	1,878	488
18.89	1,878	526
18.94	1,878	563
18.99	1,878	601
19.04	1,878	639
19.09	1,878	676
19.14	1,878	714
19.19	1,878	751
19.24	1,878	789
19.29	1,878	826
19.34	1,878	864
19.39	1,878	901
19.44	1,878	939
19.49	1,878	977
19.54	1,878	1,014
19.59	1,878	1,052
19.64	1,878	1,089
19.69	1,878	1,127
19.74	1,878	1,164
19.79	1,878	1,202
19.84	1,878	1,239
19.89	1,878	1,277
19.94	1,878	1,315
19.99	1,878	1,352
20.04	1,878	1,390
20.09	1,878	1,427
20.14	1,878	1,465
20.19	1,878	1,502
20.24	1,908	1,597
20.29	1,946	1,693
20.34	1,985	1,792
20.39	2,024	1,892
20.44	2,063	1,994
20.49	2,103	2,098
20.54	2,143	2,204
20.59	2,184	2,312
20.64	2,225	2,423
20.69	2,266	2,535
20.74	2,307	2,649
20.79	2,349	2,766
20.84	2,392	2,884
20.89	2,435	3,005
20.94	2,478	3,128
20.99	2,521	3,253
21.04	2,565	3,380
21.09	2,609	3,509
21.14	2,654	3,641
21.19	2,699	3,775
21.24	2,743	3,911
21.29	2,786	4,049
21.34	2,830	4,189
21.39	2,874	4,332
21.44	2,919	4,477
21.49	2,964	4,624
21.54	3,009	4,773
21.59	3,055	4,925
21.64	3,101	5,079
21.69	3,147	5,235
21.74	3,194	5,393
21.79	3,241	5,554
21.84	3,288	5,717
21.89	3,336	5,883
21.94	3,384	6,051
21.99	3,432	6,221
22.04	3,481	6,394
22.09	3,530	6,569
22.14	3,579	6,747
22.19	**3,629**	**6,927**

Summary for Pond MBR-2: Parking Lot Micro-Bioretention

Inflow Area = 0.460 ac, 58.66% Impervious, Inflow Depth > 6.52" for 100-yr event
Inflow = 4.06 cfs @ 11.97 hrs, Volume= 0.250 af
Outflow = 3.69 cfs @ 12.02 hrs, Volume= 0.174 af, Atten= 9%, Lag= 3.3 min
Primary = 3.69 cfs @ 12.02 hrs, Volume= 0.174 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 24.46' @ 12.02 hrs Surf.Area= 2,753 sf Storage= 4,622 cf

Plug-Flow detention time= 194.7 min calculated for 0.174 af (70% of inflow)
Center-of-Mass det. time= 100.5 min (872.2 - 771.8)

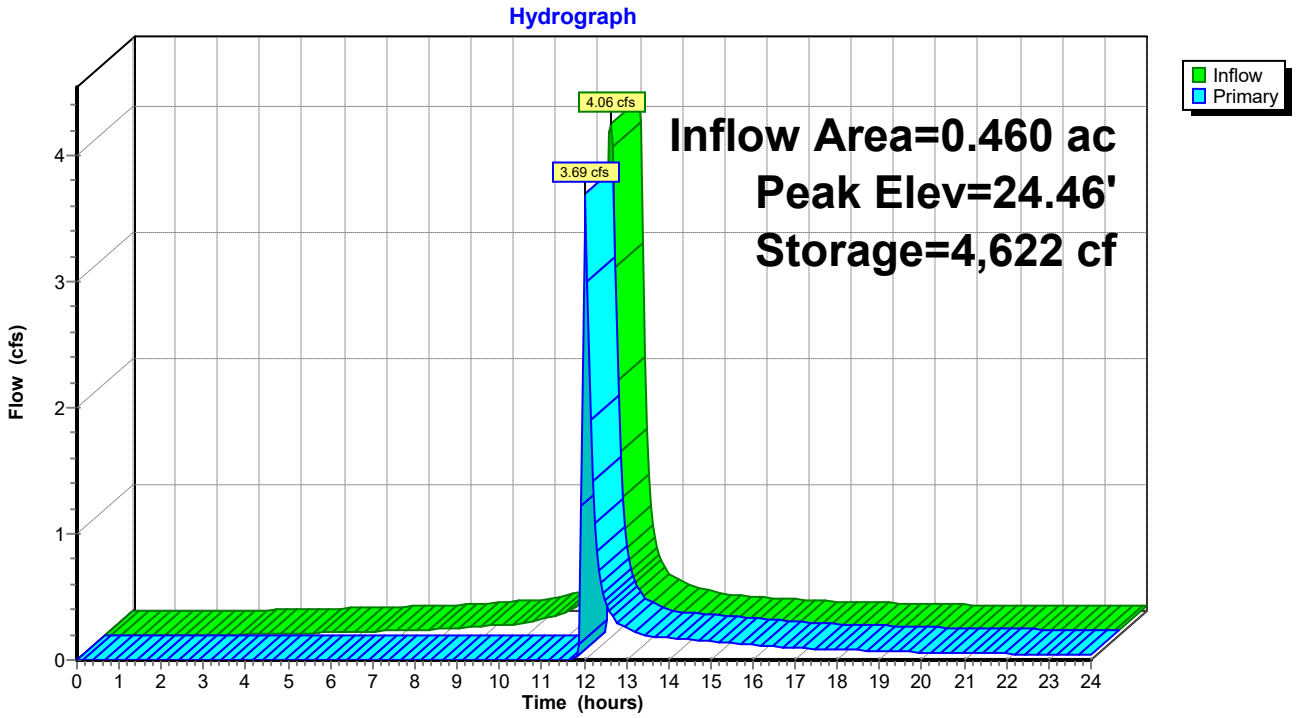
Volume	Invert	Avail.Storage	Storage Description
#1	20.74'	5,446 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.74	1,385	178.0	0.0	0	0	1,385
20.75	1,385	178.0	40.0	6	6	1,387
22.74	1,385	178.0	40.0	1,102	1,108	1,741
22.75	1,385	178.0	100.0	14	1,122	1,743
23.75	2,150	203.0	100.0	1,754	2,875	2,524
24.75	3,015	229.0	100.0	2,570	5,446	3,444

Device	Routing	Invert	Outlet Devices
#1	Primary	20.75'	**12.0" Round 12" N-12 Culvert** L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 20.75' / 20.65' S= 0.0008 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	23.75'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.25'	**10.7' long Rim MD374.23** 0 End Contraction(s)

Primary OutFlow Max=3.41 cfs @ 12.02 hrs HW=24.45' TW=0.00' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 3.41 cfs of 4.76 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.27 cfs @ 3.19 fps)
  └─**3=Rim MD374.23** (Weir Controls 3.15 cfs @ 1.47 fps)

Pond MBR-2: Parking Lot Micro-Bioretention



Stage-Area-Storage for Pond MBR-2: Parking Lot Micro-Bioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.74	1,385	0
20.79	1,385	28
20.84	1,385	55
20.89	1,385	83
20.94	1,385	111
20.99	1,385	139
21.04	1,385	166
21.09	1,385	194
21.14	1,385	222
21.19	1,385	249
21.24	1,385	277
21.29	1,385	305
21.34	1,385	332
21.39	1,385	360
21.44	1,385	388
21.49	1,385	416
21.54	1,385	443
21.59	1,385	471
21.64	1,385	499
21.69	1,385	526
21.74	1,385	554
21.79	1,385	582
21.84	1,385	609
21.89	1,385	637
21.94	1,385	665
21.99	1,385	693
22.04	1,385	720
22.09	1,385	748
22.14	1,385	776
22.19	1,385	803
22.24	1,385	831
22.29	1,385	859
22.34	1,385	886
22.39	1,385	914
22.44	1,385	942
22.49	1,385	970
22.54	1,385	997
22.59	1,385	1,025
22.64	1,385	1,053
22.69	1,385	1,080
22.74	1,385	1,108
22.79	1,412	1,178
22.84	1,447	1,249
22.89	1,482	1,323
22.94	1,517	1,397
22.99	1,553	1,474
23.04	1,590	1,553
23.09	1,626	1,633
23.14	1,663	1,715
23.19	1,701	1,800
23.24	1,739	1,886
23.29	1,777	1,973
23.34	1,816	2,063
23.39	1,855	2,155
23.44	1,895	2,249
23.49	1,935	2,345
23.54	1,975	2,442
23.59	2,016	2,542
23.64	2,058	2,644
23.69	2,099	2,748
23.74	2,142	2,854
23.79	2,182	2,962
23.84	2,222	3,072
23.89	2,262	3,184
23.94	2,303	3,298
23.99	2,344	3,415
24.04	2,386	3,533
24.09	2,428	3,653
24.14	2,470	3,776
24.19	2,513	3,900
24.24	2,556	4,027
24.29	2,599	4,156
24.34	2,643	4,287
24.39	2,687	4,420
24.44	2,731	4,555
24.49	2,776	4,693
24.54	2,821	4,833
24.59	2,867	4,975
24.64	2,913	5,120
24.69	2,959	5,267
24.74	**3,006**	**5,416**

Summary for Pond MBR-3: Office Building Micro-Bioretention

Inflow Area = 0.453 ac, 54.23% Impervious, Inflow Depth > 6.40" for 100-yr event
Inflow = 3.95 cfs @ 11.97 hrs, Volume= 0.242 af
Outflow = 3.81 cfs @ 12.01 hrs, Volume= 0.177 af, Atten= 4%, Lag= 2.3 min
Primary = 3.81 cfs @ 12.01 hrs, Volume= 0.177 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 24.72' @ 12.01 hrs Surf.Area= 2,340 sf Storage= 3,956 cf

Plug-Flow detention time= 175.5 min calculated for 0.177 af (73% of inflow)
Center-of-Mass det. time= 86.8 min (862.0 - 775.2)

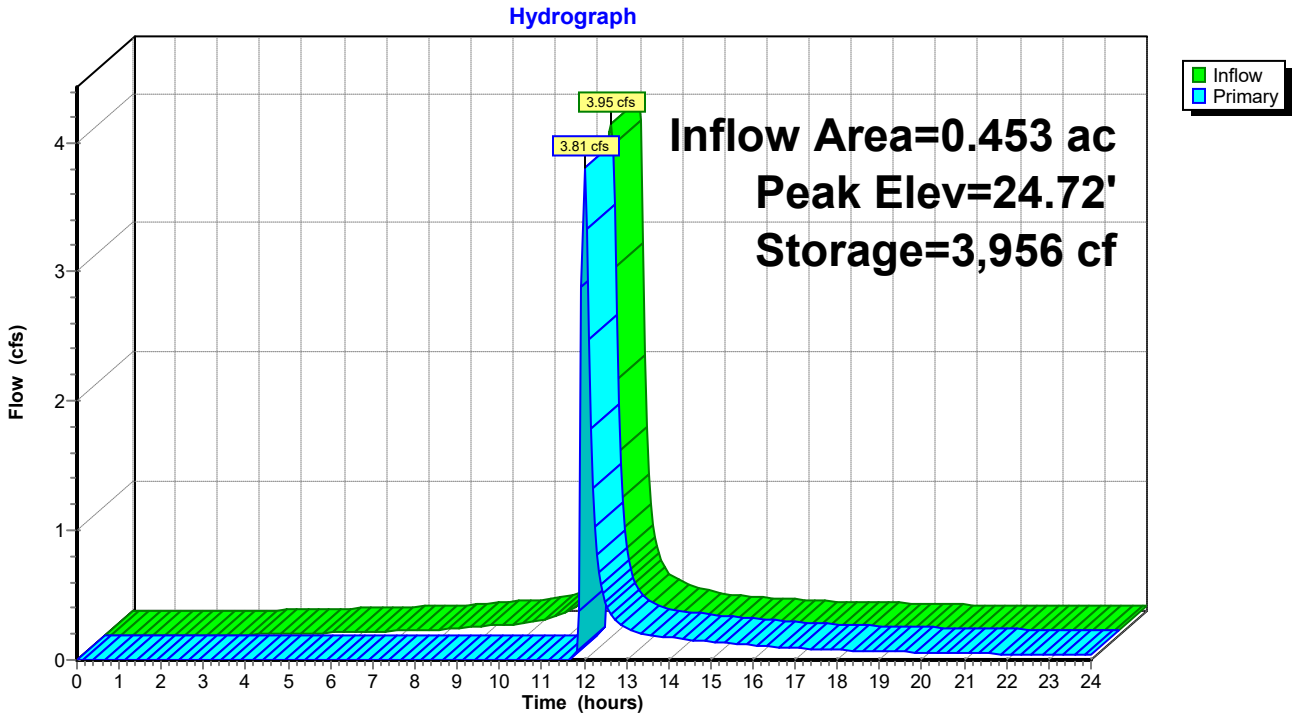
Volume	Invert	Avail.Storage	Storage Description
#1	20.99'	4,647 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.99	1,193	146.0	0.0	0	0	1,193
21.00	1,193	146.0	40.0	5	5	1,194
22.99	1,193	146.0	40.0	950	954	1,485
23.00	1,193	146.0	100.0	12	966	1,486
24.00	1,826	171.0	100.0	1,498	2,465	2,137
25.00	2,559	196.0	100.0	2,182	4,647	2,890

Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	**12.0" Round 12" N-12 Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.00' / 20.31' S= 0.0197 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.00'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.50'	**10.7' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=3.72 cfs @ 12.01 hrs HW=24.71' TW=23.02' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 3.72 cfs of 4.92 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.27 cfs @ 3.24 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 3.45 cfs @ 1.51 fps)

Pond MBR-3: Office Building Micro-Bioretention



Stage-Area-Storage for Pond MBR-3: Office Building Micro-Bioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,193	0
21.04	1,193	24
21.09	1,193	48
21.14	1,193	72
21.19	1,193	95
21.24	1,193	119
21.29	1,193	143
21.34	1,193	167
21.39	1,193	191
21.44	1,193	215
21.49	1,193	239
21.54	1,193	262
21.59	1,193	286
21.64	1,193	310
21.69	1,193	334
21.74	1,193	358
21.79	1,193	382
21.84	1,193	406
21.89	1,193	429
21.94	1,193	453
21.99	1,193	477
22.04	1,193	501
22.09	1,193	525
22.14	1,193	549
22.19	1,193	573
22.24	1,193	597
22.29	1,193	620
22.34	1,193	644
22.39	1,193	668
22.44	1,193	692
22.49	1,193	716
22.54	1,193	740
22.59	1,193	764
22.64	1,193	787
22.69	1,193	811
22.74	1,193	835
22.79	1,193	859
22.84	1,193	883
22.89	1,193	907
22.94	1,193	931
22.99	1,193	954
23.04	1,216	1,015
23.09	1,244	1,076
23.14	1,274	1,139
23.19	1,303	1,203
23.24	1,333	1,269
23.29	1,363	1,337
23.34	1,393	1,406
23.39	1,424	1,476
23.44	1,455	1,548
23.49	1,486	1,621
23.54	1,518	1,697
23.59	1,550	1,773
23.64	1,583	1,852
23.69	1,615	1,932
23.74	1,649	2,013
23.79	1,682	2,096
23.84	1,716	2,181
23.89	1,750	2,268
23.94	1,784	2,356
23.99	1,819	2,446
24.04	1,853	2,538
24.09	1,887	2,632
24.14	1,921	2,727
24.19	1,956	2,824
24.24	1,991	2,923
24.29	2,026	3,023
24.34	2,061	3,125
24.39	2,097	3,229
24.44	2,133	3,335
24.49	2,170	3,442
24.54	2,206	3,552
24.59	2,244	3,663
24.64	2,281	3,776
24.69	2,319	3,891
24.74	2,357	4,008
24.79	2,395	4,127
24.84	2,433	4,248
24.89	2,472	4,370
24.94	2,512	4,495
24.99	**2,551**	**4,621**

Summary for Pond MBR-4: Micro-Bioretention #4

Inflow Area = 0.409 ac, 74.70% Impervious, Inflow Depth > 6.76" for 100-yr event
Inflow = 3.67 cfs @ 11.97 hrs, Volume= 0.230 af
Outflow = 3.55 cfs @ 12.00 hrs, Volume= 0.167 af, Atten= 3%, Lag= 2.2 min
Primary = 3.55 cfs @ 12.00 hrs, Volume= 0.167 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 25.71' @ 12.00 hrs Surf.Area= 2,261 sf Storage= 3,876 cf

Plug-Flow detention time= 184.5 min calculated for 0.167 af (72% of inflow)
Center-of-Mass det. time= 94.4 min (858.6 - 764.2)

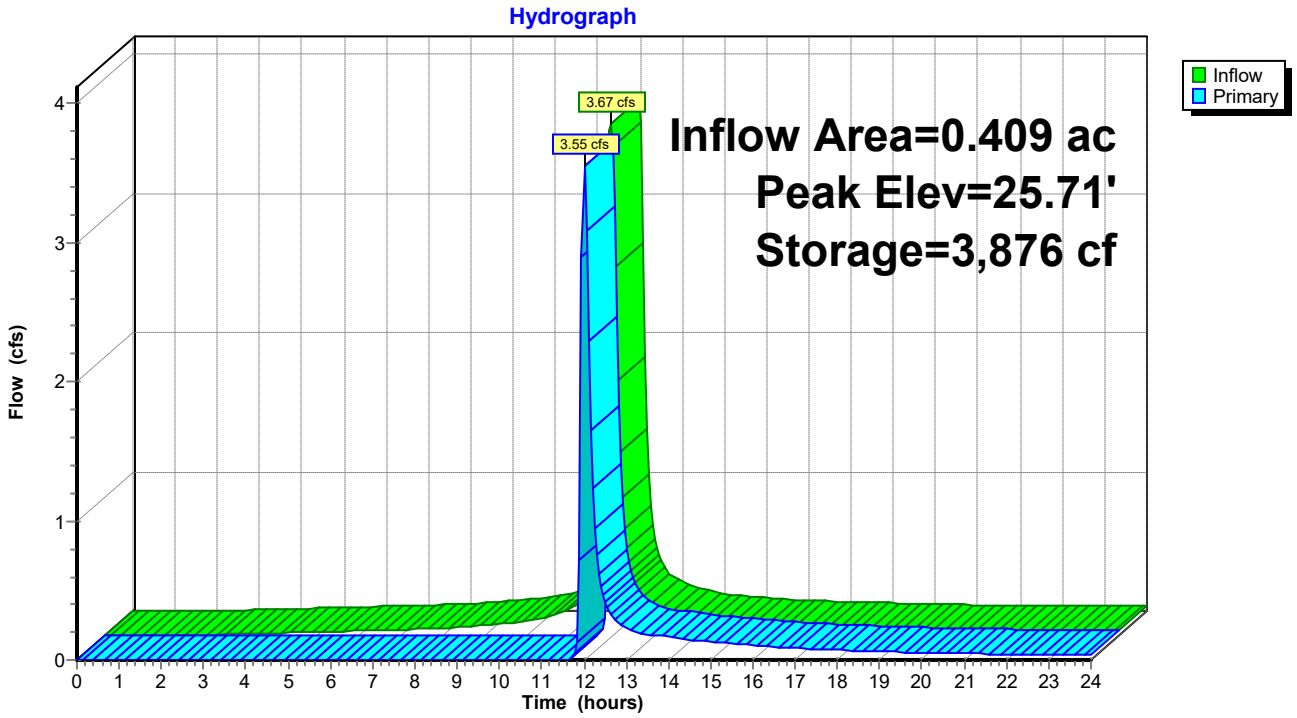
Volume	Invert	Avail.Storage	Storage Description
#1	21.99'	4,571 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
21.99	1,196	135.0	0.0	0	0	1,196
22.00	1,196	135.0	40.0	5	5	1,197
23.99	1,196	135.0	40.0	952	957	1,466
24.00	1,196	135.0	100.0	12	969	1,467
25.00	1,786	160.0	100.0	1,481	2,450	2,072
26.00	2,475	185.0	100.0	2,121	4,571	2,780

Device	Routing	Invert	Outlet Devices
#1	Primary	22.00'	**12.0" Round 12" N-12** L= 62.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 22.00' / 20.45' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	25.00'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	25.50'	**10.7' long Rim MD 374.23** 0 End Contraction(s)

Primary OutFlow Max=3.50 cfs @ 12.00 hrs HW=25.70' TW=23.19' (Dynamic Tailwater)
└─**1=12" N-12** (Passes 3.50 cfs of 5.63 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.27 cfs @ 3.20 fps)
  └─**3=Rim MD 374.23** (Weir Controls 3.24 cfs @ 1.48 fps)

Pond MBR-4: Micro-Bioretention #4



Stage-Area-Storage for Pond MBR-4: Micro-Bioretention #4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
21.99	1,196	0
22.04	1,196	24
22.09	1,196	48
22.14	1,196	72
22.19	1,196	96
22.24	1,196	120
22.29	1,196	144
22.34	1,196	167
22.39	1,196	191
22.44	1,196	215
22.49	1,196	239
22.54	1,196	263
22.59	1,196	287
22.64	1,196	311
22.69	1,196	335
22.74	1,196	359
22.79	1,196	383
22.84	1,196	407
22.89	1,196	431
22.94	1,196	454
22.99	1,196	478
23.04	1,196	502
23.09	1,196	526
23.14	1,196	550
23.19	1,196	574
23.24	1,196	598
23.29	1,196	622
23.34	1,196	646
23.39	1,196	670
23.44	1,196	694
23.49	1,196	718
23.54	1,196	742
23.59	1,196	765
23.64	1,196	789
23.69	1,196	813
23.74	1,196	837
23.79	1,196	861
23.84	1,196	885
23.89	1,196	909
23.94	1,196	933
23.99	1,196	957
24.04	1,217	1,017
24.09	1,244	1,079
24.14	1,272	1,141
24.19	1,299	1,206
24.24	1,327	1,271
24.29	1,355	1,338
24.34	1,383	1,407
24.39	1,412	1,477
24.44	1,441	1,548
24.49	1,470	1,621
24.54	1,500	1,695
24.59	1,530	1,771
24.64	1,560	1,848
24.69	1,590	1,927
24.74	1,621	2,007
24.79	1,652	2,089
24.84	1,684	2,172
24.89	1,715	2,257
24.94	1,747	2,344
24.99	1,780	2,432
25.04	1,811	2,522
25.09	1,843	2,613
25.14	1,876	2,706
25.19	1,908	2,801
25.24	1,941	2,897
25.29	1,974	2,995
25.34	2,008	3,094
25.39	2,041	3,196
25.44	2,075	3,299
25.49	2,110	3,403
25.54	2,144	3,510
25.59	2,179	3,618
25.64	2,214	3,727
25.69	2,249	3,839
25.74	2,285	3,952
25.79	2,321	4,068
25.84	2,357	4,185
25.89	2,394	4,303
25.94	2,430	4,424
25.99	**2,468**	**4,546**

Summary for Pond MBR-5: Access Road Micro-Bioretention #5

Inflow Area = 0.460 ac, 71.74% Impervious, Inflow Depth > 6.76" for 100-yr event
Inflow = 4.13 cfs @ 11.97 hrs, Volume= 0.259 af
Outflow = 1.26 cfs @ 12.01 hrs, Volume= 0.170 af, Atten= 70%, Lag= 2.5 min
Primary = 1.26 cfs @ 12.01 hrs, Volume= 0.170 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.92' @ 12.22 hrs Surf.Area= 3,368 sf Storage= 5,996 cf

Plug-Flow detention time= 194.6 min calculated for 0.170 af (66% of inflow)
Center-of-Mass det. time= 95.4 min (859.7 - 764.2)

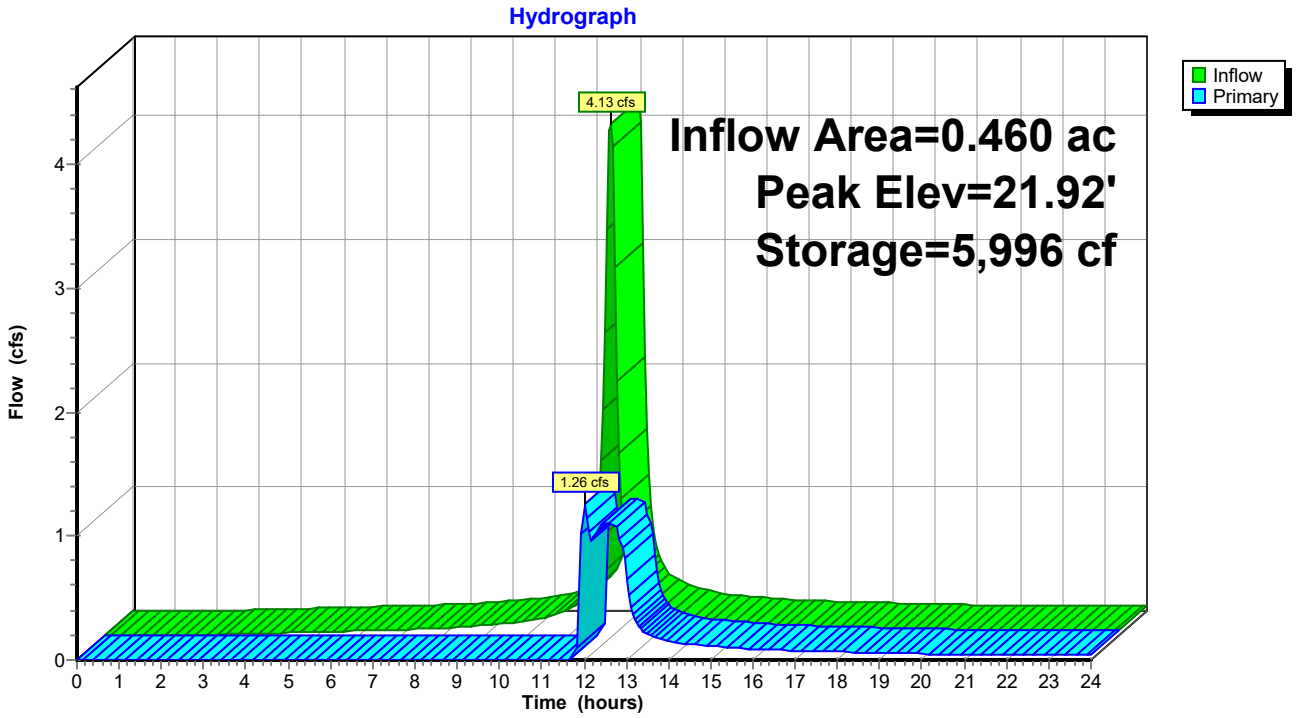
Volume	Invert	Avail.Storage	Storage Description
#1	18.19'	6,964 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
18.19	1,878	195.0	0.0	0	0	1,878
18.20	1,878	195.0	40.0	8	8	1,880
20.19	1,878	195.0	40.0	1,495	1,502	2,268
20.20	1,878	195.0	100.0	19	1,521	2,270
21.20	2,708	220.0	100.0	2,280	3,802	3,121
22.20	3,639	245.0	100.0	3,162	6,964	4,075

Device	Routing	Invert	Outlet Devices
#1	Primary	19.50'	**6.0" Round 6" PVC X 2.00** L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.50' / 18.70' S= 0.0267 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.97 cfs @ 12.01 hrs HW=21.68' TW=21.35' (Dynamic Tailwater)
└─**1=6" PVC** (Inlet Controls 0.97 cfs @ 2.46 fps)
  └─**2=6" Atrium Grate** (Passes 0.97 cfs of 1.09 cfs potential flow)

Pond MBR-5: Access Road Micro-Bioretention #5



Stage-Area-Storage for Pond MBR-5: Access Road Micro-Bioretention #5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.19	1,878	0
18.24	1,878	38
18.29	1,878	75
18.34	1,878	113
18.39	1,878	150
18.44	1,878	188
18.49	1,878	225
18.54	1,878	263
18.59	1,878	300
18.64	1,878	338
18.69	1,878	376
18.74	1,878	413
18.79	1,878	451
18.84	1,878	488
18.89	1,878	526
18.94	1,878	563
18.99	1,878	601
19.04	1,878	639
19.09	1,878	676
19.14	1,878	714
19.19	1,878	751
19.24	1,878	789
19.29	1,878	826
19.34	1,878	864
19.39	1,878	901
19.44	1,878	939
19.49	1,878	977
19.54	1,878	1,014
19.59	1,878	1,052
19.64	1,878	1,089
19.69	1,878	1,127
19.74	1,878	1,164
19.79	1,878	1,202
19.84	1,878	1,239
19.89	1,878	1,277
19.94	1,878	1,315
19.99	1,878	1,352
20.04	1,878	1,390
20.09	1,878	1,427
20.14	1,878	1,465
20.19	1,878	1,502
20.24	1,908	1,597
20.29	1,946	1,693
20.34	1,985	1,792
20.39	2,024	1,892
20.44	2,063	1,994
20.49	2,103	2,098
20.54	2,143	2,204
20.59	2,184	2,312
20.64	2,225	2,423
20.69	2,266	2,535
20.74	2,307	2,649
20.79	2,349	2,766
20.84	2,392	2,884
20.89	2,435	3,005
20.94	2,478	3,128
20.99	2,521	3,253
21.04	2,565	3,380
21.09	2,609	3,509
21.14	2,654	3,641
21.19	2,699	3,775
21.24	2,743	3,911
21.29	2,786	4,049
21.34	2,830	4,189
21.39	2,874	4,332
21.44	2,919	4,477
21.49	2,964	4,624
21.54	3,009	4,773
21.59	3,055	4,925
21.64	3,101	5,079
21.69	3,147	5,235
21.74	3,194	5,393
21.79	3,241	5,554
21.84	3,288	5,717
21.89	3,336	5,883
21.94	3,384	6,051
21.99	3,432	6,221
22.04	3,481	6,394
22.09	3,530	6,569
22.14	3,579	6,747
22.19	**3,629**	**6,927**

Summary for Pond MBR-6: Micro-Bioretention #6

Inflow Area = 0.419 ac, 74.03% Impervious, Inflow Depth > 6.76" for 100-yr event
Inflow = 3.77 cfs @ 11.97 hrs, Volume= 0.236 af
Outflow = 3.64 cfs @ 12.00 hrs, Volume= 0.173 af, Atten= 3%, Lag= 2.0 min
Primary = 3.64 cfs @ 12.00 hrs, Volume= 0.173 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 24.71' @ 12.00 hrs Surf.Area= 2,264 sf Storage= 3,886 cf

Plug-Flow detention time= 182.9 min calculated for 0.173 af (73% of inflow)
Center-of-Mass det. time= 92.6 min (856.9 - 764.2)

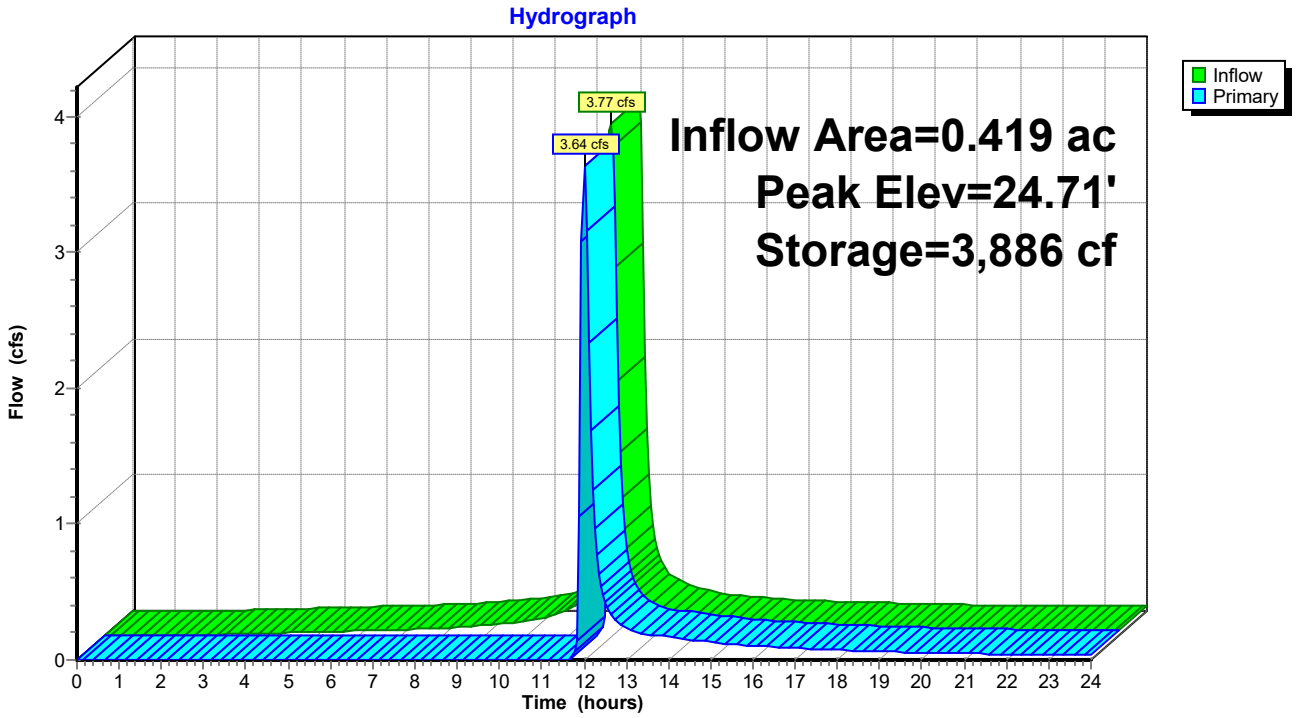
Volume	Invert	Avail.Storage	Storage Description
#1	20.99'	4,571 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.99	1,196	135.0	0.0	0	0	1,196
21.00	1,196	135.0	40.0	5	5	1,197
22.99	1,196	135.0	40.0	952	957	1,466
23.00	1,196	135.0	100.0	12	969	1,467
24.00	1,786	160.0	100.0	1,481	2,450	2,072
25.00	2,475	185.0	100.0	2,121	4,571	2,780

Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	**12.0" Round 12" N-12 Culvert** L= 26.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.00' / 20.45' S= 0.0205 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.00'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	24.50'	**10.7' long Rim MD 374.23** 2 End Contraction(s)

Primary OutFlow Max=3.62 cfs @ 12.00 hrs HW=24.71' TW=23.20' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 3.62 cfs of 4.64 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.27 cfs @ 3.22 fps)
  └─**3=Rim MD 374.23** (Weir Controls 3.35 cfs @ 1.50 fps)

Pond MBR-6: Micro-Bioretention #6



Stage-Area-Storage for Pond MBR-6: Micro-Bioretention #6

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,196	0
21.04	1,196	24
21.09	1,196	48
21.14	1,196	72
21.19	1,196	96
21.24	1,196	120
21.29	1,196	144
21.34	1,196	167
21.39	1,196	191
21.44	1,196	215
21.49	1,196	239
21.54	1,196	263
21.59	1,196	287
21.64	1,196	311
21.69	1,196	335
21.74	1,196	359
21.79	1,196	383
21.84	1,196	407
21.89	1,196	431
21.94	1,196	454
21.99	1,196	478
22.04	1,196	502
22.09	1,196	526
22.14	1,196	550
22.19	1,196	574
22.24	1,196	598
22.29	1,196	622
22.34	1,196	646
22.39	1,196	670
22.44	1,196	694
22.49	1,196	718
22.54	1,196	742
22.59	1,196	765
22.64	1,196	789
22.69	1,196	813
22.74	1,196	837
22.79	1,196	861
22.84	1,196	885
22.89	1,196	909
22.94	1,196	933
22.99	1,196	957
23.04	1,217	1,017
23.09	1,244	1,079
23.14	1,272	1,141
23.19	1,299	1,206
23.24	1,327	1,271
23.29	1,355	1,338
23.34	1,383	1,407
23.39	1,412	1,477
23.44	1,441	1,548
23.49	1,470	1,621
23.54	1,500	1,695
23.59	1,530	1,771
23.64	1,560	1,848
23.69	1,590	1,927
23.74	1,621	2,007
23.79	1,652	2,089
23.84	1,684	2,172
23.89	1,715	2,257
23.94	1,747	2,344
23.99	1,780	2,432
24.04	1,811	2,522
24.09	1,843	2,613
24.14	1,876	2,706
24.19	1,908	2,801
24.24	1,941	2,897
24.29	1,974	2,995
24.34	2,008	3,094
24.39	2,041	3,196
24.44	2,075	3,299
24.49	2,110	3,403
24.54	2,144	3,510
24.59	2,179	3,618
24.64	2,214	3,727
24.69	2,249	3,839
24.74	2,285	3,952
24.79	2,321	4,068
24.84	2,357	4,185
24.89	2,394	4,303
24.94	2,430	4,424
24.99	**2,468**	**4,546**

Summary for Pond MBR-7: Micro-Bioretention #7

Inflow Area = 0.459 ac, 81.96% Impervious, Inflow Depth > 6.99" for 100-yr event
Inflow = 4.18 cfs @ 11.97 hrs, Volume= 0.268 af
Outflow = 1.48 cfs @ 11.98 hrs, Volume= 0.202 af, Atten= 65%, Lag= 0.7 min
Primary = 1.48 cfs @ 11.98 hrs, Volume= 0.202 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 22.39' @ 12.20 hrs Surf.Area= 2,565 sf Storage= 5,333 cf

Plug-Flow detention time= 172.6 min calculated for 0.202 af (76% of inflow)
Center-of-Mass det. time= 85.6 min (841.2 - 755.6)

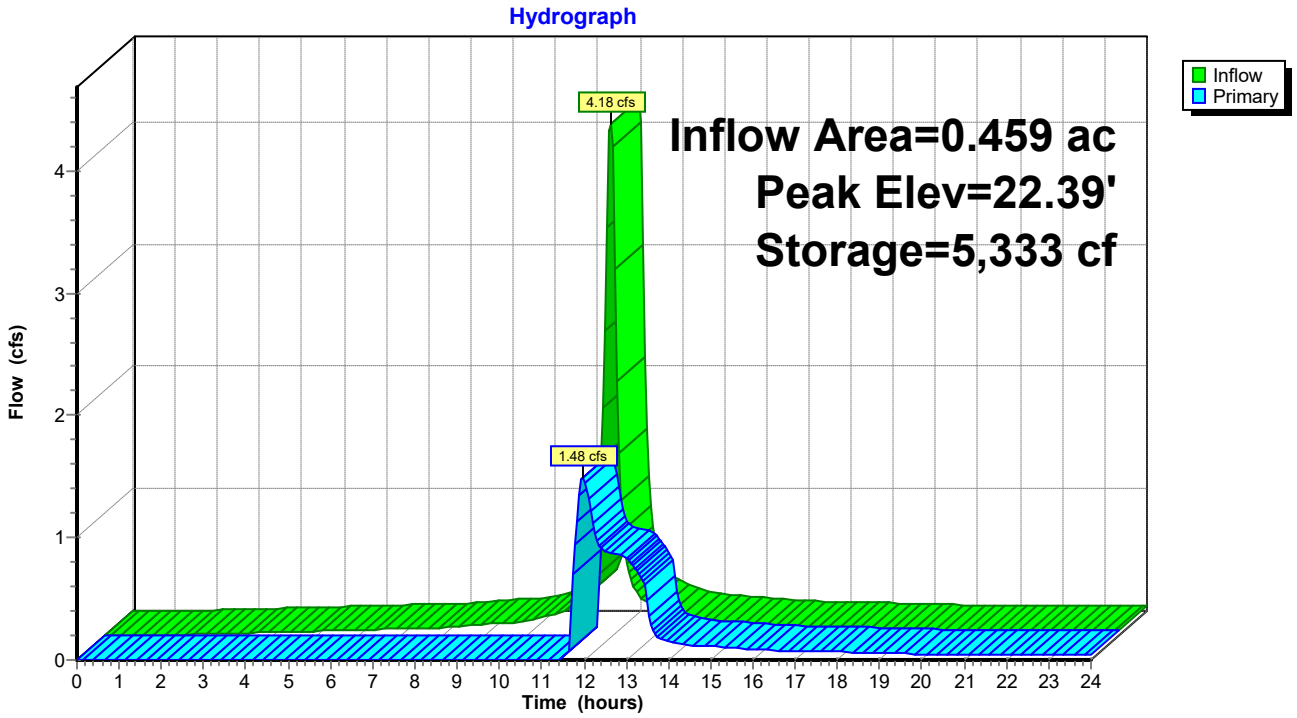
Volume	Invert	Avail.Storage	Storage Description
#1	17.19'	6,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.19	1,136	136.0	0.0	0	0	1,136
17.20	1,136	136.0	40.0	5	5	1,137
20.19	1,136	136.0	40.0	1,359	1,363	1,544
20.20	1,136	136.0	100.0	11	1,375	1,545
21.20	1,730	161.0	100.0	1,423	2,797	2,155
22.20	2,424	186.0	100.0	2,067	4,864	2,866
22.70	2,808	198.0	100.0	1,307	6,171	3,245

Device	Routing	Invert	Outlet Devices
#1	Primary	19.80'	**6.0" Round 6" PVC X 2.00** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.80' / 19.70' S= 0.0050 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.26 cfs @ 11.98 hrs HW=22.02' TW=21.45' (Dynamic Tailwater)
└─**1=6" PVC** (Inlet Controls 1.26 cfs @ 3.21 fps)
  └─**2=6" Atrium Grate** (Passes 1.26 cfs of 1.43 cfs potential flow)

Pond MBR-7: Micro-Bioretention #7



Stage-Area-Storage for Pond MBR-7: Micro-Bioretention #7

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0
17.29	1,136	45
17.39	1,136	91
17.49	1,136	136
17.59	1,136	182
17.69	1,136	227
17.79	1,136	273
17.89	1,136	318
17.99	1,136	364
18.09	1,136	409
18.19	1,136	454
18.29	1,136	500
18.39	1,136	545
18.49	1,136	591
18.59	1,136	636
18.69	1,136	682
18.79	1,136	727
18.89	1,136	772
18.99	1,136	818
19.09	1,136	863
19.19	1,136	909
19.29	1,136	954
19.39	1,136	1,000
19.49	1,136	1,045
19.59	1,136	1,091
19.69	1,136	1,136
19.79	1,136	1,181
19.89	1,136	1,227
19.99	1,136	1,272
20.09	1,136	1,318
20.19	1,136	1,363
20.29	1,184	1,479
20.39	1,239	1,600
20.49	1,295	1,727
20.59	1,353	1,859
20.69	1,412	1,997
20.79	1,471	2,142
20.89	1,533	2,292
20.99	1,595	2,448
21.09	1,659	2,611
21.19	1,723	2,780
21.29	1,788	2,955
21.39	1,853	3,137
21.49	1,919	3,326
21.59	1,987	3,521
21.69	2,055	3,723
21.79	2,125	3,933
21.89	2,196	4,149
21.99	2,269	4,372
22.09	2,342	4,602
22.19	2,416	4,840
22.29	2,491	5,086
22.39	2,567	5,338
22.49	2,643	5,599
22.59	2,721	5,867
22.69	**2,800**	**6,143**

Summary for Pond MBR-8: Micro-Bioretention #8

Inflow Area = 0.449 ac, 79.34% Impervious, Inflow Depth > 6.88" for 100-yr event
Inflow = 4.06 cfs @ 11.97 hrs, Volume= 0.257 af
Outflow = 1.43 cfs @ 11.98 hrs, Volume= 0.192 af, Atten= 65%, Lag= 0.6 min
Primary = 1.43 cfs @ 11.98 hrs, Volume= 0.192 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 22.34' @ 12.21 hrs Surf.Area= 2,528 sf Storage= 5,208 cf

Plug-Flow detention time= 172.8 min calculated for 0.192 af (75% of inflow)
Center-of-Mass det. time= 84.6 min (844.7 - 760.1)

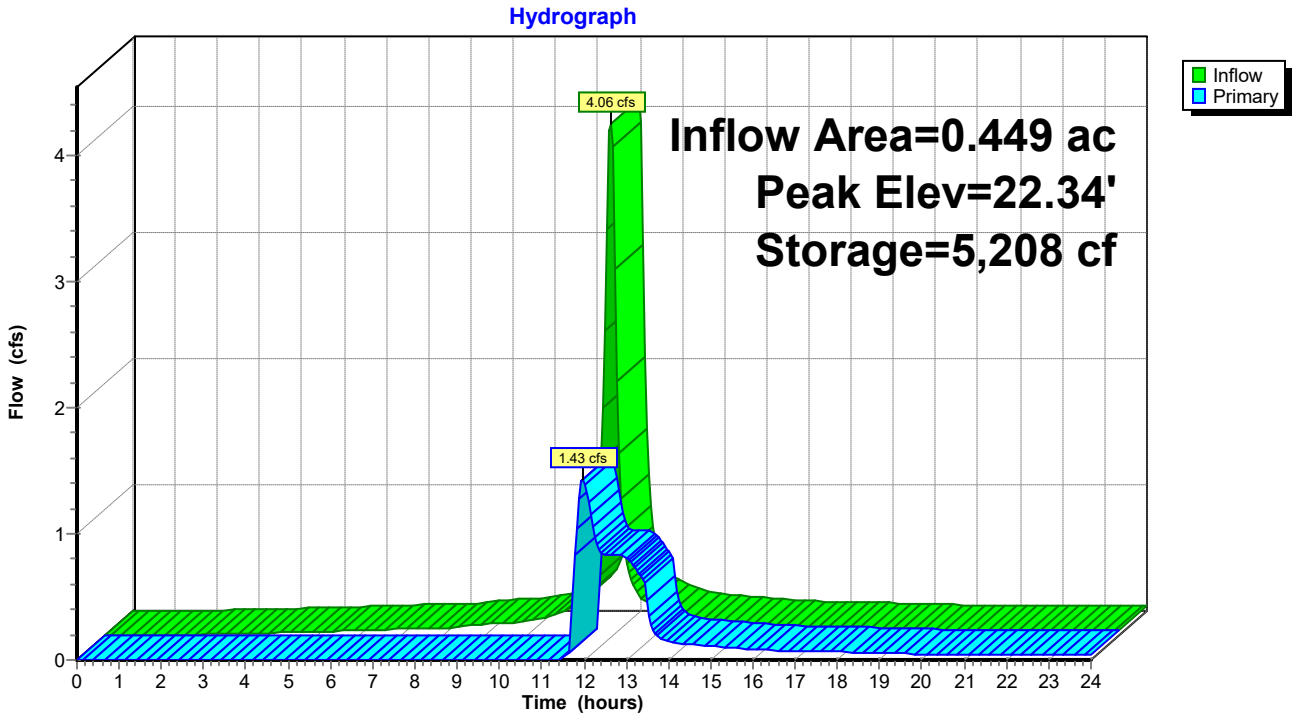
Volume	Invert	Avail.Storage	Storage Description
#1	17.19'	6,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.19	1,136	136.0	0.0	0	0	1,136
17.20	1,136	136.0	40.0	5	5	1,137
20.19	1,136	136.0	40.0	1,359	1,363	1,544
20.20	1,136	136.0	100.0	11	1,375	1,545
21.20	1,730	161.0	100.0	1,423	2,797	2,155
22.20	2,424	186.0	100.0	2,067	4,864	2,866
22.70	2,808	198.0	100.0	1,307	6,171	3,245

Device	Routing	Invert	Outlet Devices
#1	Primary	19.80'	**6.0" Round 6" PVC X 2.00** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.80' / 19.70' S= 0.0050 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.20 cfs @ 11.98 hrs HW=21.96' TW=21.44' (Dynamic Tailwater)
└─**1=6" PVC** (Inlet Controls 1.20 cfs @ 3.06 fps)
  └─**2=6" Atrium Grate** (Passes 1.20 cfs of 1.36 cfs potential flow)

Pond MBR-8: Micro-Bioretention #8



Stage-Area-Storage for Pond MBR-8: Micro-Bioretention #8

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0
17.29	1,136	45
17.39	1,136	91
17.49	1,136	136
17.59	1,136	182
17.69	1,136	227
17.79	1,136	273
17.89	1,136	318
17.99	1,136	364
18.09	1,136	409
18.19	1,136	454
18.29	1,136	500
18.39	1,136	545
18.49	1,136	591
18.59	1,136	636
18.69	1,136	682
18.79	1,136	727
18.89	1,136	772
18.99	1,136	818
19.09	1,136	863
19.19	1,136	909
19.29	1,136	954
19.39	1,136	1,000
19.49	1,136	1,045
19.59	1,136	1,091
19.69	1,136	1,136
19.79	1,136	1,181
19.89	1,136	1,227
19.99	1,136	1,272
20.09	1,136	1,318
20.19	1,136	1,363
20.29	1,184	1,479
20.39	1,239	1,600
20.49	1,295	1,727
20.59	1,353	1,859
20.69	1,412	1,997
20.79	1,471	2,142
20.89	1,533	2,292
20.99	1,595	2,448
21.09	1,659	2,611
21.19	1,723	2,780
21.29	1,788	2,955
21.39	1,853	3,137
21.49	1,919	3,326
21.59	1,987	3,521
21.69	2,055	3,723
21.79	2,125	3,933
21.89	2,196	4,149
21.99	2,269	4,372
22.09	2,342	4,602
22.19	2,416	4,840
22.29	2,491	5,086
22.39	2,567	5,338
22.49	2,643	5,599
22.59	2,721	5,867
22.69	**2,800**	**6,143**

Summary for Pond MBR-9: Micro-Bioretention #9

Inflow Area = 0.464 ac, 82.17% Impervious, Inflow Depth > 6.99" for 100-yr event
Inflow = 4.23 cfs @ 11.97 hrs, Volume= 0.271 af
Outflow = 1.49 cfs @ 11.98 hrs, Volume= 0.205 af, Atten= 65%, Lag= 0.8 min
Primary = 1.49 cfs @ 11.98 hrs, Volume= 0.205 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 22.40' @ 12.20 hrs Surf.Area= 2,576 sf Storage= 5,371 cf

Plug-Flow detention time= 171.7 min calculated for 0.205 af (76% of inflow)
Center-of-Mass det. time= 85.1 min (840.7 - 755.6)

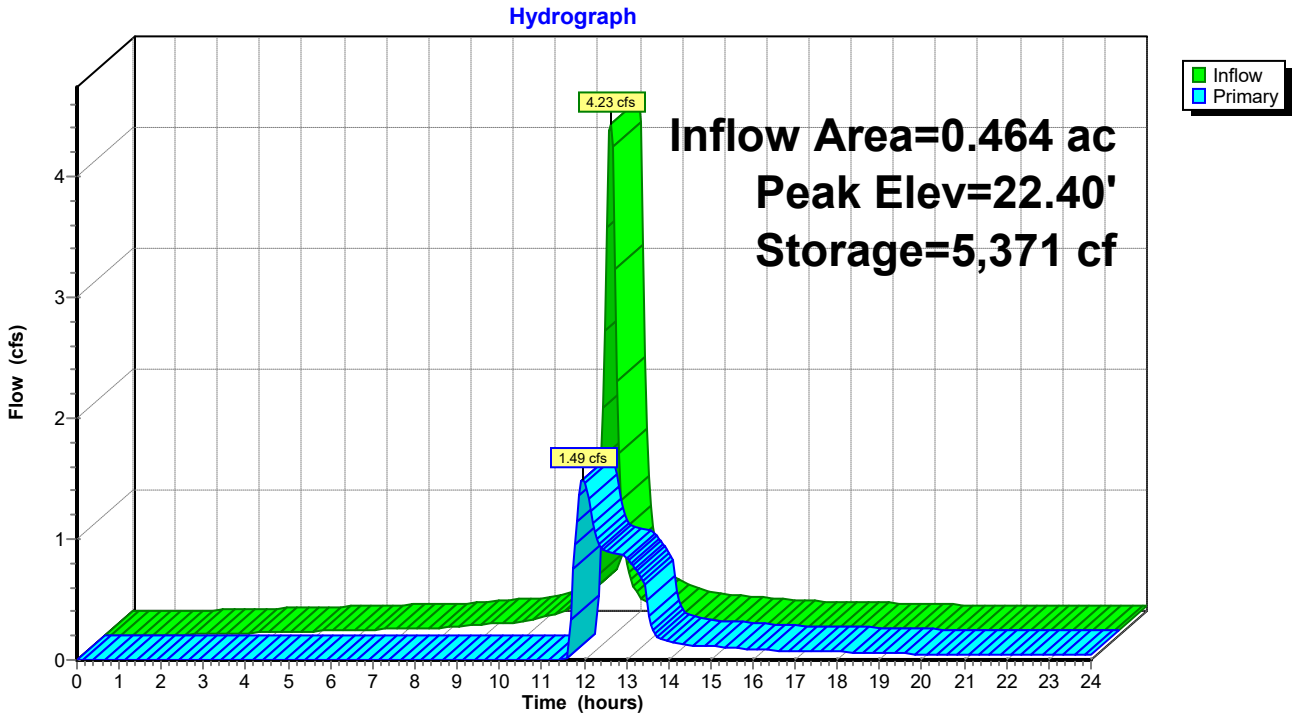
Volume	Invert	Avail.Storage	Storage Description
#1	17.19'	6,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.19	1,136	136.0	0.0	0	0	1,136
17.20	1,136	136.0	40.0	5	5	1,137
20.19	1,136	136.0	40.0	1,359	1,363	1,544
20.20	1,136	136.0	100.0	11	1,375	1,545
21.20	1,730	161.0	100.0	1,423	2,797	2,155
22.20	2,424	186.0	100.0	2,067	4,864	2,866
22.70	2,808	198.0	100.0	1,307	6,171	3,245

Device	Routing	Invert	Outlet Devices
#1	Primary	19.80'	**6.0" Round 6" PVC X 2.00** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 19.80' / 19.70' S= 0.0050 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	21.20'	**6.0" Horiz. 6" Atrium Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.27 cfs @ 11.98 hrs HW=22.04' TW=21.46' (Dynamic Tailwater)
└─**1=6" PVC** (Inlet Controls 1.27 cfs @ 3.24 fps)
  └─**2=6" Atrium Grate** (Passes 1.27 cfs of 1.44 cfs potential flow)

Pond MBR-9: Micro-Bioretention #9



Stage-Area-Storage for Pond MBR-9: Micro-Bioretention #9

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0
17.29	1,136	45
17.39	1,136	91
17.49	1,136	136
17.59	1,136	182
17.69	1,136	227
17.79	1,136	273
17.89	1,136	318
17.99	1,136	364
18.09	1,136	409
18.19	1,136	454
18.29	1,136	500
18.39	1,136	545
18.49	1,136	591
18.59	1,136	636
18.69	1,136	682
18.79	1,136	727
18.89	1,136	772
18.99	1,136	818
19.09	1,136	863
19.19	1,136	909
19.29	1,136	954
19.39	1,136	1,000
19.49	1,136	1,045
19.59	1,136	1,091
19.69	1,136	1,136
19.79	1,136	1,181
19.89	1,136	1,227
19.99	1,136	1,272
20.09	1,136	1,318
20.19	1,136	1,363
20.29	1,184	1,479
20.39	1,239	1,600
20.49	1,295	1,727
20.59	1,353	1,859
20.69	1,412	1,997
20.79	1,471	2,142
20.89	1,533	2,292
20.99	1,595	2,448
21.09	1,659	2,611
21.19	1,723	2,780
21.29	1,788	2,955
21.39	1,853	3,137
21.49	1,919	3,326
21.59	1,987	3,521
21.69	2,055	3,723
21.79	2,125	3,933
21.89	2,196	4,149
21.99	2,269	4,372
22.09	2,342	4,602
22.19	2,416	4,840
22.29	2,491	5,086
22.39	2,567	5,338
22.49	2,643	5,599
22.59	2,721	5,867
22.69	**2,800**	**6,143**

Summary for Pond MH-1: SD Manhole

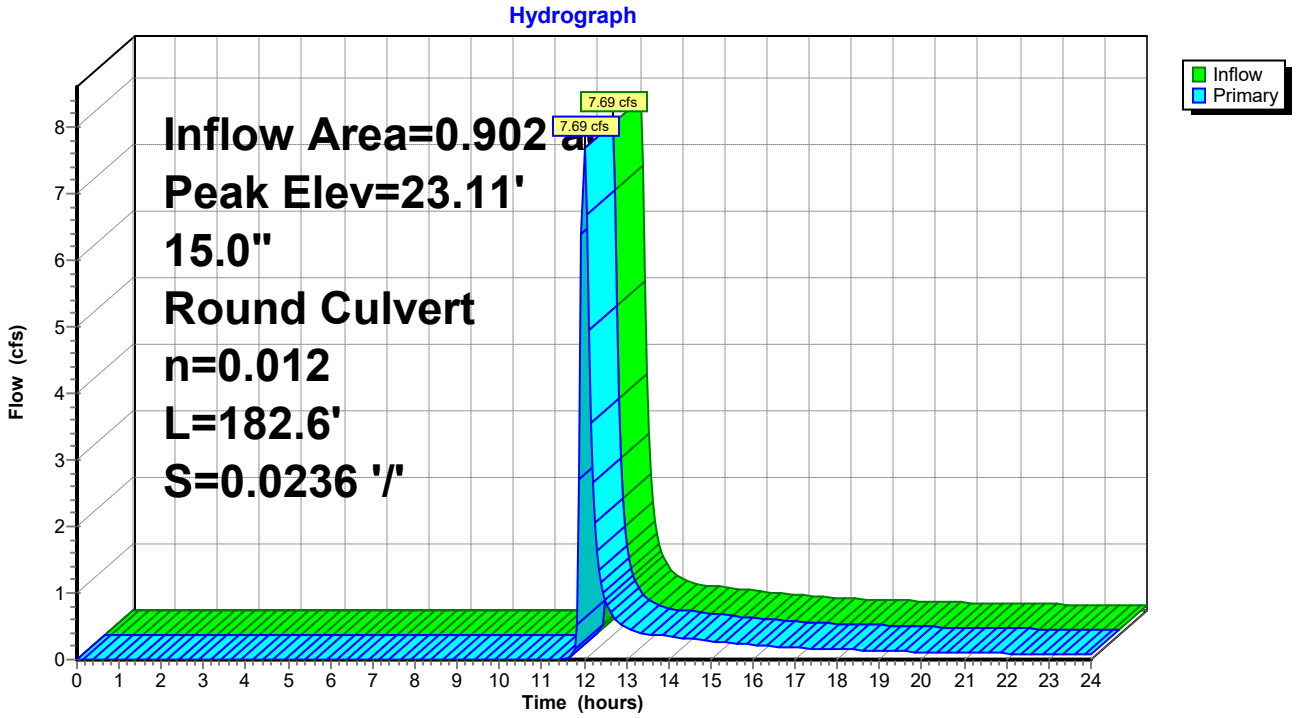
Inflow Area = 0.902 ac, 59.89% Impervious, Inflow Depth > 4.87" for 100-yr event
Inflow = 7.69 cfs @ 12.00 hrs, Volume= 0.366 af
Outflow = 7.69 cfs @ 12.00 hrs, Volume= 0.366 af, Atten= 0%, Lag= 0.0 min
Primary = 7.69 cfs @ 12.00 hrs, Volume= 0.366 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 23.11' @ 12.00 hrs
Flood Elev= 25.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.31'	**15.0" Round 18" N-12** L= 182.6' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 20.31' / 16.00' S= 0.0236 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=7.62 cfs @ 12.00 hrs HW=23.07' TW=0.00' (Dynamic Tailwater)
└─**1=18" N-12** (Inlet Controls 7.62 cfs @ 6.21 fps)

Pond MH-1: SD Manhole



Stage-Area-Storage for Pond MH-1: SD Manhole

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
20.31	**0**	22.86	0
20.36	0	22.91	0
20.41	0	22.96	0
20.46	0	23.01	0
20.51	0	23.06	0
20.56	0	23.11	0
20.61	0	23.16	0
20.66	0	23.21	0
20.71	0	23.26	0
20.76	0	23.31	0
20.81	0	23.36	0
20.86	0	23.41	0
20.91	0	23.46	0
20.96	0	23.51	0
21.01	0	23.56	0
21.06	0	23.61	0
21.11	0	23.66	0
21.16	0	23.71	0
21.21	0	23.76	0
21.26	0	23.81	0
21.31	0	23.86	0
21.36	0	23.91	0
21.41	0	23.96	0
21.46	0	24.01	0
21.51	0	24.06	0
21.56	0	24.11	0
21.61	0	24.16	0
21.66	0	24.21	0
21.71	0	24.26	0
21.76	0	24.31	0
21.81	0	24.36	0
21.86	0	24.41	0
21.91	0	24.46	0
21.96	0	24.51	0
22.01	0	24.56	0
22.06	0	24.61	0
22.11	0	24.66	0
22.16	0	24.71	0
22.21	0	24.76	0
22.26	0	24.81	0
22.31	0	24.86	0
22.36	0	24.91	0
22.41	0	24.96	0
22.46	0		
22.51	0		
22.56	0		
22.61	0		
22.66	0		
22.71	0		
22.76	0		
22.81	0		

Summary for Pond MH-2: SD Manhole

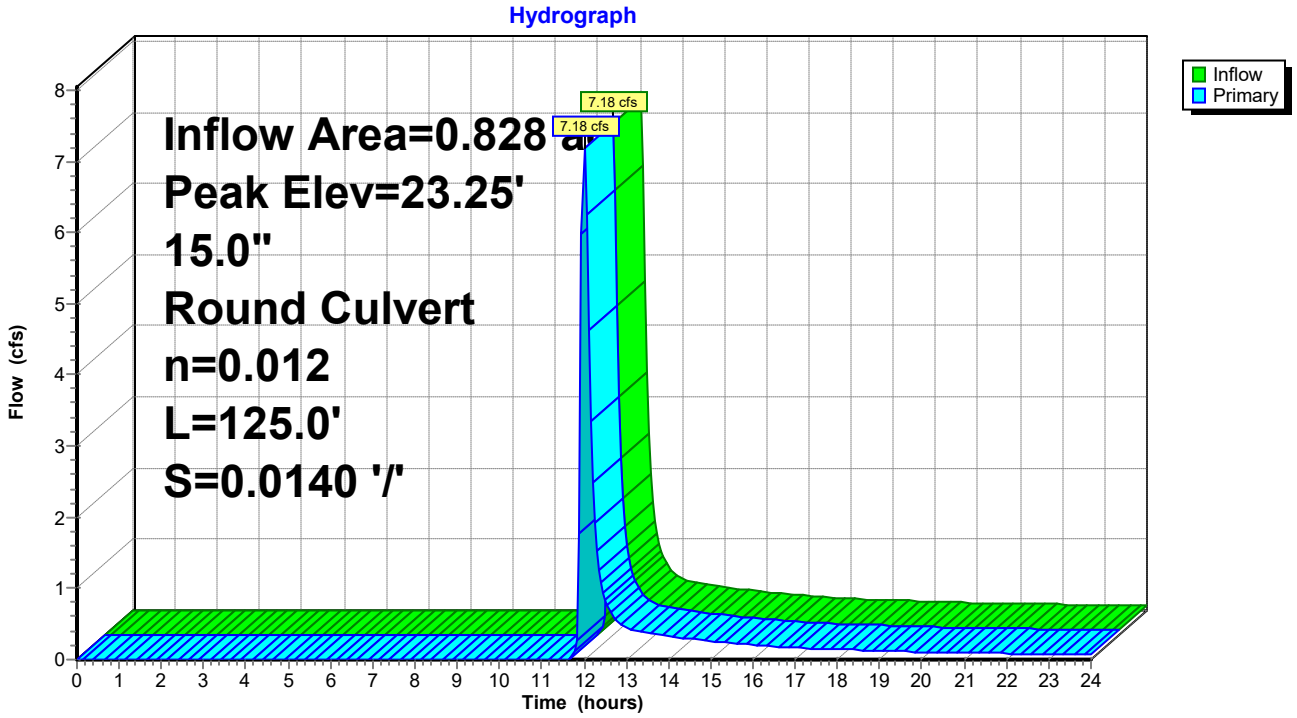
Inflow Area = 0.828 ac, 74.36% Impervious, Inflow Depth > 4.92" for 100-yr event
Inflow = 7.18 cfs @ 12.00 hrs, Volume= 0.340 af
Outflow = 7.18 cfs @ 12.00 hrs, Volume= 0.340 af, Atten= 0%, Lag= 0.0 min
Primary = 7.18 cfs @ 12.00 hrs, Volume= 0.340 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 23.25' @ 12.01 hrs
Flood Elev= 23.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.45'	**15.0" Round 15" N-12 Culvert** L= 125.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.45' / 18.70' S= 0.0140 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=6.75 cfs @ 12.00 hrs HW=23.19' TW=21.33' (Dynamic Tailwater)
└─**1=15" N-12 Culvert** (Outlet Controls 6.75 cfs @ 5.50 fps)

Pond MH-2: SD Manhole



Stage-Area-Storage for Pond MH-2: SD Manhole

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
20.45	**0**	21.47	0	22.49	0
20.47	0	21.49	0	22.51	0
20.49	0	21.51	0	22.53	0
20.51	0	21.53	0	22.55	0
20.53	0	21.55	0	22.57	0
20.55	0	21.57	0	22.59	0
20.57	0	21.59	0	22.61	0
20.59	0	21.61	0	22.63	0
20.61	0	21.63	0	22.65	0
20.63	0	21.65	0	22.67	0
20.65	0	21.67	0	22.69	0
20.67	0	21.69	0	22.71	0
20.69	0	21.71	0	22.73	0
20.71	0	21.73	0	22.75	0
20.73	0	21.75	0	22.77	0
20.75	0	21.77	0	22.79	0
20.77	0	21.79	0	22.81	0
20.79	0	21.81	0	22.83	0
20.81	0	21.83	0	22.85	0
20.83	0	21.85	0	22.87	0
20.85	0	21.87	0	22.89	0
20.87	0	21.89	0	22.91	0
20.89	0	21.91	0	22.93	0
20.91	0	21.93	0	22.95	0
20.93	0	21.95	0	22.97	0
20.95	0	21.97	0	22.99	0
20.97	0	21.99	0	23.01	0
20.99	0	22.01	0	23.03	0
21.01	0	22.03	0	23.05	0
21.03	0	22.05	0	23.07	0
21.05	0	22.07	0	23.09	0
21.07	0	22.09	0	23.11	0
21.09	0	22.11	0	23.13	0
21.11	0	22.13	0	23.15	0
21.13	0	22.15	0	23.17	0
21.15	0	22.17	0	23.19	0
21.17	0	22.19	0	23.21	0
21.19	0	22.21	0	23.23	0
21.21	0	22.23	0	23.25	0
21.23	0	22.25	0	23.27	0
21.25	0	22.27	0	23.29	0
21.27	0	22.29	0	23.31	0
21.29	0	22.31	0	23.33	0
21.31	0	22.33	0	23.35	0
21.33	0	22.35	0	23.37	0
21.35	0	22.37	0	23.39	0
21.37	0	22.39	0	23.41	0
21.39	0	22.41	0	23.43	0
21.41	0	22.43	0	23.45	0
21.43	0	22.45	0	23.47	0
21.45	0	22.47	0	23.49	0

Summary for Pond SGW-1: (Future) Submerged Gravel Wetland

Inflow Area =	4.215 ac, 66.86% Impervious, Inflow Depth > 6.64" for 100-yr event				
Inflow =	37.54 cfs @	11.97 hrs,	Volume=	2.332 af	
Outflow =	26.52 cfs @	12.06 hrs,	Volume=	1.688 af,	Atten= 29%, Lag= 5.5 min
Primary =	9.62 cfs @	12.07 hrs,	Volume=	1.163 af	
Secondary =	16.90 cfs @	12.06 hrs,	Volume=	0.526 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 26.46' @ 12.06 hrs Surf.Area= 18,382 sf Storage= 43,864 cf

Plug-Flow detention time= 213.0 min calculated for 1.685 af (72% of inflow)
Center-of-Mass det. time= 122.7 min (890.8 - 768.1)

Volume	Invert	Avail.Storage	Storage Description
#1	23.50'	44,580 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

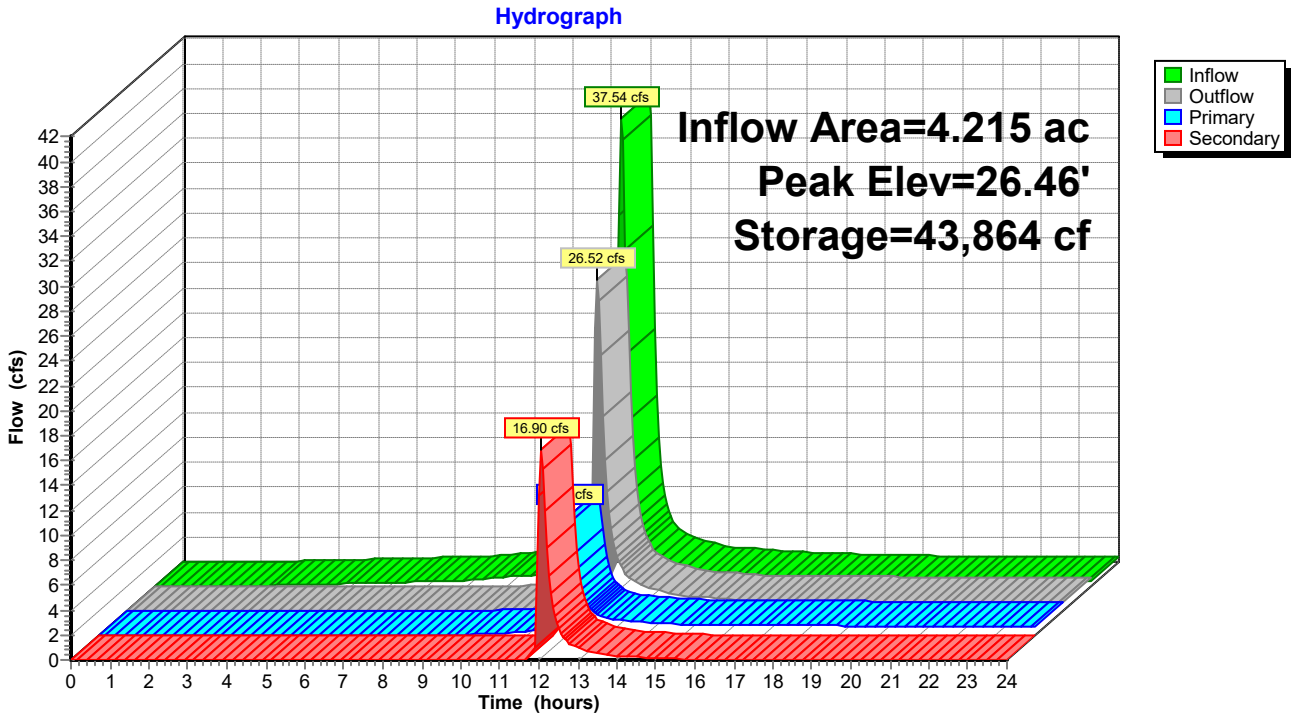
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
23.50	11,511	543.0	0	0	11,511
26.50	18,483	619.0	44,580	44,580	18,752

Device	Routing	Invert	Outlet Devices
#1	Primary	23.00'	**18.0" Round 18" N-12 Culvert** L= 324.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.00' / 21.95' S= 0.0032 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	24.00'	**3.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	26.00'	**10.7' long Rim MD 374.23** 0 End Contraction(s)
#4	Secondary	26.00'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.60 cfs @ 12.07 hrs HW=26.45' TW=0.00' (Dynamic Tailwater)
└─**1=18" N-12 Culvert** (Barrel Controls 9.60 cfs @ 5.43 fps)
  ├─**2=2" Notch** (Passes < 0.89 cfs potential flow)
  └─**3=Rim MD 374.23** (Passes < 10.59 cfs potential flow)

Secondary OutFlow Max=16.48 cfs @ 12.06 hrs HW=26.45' TW=0.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 16.48 cfs @ 1.82 fps)

Pond SGW-1: (Future) Submerged Gravel Wetland



Stage-Area-Storage for Pond SGW-1: (Future) Submerged Gravel Wetland

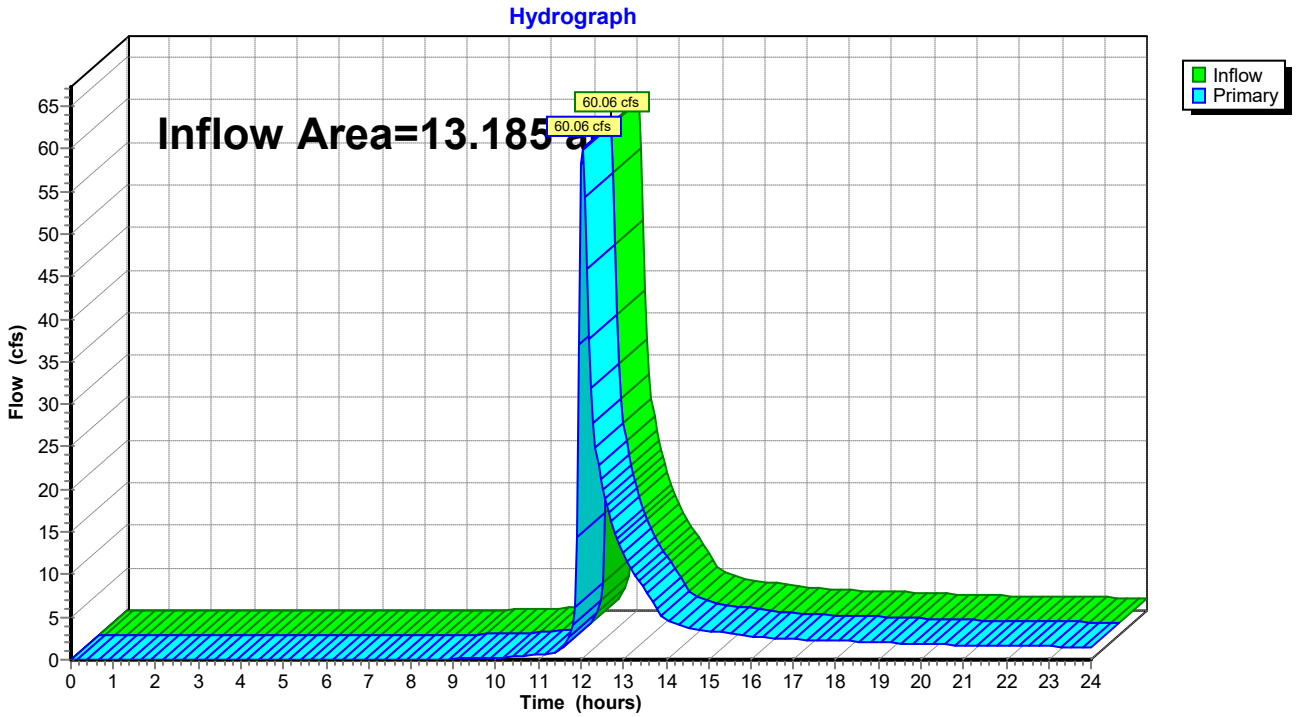
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
23.50	11,511	0
23.55	11,614	578
23.60	11,717	1,161
23.65	11,821	1,750
23.70	11,925	2,343
23.75	12,029	2,942
23.80	12,134	3,546
23.85	12,240	4,156
23.90	12,346	4,770
23.95	12,452	5,390
24.00	12,559	6,016
24.05	12,666	6,646
24.10	12,774	7,282
24.15	12,882	7,924
24.20	12,991	8,570
24.25	13,100	9,223
24.30	13,210	9,880
24.35	13,320	10,544
24.40	13,430	11,212
24.45	13,541	11,887
24.50	13,652	12,567
24.55	13,764	13,252
24.60	13,877	13,943
24.65	13,989	14,640
24.70	14,103	15,342
24.75	14,216	16,050
24.80	14,330	16,764
24.85	14,445	17,483
24.90	14,560	18,208
24.95	14,676	18,939
25.00	14,792	19,676
25.05	14,908	20,418
25.10	15,025	21,166
25.15	15,142	21,921
25.20	15,260	22,681
25.25	15,378	23,447
25.30	15,497	24,218
25.35	15,616	24,996
25.40	15,736	25,780
25.45	15,856	26,570
25.50	15,976	27,366
25.55	16,097	28,168
25.60	16,219	28,975
25.65	16,341	29,789
25.70	16,463	30,610
25.75	16,586	31,436
25.80	16,709	32,268
25.85	16,833	33,107
25.90	16,957	33,951
25.95	17,082	34,802
26.00	17,207	35,660
26.05	17,332	36,523
26.10	17,458	37,393
26.15	17,585	38,269
26.20	17,712	39,151
26.25	17,839	40,040
26.30	17,967	40,935
26.35	18,095	41,837
26.40	18,224	42,745
26.45	18,353	43,659
26.50	**18,483**	**44,580**

Summary for Link 1L: POST

Inflow Area = 13.185 ac, 53.94% Impervious, Inflow Depth > 4.74" for 100-yr event
Inflow = 60.06 cfs @ 12.04 hrs, Volume= 5.211 af
Primary = 60.06 cfs @ 12.04 hrs, Volume= 5.211 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 1L: POST

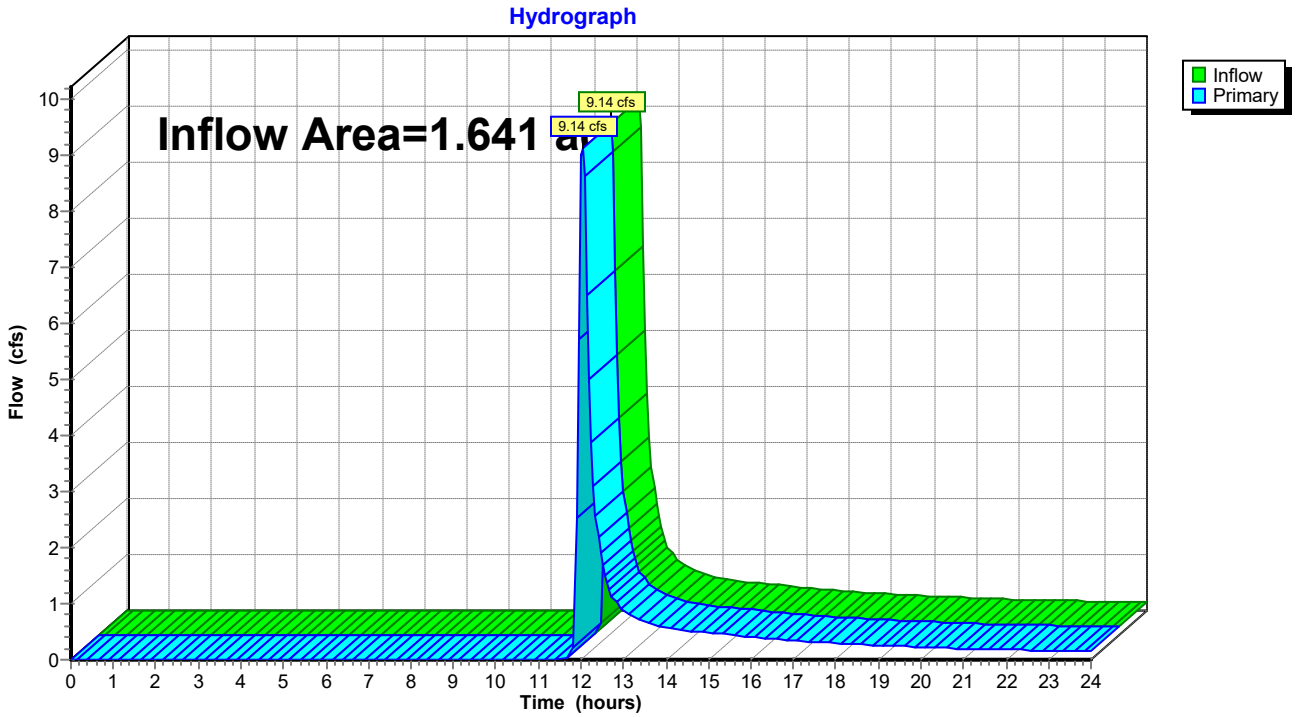


Summary for Link 2L: Existing Swale

Inflow Area = 1.641 ac, 42.66% Impervious, Inflow Depth > 4.37" for 100-yr event
Inflow = 9.14 cfs @ 12.03 hrs, Volume= 0.598 af
Primary = 9.14 cfs @ 12.03 hrs, Volume= 0.598 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 2L: Existing Swale

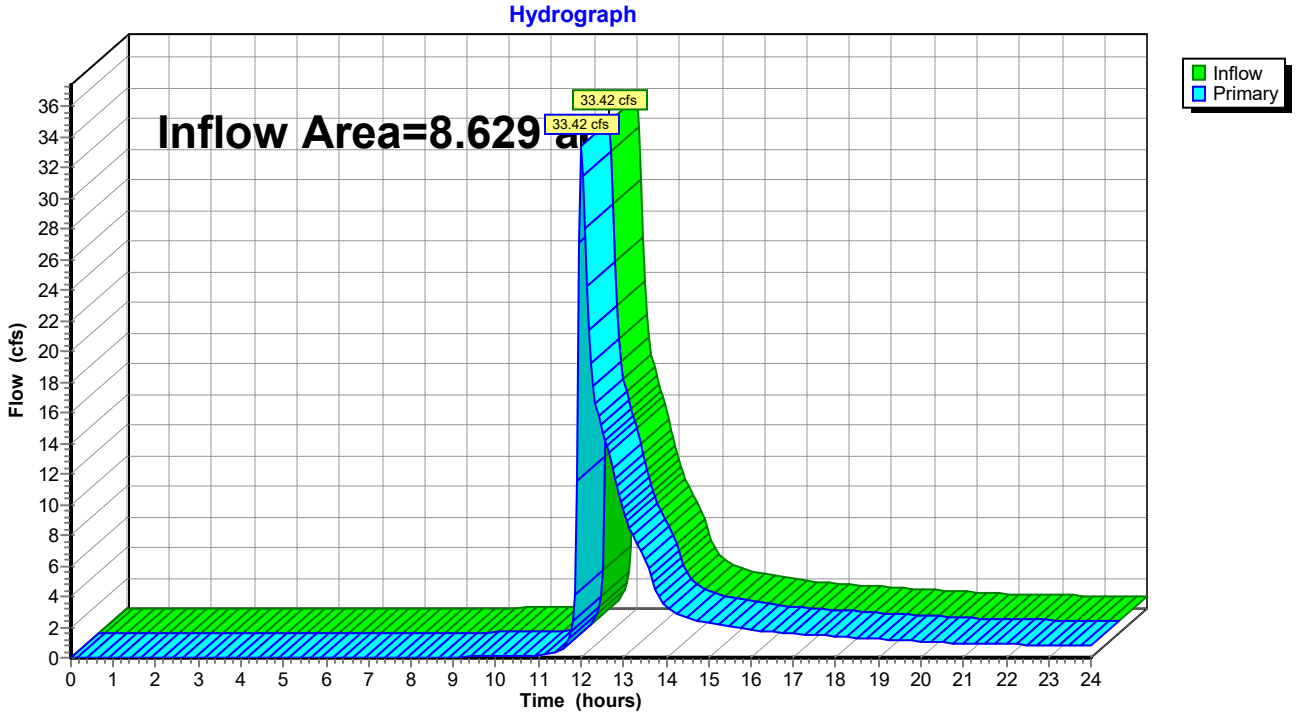


Summary for Link 3L: POI #1

Inflow Area = 8.629 ac, 49.76% Impervious, Inflow Depth > 4.69" for 100-yr event
Inflow = 33.42 cfs @ 12.01 hrs, Volume= 3.373 af
Primary = 33.42 cfs @ 12.01 hrs, Volume= 3.373 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 3L: POI #1

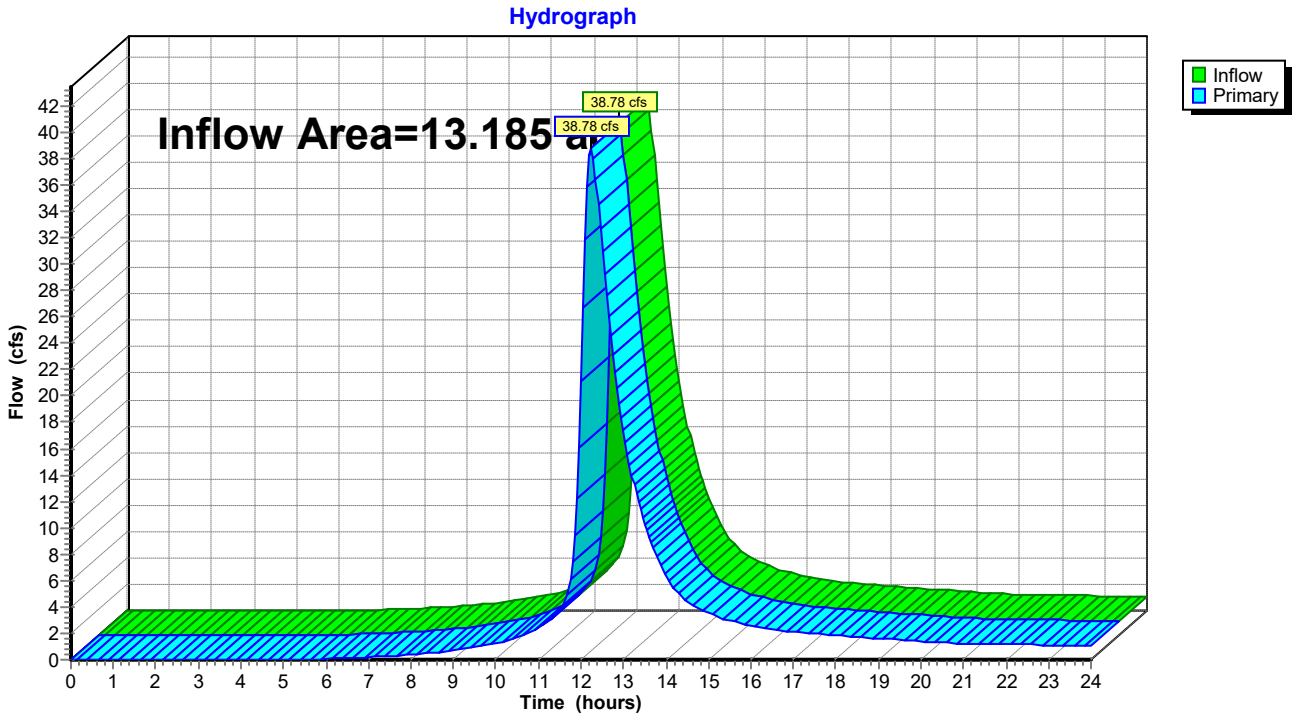


Summary for Link 5L: PRE

Inflow Area = 13.185 ac, 0.00% Impervious, Inflow Depth > 5.16" for 100-yr event
Inflow = 38.78 cfs @ 12.24 hrs, Volume= 5.668 af
Primary = 38.78 cfs @ 12.24 hrs, Volume= 5.668 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 5L: PRE

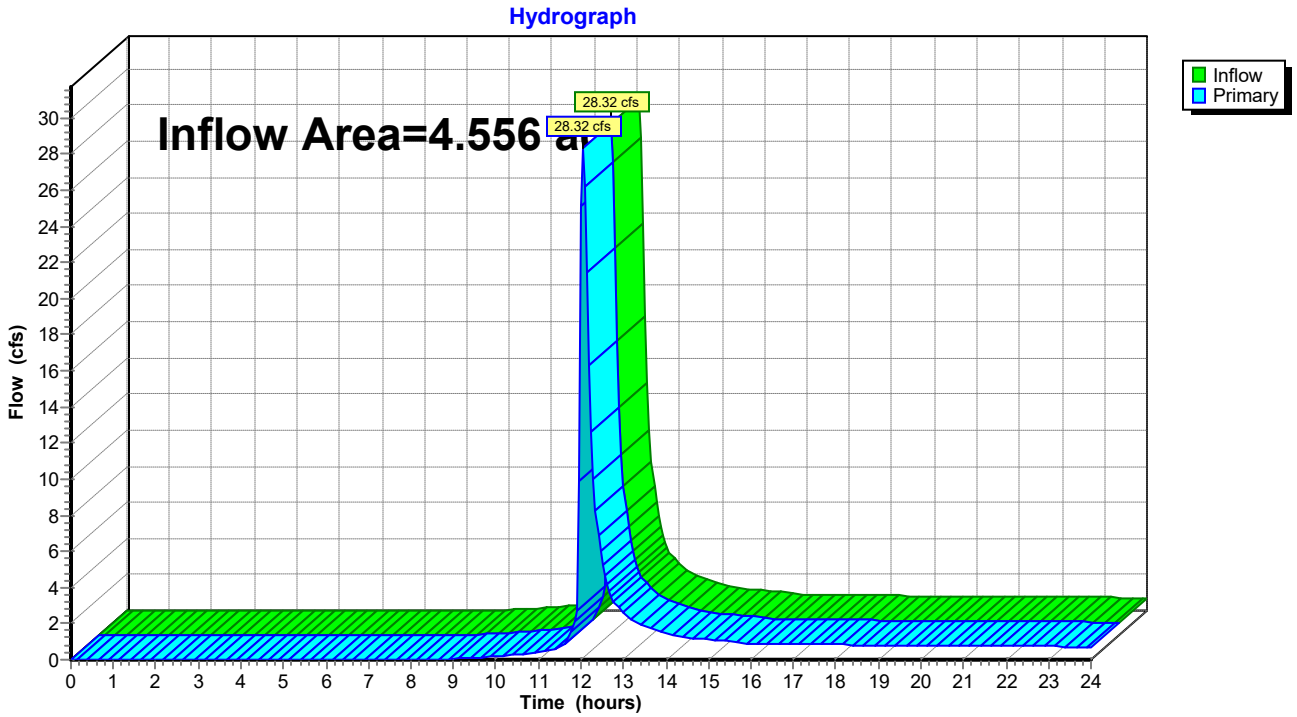


Summary for Link 6L: POI#2

Inflow Area = 4.556 ac, 61.85% Impervious, Inflow Depth > 4.84" for 100-yr event
Inflow = 28.32 cfs @ 12.05 hrs, Volume= 1.837 af
Primary = 28.32 cfs @ 12.05 hrs, Volume= 1.837 af, Atten= 0%, Lag= 0.0 min

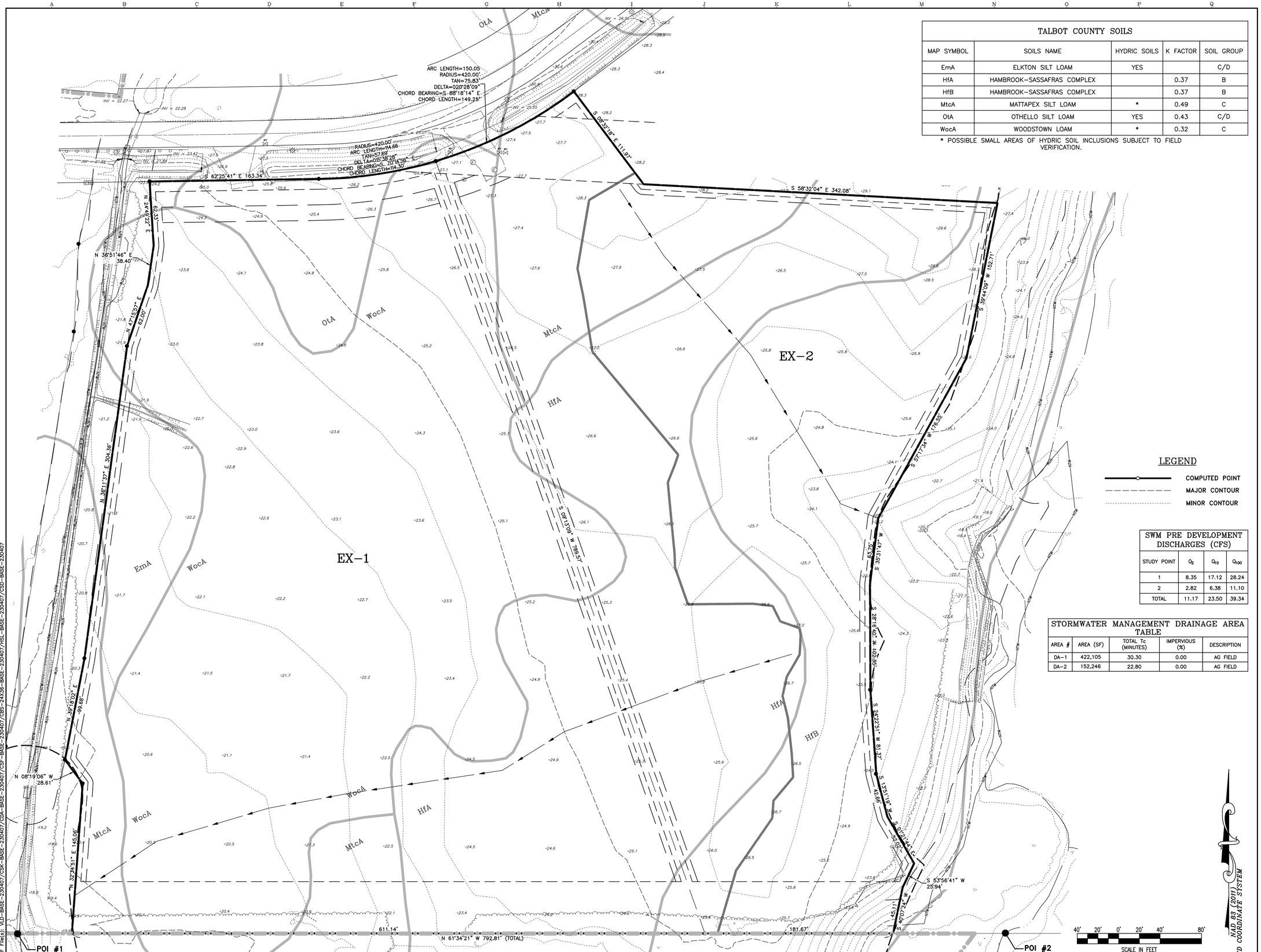
Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 6L: POI#2



APPENDIX C

Drainage Area Maps



TALBOT COUNTY SOILS

MAP SYMBOL	SOILS NAME	HYDRIC SOILS	K FACTOR	SOIL GROUP
EmA	ELKTON SILT LOAM	YES		C/D
HfA	HAMBROOK–SASSAFRAS COMPLEX		0.37	B
HfB	HAMBROOK–SASSAFRAS COMPLEX		0.37	B
MtcA	MATTAPEX SILT LOAM	*	0.49	C
OtA	OTHELLO SILT LOAM	YES	0.43	C/D
WocA	WOODSTOWN LOAM	*	0.32	C

* POSSIBLE SMALL AREAS OF HYDRIC SOIL INCLUSIONS SUBJECT TO FIELD VERIFICATION.

SWM PRE DEVELOPMENT DISCHARGES (CFS)

STUDY POINT	Q_2	Q_{10}	Q_{100}
1	8.35	17.12	28.24
2	2.82	6.38	11.10
TOTAL	11.17	23.50	39.34

STORMWATER MANAGEMENT DRAINAGE AREA TABLE

AREA #	AREA (SF)	TOTAL Tc (MINUTES)	IMPERVIOUS (%)	DESCRIPTION
DA–1	422,105	30.30	0.00	AG FIELD
DA–2	152,246	22.80	0.00	AG FIELD

APPROVED:
PLANS ARE ISSUED FOR REVIEW ONLY
TOWN OF EASTON – TOWN PLANNER DATE
APPROVED:
TOWN OF EASTON – TOWN ENGINEER DATE
APPROVED:
PLANS ARE NOT APPROVED FOR CONSTRUCTION
EASTON UTILITIES – ENGINEER DATE

REVISIONS TO APPROVED PLANS			
No.	DATE	DESCRIPTION	BY

WARNING!!

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Established 1986
Civil Engineers • Land Planning • Land Surveyors
E–mail: general@leinc.com
117 Bay St. Easton, MD 21601 (410) 822–8003
15 Washington St. Cambridge, MD 21613 (410) 221–0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758–2095

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 23152 , Expiration Date: 7/5/2025.

SEAL
STATE OF MARYLAND
BRIAN E. CHESNEY
No. 23152
PROFESSIONAL ENGINEER
DATE

EXISTING CONDITIONS DRAINAGE AREA MAP

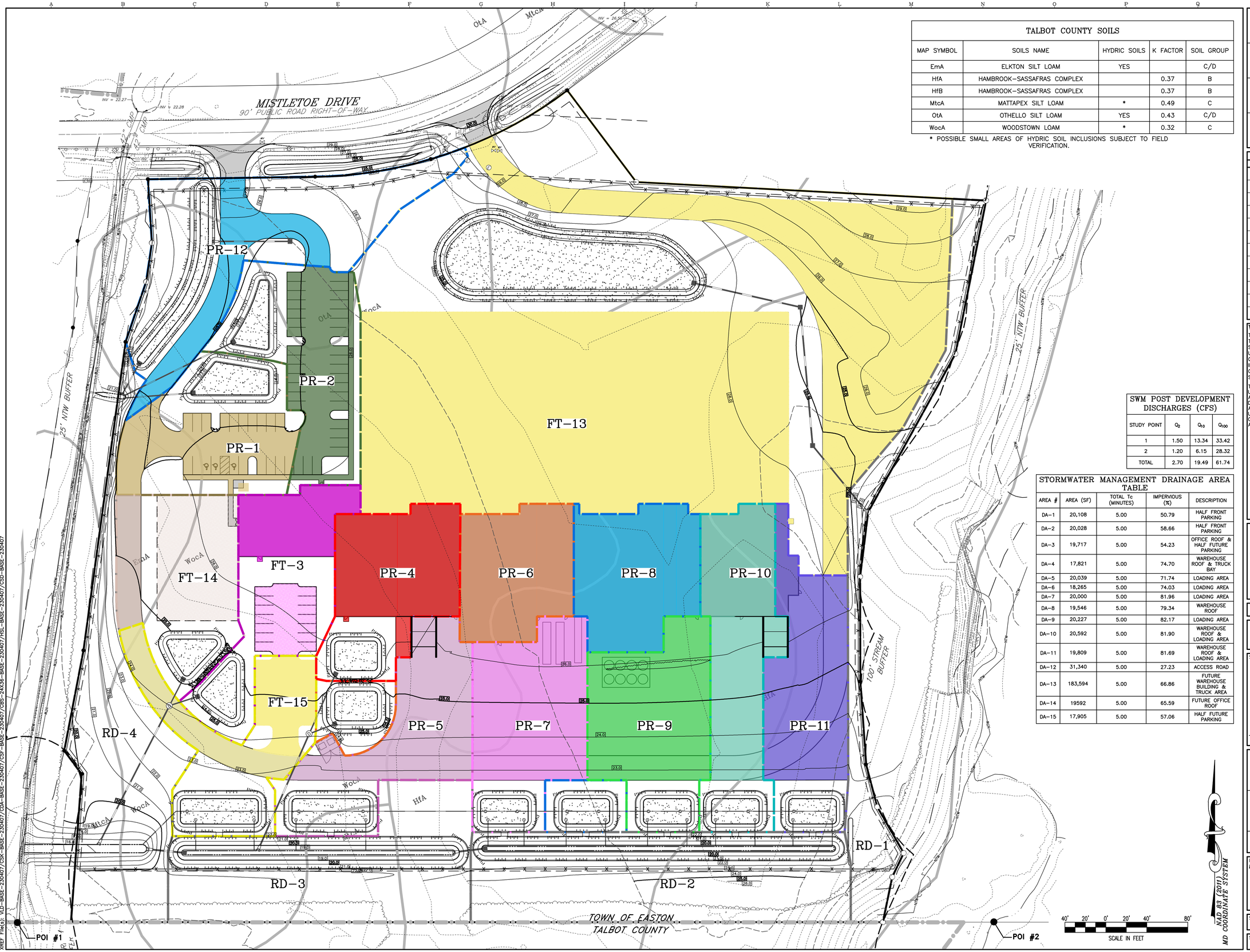
VETAGRO
LIKE NO ONE ELSE

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 25 GRID 22 PARCEL 138 LOTS 2 & 3

ISSUED/REVISED FOR:	DATE:	BY:
AGENCY REVIEW (ESDR)	11/01/23	BCE

SHEET No. 1 OF 2
JOB No. 230407
SCALE: AS NOTED
FILE No. A037

Date: 10/31/2023 – 5:28am User: achosta Project Manager: BCE
Drawing Path: J:\2023\0400\230407\Civil3D–230407\Dwg\Plots\CDA–PLTS–230407.dwg | 1 OF 2
XREF File(s): VLD–BASE–230407/CSK–BASE–230407/CDA–BASE–230407/CSF–BASE–230407/CBS–24X36–BASE–230407/HSL–BASE–230407/CSD–BASE–230407



TALBOT COUNTY SOILS

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HfB	HAMBROOK–SASSAFRAS COMPLEX		0.37	B
MtcA	MATTAPEX SILT LOAM	*	0.49	C
OtA	OTHELLO SILT LOAM	YES	0.43	C/D
WocA	WOODSTOWN LOAM	*	0.32	C

* POSSIBLE SMALL AREAS OF HYDRIC SOIL INCLUSIONS SUBJECT TO FIELD VERIFICATION.

SWM POST DEVELOPMENT DISCHARGES (CFS)

STUDY POINT	Q_2	Q_{10}	Q_{100}
1	1.50	13.34	33.42
2	1.20	6.15	28.32
TOTAL	2.70	19.49	61.74

STORMWATER MANAGEMENT DRAINAGE AREA TABLE

AREA #	AREA (SF)	TOTAL Tc (MINUTES)	IMPERVIOUS (%)	DESCRIPTION
DA–1	20,108	5.00	50.79	HALF FRONT PARKING
DA–2	20,028	5.00	58.66	HALF FRONT PARKING
DA–3	19,717	5.00	54.23	OFFICE ROOF & HALF FUTURE PARKING
DA–4	17,821	5.00	74.70	WAREHOUSE ROOF & TRUCK BAY
DA–5	20,039	5.00	71.74	LOADING AREA
DA–6	18,265	5.00	74.03	LOADING AREA
DA–7	20,000	5.00	81.96	LOADING AREA
DA–8	19,546	5.00	79.34	WAREHOUSE ROOF
DA–9	20,227	5.00	82.17	LOADING AREA
DA–10	20,592	5.00	81.90	WAREHOUSE ROOF & LOADING AREA
DA–11	19,809	5.00	81.69	WAREHOUSE ROOF & LOADING AREA
DA–12	31,340	5.00	27.23	ACCESS ROAD
DA–13	183,594	5.00	66.86	FUTURE WAREHOUSE BUILDING & TRUCK AREA
DA–14	19592	5.00	65.59	FUTURE OFFICE ROOF
DA–15	17,905	5.00	57.06	HALF FUTURE PARKING

APPROVED:
PLANS ARE ISSUED FOR REVIEW ONLY
TOWN OF EASTON – TOWN PLANNER DATE
APPROVED:
TOWN OF EASTON – TOWN ENGINEER DATE
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PLANS ARE NOT APPROVED FOR CONSTRUCTION
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REVISIONS TO APPROVED PLANS

No.	DATE	DESCRIPTION	BY

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15 Washington St. Cambridge, MD 21613 (410) 221–0818
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PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 23152 , Expiration Date: 7/5/2025.

SEAL
STATE OF MARYLAND TIMOTHY C. BEVARD No. 23152 PROFESSIONAL ENGINEER
DATE

POST–DEVELOPMENT DRAINAGE AREA MAP

VETAGRO
LIKE NO ONE ELSE

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 25 GRID 22 PARCEL 138 LOTS 2 & 3

ISSUED/REVISED FOR: DATE: BY:
AGENCY REVIEW (ESDR) 11/01/23 BCE

SHEET No. 1 OF 2
JOB No. 230407
SCALE: AS NOTED
FILE No. A037

Date: 10/31/2023 – 5:28pm User: achasta Project Manager: BCE
Drawing Path: J:\2023\0400\230407\Civil3D–230407\Dwg\Plots\CDA–PLTS–230407.dwg | 2 of 2
XREF File(s): VLD–BASE–230407/CSK–BASE–230407/CDA–BASE–230407/CSF–BASE–230407/CBS–24X36–BASE–230407/HSL–BASE–230407/CSD–BASE–230407

TOWN OF EASTON

14 South Harrison Street
Easton, Maryland 21601

December 06, 2023

Dear Resident,

The Easton Planning Commission will hold a public meeting on **Thursday, December 21, 2023 at 1:00 p.m**. in the Easton Town Council Chambers located on the second floor of 14 South Harrison Street. The Town of Easton Zoning Ordinance requires that owners of property located within 400 feet of a parcel on which certain types of applications are pending be given notice of upcoming meetings or hearings. If you are a tenant in or an owner of a multi-unit building, please distribute or post this notice in a visible location for all other tenants or owners to view. If you are a tenant of a rental property, please notify the property owner that this notice letter has been distributed to their property. Notice has also been sent to the Star Democrat, a sign has been posted at the subject property and the hearing agenda has been posted on the Town of Easton website: http://eastonmd.gov/.

This letter is sent to inform you that Lane Engineering LLC has filed Application 2023-1069 on behalf of APEG International, INC to request Sketch Site Plan approval of a proposed manufacturing/wholesale building and a 2-story office building with associated site improvements on the properties located at 9158 and 9170 Mistletoe Drive, also known as Tax Map 025, Parcel 0138, Lots 2 & 3.

Copies of the proposed application are on file and available for public review in the Town's Planning Office at 14 South Harrison Street between the hours of 8:30 a.m. and 4:00 p.m., Monday through Friday. **In addition, digital copies will be available for review one week prior to the scheduled meeting via the Town's website at** https://www.eastonmd.gov/129/Agendas-Minutes. If you have any questions regarding this application, please contact the Planning Office at (410) 822-1943 or via email at ssmith@eastonMD.gov.

Samantha N. Smith

Samantha N. Smith, Administrative Specialist
Planning & Zoning Department
410-822-1943 ssmith@eastonMD.gov

APG Media of Chesapeake, LLC **12/04/23**
29088 Airpark Drive
Easton, MD 21601

Phone: Fax:
http://www.chespub.com

Cust. AcctID:		Creation Date:	**12/04/23**
		Ad Date:	**12/06/23**
		Class:	
Name:	**Joanne Drummer**	Ad ID:	
Company:	**TOWN OF EASTON (L)**	Ad Taker:	**AHALL**
Address:	**PO Box 520**	Sales Person:	**503**
	EASTON, MD 21601	Words:	**287**
		Lines:	**47**
		Agate Lines:	**234**
Telephone:	**(410) 822-2525**	Depth:	**6.5**
Email:		Inserts:	**2**
Description:	**Planning Comm Meeting**	Blind Box:	

Other Charges:		Total:	
Discount:			
Surcharge:		Paid Amount:	
Credits:			
Bill Depth:		Amount Due:	

CREDIT CARD DETAILS

PT	CT	CN	Number	Exp.	Amnt.

Publication	Start	Stop	Inserts	Cost
The Star Democrat	12/06/23	12/06/23	1	

Ad Note:

Sign posted on December 5, 2023

Customer Note:

Planning Commission
MEETING AGENDA
Thursday, December 21, 2023 - 1:00 PM
Council Chambers, Easton Town Office
14 S Harrison Street

Please continue to check our website at:
https://eastonmd.gov/129/Agendas-Minutes
for agenda updates

1. **Call to Order**
2. **Approval of Minutes.**
   a. Approval of the Decision Summary from the November 16, 2023 meeting.
   b. Approval of the October 11, 2023 Comprehensive Plan Workshop Summary.
3. **Old Business**
   a. **Applicant:** Rise Up Dover Road LLC
      File No.: 2023-870
      Location: 625 Dover Road
      Tax Map 103, Grid 0EA, Parcel 0990
      Zoning District: R-7A
      Nature of Request: Design review and approval of the graphics and mechanical equipment screening on a previously approved kitchen facility on the existing property located at 625 Dover Road, also known as Tax Map 103, Parcel 0990.
4. **New Business**
   a. **Applicant:** Lane Engineering, LLC
      File No.: 2023 - 1069
      Location: 9158 and 9170 Mistletoe Drive
      Tax Map 025, Grid 0022, Parcel 0138,
      Lots 2 & 3
      Zoning District: I
      Nature of Request: Sketch Site Plan approval of a proposed manufacturing/ wholesale building and a 2-story office building with associated site improvements.
   b. **Applicant:** Shoregate of Cannery Commercial LLC
      File No.: 2023 - 996
      Location: 503 North Street and 108 North East Street
      Tax Map 103, Grid 0EA, Parcel 0753 & 0756, Lot 3 & 4
      Zoning District: BC
      Nature of Request: Sketch Site Plan approval to construct three (3) multifamily residential buildings with a total of 96 units and an amenity building with associated site improvements, including the demolition of an existing garage and storage building.
5. **Discussion Item**
   a. Zoning Requirements for Adult-Use Cannabis Dispensaries.
   b. Continue discussion of the Comprehensive Plan Update.
   c. Continue discussion of Amendments to Zoning Ordinance.
6. **Adjournment.**

3041198 SD 12/6/2023

We Appreciate Your Business!
Thank You Joanne Drummer!

Town of Easton
Planning and Zoning
14 S. Harrison Street Easton, MD 21601 410-822-1943
HISTORIC DISTRICT COMMISSION
CERTIFICATE OF APPROPRIATENESS

Meeting Date:	**10/9/2023**
Application Number:	**2023-996**
Location:	**108 East Avenue**
Applicant:	**Brendan Mullaney Esq. on behalf of Shoregate of Cannery Commercial LLC.**

Request: The applicant is proposing to demolish the existing warehouse located on the property at 108 East Avenue, and to construct a new 1-story amenity building.

Commissioner Pezor moved to approve the application as submitted on September 13, 2023 with the condition that:

> **1) the demolition permit shall not be granted until the applicant receives sketch site plan approval for the associated apartments;**
> **2) the Easton Ice sign shall be placed on either the South or West façade subject to compliance with the Zoning Ordinance's signage regulations; and**
> **3) the exterior siding shall be Smooth Side Hardi.**

Commissioner Greer seconded the motion.

If the scope of work changes and or the materials and methods used are contrary to that understood by the application and any supplemental information provided, the work shall not continue until such time that the Commission is notified and said differences are considered and approved by the Commission.

"A Certificate of Appropriateness shall lapse upon the expiration of the corresponding Building Permit. For applications that require a building permit but for which none is issued, this Certificate of Appropriateness shall lapse six (6) months after issuance. In the event a building permit is not required, the Certificate of Appropriateness shall lapse six (6) months from its issuance if substantial work is not underway. For good cause shown, this period may be extended by the Commission".

Prior to start of work please contact the Building Inspection Department at 410 822 2525 to ensure all required building permits have been obtained. Also, please reach out to the Building Inspection department to ensure your project complies with the Town of Easton's building codes.

Nicholas Johnson — 10/24/2023

Representative, Historic District Commission — Date

TOWN OF EASTON
PLANNING & ZONING
14 S Harrison Street, Easton MD 21601

Date of Hearing: December 21, 2023

4b

PLANNING COMMISSION
PUBLIC HEARING
STAFF REPORT

SUBJECT: **Multi-Family complex on the Lands of Shoregate of Cannery Commercial, LLC**

ELECTION WARD: Ward 1

CRITICAL ACTION DATE: At the pleasure of the Commission

STAFF CONTACTS: Joseph Mayer, Plan Reviewer
Miguel Salinas, Director of Planning and Zoning

APPLICANT: Shoregate of Cannery Commercial, LLC

DOCUMENT CREATED ON: December 11, 2023

PURPOSE: Shoregate of Cannery Commercial, LLC (Applicant), is seeking sketch site plan approval for the construction of three 3-story multifamily residential buildings comprising 110,043 square feet (SF) of gross floor area (GFA) with a total of 96 units. In addition, the Applicant is proposing a one-story amenity building comprising 3,080 SF of GFA. Associated site improvements include the demolition of an existing garage and storage building on the property located at 503 North Street.

RECOMMENDATION: Should the Planning Commission (Commission) approve the sketch site plan, staff recommends approval as submitted.

APPLICATION INFORMATION:	
APPLICANT: Shoregate of Cannery Commercial, LLC	**REPRESENTATIVE:** Lane Engineering, LLC: Brett Ewing Shoregate of Cannery Commercial, LLC
PARCELS/ACREAGE:	

Parcel Information	Acreage
Map 103, Grid 00EA, Parcel 753 Map 103, Grid 0000E, Parcel 756, Lots 3 & 4	3.19

ACCEPTANCE DATE: November 27, 2023	**LOCATION:** 503 North Street & 108 East Avenue
EXISTING ZONING BC PUD Infill Boundary PR Boundary	**EXISTING LAND USE:** Commercial
HISTORIC DISTRICT: Not Applicable for Parcel 756 Applicable for Parcel 753	**FUTURE LAND USE MAP:** Redevelopment Area

CONTEXT:

Location/Site Access – The subject property is located at the corner of North Street and North East Avenue. The site's entrance will be accessed via North Street.

Existing Conditions – The subject property is vacant and can generally be described as approximately 3.19 acres consisting of an open field, an abandoned garage and storage building.

Surrounding Properties

- 504 North Street - BC
- 112 North Park Street - R-10A
- 101, 103, 105 & 107 Parris Lane - R-10A
- 117 Parris Lane - R-7A
- 119 & 129 Pennsylvania Avenue - CB
- 424 & 427 North Street - CB
- 501, 505, 507, 509, 511 & 513 Goldsborough Street - R-7A

***Figure 1**: Vicinity Map*

PROPOSAL: The applicant is proposing to construct three 3-story multi-family buildings with a total of 96 residential units and one amenity building with associated development infrastructure. The three-story buildings will include six (6) studio units, thirty-six (36) one-bedroom units, forty-two (42) two-bedroom units, and twelve (12) three-bedroom units. The current proposed density is 30.09 dwelling units per acre.

BACKGROUND: The subject property received Commission Planned Redevelopment (PR) Overlay District sketch site plan approval for three 3-story apartment buildings with a total of 30 units on February 16, 2017. The project was an expansion of the existing Cannery Apartments located directly to the north of the property. The Commission reviewed and voted 4-0 to approve the sketch planned redevelopment site plan with the following conditions: 1) the applicant shall construct a 6' privacy fence along the entire east and west property line boundaries and the east side fence shall remain outside the 30' wide utility easement, 2) the applicant shall enhance the landscape buffer along the east and west property lines with additional plantings and evergreens, 3) the applicant shall relocate the proposed dumpster to the west side of the project as described at the Commission meeting, 4) the applicant shall provide two access points to the Rails to Trails public area and the access along North Street shall be striped similar to a crosswalk as discussed at the Commission meeting, 5) the plan shall be revised to incorporate landscape islands in front of buildings "1" and "2". *Trees shall be located in parking bays so no more than 1O spaces form an uninterrupted row,* 6) the applicant shall execute a public works agreement or bond for improvements within the Town right-of-way (ROW) in a format acceptable to the Town Attorney, 7) the applicant shall provide community covenants for Town review and the document shall discuss perpetual maintenance of stormwater management (SWM), private roadways and common areas, 8) all easements proposed including but not limited to the shared parking easement along the north property line shall be executed and recorded prior to final approval, and

9) the applicant shall address all staff, staff report and Commission comments prior to Development Plan submittal.

The Applicant returned to the Commission on October 19, 2017. The Commission reviewed and voted 5-0 to modify the February 16, 2017 Planning Commission condition that "The applicant shall provide two access points to the Rails to Trails public area. The access along North Street Shall be striped similar to a crosswalk as discussed at the Planning Commission Meeting.". The modification was approved to only require one access point along the Northern property line as shown in their development site plans

Site Construction Plans were approved on December 29, 2017. Forest Conservation was satisfied for 0.24 acres of afforestation via a fee-in-lieu of $1,045.44.

On November 27, 2023, a PR application was received from new owners Shoregate of Cannery Commercial LLA to revise the previous approval on subject property and also included the property located at 108 East Avenue. On October 9, 2023, the applicant received the Historic District Commission's Certificate of Appropriateness for the demolition of the existing warehouse located on the property at 108 East Avenue and to construct a new 1-story amenity building. The application for the new proposal was heard at the Easton Staff Development Review Committee meeting held on November 22, 2023.

Staff notes that the Applicant has addressed previous Planning Commision conditions: 1) the Applicant proposes to construct a 153' long 6' high privacy fence along the east property line boundary and will remain outside the 30' wide utility easement; there's no proposed 6' high privacy fence on the west side, 2) the Applicant proposes landscaping along the east and west property lines, 3) the proposed dumpster is on the west side of the project, 4) the Applicant is providing an access point to the Rails to Trails public area on the north side of North Avenue, 5) the Site Plan incorporates landscape islands in front of buildings and trees are located in parking bays so no more than 1O spaces form an uninterrupted row, 6) a public works agreement/bond is required for improvements within the Town ROW in a format acceptable to the Town Attorney will submitted prior to the issuance of a Grading Permit, 7) community covenants are designed for single family subdivisions and is not required for multi-family, 8) all easements are required to be recorded prior to recordation of the lot Line Revision Plat and issuance of the Grading Permit, and 9) any comments or conditions from the Planning Commission will need to be addressed prior to the submission of the Development Site Plan review.

OUTSTANDING ISSUES:

There are no outstanding issues.

ZONING ANALYSIS:

A. Purpose

Section 28-501 A.

> ***The purpose of the Planned Redevelopment Overlay District (PR) is to provide a mechanism for the redevelopment, rehabilitation, and general improvement of certain older areas within the Town of Easton that have fallen into a somewhat neglected or dilapidated state or have simply been used for a purpose that no longer serves the health, safety or general welfare of the neighborhood. PR applications may be submitted only if the project is located within the Planned Redevelopment Overlay District. However, this mechanism is optional and shall not be required of all projects located within this zone. Projects not being developed in accordance with PR District standards shall be developed in accordance with the development standards of the underlying base zoning district.***
>
> ***The nature, size, scale or intensity of a proposed use may cause a particular site not to be suitable for a specific PR proposal. Therefore, there is no general presumption that an application for such a use at a particular location is valid, inures to the general benefit of the Town, is compatible with surrounding uses, or is in compliance with the Town's Comprehensive Plan. Instead, each application will be evaluated according to its particular location and the degree to which the developer is willing or able to propose a development plan which ameliorates possible adverse impacts and furthers the goals and objectives of this Section and the Ordinance generally***

Analysis - The current process of the Town of Easton Zoning Ordinance is for the Planning and Zoning Commission to review the material submitted as described in § 28-501.C of the Town Code and shall represent the initial step in the PR review process. Successful applications shall subsequently follow the appropriate steps for the type of project submitted and the applicant shall prepare and submit for review by the Commission a development and a final site plan in accordance with the site plan requirements specified in § 28 – 901.3.B and C of the Town Code and the requirements of the Town of Easton Subdivision Regulations, if applicable.

B. Off-Street Parking

28-1001.3 Parking Requirements

	Use/Activity	Minimum Vehicle Spaces	Maximum Vehicle Spaces	Minimum Bicycle Spaces	Notes
	Residential Buildings				
4	Multifamily	1 per du	2 per du	0.5 per du	

Total Site Parking Required (when not proposed as a PR application):

Multifamily: 1 Space per dwelling unit required-Minimum
96 units x 1 = 96 spaces required-Minimum
2 Space per dwelling unit required-Maximum
96 units x 2 = 192 spaces required-Maximum
Total spaces provided: 110

Bicycle Spaces: 0.5 per dwelling unit required
96 units x 0.5 = 48 bicycle spaces
Total bicycle spaces required: 48

Analysis- There are no minimum off-street parking spaces required within the PR Overlay Zoning District, although the adequacy of parking may be a consideration of site plan review. The Applicant is proposing 110 parking spaces and required bicycle spaces. There are 86 proposed off-street parking spaces and 24 proposed parallel on-street parking spaces along North Street, North East Avenue and Scott's Alley. The multi-family complex has a total of 6 studio apartments (6% of the complex), 36 one-bedroom apartments (37% of the complex), 42 two-bedroom apartments (44% of the complex) and 12 three-bedroom apartments (13% of the complex). The overall proposed parking spaces are 14.58% over the minimum required parking spaces for projects not developed under the PR Overlay Zoning District. The Applicant believes the proposed parking is adequate to support the daily operation of this multi-family complex.

Shoregate of Cannery Commercial, LLC has demonstrated that they can adequately provide parking spaces within the minimum and maximum requirements established in § 28-1001.3.A of the Town Code. Additionally, the Applicant owns the adjacent apartment complex, Cannery Square Apartments, located north of the site which may have room to add parking spaces along the drive aisles.

C. Business Commercial District Development Standards

Table 1. Development Standards

BC Zoning District	Standard	Proposed (Planned Redevelopment Overlay)
Setbacks	Front = 40 feet Side = 10 feet Rear – 30 feet	Front = 15 feet Side = 10 feet Rear – 20 feet
Lot Size (min.)	40,000 square feet	Parcel 756 - 113,648 square feet Parcel 753 - 25,034 square feet
Lot Frontage (min.)	100 feet	Parcel 756 - 239 & 402 feet Parcel 753 - 117 & 213 feet
Building Envelope (min.)	30 feet x 80 feet	Parcel 756 - 231 & 382 feet Parcel 753 - 97 & 178 feet
Lot Coverage (max.)	50% (Lot Area)	Parcel 756 - 32.4% (Lot Area) Parcel 753 - 12.3% (Lot Area)
Height (max.)	35 feet	44 feet +/-

§ 308.2 of the Zoning Ordinance states that development within the Business Commercial District shall also meet these additional requirements:

- ***There shall be no open storage on any lot or open areas, nor shall any products be displayed in open areas. All outside storage shall be adequately screened and***

landscaped in accordance with provisions of Section 28 – 1014 of this Ordinance.

- ***All on-site lighting unless approved otherwise by the Planning and Zoning Commission shall be low cut-off shielded luminaries at 18' height and light shall not shine off-site at levels greater than 1-foot candle.***

- ***All off-street loading and unloading areas shall be screened from view by permanent decorative screens or natural planting, either of which shall be a minimum of eight (8) feet in height, in accordance with the provisions of Section 28 – 1014 of this Ordinance***

- ***All areas not devoted to buildings or parking areas shall be landscaped and maintained in a suitable manner, in accordance with the provisions of Section 28 – 1014 of this Ordinance.***

Analysis - The site falls under the BC - Business Commercial District Area and meets the § 28-308.2 Development Standards.

D. DEVELOPMENT STANDARDS

Section 28-501.B.
Development within the Planned Redevelopment Overlay District shall meet the following requirements:

(1) The area proposed for a planned redevelopment shall be in one (1) ownership, or, if in several ownerships, the proposal shall be filed jointly by all the owners of the property included in the development plan. Applicant's response: *The Property is owned by a single entity.*

(2) The site shall be of a configuration suitable for the development proposed.
Applicant's response: *The site includes an aggregate of 3.19 acres and has direct access to North Street and N. East Avenue. The Property abuts the Cannery Square multifamily development to the north, the Rails to Trails projects to the west, a commercial building and use to the south (along with residences fronting on Goldsborough Street which are across the alley from the amenities building), and residential lots to the east. The planned layout and site design proposed provide for a functional and well-designed residential community. The configuration proposed focuses parking to the interior of the Property and provides for attractive and well-landscaped residential buildings.*

(3) Public water and sewerage shall be available. Applicant's response: *Adequate water and sewer services to serve the proposed Project exist and are adjacent to the Property. The Applicant will provide the utility extensions that are necessary to connect the Project to Town services and will work with Easton Utilities to ensure that all permits and approvals are granted.*

(4) The site shall be located adjacent to adequate transportation facilities capable of serving existing traffic and that are expected to be generated by the proposed development. Applicant's response: *The Project will access from N. East Avenue, North Street, and from the adjacent Cannery Square complex to the north. A Traffic Impact Study ("TIS") prepared by Lenhart Traffic Consulting, Inc. will be submitted to supplement this filing and for the Planning Commission and Town Engineering Department's review. The Maryland State Highway Administration ("SHA ") guidelines recommend that all intersections need to operate at a LOS of " D" or better. The TIS will incorporate all existing traffic flows, will utilize actual traffic count data in the area, and will incorporate traffic impacts from proposed or developing projects in the area. Any required improvements resulting from review of the TIS or Easton Engineering comments will be made to ensure adequate and safe transportation patterns. The existing roads and traffic signaling in the area are adequate to serve the Project and its residents and development of the Project will not place an undue burden on public roadways. The internal driving and parking surfaces serving the Project comply with applicable Town standards.*

(5) The overall residential density of a Planned Redevelopment project shall not exceed forty (40) units per gross residential acre. For the purposes of this subsection, the gross residential area shall include all land within the area intended to be used for residences, residential parking space, and reservation for community recreation and education facilities. Any land mapped as floodway by the Federal Emergency Management Agency, and non-residential uses shall be excluded in computing the gross area. The Planning and Zoning Commission may require a lower density if review of the proposed development indicates that the maximum allowable density is excessive for the surrounding area. Applicant's response: *The Applicant is proposing 96 total units, which is 31 units or 24% under the maximum density of 127 units permitted on the Property.*

(6) For new infill development projects, the setback, lot size, lot coverage, height, and yard requirements shall be established for each individual project by the Planning and Zoning Commission. In establishing these requirements, the Planning and Zoning Commission shall consider such factors as the proposed intensity of the project and the existing character of the neighborhood. Applicant's response: *The Planning Commission can apply, in its discretion, bulk standards such as setbacks and maximum height on a project-by-project basis. The Project proposes: (1) 15 ' front yard setbacks; (2) 10' side yard setbacks, · (3) 15 ' rear yard setbacks, · and (4) 44' maximum height. The Applicant and development team has worked to reduce the number of proposed units such that the buildings proposed are only three (3) stories and the site layout concentrates parking to the interior of the Property. Other site constraints imposed, such as stormwater management, drive aisles, dumpster enclosure, sidewalks, and landscaping, dictate that the most reasonable Project layout is the one proposed for the Project.*

(7) Off-street parking is not required for projects proposed in the Planned Redevelopment Overlay District, although adequacy of parking may be a consideration of site plan review. Applicant's response: *Despite the fact that the Code does not require any parking for the Project, Applicant recognizes that it should not impose unnecessary parking congestion or burden on the Town and nearby residents who may use public parking. Therefore, the Applicant is proposing a total of llO parking spaces to serve the Project, which is fourteen (14) spaces above the ordinarily-prescribed 1:1 parking minimum applicable to multifamily development. The*

Applicant is confident that this design will ensure that parking occurs on the Property. The parking lot and drive aisles internal to the Project are designed to accommodate emergency vehicles, trash trucks, school buses, and delivery trucks.

(8) Sidewalks shall be constructed along any public right-of-way (except for alleys) adjacent to the site along the entire frontage(s) of the property. To the extent practicable, walkways shall be constructed on the site to tie building entrances and/or pedestrian pathway systems into existing or proposed public sidewalk systems. Applicant's response: *The Project design addresses this requirement by proposing sidewalks along the frontage of North Street and N. East Street. Sidewalks on the Property are proposed to ensure ease of access to roadways, apartment buildings, the amenities building, and the Rails to Trails project.*

Applications under the PR Overlay Zoning District for multi-family apartments are exempt from applicable supplemental use standard requirements as specified in § 28-1007.1.14 of the Town Code.

E. Forest Conservation

The Easton Forest Conservation Requirements of the Town Code, Article III, § 31-3.1, Forest Conservation Ordinance, Relevance, states that the requirements are applicable to any person making application for a subdivision, project plan, grading, or sediment and erosion control approval on units of land 40,000 square feet or greater after the effective date of the Ordinance.

Analysis - Required Afforestation on site is 0.47 acres or 20,473.2 square feet. Per the *Easton Forest Conservation Ordinance #718, Article III,* § 31-7.2, Forest Conservation will be addressed via off-site forest retention on the northern portion of Tax Map 103, Parcel 756, Lot 1 (the northern forested section of the existing Cannery Square Apartments property) and shall be placed under a long term protective easement and recorded within the Land Records of Talbot County. Forest Conservation Site Plan approval and recording of the Forest Conservation Easement Agreement is pending.

F. Traffic Impact Analysis

The Traffic Impact Analysis (TIA) was submitted by the applicant on December 4, 2023. The documents prepared by Lenhart Traffic Consulting, Inc. described that the primary access to the multifamily units will be provided with a full movement access point along North Street. A secondary access point will be provided with a connection to and through the Cannery Square Apartments development, located to the north. The amenities building, located on the south side of North Street, is also proposed to be accessed via North Street directly opposite the access to the multifamily units, and also Scotts Alley.

According to the study, the study area limits were agreed to in coordination with the Town of Easton and in conformance with the Maryland State Highway Administration's (SHA) Traffic Impact Study (TIA) Guidelines. Per SHA's Access Permit Manual, the study intersections were

evaluated using the Critical Lane Volume (CLV) operational analysis tool and Highway Capacity Manual (HCM) where all study intersections must maintain a Level of Service D or better to be considered adequate. Study intersections included:

- North Street at the site access
- North Street at North Park Street
- Goldsborough Street at East Avenue
- Goldsborough Street at North Park Street
- U.S. 50 at Goldsborough Street.

Morning and evening peak hour turn movement counts were conducted on November 8 and November 21, 2023. An annual growth rate in traffic of 3% was applied for 3 years to the existing peak hour volumes.

Projected Conditions, including Shoregate at Cannery

Taking into account the proposed 96 units, and using trip generation rates from the ITE Trip Generation Manual, the TIA anticipates that the majority of the site traffic will utilize North Street (as opposed through the Cannery Apartments) due to its more direct access to Goldsborough Street via North East Avenue. In addition, the TIA assumed that 50% of the trips to and from the existing Cannery Square Apartments will divert from its current access to Lomax Street and go through the proposed project to utilize the access along North Street. Further, the TIA assumes diversion of traffic due to the conversion of a segment of Park Street to a one-way (see below).

The CLV analysis indicates that all the study intersections operate at LOS "D" or better under existing, background, and total conditions using the CLV and HCM methodologies and are therefore considered to operate adequately per MDOT SHA and Town of Easton Guidelines. The TIA also indicates minimal impact on street delays at the *unsignalized* study intersections. According to Mike Lenhart of Lenhart Traffic Consulting, INC in an email dated December 7, 2023, the TIA results show that the site generated trips and the diversion traffic described above will add an additional 91 trips during the morning peak hour (with 50 of those trips attributed to the project) and 104 trips during the evening peak hour (with 59 trips attributed to the project). When combined with the existing conditions, this translates to one vehicle every 27 seconds in the morning peak period and one vehicle every 21 seconds in the evening peak period. In addition, the email noted that the proposed development will add 14 vehicles to the Goldsborough Street approach at U.S. 50 in the morning peak hour and 8 vehicles in the evening peak hour; resulting in one vehicle every two to three cycles of the traffic signal.

The TIA noted that an evaluation of sight distance for the southbound N. Park Street approach at its intersection with Goldsborough Street determined that the distance does not meet stopping sight distance for left turns from Park Street onto Goldsborough and cannot maneuver safely through the intersection. The TIA recommends making Park Street a one-way street in the northbound direction between Goldsborough Street and North Street to improve safety at the intersection of N. Park Street and Goldsborough Street. The TIA determined that doing so will not have a significant impact on travel patterns in the surrounding neighborhood (there is very

little southbound traffic on that portion of Park Street) and the existing southbound traffic on that segment of Park Street will be expected to divert to East Avenue.

In the conclusion of the findings contained in the report, it is recommended by Lenhart Traffic Consulting, Inc. that the proposed development be approved. In their letter dated December 14, 2023, the Town of Easton Engineering Department stated that they reviewed the analysis. After reviewing the TIA, they contacted Mr. Lenhart, discussed the conclusions and recommendations and requested additional information that he provided in the aforementioned email. The Department noted that the TIA is Acceptable to the Engineering Department.

POLICY ANALYSIS:

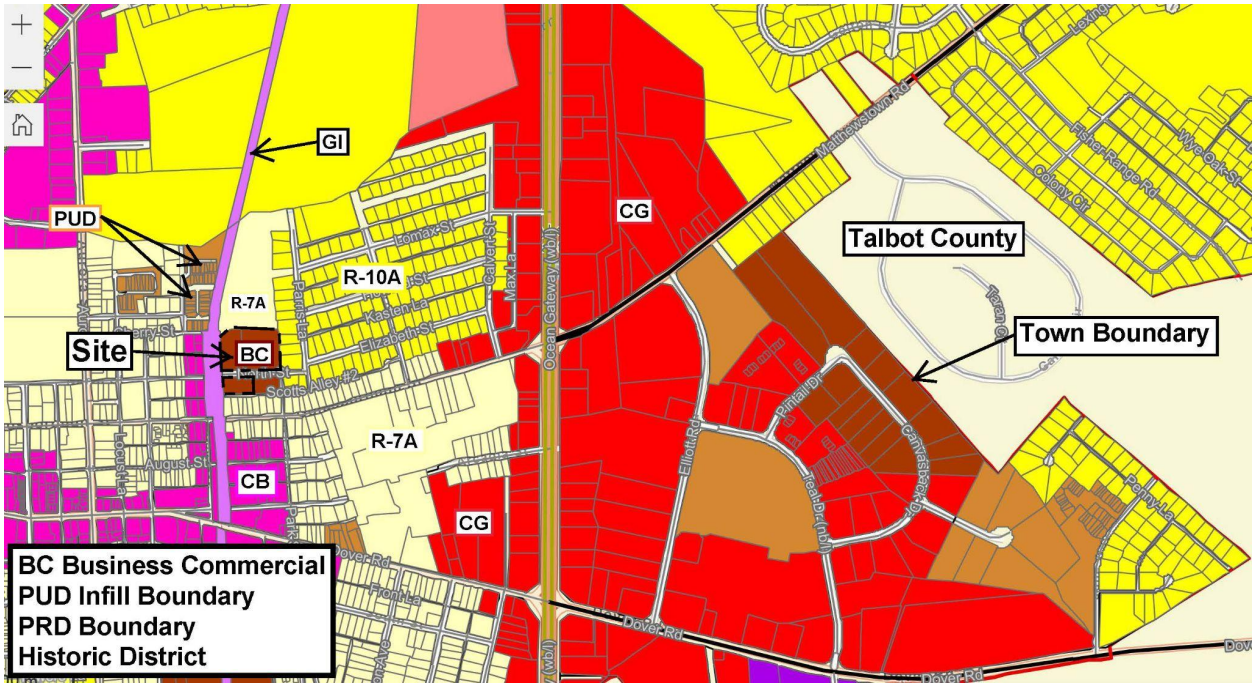

Figure 2: Zoning Map

Section 28-901.2.G of the Town Code states that the submission of a site plan for a proposed use or development activity shall not be approved unless it meets the factors below:

1. The site plan meets the design principles and standards and required improvements set forth in this Ordinance, the Town Comprehensive Plan, the Town of Easton Subdivision Regulations, and other ordinances, regulations, and policies established by the Town of Easton.

Analysis -

Town of Easton 2010 Comprehensive Plan Design Principles (Principle #1) Integrated uses are desirable- Applicant's response: *This development proposal provides residential development adjoining other residential land uses.*

Staff notes that this is an appropriate location for a walkable residential apartment complex within the Town of Easton's Business Commercial District. In addition, the proposed development is under the PR Overlay Zoning District, which includes properties adjacent to Rails-to-Trails to provide a mechanism for the redevelopment, rehabilitation, and general improvement of certain older areas within the Town of Easton, including properties that have fallen into a somewhat neglected or dilapidated state.

(Principle #2) Natural features should determine design – Applicant's response: *No compelling natural features; SWM integrated on site.*

Staff notes that there are no compelling natural features on site.

(Principle #3) Automobiles should not determine design – Applicant's response: *Parking for residents is important. The proposed parking areas have been designed to accommodate the building layout on-site.*

Staff notes that the applicant has provided adequate off-street parking interior to the site and it should be noted that there's proposed on-street parking along North Street, North East Avenue and Scott's Alley.

(Principle #4) Ample Open Space should be provided within & around neighborhoods – Applicant's response: *Usable open space not specifically applicable here; adequate buffering/screening provided. Potential access to Easton Rails to Trails provided.*

Staff notes that open space is not applicable.

(Principle #5) Architecture should respect Easton's Historical Development – Applicant's response: *The application proposes architecture compatible with existing buildings and compatible with existing architecture found in Easton.*

Staff notes that this project received Historic District Approval on 10/09/23 for the demolition of an existing building and the construction of a new amenities building to serve the residents of Shoregate at Cannery.

(Principle #6) Signs should inform but not dominate – Applicant's response: *Signage tasteful, simple and per code.*

Staff notes that any proposed monument sign will require a Signage Application to be submitted prior to installation. Signs should inform but not dominate the area.

(Principle #7) Neighborhoods should contain a diversity of housing types – *Applicant's response: This development proposes a multi-family apartment complex just west of existing single family residential dwellings.*

Staff notes that the multi-family use offers a diverse housing type. The Comprehensive Plan states that there is a demonstrated need for apartment units in Town, and that to the extent that it exists, the apartments are strictly segregated. The plan supports a diversity of housing types to enable people from a broad spectrum of economic levels to live within the same neighborhood.

(Principle #8) Residential neighborhoods should be interesting places – *Applicant's response: This development setting provides and enhances the residential community.*

(Principle #9) Neighborhoods should connect – *Applicant's response: The development proposed will extend the existing Cannery Square Apartment complex to the north.*

Staff notes that the Comprehensive Plan states that older historic areas of Easton are where you find a great variety of lot sizes, configurations, and housing types as opposed to the more recent homogenous subdivisions built over the last 30 years. In addition, the plan states that connected neighborhoods are a fundamental characteristic of the older parts of Easton that are essential to emulate in new development projects for four reasons: 1) to offer multiple travel options, 2) to promote community and increase the opportunities for social interactions and walking between adjacent developments, 3) connected neighborhoods are safer and urban gridded streets promote lower vehicular speeds, and 4) connected neighborhoods are more sustainable and can promote compact, vibrant, mixed-use neighborhoods where living in a mixed-use environment where residents are within walking distance of shops and services results in increased walking and biking.

The Comprehensive Plan's Community Character chapter, related to the role of infill development in Easton's growth strategy, states that infill development can accommodate growth without annexing land. Infill and redevelopment means:

- ***decreased demand for new, undeveloped greenfields***
- ***mobility for those who do not or cannot drive***
- ***it's less expensive to provide services to infill sites versus greenfield sites***
- ***An increased supply of smaller-sized housing units can offer more affordable and lower maintenance housing choices for smaller households***
- ***new opportunities and improved quality of life for in-Town residents,***
- ***savings on energy and the environment,***
- ***development that is consistent with State Smart Growth Policies***

The plan does state that extra attention needs to be given to compatibility and neighborhood impact issues and the plan offers points for consideration with any infill or redevelopment project. These points include: ensure housing types that are compatible with existing types, employ appropriate traffic calming measures, and provide a continuous pedestrian network.

2. The site plan avoids or minimizes adverse impacts upon features (whether on-site or off-site) of historical, cultural or ecological significance.

Analysis - A portion of the proposed site is within the Historic District and has received architectural approval from the Historic District on October 9, 2023. The site is not within the Critical Area. This project would provide ninety-six residential units with improved amenities; adequate parking, stormwater management facilities and landscaping.

3. The proposed use or development activity will not substantially increase traffic hazards due to traffic generated by the proposed use, the location of curb cuts or the layout of internal traffic circulation.

Analysis - The proposed use and activity will not increase traffic hazards in the surrounding area. Adequate off-street and on-street parking is provided.

4. The site plan and the proposed use or uses do not cause any adverse impact upon the health or safety of persons residing or working in the area surrounding the site or upon the character of the neighborhood surrounding the site; and

Analysis - There would be no adverse impacts. The existing property is located within a Business Commercial Zoned District. Proposed use would provide a multi-family use with associated parking, stormwater management facilities and landscaping.

5. ***The site plan improves the water quality of the Chesapeake Bay or its tributaries.***

Analysis - The proposed site would meet required design practices for stormwater management.

RECOMMENDED CONDITIONS:

Staff has no recommended conditions.

DRAFT MOTIONS:

1. I move that the Planning Commission approve the sketch site plan as submitted.

OR

2. I move that the Planning Commission forward the application to the January 18th Commission meeting for further discussion.

OR

3. I move an alternate motion.

ATTACHMENTS:
1. 2023-07-27 Cannery Square - Prototype Apartment Building
2. 2023-09-13 Cannery Square Clubhouse - Schematic Design
3. 2023-10-09 HDC COA, paper copy & PDF
4. 2023-11-01 Concept SWM report, PDF

5. 2023-11-20 Revised-AerialContext, paper copy & PDF
6. 2023-11-20 Revised-Illustrative, paper copy & PDF
7. 2023-11-27 Application - ESDR Application & Determination Letter, paper copy & PDF
8. 2023-11-27 Application - Forest Conservation Application, paper copy & PDF
9. 2023-11-27 Application - Site Plan App, paper copy & PDF
10. 2023-11-27 Application - Subdivision Application, paper copy & PDF
11. 2023-11-27 Deed 2918-376, paper copy & PDF
12. 2023-11-27 PC PRD Memo ShoreGate Cannery, paper copy & PDF
13. 2023-11-27 Revised-SketchSitePlan, paper copy & PDF
14. 2023-12-04 Easton Multifamily TIA, PDF
15. 2023-12-07 Town of Easton Mail - Shoregate at Cannery, paper copy & PDF
16. 2023-12-14 Cannery Square Apartments COLORED RENDERINGS, paper copy & PDF
17. 2023-12-14 ReviewLetter-1-Sketch-TIS(Cannery), paper copy & PDF

TOWN OF
EASTON
ENGINEERING DEPARTMENT

DATE: **December 14, 2023**

TO: **Brett Ewing – Lane Engineering**

FROM: **Rick Van Emburgh – Town Engineer**

Cc: **Justin Nonemaker - Owner**
Sierra Clem – Engineering Department
Miguel Salinas – Planning and Zoning Department

SUBJECT: **Shoregate at Cannery – Traffic Impact Study (TIA)**

Our office has reviewed the Traffic Impact Analysis (TIA) for the Subject project received on 12/4/2023. After reviewing the TIA, I contacted Mike Lenhart and discussed the Conclusions and Recommendations and requested additional information that he provided via email on 12/7/2023.

The **Traffic Impact Study** is **Acceptable to the Engineering Department.**

Please contact me if you have any questions. Thank you.

P.O. Box 520, Easton, Maryland 21601
410-820-8822
Engineering@EastonMD.gov - www.EastonMD.gov

MCALLISTER
DETAR
SHOWALTER
& WALKER

MEMORANDUM

November 1, 2023

To: Easton Planning Commission
From: McAllister, DeTar, Showalter & Walker LLC on behalf of ShoreGate of Cannery Commercial LLC

Re: Planned Redevelopment Overlay Cannery Square

Dear Planning Commission Members:

This application and supplemental narrative are submitted on behalf of ShoreGate of Cannery Commercial LLC ("**Applicant**") along with various plans, renderings, and information related to a proposed 96-unit multifamily residential development within the Town of Easton. The following comprises a narrative summary of the Project and its compliance with Article V of the Town of Easton Zoning Ordinance.

Background

The subject property is comprised of three parcels identified as: (1) Lot 4, Parcel 756 of Tax Map 103, 1.663 acres ("**Lot 4**"); (2) Lot 3, Parcel 756 of Tax Map 103, 0.946 acres ("**Lot 3**"); and (3) Parcel 753 of Tax Map 103, 0.581 acres ("**Easton Ice Lot**"). Lot 4, Lot 3, and the Easton Ice Lot are collectively referred to herein as the "**Property**". The Property lies within the Town of Easton and is zoned Business Commercial (BC). The Property is within both the PUD Infill Overlay and the Planned Redevelopment Overlay District ("**PRD**"). The Easton Ice Lot, but neither Lot 3 nor Lot 4, is within the Historic District Boundary.

Lot 4 is currently vacant and Lot 3 is improved with a vacant commercial building that has been expanded significantly since its initial construction but is in general disrepair. The Easton Ice Lot is improved by a cinderblock building which was recently approved for demolition and replacement by the Easton Historic District Commission on October 9, 2023.

The Town of Easton currently faces a severe shortage of affordable housing and has undertaken multiple initiatives to bring developers to the area to build houses and projects that will address the needs in the community. ShoreGate Partners is a Maryland developer located in Easton and around Talbot County who develops, owns, and manages multifamily and commercial properties. Their attention to amenities and the unique needs of the communities they serve is paramount. The Project will provide one, two, and three-bedroom apartment units for housing that will serve the Town and surrounding area.

Pursuant to Article V, Section 28-501, the Easton Planning and Zoning Commission is the approving authority for projects proposed for PRD development. The application as submitted is consistent with the goals and requirements of Article V (Planned Redevelopment Overlay District) and the requirements of Section 28-901 of the Easton Zoning Ordinance.

Development Proposal

The Planned Redevelopment Overlay District is meant to "provide a mechanism for the redevelopment, rehabilitation, and general improvement of certain older areas within the Town of Easton that have fallen into a somewhat neglected or dilapidated state or have simply been used for a purpose that no longer serves the health, safety or general welfare of the neighborhood." The Property is improved in part by dilapidated and neglected buildings which the Applicant purchased in November of 2021. The proposed Project results in reasonable improvement of the Property to provide much-needed housing, with substantial resident amenities, which would be available to the Easton and Eastern Shore community. Demand for new and reasonably-priced housing in Easton is high and there are few properties near downtown Easton that can support a project of the density and area necessary to provide a meaningful housing community to the Town and its residents.

As shown on the enclosed Sketch Site Plan on the Lands of ShoreGate of Cannery Commercial, LLC[1], the Applicant proposes to improve the Property with three 3-story apartment buildings with a total of 96 residential units on Lot 3 and Lot 4, a community amenity building on the Easton Ice Lot, and associated development infrastructure (collectively, the "**Project**"). As part of this proposal, Lot 3 and Lot 4 will be combined into one parcel. New sidewalks will be installed along N. East Avenue and North Street. The amenities building to be located on the Easton Ice Lot is a 3,080 square foot, one-story structure that will house a leasing office, resident gym, common room with kitchen, package room, bicycle storage, and storage units for residents of the community. As depicted by the architectural plans submitted with this application, the Applicant has incorporated historical features of the surrounding area to ensure that the proposed amenities building adds value to the aesthetic of the area and recognizes the history of the railway that once ran just to the west of the Property.

The Project is immediately adjacent to the Rails to Trails project and is perfectly situated to allow easy access to the open space and recreation offered by the Rails to Trails project, John Ford Park to the north (0.5 mi.), and Idlewild Park to the south (0.9 mi.).

The Applicant proposes to plant the required buffer plantings to help screen the buildings from streets and nearby properties, but to also allow for privacy for the residents. Forest Conservation Act requirements will be met by encumbering 0.47 acres of existing forest on Lot 1, Parcel 756 to the north (the existing Cannery Square apartment property).

[1] Prepared by Lane Engineering, LLC and last revised November 1, 2023.

Stormwater management for the site will comply with ESD and quantity control requirements and stormwater management mechanisms will mimic landscaping beds that will add to the attractive character of the community.

The Project proposes 96 residential units on the 3.19-acre Property. This proposed density is well under the permitted 127 unit maximum prescribed by Section 28-501(B)(5), which allows up to forty (40) units per acre. Higher density is encouraged with infill and PRD development to reduce demand outside of Town limits and to help eliminate sprawl. This request meets several Comprehensive Plan goals and objectives and addresses a critical housing issue within the Town.

PRD Development Standard Compliance Summary

In accordance with Section 28-501(B). Development Standards (1) through (8), the Project complies with the following requirements:

(1) The area proposed for a planned redevelopment shall be in one (1) ownership, or, if in several ownerships, the proposal shall be filed jointly by all the owners of the property included in the development plan.

The Property is owned by a single entity.

(2) The site shall be of a configuration suitable for the development proposed.

The site includes an aggregate of 3.19 acres and has direct access to North Street and N. East Avenue. The Property abuts the Cannery Square multifamily development to the north, the Rails to Trails projects to the west, a commercial building and use to the south (along with residences fronting on Goldsborough Street which are across the alley from the amenities building), and residential lots to the east. The planned layout and site design proposed provide for a functional and well-designed residential community. The configuration proposed focuses parking to the interior of the Property and provides for attractive and well-landscaped residential buildings.

(3) Public water and sewerage shall be available.

Adequate water and sewer services to serve the proposed Project exist and are adjacent to the Property. The Applicant will provide the utility extensions that are necessary to connect the Project to Town services and will work with Easton Utilities to ensure that all permits and approvals are granted.

(4) The site shall be located adjacent to adequate transportation facilities capable of serving existing traffic and that expected to be generated by the proposed development.

*The Project will access from N. East Avenue, North Street, and from the adjacent Cannery Square complex to the north. A Traffic Impact Study ("**TIS**") prepared by Lenhart Traffic Consulting, Inc. will be submitted to supplement this filing and for the Planning Commission and Town Engineering Department's review. The Maryland State Highway Administration ("**SHA**") guidelines recommend that all intersections need to operate at a LOS of "D" or better. The TIS will incorporate all existing traffic flows, will utilize actual traffic count data in the area, and will incorporate traffic impacts from proposed or developing projects in the area. Any required improvements resulting from review of the TIS or Easton Engineering comments will be made to ensure adequate and safe transportation patterns. The existing roads and traffic signaling in the area are adequate to serve the Project and its residents and development of the Project will not place an undue burden on public roadways. The internal driving and parking surfaces serving the Project comply with applicable Town standards.*

(5) The overall residential density of a Planned Redevelopment project shall not exceed forty (40) units per gross residential acre. For the purposes of this subsection, the gross residential area shall include all land within the area intended to be used for residences, residential parking space, and reservation for community recreation and education facilities. Any land mapped as floodway by the Federal Emergency Management Agency, and non-residential uses shall be excluded in computing the gross area. The Planning and Zoning Commission may require a lower density if review of the proposed development indicates that the maximum allowable density is excessive for the surrounding area.

The Applicant is proposing 96 total units, which is 31 units or 24% under the maximum density of 127 units permitted on the Property.

(6) For new infill development projects, the setback, lot size, lot coverage, height, and yard requirements shall be established for each individual project by the Planning and Zoning Commission. In establishing these requirements the Planning and Zoning Commission shall consider such factors as the proposed intensity of the project and the existing character of the neighborhood.

The Planning Commission can apply, in its discretion, bulk standards such as setbacks and maximum heigh on a project-by-project basis. The Project proposes: (1) 15' front yard setbacks; (2) 10' side yard setbacks; (3) 15' rear yard setbacks; and (4) 44' maximum height. The Applicant and development team has worked to reduce the number of proposed units such that the buildings proposed are only three (3) stories and the site layout concentrates parking to the interior of the Property. Other site constraints imposed, such as stormwater management, drive aisles, dumpster enclosure, sidewalks, and landscaping, dictate that the most reasonable Project layout is the one proposed for the Project.

(7) Off-street parking is not required for projects proposed in the Planned Redevelopment Overlay District, although adequacy of parking may be a consideration of site plan review.

Despite the fact that the Code does not require any parking for the Project, Applicant recognizes that it should not impose unnecessary parking congestion or burden on the Town and nearby residents who may use public parking. Therefore, the Applicant is proposing a total of 110 parking spaces to serve the Project, which is fourteen (14) spaces above the ordinarily-prescribed 1:1 parking minimum applicable to multifamily development. The Applicant is confident that this design will ensure that parking occurs on the Property. The parking lot and drive aisles internal to the Project are designed to accommodate emergency vehicles, trash trucks, school buses, and delivery trucks.

(8) Sidewalks shall be constructed along any public right-of-way (except for alleys) adjacent to the site along the entire frontage(s) of the property. To the extent practicable, walkways shall be constructed on the site to tie building entrances and/or pedestrian pathway systems into existing or proposed public sidewalk systems.

The Project design addresses this requirement by proposing sidewalks along the frontage of North Street and N. East Street. Sidewalks on the Property are proposed to ensure ease of access to roadways, apartment buildings, the amenities building, and the Rails to Trails project.

TOWN OF EASTON
Planning & Zoning Department
14 South Harrison Street
P.O. Box 520
Easton, Maryland 21601

Easton Staff Development Review Worksheet

Date: November 22, 2023
Project: 503 North Street and 108 North East Street - Cannery Square/Shoregate Apartments
To: Brett Ewing

The Easton Staff Development Review (ESDR) Committee meeting was held on November 22nd at 11:00 am. Staff reviewed the Site Sketch Plan for the proposed apartment buildings (96 units) and amenity building on the property located at 503 North Street and 108 North East Street, also known as Tax Map 103, Parcel 756 & 753, Lots 3 & 4.

The project will need to address agency comments as specified in the attached review letters and at ESDR. The Committee determined that the application may be scheduled for Planning Commission review pending the submission of the Traffic Impact Study. Please address comments and submit all updated documents.

The next Planning Commission meeting is scheduled for **Thursday, December 21, 2023 at 1:00 pm.** Submit all documentation to the Planning and Zoning Department no later than **Monday, November 27th**. Please submit a Traffic Impact Study no later than **Monday, December 4, 2023 at 1:00 pm.** The recommended onsite 3D Renderings may be submitted no later than **Monday, December 11, 2023 at 1:00 pm.** Files for presentation at the Planning Commission need to be provided on a flash drive. In addition, provide a digital submittal (via email) of all supporting documents necessary for the Planning Commissions review, including **eight paper copies**.

Based on the ESDR sketch plan submission, the Staff did not identify constraints which require action by the Board of Zoning Appeals.

Please contact the Planning & Zoning Department at 410 822-1943 with any questions.

Sincerely,

Joseph A. Mayer
Plan Reviewer - Planning and Zoning

TOWN OF EASTON
PLANNING & ZONING DEPARTMENT
P.O. Box 520
Easton, Maryland 21601
410-822-1943
www.EastonMD.gov

DATE: **November 17, 2023**
TO: **Brett Ewing –** Lane Engineering, LLC
Owner - Shoregate of Cannery Commercial, LLC
Cc: **Miguel Salinas –** Director of Planning & Zoning Department
Rick VanEmburgh – Town Engineer, Department of Engineering
FROM: **Joseph A. Mayer -** Plan Reviewer, Planning & Zoning Department
SUBJECT: 503 North Street & 108 North East Street - Multi Family Residential

We reviewed the **November 1, 2023** Sketch Site Plan Submittal for the Subject Project and have the following comments:

PLANNING & ZONING COMMENTS

Sketch Site Plan Review #1

1. Label Scott's Alley road name on all plan views.
2. Add the proposed building setbacks within the Project Data located on the Sketch Site Plan.
3. Elaborate more on the road connection between North Street and North East Avenue.
4. Add the proposed density per acre onto the Site Notes.
5. Consider centering ADA parking spaces at the apartments closer to the proximity of the entrances.
6. Recommend to replace Crepe Myrtle plant selection with a native plant species.
7. Dimension the offset distances from the proposed building to all property lines.
8. Show the zoning district on the adjacent property callouts.

Plan Review Status

IMPROVEMENT PLAN REVIEW			Comments
Plans Approved	☐Y	☒ N	Please review the comments above. Revise and resubmit.

Forest Stand Delineation & Forest Conservation Plan	
☒ Required ☐ Submitted ☐Approved	**The overall site is 3.1837 acres or 138,681 square feet. Per the *Easton Forest Conservation Ordinance #718, Article III*, § 31-3.1, the site is over 40,000 square feet and is required to apply for a Forest Conservation Application. The applicant is required to provide a total of 0.47 acres for afforestation. The applicant proposes off-site forest retention located on the northern portion of Tax Parcel 756, Lot 1 (Cannery Square Apartment Property) and shall be placed under a long term protective easement and recorded within the land records of Talbot County.**
Other	
☒Required ☐ Submitted ☐ Approved	**<u>IMPACT FEES</u>** **Please note, there will be a required Impact Fee for all proposed units. The Town's Impact Fees and Inspection Fees are to be paid upon the time you pick up your Building Permit. Please provide building square footage with appropriate use for calculation of Impact Fee.** **Talbot County Impact Fees are due prior to obtaining your Building Permit. Please provide receipt of payment to the Town's Building Inspection Division.** **Please add estimated Town Impact Fee calculations to cover sheet and add note below calculations; "*Note: The Impact Fee indicated in this notation shall not be construed as vested and until submission of the building application.*"** **<u>Line Abandonment Plat</u>** **To be submitted for review upon Sketch Plan approval.**

Please contact me if you have any questions. Thank you.

TOWN OF
EASTON
ENGINEERING DEPARTMENT

DATE: **November 21st, 2023**

TO: **Brett Ewing – Lane Engineering**
Justin Nonemaker - Owner
Cc: **Rick Van Emburgh – Town Engineer**
Miguel Salinas – Planning and Zoning Department
Aaron Goller – EUC
FROM: **Sierra Clem – Engineering Department**
SUBJECT: **Shoregate at Cannery – Sketch Site Plan Review for ESDR**

Our office has reviewed the Application for the Subject project received on 11/1/2023 and have the following comments.

Site Plan

The **Sketch Site Plan** is **Acceptable to the Engineering Department with the following conditions**:

1. Please label Scotts Alley.
2. Please verify the width of Scotts Alley, and the distance from the edge of the parking stalls to the front of the opposite structures, as well as the alley width. At least 24 feet is needed to safely back out of the 90 degree parking spaces.
3. Entrances from North Street should be concrete per TOE-R-4.02 (similar to a comment from our 2017 Review Letter).
4. An easement is required for the sidewalk along the Town Road Frontage on the south side of North Street and the east side of North East Avenue. Also consider an easement on the north side of Scotts Alley. (This comment is similar to a comment from our 2017 Review Letter).
5. Consider a proposed sidewalk to continue along the eastern side of the property to connect the proposed parking spots in the northeast corner to North Street.

Please submit a Preliminary Site plan for review once Planning Commission approval is obtained.

Stormwater Management

The **Sketch Stormwater Management Plan** is **Approved with the following condition**:

1. Please complete the ESD Summary Chart to include the total values.

Please submit a Preliminary Stormwater Management Plan once Planning Commission approval is obtained.

P.O. Box 520, Easton, Maryland 21601
410-820-8822
Engineering@EastonMD.gov - www.EastonMD.gov

Discussion from Previous Applications for this Site

1. A comment from 2004, 2016 and 2017 (and was a condition of 2004 and 2017 PC approval) - *Provide curb and gutter and asphalt paving along North street property frontage. The North Street road cross section for on-street parking should be similar to Town Detail PW-1.01. Provide curb, gutter, sidewalks and street trees along the north side of North Street extending to the western right of way of East Avenue. The sidewalk should extend to the rail trail.*

   This comment has been addressed with this new Sketch Plan and is acceptable to the Engineering Department.

We have been working with the Applicant's Traffic Engineer to analyze the existing Town streets in the area. They will provide a Traffic Impact Study (TIS) prior to final approval with recommendations.

Please contact me if you have any questions. Thank you.

TOWN OF EASTON

P. O. Box 520
Easton, Maryland 21601

October 27, 2004

Mr. Barry Griffith
Lane Engineering
P.O. Box 1767
Easton, MD 21601

Re: Cannery Square Expansion.

Dear Barry:

At the Planning Commission meeting of October 21st the Planning Commission voted 5-0 to approve the Cannery Square PRD project with the following conditions.

1.) Provide curb, gutter, sidewalks, and street trees along North side of North Street extending to the western right of way of East Avenue. The sidewalk shall extend to the rail trail.
2.) Any portion of the abandoned Park Street, which is added to this property should be shown as additional landscaping and buffering.

You may now submit 2 copies of the preliminary site plan for review.

If you have any questions, feel free to contact me at 410-822-1943.

Sincerely,

Tom Hamilton

Tom Hamilton
Town Planner

February 20, 2017

EA Land Company, LLC
c/o Barry Griffith, Lane Engineering
North Street; Map 103, Parcel 756, Lot 4
Easton, MD 21601

Re: Sketch Planned Redevelopment Site Plan
Cannery Square Expansion- 30 units; three 3-story buildings.

Dear Applicant:

At our regular monthly meeting on February 16, 2017, the Easton Planning and Zoning Commission reviewed and voted 4-0 to approve the sketch planned redevelopment site plan with the following conditions:

1. The applicant shall construct a 6' privacy fence along the entire east and west property line boundaries. The east side fence shall remain outside the 30' wide utility easement.
2. The applicant shall enhance the landscape buffer along the east and west property lines with additional plantings and evergreens.
3. The applicant shall relocate the proposed dumpster to the west side of the project as described at the Planning Commission meeting.
4. The applicant shall provide two access points to the Rails to Trails public area. The access along North Street shall be striped similar to a crosswalk as discussed at the Planning Commission meeting.
5. The plan shall be revised to incorporate landscape islands in front of buildings "1" and "2". *Trees shall be located in parking bays so no more than 10 spaces form an uninterrupted row.*
6. The applicant shall execute a public works agreement or bond for improvements within the Town ROW in a format acceptable to the Town Attorney.
7. The applicant shall provide community covenants for Town review. This document shall discuss perpetual maintenance of SWM, private roadways and common areas.
8. All easements proposed including but not limited to the shared parking easement along the north property line shall be executed and recorded prior to final approval.
9. The applicant shall address all staff, staff report and Planning Commission comments prior to Development Plan submittal.

Please contact me if you have any questions concerning this matter.

Sincerely,

Brett C. Ewing, AICP
Senior Planner

October 20, 2017

Lane Engineering
c/o Barry Griffith
P.O. Box 1767
Easton, MD. 21601

Re: Planning Commission Condition Modification – Cannery Square.

Dear Mr. Griffith:

At our regular monthly meeting of October 19, 2017, the Easton Planning and Zoning Commission reviewed and voted 5-0 to modify the February 16, 2017 Planning Commission condition "The applicant shall provide two access points to the Rails to Trails public area. The access along North Street Shall be striped similar to a crosswalk as discussed at the Planning Commission Meeting.". The modification was approved to only require one access point along the Northern property line as shown in their development site plans.

Please contact me if you have any questions concerning this matter.

Sincerely,

Sierra Crist
Current Planner and GIS Analyst

EASTON UTILITIES

Life. Made better.™

Easton Utilities Commission

Plan Review Comments

Date: Wednesday, November 15, 2023
To: Joe Mayer; Nicholas Johnson; Sierra Clem
From: Kia Gibbs on behalf of Aaron Goller, PE **No. of Pages:** 1
Regarding: 503 North Street - Cannery Square/Shoregate Apartments
Phase: Sketch Site Plan **SUBM:** 1 **Status:** **Approved as Noted**

Easton Utilities Commission has reviewed the above referenced plans and have provided the following comments. Please provide your corrections as listed below. Additional reviews will be required to ensure comments have been addressed. Items or documents not provided on initial submission will be subject to further review. Please contact Kia Gibbs, Admin Support at kgibbs@eucmail.com should you have any questions.

ITEM:	DRAWING / PAGE	COMMENTS:
1	General	Natural gas is in the area.
2	General	Capital charges due
3	General	Utilities easement required per code
4	General	Watermain to be looped on North Street
5	General	Gravity elevation to be obtained by provider
2	General	Contact EUC for electric design to be incorporated on 60% drawings.

201 N. Washington Street | Easton, Maryland 21601
Telephone: 410-822-6110 | Fax: 410-822-0743 | eastonutilities.com

TOWN OF EASTON

PO Box 520
Easton, Maryland 21601
(410)-822-2526 Fax (410)-822-8738
Office of Building Inspection.

ACCREDITED

ESDR- Building Inspection and Permit Department Comments

Date: November 16, 2023

Project; **Shoregate of Cannery Commercial, LLC**
Apartment Complex -503 North Street and 108 North East Street

A Town of Easton Building Permit is required for all new construction. Contact this Department and verify current Building Codes including the Town of Easton's modifications prior to preparation of Building plans.

The following lists items required on the construction drawings in order to apply for a Building Permit.

- Construction Documents (3 sets) for any new construction will be required. Documents must be prepared by a Maryland Registered Architect, with original plans signed and sealed. A code analysis completed by the Maryland Registered Architect shall include, classification (use group), construction type, occupant loads, egress, fire separations and ADA compliance must be completed and included with the application materials.
- Items that must be addressed by the construction documents will be structural strength, means of egress (include travel distance), facilities, stability, sanitation, light and ventilation, energy conservation and safety to life and property from fire and other hazards attributed to the built environment, **Accessibility**, and other safety requirements for public access.
- If your project will be phased include a phasing plan in the Construction Documents.
- All mechanical, electrical, and plumbing permits as required must include 3 sets construction documents signed and sealed by a professional engineer and by a responsible party for the contractor receiving the permit. Be sure the Town of Easton modifications are included. Section 6-16 of the Town Code.
- The Town of Easton may require, in accordance with the International Building Code Chapter 17, a building inspections procedure that utilizes qualified, third-party professionals in addition to the Town's Building Inspectors. The purpose of this document is to establish the policy and guidelines for the construction process in accordance with the Building Code requirements and to:
    - Define the responsibility of all parties.
    - Standardize code application.
    - Provide for an orderly and systematic approach for updating standards that apply to the Special Inspections.
    - Set forth a guideline for Special Inspections.

A copy of " The Statement of Special Inspections" can be found on the Towns Web Site

- An appointment may be set up with this department to review your permit application materials prior to permit application submission.
- **State Fire Marshal,** (410-822-7609) plan review and inspections are required. It is your responsibility to contact them and make application.

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NOV 01 2023
TOWN OF EASTON

Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

Easton Staff Development Review

Property Information

Address	503 North Street, Easton MD 21601 and 108 North East Street, Easton MD 21601						
Tax Map	103	Grid		Parcel	756 & 753	Lot	3 & 4
Deed Refernce:	Liber	2918	Folio	389, 396, 376			
Plat Reference:	Liber	89	Folio	189			
Base Zoning District		BC	Historic District	Y ☒ N ☐	Planning Redevelopment	Y ☒ N ☐	

Purpose of Application / Description of Work:

Demolish existing abandoned garage & storage building. Construct 3- Multi Family Residential & Amenity buildings.

Owner

Name	Shoregate of Cannery Commercial, LLC		
Mailing Address	29 South Harrison Street, Easton MD 21601		
Telephone No.		Email	

Applicant / Agent

Name	Brett Ewing		
Mailing Address	117 Bay Street, Easton MD 21601		
Telephone No.	410-822-8003	Email	bewing@leinc.com

Surveyor / Engineer

Name	Tim Glass	License No.	23152	Expiration Date	7/5/2025
Mailing Address	117 Bay Street, Easton MD 21601				
Telephone No.	410-822-8003	Email	tglass@leinc.com		

Any modifications during review shall warrant an updated application.

I do hereby solemnly declare and affirm that the information provided by this application and the documents attached hereto accurately represent the conditions of the request and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent	
Date	11/1/23
Printed Name of Applicant or Agent	Brett Ewing

For Office Use Only

Easton Staff Development Review Meeting Required Y ☒ N ☐

ESDR 23-24 / 2023-996

Easton Staff Development Review Meeting Date 11/22/2023

Completeness Check Date 11/13/2023

Revisions/Resubmissions Required Y ☐ N ☒

Resubmission Date

Documents Received Y ☐ N ☐

Staff Determination

Planning Commission Requir Y ☒ N ☐ **Planning Commission Meeting Date 12/21/2023**

BOZA Required Y ☐ N ☒

Historic District Commission Required Y ☒ N ☐ **HDC Demolition approval on 10/09/2023**

Resubmission for ESDR Required Y ☐ N ☐

Staff Signature Samantha N. Smith Date 11/27/2023

Revised 02-2019

Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

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Site Plan, PUD, Planned Healthcare Application

Application Type

Planned Unit Development ☐ Amendment ☐ Health Care (HC) ☐ Site Plan ☒

Subdivision Information

Name	N/A				
Original Property Size	Acres		Square Feet		
Telephone No.		Email			

Site Plan Information

Property Size	Acres	3.19	Square Feet	138,682	Total of Parcels: 7538756
Structure's Floor Area	36831 each	Structure's Square Feet	12277 each		
Area of Disturbance	3.19	Number of Dwelling Units	96		

Property Information

Address	503 North Street, Easton MD 21601 and 108 North East Street, Easton, MD 21601						
Tax Map	103	Grid		Parcel	756 & 753	Lot	3 & 4
Deed Refernce:	Liber	2918	Folio	389, 396, 376			
Plat Reference:	Liber	89	Folio	189			
Base Zoning District	BC	Historic Y ☒	N ☐	Planned Redevelopment Y ☒	N ☐		
Source of Electricity	EUC						

Owner

Name	Shoregate of Cannery Commercial, LLC		
Mailing Address	29 South Harrison Street, Easton MD 21601		
Telephone No.		Email	

Applicant or Agent

Name	Brett Ewing		
Mailing Address	117 Bay Street, Easton MD 21601		
Telephone No.	410-822-8003	Email	bewing@leinc.com

Surveyor / Engineer

Name	Tim Glass	License No.	23152	Expiration Date	7/5/2025
Mailing Address	117 Bay Street, Easton MD 21601				
Telephone No.	410-822-8003	Email	tglass@leinc.com		

Any modifications during review shall warrant an updated application.

I hereby certify that I have reviewed and satisfied the Town of Easton Development Standards and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent	
Date	11/1/23
Printed Name of Applicant or Agent	Brett Ewing

For Office Use Only

Planning Commission Required	Y ☒ N ☐		
Planning Commission Meeting Date	12/21/2023		
Sketch Approval Date		Project No.	ESDR 23-24
Prelim/Dev. Approval Date		Application No.	2023-996
Final Approval Date		Sketch Fee Paid	11/06/2023
Recordation Date		Develop. Fee Paid	
Historic District Commission Approval Date: 10/09/2023			*Revised 02-2019*

Town of Easton
Engineering, Planning and Zoning
13 South Harrison Street, Easton, MD 21601

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TOWN OF EASTON

Subdivision & Property Line Adjustment Application

Application Type

Subdivision ☐ Minor Subdivision ☐ Lot Line Revision ☒

Subdivision Information

Name	N/A				
Property Size	Acres		Square Feet		
Number of Lots Proposed					

Property Information

Address	503 & 108 North Street, Easton MD 21601						
Tax Map	103	Grid		Parcel	756/753	Lot	3 & 4
Deed Refernce:	Liber	2918	Folio	389, 396, 376			
Plat Reference:	Liber	89	Folio	189			
Zoning District	BC	Planned Redevelopment Y ☒ N ☐			Historic District Y ☒ N ☐		
Source of Electricity	EUC						

Owner

Name	Shoregate of Cannery Commercial, LLC		
Mailing Address	29 South Harrison Street, Easton MD 21601		
Telephone No.		Email	

Surveyor / Engineer

Name	Tim Glass	License No.	23152	Expiration Date	7/5/2025
Mailing Address	117 Bay Street, Easton MD 21601				
Telephone No.	410-822-8003	Email	tglass@leinc.com		

Applicant or Agent

Name	Brett Ewing		
Mailing Address	117 Bay Street, Easton MD 21601		
Telephone No.	410-822-8003	Email	bewing@leinc.com

Additional Comments:

Abandonment of interior lot line. Construction of 3 Multi family & 1 Amenity Building.

Minimum Lot Size	-	Minimum Lot Frontage	-
Minimum Lot Envelope	-	Existing Lot Coverage	-
		Proposed Lot Coverage	-

☐ ESDR Letter
☐ $200 Per Subdivided Lot Fee
☐ $500 Lot Line Revision Fee

Any modifications during review shall warrant an updated application.

I hereby certify that I have reviewed and satisfied the Town of Easton Subdivision Regulations Article 4, Procedures and Requirements and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent	
Date	11/1/23
Printed Name of Applicant or Agent	Brett Ewing

For Office Use Only

Planning Commission Y ☒ N ☐			
Planning Commission Meeting Date		12/21/2023	**ESDR 23-24**
PC Approval Date		Subdivision No.	
Conditions? Y / N		Application No.	2023-996
Recordation Date		Fee Amount	$500.00
ESDR Y / N Date	11/22/2023	Review Fee Paid	11/06/2023
HDC Approval Date: 10/09/2023			*Revised 02-2019*

Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

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TOWN OF EASTON

Forest Conservation Application

Project Information

Project Name	Shoregate of Cannery Commercial, LLC	Project Number	
Project Location	503 North St., Easton, MD 21601 (parcel 756, Lots 3 & 4) & 108 North St., Easton, MD 21601 (parcel 753)		
Project Description	3 Multi-Family Apartments with Amenity Building		

Watershed Information

Watershed Name	Choptank-021304	Sub-watershed No.	213403
County	Talbot	Municipality	Easton

Property Information

National Spatial Reference System (NSRS)
Alignment of passive control with the latest realization of the North American Datum of 1983:
NAD 83(2011), NAD 83(PA11), and NAD 83(MA11) Epoch 2010.00

Maryland Grid Coordinates centroid:	344,800			ft. North	1,065,000		ft. East
ADC Map: Year	2003	Page	14	Grid	D5		
Tax Map:	103	Grid		Parcel	756	Block	
District / Account Number	01-025309					Lot	3 & 4
Liber	2918	Folio	389 & 39				

Agent Information

Name	Brett Ewing	License No.		Expiration Date	
Firm Name	Lane Engineering, LLC				
Mailing Address	117 Bay Street, Easton, MD 21601				
Telephone No.	410-822-8003	Email	bewing@leinc.com		

Forest Stand Delineation Information

Details of Request (Acreage or portion thereof)

Total Tract Area	3.19 Ac.	*Net Tract Area*	3.10 Ac.
Area within 100-year Floodplain	- Ac.	Area of Existing Forest	0 Ac.
Area Remaining in Agriculture	- Ac.	Area of Existing NTW	0 Ac.
Other **(Utility Easement)**	0.09 Ac.	Sensitive Areas	0 Ac.

Forested Stream Buffers (minimum 50' wide):			Yes	x	No
One Side		Both Sides			
Buffer Area Forested	Ac.	Length	Ft.		
Steep Slopes		Yes	X	No	
Threatened & Endangered Species		Yes	X	No	
Dominant & Co-dominant Species		Yes	X	No	

Forest Stand Delineation Prepared by:

Licensed Landscape Architect | Licensed Forester | Qualified Professional

Forest Conservation Plan Information

Details of Request (Acreage or portion thereof)

Existing Land Use (zone)	BC/PRD	Proposed Land Use (zone)	BC/PRD		
Afforestation Threshold	15%	Conservation Threshold	15%		
Proposed Area of Disturbance	3.10 AC.	in Sensitive Areas	0		
Proposed Forest Clearing	N/A	in Sensitive Areas	0	in NTW	0

Forest Retention:

Onsite		Offsite	0.47 AC	in Long Term Protection	0.47 AC	(OFF-SITE)
		Forest Conservation Required	0.47 AC	Forest Conservation Provided	0.47 AC	

Planting:

Onsite		Offsite		Sensitive Area Planting	

Stream Buffer Established: Length | Width

Other:

Offsite Location:

County	Talbot		Municipality	Easton			
ADC Map:		Year	2003	Page	14	Grid	D5
Tax Map:	103	Grid		Parcel	756	Block	
Maryland Grid:	NAD27		North American Datum Year		1927	Lot	1
District / Account Number	01-011960		Sub-watershed No.		2130403		
Planting Responsibility:	Owner:		Contact #				
Maintenance Responsibility:	Justin Nonmaker		Contact #		(917) 710-1933		
Long Term Protection	0.47 ac		% in Sensitive Areas				
Long Term Protection Agreement Type		Easement					
Fee-in Lieu Amount			Acreage				
Forest Conservation Plan Prepared by		Lane Engineering, LLC					
Licensed Landscape Architect							
Licensed Forester							
Qualified Professional	D. Wayde Barnhart						

Subject to previous FCP? Y / N

If yes, please provide a copy of previous approved FCP.

Subject to ESDR? Y/ N

Required:

- ☐ Completed Form
- ☐ Written Statement
- ☐ Signature of Applicant
- ☐ Hardcopy of Drawings
- ☐ Digital Copy of Drawings
- ☐ Copies Hard / Digital of Any Previous FCP + Application
- ☐ Review Fee

Any modifications during review shall warrant an updated application.

I do hereby solemnly declare and affirm that the information provided by this application and the documents attached hereto accurately represent the conditions of the request and that submission of an incomplete application will be returned for correction prior to processing.

By signing below, the applicant certifies that he of she has the legal right to implement proposed planting, maintenance and or a long-term protection agreement. The applicant further certifies that the property, subject to a long-term protection agreement is not otherwise protected under Federal, State or local programs.

Signature of Applicant or Agent	
Date	11/01/23
Printed Name of Applicant or Agent	Brett Ewing

For Office Use Only

Planning Commission Meeting Date	12/21/2023		
Sketch Approval Date		Project No.	ESDR 23-24
Prelim/Dev. Approval Date		Application No.	2023-996
Final Approval Date		Sketch Fee Paid	11/06/2023
Recordation Date		Develop. Fee Paid	
HDC Approval Date: 10/09/2023			Revised 02-2019

Date: 11/27/2023 – 10:15am User: wbarnhart Project Manager: BCE
Drawing Path: J:\2023\0200\230228\Civil3D-230228\Dwg\Plots\RSK-PLTS-230228.dwg | SKETCH SITE PLAN
XREF File(s): VLD-BASE-170148/VSF-BASE-170148/RSK-BASE-230228/RBS-BASE-24X36-230228/VLD-BASE-230228/RLD-EUC-BASE-230228/LLP-BASE-230228/RAR-BASE-230228/VSF-BASE-230228/XRN-BASE-230228

PROJECT DATA

OWNER: SHOREGATE OF CANNERY COMMERCIAL, LLC
29 SOUTH HARRISON STREET
EASTON, MARYLAND 21601

PROPERTY ADDRESS

TAX PARCEL 756, LOTS 3 & 4: 503 NORTH STREET, EASTON, MD 21601

TAX PARCEL 753: 108 NORTH EAST STREET, EASTON, MD 21601

DEED REFERENCE: PARCEL 756 – 2918/389 (LOT 3)
2918/396 (LOT 4)
PARCEL 753 – 2918/376

PLAT REFERENCE: 89/189 (TAX PARCEL 756)

ZONING CLASSIFICATION: BC – BUSINESS COMMERCIAL
PRD – PLANNED REDEVELOPMENT OVERLAY

SITE AREA: PARCEL 756 LOT 3 – 0.946 ACRES±;(41,208 SF±)
PARCEL 756 LOT 4 – 1.663 ACRES±;(72,440 SF±)
PARCEL 753 – 0.581 ACRES±;(25,034 SF±)

BC ZONING
BUILDING SETBACKS: EXISTING/ PROPOSED PRD

FRONT– 40'/ 15'
SIDE – 10'/ 10'
REAR – 30'/ 20'

MAXIMUM BUILDING HEIGHT: 35'; HEIGHT ESTABLISHED PER PR DISTRICT: 44'
MAXIMUM LOT COVERAGE: 50% BY BUILDINGS AND STRUCTURES
PROPOSED BUILDING LOT COVERAGE TAX PARCEL 756 = 32.4%
PROPOSED BUILDING LOT COVERAGE TAX PARCEL 753 = 12.3%

DENSITY: 40 UNITS/ ACRE PERMITTED (127 UNITS); 96 UNITS PROPOSED

APPROVALS: HDC APPROVAL FOR AMENITY BUILDING 10/9/23.

SHRUB/GROUNDCOVER PLANTINGS: PROVIDED ACROSS SITE AS SHOWN HEREON.

EXISTING CONDITIONS: OPEN FIELD, VACANT AUTOMOTIVE REPAIR SHOP & EASTON ICE BUILDING

PROPOSED DEVELOPMENT: 3–STORY MULTI–FAMILY APARTMENTS (TYPICAL OF 3)

BUILDING FOOTPRINT: 12,277 SF± (MULTI–FAMILY BUILDINGS), 3,080 SF± (AMENITY BUILDING)

PARKING PROVIDED: 110 TOTAL SPACES PROVIDED (INCLUDING 8 ADA & VAN ACCESSIBLE SPACES)

PARKING NOTE: OFF–STREET PARKING NOT REQUIRED FOR PROJECTS IN THE PR DISTRICT, ALTHOUGH ADEQUACY IS CONSIDERED THROUGH THE SITE PLAN PROCESS. 1.15 SPACES IS PROPOSED PER UNIT AND SIDEWALK CONNECTION TO THE RAILS TO TRAILS AND BIKE RACKS RESULT IN ADEQUACY FROM A FUNCTION AND MARKETING PERSPECTIVE.

PROJECT NOTES

THE PROPERTY SHOWN HEREON LIES ENTIRELY WITHIN THE CHESAPEAKE BAY CRITICAL AREA AS SHOWN ON THE TALBOT COUNTY CRITICAL AREA MAPS IN ACCORDANCE WITH TALBOT COUNTY BILL NO. 1295, ENACTED AUGUST 12, 2014.

THE IMPROVEMENTS SHOWN HEREON FOR TAX PARCEL 753 WERE FIELD LOCATED BY LANE ENGINEERING, LLC ON JULY 6, 2023 & IMPROVEMENTS FOR TAX PARCEL 756, LOTS 3 & 4 WERE FIELD LOCATED BY LANE ENGINEERING, LLC ON JUNE 17, 2017.

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THERE ARE NO KNOWN HISTORIC STRUCTURES OR ARCHEOLOGICALLY SIGNIFICANT RESOURCES, STEEP SLOPES APPROACHING 15%, STREAMS, TIDAL WETLANDS/NON–TIDAL WETLANDS OR KNOWN HABITAT PROTECTION AREAS IN PROXIMITY TO THE PROPOSED SITE IMPROVEMENTS.

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FLOOD DATA

THE PROPERTY SHOWN HEREON IS NOT LOCATED IN THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP) SPECIAL FLOOD HAZARD AREA (SFHA) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD. THE PROPERTY IS MAPPED IN THE "X" FLOOD ZONE AS SHOWN ON THE FLOOD INSURANCE RATE MAPS FOR COMMUNITY NO. 240067, MAP NO. 24041C0189D FOR TOWN OF EASTON, MARYLAND. THE 1% ANNUAL CHANCE FLOOD (100–YEAR FLOOD), ALSO KNOWN AS THE BASE FLOOD, IS THE FLOOD THAT HAS A 1% CHANCE OF BEING EQUALED OR EXCEEDED IN ANY GIVEN YEAR. THE SFHA IS THE AREA SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD. THE SFHA INCLUDES ZONES A, AE, AH, AO, AR, A99, V & VE. THE BASE FLOOD ELEVATION (BFE) IS THE WATER SURFACE ELEVATION OF THE 1% ANNUAL CHANCE FLOOD. FLOOD INSURANCE MAY BE REQUIRED FOR STRUCTURES LOCATED IN THE SPECIAL FLOOD HAZARD AREA.

FLOOD ZONE LEGEND
ZONE X – AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD

THE FLOOD DATA SHOWN HEREON IS BASED ON AVAILABLE MAPPED AND/OR DIGITAL INFORMATION AND IS DEPICTED AS DIRECTED AND REQUIRED BY FEDERAL, STATE AND LOCAL REGULATIONS. IT IS SUBJECT TO DATA INACCURACIES AND REGULATORY CHANGE AND SHOULD BE VERIFIED PRIOR TO FINALIZING DEVELOPMENT OR IMPROVEMENT PLANS FOR THE SUBJECT LANDS.

LANDSCAPE REQUIREMENTS SUMMARY PER ZONING ORDINANCE:

SECTION 1014.6.B.:

1. OVERALL TREES – 3 TREES/ RESIDENTIAL UNIT: 96 UNITS X 3 = 288 TREES REQUIRED

1A. STREET TREES– 1 DECIDUOUS TREE/ 25' OF STREET CENTERLINE: 487 LF/ 25 = 19 TREES REQUIRED

1B. PARKING LOTS/ PARKING COURTS– 1 TREE/ 5 SPACES: 108 SPACES/5 = 22 TREES REQUIRED

2. SHRUB/GROUNDCOVER PLANTINGS: PROVIDED ACROSS SITE AS SHOWN HEREON.

LANDSCAPE BUFFERYARD REQUIREMENTS (SECTION 1014.7 E.)

10' WIDE LANDSCAPE BUFFERYARD 'E' (ALONG EAST PROPERTY LINE; TOTAL OF 270 LF)
DUE TO UTILITY CONSTRAINTS THE OWNER WILL UTILIZE 2 PLANTING OPTIONS ALONG THE EASTER PROPERTY LINE

A – FENCE WITH 3 LG EVERGREEN SHRUB: 153 LF / 50' = 3.06 PLANT UNITS (PU); &
B – 4 EVERGREENS: 117 LF / 50' = 2.34 PLANT UNITS (PU)

A– FENCE WITH 3 LARGE EVERGREEN SHRUBS X 3.06 PU = PRIVACY FENCE & 9 LARGE EVERGREEN SHRUBS REQUIRED
B– 4 EVERGREEN TREES X 2.34 PU = 9 EVERGREEN TREES REQUIRED

COMPREHENSIVE PLAN DESIGN PRINCIPLES RESPONSE NARRATIVE

PRINCIPLE #1– INTEGRATED USES ARE DESIRABLE– THIS DEVELOPMENT PROPOSES RESIDENTIAL DEVELOPMENT ADJOINING OTHER RESIDENTIAL LAND USES.

PRINCIPLE #2– NATURAL FEATURES SHOULD DETERMINE DESIGN– NO COMPELLING NATURAL FEATURES; SWM INTEGRATED ON SITE.

PRINCIPLE #3– AUTOMOBILES SHOULD NOT DETERMINE DESIGN– PARKING FOR RESIDENTS IS IMPORTANT. THE PROPOSED PARKING AREAS HAVE BEEN DESIGNED TO ACCOMMODATE THE BUILDING LAYOUT ON–SITE.

PRINCIPLE #4– AMPLE OPEN SPACES SHOULD BE PROVIDED WITHIN & AROUND NEIGHBORHOODS– USABLE OPEN SPACE NOT SPECIFICALLY APPLICABLE HERE; ADEQUATE BUFFERING/SCREENING PROVIDED. POTENTIAL ACCESS TO EASTON RAILS TO TRAILS PROVIDED.

PRINCIPLE #5– ARCHITECTURE SHOULD RESPECT EASTON'S HISTORICAL DEVELOPMENT– THIS APPLICATION PROPOSES ARCHITECTURE COMPATIBLE WITH EXISTING BUILDINGS AND COMPATIBLE WITH EXISTING ARCHITECTURE FOUND IN EASTON.

PRINCIPLE #6– SIGNS SHOULD INFORM BUT NOT DOMINATE–SIGNAGE TASTEFUL, SIMPLE AND PER CODE.

PRINCIPLE #7– NEIGHBORHOODS SHOULD CONTAIN A DIVERSITY OF HOUSING TYPES– THIS DEVELOPMENT PROPOSES A MULTI–FMAILY APARTMENT COMPLEX JUST WEST OF EXISTING SINGLE FAMILY RESIDENTIAL DWELLINGS.

PRINCIPLE #8 RESIDENTIAL NEIGHBORHOODS SHOULD BE INTERESTING PLACES– THIS DEVELOPMENTS SETTING PROVIDES AND ENHANCES THE SURROUNDING RESIDENTIAL COMMUNITY.

PRINCIPLE #9– NEIGHBORHOODS SHOULD CONNECT– THE DEVELOPMENT PROPOSED WILL EXTEND THE EXISTING CANNERY SQUARE APARTMENT COMPLEX TO THE NORTH.

FOREST CONSERVATION COMPLIANCE

THE TOTAL TRACT (3.19 ACRES) IS AN INFILL DEVELOPMENT OPPORTUNITY IN THE TOWN OF EASTON. THE NET TRACT FOR PURPOSES OF THIS FOREST CONSERVATION PLAN IS THE TOTAL TRACT AREA (3.19 ACRES) LESS THE 30' WIDE UTILITY EASEMENT (0.09 ACRES) AND EQUALS 3.10 ACRES WHICH IS SUBJECT TO FOREST CONSERVATION REGULATIONS.

THE OWNER IS REQUIRED PLANT/ AFFOREST A TOTAL OF 0.47 ACRES. THE AFFORESTATION REQUIREMENTS SHALL BE MET BY UTILIZING OFF–SITE FOREST RETENTION LOCATED ON THE NORTHERN PORTION OF TAX PARCEL 756, LOT 1 (CANNERY SQUARE APARTMENT PROPERTY) AND SHALL BE PLACED UNDER A LONG TERM PROTECTIVE EASEMENT AND RECORDED WITHIN THE LAND RECORDS OF TALBOT COUNTY.

LANDSCAPE KEY

2" CALIPER MINIMUM CANOPY OR STREET TREES (OAK, MAPLE TYPES)

1.25" CALIPER OR 7' HEIGHT MINIMUM FLOWERING TREES (CHERRY, MAGNOLIA, SERVICEBERRY, RED BUD, SERVICEBERRY TYPES)

7' HEIGHT MINIMUM EVERGREEN TREES (WHITE PINE, AMERICAN ARBORVITAE, LOBLOLLY TYPES)

SHRUBS / SHRUB MASS, GROUND COVER

STORMWATER MANAGEMENT ESD LANDSCAPING MASS / PERENNIAL MIX WITH SHRUBS AND GRASSES

UNOBSTRUCTED VISION TRIANGLE AREA NOTE

25' UNOBSTRUCTED VISION TRIANGLE IN ACCORDANCE WITH THE TOWN OF EASTON ZONING ORDINANCE.

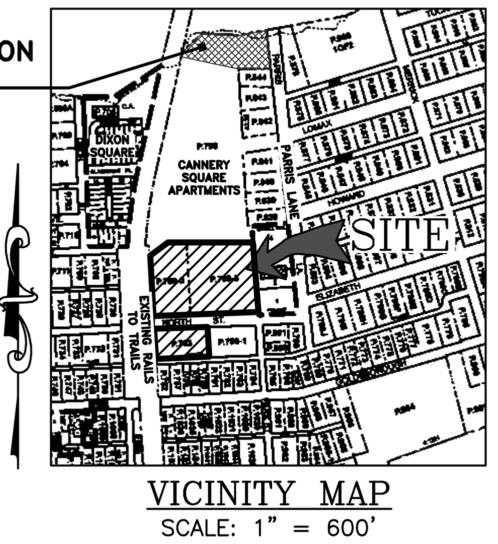
SWM QUANTITY SUMMARY CHART

POI	DA (ACRES)	IMPERVIOUS (ACRES)	RCN	Tc (MINUTES)	PRE 2 YEAR	POST 2 YEAR	WSE	PRE 10 YEAR	POST 10 YEAR	WSE	PRE 100 YEAR	POST 100 YEAR	WSE
1	3.30	1.62	71	1.00	4.86	0.65	36.79	9.40	3.31	37.42	15.20	8.15	38.23

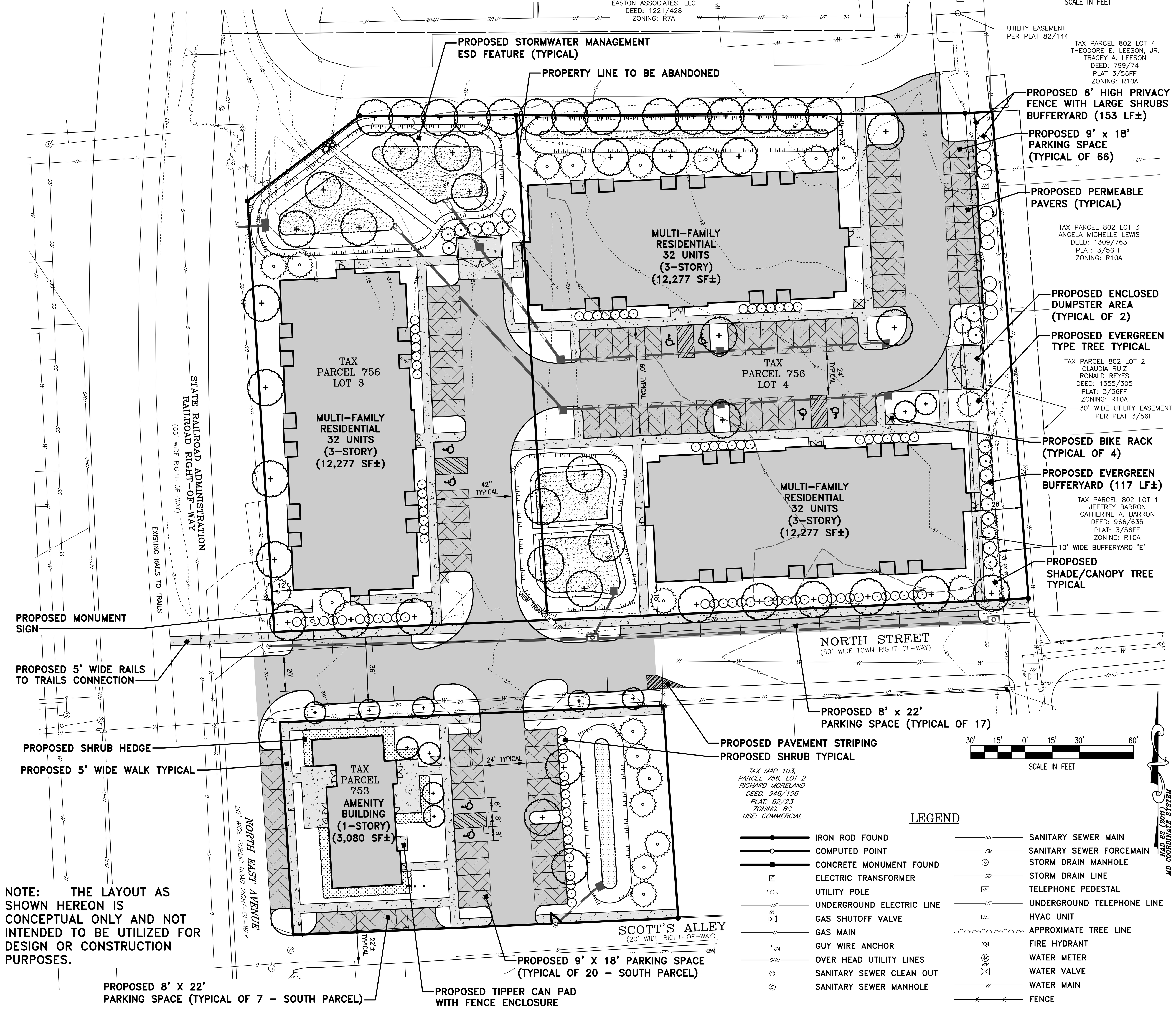
ESD SUMMARY CHART

DRAINAGE AREA	TYPE OF ESD PRACTICE	TYPE OF ESD PRACTICE (STRUCTURE NAME)	ON–SITE OR OFF–SITE STRUCTURE	RUNOFF CURVE NUMBER (RCN) WEIGHTED	MARYLAND GRID COORDINATE NAD 83 METERS NORTHING	MARYLAND GRID COORDINATE NAD 83 METERS EASTING	ESD PRACTICE TOTAL DRAINAGE AREA (ACRES)	ESD PRACTICE IMPERVIOUS DRAINAGE AREA (ACRES)	SURFACE AREA OF ESD PRACTICE (ACRES)	TARGET PE (IN)	ACTUAL PE (IN)	TARGET ESDv (FT³)	ACTUAL ESDv (FT³)
PR–1	M–6	MICRO–BIORETENTION	ON–SITE	87	405,740.66	1,578,102.95	0.46	0.35	0.02	1.8	1.8	2205	2591
PR–2	M–6	MICRO–BIORETENTION	ON–SITE	87	405,703.78	1,578,106.94	0.44	0.31	0.03	1.8	1.8	1992	2462
PR–3	M–6	MICRO–BIORETENTION	ON–SITE	87	405,921.41	1,578,029.25	0.47	0.19	0.03	1.8	1.8	1297	2018
PR–4	M–6	MICRO–BIORETENTION	ON–SITE	87	405,898.70	1,577,970.02	0.41	0.30	0.03	1.8	1.8	1886	2684
PR–5	M–6	MICRO–BIORETENTION	ON–SITE	87	405,564.11	1,578,120.81	0.52	0.20	0.04	1.8	1.8	1321	2055
PR–6	M–8	BIO–SWALE	ON–SITE	87	405,941.44	1,578,164.12	0.72	0.22	0.03	1.8	1.8	1527	2279
TOTAL	––	––	ON–SITE	87	––	––	3.02	1.57	0.18	1.8	1.8	10228	14089

APPROXIMATE FOREST CONSERVATION RETENTION AREA (0.47 AC±)



VICINITY MAP
SCALE: 1" = 600'
300' 0' 300' 600'
SCALE IN FEET



APPROVED:
PLANS ARE ISSUED FOR REVIEW ONLY
TOWN OF EASTON – PLANNING & ZONING DATE
APPROVED:
TOWN OF EASTON – TOWN ENGINEER DATE
APPROVED:
PLANS ARE NOT APPROVED FOR CONSTRUCTION
EASTON UTILITIES – MANAGER OF ENGINEERING DATE

REVISIONS TO APPROVED PLANS

No.	DATE	DESCRIPTION	BY

WARNING!!
THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE QUANTITIES SHOWN ON THIS PLAN ARE FOR INFORMATIONAL AND PERMITTING PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES TO HIS OWN SATISFACTION PRIOR TO BEGINNING CONSTRUCTION.

THE CONTRACTOR SHALL TEST PIT AND LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO THE BEGINNING OF ANY WORK ON–SITE. THE CONTRACTOR SHALL NOTIFY DEPT. OF PUBLIC WORKS OF ANY POSSIBLE CONFLICT AND REQUEST THE RELOCATION OF THE EXISTING UNDERGROUND UTILITIES BEFORE BEGINNING ANY WORK ON–SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RELOCATION EXPENSE.

MISS UTILITY
DIG WITH CARE – CALL MISS UTILITY – KEEP MARYLAND SAFE
BEFORE YOU DIG CALL
1–800–441–8355 OR 811
PROTECT YOURSELF, GIVE
TWO WORKING DAYS NOTICE

Lane Engineering, LLC
Established 1986
Civil Engineers • Land Planning • Land Surveyors
E–mail: general@leinc.com
117 Bay St. Easton, MD 21601 (410) 822–8003
15 Washington St. Cambridge, MD 21613 (410) 221–0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758–2095

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 23152 , Expiration Date: 7/5/2025.

SEAL
STATE OF MARYLAND – TIMOTHY W. GLASS – NO. 23152 – REGISTERED PROFESSIONAL ENGINEER
11.27.23
DATE

SKETCH SITE PLAN

ON THE LANDS OF
SHOREGATE OF CANNERY COMMERCIAL, LLC
IN THE TOWN OF EASTON, WARD 1
TALBOT COUNTY, MARYLAND
TAX MAP 103 PARCEL 756 LOTS 3 & 4

ISSUED/REVISED FOR:	DATE:	BY:
ESDR REVIEW	11/1/23	BCE
PLANNING COMMISSION	11/27/23	BCE

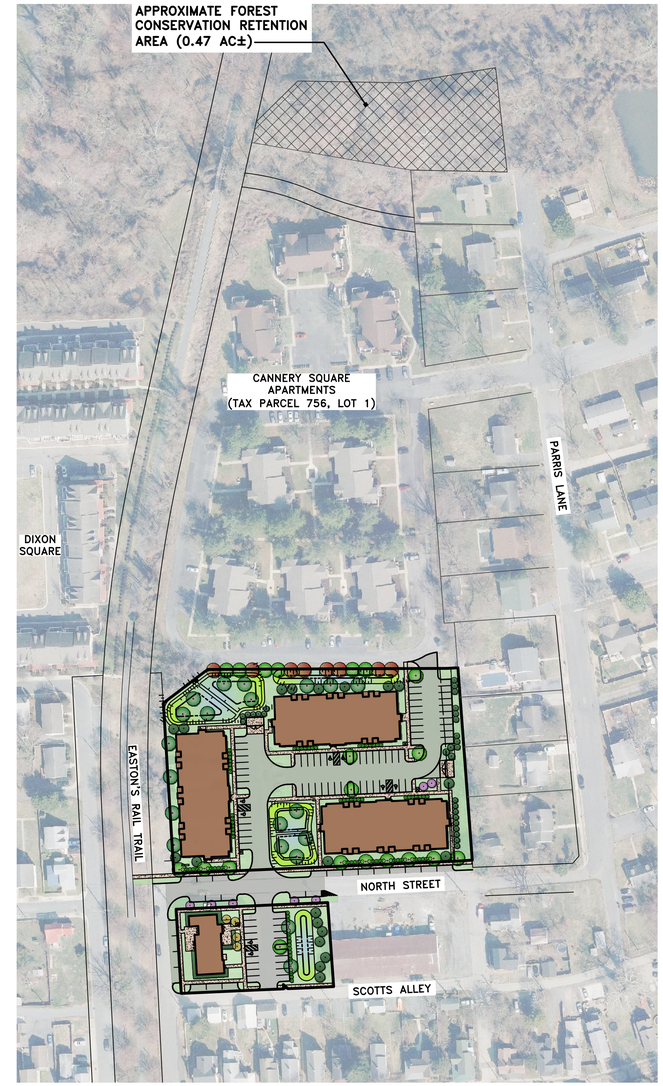
SHEET No. 1 OF 1
11/1/23
JOB No. 230228
SCALE: AS NOTED
FILE No. B246

© LANE ENGINEERING, LLC

AERIAL CONTEXT PLAN
SCALE: 1" = 60'

60' 30' 0' 30' 60' 120'
SCALE IN FEET

NAD 83 (2011)
MD COORDINATE SYSTEM



FOREST CONSERVATION RETENTION AREA OVERVIEW
SCALE: 1" = 100'

100' 50' 0' 50' 100' 200'
SCALE IN FEET

NAD 83 (2011)
MD COORDINATE SYSTEM

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TOWN OF EASTON – PLANNING & ZONING DATE
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SEAL
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TAX MAP 103 PARCEL 756 LOTS 3 & 4

ISSUED/REVISED FOR:	DATE:	BY:
ESDR REVIEW	11/1/23	BCE
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SHEET No. 1 OF 1	11/1/23
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Date: 11/27/2023 – 10:18am User: wbarnhart Project Manager: BCE
Drawing Path: J:\2023\0200\230228\Civil3D-230228\Dwg\Plots\YRSK-PLTS-230228.dwg | AERIAL CONTEXT
XREF File(s): VLD-BASE-170148/YSF-BASE-170148/YRSK-BASE-230228/RBS-BASE-24X36-230228/RLD-BASE-230228/RLD-EUC-BASE-230228/LLP-BASE-230228/RAR-BASE-230228/YRN-BASE-230228

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DUE TO UTILITY CONSTRAINTS THE OWNER WILL UTILIZE 2 PLANTING OPTIONS ALONG THE EASTER PROPERTY LINE

A – FENCE WITH 3 LG EVERGREEN SHRUB: 153 LF / 50' = 3.06 PLANT UNITS (PU); &
B – 4 EVERGREENS: 117 LF / 50' = 2.34 PLANT UNITS (PU)

A– FENCE WITH 3 LARGE EVERGREEN SHRUBS X 3.06 PU = PRIVACY FENCE & 9 LARGE EVERGREEN SHRUBS REQUIRED
B– 4 EVERGREEN TREES X 2.34 PU = 9 EVERGREEN TREES REQUIRED

COMPREHENSIVE PLAN DESIGN PRINCIPLES RESPONSE NARRATIVE

PRINCIPLE #1– INTEGRATED USES ARE DESIRABLE– THIS DEVELOPMENT PROPOSES RESIDENTIAL DEVELOPMENT ADJOINING OTHER RESIDENTIAL LAND USES.

PRINCIPLE #2– NATURAL FEATURES SHOULD DETERMINE DESIGN– NO COMPELLING NATURAL FEATURES; SWM INTEGRATED ON SITE.

PRINCIPLE #3– AUTOMOBILES SHOULD NOT DETERMINE DESIGN– PARKING FOR RESIDENTS IS IMPORTANT. THE PROPOSED PARKING AREAS HAVE BEEN DESIGNED TO ACCOMMODATE THE BUILDING LAYOUT ON–SITE.

PRINCIPLE #4– AMPLE OPEN SPACES SHOULD BE PROVIDED WITHIN & AROUND NEIGHBORHOODS– USABLE OPEN SPACE NOT SPECIFICALLY APPLICABLE HERE; ADEQUATE BUFFERING/SCREENING PROVIDED. POTENTIAL ACCESS TO EASTON RAILS TO TRAILS PROVIDED.

PRINCIPLE #5– ARCHITECTURE SHOULD RESPECT EASTON'S HISTORICAL DEVELOPMENT– THIS APPLICATION PROPOSES ARCHITECTURE COMPATIBLE WITH EXISTING BUILDINGS AND COMPATIBLE WITH EXISTING ARCHITECTURE FOUND IN EASTON.

PRINCIPLE #6– SIGNS SHOULD INFORM BUT NOT DOMINATE–SIGNAGE TASTEFUL, SIMPLE AND PER CODE.

PRINCIPLE #7– NEIGHBORHOODS SHOULD CONTAIN A DIVERSITY OF HOUSING TYPES– THIS DEVELOPMENT PROPOSES A MULTI–FMAILY APARTMENT COMPLEX JUST WEST OF EXISTING SINGLE FAMILY RESIDENTIAL DWELLINGS.

PRINCIPLE #8 RESIDENTIAL NEIGHBORHOODS SHOULD BE INTERESTING PLACES– THIS DEVELOPMENTS SETTING PROVIDES AND ENHANCES THE SURROUNDING RESIDENTIAL COMMUNITY.

PRINCIPLE #9– NEIGHBORHOODS SHOULD CONNECT– THE DEVELOPMENT PROPOSED WILL EXTEND THE EXISTING CANNERY SQUARE APARTMENT COMPLEX TO THE NORTH.

NOTE: THE LAYOUT AS SHOWN HEREON IS CONCEPTUAL ONLY AND NOT INTENDED TO BE UTILIZED FOR DESIGN OR CONSTRUCTION PURPOSES.

Date: 11/27/2023 – 10:16am User: wbarnhart Project Manager: BCE
Drawing Path: J:\2023\0200\230228\Civil3D–230228\Dwg\Plots\RSK–PLTS–230228.dwg | ILLUSTRATIVE
XREF File(s): VLD–BASE–170148/VSF–BASE–170148/RSK–BASE–230228/RBS–BASE–24X36–230228/VLD–BASE–230228/RLD–EUC–BASE–230228/LLP–BASE–230228/RAR–BASE–230228/VSF–BASE–230228/XRN–BASE–230228

LANDSCAPE KEY

- 2" CALIPER MINIMUM CANOPY OR STREET TREES (OAK, MAPLE TYPES)
- 1.25" CALIPER OR 7' HEIGHT MINIMUM FLOWERING TREES (CHERRY, MAGNOLIA, SERVICEBERRY, RED BUD, SERVICEBERRY TYPES)
- 7' HEIGHT MINIMUM EVERGREEN TREES (WHITE PINE, AMERICAN ARBORVITAE, LOBLOLLY TYPES)
- SHRUBS / SHRUB MASS, GROUND COVER
- STORMWATER MANAGEMENT ESD LANDSCAPING MASS / PERENNIAL MIX WITH SHRUBS AND GRASSES

UNOBSTRUCTED VISION TRIANGLE AREA NOTE

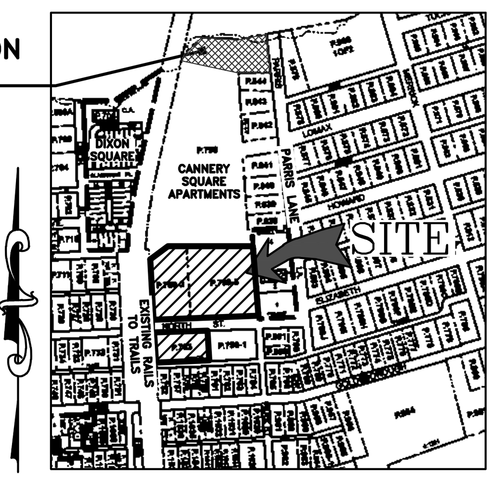
25' UNOBSTRUCTED VISION TRIANGLE IN ACCORDANCE WITH THE TOWN OF EASTON ZONING ORDINANCE.

FOREST CONSERVATION COMPLIANCE

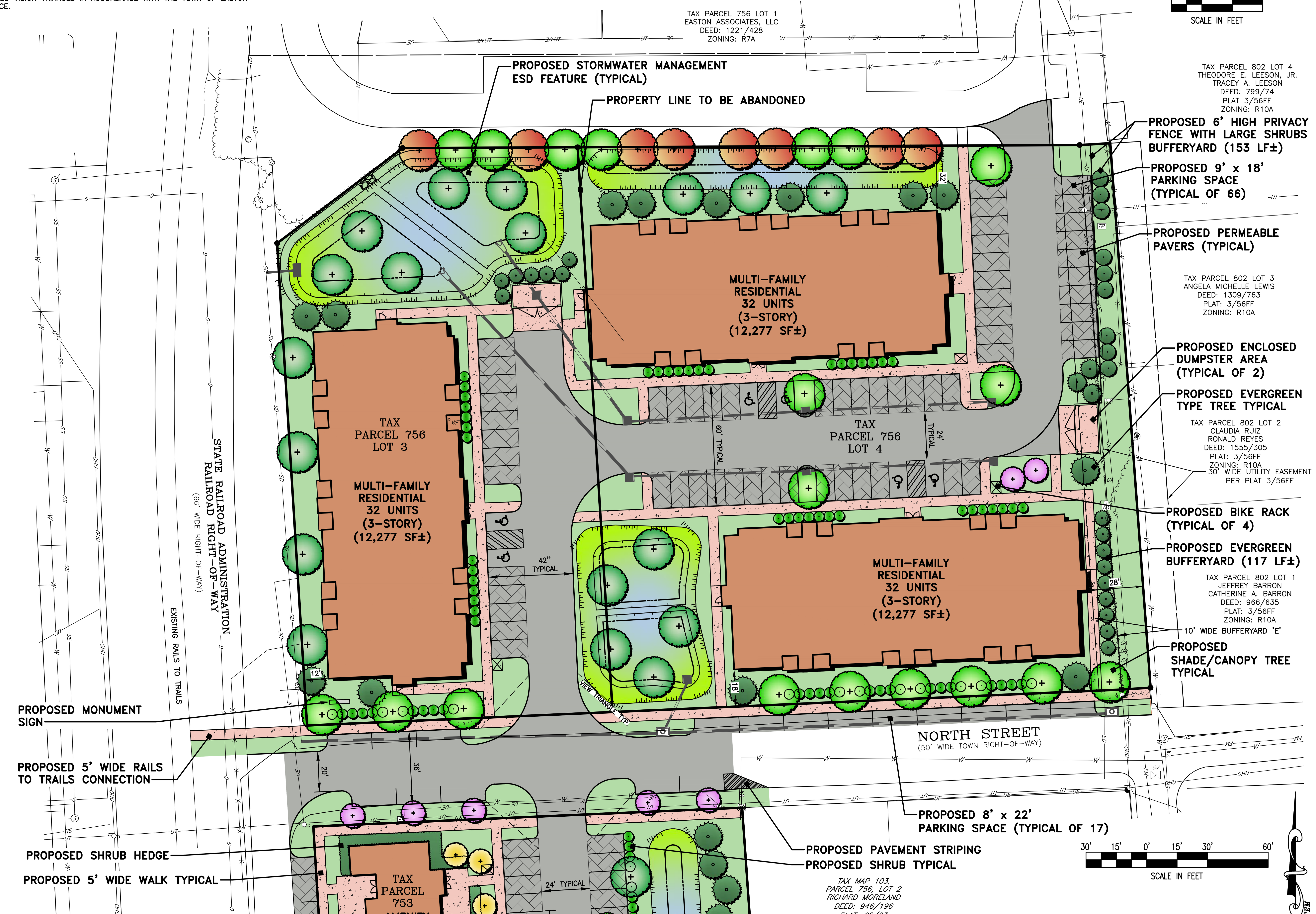
THE TOTAL TRACT (3.19 ACRES) IS AN INFILL DEVELOPMENT OPPORTUNITY IN THE TOWN OF EASTON. THE NET TRACT FOR PURPOSES OF THIS FOREST CONSERVATION PLAN IS THE TOTAL TRACT AREA (3.19 ACRES) LESS THE 30' WIDE UTILITY EASEMENT (0.09 ACRES) AND EQUALS 3.10 ACRES WHICH IS SUBJECT TO FOREST CONSERVATION REGULATIONS.

THE OWNER IS REQUIRED PLANT/ AFFOREST A TOTAL OF 0.47 ACRES. THE AFFORESTATION REQUIREMENTS SHALL BE MET BY UTILIZING OFF–SITE FOREST RETENTION LOCATED ON THE NORTHERN PORTION OF TAX PARCEL 756 (CANNERY SQUARE APARTMENT PROPERTY) AND SHALL BE PLACED UNDER A LONG TERM PROTECTIVE EASEMENT AND RECORDED WITHIN THE LAND RECORDS OF TALBOT COUNTY.

APPROXIMATE FOREST CONSERVATION RETENTION AREA (0.47 AC±)



VICINITY MAP
SCALE: 1" = 600'
300' 0' 300' 600'
SCALE IN FEET



LEGEND

- IRON ROD FOUND
- COMPUTED POINT
- CONCRETE MONUMENT FOUND
- ELECTRIC TRANSFORMER
- UTILITY POLE
- UNDERGROUND ELECTRIC LINE
- GAS SHUTOFF VALVE
- GAS MAIN
- GUY WIRE ANCHOR
- OVER HEAD UTILITY LINES
- SANITARY SEWER CLEAN OUT
- SANITARY SEWER MANHOLE
- SANITARY SEWER MAIN
- SANITARY SEWER FORCEMAIN
- STORM DRAIN MANHOLE
- STORM DRAIN LINE
- TELEPHONE PEDESTAL
- UNDERGROUND TELEPHONE LINE
- HVAC UNIT
- APPROXIMATE TREE LINE
- FIRE HYDRANT
- WATER METER
- WATER VALVE
- WATER MAIN
- FENCE

APPROVED:
PLANS ARE ISSUED FOR REVIEW ONLY
TOWN OF EASTON – PLANNING & ZONING DATE
APPROVED:
TOWN OF EASTON – TOWN ENGINEER DATE
APPROVED:
PLANS ARE NOT APPROVED FOR CONSTRUCTION
EASTON UTILITIES – MANAGER OF ENGINEERING DATE

REVISIONS TO APPROVED PLANS

No.	DATE	DESCRIPTION	BY

WARNING!!
THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE QUANTITIES SHOWN ON THIS PLAN ARE FOR INFORMATIONAL AND PERMITTING PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES TO HIS OWN SATISFACTION PRIOR TO BEGINNING CONSTRUCTION.

THE CONTRACTOR SHALL TEST PIT AND LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO THE BEGINNING OF ANY WORK ON–SITE. THE CONTRACTOR SHALL NOTIFY DEPT. OF PUBLIC WORKS OF ANY POSSIBLE CONFLICT AND REQUEST THE RELOCATION OF THE EXISTING UNDERGROUND UTILITIES BEFORE BEGINNING ANY WORK ON–SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RELOCATION EXPENSE.

MISS UTILITY
DIG WITH CARE – CALL MISS UTILITY – KEEP MARYLAND SAFE
BEFORE YOU DIG CALL 1–800–441–8355 OR 811
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

Lane Engineering, LLC
Established 1986
Civil Engineers • Land Planning • Land Surveyors
E–mail: general@leinc.com
117 Bay St. Easton, MD 21601 (410) 822–8003
15 Washington St. Cambridge, MD 21613 (410) 221–0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758–2095

SEAL
DATE

ILLUSTRATIVE SITE PLAN

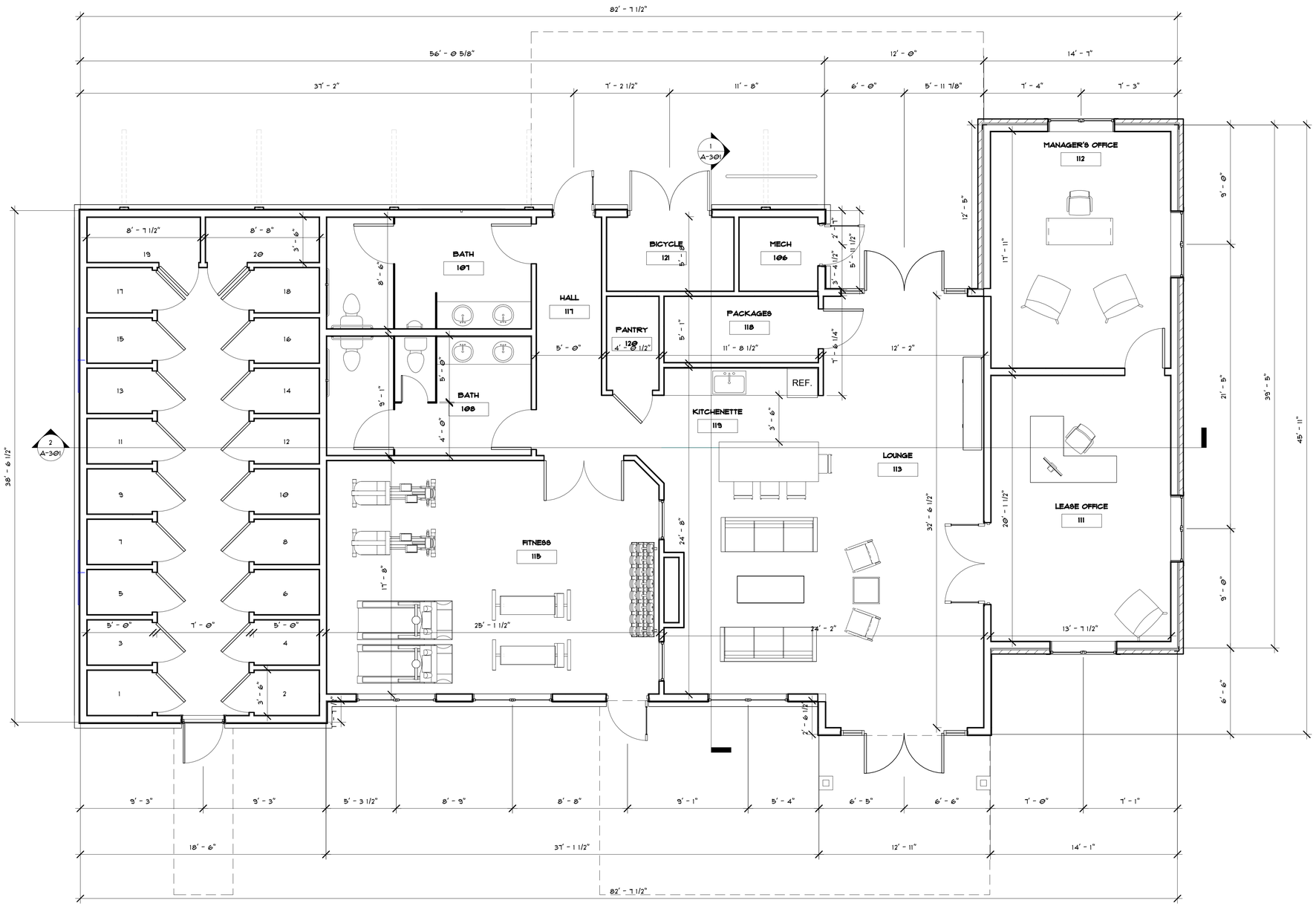
ON THE LANDS OF
SHOREGATE OF CANNERY COMMERCIAL, LLC

IN THE TOWN OF EASTON, WARD 1
TALBOT COUNTY, MARYLAND
TAX MAP 103 PARCEL 756 LOTS 3 & 4

ISSUED/REVISED FOR:	DATE:	BY:
ESDR REVIEW	11/1/23	BCE
PLANNING COMMISSION	11/27/23	BCE

SHEET No. 1 OF 1
SCALE: AS NOTED
11/1/23
JOB No. 230228
FILE No. B246

© LANE ENGINEERING, LLC



1 FIRST FLOOR
1/4" = 1'-0"

FISHER ARCHITECTURE
Fisher Architecture, LLC
542 Riverside Drive
Salisbury, MD 21801
(410) 742-0238

SEAL:

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LICENSE NO.: 0013955
EXPIRATION NO.: 09.23.2024

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CONSULTANTS:

CANNERY SQUARE APARTMENTS CLUBHOUSE

ADDRESS
CITY, STATE

SHEET INFO:

FIRST FLOOR PLAN

REV	REV DATE	DESCRIPTION
4	09.13.2023	HDC Resubmission
3	08.24.2023	HDC Resubmission
2	08.02.2023	HDC Submission
1	07.25.2023	Schematic Design

DATE:	2023.07.14
PROJECT NO.	2023065
SCALE:	1/4" = 1'-0"
PROJ MGR:	Designer
DRAWN BY:	Author

SHEET NUMBER:

A-101

1 ELEVATION EAST (FRONT)
1/4" = 1'-0"

2 ELEVATION WEST (REAR)
1/4" = 1'-0"

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Fisher Architecture, LLC
542 Riverside Drive
Salisbury, MD 21801
(410) 742-0238

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CONSULTANTS:

CANNERY SQUARE APARTMENTS CLUBHOUSE

ADDRESS
CITY, STATE

SHEET INFO:

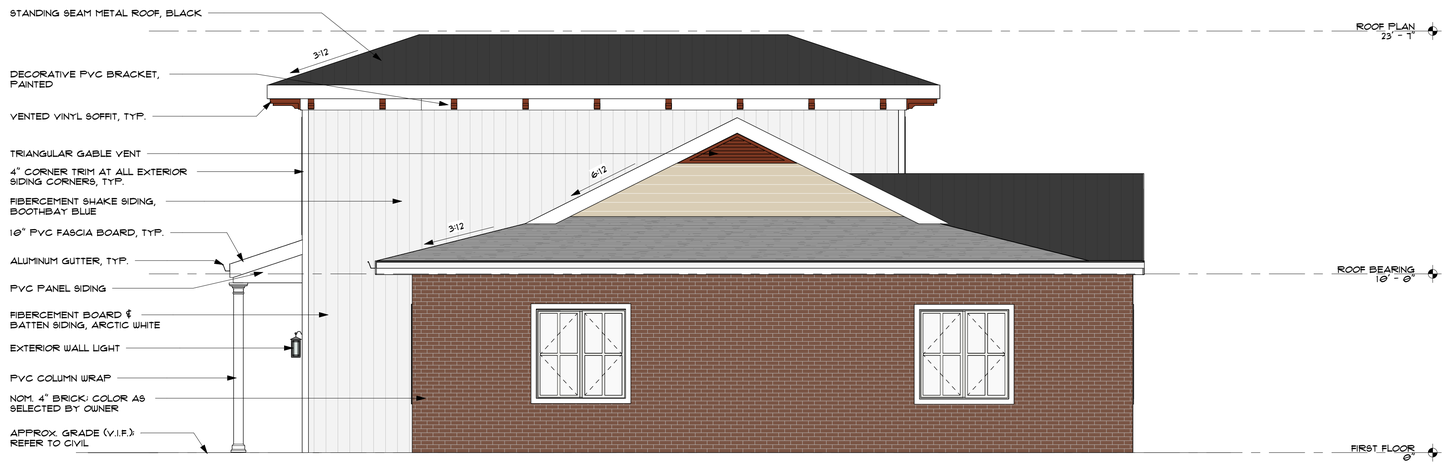
ELEVATIONS

REV	REV DATE	DESCRIPTION
4	09.13.2023	HDC Resubmission
3	08.24.2023	HDC Resubmission
2	08.02.2023	HDC Submission
1	07.25.2023	Schematic Design

DATE:	2023.07.14
PROJECT NO.	2023065
SCALE:	1/4" = 1'-0"
PROJ MGR:	Designer
DRAWN BY:	Author

SHEET NUMBER:

A-201



1 ELEVATION NORTH (RIGHT)
1/4" = 1'-0"

2 ELEVATION SOUTH (LEFT)
1/4" = 1'-0"

FISHER ARCHITECTURE
Fisher Architecture, LLC
542 Riverside Drive
Salisbury, MD 21801
(410) 742-0238

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LICENSE NO.: 0013955
EXPIRATION NO.: 09.23.2024

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ADDRESS
CITY, STATE

SHEET INFO:

ELEVATIONS

REV	REV DATE	DESCRIPTION
4	09.13.2023	HDC Resubmission
3	08.24.2023	HDC Resubmission
2	08.02.2023	HDC Submission
1	07.25.2023	Schematic Design

DATE:	2023.07.14
PROJECT NO.	2023056
SCALE:	1/4" = 1'-0"
PROJ MGR:	Designer
DRAWN BY:	Author

SHEET NUMBER:

A-202

ELIZABETH STREET VIEW

FISHER
ARCHITECTURE
Fisher Architecture, LLC
542 Riverside Drive
Salisbury, MD 21801
(410) 742-0238

SEAL:

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LICENSE NO.: 0013955
EXPIRATION NO.: 09.23.2024

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CONSULTANTS:

CANNERY SQUARE APARTMENTS CLUBHOUSE

ADDRESS
CITY, STATE

SHEET INFO:

RENDERING - ELIZABETH STREET

REV	DATE	DESCRIPTION
4	09.13.2023	HDC Resubmission
3	08.24.2023	HDC Resubmission
2	08.02.2023	HDC Submission
1	07.25.2023	Schematic Design

DATE:	2023.07.14
PROJECT NO.	2023065
SCALE:	
PROJ MGR:	Designer
DRAWN BY:	Author

SHEET NUMBER:

A-801

EAST STREET VIEW

FISHER ARCHITECTURE
Fisher Architecture, LLC
542 Riverside Drive
Salisbury, MD 21801
(410) 742-0238

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EXPIRATION NO.: 09.23.2024

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CONSULTANTS:

CANNERY SQUARE APARTMENTS CLUBHOUSE

ADDRESS
CITY, STATE

SHEET INFO:

RENDERING - EAST STREET

REV.	REV DATE	DESCRIPTION
4	09.13.2023	HDC Resubmission
3	08.24.2023	HDC Resubmission
2	08.02.2023	HDC Submission
1	07.25.2023	Schematic Design

DATE:	2023.07.14
PROJECT NO.	2023065
SCALE:	
PROJ MGR:	Designer
DRAWN BY:	Author

SHEET NUMBER:

A-802

UNIT MATRIX					
	AREA	1ST	2ND	3RD	TOTAL
3 BED TYPE B	1,237 S.F.	2	2	0	4 (13%)
2 BED TYPE A	1,084 S.F.	1	0	0	14 (44%)
2 BED TYPE B	1,084 S.F.	3	4	6	
1 BED TYPE B	762 S.F.	4	4	4	12 (37%)
STUDIO	655 S.F.	0	1	1	2 (6%)
		10	11	11	32

1 FIRST FLOOR
1/8" = 1'-0"

GENERAL PLAN NOTES

1. ALL TENANT UNIT SEPARATION WALLS SHALL BE 1 HOUR RATED; WALLS SHALL BE CONSTRUCTED AS WALL TYPE 2, U.O.N.
2. ALL CORRIDOR WALLS SHALL BE 1 HOUR RATED; WALLS SHALL BE CONSTRUCTED AS WALL TYPE 2, U.O.N.
3. REFER TO ENLARGED UNIT PLANS (A-400'S) FOR DIMENSIONS, DETAILS AND WALL TYPES.
4. REFER TO ENLARGED VESTIBULE PLANS (A-504) FOR DIMENSIONS, DETAILS AND WALL TYPES.
5. ALL BALCONIES TO HAVE 1/8" SLOPE AWAY FROM BUILDING.

FISHER ARCHITECTURE
Fisher Architecture, LLC
542 Riverside Drive
Salisbury, MD 21801
(410) 742-0238

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LICENSE NO.: 0013955
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CONSULTANTS:

CANNERY SQUARE BUILDING

EASTON, MD 21601

SHEET INFO:

FIRST FLOOR PLAN

REV	REV DATE	DESCRIPTION
2	2023.07.27	SDs To Owner
1	2023.07.13	SDs To Owner

DATE:	2021.08.04
PROJECT NO.	2020054
SCALE:	As Indicated
PROJ MGR:	HAM
DRAWN BY:	Author

SHEET NUMBER:

A-101

UNIT MATRIX					
	AREA	1ST	2ND	3RD	TOTAL
3 BED TYPE B	1,237 S.F.	2	2	0	4 (13%)
2 BED TYPE A	1,084 S.F.	1	0	0	14 (44%)
2 BED TYPE B	1,084 S.F.	3	4	6	
1 BED TYPE B	762 S.F.	4	4	4	12 (37%)
STUDIO	655 S.F.	0	1	1	2 (6%)
		10	11	11	32

1 SECOND FLOOR
1/8" = 1'-0"

GENERAL PLAN NOTES

1. ALL TENANT UNIT SEPARATION WALLS SHALL BE 1 HOUR RATED; WALLS SHALL BE CONSTRUCTED AS WALL TYPE 2, U.O.N.
2. ALL CORRIDOR WALLS SHALL BE 1 HOUR RATED; WALLS SHALL BE CONSTRUCTED AS WALL TYPE 2, U.O.N.
3. REFER TO ENLARGED UNIT PLANS (A-400'S) FOR DIMENSIONS, DETAILS AND WALL TYPES.
4. REFER TO ENLARGED VESTIBULE PLANS (A-504) FOR DIMENSIONS, DETAILS AND WALL TYPES.
5. ALL BALCONIES TO HAVE 1/8" SLOPE AWAY FROM BUILDING.

FISHER ARCHITECTURE
Fisher Architecture, LLC
542 Riverside Drive
Salisbury, MD 21801
(410) 742-0238

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LICENSE NO.: 0013955
EXPIRATION NO.: 09.23.2022

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EASTON, MD 21601

SHEET INFO:

SECOND FLOOR PLAN

REV	REV DATE	DESCRIPTION
2	2023.07.27	SDs To Owner
1	2023.07.13	SDs To Owner

DATE:	2021.08.04
PROJECT NO.	2020054
SCALE:	As indicated
PROJ MGR:	HAM
DRAWN BY:	Author

SHEET NUMBER:

A-102

UNIT MATRIX					
	AREA	1ST	2ND	3RD	TOTAL
3 BED TYPE B	1,237 S.F.	2	2	0	4 (13%)
2 BED TYPE A	1,084 S.F.	1	0	0	14 (44%)
2 BED TYPE B	1,084 S.F.	3	4	6	
1 BED TYPE B	762 S.F.	4	4	4	12 (37%)
STUDIO	655 S.F.	0	1	1	2 (6%)
		10	11	11	32

1 THIRD FLOOR
1/8" = 1'-0"

GENERAL PLAN NOTES

1. ALL TENANT UNIT SEPARATION WALLS SHALL BE 1 HOUR RATED; WALLS SHALL BE CONSTRUCTED AS WALL TYPE 2, U.O.N.
2. ALL CORRIDOR WALLS SHALL BE 1 HOUR RATED; WALLS SHALL BE CONSTRUCTED AS WALL TYPE 2, U.O.N.
3. REFER TO ENLARGED UNIT PLANS (A-400'S) FOR DIMENSIONS, DETAILS AND WALL TYPES.
4. REFER TO ENLARGED VESTIBULE PLANS (A-504) FOR DIMENSIONS, DETAILS AND WALL TYPES.
5. ALL BALCONIES TO HAVE 1/8" SLOPE AWAY FROM BUILDING.

FISHER ARCHITECTURE
Fisher Architecture, LLC
542 Riverside Drive
Salisbury, MD 21801
(410) 742-0238

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LICENSE NO.: 0013955
EXPIRATION NO.: 09.23.2022

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CONSULTANTS:

CANNERY SQUARE BUILDING

EASTON, MD 21601

SHEET INFO:

THIRD FLOOR PLAN

REV	REV DATE	DESCRIPTION
2	2023.07.27	SDs To Owner
1	2023.07.13	SDs To Owner

DATE:	2021.08.04
PROJECT NO.	2020054
SCALE:	As indicated
PROJ MGR:	HAM
DRAWN BY:	Author

SHEET NUMBER:

A-103

1 ELEVATION NORTH
1/8" = 1'-0"

2 ELEVATION SOUTH
1/8" = 1'-0"

FISHER ARCHITECTURE
Fisher Architecture, LLC
542 Riverside Drive
Salisbury, MD 21801
(410) 742-0238

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CONSULTANTS:

CANNERY SQUARE BUILDING

EASTON, MD 21601

SHEET INFO:

ELEVATIONS

REV	REV DATE	DESCRIPTION
2	2023.07.27	SDs To Owner
1	2023.07.13	SDs To Owner

DATE:	2021.08.04
PROJECT NO.	202005.4
SCALE:	1/8" = 1'-0"
PROJ MGR:	HAM
DRAWN BY:	Author

SHEET NUMBER:

A-201

1 ELEVATION EAST
1/8" = 1'-0"

2 ELEVATION WEST
1/8" = 1'-0"

FISHER ARCHITECTURE
Fisher Architecture, LLC
542 Riverside Drive
Salisbury, MD 21801
(410) 742-0238

SEAL:

FOR REVIEW ONLY NOT FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION:
I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE NO.: 0013955
EXPIRATION NO.: 09.23.2022

THE DOCUMENTS PREPARED BY FISHER ARCHITECTURE, LLC, ARE SOLELY FOR THE PURPOSES OF THE SPECIFIED PROJECT. THEY ARE NOT INTENDED OR AUTHORIZED FOR USE ON ANY OTHER PROJECT. FISHER ARCHITECTURE, LLC MAKES NO REPRESENTATION AS TO THEIR SUITABILITY FOR ANY OTHER USE. ALL DOCUMENTS PREPARED BY FISHER ARCHITECTURE, LLC ARE INSTRUMENTS OF PROFESSIONAL SERVICE IN RESPECT OF THE PROJECT. THESE DOCUMENTS ARE, AND SHALL REMAIN, THE PROPERTY OF FISHER ARCHITECTURE, LLC.

CONSULTANTS:

CANNERY SQUARE BUILDING

EASTON, MD 21601

SHEET INFO:

ELEVATIONS

REV	REV DATE	DESCRIPTION
2	2023.07.27	SDs To Owner
1	2023.07.13	SDs To Owner

DATE:	2021.08.04
PROJECT NO.	2020054
SCALE:	1/8" = 1'-0"
PROJ MGR:	HAM
DRAWN BY:	Author

SHEET NUMBER:

A-202

FISHER
ARCHITECTURE

FISHER
ARCHITECTURE

McAllister, DeTar, Showalter & Walker LLC
File No. **1106.630**
Tax ID # **01-017128**
Underwriter: **Chicago Title Insurance Company**

This Deed, made this 10th day of November, 2021 by and between TWO SONS E.I.P., LLC, a Maryland limited liability company, party of the first part, Grantor; and SHOREGATE OF CANNERY COMMERCIAL, LLC, a Maryland limited liability company, party of the second part, Grantee.

- Witnesseth -

That for and in consideration of the sum of FOUR HUNDRED FIFTY THOUSAND DOLLARS AND 00/100 ($450,000.00), which includes the amount of any outstanding Mortgage or Deed of Trust, if any, the receipt whereof is hereby acknowledged, the said Grantor do hereby grant and convey unto the said SHOREGATE OF CANNERY COMMERCIAL, LLC, a Maryland limited liability company, its successors and assigns, forever, in fee simple, all that lot of ground situate in the County of Talbot, State of Maryland and described as follows, that is to say:

ALL of those lots, pieces or parcels of land situate, lying and being in the Town of Easton, Talbot County, Maryland, being collectively known and designated as 108 East Avenue, Easton, Maryland, and being identified on the Tax Assessment Maps of the State of Maryland as Parcel No. 753, of Tax Map No. 103, Tax Account No. 01-017128, and being more particularly described as follows:

(1) ALL of that lot, piece or parcel of property which was conveyed unto Charles A. Beesley by Blenda W. Armistead, by deed dated November 27, 1985, and recorded among the Land Records for Talbot County, Maryland in Liber No. 607, folio 743, and being more particularly described therein and herein as follows:

"ALL that lot or parcel of ground (40` x 117.95`±) situate in the Town of Easton, Talbot County, Maryland, and described as bounded on the East and West by property formerly belonging to Peoples Ice Company, Incorporated (now owned by Charles A. Beesley), on the South by Scott Alley and on the North by North Street, be the contents thereof what it may."

(2) ALL of those two parcels of property which were conveyed unto Charles A. Beesley by L. Clark Ewing and J. Stanley Ridgeway, by deed dated October 16, 1980, and recorded among the Land
Records for Talbot County, Maryland in Liber No. 549, folio 549, and being more particularly described therein and herein as follows:

"FIRST: ALL those 2 lots which are shown as Lots 84 and 85 Block 6, on the Plat of Caldwells Addition recorded in Liber No. 77, folio 265, save a 5-foot strip conveyed to the Mayor and Council for the widening of Scotts Alley (Liber 168, folio 171), comprising one parcel fronting 103 feet, more or less, on the North side of Scotts Alley, 120 feet on the East side of East Street, 103 feet, more or less, on the South side of North Street, and 120 feet on the West side of a 40-foot right-of-way extending Northerly from Scotts Alley, together with the right to use said right-of-way.

TALBOT COUNTY FINANCE OFFICE
RECORDATION TAX
AMT: $1,400.00
DATE: 11/17/2021
INITIALS: SPH
Rcp ID: 0101-7128

CERTIFICATION IS MADE THAT ALL TAXES DUE ON THE PROPERTY INDICATED IN THIS DEED HAVE BEEN PAID.
FINANCE OFFICER OF TALBOT COUNTY
CLAY B. STAMP, FIN. OFFICER
DATE 11/18/2021

TALBOT COUNTY CIRCUIT COURT (Land Records) KMD 2918, p. 0376, MSA_CE91_2857. Date available 11/19/2021. Printed 05/23/2023.

SECOND: ALL that lot fronting 70 feet on the North side of Scotts Alley, and running back with the East side of said 40-foot right-of-way, with an equal width of 70 feet, 117.95 feet, save the portion thereof immediately adjacent to said 40-foot right-of way fronting 20 feet on the North side of Scotts Alley, and extending back 117.95 feet which was conveyed to Mayor and Council (Liber 251, folio 119, and see Plat Record 1, folio 168) and (2) to Chas. T. Wrightson & Son, Inc. (Liber 257, folio 176)."

For informational purposes only: The improvements thereon being known as 108 East Ave.

TAX ACCOUNT NO. : 01-017128

Being the same property conveyed to Two Sons E.I.P. LLC, by virtue of Deed from Philip James Harrington Jr and Philip James Harrington III, dated July 17, 2016, recorded among the Land Records of Talbot County, Maryland, in Liber MAS 2368, folio 63.

Together with the buildings and improvements thereon erected, made or being; and all and every, the rights, alleys, ways, waters, privileges, appurtenances and advantages thereto belonging, or in anywise appertaining.

Subject, however, to any covenants, conditions, restrictions and easements of record.

To Have and To Hold the said tract of ground and premises above described and mentioned, and hereby intended to be conveyed, together with the rights, privileges, appurtenances and advantages thereto belonging or appertaining unto and to the proper use and benefit of the said SHOREGATE OF CANNERY COMMERCIAL, LLC, a Maryland limited liability company, its successors and assigns, forever, in fee simple.

And the said party of the first part hereby covenant that it has not done or suffered to be done any act, matter or thing whatsoever, to encumber the property hereby conveyed; that it will warrant specially the property hereby granted; and that it will execute such further assurances of the same as may be requisite.

TALBOT COUNTY CIRCUIT COURT (Land Records) KMD 2918, p. 0377, MSA_CE91_2857. Date available 11/19/2021. Printed 05/23/2023.

TALBOT COUNTY CIRCUIT COURT (Land Records) KMD 2918, p. 0378, MSA_CE91_2857. Date available 11/19/2021. Printed 05/23/2023.

As Witness the hand and seal of said Grantor, the day and year first above written.

_____(SEAL)
Witness

TWO SONS E.I.P., LLC, a Maryland Limited Liability Company

By: _____(SEAL)
PHILIP J. HARRINGTON, III, SOLE MEMBER

STATE OF MARYLAND, COUNTY OF Talbot, TO WIT:

I hereby certify that on this 10th day of November, 2021, before me, the subscriber, a Notary Public of the State and County aforesaid, personally appeared Philip J. Harrington, III, who acknowledged himself to be the (i) Sole Member of Two Sons E.I.P., LLC, a Maryland limited liability company (the "LLC"), (ii) as such Sole Member, being authorized to do so, executed the same for and on behalf of the LLC in the capacity therein stated and for the purposes therein contained, and (iii) said instrument is the act of the LLC, giving oath under the penalties of perjury that the consideration recited herein is correct.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

DOUGLAS S. WALKER
My Commission Expires
NOTARY PUBLIC
02-01-2025
TALBOT COUNTY, MD

_____
Notary Public
My commission expires: 2/1/25

THIS IS TO CERTIFY that the within Deed was prepared by, or under the supervision of the undersigned, an Attorney duly admitted to practice before the Court of Appeals of Maryland.

_____(SEAL)
Douglas S. Walker

AFTER RECORDING, PLEASE RETURN TO:
McAllister, DeTar, Showalter & Walker LLC
100 N. West Street
Easton, MD 21601

Maryland FORM **WH-AR**

Certification of Exemption from Withholding Upon Disposition of Maryland Real Estate Affidavit of Residence or Principal Residence

2021

Based on the certification below, Transferor claims exemption from the tax withholding requirements of §10-912 of the Tax-General Article, Annotated Code of Maryland. Section 10-912 provides that certain tax payments must be withheld and paid when a deed or other instrument that effects a change in ownership of real property is presented for recordation. The requirements of §10-912 do not apply when a transferor provides a certification of Maryland residence or certification that the transferred property is the transferor's principal residence.

1. Transferor Information

Name of Transferor TWO SONS E.I.P., LLC

2. Description of Property (Street address. If no address is available, include county, district, subdistrict and lot numbers).

108 N East Avenue, Easton, MD 21601

3. Reasons for Exemption

Resident Status

☐ As of the date this form is signed, I, Transferor, am a resident of the State of Maryland.

☑ Transferor is a resident entity as defined in Code of Maryland Regulations (COMAR)03.04.12.02B(11), I am an agent of Transferor, and I have authority to sign this document on Transferor's behalf.

Principal Residence

☐ Although I am no longer a resident of the State of Maryland, the Property is my principal residence as defined in IRC 121 (principal residence for 2 (two) of the last 5 (five) years) and is currently recorded as such with the State Department of Assessments and Taxation.

Under penalty of perjury, I certify that I have examined this declaration and that, to the best of my knowledge, it is true, correct, and complete.

3a. Individual Transferors

Witness

Name **Date

Signature

3b. Entity Transferors

Witness/Attest

TWO SONS E.I.P., LLC
Name of Entity

By

PHILIP J. HARRINGTON, III 11-18-21
Name **Date

SOLE MEMBER
Title

** Form must be dated to be valid.

Note: Form is only valid if it was executed on the date the Property was transferred and is properly recorded with the Clerk of the Court.

To the Clerk of the Court: Only an un-altered Form WH-AR should be considered a valid certification for purposes of Section 10-912.

21-49

TALBOT COUNTY CIRCUIT COURT (Land Records) KMD 2918, p. 0379, MSA_CE91_2857. Date available 11/19/2021. Printed 05/23/2023.

LR - Deed (w Taxes)
Recording Fee no RT
20.00
Name: TWO SONS E I P
LLC
Ref:
LR - Deed (with Taxes)
Surcharge 40.00
LR - Deed State
Transfer Tax 2,250.00
LR - County Transfer
Tax - linked 4,500.00
LR - NR Tax - lkd 0.00
==========
SubTotal: 6,810.00
==========
Total: 6,810.00
11/18/2021 08:42
CC20-CV
#15638039 CC0205 -
Talbot
County/CC02.05.01 -
Register 01

Kathleen M. Duvall, Clerk

Circuit Court for Talbot County

11 N. Washington St., Suite 16

Easton, Maryland 21601

License and Recording

410-822-2611 Ext. 4

DOCUMENT VALIDATION
(excluded from page count)

TALBOT COUNTY CIRCUIT COURT (Land Records) KMD 2918, p. 0380, MSA_CE91_2857. Date available 11/19/2021. Printed 05/23/2023.

State of Maryland Land Instrument Intake Sheet

☐ Baltimore City ☒ County: Talbot

Information provided is for the use of the Clerk's Office, State Department of Assessments and Taxation, and County Finance Office Only.

(Type or Print in Black Ink Only – All Copies Must Be Legible)

Space Reserved for Circuit Court Clerk Recording Validation

1 Type(s) of Instruments (☐ Check Box if addendum Intake Form is Attached.)

x Deed	Mortgage	Other _____	Other _____
Deed of Trust	Lease	_____	_____

2 Conveyance Type Check Box

x Improved Sale Arms-Length [1]	Unimproved Sale Arms-Length [2]	Multiple Accounts Arms-Length [3]	Not an Arms-Length Sale [9]

3 Tax Exemptions (if applicable) Cite or Explain Authority

Recordation	
State Transfer	
County Transfer	

4 Consideration and Tax Calculations

Consideration Amount	
Purchase Price/Consideration	$ 450,000.00
Any New Mortgage	$
Balance of Existing Mortgage	$
Other:	$
Other:	$
Full Cash Value:	$

Finance Office Use Only Transfer and Recordation Tax Consideration	
Transfer Tax Consideration	$
X ( ) % =	$
Less Exemption Amount -	$
Total Transfer Tax =	$
Recordation Tax Consideration	$
X ( ) per $500 =	$
TOTAL DUE	$

5 Fees

Amount of Fees	Doc. 1	Doc. 2
Recording Charge	$ 20.00	$
Surcharge	$ 40.00	$
State Recordation Tax	$ 5,400.00	$
State Transfer Tax	$ 2,250.00	$
County Transfer Tax	$ 4,500.00	$
Other	$	$
Other	$	$

Agent:

Tax Bill:

C.B. Credit:

Ag. Tax/Other:

6 Description of Property SDAT requires submission of all applicable information. A maximum of 40 characters will be indexed in accordance with the priority cited in Real Property Article Section 3-104(g)(3)(i).

District	Property Tax ID No. (1)	Grantor Liber/Folio	Map	Parcel No.	Var. LOG
01	017128	2368 , 063	0103	0753	☐ (5)

Subdivision Name	Lot (3a)	Block (3b)	Sect/AR (3c)	Plat Ref.	SqFt/Acreage (4)

Location/Address of Property Being Conveyed (2): 108 N East Avenue, Easton, MD 21601

Other Property Identifiers (if applicable): | Water Meter Account No.:

Residential ☐ Or Non-Residential ☐ | Fee Simple ☒ or Ground Rent ☐ Amount: $_____

Partial Conveyance ☐ Yes ☒ No | Description/Amt. of SqFt/Acreage Transferred:

If Partial Conveyance, List Improvements

7 Transferred From

Doc. 1 – Grantor(s) Name(s)	Doc. 2 – Grantor(s) Name(s)
TWO SONS E.I.P., LLC	
Doc. 1 – Owner(s) of Record, if Different from Grantor(s)	**Doc. 2 Owner(s) of Record, if Different from Grantor(s)**

8 Transferred To

Doc. 1 – Grantee(s) Name(s)	Doc. 2 – Grantee(s) Name(s)
SHOREGATE OF CANNERY COMMERCIAL, LLC	

New Owner's (Grantee) Mailing Address: 29 South Harrison Street, Easton, MD 21601

9 Other Names to Be Indexed

Doc. 1 – Additional Names to be Indexed (Optional)	Doc. 2 – Additional Names to be Indexed (Optional)

10 Contact/Mail Information

Instrument Submitted By or Contact Person

Name: Madison Andrew

Firm McAllister, DeTar, Showalter & Walker LLC

Address: 100 N. West Street

Easton, MD 21601 Phone: (443) 396-7517

☒ Return to Contact Person

☐ Hold for Pickup

☐ Return Address Provided

11 IMPORTANT: *BOTH* THE ORIGINAL DEED *AND* A PHOTOCOPY MUST ACCOMPANY EACH TRANSFER

Assessment Information

☐ Yes ☒ No Will the property being conveyed be the grantee's principal residence?

☐ Yes ☒ No Does the transfer include personal property? If yes, identify: _____

☐ Yes ☒ No Was property surveyed? If Yes, attach copy of survey (if recorded, no copy required).

Space Reserved for County Validation

Assessment use only – Do Not Write Below This Line

Terminal Verification | Agricultural Verification | Whole | Part | Tran. Process Verification

Transfer Number | Date Received: | Deed Reference: | Assigned Property No.:

Year	20	20	Geo.	Map	Sub	Block
Land			Zoning	Grid	Plat	Lot
Buildings			Use	Parcel	Section	Occ. Cd.
Total			Town Cd.	Ex. St.	Ex. Cd.	

REMARKS:

Distribution: White Clerk's Office, Pink Office of Finance, Canary SDAT, Goldenrod Preparer

AOC-CC-3005 2007).

TALBOT COUNTY CIRCUIT COURT (Land Records) KMD 2918, P. 0381, MSA_CE91_2857. Date available 11/19/2021. Printed 05/23/2023.

CONCEPT STORMWATER MANAGEMENT REPORT

For

Cannery Square Apartments
Easton, Maryland

Developer

Shoregate of Cannery Commercial, LLC
c/o Justin Nonemaker
29 S. Harrison Street
Easton, MD 21601

Design Professional

Lane Engineering, LLC
117 Bay Street
Easton, Maryland 21601
410-822-8003

Date Prepared

November 1, 2023

Date Revised

N/A

Prepared by

Alec F. Chosta, E.I.T.
Civil Engineer

Timothy W. Glass, P.E.

PROFESSIONAL CERTIFICATION: I hereby certify that this document was prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 23152, Expiration Date: 7/5/25

TABLE OF CONTENTS

SECTIONS LIST

1. Introduction
2. General Site Information
3. Proposed Project
4. Environmental Site Design (ESD)
   4.1 Quantity
   4.2 Quality
      4.2.1 ESD Practices
5. Conclusion

APPENDIX LIST

APPENDIX A – Maryland Environmental Site Design (ESD) Calculations
APPENDIX B – HydroCAD Quantity Analysis
APPENDIX C – Drainage Area Maps

ATTACHMENT LIST

Stormwater Management Submittal Checklist

Cannery Square Apartments
STORMWATER MANAGEMENT REPORT

1. INTRODUCTION

This report addresses stormwater management for development of the vacant property located at 503 North Street and the re-development of the Easton Ice building located at 108 North East Street. The stormwater management plan incorporates the requirements of the *2000 Maryland Stormwater Design Manual Volumes I and II* (Manual) as currently updated. Stormwater projects are required to be reviewed during the concept, preliminary site development and final design stages. This narrative addresses the requirements pertaining to the concept design stage and meets the intent of the guidelines and methodologies presented in the MDE document *Environmental Site Design (ESD) Process & Computations* dated July 2010.

2. GENERAL SITE INFORMATION

The main property, located at 503 North Street, has previously hosted a NAPA Auto garage until a fire destroyed significant portions of the structure, which was subsequently demolished. Adjacent to the building are other existing industrial/warehouse structures. Located to the south of the main development site is the Easton Ice Building & Loading area. Both properties border Easton's Rails to Trails and are surrounded by other residential dwellings. Each property is also within the Tanyard Branch Watershed.

According to the USDA soil maps, site soils are predominantly Fallsington Loams (Group C/D) with a negligible pocket of Hambrook (Group B) soils in the northeast corner of the site. For more conservative calculations all predevelopment C/D soils are assumed to act in the drained, Group C, condition.

3. PROPOSED PROJECT

The proposed development consists of three (3) multi-family apartments totaling 96 units with associated parking on the northern NAPA Auto site. Across the street, to the south, the Easton Ice building will be removed for the construction of an Amenity Building to serve the community.

There are additional improvements surrounding the proposed construction, including those on North Street and an adjacent stormwater quantity & quality project to be conducted by the Town to alleviate historical flooding in the area. Public Right of Way improvements are not quantified in this report and will be conducted in cooperation with the Town and the Engineering Department.

4. ENVIRONMENTAL SITE DESIGN (ESD)

ESD requirements must be addressed for the project's limits of disturbance (LOD), which is conservatively assumed to consist of both properties (143,748 SF). Technically, as two separate sites, the Easton Ice Parcel could be considered as "re-development" where existing impervious exceeds 40% - the lot is currently almost 100% impervious. However, given the additional quantitative requirements associated with the properties being in the Tanyard Branch watershed, there is currently little advantage in pursing such a line of calculation at this time.

The proposed buildings, parking, and amenity structure create 70,784 SF (1.62 acres) of impervious cover (49%). Utilizing table 5.3 and onsite soil conditions, a target P_E of 1.8" results in an ESD target volume of **10,634 cf.**

In accordance with the Manual, available ESD techniques i.e. Alternative Surfaces, Non-Structural and Micro-Scale Practices were evaluated for use at the site. Considering the proposed site conditions, i.e. location, topography, facility orientation, soil properties, ground water elevation, traffic, economics, use of facility, construction constraints, neighboring properties and available stormwater discharge locations, the following ESD practices are proposed for the site:

- Micro-BioRetentions (MBR)
- Permeable Pavements (PERM)
- Bio-Swale (BSW)

See Appendix A for calculations.

4.1 STORMWATER QUANTITY

Both sites on each side of North Street drain to an existing, trunk, storm drain pipe that parallels the Rails to Trails and daylights in Tanyard Branch. Both sites were analyzed based on storm flow to a single study point in this common storm drain. See pre & post drainage area maps.

Analysis verifies that management of the 2 and 10-year storms with the 10-year post-development runoff managed to the 2-year pre-development level, is achieved in the proposed stormwater features. These consist of a combination of micro-bioretentions, a bio-swale, and permeable pavers.

	2 Year Storm (cfs)		10 Year Storm (cfs)		100 Year Storm (cfs)	
	Pre	**Post**	**Pre**	**Post**	**Pre**	**Post**
Study Point 1	4.86	0.65	9.40	3.31	15.20	8.15
NET REDUCTION	**4.21**		**6.09**		**7.05**	

Please see Appendix B for HydroCAD calculations and Appendix C for Drainage Area Maps.

4.2 STORMWATER QUALITY

The project is broken into 16 primary drainage areas to be treated with downstream ESD practices and two "Residual" (RD-#) greenspace areas where grading is to be conducted to facilitate construction and minor impervious is created in the form of sidewalks, therefore no individual drainage area ESD targets are assessed in these locations.

The primary method of quality treatment is in the form of Micro-Bioretentions and a Bio-Swale. A network of piping, inlets, and curbing will keep the Micro-Bioretentions within the 20,000 sf drainage threshold. The Town's storm drain pipe is deep enough to facilitate the use of underdrains to ensure optimal function of these practices.

In addition to the ESD calculations in appendix A, the use of pavers with 12" of base stone provides extra ESD volume – 0.16 ESDv per square foot. The project is currently proposing 13,770 sf of pavers or **2,203 cf** of treatment in addition to the **14,089 cf** afforded by the bioretentions Bio-Swale.

4.2.1 ESD PRACTICES

ESD practices were evaluated for applicability to the site:

Alternative Surfaces

- Green Rooftops – the project economics do not readily allow for the use of green roofs; green roofs on multi-story structures may prove more difficult to access and maintain.
- **Permeable Pavements** – Alternative surfaces are ideal for in-town redevelopment scenarios or similar projects. Given the Tanyard Branch requirements, this practice is necessary to minimize post-development runoff.
- Reinforced Turf - Reinforced turf areas are commonly used for emergency equipment access or for areas that receive minimal vehicular use. Emergency equipment can service the building using the paved surfaces designed for the site needs, and additional access areas are not necessary.

Nonstructural practices

- Disconnection of Rooftop Runoff – Due to slopes exceeding 5% in adjacent open space areas adjacent to the building, the large size of the building roof, and the spatial limitations of the property, disconnection of rooftop runoff is not feasible.
- Disconnection of Non-Rooftop Runoff – As an in-town property with relatively high density, there is limited opportunity and space to implement this practice.
- Sheetflow to Conservation Area – Existing open space areas adjacent to the site do not meet slope constraints for the ideal implementation of this practice.

Micro-scale practices

- Rainwater Harvesting – Opportunities for on-site reuse of harvested rainwater is limited. Irrigation is not proposed for the site. Operations and maintenance, especially during cold-weather periods, is also a concern.
- Submerged Gravel Wetlands – This practice is best suited for sites with a high groundwater table and large drainage areas. Depending on future soil testing, a liner may be required. The future warehouse will utilize this practice subject to additional evaluation upon a refined building design.
- Landscape Infiltration – the soils on-site are predominantly mapped as group C at the surface level, and would not be ideal for this practice.
- Infiltration Berms – the soils on-site are mapped as group C at the surface level, and would not be ideal for this practice.
- Dry Wells – the proposed drainage areas exceed the 1,000 sf limit for dry wells.
- **Micro Bio-Retention** – This practice can be easily configured to fit the spatial constraints of the site, provides excellent water quality treatment, and quantity reduction. The 20,000 SF limitation can be met by utilizing curb openings to break apart large drainage surfaces into smaller, compliant, areas.
- Rain Gardens – Given the extensive impervious surfaces, this practice's drainage area restrictions (10,000 sf max) prevent effective implementation.
- **Bio-Swales** –Wet swales are proposed for quantity management and will dewater utilizing a low-flow orifice. These practices are not credited for ESD volume but rather are intended to serve as conveyance only. A Bio-Swale is also being proposed to treat a portion of the site's access road at the property entrance.

A combination of practices centered around the dominant use of Micro Bio-Retentions, a Bio-Swale, and Pavers are required for this site. The total ESD volume provided is **14,089 CF.**

5. CONCLUSION

This stormwater management analysis indicates that the proposed design will successfully meet stormwater quality and quantity requirements. Referring to the attached water quality calculations, the computed ESDv provided is greater than the ESDv required. Planning and design analysis indicates that stormwater quality and quantity management can be accomplished as described.

APPENDIX A

MARYLAND ENVIRONMENTAL SITE DESIGN (ESD) CALCULATIONS

Maryland Environmental Site Design (ESD) Computations

Project	Shoregate of Cannery Commercial, LLC	By	AFC	Job #	230228
Location	503 North Street	Date	11/1/2023	File #	B246

Determine if the Project is subject to Redevelopment Requirements:

Site Area =	3.3	ac
Net Site Area =	3.3	ac
Existing Imp. Area =	1.150	ac
Percent Impervious (I) =	34.85	%

I <40%. Project Not subject to Redevelopment requirements.

Step 1 - Determine Stormwater Management Requirements

Initial Site Assessment (Site Data):

Existing Conditions

Total Disturbance Area: 143,748 sf

Soil Types:

HSG	A	B	C	D
Area			143,748	
Percent			100.0	

Proposed Layout

Impervious Cover: 70,784 sf

Percent Impervious (I) 49 %

Determine RCNs for Wooded Conditions:

HSG	A	B	C	D
Area			143,748	
Percent			100.0	
RCN	38	55	70	77

Weighted RCN: **70**

Determine ESD Targets:

Rv = 0.05 +0.009(I)
= 0.49

From Table 5.3 and
%I = 49

HSG	A	B	C	D
Area			143,748	
Target P_E			1.8	

Composite Target P_E (in.): **1.80**

$$ESDv = \frac{(P_E)(Rv)(A)}{12}$$

= **10,634** **cf**

Step 2 - Preliminary ESD Options

Please refer to the Stormwater Management Report

Step 3 - ESD Design

Evaluation of specific ESD treatment practices for the project on the following sheets.

Drainage Area #1 MBR-1

Total Area	20,145	sf	Target ESDv =	$\frac{(P_E)(Rv)(A)}{12}$
Impervious Area	15,217	sf		
Percent Impervious (I)	76	%	=	2,205 cf
Rv = 0.05 +0.009(I)	0.73		75% of target=	1,654 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{3,431\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **2,591 cf**

Surface Area=	1,082	sf	Media Depth=	3	ft
Ponding Area=	1,504	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,591 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	118%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	5.4%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #2 MBR-2

Total Area	18,955	sf	Target ESDv =	$\frac{(P_E)(Rv)(A)}{12}$
Impervious Area	13,703	sf		
Percent Impervious (I)	72	%	=	1,992 cf
Rv = 0.05 +0.009(I)	0.70		75% of target=	1,494 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{3{,}099\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **2,462 cf**

Surface Area=	1,244	sf	Media Depth=	2	ft
Ponding Area=	1,690	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,462 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	124%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	6.6%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #3 MBR-3

Total Area	20,660	sf	Target ESDv =	$\frac{(P_E)(Rv)(A)}{12}$
Impervious Area	8,462	sf		
Percent Impervious (I)	41	%	=	1,297 cf
Rv = 0.05 +0.009(I)	0.42		75% of target=	973 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{2{,}018\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **2,881 cf**

Surface Area=	1,395	sf	Media Depth=	2	ft
Ponding Area=	2,134	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,018 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	222%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	6.8%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #4 MBR-4

Total Area	17,911	sf	Target ESDv =	$\frac{(P_E)(Rv)(A)}{12}$
Impervious Area	12,973	sf		
Percent Impervious (I)	72	%	=	1,886 cf
Rv = 0.05 +0.009(I)	0.70		75% of target=	1,414 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{2{,}933\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **2,684 cf**

Surface Area=	1,282	sf	Media Depth=	2	ft
Ponding Area=	2,035	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,684 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	142%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	7.2%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #5 MBR-5

Total Area	22,521	sf	Target ESDv =	$\frac{(P_E)(Rv)(A)}{12}$
Impervious Area	8,533	sf		
Percent Impervious (I)	38	%	=	1,321 cf
Rv = 0.05 +0.009(I)	0.39		75% of target=	991 cf

Site Development Design - Micro-Bioretention (M-6)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{2{,}055\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **3,795 cf**

Surface Area=	1,878	sf	Media Depth=	2	ft
Ponding Area=	2,708	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,055 cf.**

Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to any individual practice shall be approximately 20,000 sf	✓
_ Micro-Boretention practices shall capture and store at least 75% of the ESDv.	287%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	8.3%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Drainage Area #6 BSW-6

Total Area	31,340	sf	Target ESDv =	$\frac{(P_E)(Rv)(A)}{12}$
Impervious Area	9,568	sf		
Percent Impervious (I)	31	%	=	1,527 cf
Rv = 0.05 +0.009(I)	0.32		75% of target=	1,145 cf

Site Development Design - BioSwale (M-8)

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{2{,}375\ cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage) + (Storage in media)
= **2,279 cf**

Surface Area=	1,521	sf	Media Depth=	2	ft
Ponding Area=	2,728	sf			
Ponding depth=	0.5	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **2,279 cf.**

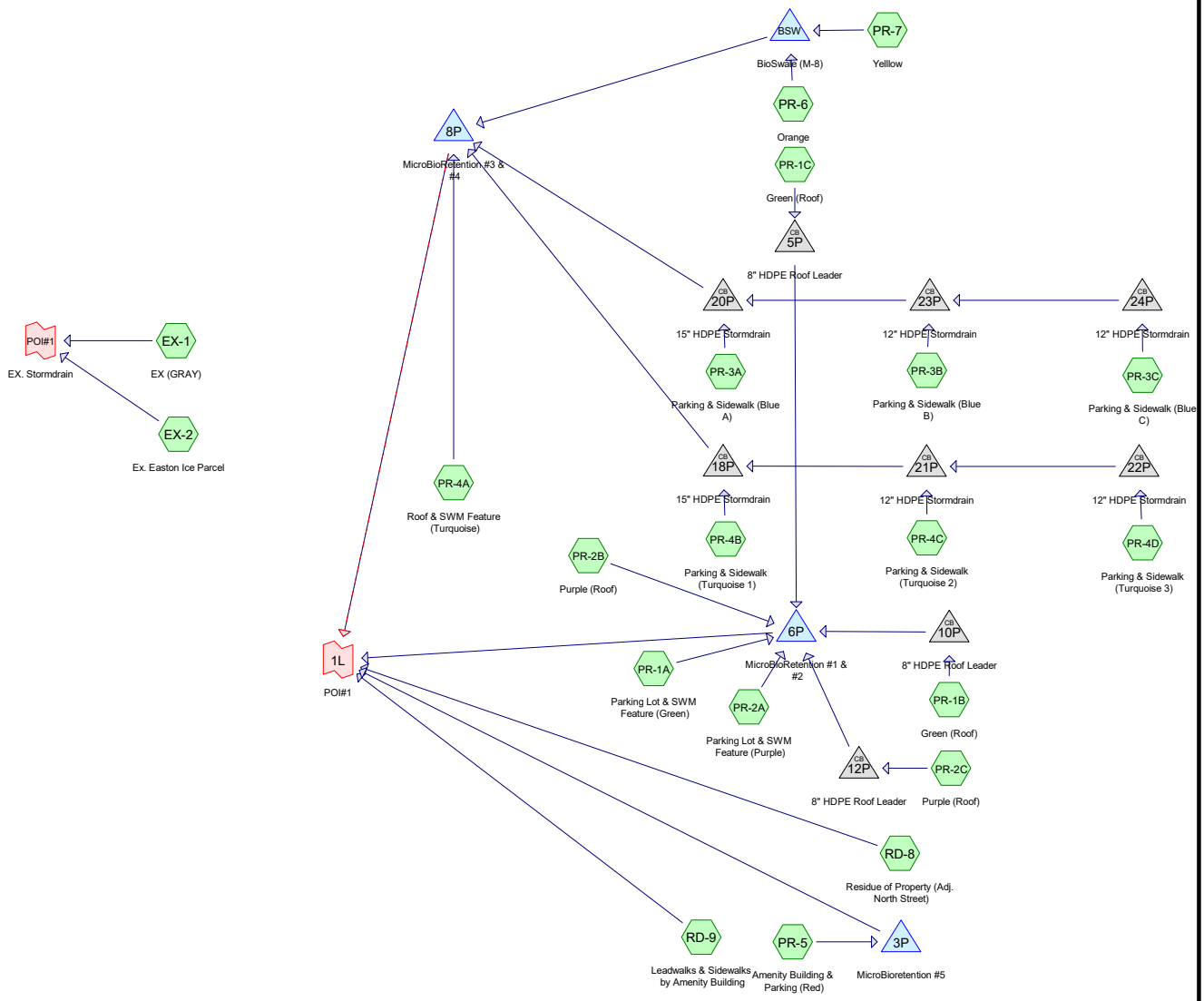
Now check for compliance with design criteria:

Micro-Bioretention Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ BioSwale practices shall capture and store at least 75% of the ESDv.	149%
_ The surface area of the practice shall be at least 2% of the contributing drainage area	4.9%
_ Filter beds shall be between 24 and 48 inches deep	24"
_ Filter beds shall not intercept groundwater	✓
_ Planting soil, mulch and underdrain systems shall conform to specs in Manual Appendix B.4	✓
_ Locate at least 30' from water supply wells and 25' from septic systems	✓
_ Any trees planted in practice shall be located to avoid future problems with overhead lines	✓
_ Size and locate practices to meet minimum local requirements for clearance from utilities	✓

Feature #	Drainage Area (DA)	DA Target	DA Provided	Exceeded by
1	Drainage Area #1 MBR-1	2,205	2591	386
2	Drainage Area #2 MBR-2	1,992	2462	470
3	Drainage Area #3 MBR-3	1,297	2018	721
4	Drainage Area #4 MBR-4	1,886	2684	798
5	Drainage Area #5 MBR-5	1,321	2055	734
6	Drainage Area #6 BSW-6	1,527	2279	752
		Total Provided	**14,089**	
		Site Target	10,634	

APPENDIX B

HydroCAD Quantity Analysis



Routing Diagram for 230228-CannerySquare-Sketch HydroCAD
Prepared by Lane Engineering, LLC, Printed 10/31/2023
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

Summary for Subcatchment EX-1: EX (GRAY)

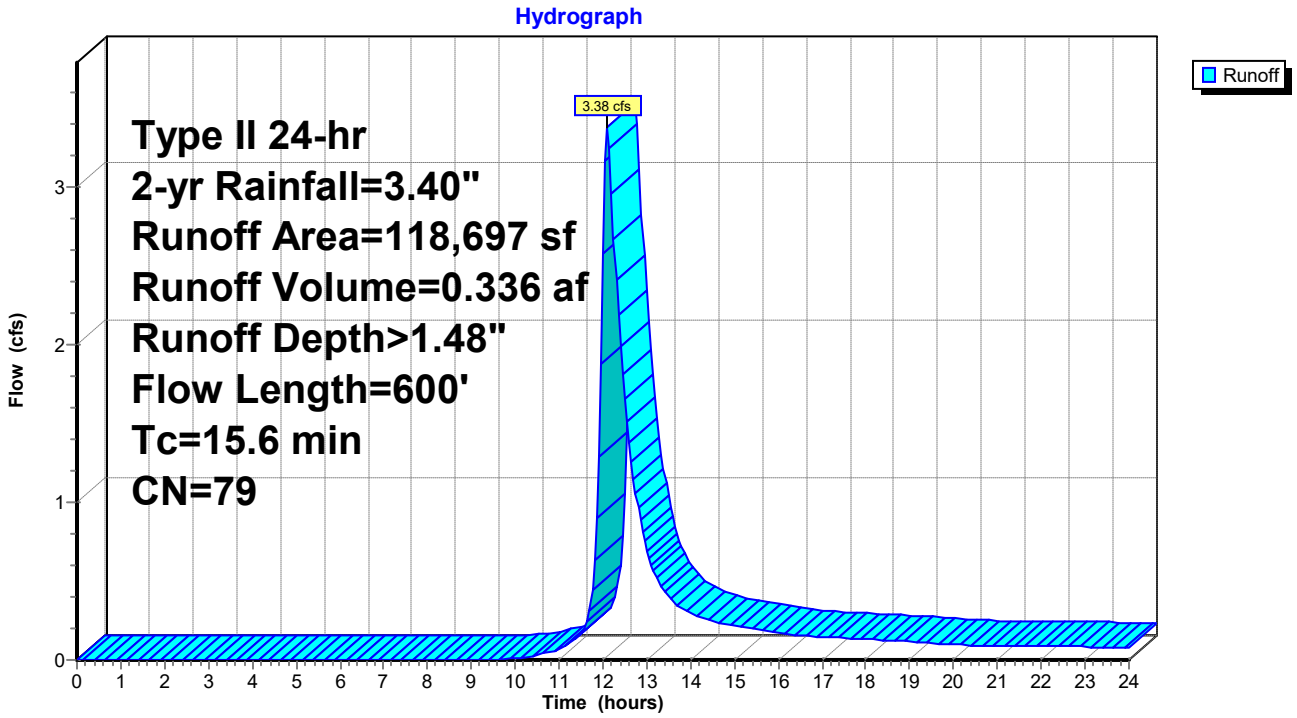
Runoff = 3.38 cfs @ 12.11 hrs, Volume= 0.336 af, Depth> 1.48"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	92,205	74	Vacant Grass Field
*	26,492	98	Ex Bldgs & Parking Areas
	118,697	79	Weighted Average
	92,205		77.68% Pervious Area
	26,492		22.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, Grassed Lot** Grass: Short n= 0.150 P2= 3.40"
1.5	197	0.0200	2.12		**Shallow Concentrated Flow, Grassed Lot** Grassed Waterway Kv= 15.0 fps
0.5	84	0.0050	2.73	15.04	**Channel Flow, Ex Swale** Area= 5.5 sf Perim= 12.7' r= 0.43' n= 0.022 Earth, clean & straight
0.2	65	0.0058	4.34	5.33	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
0.3	104	0.0171	5.82	68.10	**Channel Flow, Ex Veg. Swale** Area= 11.7 sf Perim= 10.9' r= 1.07' n= 0.035 Earth, dense weeds
15.6	600	Total			

Subcatchment EX-1: EX (GRAY)



Summary for Subcatchment EX-2: Ex. Easton Ice Parcel

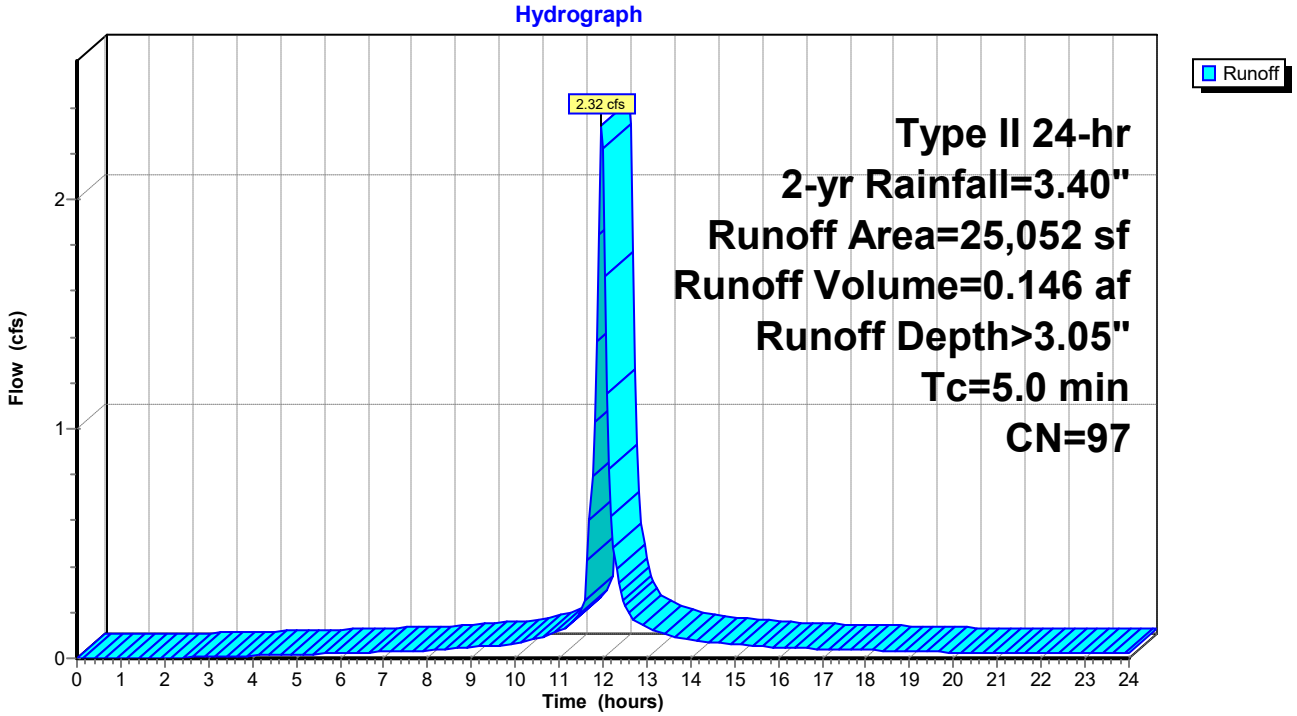
Runoff = 2.32 cfs @ 11.97 hrs, Volume= 0.146 af, Depth> 3.05"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	23,608	98	Ex. Building & Parking Area
*	1,444	74	Lawn & Landscape Area
	25,052	97	Weighted Average
	1,444		5.76% Pervious Area
	23,608		94.24% Impervious Area

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

Subcatchment EX-2: Ex. Easton Ice Parcel



Summary for Subcatchment PR-1A: Parking Lot & SWM Feature (Green)

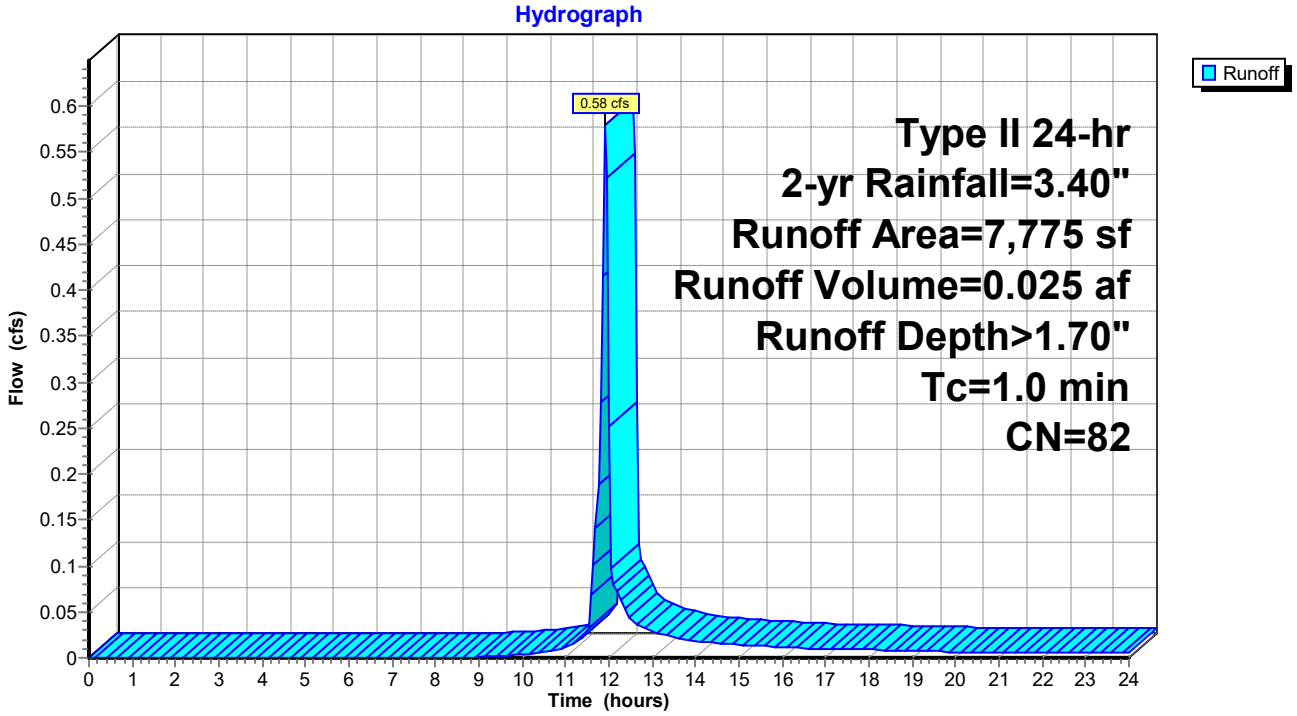
Runoff = 0.58 cfs @ 11.91 hrs, Volume= 0.025 af, Depth> 1.70"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	3,632	74	>75% Grass cover, Good, HSG C
*	2,847	98	Asphalt & Sidewalk
*	1,296	70	Permeable Pavers (Woods in Good Condition)
	7,775	82	Weighted Average
	4,928		63.38% Pervious Area
	2,847		36.62% Impervious Area

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

Subcatchment PR-1A: Parking Lot & SWM Feature (Green)



Summary for Subcatchment PR-1B: Green (Roof)

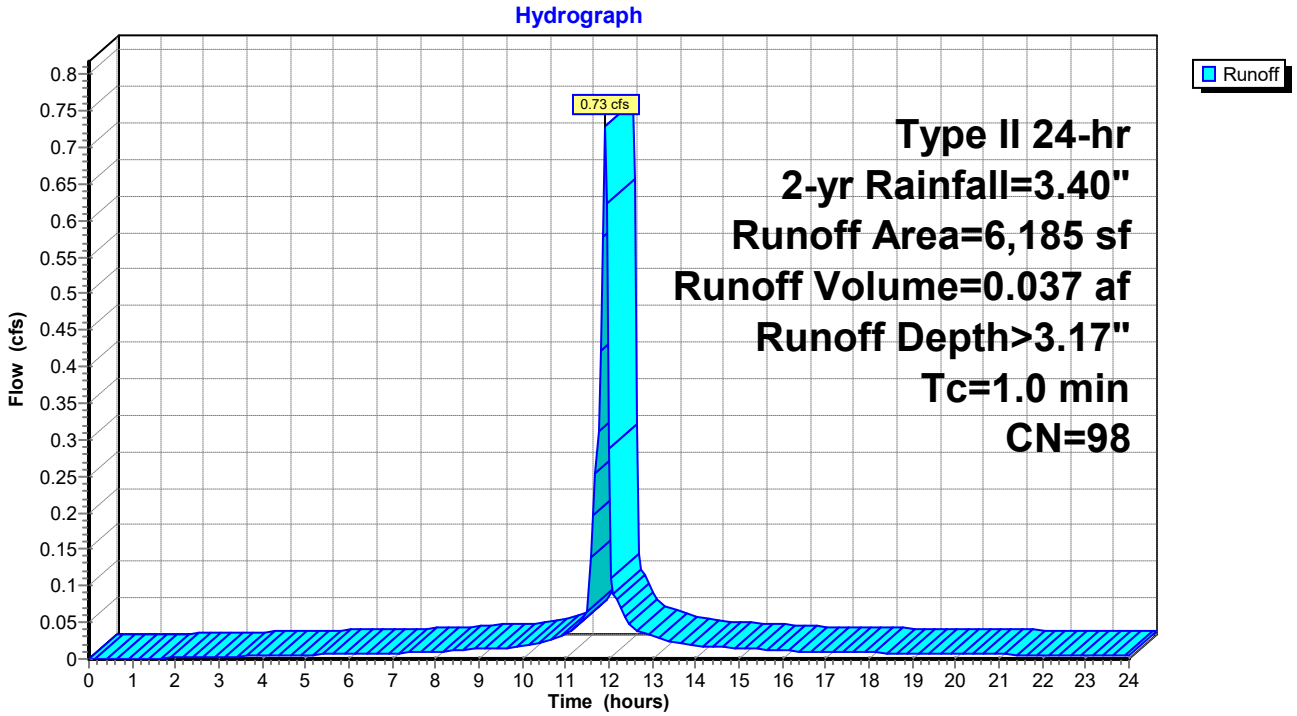
Runoff = 0.73 cfs @ 11.90 hrs, Volume= 0.037 af, Depth> 3.17"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	6,185	98	Roof
	6,185		100.00% Impervious Area

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

Subcatchment PR-1B: Green (Roof)



Summary for Subcatchment PR-1C: Green (Roof)

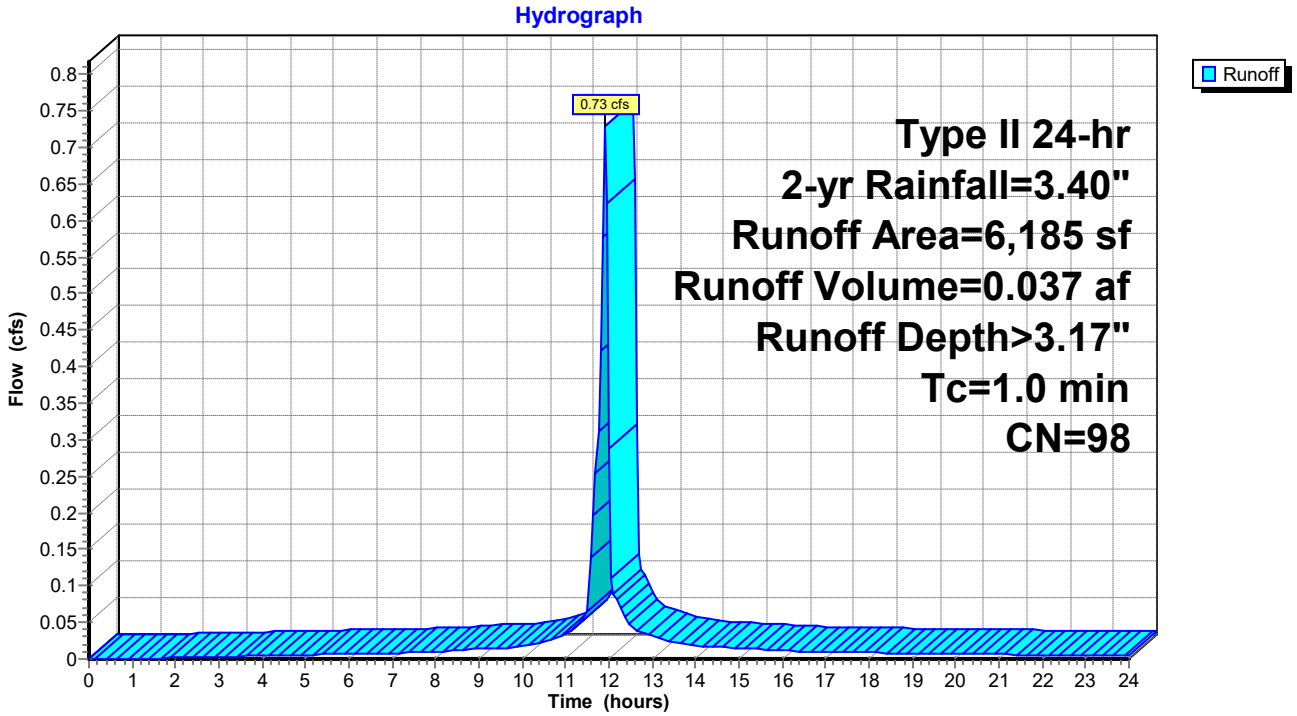
Runoff = 0.73 cfs @ 11.90 hrs, Volume= 0.037 af, Depth> 3.17"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	6,185	98	Roof
	6,185		100.00% Impervious Area

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

Subcatchment PR-1C: Green (Roof)



Summary for Subcatchment PR-2A: Parking Lot & SWM Feature (Purple)

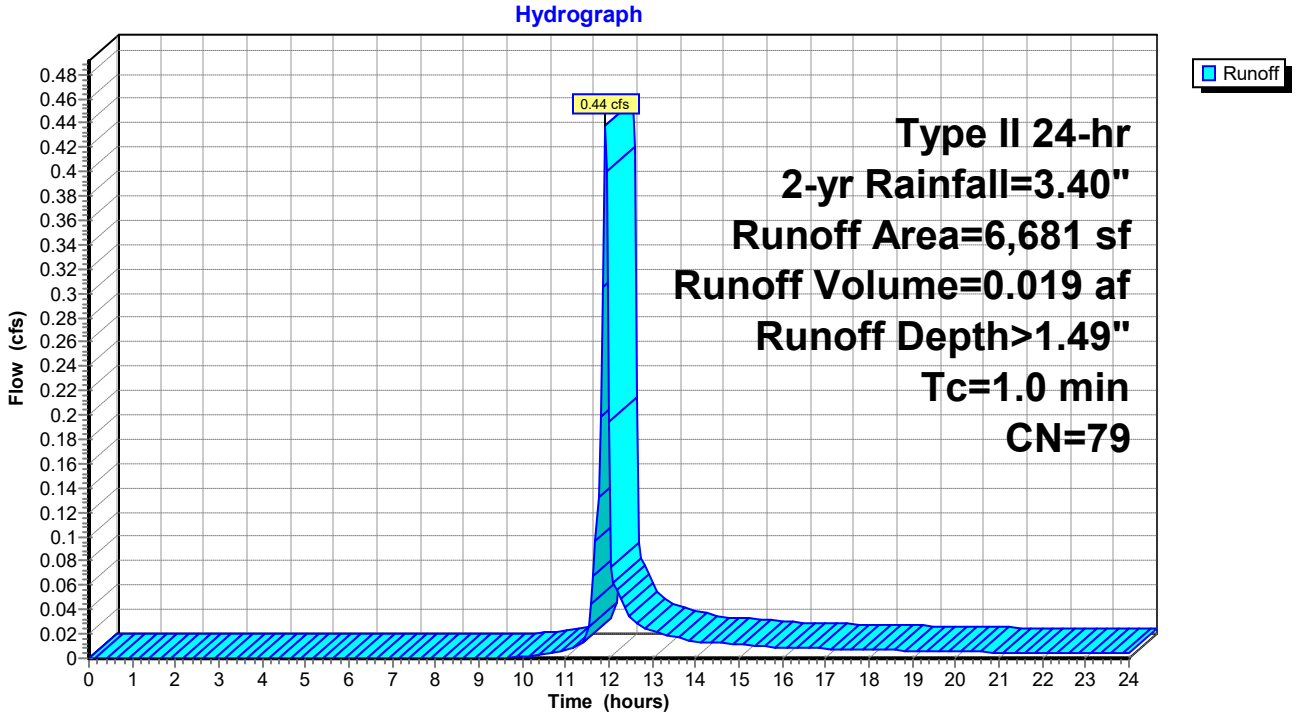
Runoff = 0.44 cfs @ 11.92 hrs, Volume= 0.019 af, Depth> 1.49"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	5,252	74	>75% Grass cover, Good, HSG C
*	1,429	98	Asphalt & Sidewalk
	6,681	79	Weighted Average
	5,252		78.61% Pervious Area
	1,429		21.39% Impervious Area

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

Subcatchment PR-2A: Parking Lot & SWM Feature (Purple)



Summary for Subcatchment PR-2B: Purple (Roof)

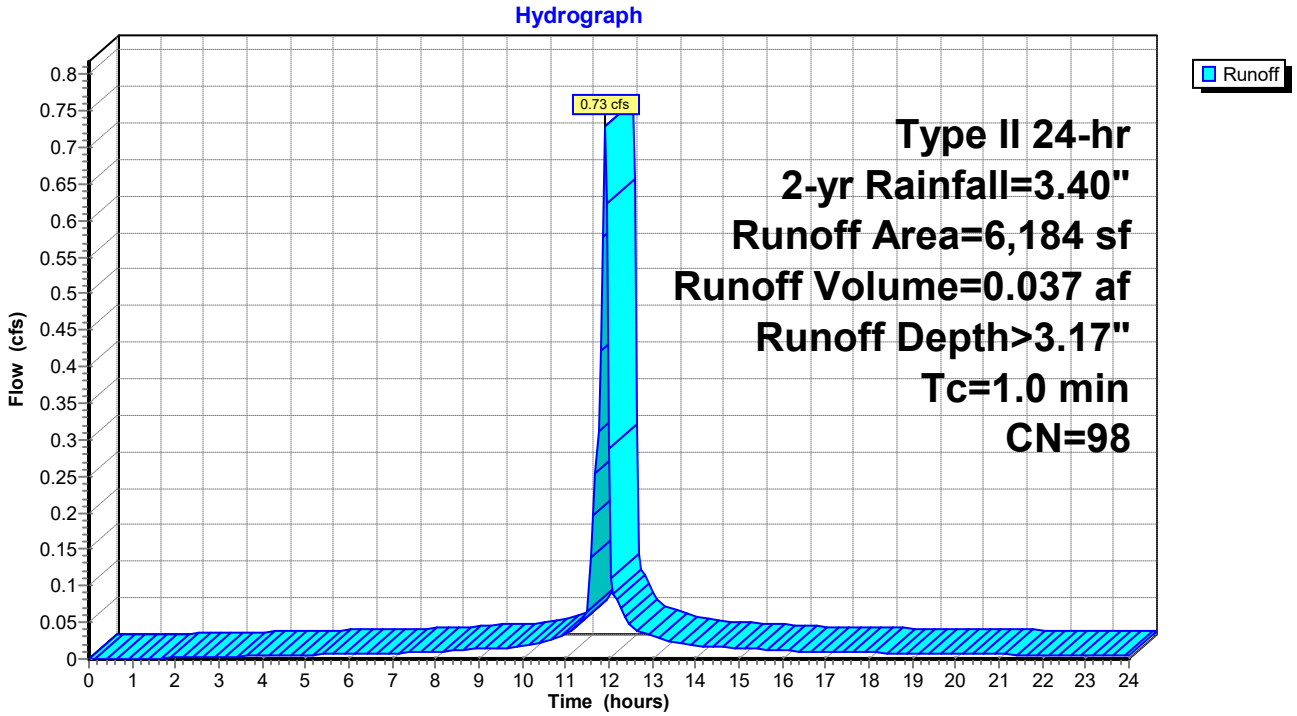
Runoff = 0.73 cfs @ 11.90 hrs, Volume= 0.037 af, Depth> 3.17"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	6,184	98	Roof
	6,184		100.00% Impervious Area

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

Subcatchment PR-2B: Purple (Roof)



Summary for Subcatchment PR-2C: Purple (Roof)

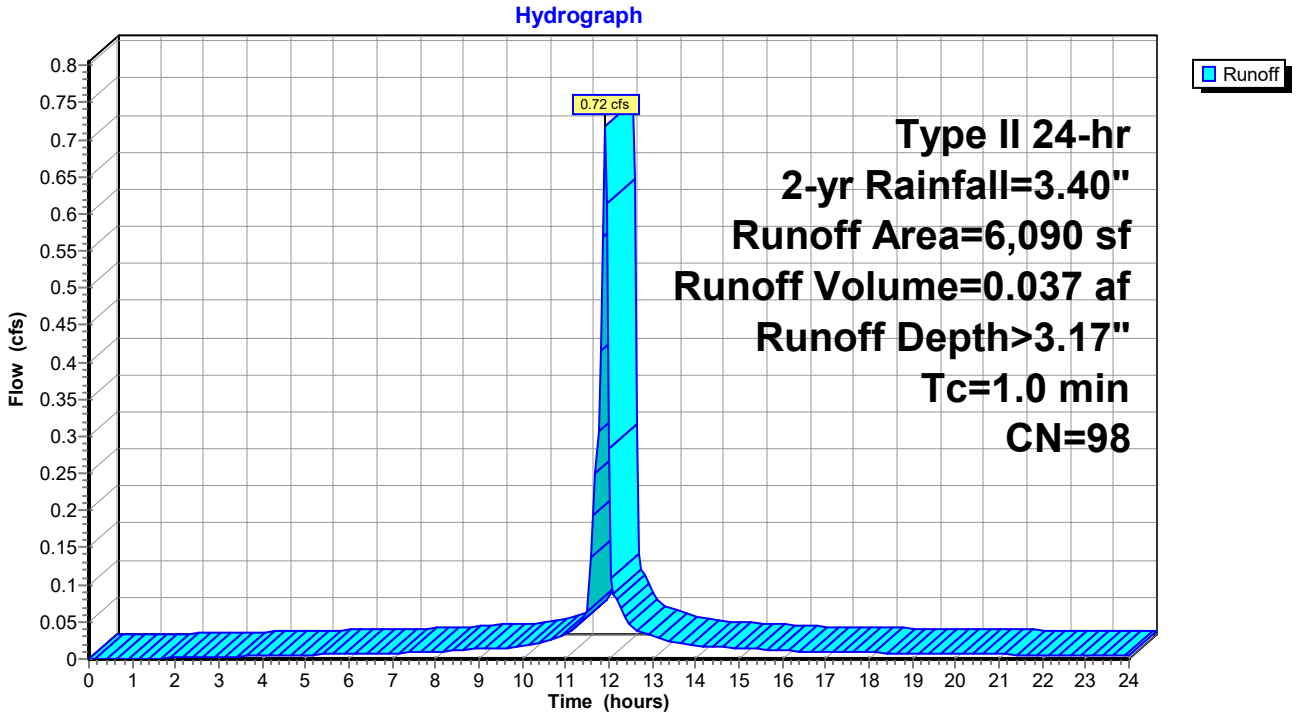
Runoff = 0.72 cfs @ 11.90 hrs, Volume= 0.037 af, Depth> 3.17"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	6,090	98	Roof
	6,090		100.00% Impervious Area

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

Subcatchment PR-2C: Purple (Roof)



Summary for Subcatchment PR-3A: Parking & Sidewalk (Blue A)

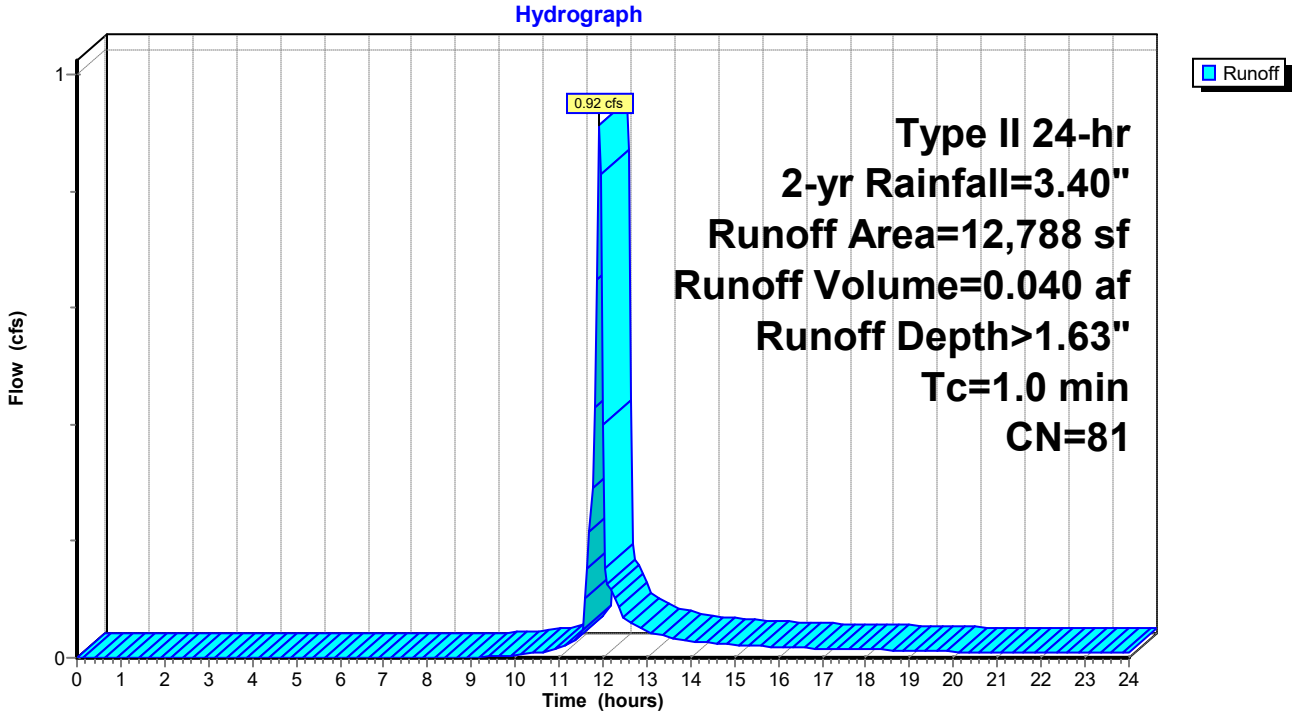
Runoff = 0.92 cfs @ 11.91 hrs, Volume= 0.040 af, Depth> 1.63"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	4,184	98	Parking
	7,361	74	>75% Grass cover, Good, HSG C
*	1,243	70	Permeable Pavers (Wood Good Condition)
	12,788	81	Weighted Average
	8,604		67.28% Pervious Area
	4,184		32.72% Impervious Area

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

Subcatchment PR-3A: Parking & Sidewalk (Blue A)



Summary for Subcatchment PR-3B: Parking & Sidewalk (Blue B)

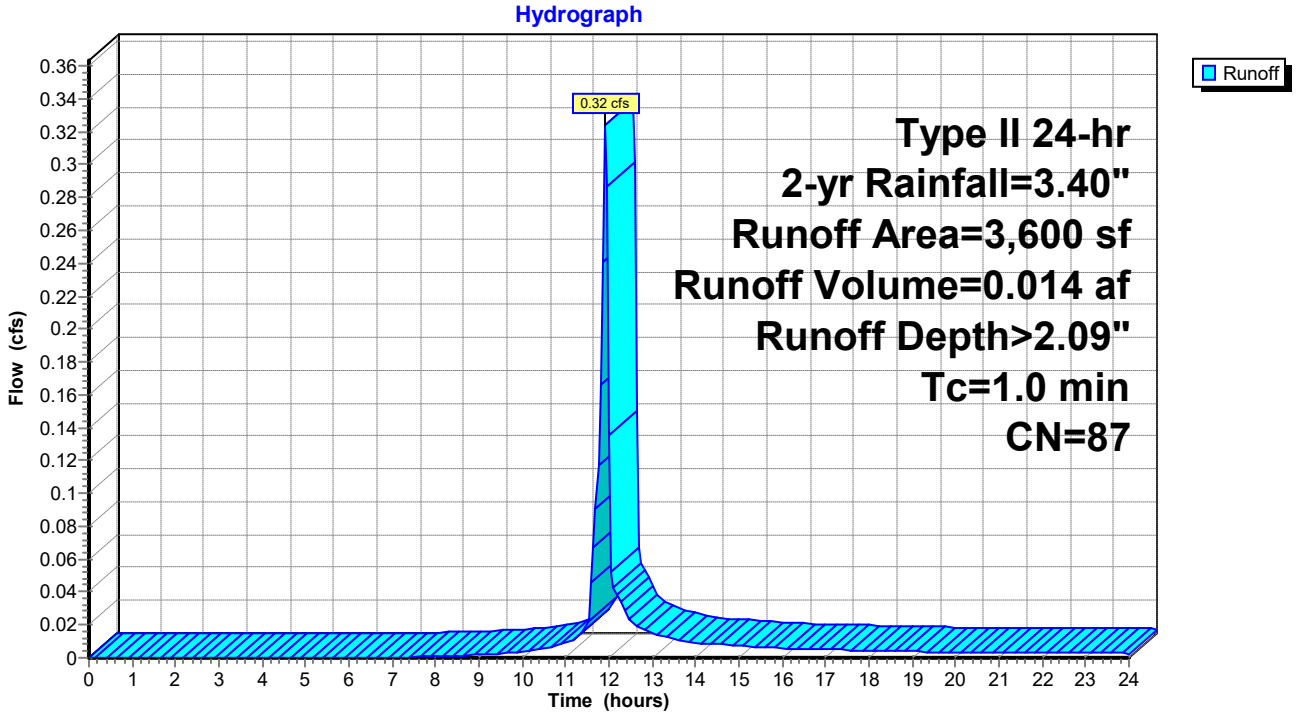
Runoff = 0.32 cfs @ 11.91 hrs, Volume= 0.014 af, Depth> 2.09"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	2,035	98	Parking
	647	74	>75% Grass cover, Good, HSG C
*	918	70	Permeable Pavers (Wood Good Condition)
	3,600	87	Weighted Average
	1,565		43.47% Pervious Area
	2,035		56.53% Impervious Area

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

Subcatchment PR-3B: Parking & Sidewalk (Blue B)



Summary for Subcatchment PR-3C: Parking & Sidewalk (Blue C)

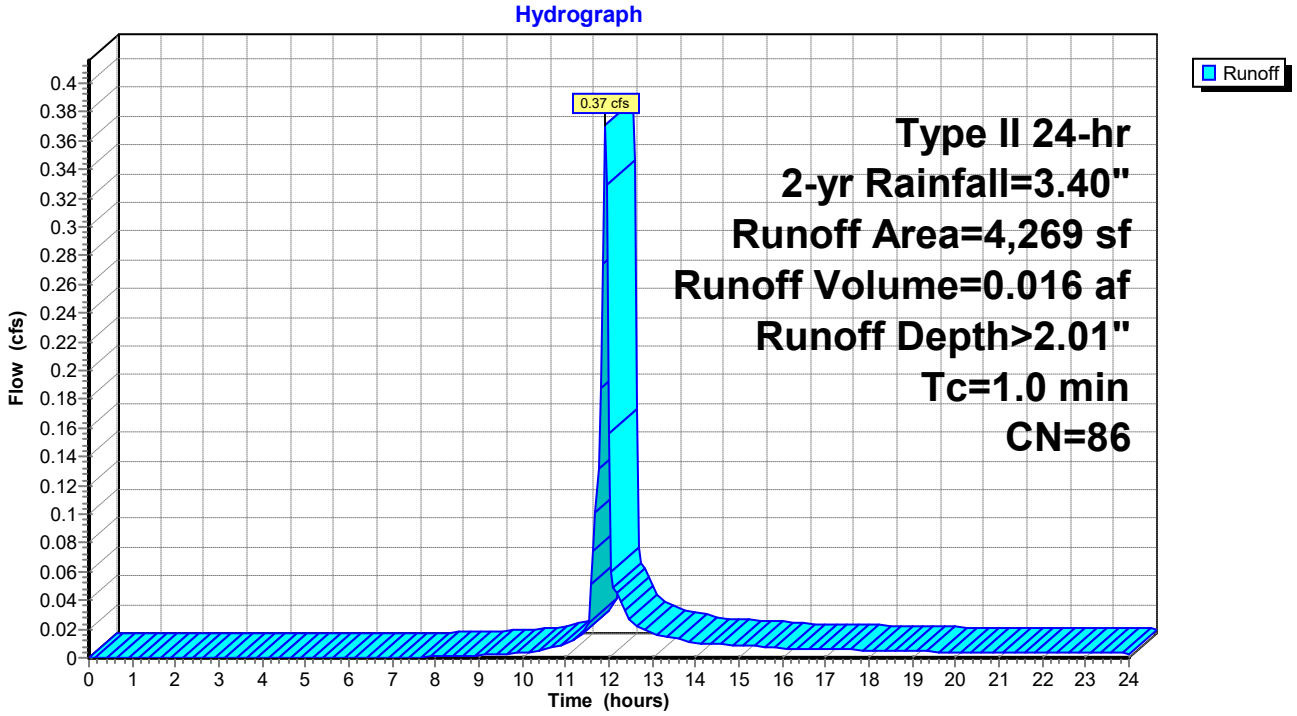
Runoff = 0.37 cfs @ 11.91 hrs, Volume= 0.016 af, Depth> 2.01"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	2,235	98	Parking
	1,441	74	>75% Grass cover, Good, HSG C
*	593	70	Permeable Pavers (Wood Good Condition)
	4,269	86	Weighted Average
	2,034		47.65% Pervious Area
	2,235		52.35% Impervious Area

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

Subcatchment PR-3C: Parking & Sidewalk (Blue C)



Summary for Subcatchment PR-4A: Roof & SWM Feature (Turquoise)

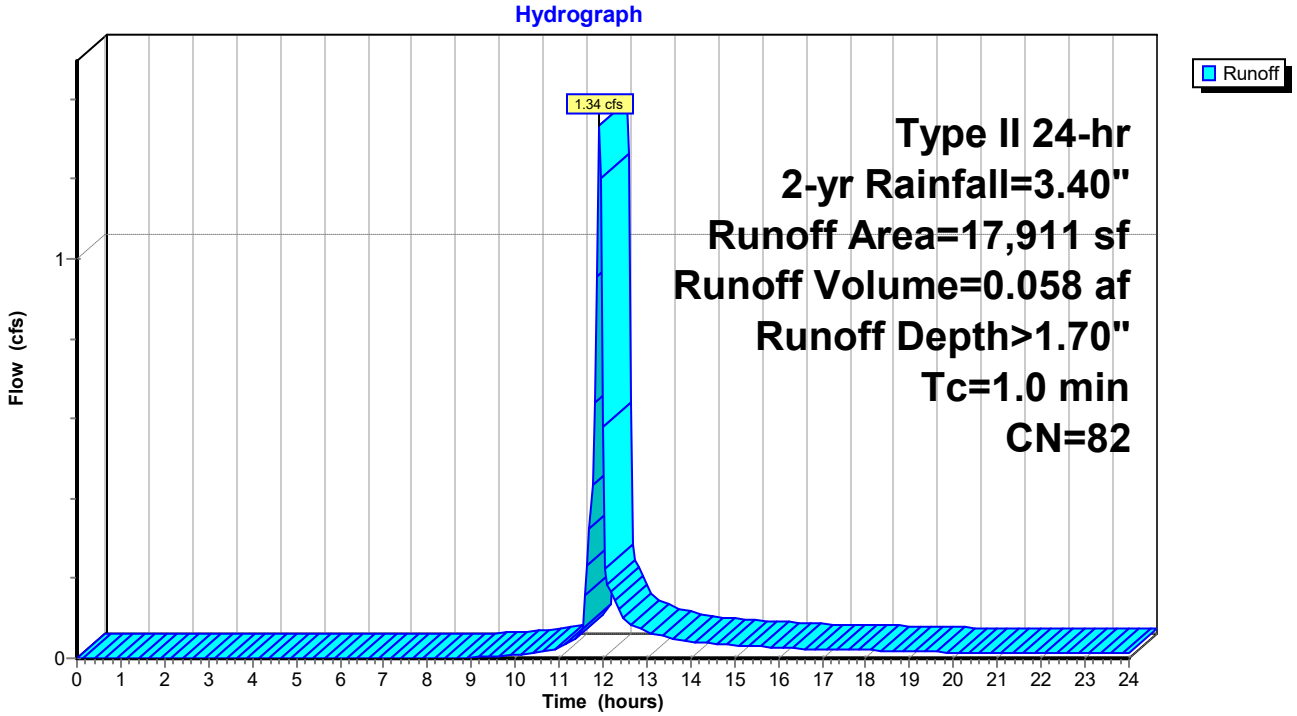
Runoff = 1.34 cfs @ 11.91 hrs, Volume= 0.058 af, Depth> 1.70"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	6,333	98	Roof & Sidewalk
	11,578	74	>75% Grass cover, Good, HSG C
	17,911	82	Weighted Average
	11,578		64.64% Pervious Area
	6,333		35.36% Impervious Area

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

Subcatchment PR-4A: Roof & SWM Feature (Turquoise)



Summary for Subcatchment PR-4B: Parking & Sidewalk (Turquoise 1)

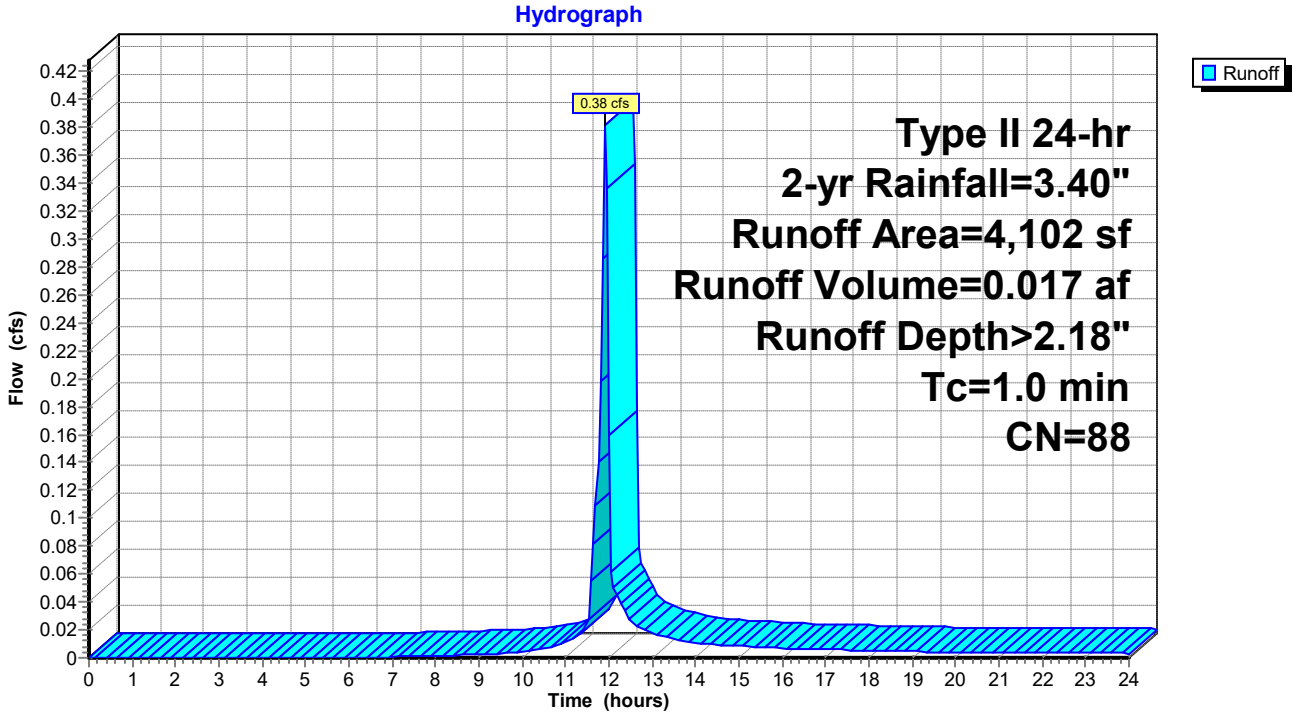
Runoff = 0.38 cfs @ 11.91 hrs, Volume= 0.017 af, Depth> 2.18"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	2,485	98	Parking
	1,455	74	>75% Grass cover, Good, HSG C
*	162	70	Permeable Pavers (Woods Good Condition)
	4,102	88	Weighted Average
	1,617		39.42% Pervious Area
	2,485		60.58% Impervious Area

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

Subcatchment PR-4B: Parking & Sidewalk (Turquoise 1)



Summary for Subcatchment PR-4C: Parking & Sidewalk (Turquoise 2)

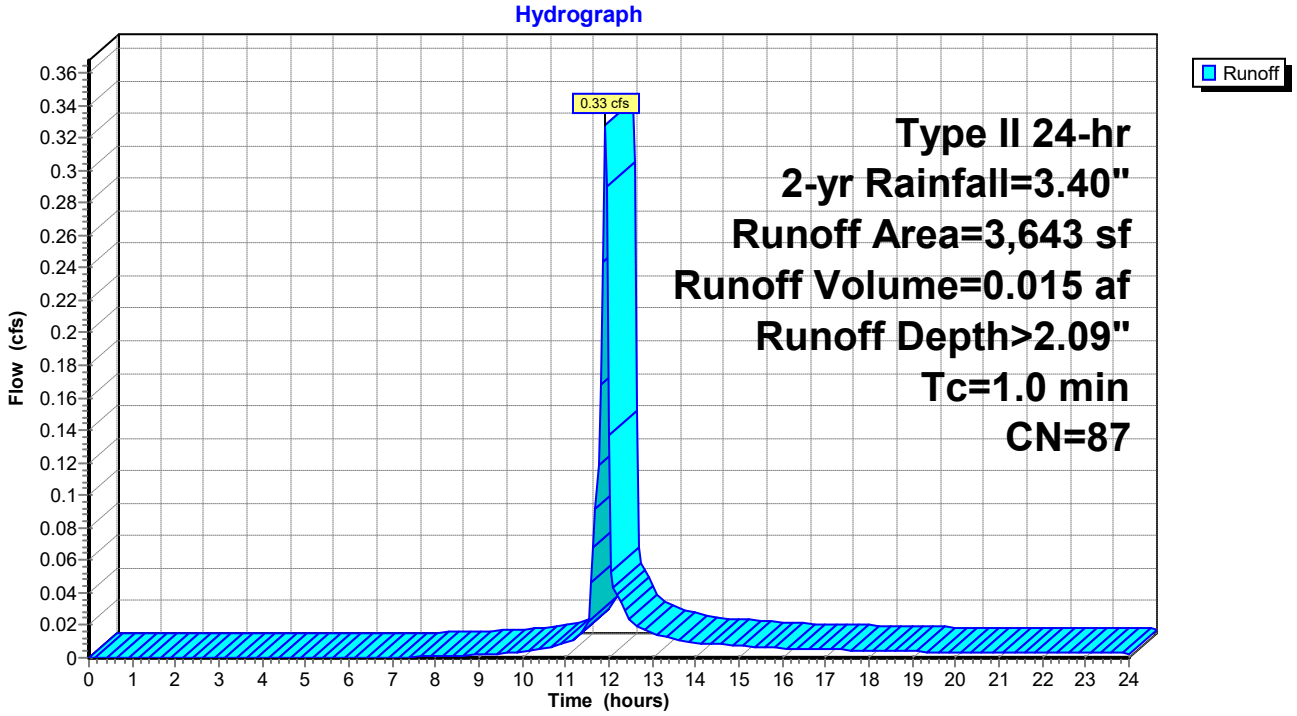
Runoff = 0.33 cfs @ 11.91 hrs, Volume= 0.015 af, Depth> 2.09"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	1,993	98	Parking
	1,306	74	>75% Grass cover, Good, HSG C
*	344	70	Permeable Pavers (Woods Good Condition)
	3,643	87	Weighted Average
	1,650		45.29% Pervious Area
	1,993		54.71% Impervious Area

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

Subcatchment PR-4C: Parking & Sidewalk (Turquoise 2)



Summary for Subcatchment PR-4D: Parking & Sidewalk (Turquoise 3)

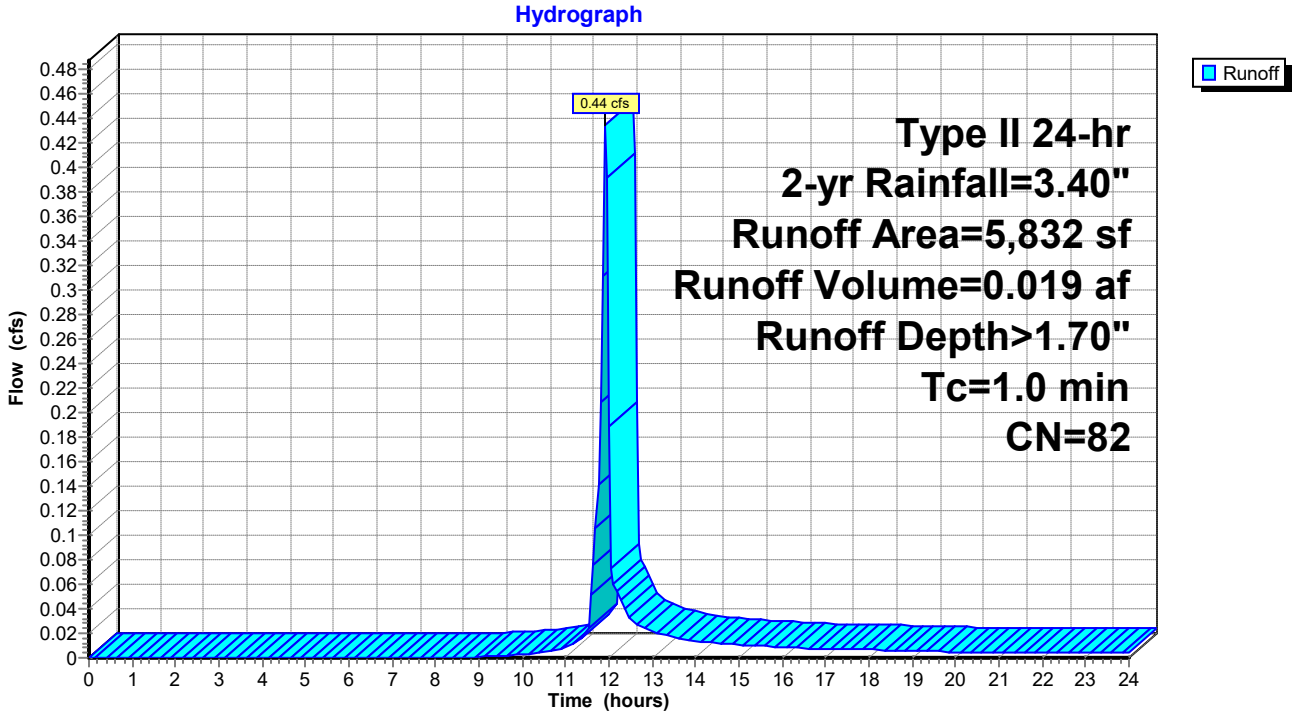
Runoff = 0.44 cfs @ 11.91 hrs, Volume= 0.019 af, Depth> 1.70"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	2,142	98	Parking
	2,955	74	>75% Grass cover, Good, HSG C
*	735	70	Permeable Pavers (Woods Good Condition)
	5,832	82	Weighted Average
	3,690		63.27% Pervious Area
	2,142		36.73% Impervious Area

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

Subcatchment PR-4D: Parking & Sidewalk (Turquoise 3)



Summary for Subcatchment PR-5: Amenity Building & Parking (Red)

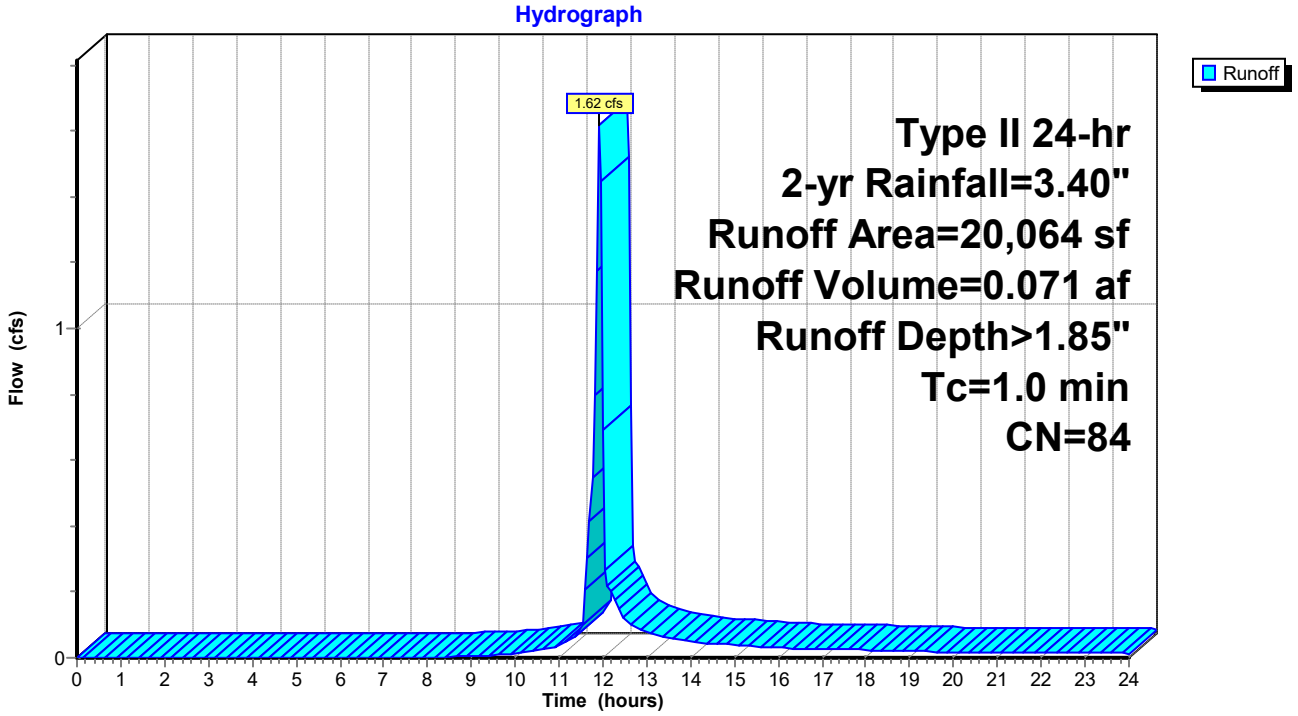
Runoff = 1.62 cfs @ 11.91 hrs, Volume= 0.071 af, Depth> 1.85"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	8,533	98	Building Roof & Parking
*	2,916	72	Pavers (Woods in Good Condition)
*	8,615	74	Lawn Areas
	20,064	84	Weighted Average
	11,531		57.47% Pervious Area
	8,533		42.53% Impervious Area

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

Subcatchment PR-5: Amenity Building & Parking (Red)



Summary for Subcatchment PR-6: Orange

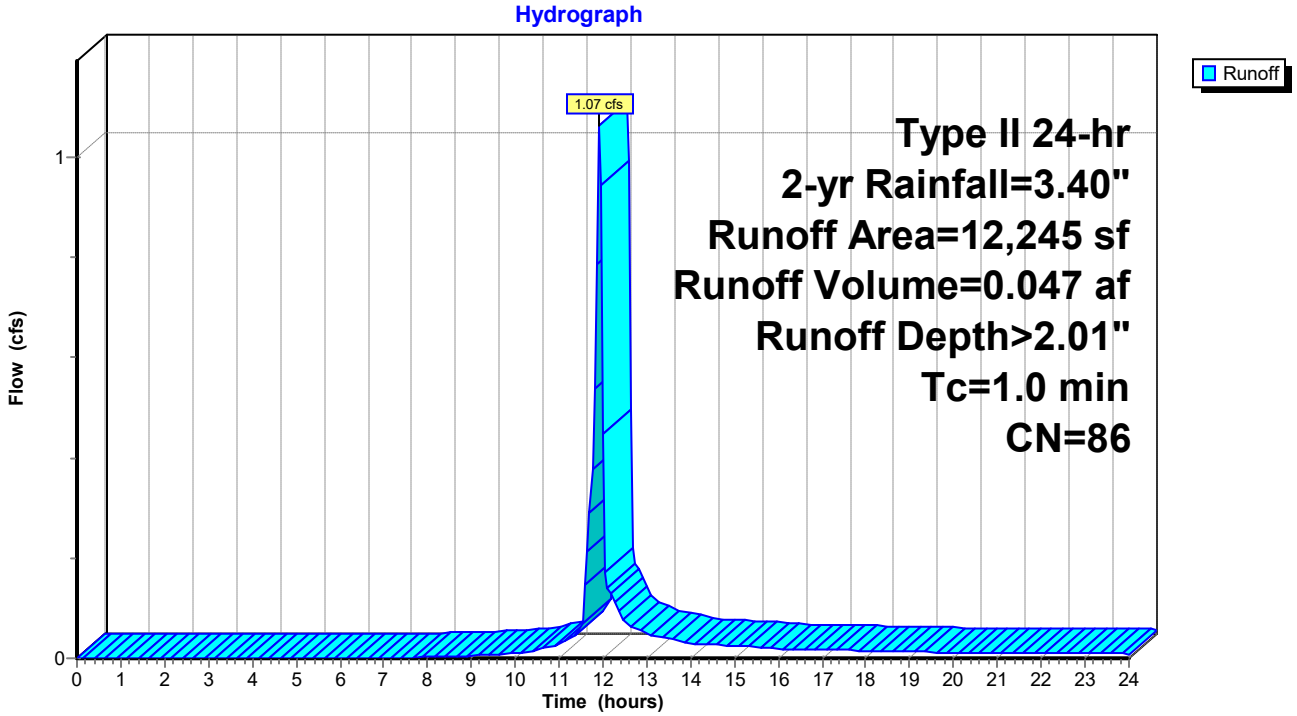
Runoff = 1.07 cfs @ 11.91 hrs, Volume= 0.047 af, Depth> 2.01"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	6,090	98	Roof
	6,155	74	>75% Grass cover, Good, HSG C
	12,245	86	Weighted Average
	6,155		50.27% Pervious Area
	6,090		49.73% Impervious Area

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

Subcatchment PR-6: Orange



Summary for Subcatchment PR-7: Yelllow

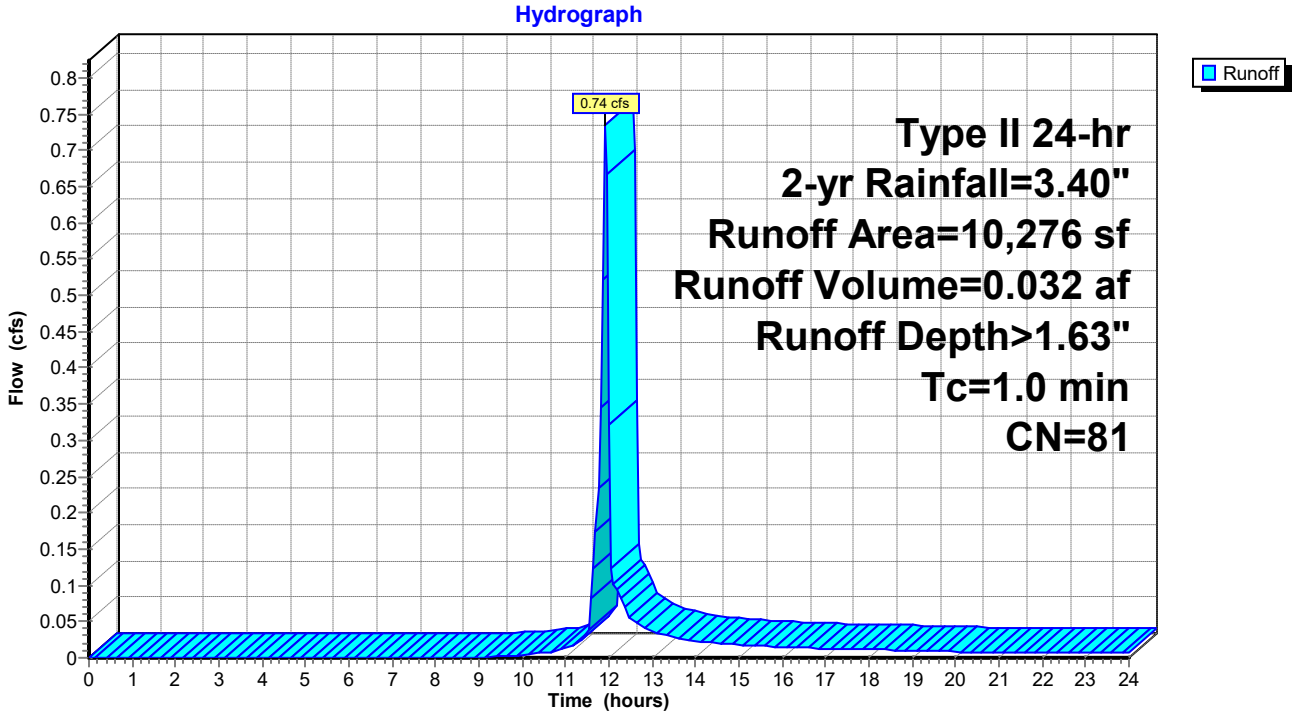
Runoff = 0.74 cfs @ 11.91 hrs, Volume= 0.032 af, Depth> 1.63"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	3,559	74	>75% Grass cover, Good, HSG C
*	3,240	70	Permeable Pavers (Woods Good Condition)
*	3,477	98	Asphalt & Sidewalk
	10,276	81	Weighted Average
	6,799		66.16% Pervious Area
	3,477		33.84% Impervious Area

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

Subcatchment PR-7: Yelllow



Summary for Subcatchment RD-8: Residue of Property (Adj. North Street)

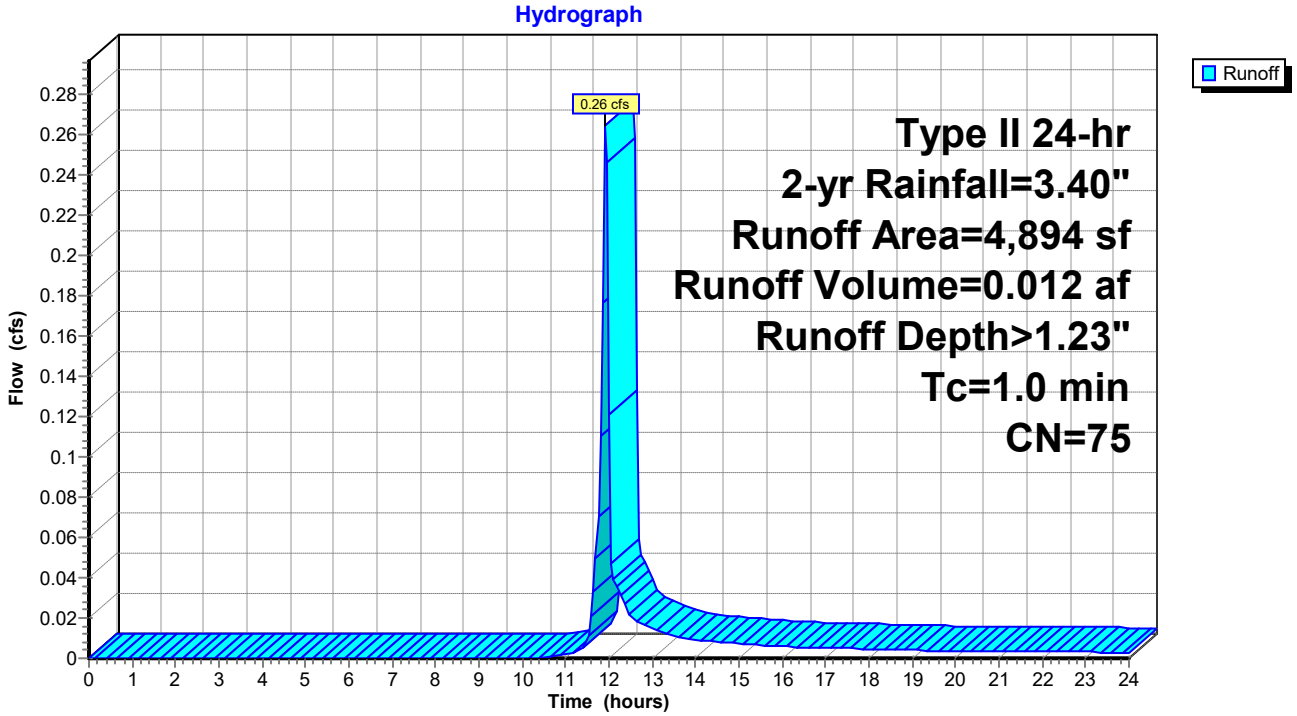
Runoff = 0.26 cfs @ 11.92 hrs, Volume= 0.012 af, Depth> 1.23"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	274	98	Sidewalk
	4,620	74	>75% Grass cover, Good, HSG C
	4,894	75	Weighted Average
	4,620		94.40% Pervious Area
	274		5.60% Impervious Area

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

Subcatchment RD-8: Residue of Property (Adj. North Street)



Summary for Subcatchment RD-9: Leadwalks & Sidewalks by Amenity Building

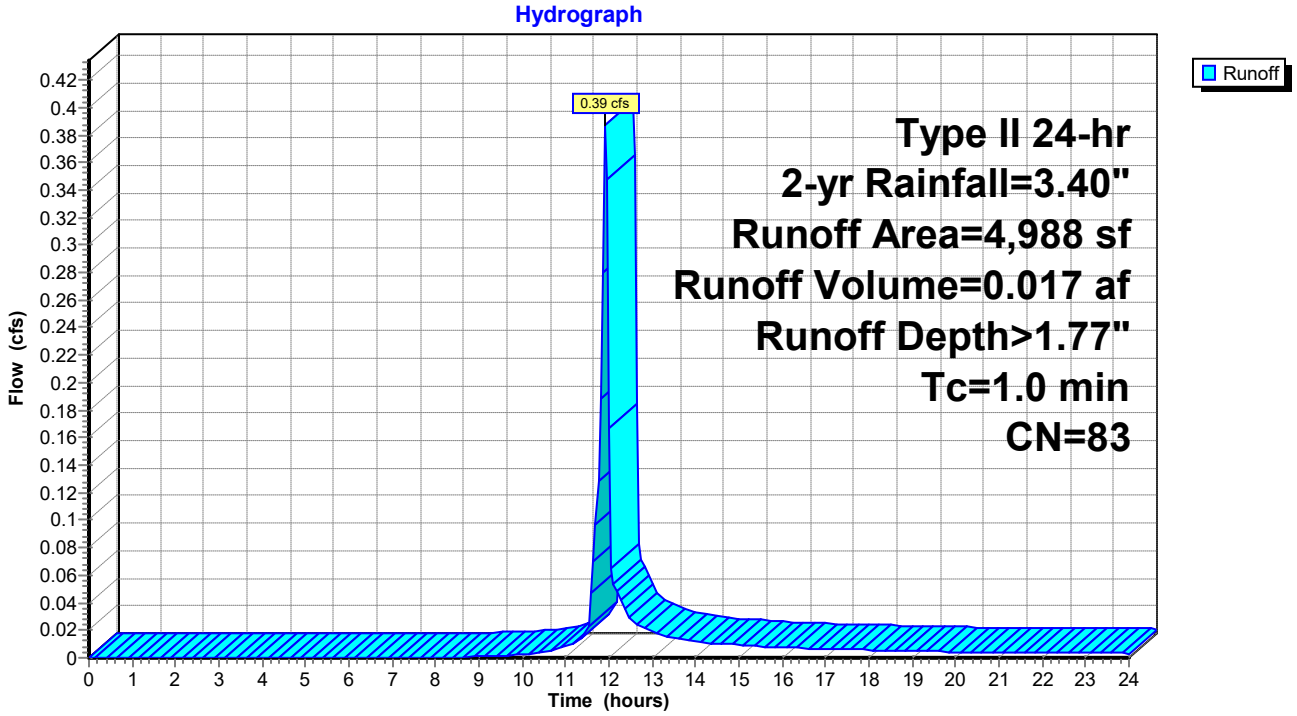
Runoff = 0.39 cfs @ 11.91 hrs, Volume= 0.017 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	2,062	98	Lead Walks & Sidewalks
*	1,145	70	Permeable Pavers (Woods in Good Condition)
*	1,781	74	Lawn & Landscape Areas
	4,988	83	Weighted Average
	2,926		58.66% Pervious Area
	2,062		41.34% Impervious Area

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

Subcatchment RD-9: Leadwalks & Sidewalks by Amenity Building



Summary for Pond 3P: MicroBioretention #5

Inflow Area = 0.461 ac, 42.53% Impervious, Inflow Depth > 1.85" for 2-yr event
Inflow = 1.62 cfs @ 11.91 hrs, Volume= 0.071 af
Outflow = 0.06 cfs @ 13.38 hrs, Volume= 0.033 af, Atten= 96%, Lag= 88.4 min
Primary = 0.06 cfs @ 13.38 hrs, Volume= 0.033 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.39' @ 13.38 hrs Surf.Area= 1,589 sf Storage= 1,891 cf

Plug-Flow detention time= 298.8 min calculated for 0.033 af (46% of inflow)
Center-of-Mass det. time= 179.6 min (999.2 - 819.6)

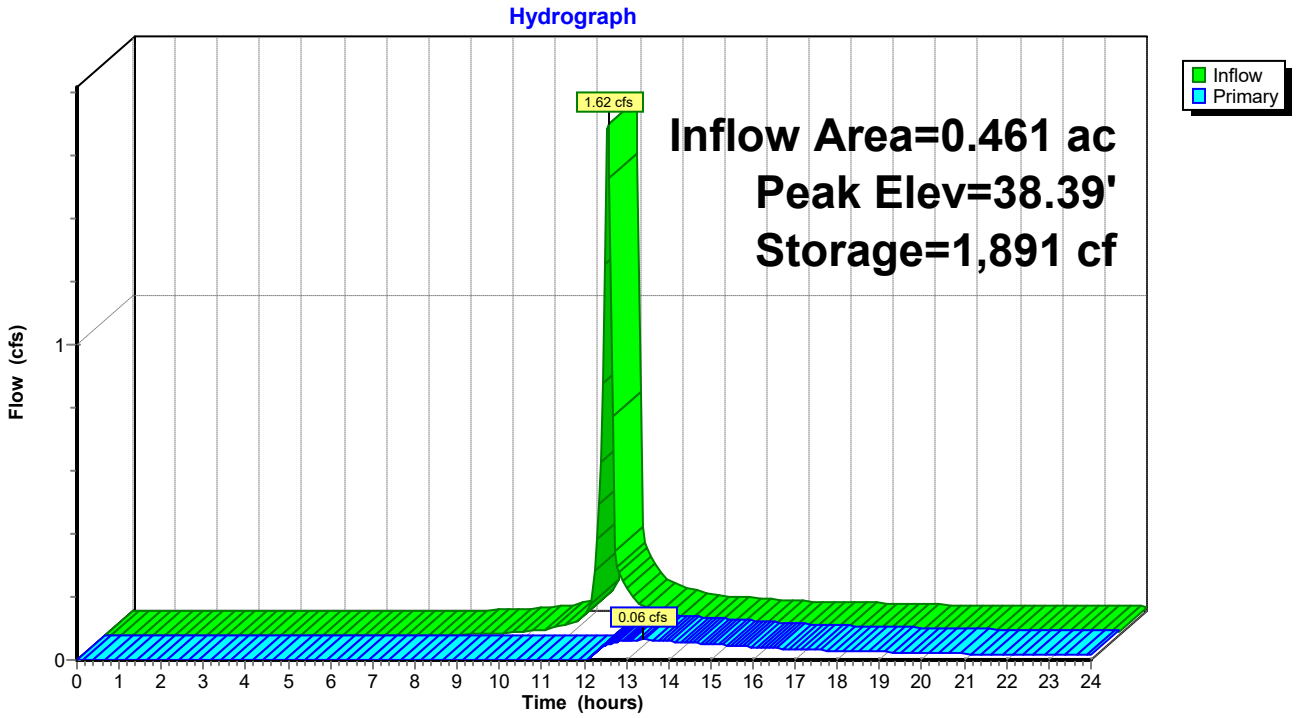
Volume	Invert	Avail.Storage	Storage Description
#1	35.14'	3,338 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.14	650	175.0	0.0	0	0	650
35.15	650	175.0	40.0	3	3	652
37.14	650	175.0	40.0	517	520	1,000
37.15	650	175.0	100.0	6	526	1,002
38.15	1,401	200.0	100.0	1,002	1,528	1,771
39.15	2,252	225.0	100.0	1,810	3,338	2,643

Device	Routing	Invert	Outlet Devices
#1	Primary	35.14'	**12.0" Round 12" N-12 Culvert** L= 57.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.14' / 35.14' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	38.15'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	38.65'	**10.7' long Rim MD 374.23** 0 End Contraction(s)

Primary OutFlow Max=0.06 cfs @ 13.38 hrs HW=38.39' TW=0.00' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 0.06 cfs of 5.44 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.06 cfs @ 1.58 fps)
  └─**3=Rim MD 374.23** (Controls 0.00 cfs)

Pond 3P: MicroBioretention #5



Stage-Area-Storage for Pond 3P: MicroBioretention #5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
35.14	650	0
35.19	650	13
35.24	650	26
35.29	650	39
35.34	650	52
35.39	650	65
35.44	650	78
35.49	650	91
35.54	650	104
35.59	650	117
35.64	650	130
35.69	650	143
35.74	650	156
35.79	650	169
35.84	650	182
35.89	650	195
35.94	650	208
35.99	650	221
36.04	650	234
36.09	650	247
36.14	650	260
36.19	650	273
36.24	650	286
36.29	650	299
36.34	650	312
36.39	650	325
36.44	650	338
36.49	650	351
36.54	650	364
36.59	650	377
36.64	650	390
36.69	650	403
36.74	650	416
36.79	650	429
36.84	650	442
36.89	650	455
36.94	650	468
36.99	650	481
37.04	650	494
37.09	650	507
37.14	650	520
37.19	675	553
37.24	706	587
37.29	738	624
37.34	771	661
37.39	804	701
37.44	838	742
37.49	873	785
37.54	909	829
37.59	945	875
37.64	982	924
37.69	1,020	974
37.74	1,059	1,026
37.79	1,098	1,080
37.84	1,138	1,135
37.89	1,178	1,193
37.94	1,220	1,253
37.99	1,262	1,315
38.04	1,304	1,379
38.09	1,348	1,446
38.14	1,392	1,514
38.19	1,431	1,585
38.24	1,469	1,657
38.29	1,508	1,732
38.34	1,547	1,808
38.39	1,587	1,887
38.44	1,627	1,967
38.49	1,668	2,049
38.54	1,709	2,134
38.59	1,751	2,220
38.64	1,793	2,309
38.69	1,836	2,399
38.74	1,879	2,492
38.79	1,922	2,587
38.84	1,967	2,685
38.89	2,011	2,784
38.94	2,057	2,886
38.99	2,102	2,990
39.04	2,149	3,096
39.09	2,195	3,205
39.14	**2,242**	**3,316**

Summary for Pond 5P: 8" HDPE Roof Leader

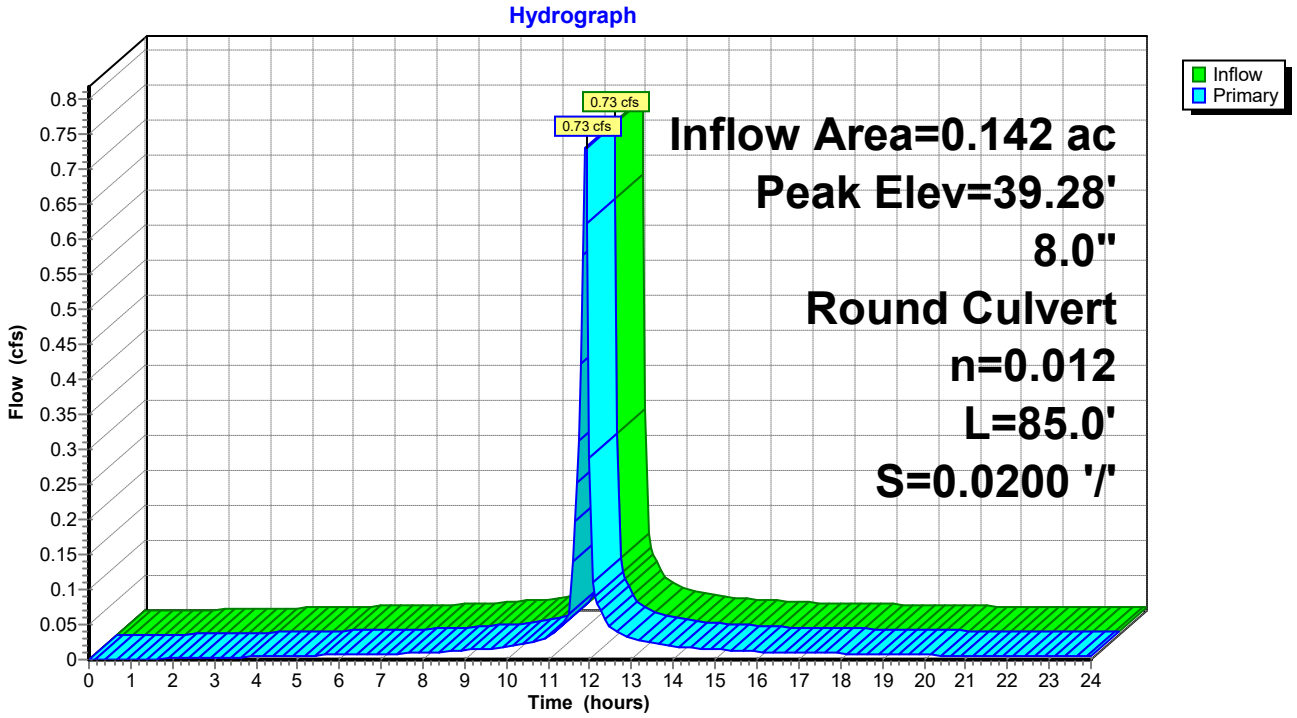
Inflow Area =	0.142 ac,100.00% Impervious, Inflow Depth > 3.17" for 2-yr event			
Inflow =	0.73 cfs @ 11.90 hrs, Volume=	0.037 af		
Outflow =	0.73 cfs @ 11.90 hrs, Volume=	0.037 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.73 cfs @ 11.90 hrs, Volume=	0.037 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 39.28' @ 11.90 hrs
Flood Elev= 42.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.70'	**8.0" Round ADS N-12** L= 85.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 38.70' / 37.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=0.72 cfs @ 11.90 hrs HW=39.27' TW=37.05' (Dynamic Tailwater)
└─**1=ADS N-12** (Inlet Controls 0.72 cfs @ 2.27 fps)

Pond 5P: 8" HDPE Roof Leader



Stage-Area-Storage for Pond 5P: 8" HDPE Roof Leader

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
38.70	**0**	41.25	0
38.75	0	41.30	0
38.80	0	41.35	0
38.85	0	41.40	0
38.90	0	41.45	0
38.95	0	41.50	0
39.00	0	41.55	0
39.05	0	41.60	0
39.10	0	41.65	0
39.15	0	41.70	0
39.20	0	41.75	0
39.25	0	41.80	0
39.30	0	41.85	0
39.35	0	41.90	0
39.40	0	41.95	0
39.45	0	42.00	0
39.50	0	42.05	0
39.55	0	42.10	0
39.60	0	42.15	0
39.65	0	42.20	0
39.70	0	42.25	0
39.75	0	42.30	0
39.80	0	42.35	0
39.85	0	42.40	0
39.90	0	42.45	0
39.95	0	42.50	0
40.00	0		
40.05	0		
40.10	0		
40.15	0		
40.20	0		
40.25	0		
40.30	0		
40.35	0		
40.40	0		
40.45	0		
40.50	0		
40.55	0		
40.60	0		
40.65	0		
40.70	0		
40.75	0		
40.80	0		
40.85	0		
40.90	0		
40.95	0		
41.00	0		
41.05	0		
41.10	0		
41.15	0		
41.20	0		

Summary for Pond 6P: MicroBioRetention #1 & #2

Inflow Area = 0.898 ac, 73.96% Impervious, Inflow Depth > 2.59" for 2-yr event
Inflow = 3.92 cfs @ 11.91 hrs, Volume= 0.194 af
Outflow = 0.05 cfs @ 18.39 hrs, Volume= 0.032 af, Atten= 99%, Lag= 389.2 min
Primary = 0.05 cfs @ 18.39 hrs, Volume= 0.032 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.20' @ 18.39 hrs Surf.Area= 3,365 sf Storage= 7,145 cf
Flood Elev= 40.00' Surf.Area= 5,100 sf Storage= 14,707 cf

Plug-Flow detention time= 647.7 min calculated for 0.032 af (17% of inflow)
Center-of-Mass det. time= 393.8 min (1,159.9 - 766.1)

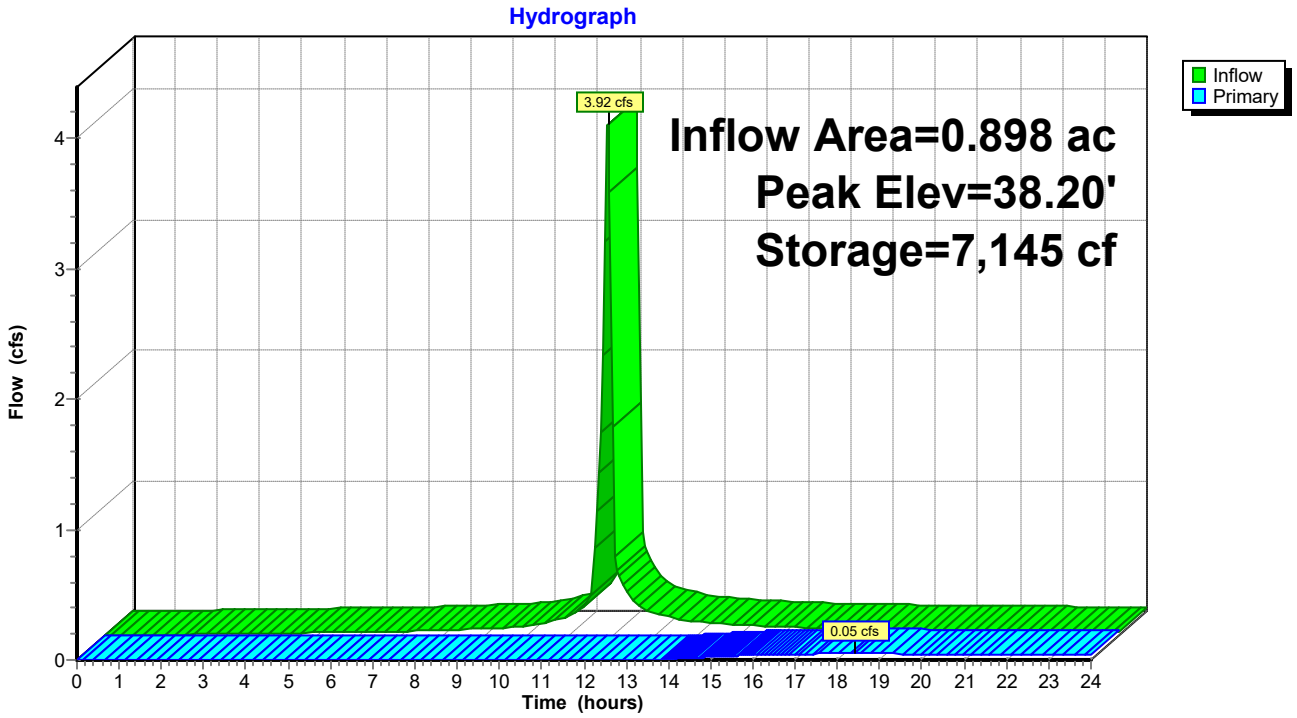
Volume	Invert	Avail.Storage	Storage Description
#1	32.99'	14,707 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.99	2,323	129.8	0.0	0	0	2,323
33.00	2,323	129.8	40.0	9	9	2,324
36.99	2,323	129.8	40.0	3,708	3,717	2,842
37.00	2,323	129.8	100.0	23	3,740	2,843
38.00	3,194	289.0	100.0	2,747	6,487	8,153
40.00	5,100	278.0	100.0	8,220	14,707	8,907

Device	Routing	Invert	Outlet Devices
#1	Primary	32.00'	**12.0" Round 12" HDPE** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 32.00' / 31.95' S= 0.0018 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	38.00'	**2.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	39.50'	**10.7' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.05 cfs @ 18.39 hrs HW=38.20' TW=0.00' (Dynamic Tailwater)
└─**1=12" HDPE** (Passes 0.05 cfs of 9.03 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 1.44 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: MicroBioRetention #1 & #2



Stage-Area-Storage for Pond 6P: MicroBioRetention #1 & #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
32.99	2,323	0
33.09	2,323	93
33.19	2,323	186
33.29	2,323	279
33.39	2,323	372
33.49	2,323	465
33.59	2,323	558
33.69	2,323	650
33.79	2,323	743
33.89	2,323	836
33.99	2,323	929
34.09	2,323	1,022
34.19	2,323	1,115
34.29	2,323	1,208
34.39	2,323	1,301
34.49	2,323	1,394
34.59	2,323	1,487
34.69	2,323	1,580
34.79	2,323	1,673
34.89	2,323	1,765
34.99	2,323	1,858
35.09	2,323	1,951
35.19	2,323	2,044
35.29	2,323	2,137
35.39	2,323	2,230
35.49	2,323	2,323
35.59	2,323	2,416
35.69	2,323	2,509
35.79	2,323	2,602
35.89	2,323	2,695
35.99	2,323	2,788
36.09	2,323	2,881
36.19	2,323	2,973
36.29	2,323	3,066
36.39	2,323	3,159
36.49	2,323	3,252
36.59	2,323	3,345
36.69	2,323	3,438
36.79	2,323	3,531
36.89	2,323	3,624
36.99	2,323	3,717
37.09	2,396	3,952
37.19	2,478	4,196
37.29	2,561	4,448
37.39	2,646	4,708
37.49	2,732	4,977
37.59	2,820	5,255
37.69	2,909	5,541
37.79	3,000	5,837
37.89	3,091	6,141
37.99	3,185	6,455
38.09	3,270	6,778
38.19	3,356	7,109
38.29	3,443	7,449
38.39	3,531	7,798
38.49	3,620	8,155
38.59	3,710	8,522
38.69	3,801	8,897
38.79	3,894	9,282
38.89	3,987	9,676
38.99	4,082	10,080
39.09	4,178	10,493
39.19	4,275	10,915
39.29	4,373	11,348
39.39	4,472	11,790
39.49	4,572	12,242
39.59	4,673	12,704
39.69	4,775	13,177
39.79	4,879	13,659
39.89	4,984	14,152
39.99	**5,089**	**14,656**

Summary for Pond 8P: MicroBioRetention #3 & #4

Inflow Area = 1.714 ac, 41.48% Impervious, Inflow Depth > 1.46" for 2-yr event
Inflow = 4.09 cfs @ 11.91 hrs, Volume= 0.208 af
Outflow = 0.04 cfs @ 24.00 hrs, Volume= 0.013 af, Atten= 99%, Lag= 725.3 min
Primary = 0.04 cfs @ 24.00 hrs, Volume= 0.013 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 36.79' @ 24.00 hrs Surf.Area= 4,443 sf Storage= 8,513 cf

Plug-Flow detention time= 675.4 min calculated for 0.013 af (6% of inflow)
Center-of-Mass det. time= 467.7 min (1,315.9 - 848.2)

Volume	Invert	Avail.Storage	Storage Description
#1	31.59'	19,369 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

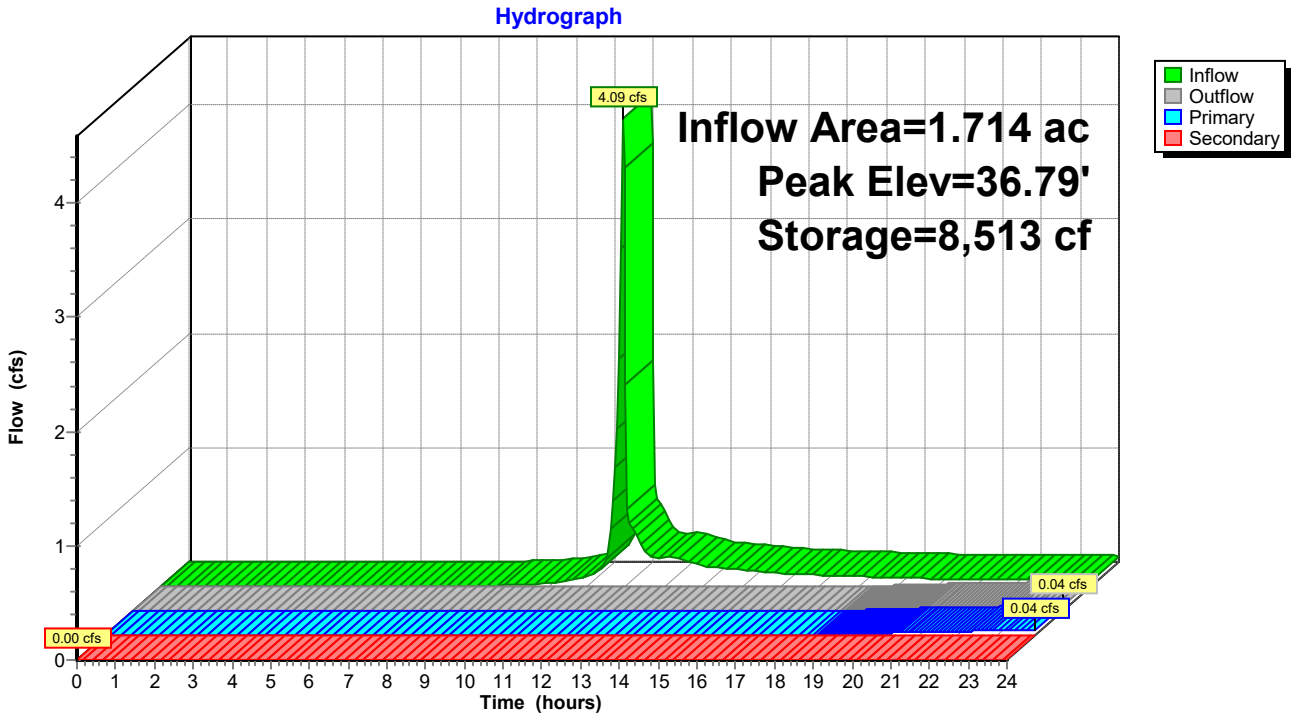
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
31.59	2,680	314.0	0.0	0	0	2,680
31.60	2,680	314.0	40.0	11	11	2,683
35.59	2,680	314.0	40.0	4,277	4,288	3,936
35.60	2,680	314.0	100.0	27	4,315	3,939
37.60	5,892	454.0	100.0	8,364	12,679	12,530
38.60	7,521	353.0	100.0	6,690	19,369	19,028

Device	Routing	Invert	Outlet Devices
#1	Primary	31.60'	**18.0" Round 18" HDPE** L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 31.60' / 30.95' S= 0.0542 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	36.60'	**2.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	38.10'	**16.3' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	38.10'	**10.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.04 cfs @ 24.00 hrs HW=36.79' TW=0.00' (Dynamic Tailwater)
└─**1=18" HDPE** (Passes 0.04 cfs of 17.93 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 1.40 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=31.59' TW=0.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 8P: MicroBioRetention #3 & #4



Stage-Area-Storage for Pond 8P: MicroBioRetention #3 & #4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
31.59	2,680	0
31.69	2,680	107
31.79	2,680	214
31.89	2,680	322
31.99	2,680	429
32.09	2,680	536
32.19	2,680	643
32.29	2,680	750
32.39	2,680	858
32.49	2,680	965
32.59	2,680	1,072
32.69	2,680	1,179
32.79	2,680	1,286
32.89	2,680	1,394
32.99	2,680	1,501
33.09	2,680	1,608
33.19	2,680	1,715
33.29	2,680	1,822
33.39	2,680	1,930
33.49	2,680	2,037
33.59	2,680	2,144
33.69	2,680	2,251
33.79	2,680	2,358
33.89	2,680	2,466
33.99	2,680	2,573
34.09	2,680	2,680
34.19	2,680	2,787
34.29	2,680	2,894
34.39	2,680	3,002
34.49	2,680	3,109
34.59	2,680	3,216
34.69	2,680	3,323
34.79	2,680	3,430
34.89	2,680	3,538
34.99	2,680	3,645
35.09	2,680	3,752
35.19	2,680	3,859
35.29	2,680	3,966
35.39	2,680	4,074
35.49	2,680	4,181
35.59	2,680	4,288
35.69	2,798	4,561
35.79	2,931	4,848
35.89	3,068	5,148
35.99	3,208	5,461
36.09	3,351	5,789
36.19	3,498	6,132
36.29	3,647	6,489
36.39	3,799	6,861
36.49	3,955	7,249
36.59	4,114	7,652
36.69	4,276	8,072
36.79	4,441	8,508
36.89	4,609	8,960
36.99	4,780	9,430
37.09	4,954	9,916
37.19	5,132	10,421
37.29	5,312	10,943
37.39	5,496	11,483
37.49	5,683	12,042
37.59	5,873	12,620
37.69	6,030	13,215
37.79	6,186	13,826
37.89	6,344	14,452
37.99	6,504	15,095
38.09	6,665	15,753
38.19	6,829	16,428
38.29	6,995	17,119
38.39	7,162	17,827
38.49	7,332	18,552
38.59	**7,504**	**19,293**

Summary for Pond 10P: 8" HDPE Roof Leader

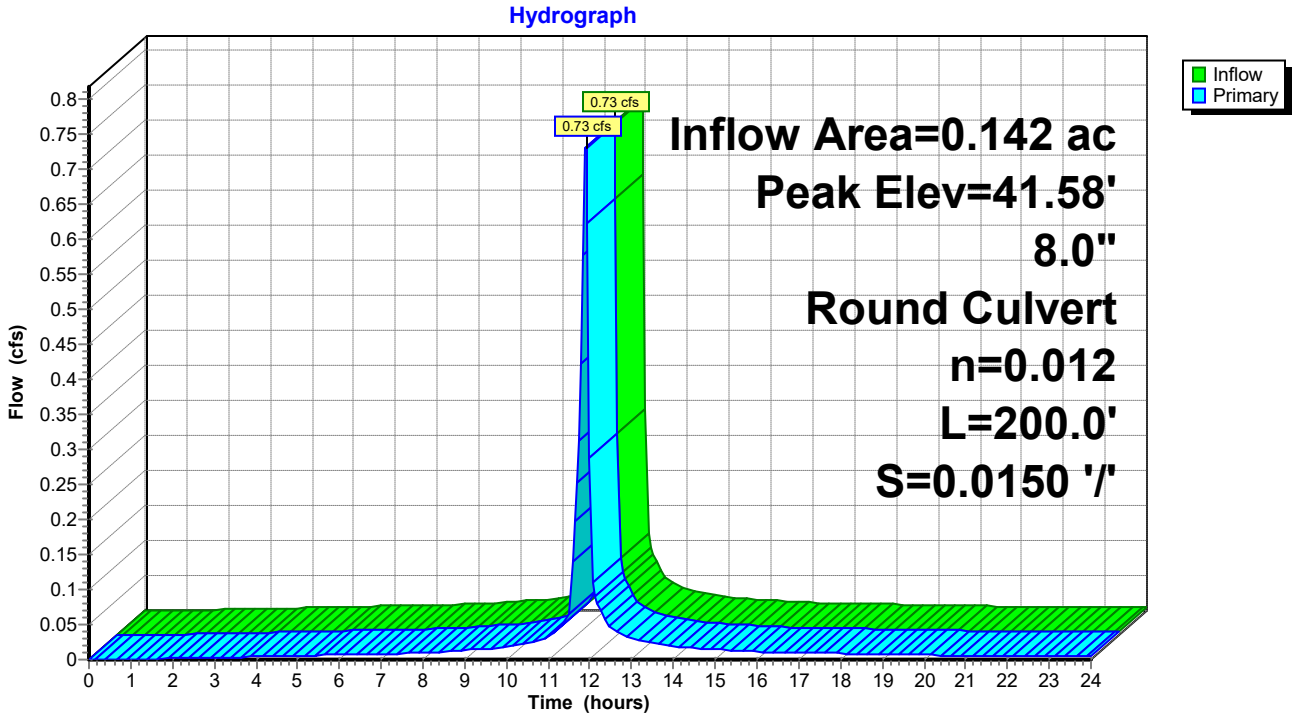
Inflow Area =	0.142 ac,100.00% Impervious, Inflow Depth > 3.17" for 2-yr event				
Inflow =	0.73 cfs @	11.90 hrs,	Volume=	0.037 af	
Outflow =	0.73 cfs @	11.90 hrs,	Volume=	0.037 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.73 cfs @	11.90 hrs,	Volume=	0.037 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 41.58' @ 11.90 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	41.00'	**8.0" Round 8" N-12** L= 200.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 41.00' / 38.00' S= 0.0150 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=0.72 cfs @ 11.90 hrs HW=41.57' TW=37.05' (Dynamic Tailwater)
└─**1=8" N-12** (Inlet Controls 0.72 cfs @ 2.27 fps)

Pond 10P: 8" HDPE Roof Leader



Stage-Area-Storage for Pond 10P: 8" HDPE Roof Leader

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
41.00	**0**	41.51	0
41.01	0	41.52	0
41.02	0	41.53	0
41.03	0	41.54	0
41.04	0	41.55	0
41.05	0	41.56	0
41.06	0	41.57	0
41.07	0	41.58	0
41.08	0	41.59	0
41.09	0	41.60	0
41.10	0	41.61	0
41.11	0	41.62	0
41.12	0	41.63	0
41.13	0	41.64	0
41.14	0	41.65	0
41.15	0	41.66	0
41.16	0	41.67	0
41.17	0	41.68	0
41.18	0	41.69	0
41.19	0	41.70	0
41.20	0	41.71	0
41.21	0	41.72	0
41.22	0	41.73	0
41.23	0	41.74	0
41.24	0	41.75	0
41.25	0	41.76	0
41.26	0	41.77	0
41.27	0	41.78	0
41.28	0	41.79	0
41.29	0	41.80	0
41.30	0	41.81	0
41.31	0	41.82	0
41.32	0	41.83	0
41.33	0	41.84	0
41.34	0	41.85	0
41.35	0	41.86	0
41.36	0	41.87	0
41.37	0	41.88	0
41.38	0	41.89	0
41.39	0	41.90	0
41.40	0	41.91	0
41.41	0	41.92	0
41.42	0	41.93	0
41.43	0	41.94	0
41.44	0	41.95	0
41.45	0	41.96	0
41.46	0	41.97	0
41.47	0	41.98	0
41.48	0	41.99	0
41.49	0	42.00	0
41.50	0		

Summary for Pond 12P: 8" HDPE Roof Leader

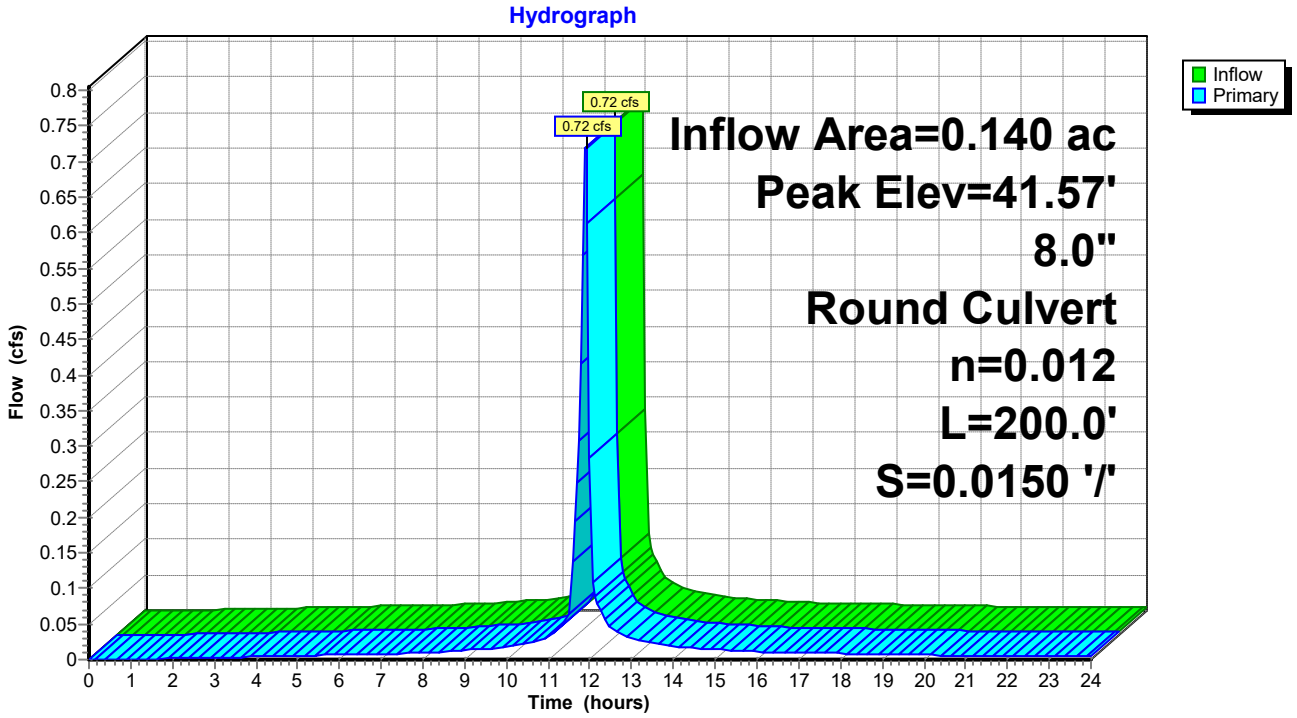
Inflow Area =	0.140 ac,100.00% Impervious, Inflow Depth > 3.17" for 2-yr event			
Inflow =	0.72 cfs @ 11.90 hrs, Volume=	0.037 af		
Outflow =	0.72 cfs @ 11.90 hrs, Volume=	0.037 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.72 cfs @ 11.90 hrs, Volume=	0.037 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 41.57' @ 11.90 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	41.00'	**8.0" Round 8" N-12** L= 200.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 41.00' / 38.00' S= 0.0150 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=0.71 cfs @ 11.90 hrs HW=41.56' TW=37.05' (Dynamic Tailwater)
└─**1=8" N-12** (Inlet Controls 0.71 cfs @ 2.25 fps)

Pond 12P: 8" HDPE Roof Leader



Stage-Area-Storage for Pond 12P: 8" HDPE Roof Leader

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
41.00	**0**	41.51	0
41.01	0	41.52	0
41.02	0	41.53	0
41.03	0	41.54	0
41.04	0	41.55	0
41.05	0	41.56	0
41.06	0	41.57	0
41.07	0	41.58	0
41.08	0	41.59	0
41.09	0	41.60	0
41.10	0	41.61	0
41.11	0	41.62	0
41.12	0	41.63	0
41.13	0	41.64	0
41.14	0	41.65	0
41.15	0	41.66	0
41.16	0	41.67	0
41.17	0	41.68	0
41.18	0	41.69	0
41.19	0	41.70	0
41.20	0	41.71	0
41.21	0	41.72	0
41.22	0	41.73	0
41.23	0	41.74	0
41.24	0	41.75	0
41.25	0	41.76	0
41.26	0	41.77	0
41.27	0	41.78	0
41.28	0	41.79	0
41.29	0	41.80	0
41.30	0	41.81	0
41.31	0	41.82	0
41.32	0	41.83	0
41.33	0	41.84	0
41.34	0	41.85	0
41.35	0	41.86	0
41.36	0	41.87	0
41.37	0	41.88	0
41.38	0	41.89	0
41.39	0	41.90	0
41.40	0	41.91	0
41.41	0	41.92	0
41.42	0	41.93	0
41.43	0	41.94	0
41.44	0	41.95	0
41.45	0	41.96	0
41.46	0	41.97	0
41.47	0	41.98	0
41.48	0	41.99	0
41.49	0	42.00	0
41.50	0		

Summary for Pond 18P: 15" HDPE Stormdrain

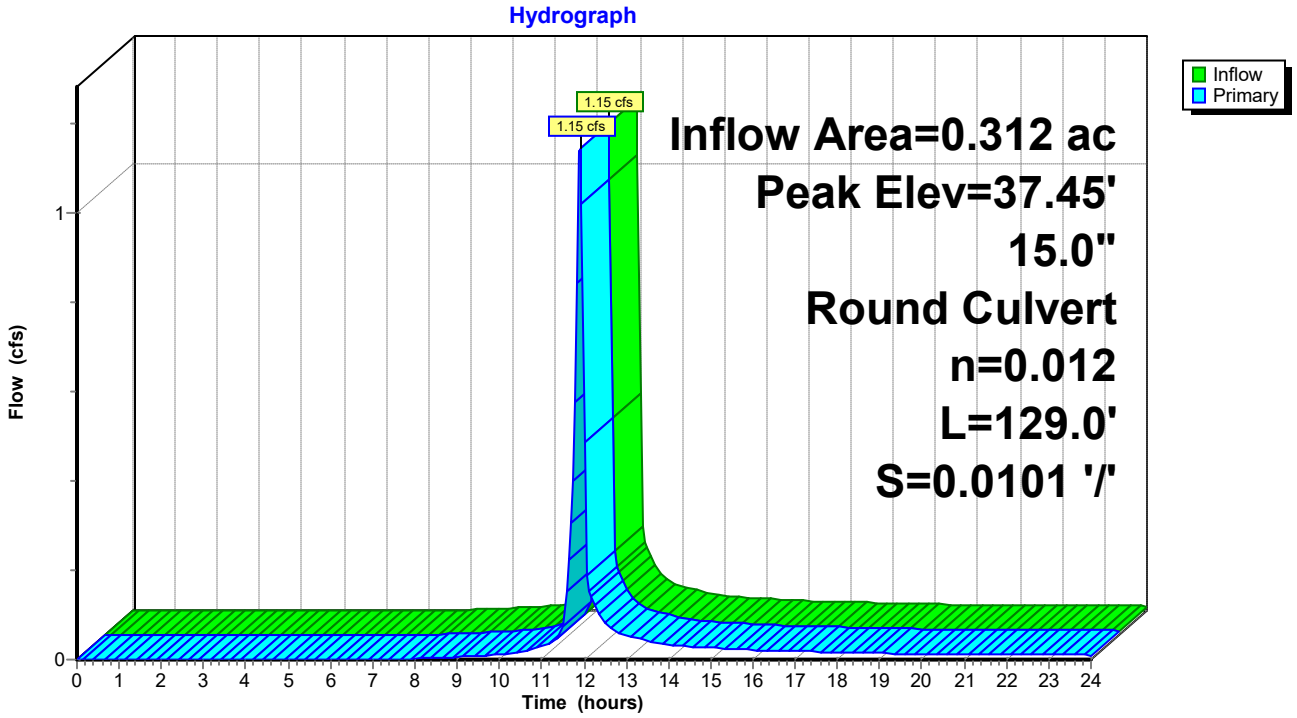
Inflow Area =	0.312 ac, 48.76% Impervious, Inflow Depth > 1.95" for 2-yr event				
Inflow =	1.15 cfs @ 11.91 hrs, Volume=	0.051 af			
Outflow =	1.15 cfs @ 11.91 hrs, Volume=	0.051 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.15 cfs @ 11.91 hrs, Volume=	0.051 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 37.45' @ 11.91 hrs
Flood Elev= 40.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.90'	**15.0" Round CPP_Round 15"** L= 129.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 36.90' / 35.60' S= 0.0101 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.11 cfs @ 11.91 hrs HW=37.44' TW=34.09' (Dynamic Tailwater)
└─**1=CPP_Round 15"** (Inlet Controls 1.11 cfs @ 2.20 fps)

Pond 18P: 15" HDPE Stormdrain



Stage-Area-Storage for Pond 18P: 15" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
36.90	**0**	39.45	0
36.95	0	39.50	0
37.00	0	39.55	0
37.05	0	39.60	0
37.10	0	39.65	0
37.15	0	39.70	0
37.20	0	39.75	0
37.25	0	39.80	0
37.30	0	39.85	0
37.35	0	39.90	0
37.40	0	39.95	0
37.45	0	40.00	0
37.50	0	40.05	0
37.55	0	40.10	0
37.60	0	40.15	0
37.65	0		
37.70	0		
37.75	0		
37.80	0		
37.85	0		
37.90	0		
37.95	0		
38.00	0		
38.05	0		
38.10	0		
38.15	0		
38.20	0		
38.25	0		
38.30	0		
38.35	0		
38.40	0		
38.45	0		
38.50	0		
38.55	0		
38.60	0		
38.65	0		
38.70	0		
38.75	0		
38.80	0		
38.85	0		
38.90	0		
38.95	0		
39.00	0		
39.05	0		
39.10	0		
39.15	0		
39.20	0		
39.25	0		
39.30	0		
39.35	0		
39.40	0		

Summary for Pond 20P: 15" HDPE Stormdrain

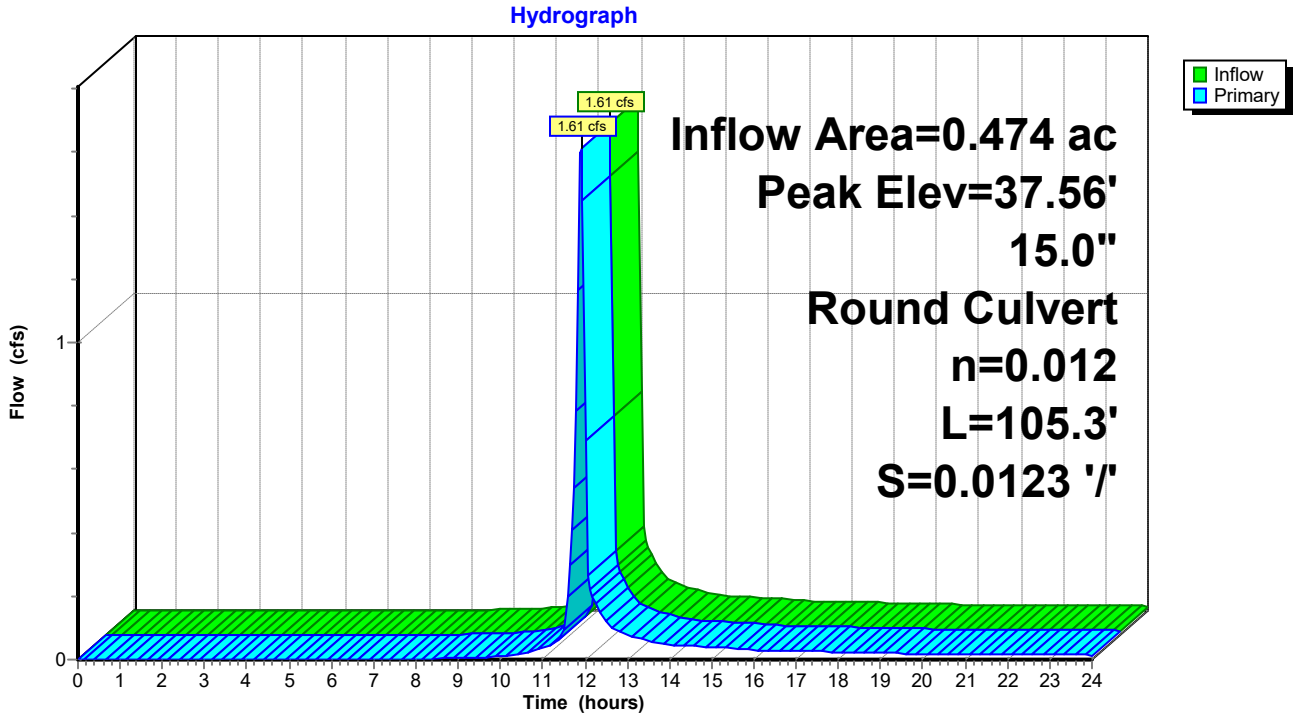
Inflow Area = 0.474 ac, 40.93% Impervious, Inflow Depth > 1.79" for 2-yr event
Inflow = 1.61 cfs @ 11.91 hrs, Volume= 0.071 af
Outflow = 1.61 cfs @ 11.91 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min
Primary = 1.61 cfs @ 11.91 hrs, Volume= 0.071 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 37.56' @ 11.91 hrs
Flood Elev= 40.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.90'	**15.0" Round CPP_Round 15"** L= 105.3' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 36.90' / 35.60' S= 0.0123 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.56 cfs @ 11.91 hrs HW=37.55' TW=34.11' (Dynamic Tailwater)
└─**1=CPP_Round 15"** (Inlet Controls 1.56 cfs @ 2.42 fps)

Pond 20P: 15" HDPE Stormdrain



Stage-Area-Storage for Pond 20P: 15" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
36.90	**0**	39.45	0
36.95	0	39.50	0
37.00	0	39.55	0
37.05	0	39.60	0
37.10	0	39.65	0
37.15	0	39.70	0
37.20	0	39.75	0
37.25	0	39.80	0
37.30	0	39.85	0
37.35	0	39.90	0
37.40	0	39.95	0
37.45	0	40.00	0
37.50	0	40.05	0
37.55	0	40.10	0
37.60	0	40.15	0
37.65	0		
37.70	0		
37.75	0		
37.80	0		
37.85	0		
37.90	0		
37.95	0		
38.00	0		
38.05	0		
38.10	0		
38.15	0		
38.20	0		
38.25	0		
38.30	0		
38.35	0		
38.40	0		
38.45	0		
38.50	0		
38.55	0		
38.60	0		
38.65	0		
38.70	0		
38.75	0		
38.80	0		
38.85	0		
38.90	0		
38.95	0		
39.00	0		
39.05	0		
39.10	0		
39.15	0		
39.20	0		
39.25	0		
39.30	0		
39.35	0		
39.40	0		

Summary for Pond 21P: 12" HDPE Stormdrain

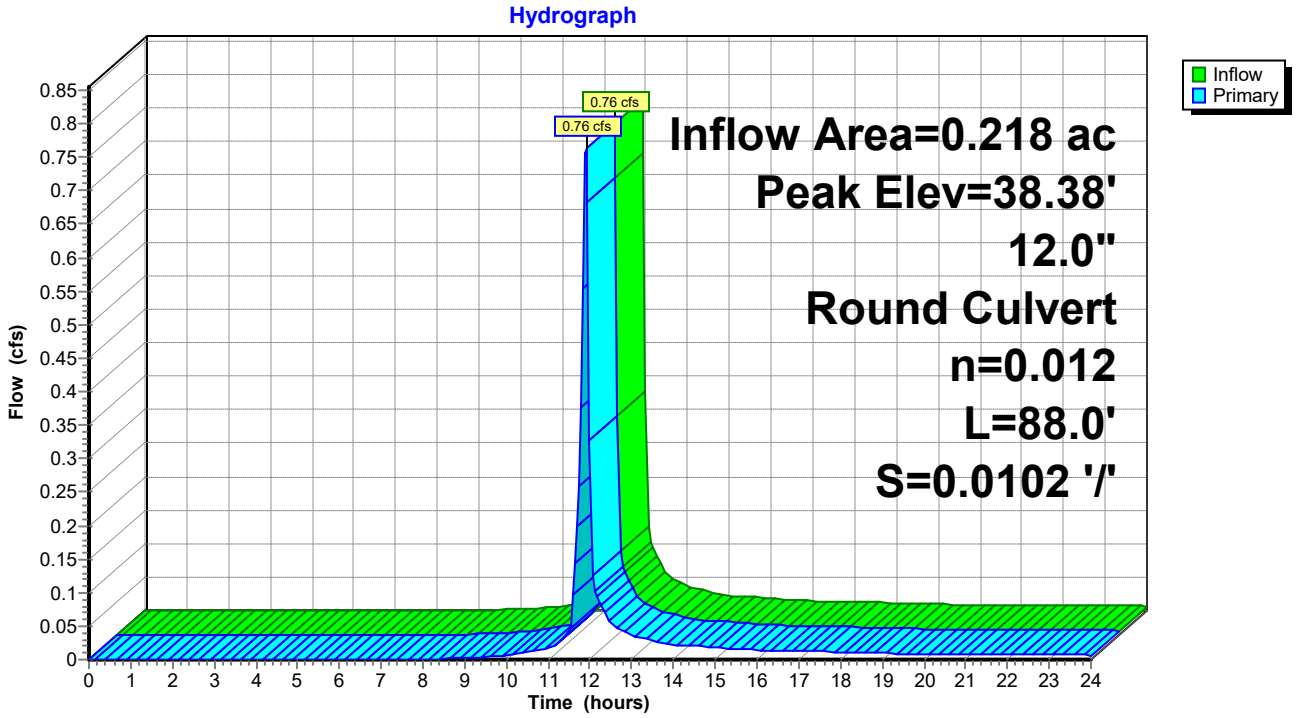
Inflow Area = 0.218 ac, 43.64% Impervious, Inflow Depth > 1.85" for 2-yr event
Inflow = 0.76 cfs @ 11.91 hrs, Volume= 0.034 af
Outflow = 0.76 cfs @ 11.91 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 11.91 hrs, Volume= 0.034 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.38' @ 11.91 hrs
Flood Elev= 41.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	**12.0" Round CPP_Round 12"** L= 88.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 37.90' / 37.00' S= 0.0102 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.74 cfs @ 11.91 hrs HW=38.37' TW=37.44' (Dynamic Tailwater)
└─**1=CPP_Round 12"** (Inlet Controls 0.74 cfs @ 2.05 fps)

Pond 21P: 12" HDPE Stormdrain



Stage-Area-Storage for Pond 21P: 12" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
37.90	**0**	40.45	0
37.95	0	40.50	0
38.00	0	40.55	0
38.05	0	40.60	0
38.10	0	40.65	0
38.15	0	40.70	0
38.20	0	40.75	0
38.25	0	40.80	0
38.30	0	40.85	0
38.35	0	40.90	0
38.40	0	40.95	0
38.45	0	41.00	0
38.50	0	41.05	0
38.55	0	41.10	0
38.60	0	41.15	0
38.65	0	41.20	0
38.70	0	41.25	0
38.75	0	41.30	0
38.80	0	41.35	0
38.85	0	41.40	0
38.90	0	41.45	0
38.95	0	41.50	0
39.00	0	41.55	0
39.05	0	41.60	0
39.10	0	41.65	0
39.15	0		
39.20	0		
39.25	0		
39.30	0		
39.35	0		
39.40	0		
39.45	0		
39.50	0		
39.55	0		
39.60	0		
39.65	0		
39.70	0		
39.75	0		
39.80	0		
39.85	0		
39.90	0		
39.95	0		
40.00	0		
40.05	0		
40.10	0		
40.15	0		
40.20	0		
40.25	0		
40.30	0		
40.35	0		
40.40	0		

Summary for Pond 22P: 12" HDPE Stormdrain

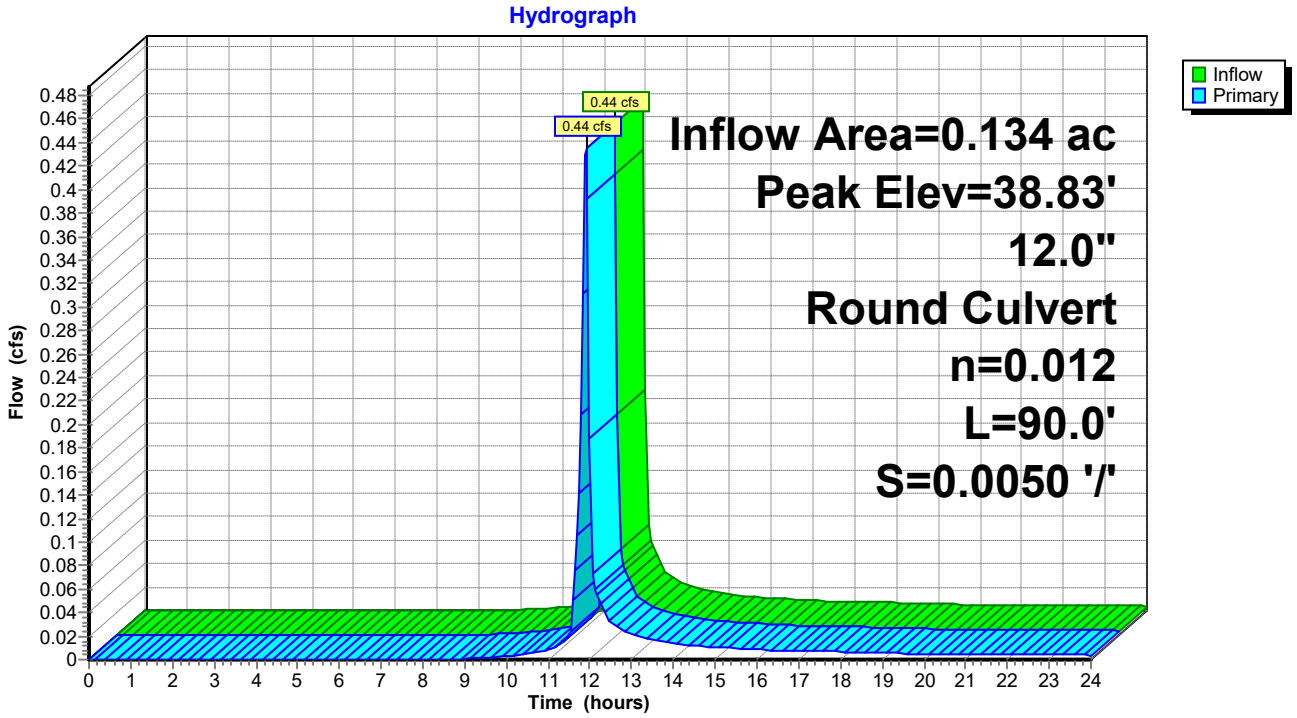
Inflow Area = 0.134 ac, 36.73% Impervious, Inflow Depth > 1.70" for 2-yr event
Inflow = 0.44 cfs @ 11.91 hrs, Volume= 0.019 af
Outflow = 0.44 cfs @ 11.91 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min
Primary = 0.44 cfs @ 11.91 hrs, Volume= 0.019 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.83' @ 11.92 hrs
Flood Elev= 41.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.45'	**12.0" Round CPP_Round 12"** L= 90.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 38.45' / 38.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.40 cfs @ 11.91 hrs HW=38.82' TW=38.37' (Dynamic Tailwater)
└─**1=CPP_Round 12"** (Outlet Controls 0.40 cfs @ 2.22 fps)

Pond 22P: 12" HDPE Stormdrain



Stage-Area-Storage for Pond 22P: 12" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
38.45	**0**	41.00	0
38.50	0	41.05	0
38.55	0	41.10	0
38.60	0	41.15	0
38.65	0	41.20	0
38.70	0	41.25	0
38.75	0	41.30	0
38.80	0	41.35	0
38.85	0	41.40	0
38.90	0	41.45	0
38.95	0	41.50	0
39.00	0	41.55	0
39.05	0	41.60	0
39.10	0	41.65	0
39.15	0	41.70	0
39.20	0	41.75	0
39.25	0	41.80	0
39.30	0	41.85	0
39.35	0	41.90	0
39.40	0		
39.45	0		
39.50	0		
39.55	0		
39.60	0		
39.65	0		
39.70	0		
39.75	0		
39.80	0		
39.85	0		
39.90	0		
39.95	0		
40.00	0		
40.05	0		
40.10	0		
40.15	0		
40.20	0		
40.25	0		
40.30	0		
40.35	0		
40.40	0		
40.45	0		
40.50	0		
40.55	0		
40.60	0		
40.65	0		
40.70	0		
40.75	0		
40.80	0		
40.85	0		
40.90	0		
40.95	0		

Summary for Pond 23P: 12" HDPE Stormdrain

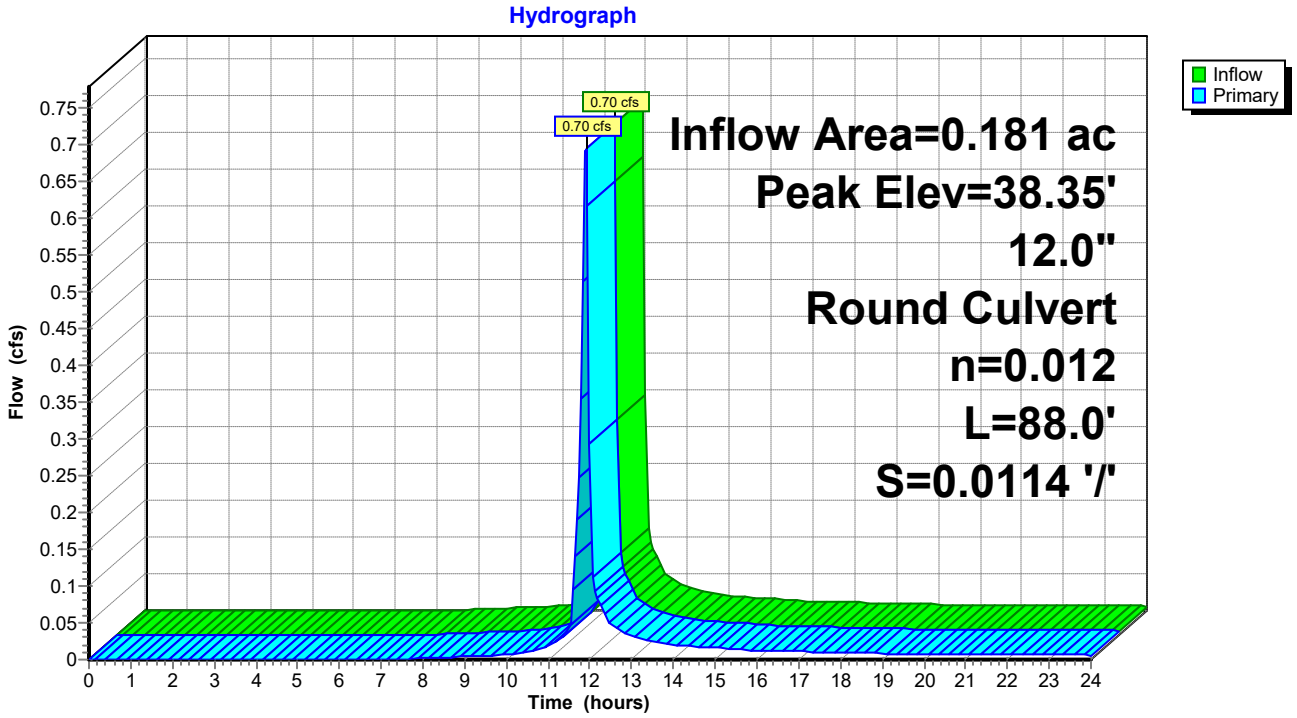
Inflow Area = 0.181 ac, 54.26% Impervious, Inflow Depth > 2.05" for 2-yr event
Inflow = 0.70 cfs @ 11.91 hrs, Volume= 0.031 af
Outflow = 0.70 cfs @ 11.91 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min
Primary = 0.70 cfs @ 11.91 hrs, Volume= 0.031 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.35' @ 11.91 hrs
Flood Elev= 41.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	**12.0" Round CPP_Round 12"** L= 88.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 37.90' / 36.90' S= 0.0114 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.68 cfs @ 11.91 hrs HW=38.34' TW=37.55' (Dynamic Tailwater)
└─**1=CPP_Round 12"** (Inlet Controls 0.68 cfs @ 2.00 fps)

Pond 23P: 12" HDPE Stormdrain



Stage-Area-Storage for Pond 23P: 12" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
37.90	**0**	40.45	0
37.95	0	40.50	0
38.00	0	40.55	0
38.05	0	40.60	0
38.10	0	40.65	0
38.15	0	40.70	0
38.20	0	40.75	0
38.25	0	40.80	0
38.30	0	40.85	0
38.35	0	40.90	0
38.40	0	40.95	0
38.45	0	41.00	0
38.50	0	41.05	0
38.55	0	41.10	0
38.60	0	41.15	0
38.65	0	41.20	0
38.70	0	41.25	0
38.75	0	41.30	0
38.80	0	41.35	0
38.85	0	41.40	0
38.90	0	41.45	0
38.95	0	41.50	0
39.00	0	41.55	0
39.05	0	41.60	0
39.10	0	41.65	0
39.15	0		
39.20	0		
39.25	0		
39.30	0		
39.35	0		
39.40	0		
39.45	0		
39.50	0		
39.55	0		
39.60	0		
39.65	0		
39.70	0		
39.75	0		
39.80	0		
39.85	0		
39.90	0		
39.95	0		
40.00	0		
40.05	0		
40.10	0		
40.15	0		
40.20	0		
40.25	0		
40.30	0		
40.35	0		
40.40	0		

Summary for Pond 24P: 12" HDPE Stormdrain

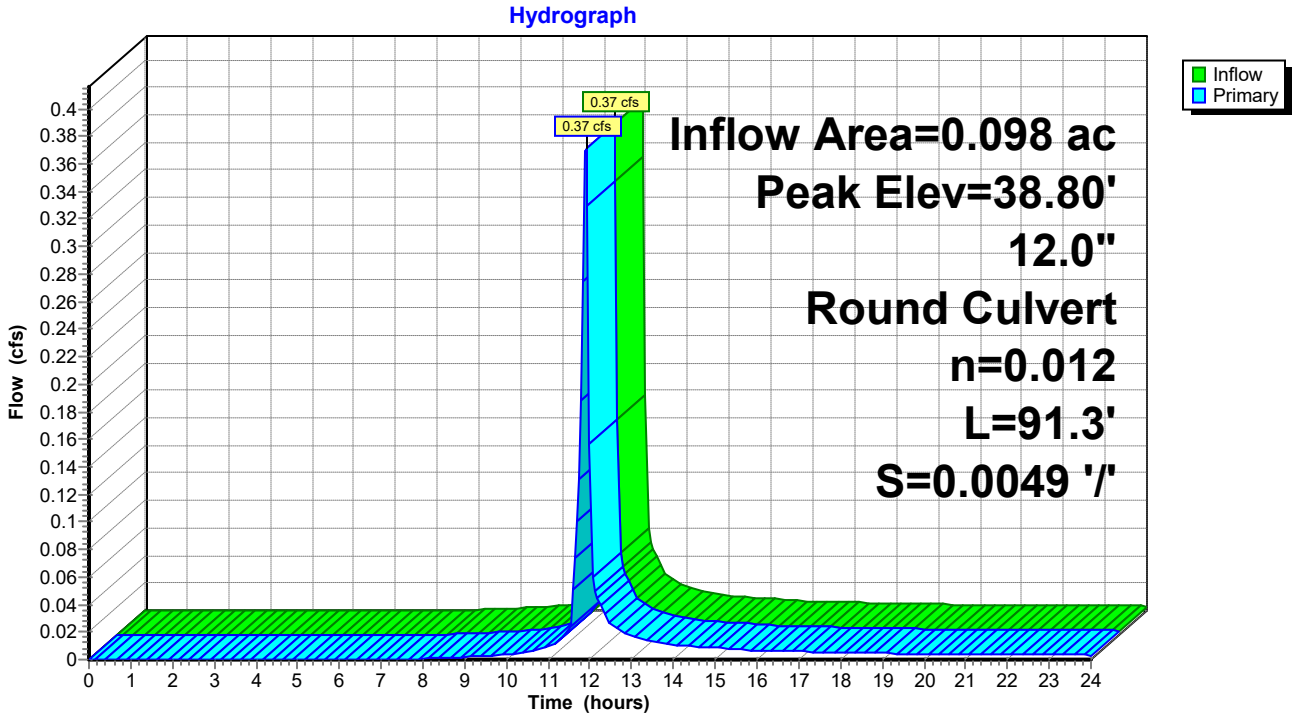
Inflow Area = 0.098 ac, 52.35% Impervious, Inflow Depth > 2.01" for 2-yr event
Inflow = 0.37 cfs @ 11.91 hrs, Volume= 0.016 af
Outflow = 0.37 cfs @ 11.91 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min
Primary = 0.37 cfs @ 11.91 hrs, Volume= 0.016 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.80' @ 11.92 hrs
Flood Elev= 41.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.45'	**12.0" Round CPP_Round 12"** L= 91.3' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 38.45' / 38.00' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.34 cfs @ 11.91 hrs HW=38.80' TW=38.34' (Dynamic Tailwater)
└─**1=CPP_Round 12"** (Outlet Controls 0.34 cfs @ 2.12 fps)

Pond 24P: 12" HDPE Stormdrain



Stage-Area-Storage for Pond 24P: 12" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
38.45	**0**	41.00	0
38.50	0	41.05	0
38.55	0	41.10	0
38.60	0	41.15	0
38.65	0	41.20	0
38.70	0	41.25	0
38.75	0	41.30	0
38.80	0	41.35	0
38.85	0	41.40	0
38.90	0	41.45	0
38.95	0	41.50	0
39.00	0	41.55	0
39.05	0	41.60	0
39.10	0	41.65	0
39.15	0	41.70	0
39.20	0	41.75	0
39.25	0	41.80	0
39.30	0	41.85	0
39.35	0	41.90	0
39.40	0		
39.45	0		
39.50	0		
39.55	0		
39.60	0		
39.65	0		
39.70	0		
39.75	0		
39.80	0		
39.85	0		
39.90	0		
39.95	0		
40.00	0		
40.05	0		
40.10	0		
40.15	0		
40.20	0		
40.25	0		
40.30	0		
40.35	0		
40.40	0		
40.45	0		
40.50	0		
40.55	0		
40.60	0		
40.65	0		
40.70	0		
40.75	0		
40.80	0		
40.85	0		
40.90	0		
40.95	0		

Summary for Pond BSW: BioSwale (M-8)

Inflow Area = 0.517 ac, 42.48% Impervious, Inflow Depth > 1.84" for 2-yr event
Inflow = 1.80 cfs @ 11.91 hrs, Volume= 0.079 af
Outflow = 0.08 cfs @ 13.28 hrs, Volume= 0.029 af, Atten= 96%, Lag= 82.2 min
Primary = 0.08 cfs @ 13.28 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 40.04' @ 13.28 hrs Surf.Area= 1,804 sf Storage= 2,230 cf

Plug-Flow detention time= 322.9 min calculated for 0.029 af (37% of inflow)
Center-of-Mass det. time= 198.5 min (1,017.9 - 819.4)

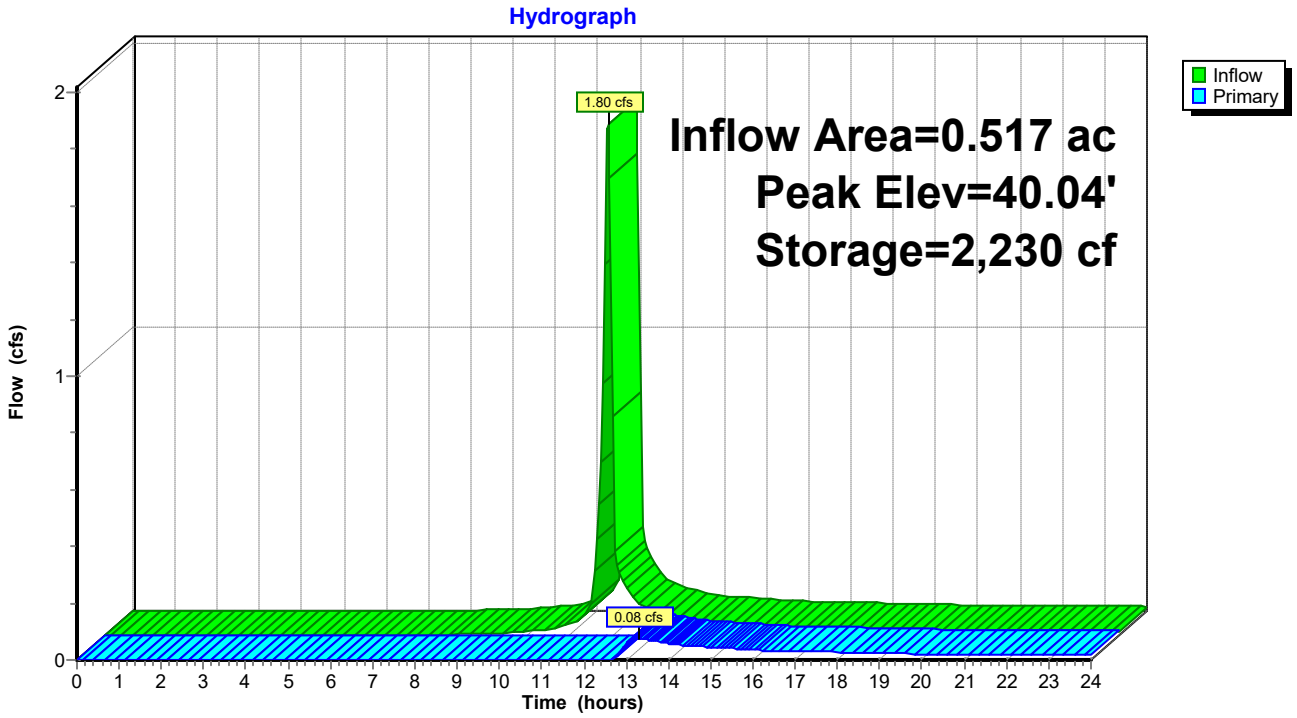
Volume	Invert	Avail.Storage	Storage Description
#1	34.99'	4,698 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
34.99	631	323.0	0.0	0	0	631
35.00	631	323.0	40.0	3	3	634
38.99	631	323.0	40.0	1,007	1,010	1,923
39.00	631	323.0	100.0	6	1,016	1,926
41.00	3,423	373.0	100.0	3,682	4,698	4,782

Device	Routing	Invert	Outlet Devices
#1	Primary	40.00'	**4.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.08 cfs @ 13.28 hrs HW=40.04' TW=35.96' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 0.08 cfs @ 0.47 fps)

Pond BSW: BioSwale (M-8)



Stage-Area-Storage for Pond BSW: BioSwale (M-8)

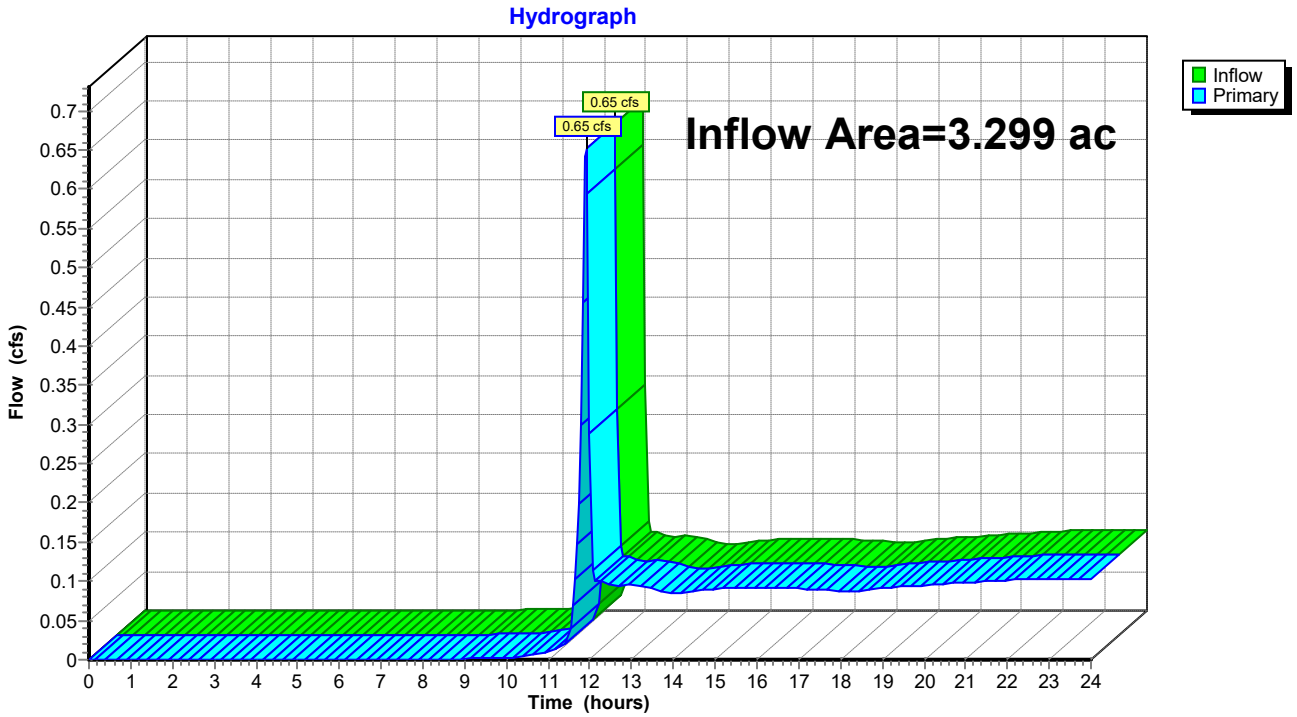
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
34.99	631	0
35.09	631	25
35.19	631	50
35.29	631	76
35.39	631	101
35.49	631	126
35.59	631	151
35.69	631	177
35.79	631	202
35.89	631	227
35.99	631	252
36.09	631	278
36.19	631	303
36.29	631	328
36.39	631	353
36.49	631	379
36.59	631	404
36.69	631	429
36.79	631	454
36.89	631	480
36.99	631	505
37.09	631	530
37.19	631	555
37.29	631	581
37.39	631	606
37.49	631	631
37.59	631	656
37.69	631	681
37.79	631	707
37.89	631	732
37.99	631	757
38.09	631	782
38.19	631	808
38.29	631	833
38.39	631	858
38.49	631	883
38.59	631	909
38.69	631	934
38.79	631	959
38.89	631	984
38.99	631	1,010
39.09	709	1,076
39.19	800	1,152
39.29	898	1,236
39.39	1,000	1,331
39.49	1,109	1,437
39.59	1,223	1,553
39.69	1,342	1,681
39.79	1,467	1,822
39.89	1,598	1,975
39.99	1,734	2,142
40.09	1,876	2,322
40.19	2,024	2,517
40.29	2,177	2,727
40.39	2,335	2,953
40.49	2,499	3,194
40.59	2,669	3,453
40.69	2,844	3,728
40.79	3,025	4,022
40.89	3,212	4,334
40.99	**3,403**	**4,664**

Summary for Link 1L: POI#1

Inflow Area = 3.299 ac, 49.24% Impervious, Inflow Depth > 0.39" for 2-yr event
Inflow = 0.65 cfs @ 11.91 hrs, Volume= 0.107 af
Primary = 0.65 cfs @ 11.91 hrs, Volume= 0.107 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 1L: POI#1

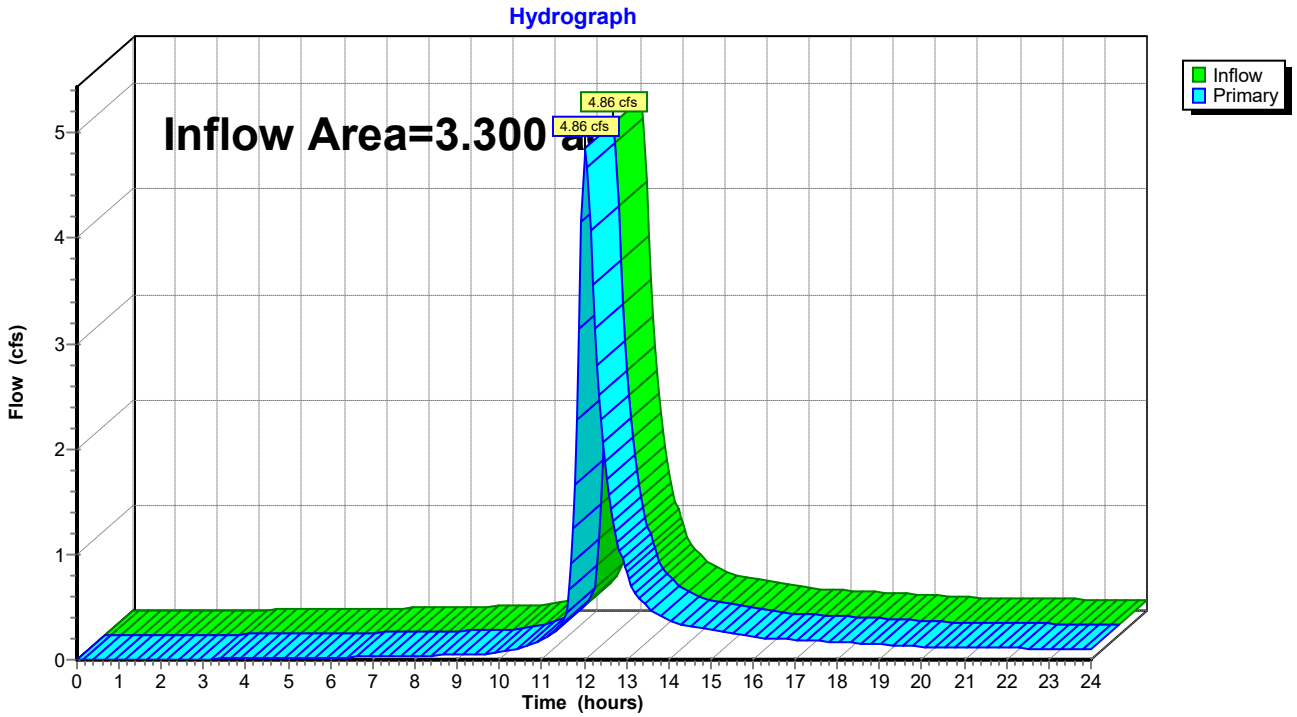


Summary for Link POI#1: EX. Stormdrain

Inflow Area = 3.300 ac, 34.85% Impervious, Inflow Depth > 1.75" for 2-yr event
Inflow = 4.86 cfs @ 12.03 hrs, Volume= 0.482 af
Primary = 4.86 cfs @ 12.03 hrs, Volume= 0.482 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link POI#1: EX. Stormdrain



Summary for Subcatchment EX-1: EX (GRAY)

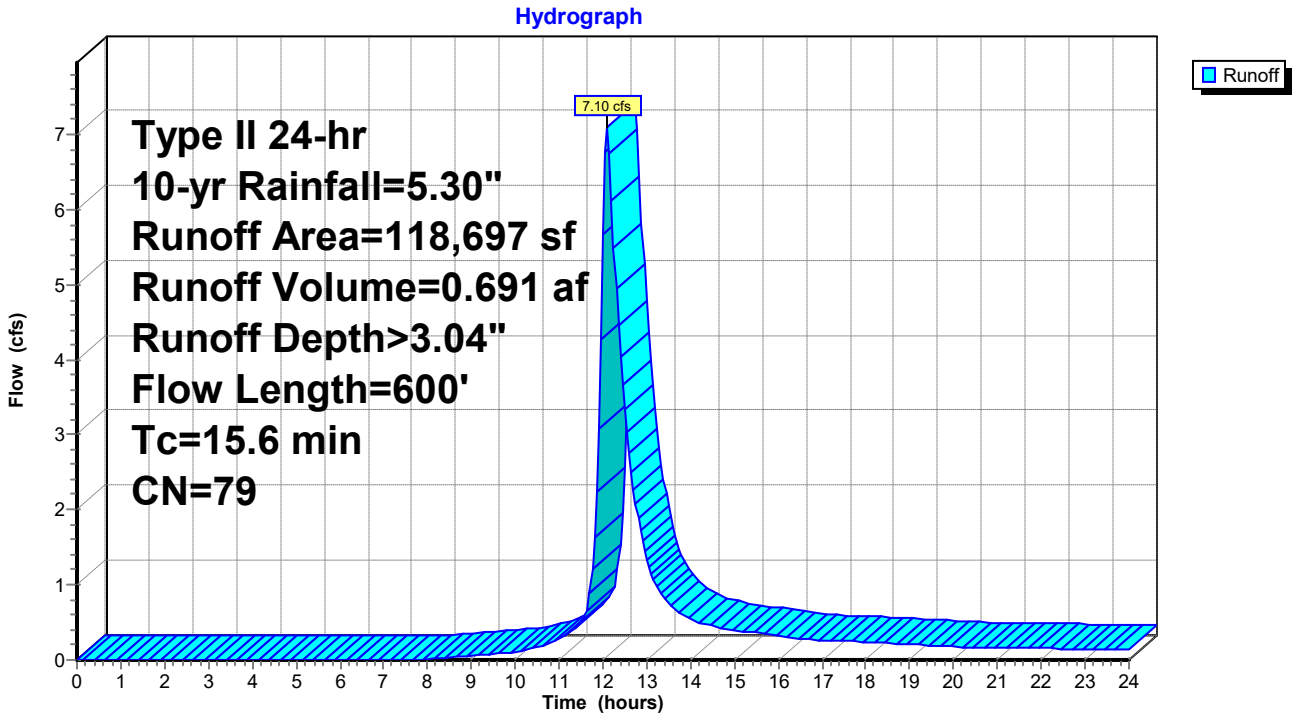
Runoff = 7.10 cfs @ 12.10 hrs, Volume= 0.691 af, Depth> 3.04"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	92,205	74	Vacant Grass Field
*	26,492	98	Ex Bldgs & Parking Areas
	118,697	79	Weighted Average
	92,205		77.68% Pervious Area
	26,492		22.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, Grassed Lot** Grass: Short n= 0.150 P2= 3.40"
1.5	197	0.0200	2.12		**Shallow Concentrated Flow, Grassed Lot** Grassed Waterway Kv= 15.0 fps
0.5	84	0.0050	2.73	15.04	**Channel Flow, Ex Swale** Area= 5.5 sf Perim= 12.7' r= 0.43' n= 0.022 Earth, clean & straight
0.2	65	0.0058	4.34	5.33	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
0.3	104	0.0171	5.82	68.10	**Channel Flow, Ex Veg. Swale** Area= 11.7 sf Perim= 10.9' r= 1.07' n= 0.035 Earth, dense weeds
15.6	600	Total			

Subcatchment EX-1: EX (GRAY)



Summary for Subcatchment EX-2: Ex. Easton Ice Parcel

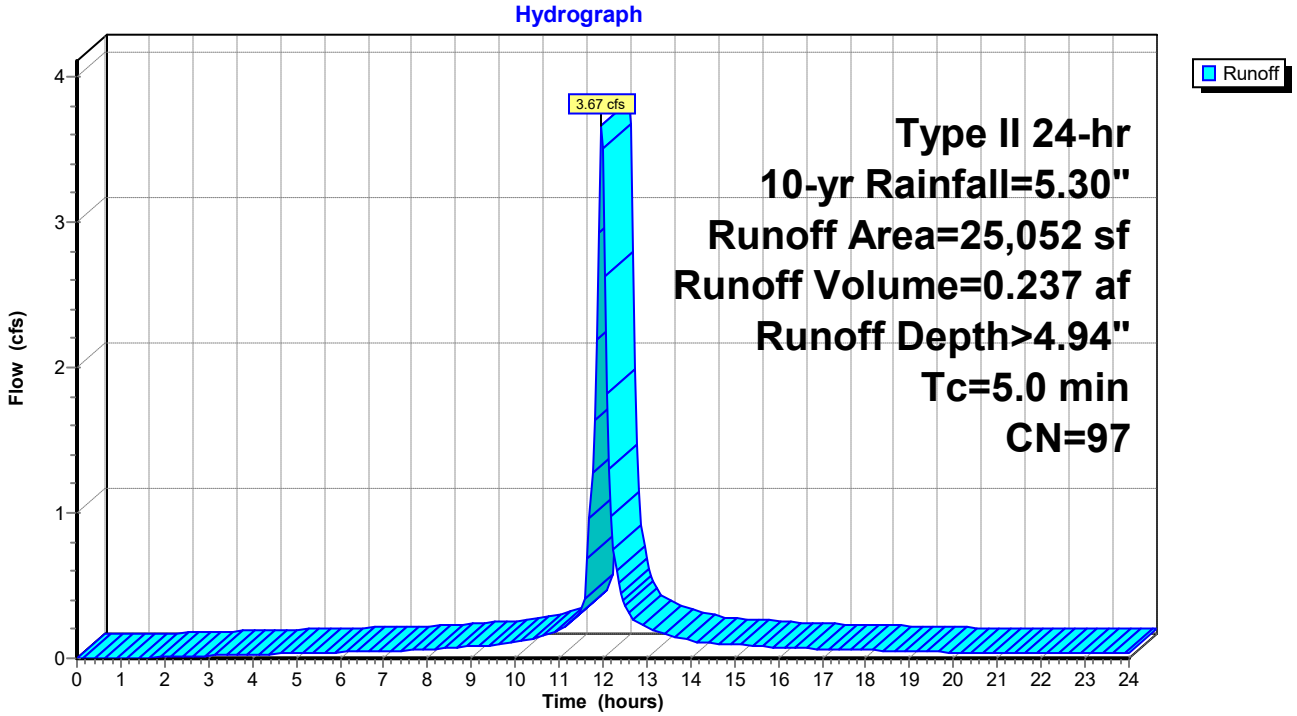
Runoff = 3.67 cfs @ 11.97 hrs, Volume= 0.237 af, Depth> 4.94"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	23,608	98	Ex. Building & Parking Area
*	1,444	74	Lawn & Landscape Area
	25,052	97	Weighted Average
	1,444		5.76% Pervious Area
	23,608		94.24% Impervious Area

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

Subcatchment EX-2: Ex. Easton Ice Parcel



Summary for Subcatchment PR-1A: Parking Lot & SWM Feature (Green)

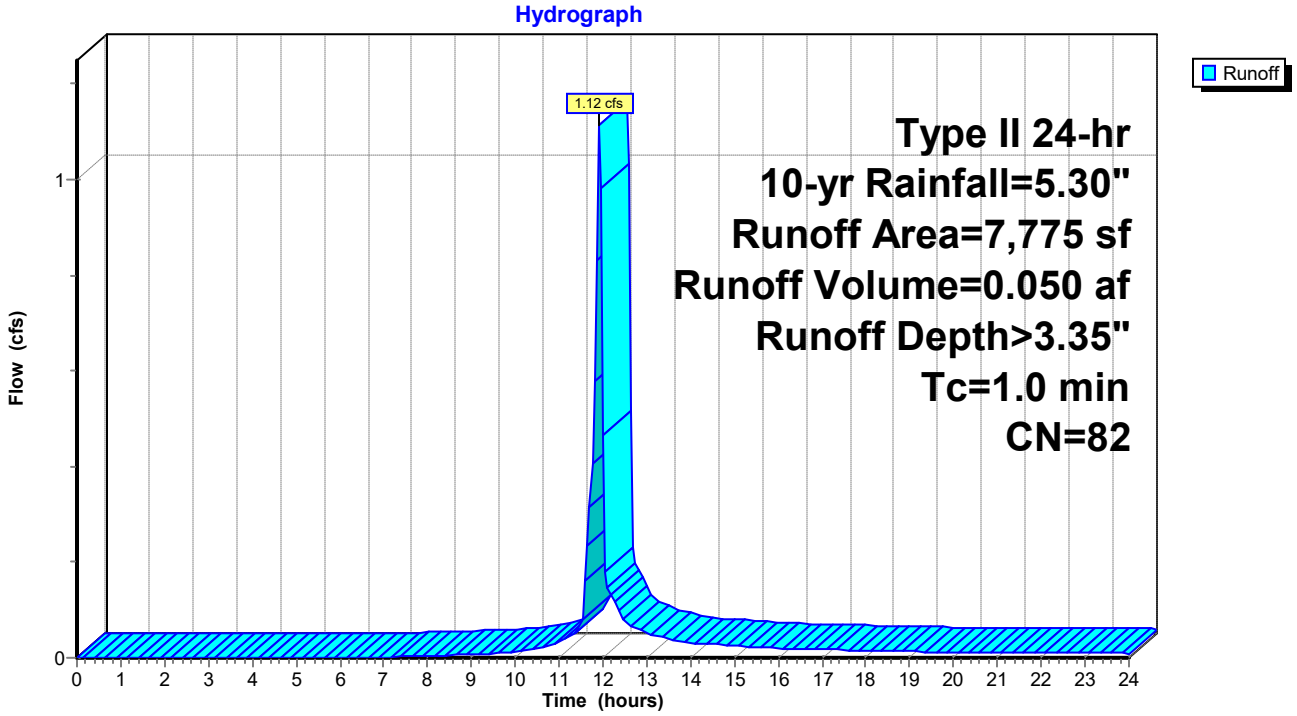
Runoff = 1.12 cfs @ 11.91 hrs, Volume= 0.050 af, Depth> 3.35"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
	3,632	74	>75% Grass cover, Good, HSG C
*	2,847	98	Asphalt & Sidewalk
*	1,296	70	Permeable Pavers (Woods in Good Condition)
	7,775	82	Weighted Average
	4,928		63.38% Pervious Area
	2,847		36.62% Impervious Area

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

Subcatchment PR-1A: Parking Lot & SWM Feature (Green)



Summary for Subcatchment PR-1B: Green (Roof)

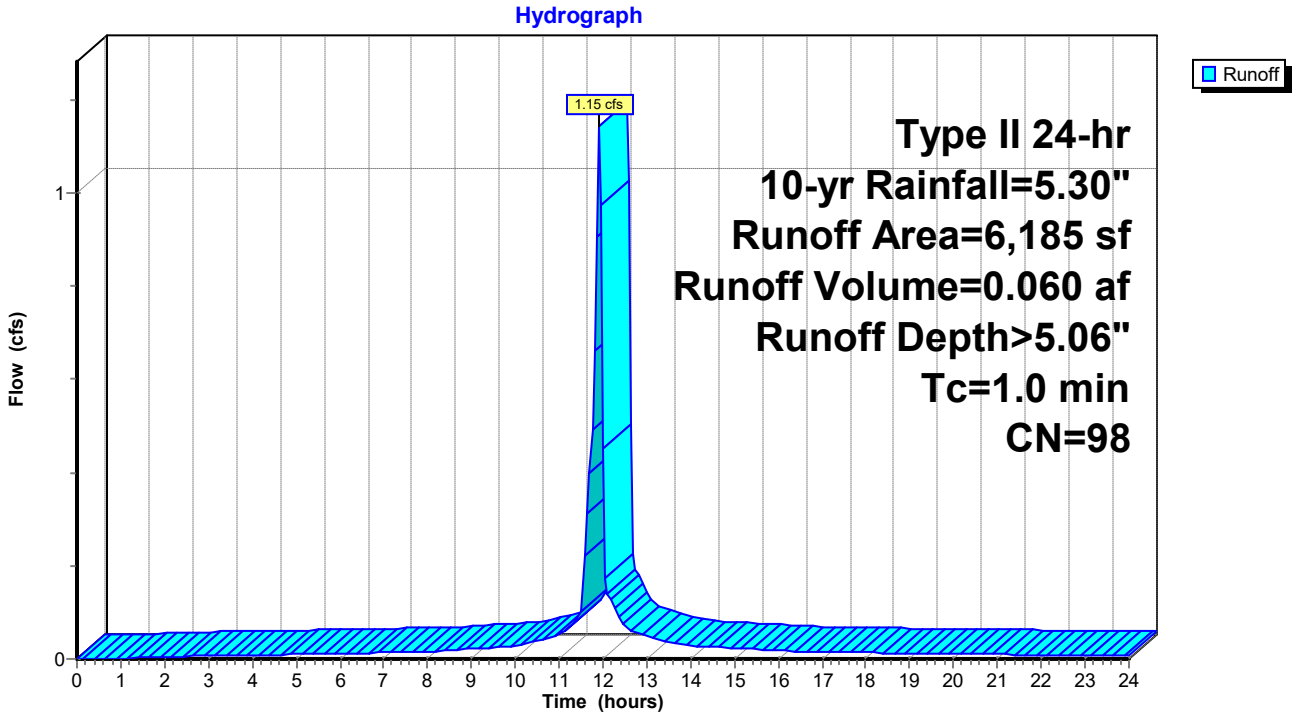
Runoff = 1.15 cfs @ 11.90 hrs, Volume= 0.060 af, Depth> 5.06"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	6,185	98	Roof
	6,185		100.00% Impervious Area

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

Subcatchment PR-1B: Green (Roof)



Summary for Subcatchment PR-1C: Green (Roof)

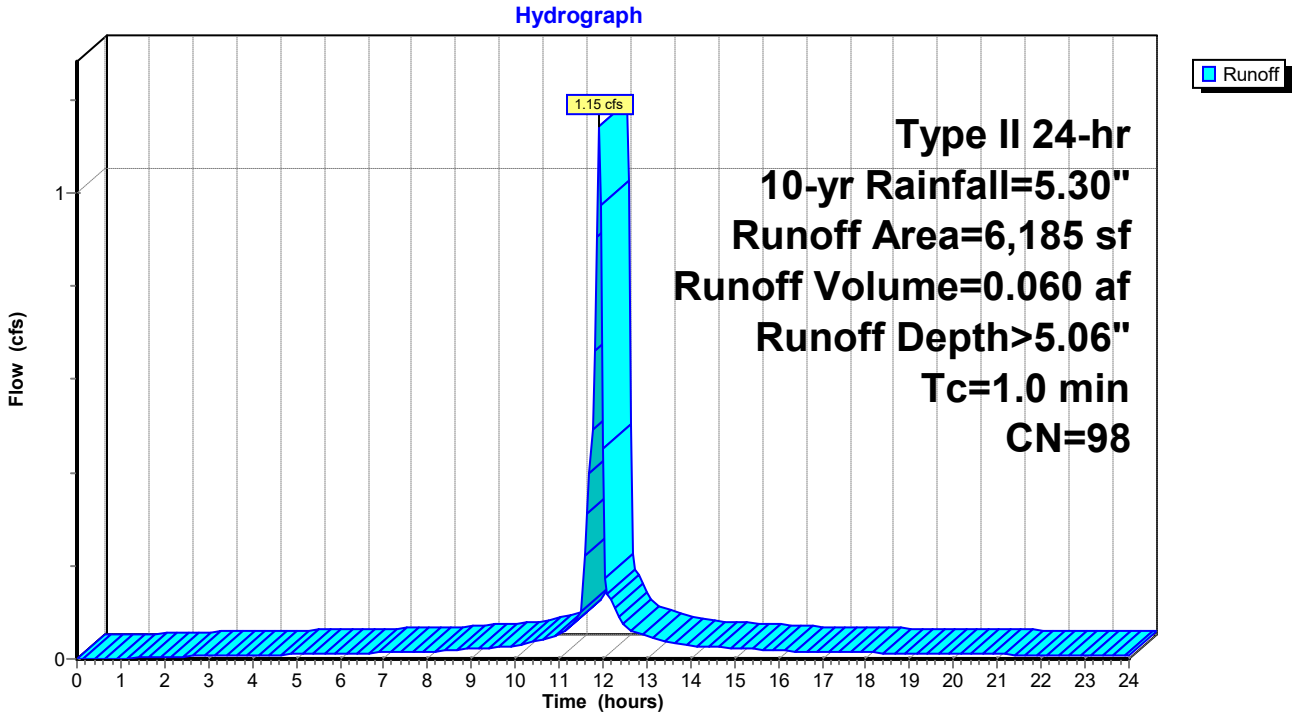
Runoff = 1.15 cfs @ 11.90 hrs, Volume= 0.060 af, Depth> 5.06"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	6,185	98	Roof
	6,185		100.00% Impervious Area

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

Subcatchment PR-1C: Green (Roof)



Summary for Subcatchment PR-2A: Parking Lot & SWM Feature (Purple)

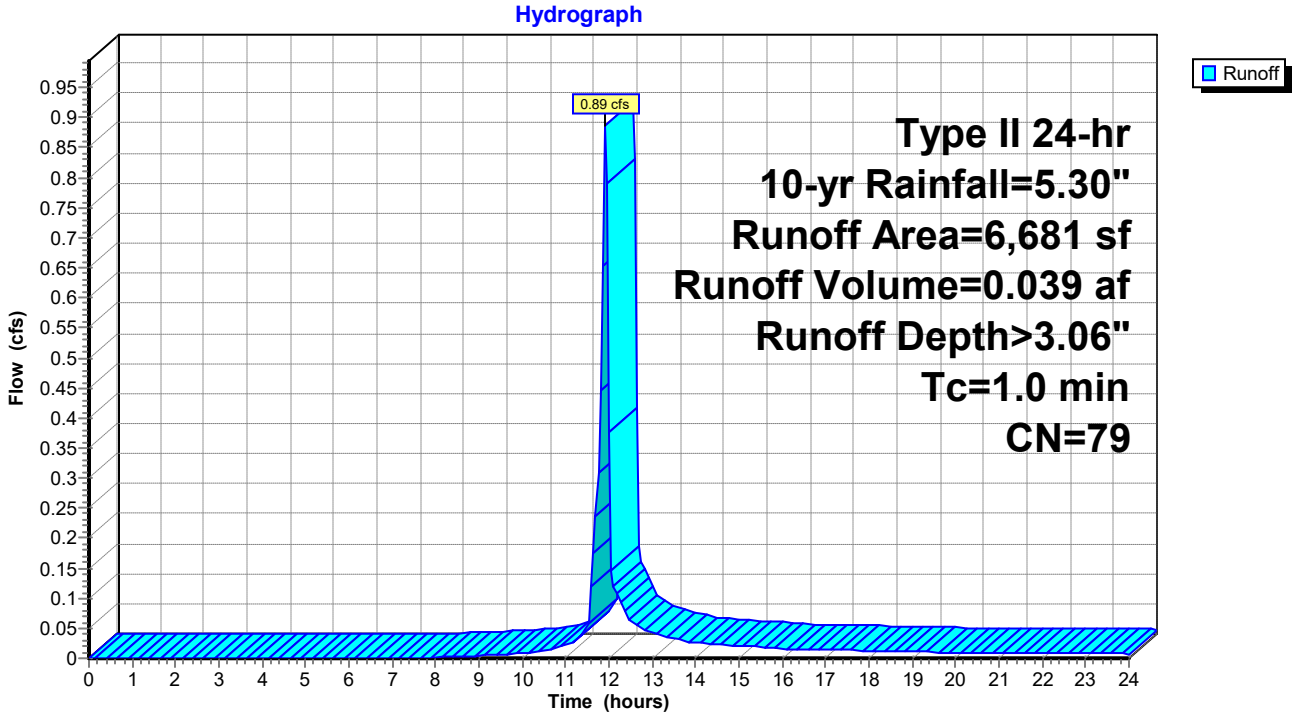
Runoff = 0.89 cfs @ 11.91 hrs, Volume= 0.039 af, Depth> 3.06"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
	5,252	74	>75% Grass cover, Good, HSG C
*	1,429	98	Asphalt & Sidewalk
	6,681	79	Weighted Average
	5,252		78.61% Pervious Area
	1,429		21.39% Impervious Area

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

Subcatchment PR-2A: Parking Lot & SWM Feature (Purple)



Summary for Subcatchment PR-2B: Purple (Roof)

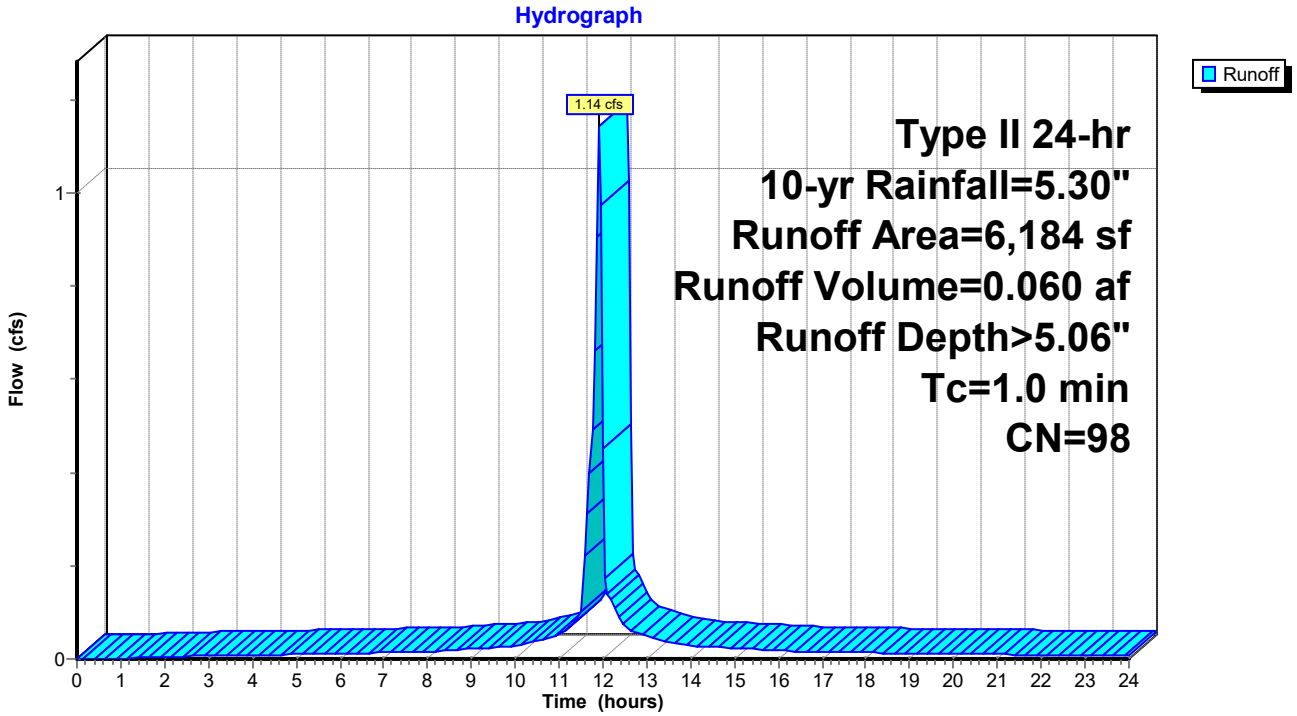
Runoff = 1.14 cfs @ 11.90 hrs, Volume= 0.060 af, Depth> 5.06"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	6,184	98	Roof
	6,184		100.00% Impervious Area

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

Subcatchment PR-2B: Purple (Roof)



Summary for Subcatchment PR-2C: Purple (Roof)

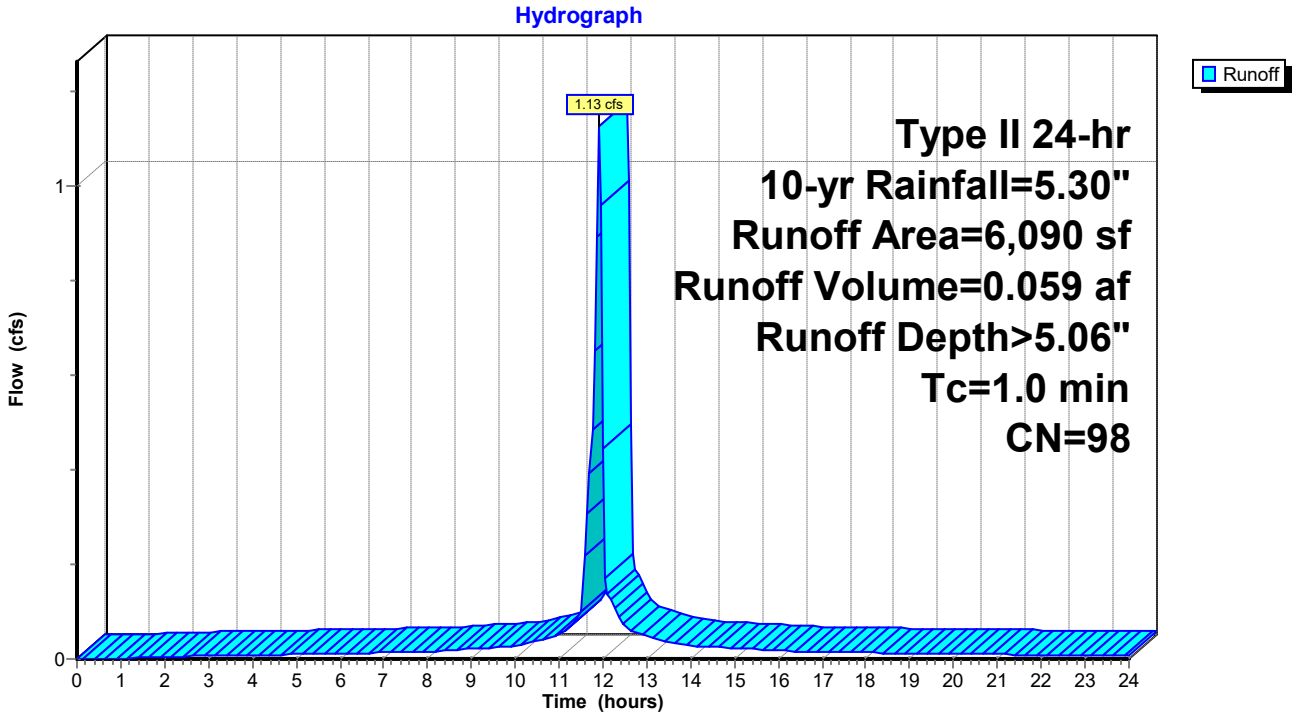
Runoff = 1.13 cfs @ 11.90 hrs, Volume= 0.059 af, Depth> 5.06"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	6,090	98	Roof
	6,090		100.00% Impervious Area

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

Subcatchment PR-2C: Purple (Roof)



Summary for Subcatchment PR-3A: Parking & Sidewalk (Blue A)

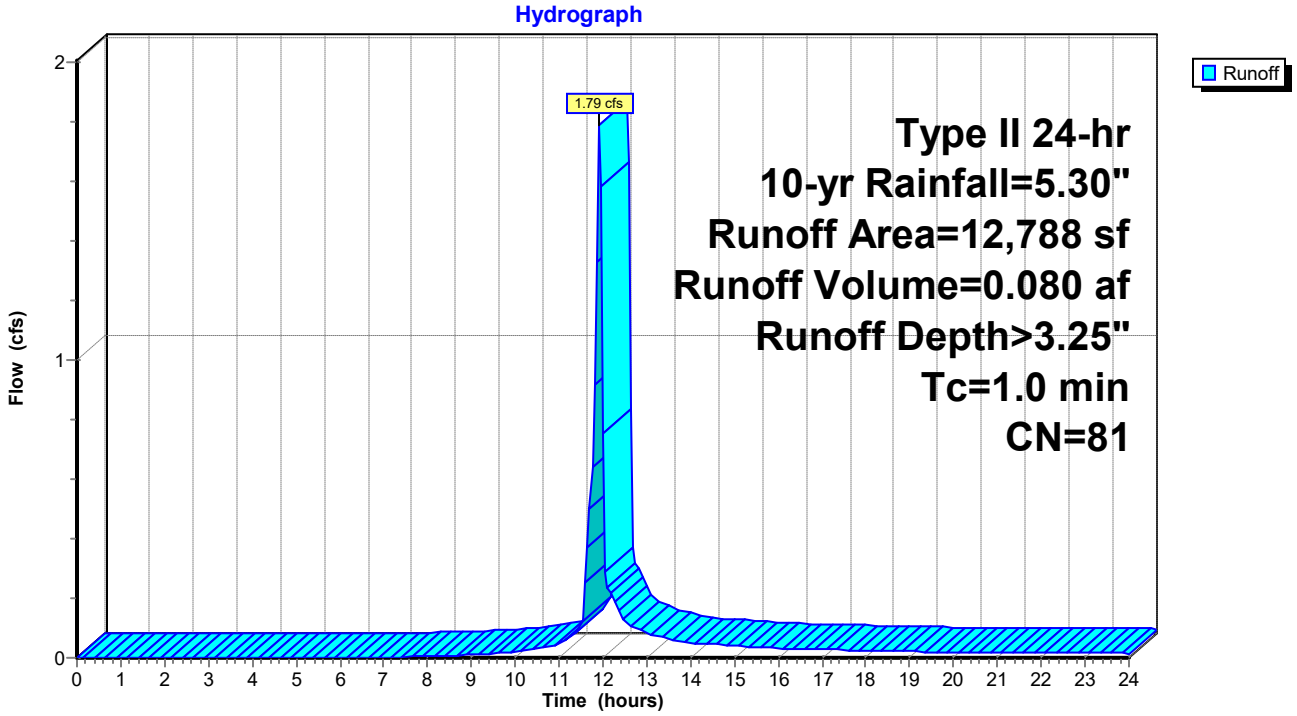
Runoff = 1.79 cfs @ 11.91 hrs, Volume= 0.080 af, Depth> 3.25"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	4,184	98	Parking
	7,361	74	>75% Grass cover, Good, HSG C
*	1,243	70	Permeable Pavers (Wood Good Condition)
	12,788	81	Weighted Average
	8,604		67.28% Pervious Area
	4,184		32.72% Impervious Area

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

Subcatchment PR-3A: Parking & Sidewalk (Blue A)



Summary for Subcatchment PR-3B: Parking & Sidewalk (Blue B)

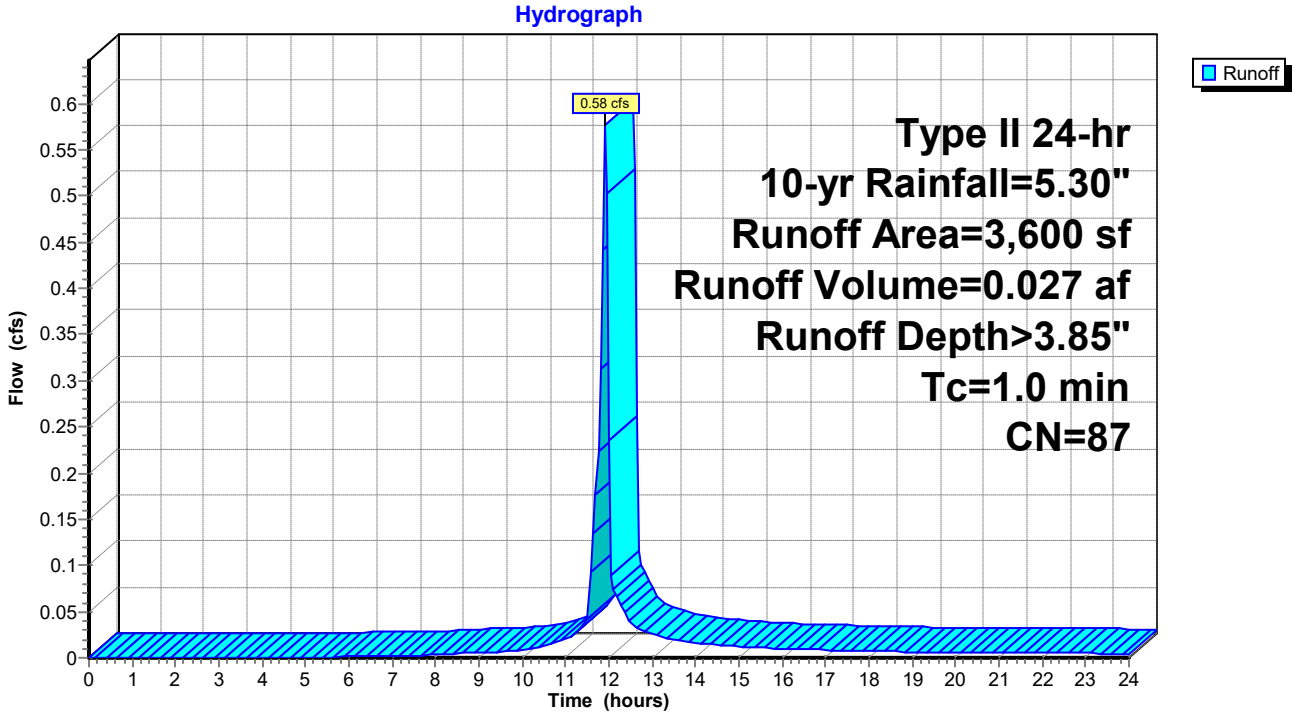
Runoff = 0.58 cfs @ 11.91 hrs, Volume= 0.027 af, Depth> 3.85"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	2,035	98	Parking
	647	74	>75% Grass cover, Good, HSG C
*	918	70	Permeable Pavers (Wood Good Condition)
	3,600	87	Weighted Average
	1,565		43.47% Pervious Area
	2,035		56.53% Impervious Area

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

Subcatchment PR-3B: Parking & Sidewalk (Blue B)



Summary for Subcatchment PR-3C: Parking & Sidewalk (Blue C)

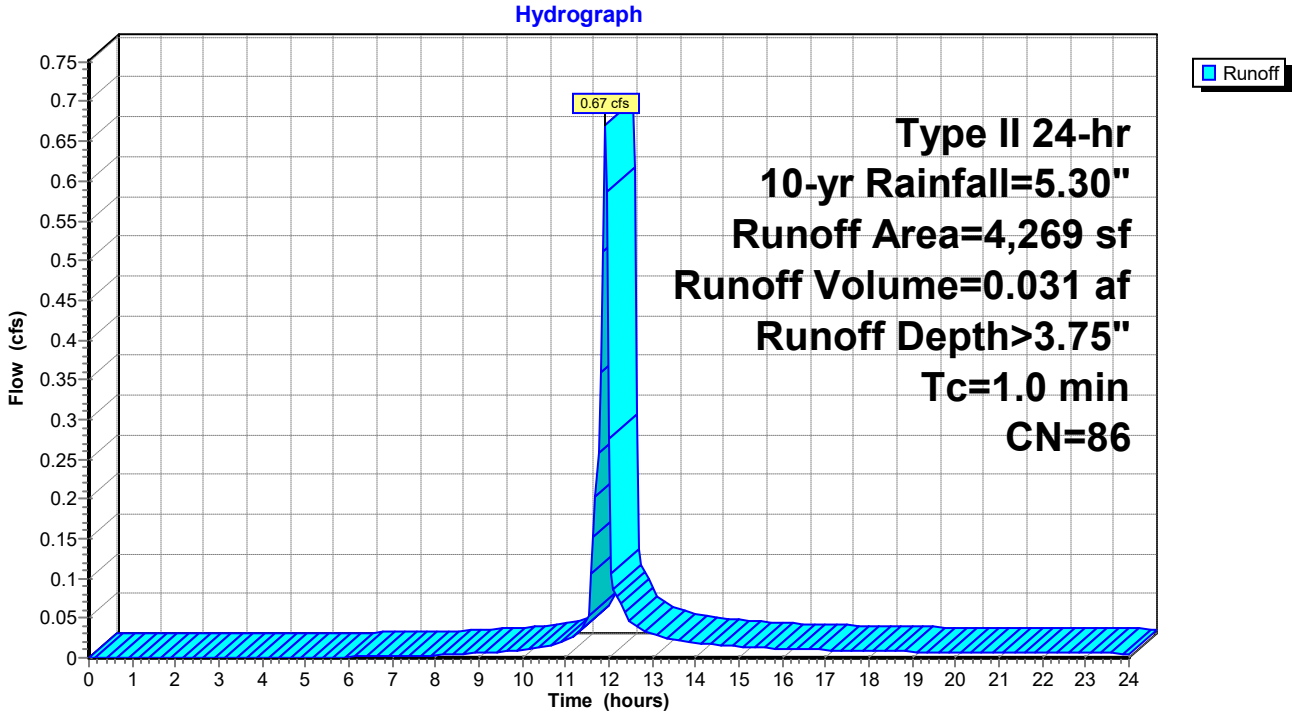
Runoff = 0.67 cfs @ 11.91 hrs, Volume= 0.031 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	2,235	98	Parking
	1,441	74	>75% Grass cover, Good, HSG C
*	593	70	Permeable Pavers (Wood Good Condition)
	4,269	86	Weighted Average
	2,034		47.65% Pervious Area
	2,235		52.35% Impervious Area

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

Subcatchment PR-3C: Parking & Sidewalk (Blue C)



Summary for Subcatchment PR-4A: Roof & SWM Feature (Turquoise)

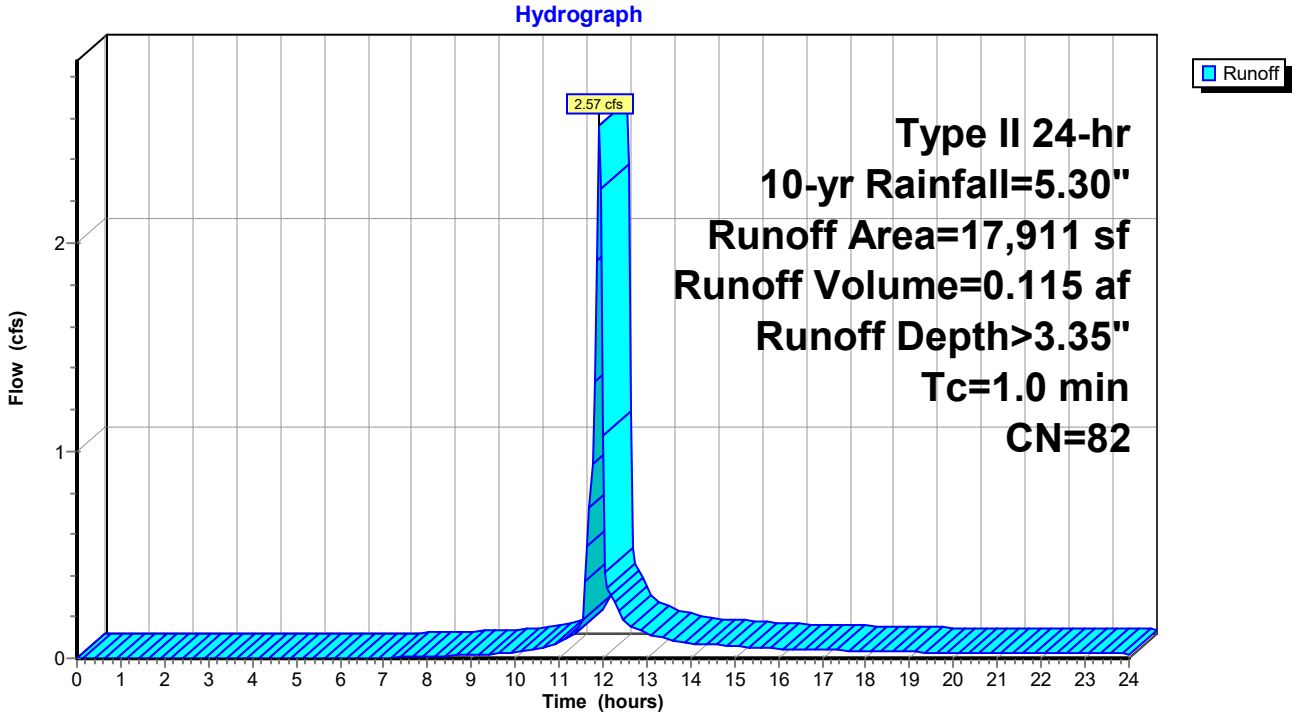
Runoff = 2.57 cfs @ 11.91 hrs, Volume= 0.115 af, Depth> 3.35"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	6,333	98	Roof & Sidewalk
	11,578	74	>75% Grass cover, Good, HSG C
	17,911	82	Weighted Average
	11,578		64.64% Pervious Area
	6,333		35.36% Impervious Area

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

Subcatchment PR-4A: Roof & SWM Feature (Turquoise)



Summary for Subcatchment PR-4B: Parking & Sidewalk (Turquoise 1)

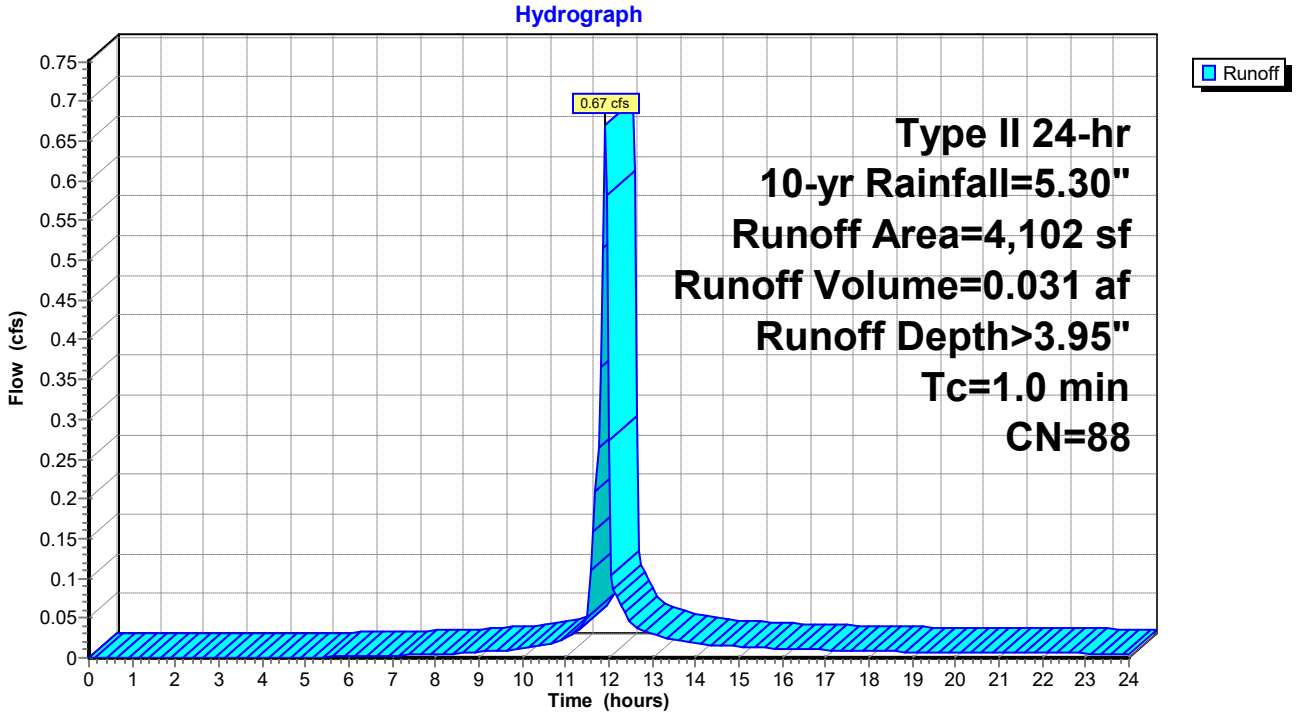
Runoff = 0.67 cfs @ 11.91 hrs, Volume= 0.031 af, Depth> 3.95"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	2,485	98	Parking
	1,455	74	>75% Grass cover, Good, HSG C
*	162	70	Permeable Pavers (Woods Good Condition)
	4,102	88	Weighted Average
	1,617		39.42% Pervious Area
	2,485		60.58% Impervious Area

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

Subcatchment PR-4B: Parking & Sidewalk (Turquoise 1)



Summary for Subcatchment PR-4C: Parking & Sidewalk (Turquoise 2)

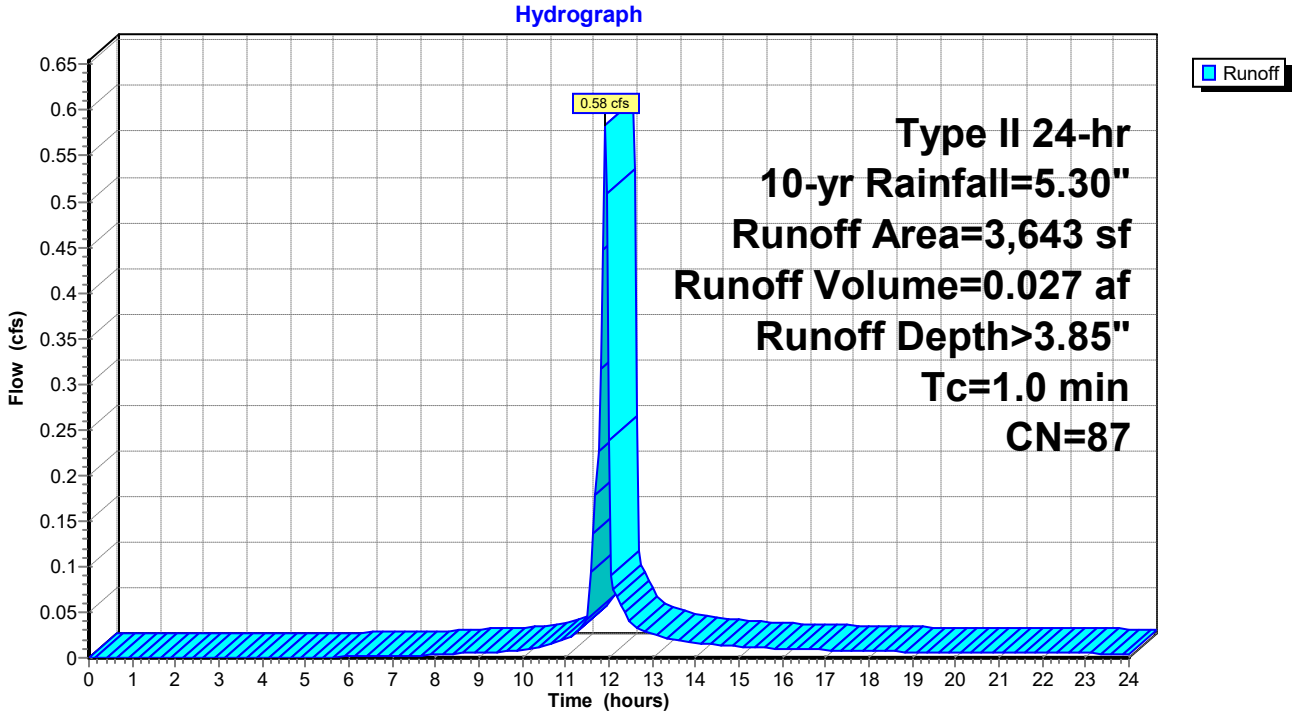
Runoff = 0.58 cfs @ 11.91 hrs, Volume= 0.027 af, Depth> 3.85"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	1,993	98	Parking
	1,306	74	>75% Grass cover, Good, HSG C
*	344	70	Permeable Pavers (Woods Good Condition)
	3,643	87	Weighted Average
	1,650		45.29% Pervious Area
	1,993		54.71% Impervious Area

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

Subcatchment PR-4C: Parking & Sidewalk (Turquoise 2)



Summary for Subcatchment PR-4D: Parking & Sidewalk (Turquoise 3)

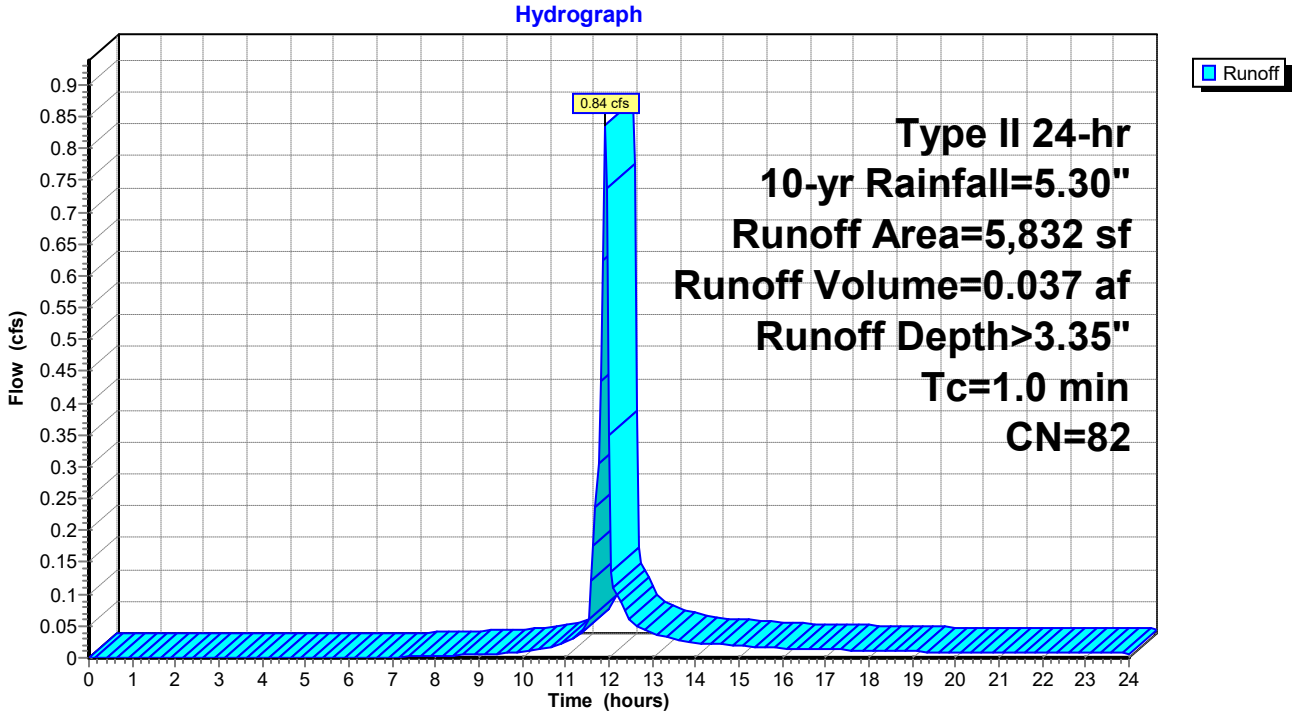
Runoff = 0.84 cfs @ 11.91 hrs, Volume= 0.037 af, Depth> 3.35"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	2,142	98	Parking
	2,955	74	>75% Grass cover, Good, HSG C
*	735	70	Permeable Pavers (Woods Good Condition)
	5,832	82	Weighted Average
	3,690		63.27% Pervious Area
	2,142		36.73% Impervious Area

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

Subcatchment PR-4D: Parking & Sidewalk (Turquoise 3)



Summary for Subcatchment PR-5: Amenity Building & Parking (Red)

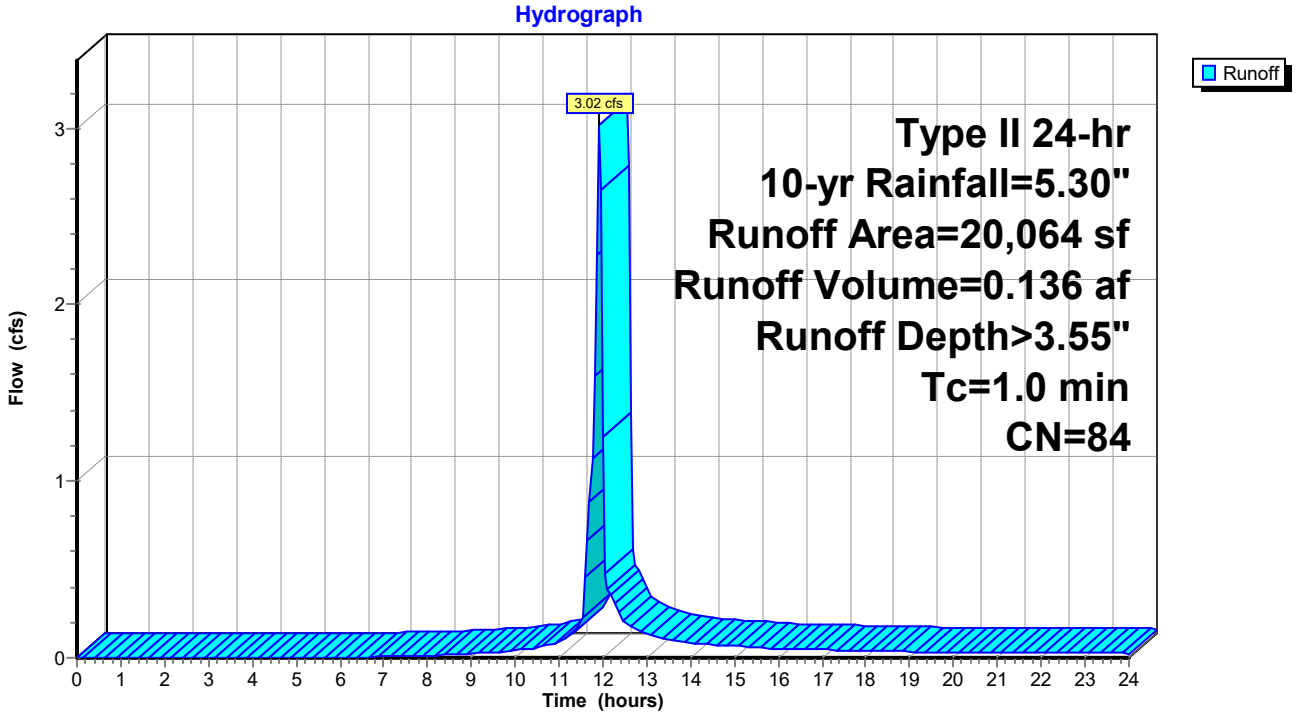
Runoff = 3.02 cfs @ 11.91 hrs, Volume= 0.136 af, Depth> 3.55"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	8,533	98	Building Roof & Parking
*	2,916	72	Pavers (Woods in Good Condition)
*	8,615	74	Lawn Areas
	20,064	84	Weighted Average
	11,531		57.47% Pervious Area
	8,533		42.53% Impervious Area

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

Subcatchment PR-5: Amenity Building & Parking (Red)



Summary for Subcatchment PR-6: Orange

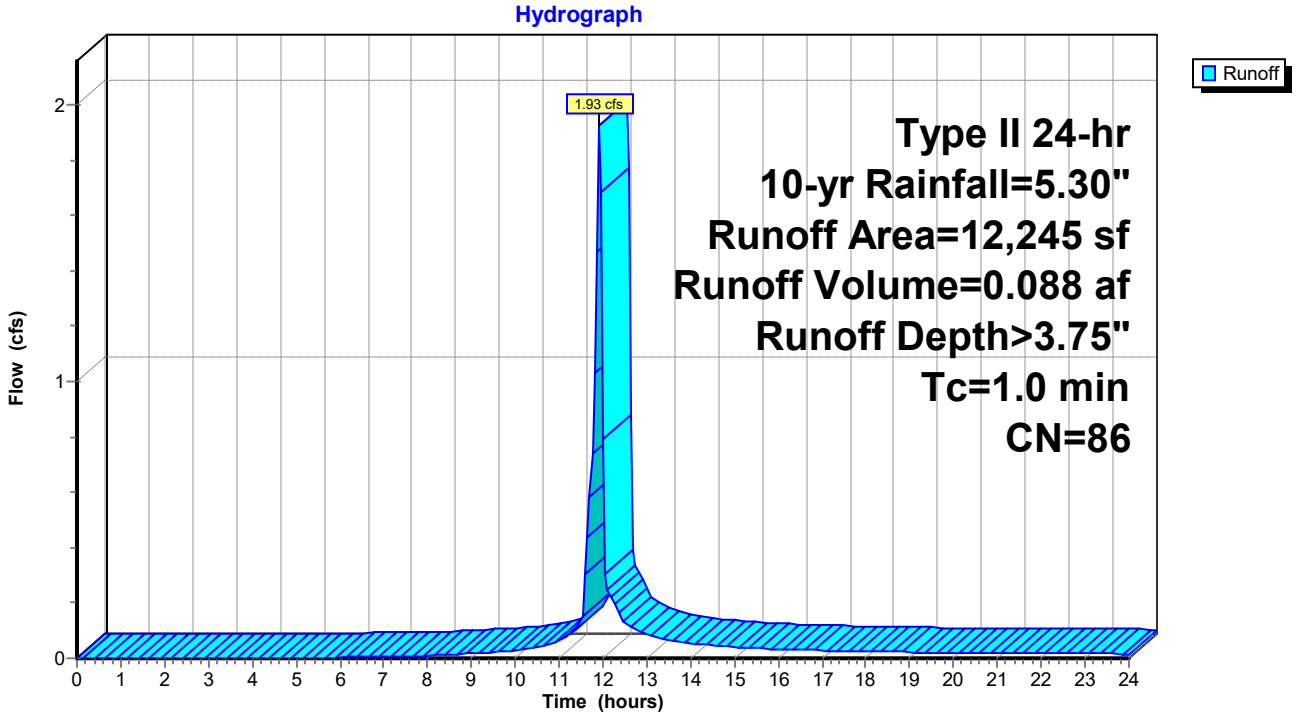
Runoff = 1.93 cfs @ 11.91 hrs, Volume= 0.088 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	6,090	98	Roof
	6,155	74	>75% Grass cover, Good, HSG C
	12,245	86	Weighted Average
	6,155		50.27% Pervious Area
	6,090		49.73% Impervious Area

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

Subcatchment PR-6: Orange



Summary for Subcatchment PR-7: Yelllow

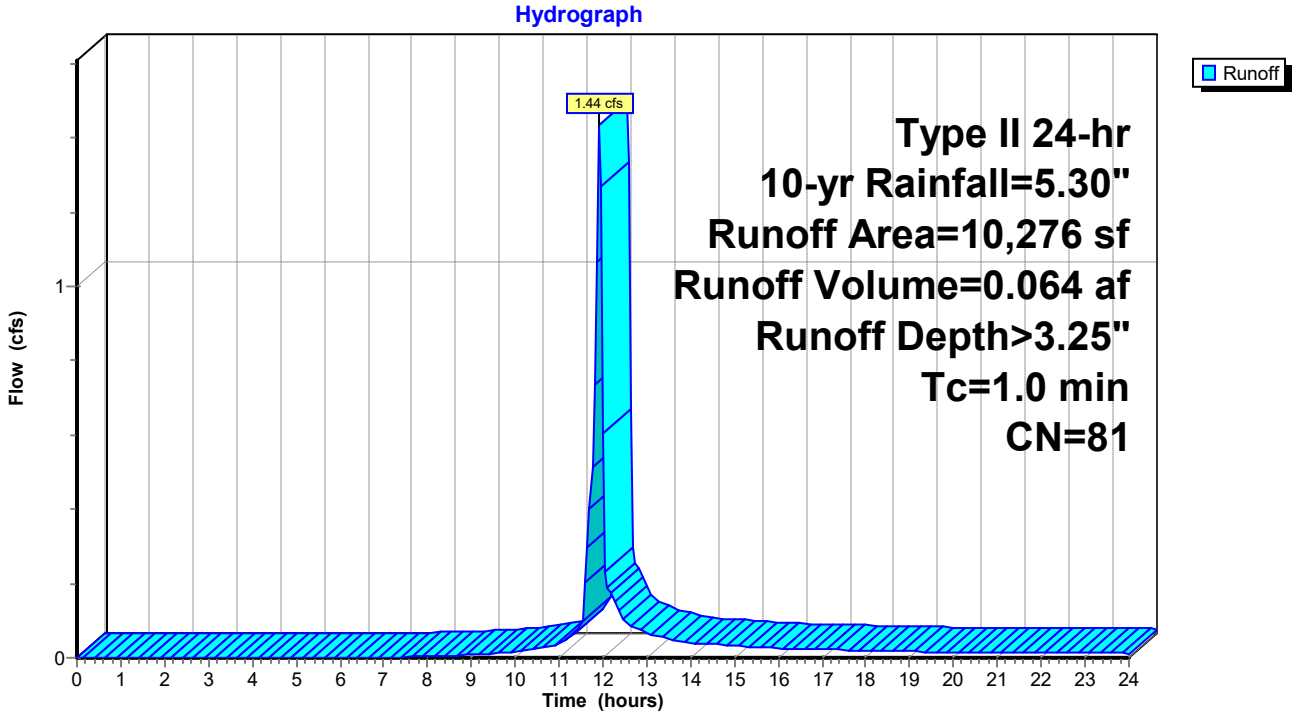
Runoff = 1.44 cfs @ 11.91 hrs, Volume= 0.064 af, Depth> 3.25"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
	3,559	74	>75% Grass cover, Good, HSG C
*	3,240	70	Permeable Pavers (Woods Good Condition)
*	3,477	98	Asphalt & Sidewalk
	10,276	81	Weighted Average
	6,799		66.16% Pervious Area
	3,477		33.84% Impervious Area

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

Subcatchment PR-7: Yelllow



Summary for Subcatchment RD-8: Residue of Property (Adj. North Street)

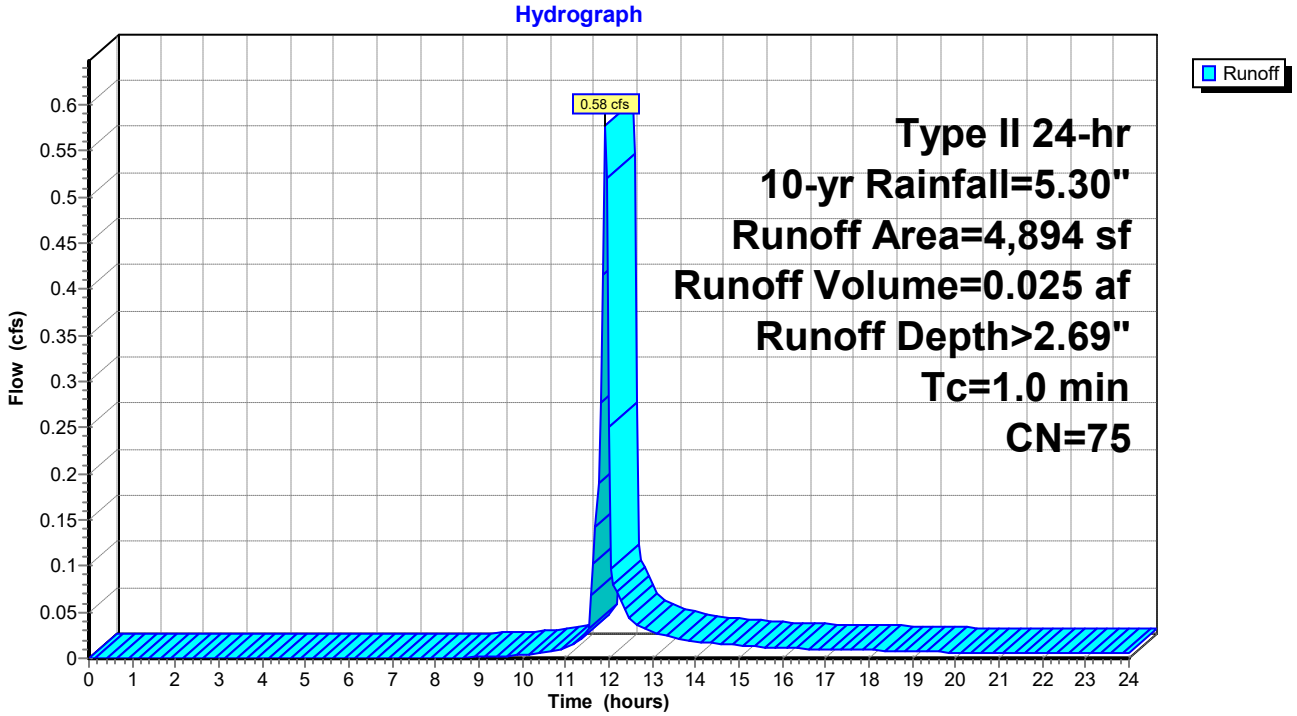
Runoff = 0.58 cfs @ 11.91 hrs, Volume= 0.025 af, Depth> 2.69"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	274	98	Sidewalk
	4,620	74	>75% Grass cover, Good, HSG C
	4,894	75	Weighted Average
	4,620		94.40% Pervious Area
	274		5.60% Impervious Area

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

Subcatchment RD-8: Residue of Property (Adj. North Street)



Summary for Subcatchment RD-9: Leadwalks & Sidewalks by Amenity Building

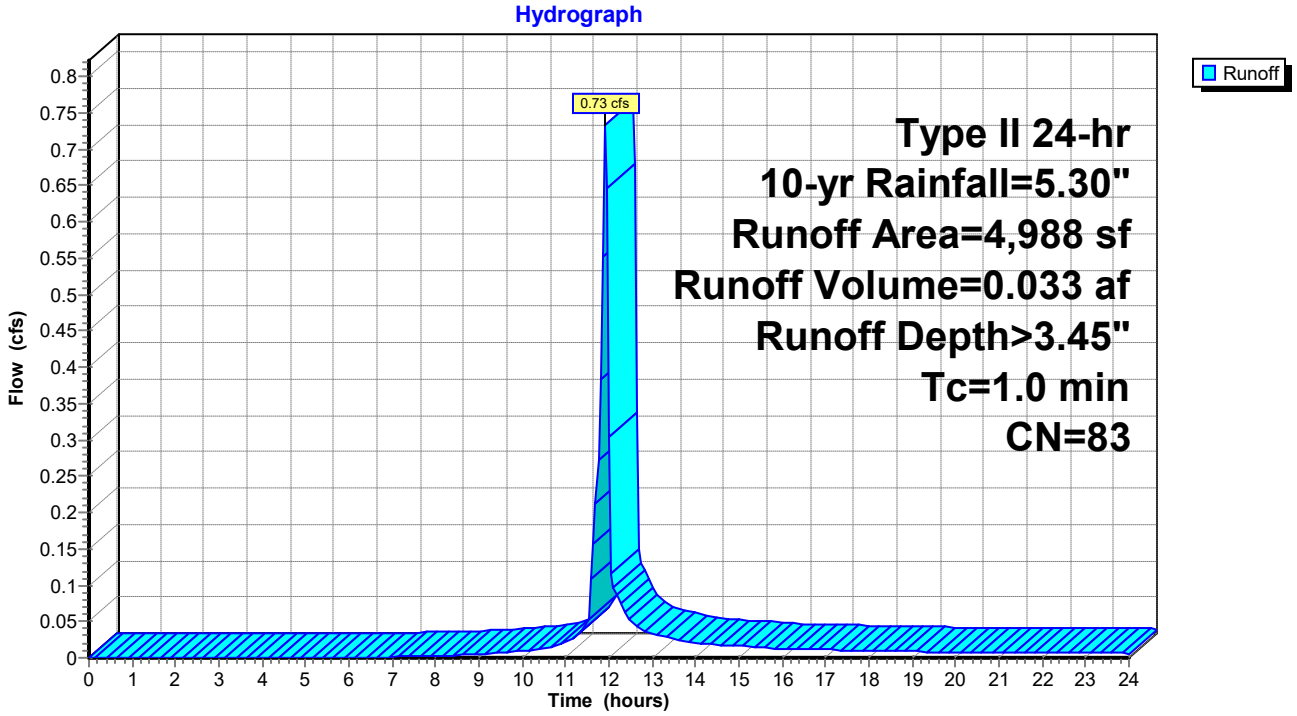
Runoff = 0.73 cfs @ 11.91 hrs, Volume= 0.033 af, Depth> 3.45"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	Area (sf)	CN	Description
*	2,062	98	Lead Walks & Sidewalks
*	1,145	70	Permeable Pavers (Woods in Good Condition)
*	1,781	74	Lawn & Landscape Areas
	4,988	83	Weighted Average
	2,926		58.66% Pervious Area
	2,062		41.34% Impervious Area

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

Subcatchment RD-9: Leadwalks & Sidewalks by Amenity Building



Summary for Pond 3P: MicroBioretention #5

Inflow Area = 0.461 ac, 42.53% Impervious, Inflow Depth > 3.55" for 10-yr event
Inflow = 3.02 cfs @ 11.91 hrs, Volume= 0.136 af
Outflow = 2.06 cfs @ 11.98 hrs, Volume= 0.096 af, Atten= 32%, Lag= 4.1 min
Primary = 2.06 cfs @ 11.98 hrs, Volume= 0.096 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.79' @ 11.98 hrs Surf.Area= 1,922 sf Storage= 2,587 cf

Plug-Flow detention time= 184.2 min calculated for 0.096 af (71% of inflow)
Center-of-Mass det. time= 87.3 min (888.4 - 801.1)

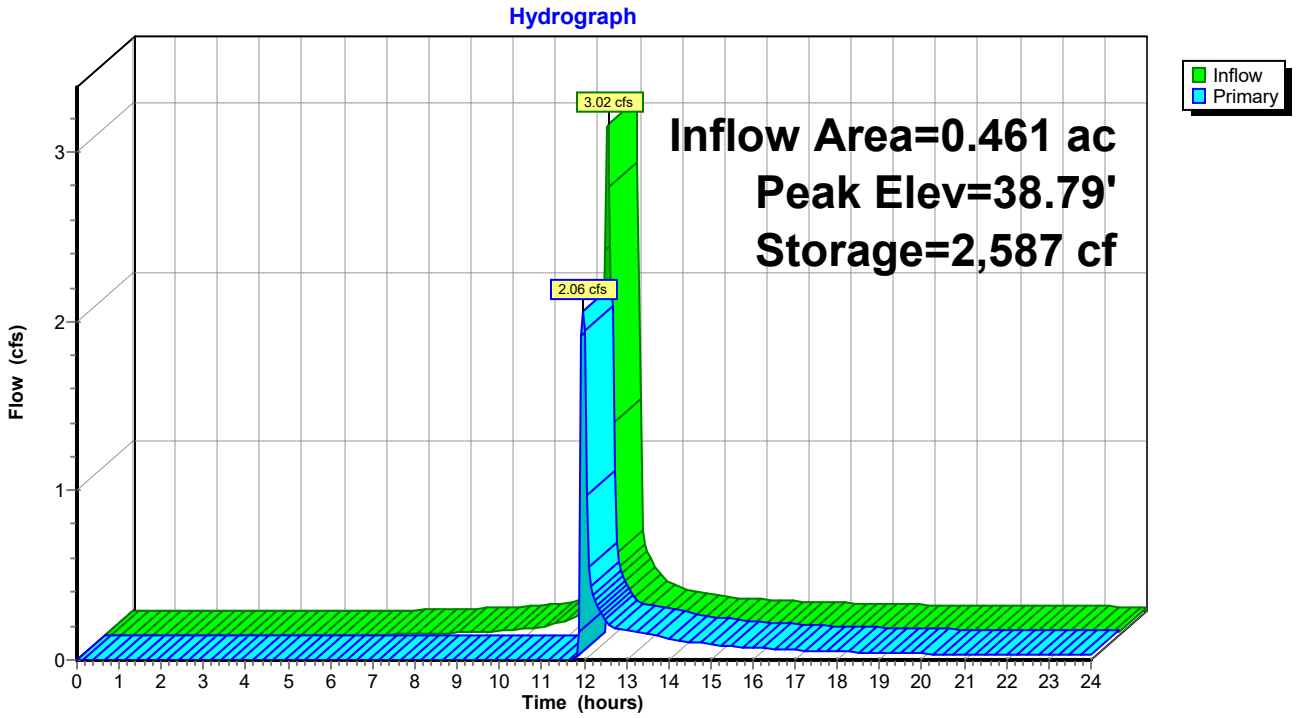
Volume	Invert	Avail.Storage	Storage Description
#1	35.14'	3,338 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.14	650	175.0	0.0	0	0	650
35.15	650	175.0	40.0	3	3	652
37.14	650	175.0	40.0	517	520	1,000
37.15	650	175.0	100.0	6	526	1,002
38.15	1,401	200.0	100.0	1,002	1,528	1,771
39.15	2,252	225.0	100.0	1,810	3,338	2,643

Device	Routing	Invert	Outlet Devices
#1	Primary	35.14'	**12.0" Round 12" N-12 Culvert** L= 57.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.14' / 35.14' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	38.15'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	38.65'	**10.7' long Rim MD 374.23** 0 End Contraction(s)

Primary OutFlow Max=1.93 cfs @ 11.98 hrs HW=38.78' TW=0.00' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 1.93 cfs of 5.89 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.24 cfs @ 2.92 fps)
  └─**3=Rim MD 374.23** (Weir Controls 1.69 cfs @ 1.19 fps)

Pond 3P: MicroBioretention #5



Stage-Area-Storage for Pond 3P: MicroBioretention #5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
35.14	650	0
35.19	650	13
35.24	650	26
35.29	650	39
35.34	650	52
35.39	650	65
35.44	650	78
35.49	650	91
35.54	650	104
35.59	650	117
35.64	650	130
35.69	650	143
35.74	650	156
35.79	650	169
35.84	650	182
35.89	650	195
35.94	650	208
35.99	650	221
36.04	650	234
36.09	650	247
36.14	650	260
36.19	650	273
36.24	650	286
36.29	650	299
36.34	650	312
36.39	650	325
36.44	650	338
36.49	650	351
36.54	650	364
36.59	650	377
36.64	650	390
36.69	650	403
36.74	650	416
36.79	650	429
36.84	650	442
36.89	650	455
36.94	650	468
36.99	650	481
37.04	650	494
37.09	650	507
37.14	650	520
37.19	675	553
37.24	706	587
37.29	738	624
37.34	771	661
37.39	804	701
37.44	838	742
37.49	873	785
37.54	909	829
37.59	945	875
37.64	982	924
37.69	1,020	974
37.74	1,059	1,026
37.79	1,098	1,080
37.84	1,138	1,135
37.89	1,178	1,193
37.94	1,220	1,253
37.99	1,262	1,315
38.04	1,304	1,379
38.09	1,348	1,446
38.14	1,392	1,514
38.19	1,431	1,585
38.24	1,469	1,657
38.29	1,508	1,732
38.34	1,547	1,808
38.39	1,587	1,887
38.44	1,627	1,967
38.49	1,668	2,049
38.54	1,709	2,134
38.59	1,751	2,220
38.64	1,793	2,309
38.69	1,836	2,399
38.74	1,879	2,492
38.79	1,922	2,587
38.84	1,967	2,685
38.89	2,011	2,784
38.94	2,057	2,886
38.99	2,102	2,990
39.04	2,149	3,096
39.09	2,195	3,205
39.14	**2,242**	**3,316**

Summary for Pond 5P: 8" HDPE Roof Leader

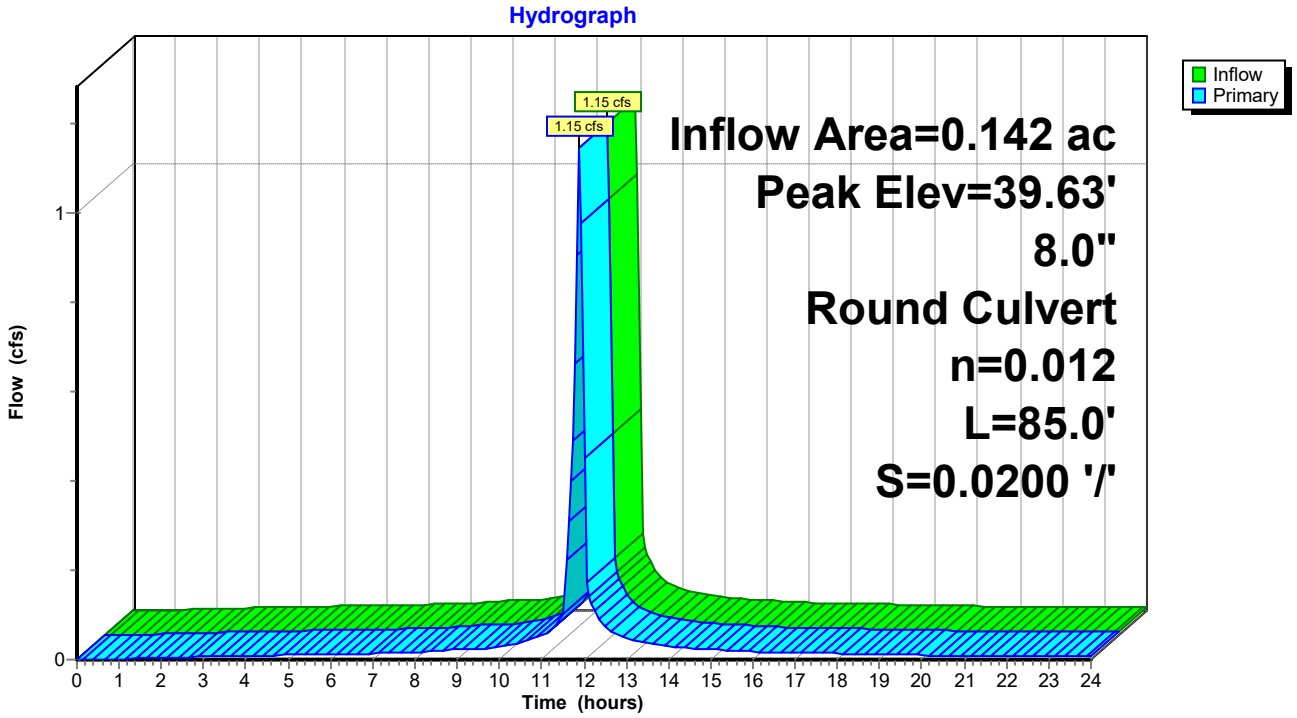
Inflow Area =	0.142 ac,100.00% Impervious, Inflow Depth > 5.06" for 10-yr event				
Inflow =	1.15 cfs @ 11.90 hrs, Volume=	0.060 af			
Outflow =	1.15 cfs @ 11.90 hrs, Volume=	0.060 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.15 cfs @ 11.90 hrs, Volume=	0.060 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 39.63' @ 11.90 hrs
Flood Elev= 42.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.70'	**8.0" Round ADS N-12** L= 85.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 38.70' / 37.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=1.13 cfs @ 11.90 hrs HW=39.61' TW=38.08' (Dynamic Tailwater)
└─**1=ADS N-12** (Inlet Controls 1.13 cfs @ 3.24 fps)

Pond 5P: 8" HDPE Roof Leader



Stage-Area-Storage for Pond 5P: 8" HDPE Roof Leader

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
38.70	**0**	41.25	0
38.75	0	41.30	0
38.80	0	41.35	0
38.85	0	41.40	0
38.90	0	41.45	0
38.95	0	41.50	0
39.00	0	41.55	0
39.05	0	41.60	0
39.10	0	41.65	0
39.15	0	41.70	0
39.20	0	41.75	0
39.25	0	41.80	0
39.30	0	41.85	0
39.35	0	41.90	0
39.40	0	41.95	0
39.45	0	42.00	0
39.50	0	42.05	0
39.55	0	42.10	0
39.60	0	42.15	0
39.65	0	42.20	0
39.70	0	42.25	0
39.75	0	42.30	0
39.80	0	42.35	0
39.85	0	42.40	0
39.90	0	42.45	0
39.95	0	42.50	0
40.00	0		
40.05	0		
40.10	0		
40.15	0		
40.20	0		
40.25	0		
40.30	0		
40.35	0		
40.40	0		
40.45	0		
40.50	0		
40.55	0		
40.60	0		
40.65	0		
40.70	0		
40.75	0		
40.80	0		
40.85	0		
40.90	0		
40.95	0		
41.00	0		
41.05	0		
41.10	0		
41.15	0		
41.20	0		

Summary for Pond 6P: MicroBioRetention #1 & #2

Inflow Area = 0.898 ac, 73.96% Impervious, Inflow Depth > 4.38" for 10-yr event
Inflow = 6.56 cfs @ 11.91 hrs, Volume= 0.328 af
Outflow = 0.37 cfs @ 12.61 hrs, Volume= 0.161 af, Atten= 94%, Lag= 42.1 min
Primary = 0.37 cfs @ 12.61 hrs, Volume= 0.161 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.78' @ 12.61 hrs Surf.Area= 3,889 sf Storage= 9,262 cf
Flood Elev= 40.00' Surf.Area= 5,100 sf Storage= 14,707 cf

Plug-Flow detention time= 328.0 min calculated for 0.161 af (49% of inflow)
Center-of-Mass det. time= 202.1 min (960.3 - 758.2)

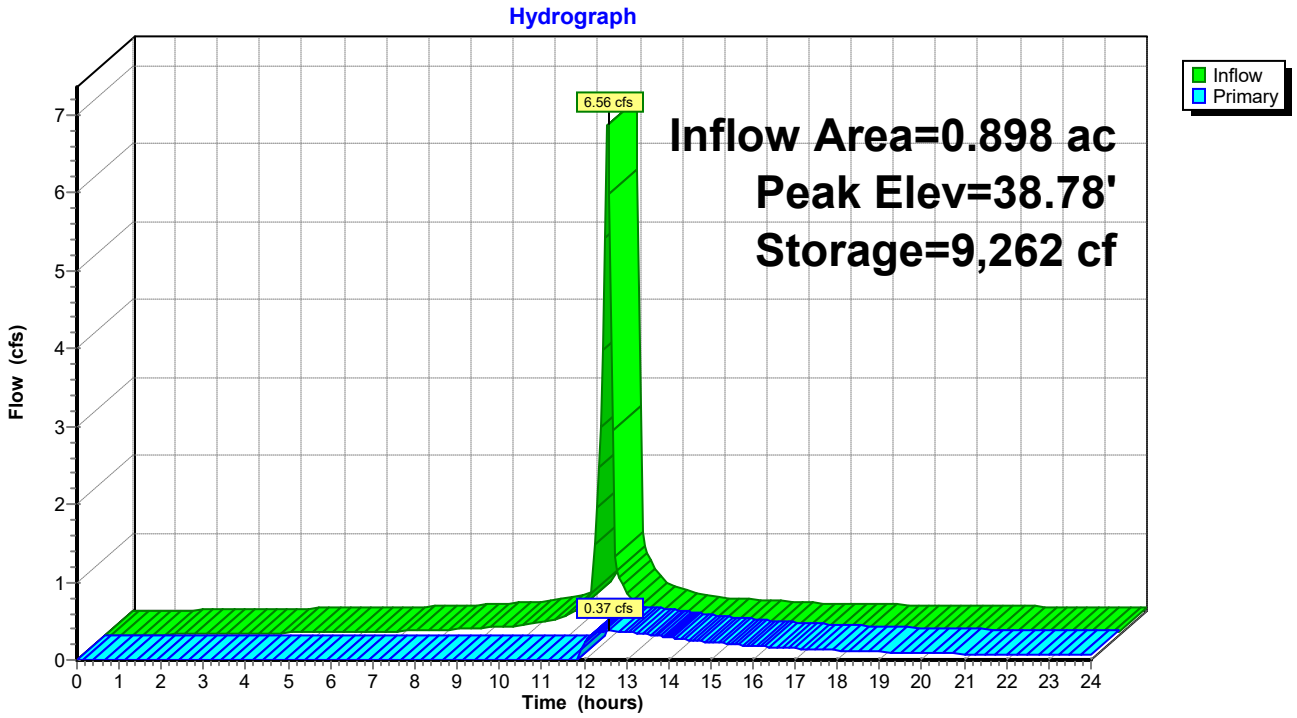
Volume	Invert	Avail.Storage	Storage Description
#1	32.99'	14,707 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.99	2,323	129.8	0.0	0	0	2,323
33.00	2,323	129.8	40.0	9	9	2,324
36.99	2,323	129.8	40.0	3,708	3,717	2,842
37.00	2,323	129.8	100.0	23	3,740	2,843
38.00	3,194	289.0	100.0	2,747	6,487	8,153
40.00	5,100	278.0	100.0	8,220	14,707	8,907

Device	Routing	Invert	Outlet Devices
#1	Primary	32.00'	**12.0" Round 12" HDPE** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 32.00' / 31.95' S= 0.0018 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	38.00'	**2.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	39.50'	**10.7' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.37 cfs @ 12.61 hrs HW=38.78' TW=0.00' (Dynamic Tailwater)
└─**1=12" HDPE** (Passes 0.37 cfs of 9.48 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.37 cfs @ 2.84 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: MicroBioRetention #1 & #2



Stage-Area-Storage for Pond 6P: MicroBioRetention #1 & #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
32.99	2,323	0
33.09	2,323	93
33.19	2,323	186
33.29	2,323	279
33.39	2,323	372
33.49	2,323	465
33.59	2,323	558
33.69	2,323	650
33.79	2,323	743
33.89	2,323	836
33.99	2,323	929
34.09	2,323	1,022
34.19	2,323	1,115
34.29	2,323	1,208
34.39	2,323	1,301
34.49	2,323	1,394
34.59	2,323	1,487
34.69	2,323	1,580
34.79	2,323	1,673
34.89	2,323	1,765
34.99	2,323	1,858
35.09	2,323	1,951
35.19	2,323	2,044
35.29	2,323	2,137
35.39	2,323	2,230
35.49	2,323	2,323
35.59	2,323	2,416
35.69	2,323	2,509
35.79	2,323	2,602
35.89	2,323	2,695
35.99	2,323	2,788
36.09	2,323	2,881
36.19	2,323	2,973
36.29	2,323	3,066
36.39	2,323	3,159
36.49	2,323	3,252
36.59	2,323	3,345
36.69	2,323	3,438
36.79	2,323	3,531
36.89	2,323	3,624
36.99	2,323	3,717
37.09	2,396	3,952
37.19	2,478	4,196
37.29	2,561	4,448
37.39	2,646	4,708
37.49	2,732	4,977
37.59	2,820	5,255
37.69	2,909	5,541
37.79	3,000	5,837
37.89	3,091	6,141
37.99	3,185	6,455
38.09	3,270	6,778
38.19	3,356	7,109
38.29	3,443	7,449
38.39	3,531	7,798
38.49	3,620	8,155
38.59	3,710	8,522
38.69	3,801	8,897
38.79	3,894	9,282
38.89	3,987	9,676
38.99	4,082	10,080
39.09	4,178	10,493
39.19	4,275	10,915
39.29	4,373	11,348
39.39	4,472	11,790
39.49	4,572	12,242
39.59	4,673	12,704
39.69	4,775	13,177
39.79	4,879	13,659
39.89	4,984	14,152
39.99	**5,089**	**14,656**

Summary for Pond 8P: MicroBioRetention #3 & #4

Inflow Area = 1.714 ac, 41.48% Impervious, Inflow Depth > 3.14" for 10-yr event
Inflow = 8.95 cfs @ 11.93 hrs, Volume= 0.448 af
Outflow = 0.40 cfs @ 13.48 hrs, Volume= 0.235 af, Atten= 96%, Lag= 92.8 min
Primary = 0.40 cfs @ 13.48 hrs, Volume= 0.235 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 37.42' @ 13.48 hrs Surf.Area= 5,561 sf Storage= 11,676 cf

Plug-Flow detention time= 308.0 min calculated for 0.235 af (52% of inflow)
Center-of-Mass det. time= 187.6 min (1,005.5 - 817.9)

Volume	Invert	Avail.Storage	Storage Description
#1	31.59'	19,369 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

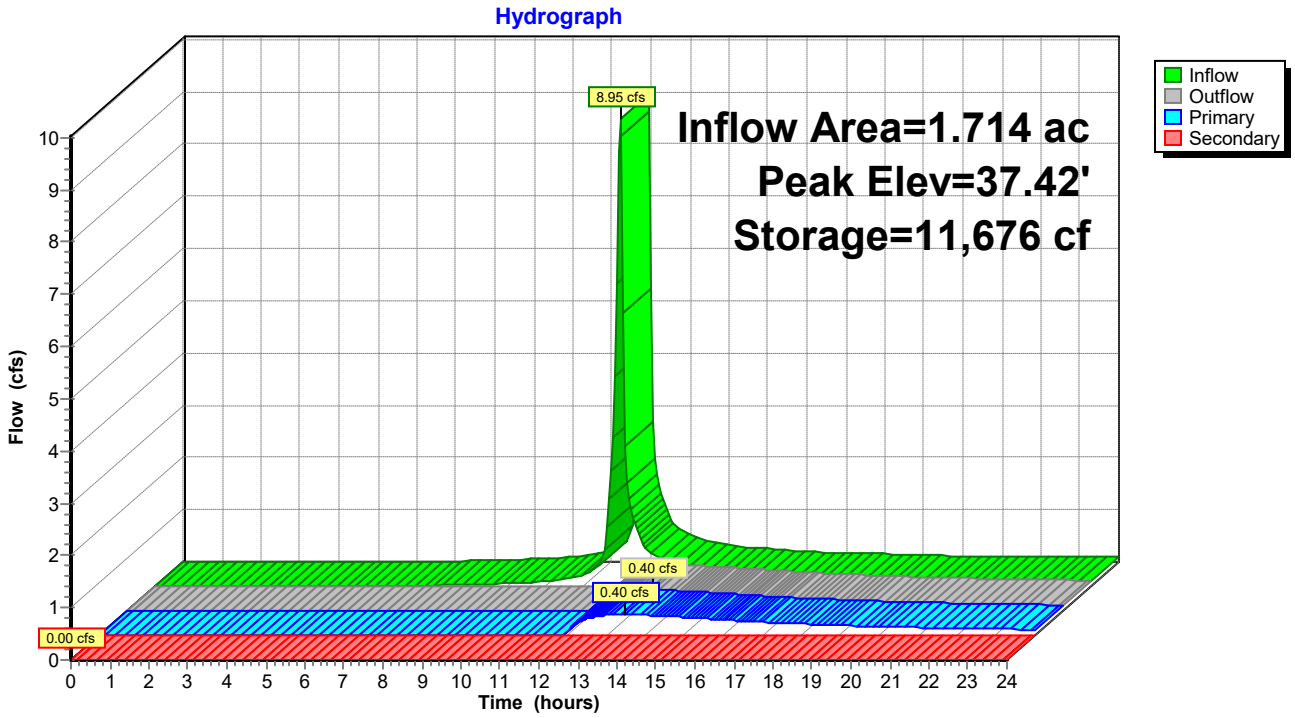
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
31.59	2,680	314.0	0.0	0	0	2,680
31.60	2,680	314.0	40.0	11	11	2,683
35.59	2,680	314.0	40.0	4,277	4,288	3,936
35.60	2,680	314.0	100.0	27	4,315	3,939
37.60	5,892	454.0	100.0	8,364	12,679	12,530
38.60	7,521	353.0	100.0	6,690	19,369	19,028

Device	Routing	Invert	Outlet Devices
#1	Primary	31.60'	**18.0" Round 18" HDPE** L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 31.60' / 30.95' S= 0.0542 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	36.60'	**2.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	38.10'	**16.3' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	38.10'	**10.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.40 cfs @ 13.48 hrs HW=37.42' TW=0.00' (Dynamic Tailwater)
└─**1=18" HDPE** (Passes 0.40 cfs of 19.17 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.40 cfs @ 2.92 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=31.59' TW=0.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 8P: MicroBioRetention #3 & #4



Stage-Area-Storage for Pond 8P: MicroBioRetention #3 & #4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
31.59	2,680	0
31.69	2,680	107
31.79	2,680	214
31.89	2,680	322
31.99	2,680	429
32.09	2,680	536
32.19	2,680	643
32.29	2,680	750
32.39	2,680	858
32.49	2,680	965
32.59	2,680	1,072
32.69	2,680	1,179
32.79	2,680	1,286
32.89	2,680	1,394
32.99	2,680	1,501
33.09	2,680	1,608
33.19	2,680	1,715
33.29	2,680	1,822
33.39	2,680	1,930
33.49	2,680	2,037
33.59	2,680	2,144
33.69	2,680	2,251
33.79	2,680	2,358
33.89	2,680	2,466
33.99	2,680	2,573
34.09	2,680	2,680
34.19	2,680	2,787
34.29	2,680	2,894
34.39	2,680	3,002
34.49	2,680	3,109
34.59	2,680	3,216
34.69	2,680	3,323
34.79	2,680	3,430
34.89	2,680	3,538
34.99	2,680	3,645
35.09	2,680	3,752
35.19	2,680	3,859
35.29	2,680	3,966
35.39	2,680	4,074
35.49	2,680	4,181
35.59	2,680	4,288
35.69	2,798	4,561
35.79	2,931	4,848
35.89	3,068	5,148
35.99	3,208	5,461
36.09	3,351	5,789
36.19	3,498	6,132
36.29	3,647	6,489
36.39	3,799	6,861
36.49	3,955	7,249
36.59	4,114	7,652
36.69	4,276	8,072
36.79	4,441	8,508
36.89	4,609	8,960
36.99	4,780	9,430
37.09	4,954	9,916
37.19	5,132	10,421
37.29	5,312	10,943
37.39	5,496	11,483
37.49	5,683	12,042
37.59	5,873	12,620
37.69	6,030	13,215
37.79	6,186	13,826
37.89	6,344	14,452
37.99	6,504	15,095
38.09	6,665	15,753
38.19	6,829	16,428
38.29	6,995	17,119
38.39	7,162	17,827
38.49	7,332	18,552
38.59	**7,504**	**19,293**

Summary for Pond 10P: 8" HDPE Roof Leader

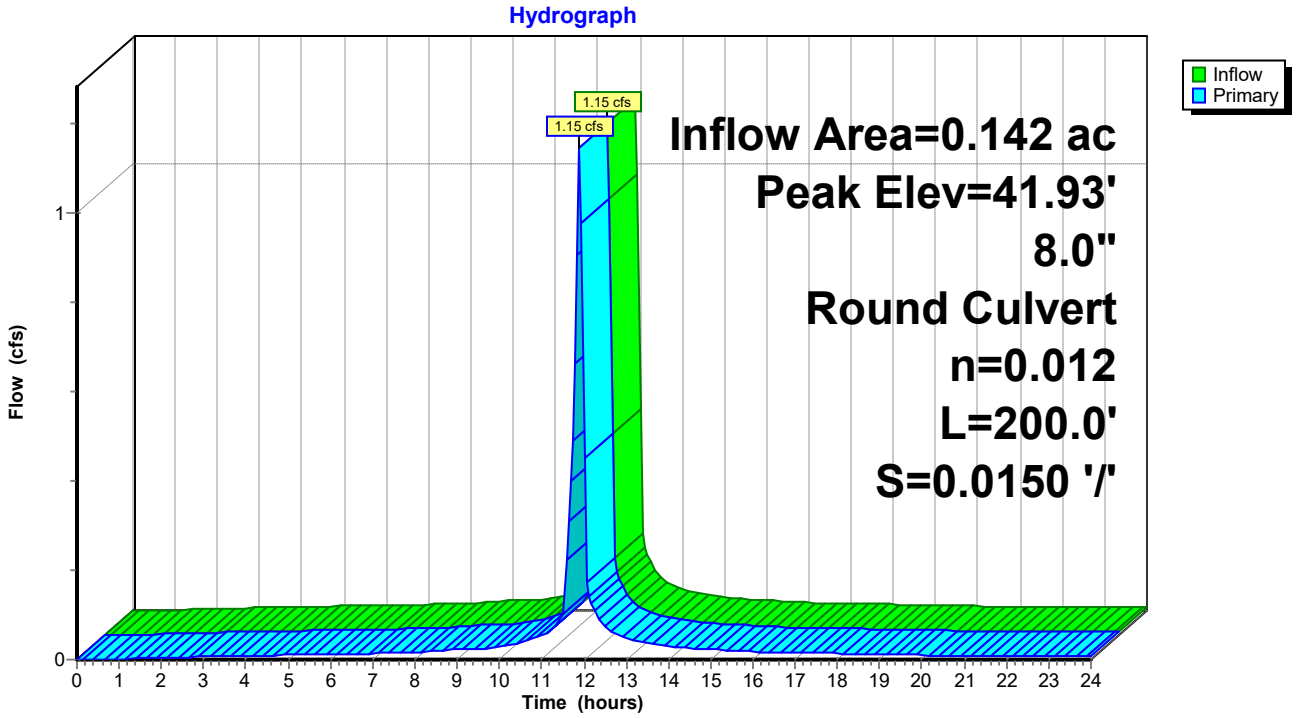
Inflow Area =	0.142 ac,100.00% Impervious, Inflow Depth > 5.06" for 10-yr event				
Inflow =	1.15 cfs @ 11.90 hrs, Volume=	0.060 af			
Outflow =	1.15 cfs @ 11.90 hrs, Volume=	0.060 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.15 cfs @ 11.90 hrs, Volume=	0.060 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 41.93' @ 11.90 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	41.00'	**8.0" Round 8" N-12** L= 200.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 41.00' / 38.00' S= 0.0150 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=1.13 cfs @ 11.90 hrs HW=41.91' TW=38.08' (Dynamic Tailwater)
└─**1=8" N-12** (Inlet Controls 1.13 cfs @ 3.24 fps)

Pond 10P: 8" HDPE Roof Leader



Stage-Area-Storage for Pond 10P: 8" HDPE Roof Leader

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
41.00	**0**	41.51	0
41.01	0	41.52	0
41.02	0	41.53	0
41.03	0	41.54	0
41.04	0	41.55	0
41.05	0	41.56	0
41.06	0	41.57	0
41.07	0	41.58	0
41.08	0	41.59	0
41.09	0	41.60	0
41.10	0	41.61	0
41.11	0	41.62	0
41.12	0	41.63	0
41.13	0	41.64	0
41.14	0	41.65	0
41.15	0	41.66	0
41.16	0	41.67	0
41.17	0	41.68	0
41.18	0	41.69	0
41.19	0	41.70	0
41.20	0	41.71	0
41.21	0	41.72	0
41.22	0	41.73	0
41.23	0	41.74	0
41.24	0	41.75	0
41.25	0	41.76	0
41.26	0	41.77	0
41.27	0	41.78	0
41.28	0	41.79	0
41.29	0	41.80	0
41.30	0	41.81	0
41.31	0	41.82	0
41.32	0	41.83	0
41.33	0	41.84	0
41.34	0	41.85	0
41.35	0	41.86	0
41.36	0	41.87	0
41.37	0	41.88	0
41.38	0	41.89	0
41.39	0	41.90	0
41.40	0	41.91	0
41.41	0	41.92	0
41.42	0	41.93	0
41.43	0	41.94	0
41.44	0	41.95	0
41.45	0	41.96	0
41.46	0	41.97	0
41.47	0	41.98	0
41.48	0	41.99	0
41.49	0	42.00	0
41.50	0		

Summary for Pond 12P: 8" HDPE Roof Leader

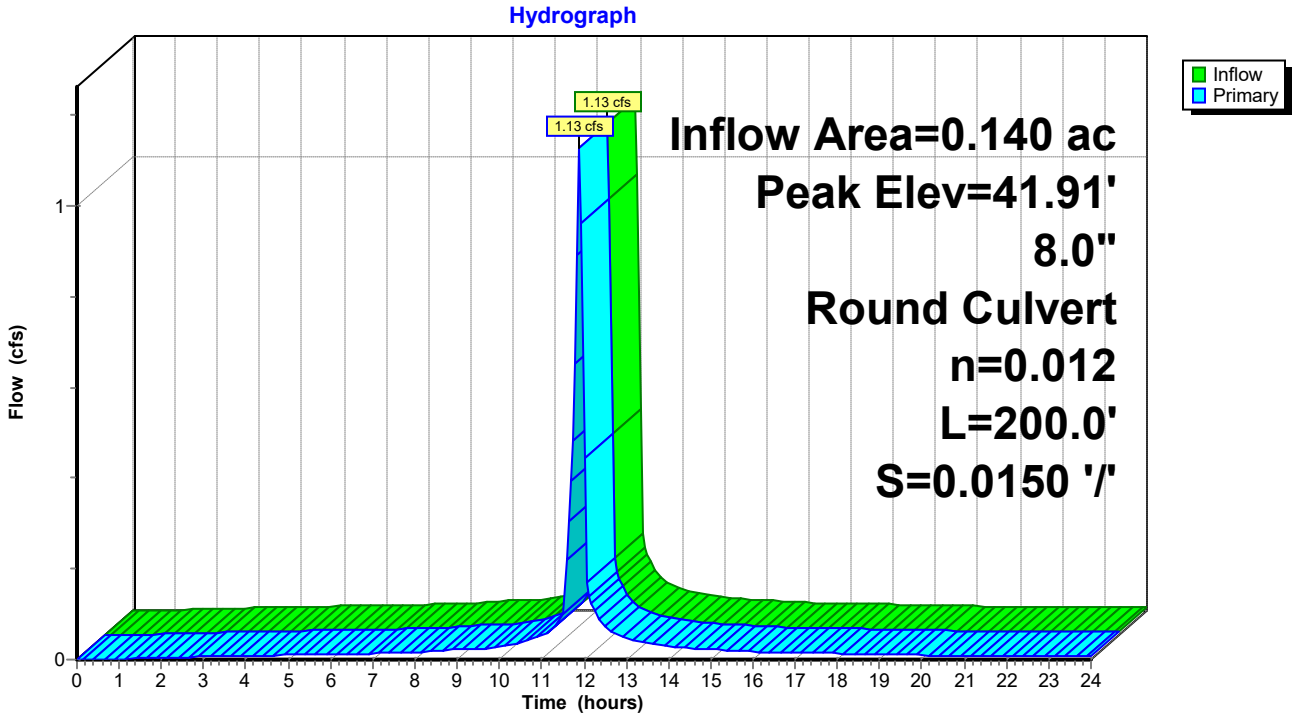
Inflow Area =	0.140 ac,100.00% Impervious, Inflow Depth > 5.06" for 10-yr event				
Inflow =	1.13 cfs @ 11.90 hrs, Volume=	0.059 af			
Outflow =	1.13 cfs @ 11.90 hrs, Volume=	0.059 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.13 cfs @ 11.90 hrs, Volume=	0.059 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 41.91' @ 11.90 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	41.00'	**8.0" Round 8" N-12** L= 200.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 41.00' / 38.00' S= 0.0150 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=1.11 cfs @ 11.90 hrs HW=41.90' TW=38.08' (Dynamic Tailwater)
└─**1=8" N-12** (Inlet Controls 1.11 cfs @ 3.19 fps)

Pond 12P: 8" HDPE Roof Leader



Stage-Area-Storage for Pond 12P: 8" HDPE Roof Leader

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
41.00	**0**	41.51	0
41.01	0	41.52	0
41.02	0	41.53	0
41.03	0	41.54	0
41.04	0	41.55	0
41.05	0	41.56	0
41.06	0	41.57	0
41.07	0	41.58	0
41.08	0	41.59	0
41.09	0	41.60	0
41.10	0	41.61	0
41.11	0	41.62	0
41.12	0	41.63	0
41.13	0	41.64	0
41.14	0	41.65	0
41.15	0	41.66	0
41.16	0	41.67	0
41.17	0	41.68	0
41.18	0	41.69	0
41.19	0	41.70	0
41.20	0	41.71	0
41.21	0	41.72	0
41.22	0	41.73	0
41.23	0	41.74	0
41.24	0	41.75	0
41.25	0	41.76	0
41.26	0	41.77	0
41.27	0	41.78	0
41.28	0	41.79	0
41.29	0	41.80	0
41.30	0	41.81	0
41.31	0	41.82	0
41.32	0	41.83	0
41.33	0	41.84	0
41.34	0	41.85	0
41.35	0	41.86	0
41.36	0	41.87	0
41.37	0	41.88	0
41.38	0	41.89	0
41.39	0	41.90	0
41.40	0	41.91	0
41.41	0	41.92	0
41.42	0	41.93	0
41.43	0	41.94	0
41.44	0	41.95	0
41.45	0	41.96	0
41.46	0	41.97	0
41.47	0	41.98	0
41.48	0	41.99	0
41.49	0	42.00	0
41.50	0		

Summary for Pond 18P: 15" HDPE Stormdrain

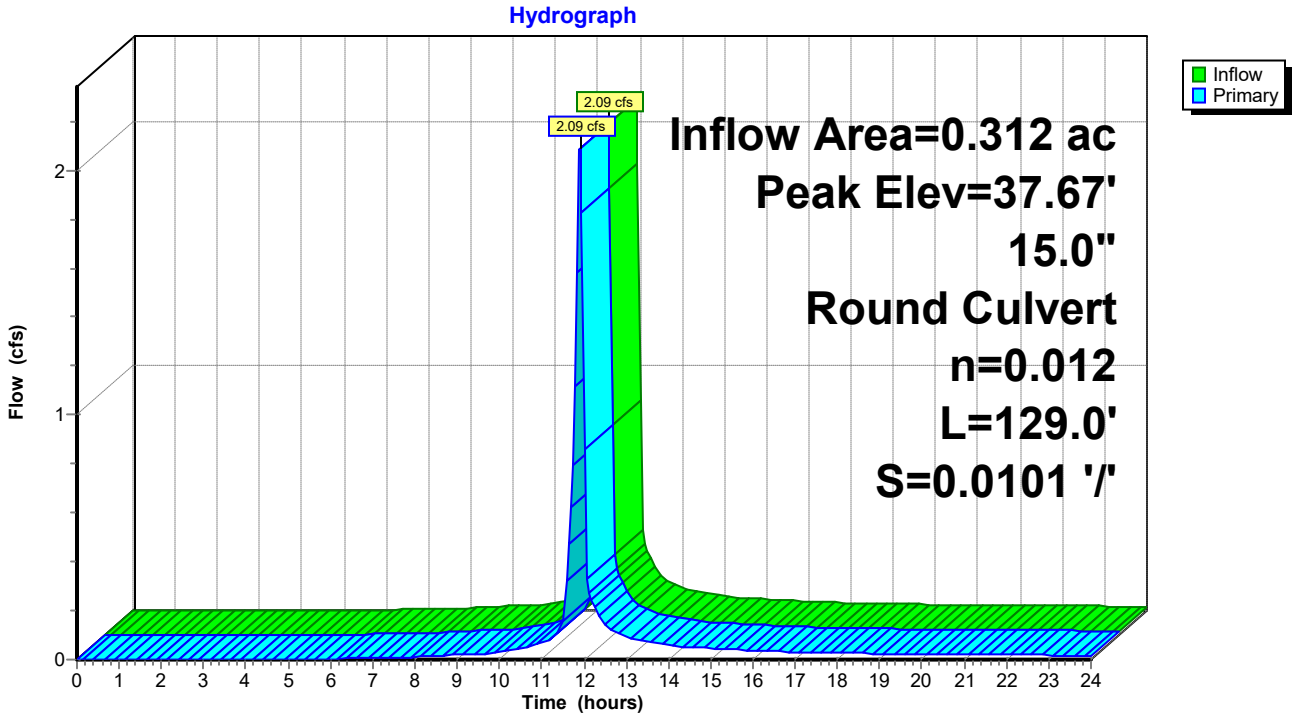
Inflow Area =	0.312 ac, 48.76% Impervious, Inflow Depth > 3.67" for 10-yr event				
Inflow =	2.09 cfs @ 11.91 hrs, Volume=	0.095 af			
Outflow =	2.09 cfs @ 11.91 hrs, Volume=	0.095 af, Atten= 0%, Lag= 0.0 min			
Primary =	2.09 cfs @ 11.91 hrs, Volume=	0.095 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 37.67' @ 11.91 hrs
Flood Elev= 40.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.90'	**15.0" Round CPP_Round 15"** L= 129.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 36.90' / 35.60' S= 0.0101 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.04 cfs @ 11.91 hrs HW=37.66' TW=36.15' (Dynamic Tailwater)
└─**1=CPP_Round 15"** (Inlet Controls 2.04 cfs @ 2.62 fps)

Pond 18P: 15" HDPE Stormdrain



Stage-Area-Storage for Pond 18P: 15" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
36.90	**0**	39.45	0
36.95	0	39.50	0
37.00	0	39.55	0
37.05	0	39.60	0
37.10	0	39.65	0
37.15	0	39.70	0
37.20	0	39.75	0
37.25	0	39.80	0
37.30	0	39.85	0
37.35	0	39.90	0
37.40	0	39.95	0
37.45	0	40.00	0
37.50	0	40.05	0
37.55	0	40.10	0
37.60	0	40.15	0
37.65	0		
37.70	0		
37.75	0		
37.80	0		
37.85	0		
37.90	0		
37.95	0		
38.00	0		
38.05	0		
38.10	0		
38.15	0		
38.20	0		
38.25	0		
38.30	0		
38.35	0		
38.40	0		
38.45	0		
38.50	0		
38.55	0		
38.60	0		
38.65	0		
38.70	0		
38.75	0		
38.80	0		
38.85	0		
38.90	0		
38.95	0		
39.00	0		
39.05	0		
39.10	0		
39.15	0		
39.20	0		
39.25	0		
39.30	0		
39.35	0		
39.40	0		

Summary for Pond 20P: 15" HDPE Stormdrain

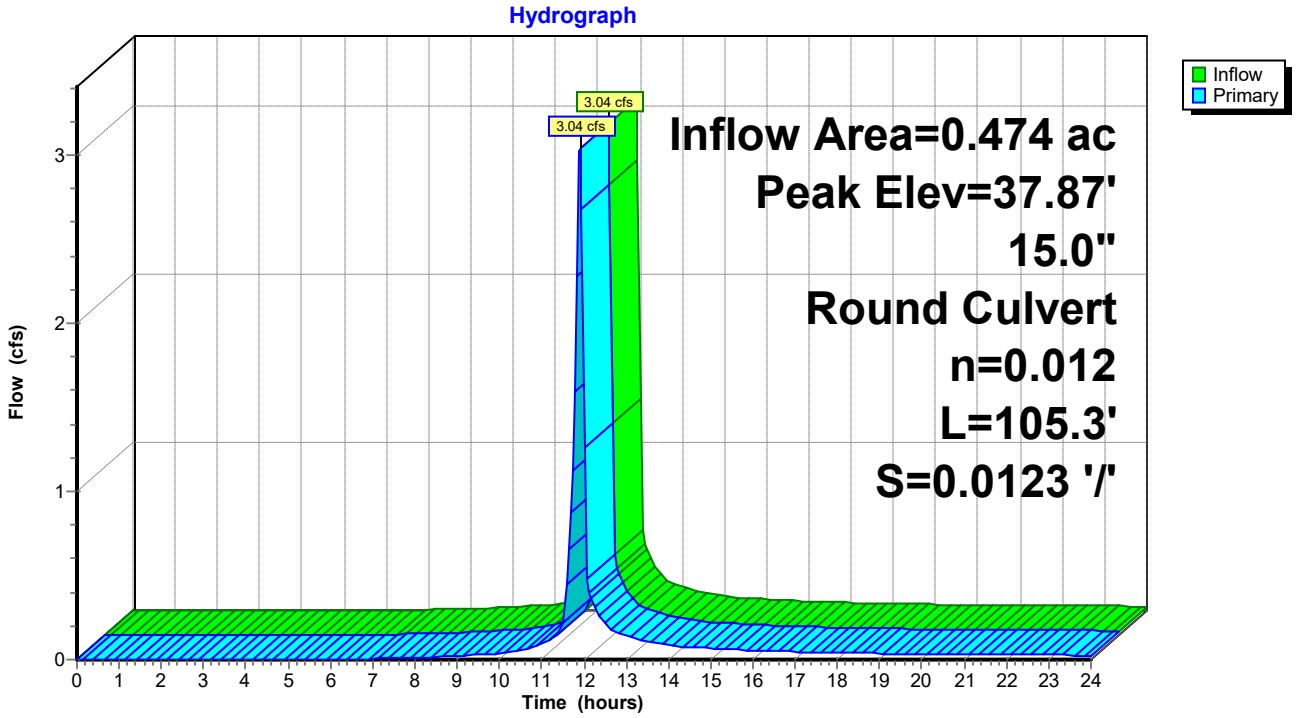
Inflow Area = 0.474 ac, 40.93% Impervious, Inflow Depth > 3.46" for 10-yr event
Inflow = 3.04 cfs @ 11.91 hrs, Volume= 0.137 af
Outflow = 3.04 cfs @ 11.91 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min
Primary = 3.04 cfs @ 11.91 hrs, Volume= 0.137 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 37.87' @ 11.91 hrs
Flood Elev= 40.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.90'	**15.0" Round CPP_Round 15"** L= 105.3' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 36.90' / 35.60' S= 0.0123 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.96 cfs @ 11.91 hrs HW=37.86' TW=36.16' (Dynamic Tailwater)
└─**1=CPP_Round 15"** (Inlet Controls 2.96 cfs @ 2.94 fps)

Pond 20P: 15" HDPE Stormdrain



Stage-Area-Storage for Pond 20P: 15" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
36.90	**0**	39.45	0
36.95	0	39.50	0
37.00	0	39.55	0
37.05	0	39.60	0
37.10	0	39.65	0
37.15	0	39.70	0
37.20	0	39.75	0
37.25	0	39.80	0
37.30	0	39.85	0
37.35	0	39.90	0
37.40	0	39.95	0
37.45	0	40.00	0
37.50	0	40.05	0
37.55	0	40.10	0
37.60	0	40.15	0
37.65	0		
37.70	0		
37.75	0		
37.80	0		
37.85	0		
37.90	0		
37.95	0		
38.00	0		
38.05	0		
38.10	0		
38.15	0		
38.20	0		
38.25	0		
38.30	0		
38.35	0		
38.40	0		
38.45	0		
38.50	0		
38.55	0		
38.60	0		
38.65	0		
38.70	0		
38.75	0		
38.80	0		
38.85	0		
38.90	0		
38.95	0		
39.00	0		
39.05	0		
39.10	0		
39.15	0		
39.20	0		
39.25	0		
39.30	0		
39.35	0		
39.40	0		

Summary for Pond 21P: 12" HDPE Stormdrain

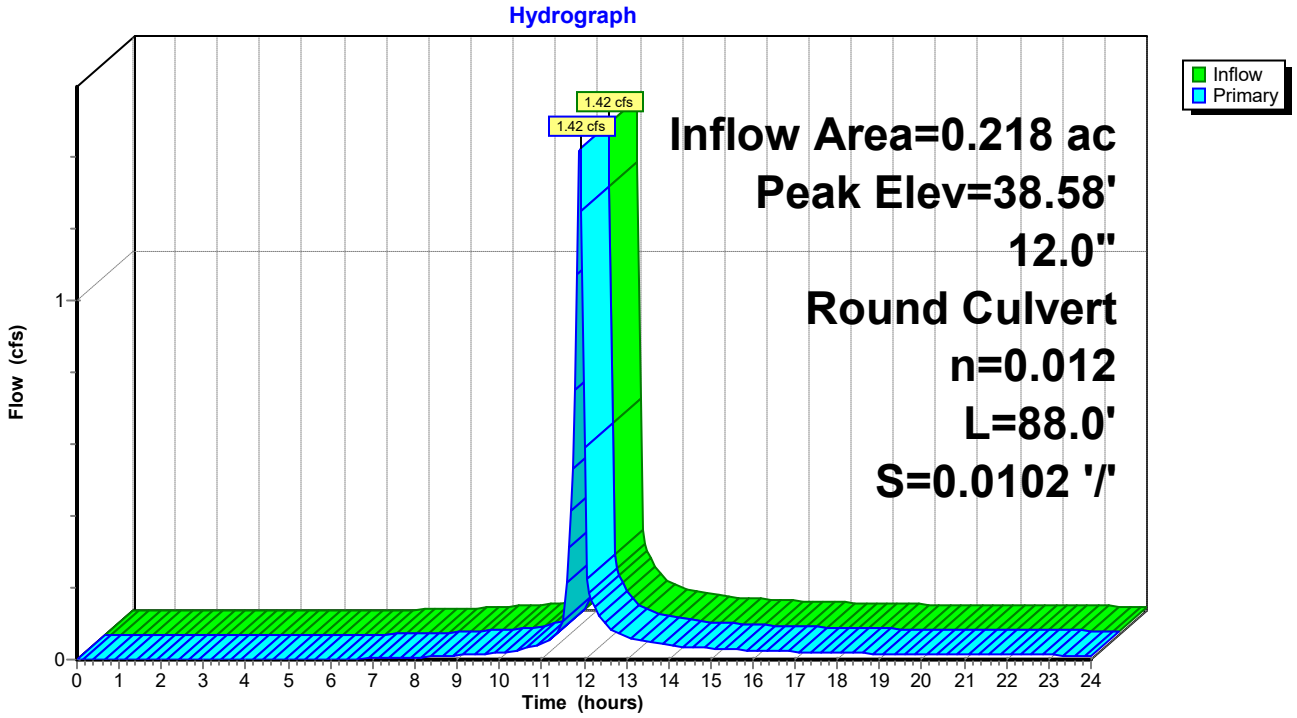
Inflow Area =	0.218 ac, 43.64% Impervious, Inflow Depth > 3.54" for 10-yr event				
Inflow =	1.42 cfs @ 11.91 hrs, Volume=	0.064 af			
Outflow =	1.42 cfs @ 11.91 hrs, Volume=	0.064 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.42 cfs @ 11.91 hrs, Volume=	0.064 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.58' @ 11.91 hrs
Flood Elev= 41.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	**12.0" Round CPP_Round 12"** L= 88.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 37.90' / 37.00' S= 0.0102 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.39 cfs @ 11.91 hrs HW=38.57' TW=37.66' (Dynamic Tailwater)
└─**1=CPP_Round 12"** (Inlet Controls 1.39 cfs @ 2.46 fps)

Pond 21P: 12" HDPE Stormdrain



Stage-Area-Storage for Pond 21P: 12" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
37.90	**0**	40.45	0
37.95	0	40.50	0
38.00	0	40.55	0
38.05	0	40.60	0
38.10	0	40.65	0
38.15	0	40.70	0
38.20	0	40.75	0
38.25	0	40.80	0
38.30	0	40.85	0
38.35	0	40.90	0
38.40	0	40.95	0
38.45	0	41.00	0
38.50	0	41.05	0
38.55	0	41.10	0
38.60	0	41.15	0
38.65	0	41.20	0
38.70	0	41.25	0
38.75	0	41.30	0
38.80	0	41.35	0
38.85	0	41.40	0
38.90	0	41.45	0
38.95	0	41.50	0
39.00	0	41.55	0
39.05	0	41.60	0
39.10	0	41.65	0
39.15	0		
39.20	0		
39.25	0		
39.30	0		
39.35	0		
39.40	0		
39.45	0		
39.50	0		
39.55	0		
39.60	0		
39.65	0		
39.70	0		
39.75	0		
39.80	0		
39.85	0		
39.90	0		
39.95	0		
40.00	0		
40.05	0		
40.10	0		
40.15	0		
40.20	0		
40.25	0		
40.30	0		
40.35	0		
40.40	0		

Summary for Pond 22P: 12" HDPE Stormdrain

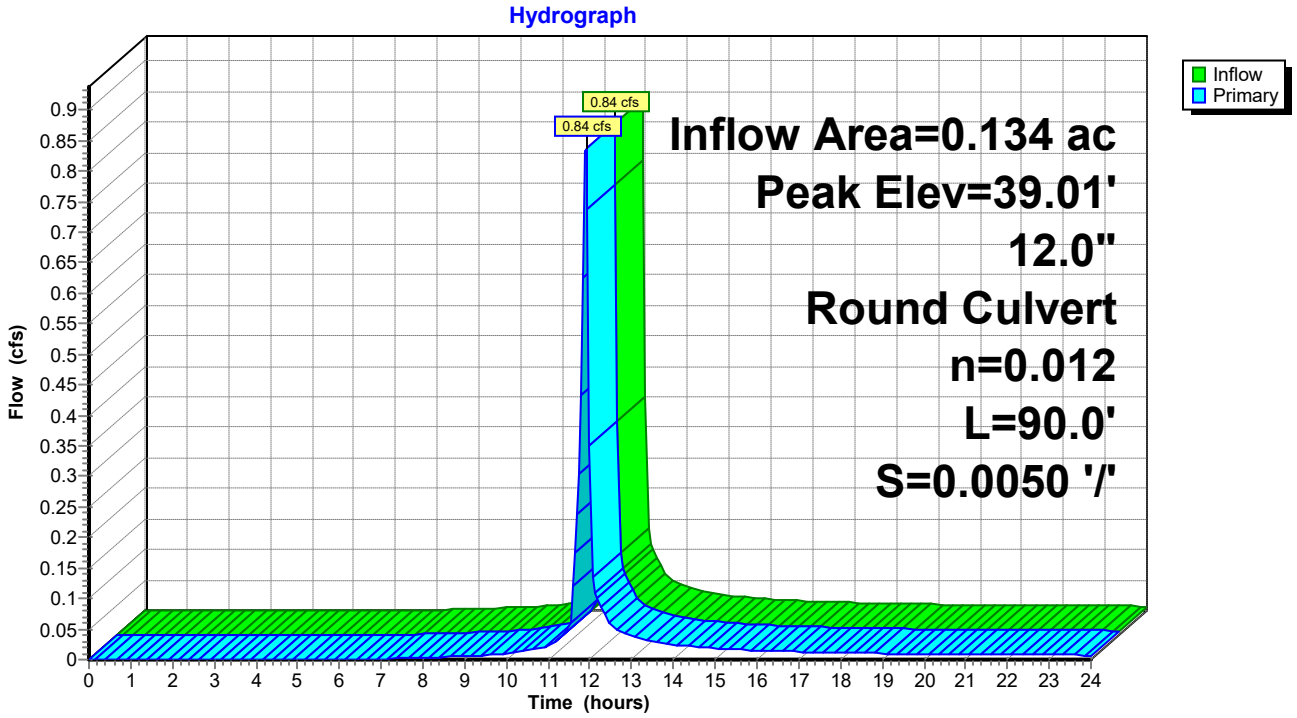
Inflow Area = 0.134 ac, 36.73% Impervious, Inflow Depth > 3.35" for 10-yr event
Inflow = 0.84 cfs @ 11.91 hrs, Volume= 0.037 af
Outflow = 0.84 cfs @ 11.91 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min
Primary = 0.84 cfs @ 11.91 hrs, Volume= 0.037 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 39.01' @ 11.92 hrs
Flood Elev= 41.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.45'	**12.0" Round CPP_Round 12"** L= 90.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 38.45' / 38.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.75 cfs @ 11.91 hrs HW=39.00' TW=38.57' (Dynamic Tailwater)
└─**1=CPP_Round 12"** (Outlet Controls 0.75 cfs @ 2.46 fps)

Pond 22P: 12" HDPE Stormdrain



Stage-Area-Storage for Pond 22P: 12" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
38.45	**0**	41.00	0
38.50	0	41.05	0
38.55	0	41.10	0
38.60	0	41.15	0
38.65	0	41.20	0
38.70	0	41.25	0
38.75	0	41.30	0
38.80	0	41.35	0
38.85	0	41.40	0
38.90	0	41.45	0
38.95	0	41.50	0
39.00	0	41.55	0
39.05	0	41.60	0
39.10	0	41.65	0
39.15	0	41.70	0
39.20	0	41.75	0
39.25	0	41.80	0
39.30	0	41.85	0
39.35	0	41.90	0
39.40	0		
39.45	0		
39.50	0		
39.55	0		
39.60	0		
39.65	0		
39.70	0		
39.75	0		
39.80	0		
39.85	0		
39.90	0		
39.95	0		
40.00	0		
40.05	0		
40.10	0		
40.15	0		
40.20	0		
40.25	0		
40.30	0		
40.35	0		
40.40	0		
40.45	0		
40.50	0		
40.55	0		
40.60	0		
40.65	0		
40.70	0		
40.75	0		
40.80	0		
40.85	0		
40.90	0		
40.95	0		

Summary for Pond 23P: 12" HDPE Stormdrain

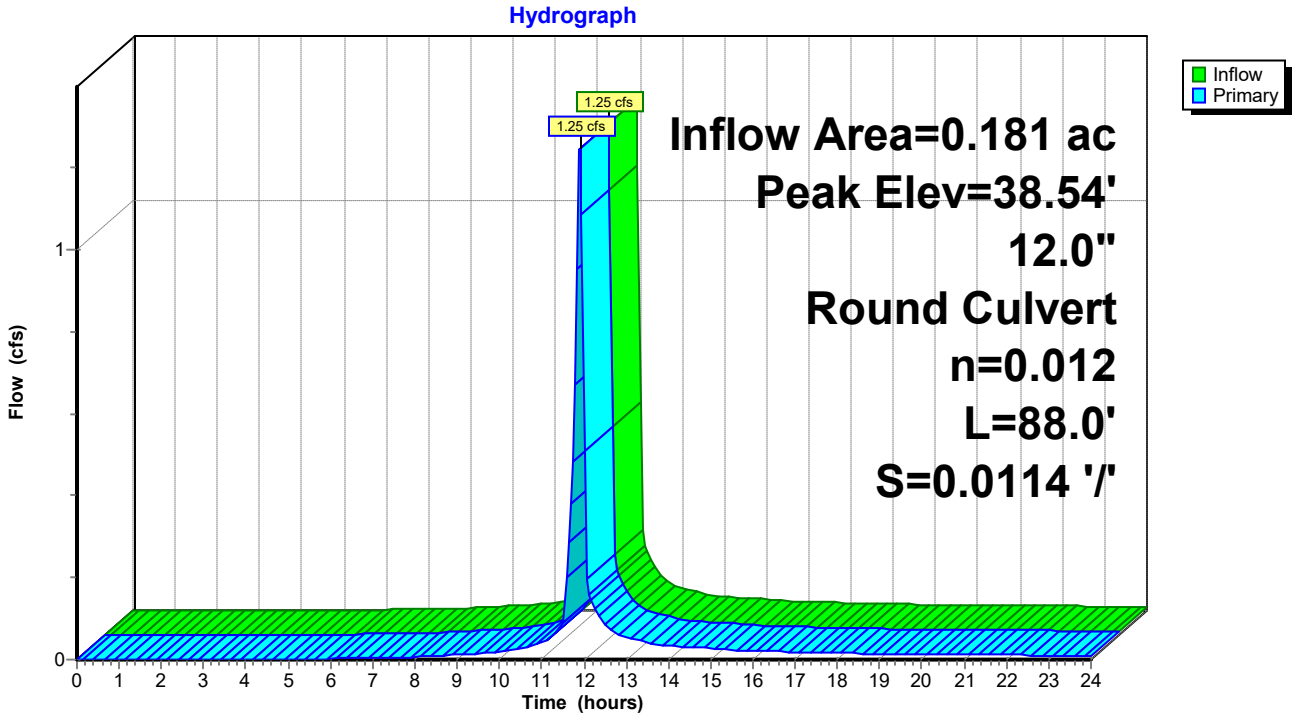
Inflow Area = 0.181 ac, 54.26% Impervious, Inflow Depth > 3.79" for 10-yr event
Inflow = 1.25 cfs @ 11.91 hrs, Volume= 0.057 af
Outflow = 1.25 cfs @ 11.91 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min
Primary = 1.25 cfs @ 11.91 hrs, Volume= 0.057 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.54' @ 11.92 hrs
Flood Elev= 41.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	**12.0" Round CPP_Round 12"** L= 88.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 37.90' / 36.90' S= 0.0114 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.16 cfs @ 11.91 hrs HW=38.53' TW=37.86' (Dynamic Tailwater)
└─**1=CPP_Round 12"** (Outlet Controls 1.16 cfs @ 3.21 fps)

Pond 23P: 12" HDPE Stormdrain



Stage-Area-Storage for Pond 23P: 12" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
37.90	**0**	40.45	0
37.95	0	40.50	0
38.00	0	40.55	0
38.05	0	40.60	0
38.10	0	40.65	0
38.15	0	40.70	0
38.20	0	40.75	0
38.25	0	40.80	0
38.30	0	40.85	0
38.35	0	40.90	0
38.40	0	40.95	0
38.45	0	41.00	0
38.50	0	41.05	0
38.55	0	41.10	0
38.60	0	41.15	0
38.65	0	41.20	0
38.70	0	41.25	0
38.75	0	41.30	0
38.80	0	41.35	0
38.85	0	41.40	0
38.90	0	41.45	0
38.95	0	41.50	0
39.00	0	41.55	0
39.05	0	41.60	0
39.10	0	41.65	0
39.15	0		
39.20	0		
39.25	0		
39.30	0		
39.35	0		
39.40	0		
39.45	0		
39.50	0		
39.55	0		
39.60	0		
39.65	0		
39.70	0		
39.75	0		
39.80	0		
39.85	0		
39.90	0		
39.95	0		
40.00	0		
40.05	0		
40.10	0		
40.15	0		
40.20	0		
40.25	0		
40.30	0		
40.35	0		
40.40	0		

Summary for Pond 24P: 12" HDPE Stormdrain

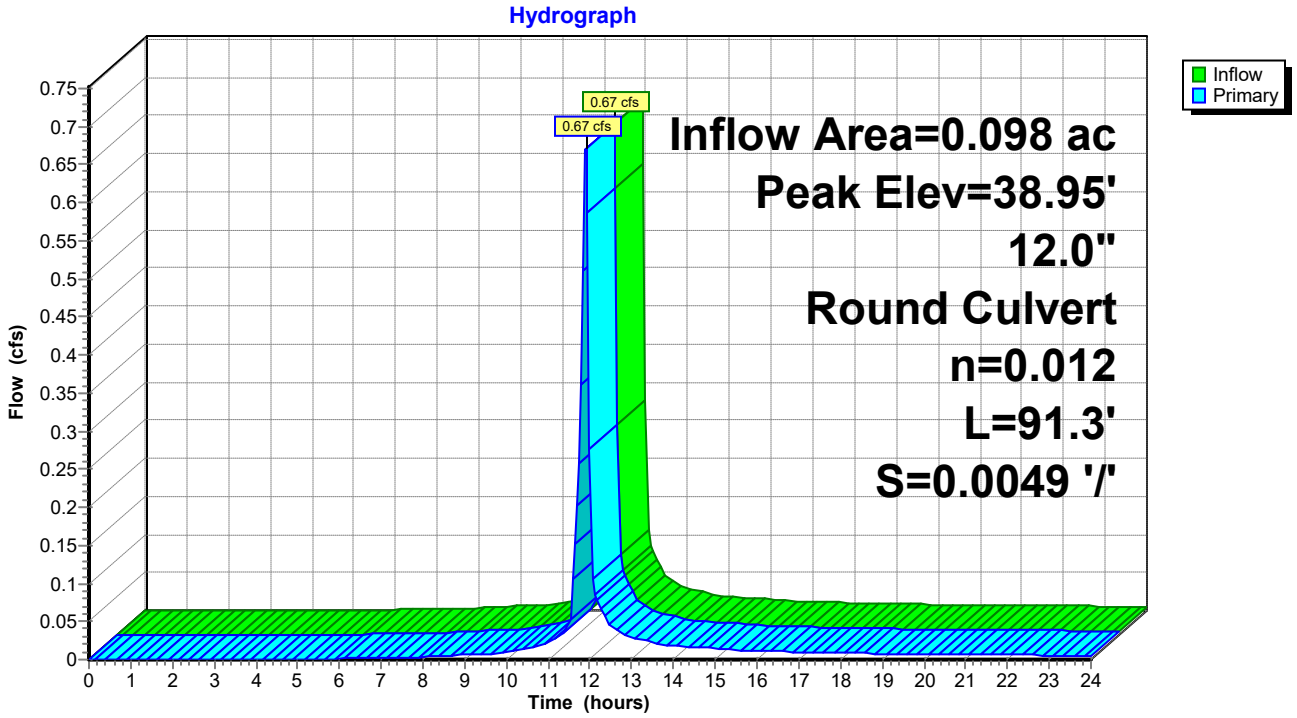
Inflow Area = 0.098 ac, 52.35% Impervious, Inflow Depth > 3.75" for 10-yr event
Inflow = 0.67 cfs @ 11.91 hrs, Volume= 0.031 af
Outflow = 0.67 cfs @ 11.91 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min
Primary = 0.67 cfs @ 11.91 hrs, Volume= 0.031 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.95' @ 11.92 hrs
Flood Elev= 41.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.45'	**12.0" Round CPP_Round 12"** L= 91.3' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 38.45' / 38.00' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.60 cfs @ 11.91 hrs HW=38.94' TW=38.53' (Dynamic Tailwater)
└─**1=CPP_Round 12"** (Outlet Controls 0.60 cfs @ 2.31 fps)

Pond 24P: 12" HDPE Stormdrain



Stage-Area-Storage for Pond 24P: 12" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
38.45	**0**	41.00	0
38.50	0	41.05	0
38.55	0	41.10	0
38.60	0	41.15	0
38.65	0	41.20	0
38.70	0	41.25	0
38.75	0	41.30	0
38.80	0	41.35	0
38.85	0	41.40	0
38.90	0	41.45	0
38.95	0	41.50	0
39.00	0	41.55	0
39.05	0	41.60	0
39.10	0	41.65	0
39.15	0	41.70	0
39.20	0	41.75	0
39.25	0	41.80	0
39.30	0	41.85	0
39.35	0	41.90	0
39.40	0		
39.45	0		
39.50	0		
39.55	0		
39.60	0		
39.65	0		
39.70	0		
39.75	0		
39.80	0		
39.85	0		
39.90	0		
39.95	0		
40.00	0		
40.05	0		
40.10	0		
40.15	0		
40.20	0		
40.25	0		
40.30	0		
40.35	0		
40.40	0		
40.45	0		
40.50	0		
40.55	0		
40.60	0		
40.65	0		
40.70	0		
40.75	0		
40.80	0		
40.85	0		
40.90	0		
40.95	0		

Summary for Pond BSW: BioSwale (M-8)

Inflow Area = 0.517 ac, 42.48% Impervious, Inflow Depth > 3.52" for 10-yr event
Inflow = 3.36 cfs @ 11.91 hrs, Volume= 0.152 af
Outflow = 2.06 cfs @ 11.99 hrs, Volume= 0.101 af, Atten= 39%, Lag= 4.7 min
Primary = 2.06 cfs @ 11.99 hrs, Volume= 0.101 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 40.35' @ 11.99 hrs Surf.Area= 2,270 sf Storage= 2,859 cf

Plug-Flow detention time= 171.8 min calculated for 0.101 af (67% of inflow)
Center-of-Mass det. time= 70.0 min (871.1 - 801.1)

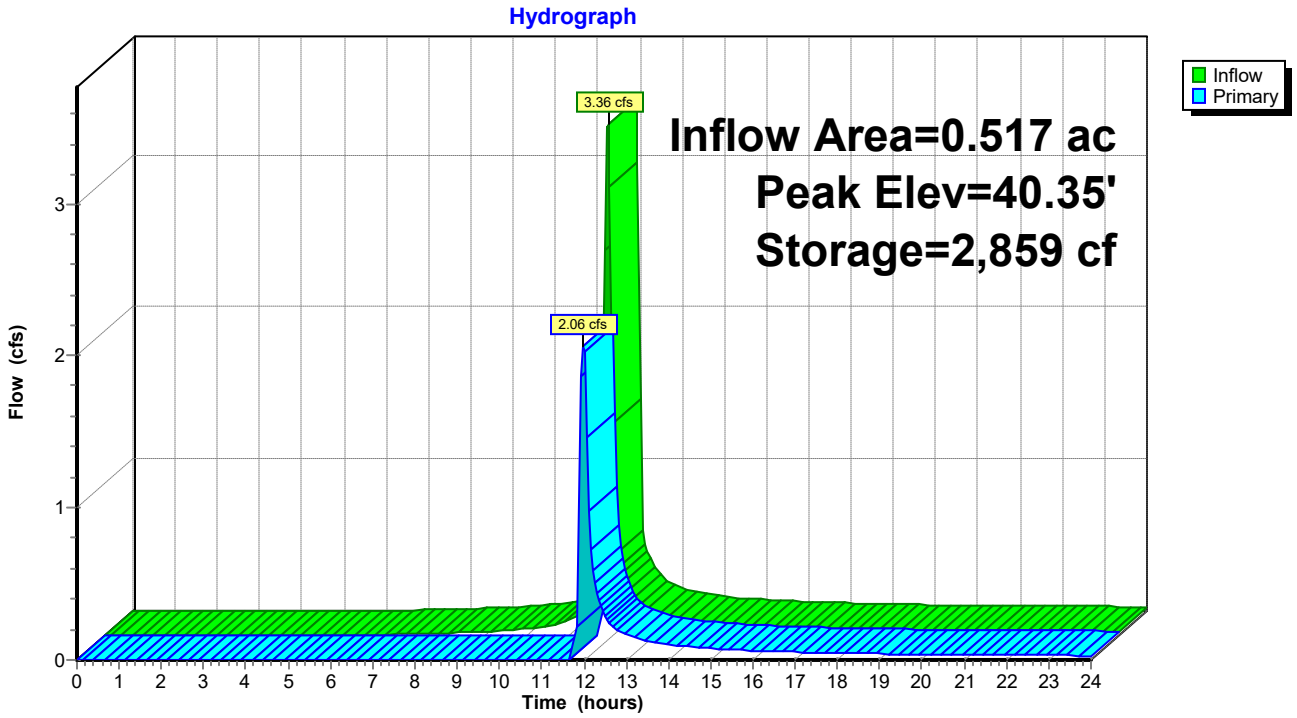
Volume	Invert	Avail.Storage	Storage Description
#1	34.99'	4,698 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
34.99	631	323.0	0.0	0	0	631
35.00	631	323.0	40.0	3	3	634
38.99	631	323.0	40.0	1,007	1,010	1,923
39.00	631	323.0	100.0	6	1,016	1,926
41.00	3,423	373.0	100.0	3,682	4,698	4,782

Device	Routing	Invert	Outlet Devices
#1	Primary	40.00'	**4.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=1.99 cfs @ 11.99 hrs HW=40.34' TW=36.72' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 1.99 cfs @ 1.46 fps)

Pond BSW: BioSwale (M-8)



Stage-Area-Storage for Pond BSW: BioSwale (M-8)

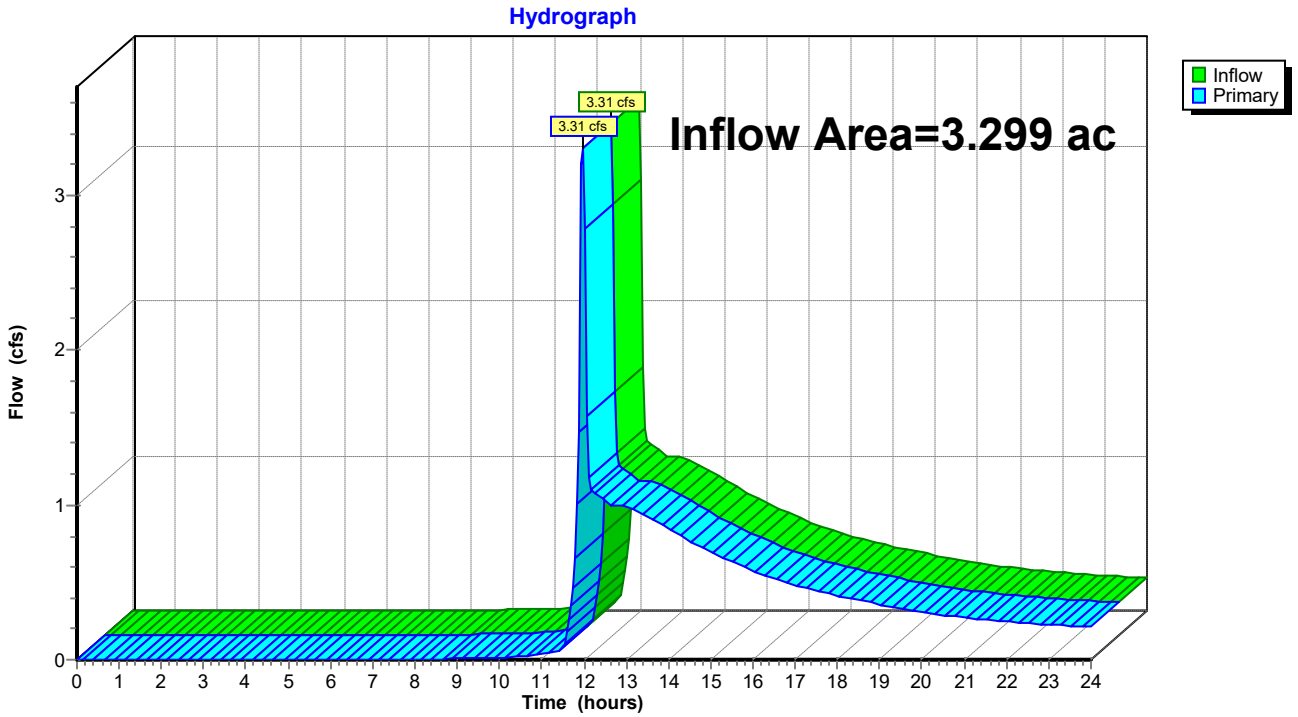
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
34.99	631	0
35.09	631	25
35.19	631	50
35.29	631	76
35.39	631	101
35.49	631	126
35.59	631	151
35.69	631	177
35.79	631	202
35.89	631	227
35.99	631	252
36.09	631	278
36.19	631	303
36.29	631	328
36.39	631	353
36.49	631	379
36.59	631	404
36.69	631	429
36.79	631	454
36.89	631	480
36.99	631	505
37.09	631	530
37.19	631	555
37.29	631	581
37.39	631	606
37.49	631	631
37.59	631	656
37.69	631	681
37.79	631	707
37.89	631	732
37.99	631	757
38.09	631	782
38.19	631	808
38.29	631	833
38.39	631	858
38.49	631	883
38.59	631	909
38.69	631	934
38.79	631	959
38.89	631	984
38.99	631	1,010
39.09	709	1,076
39.19	800	1,152
39.29	898	1,236
39.39	1,000	1,331
39.49	1,109	1,437
39.59	1,223	1,553
39.69	1,342	1,681
39.79	1,467	1,822
39.89	1,598	1,975
39.99	1,734	2,142
40.09	1,876	2,322
40.19	2,024	2,517
40.29	2,177	2,727
40.39	2,335	2,953
40.49	2,499	3,194
40.59	2,669	3,453
40.69	2,844	3,728
40.79	3,025	4,022
40.89	3,212	4,334
40.99	**3,403**	**4,664**

Summary for Link 1L: POI#1

Inflow Area = 3.299 ac, 49.24% Impervious, Inflow Depth > 2.00" for 10-yr event
Inflow = 3.31 cfs @ 11.97 hrs, Volume= 0.551 af
Primary = 3.31 cfs @ 11.97 hrs, Volume= 0.551 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 1L: POI#1

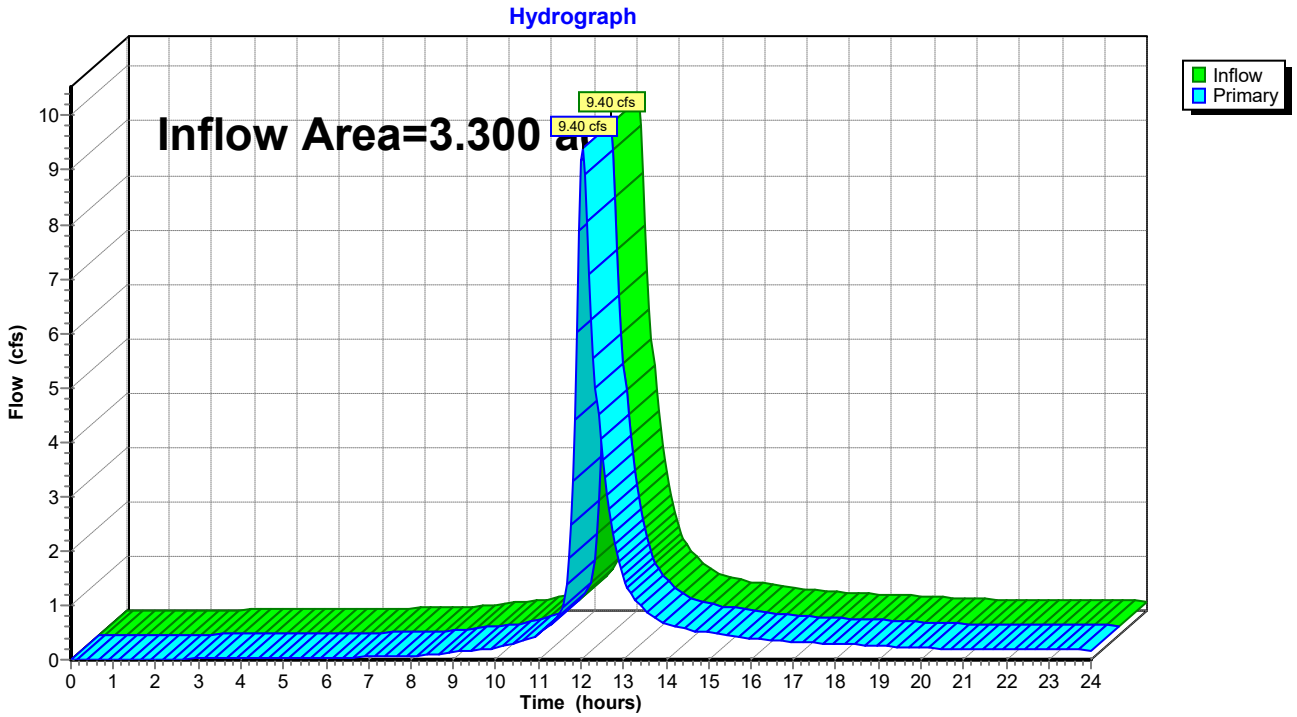


Summary for Link POI#1: EX. Stormdrain

Inflow Area = 3.300 ac, 34.85% Impervious, Inflow Depth > 3.37" for 10-yr event
Inflow = 9.40 cfs @ 12.04 hrs, Volume= 0.928 af
Primary = 9.40 cfs @ 12.04 hrs, Volume= 0.928 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link POI#1: EX. Stormdrain



Summary for Subcatchment EX-1: EX (GRAY)

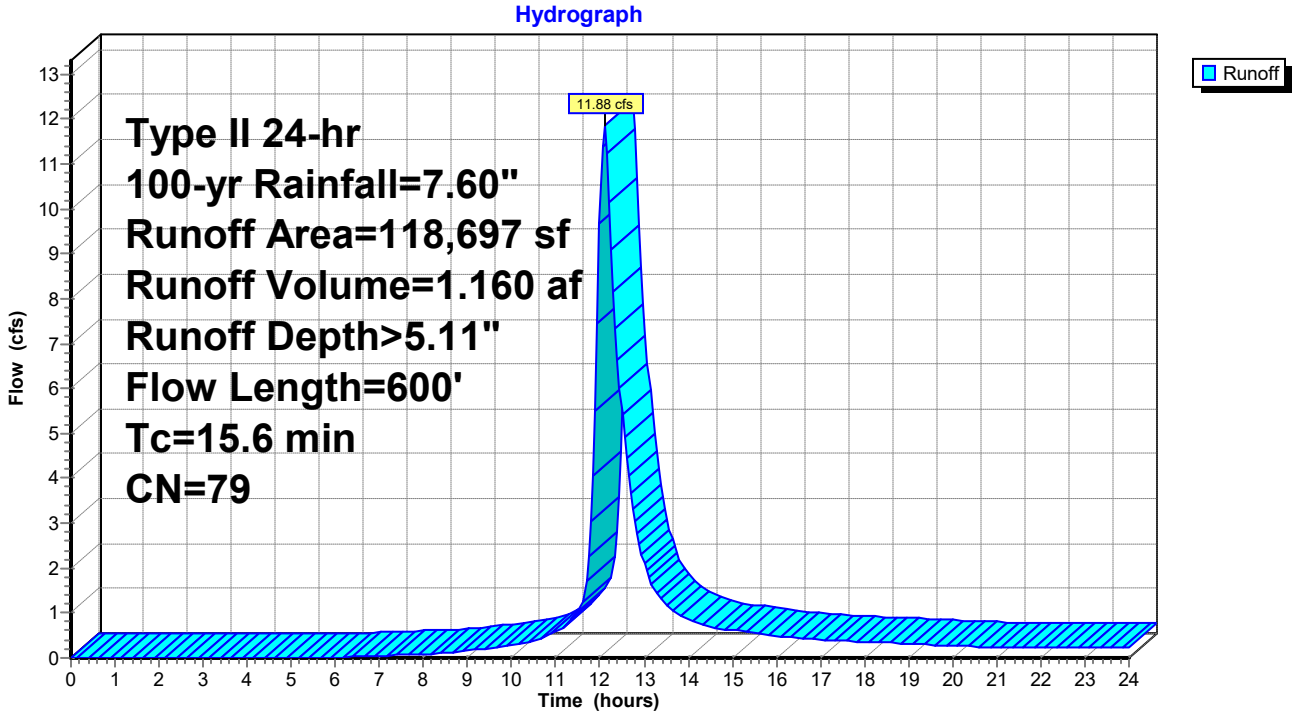
Runoff = 11.88 cfs @ 12.10 hrs, Volume= 1.160 af, Depth> 5.11"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	92,205	74	Vacant Grass Field
*	26,492	98	Ex Bldgs & Parking Areas
	118,697	79	Weighted Average
	92,205		77.68% Pervious Area
	26,492		22.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, Grassed Lot** Grass: Short n= 0.150 P2= 3.40"
1.5	197	0.0200	2.12		**Shallow Concentrated Flow, Grassed Lot** Grassed Waterway Kv= 15.0 fps
0.5	84	0.0050	2.73	15.04	**Channel Flow, Ex Swale** Area= 5.5 sf Perim= 12.7' r= 0.43' n= 0.022 Earth, clean & straight
0.2	65	0.0058	4.34	5.33	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
0.3	104	0.0171	5.82	68.10	**Channel Flow, Ex Veg. Swale** Area= 11.7 sf Perim= 10.9' r= 1.07' n= 0.035 Earth, dense weeds
15.6	600	Total			

Subcatchment EX-1: EX (GRAY)



Summary for Subcatchment EX-2: Ex. Easton Ice Parcel

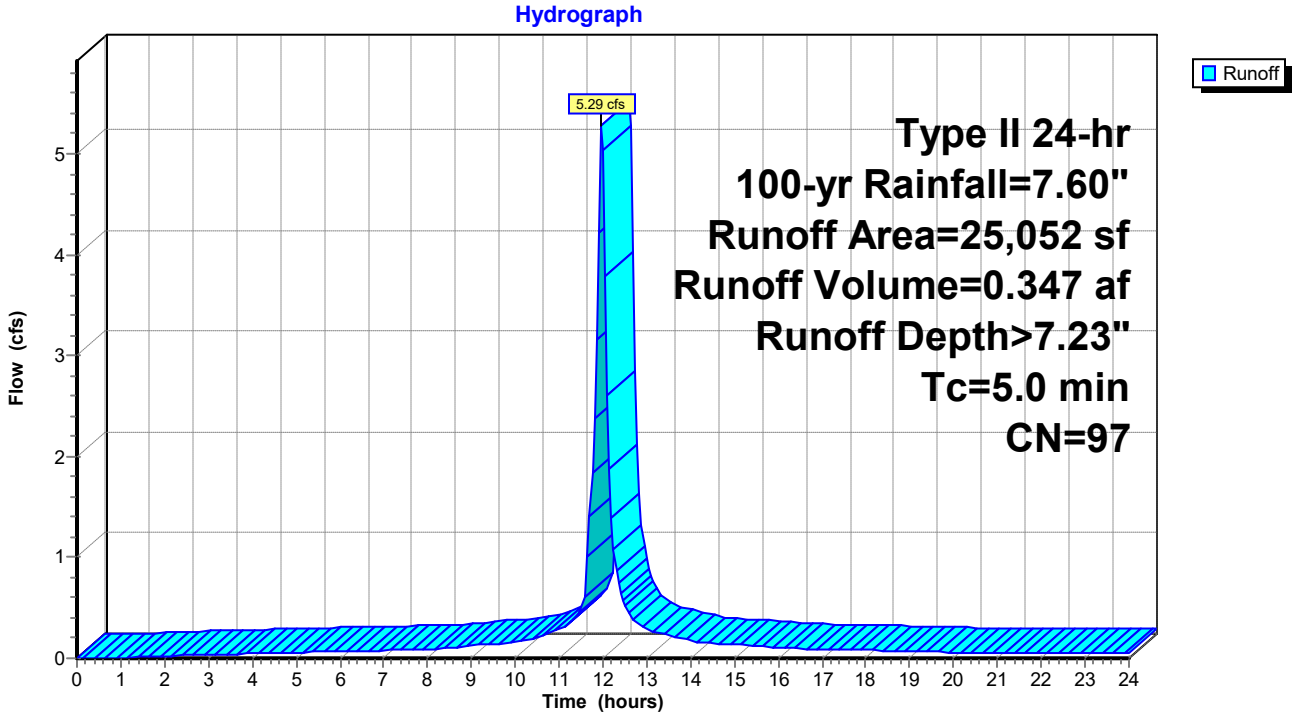
Runoff = 5.29 cfs @ 11.97 hrs, Volume= 0.347 af, Depth> 7.23"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	23,608	98	Ex. Building & Parking Area
*	1,444	74	Lawn & Landscape Area
	25,052	97	Weighted Average
	1,444		5.76% Pervious Area
	23,608		94.24% Impervious Area

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

Subcatchment EX-2: Ex. Easton Ice Parcel



Summary for Subcatchment PR-1A: Parking Lot & SWM Feature (Green)

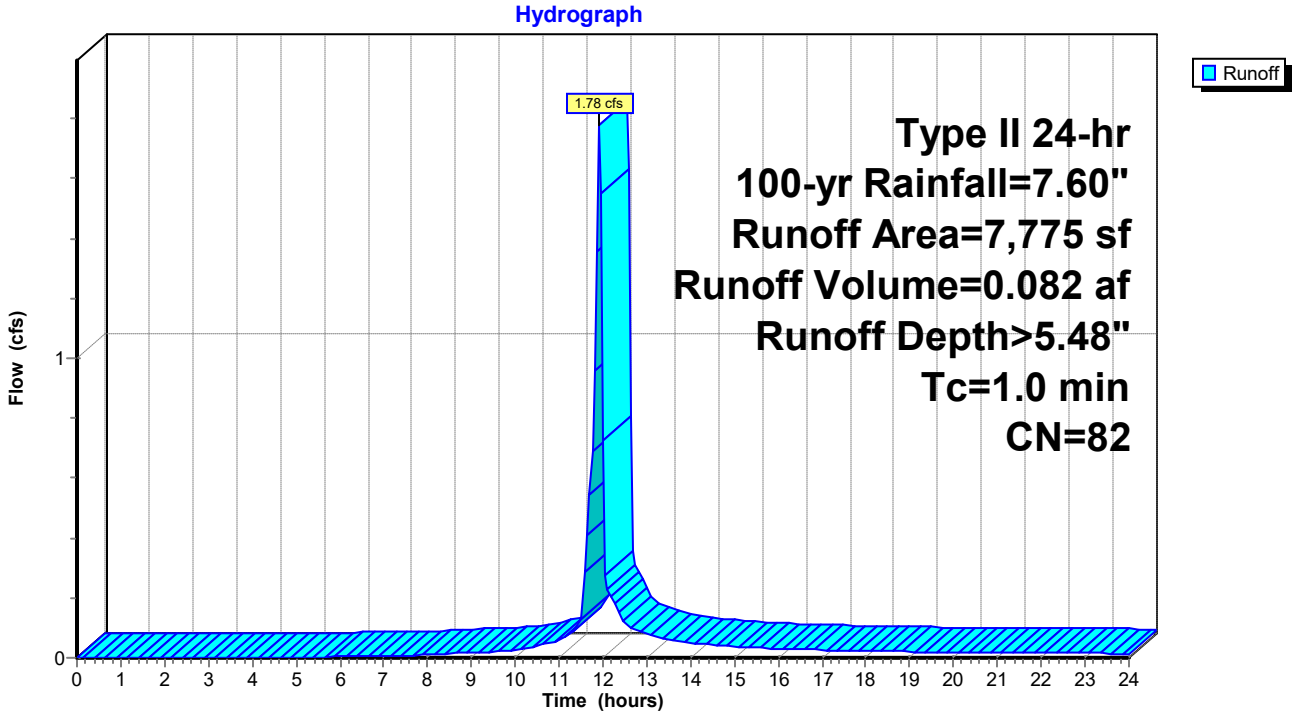
Runoff = 1.78 cfs @ 11.91 hrs, Volume= 0.082 af, Depth> 5.48"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
	3,632	74	>75% Grass cover, Good, HSG C
*	2,847	98	Asphalt & Sidewalk
*	1,296	70	Permeable Pavers (Woods in Good Condition)
	7,775	82	Weighted Average
	4,928		63.38% Pervious Area
	2,847		36.62% Impervious Area

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

Subcatchment PR-1A: Parking Lot & SWM Feature (Green)



Summary for Subcatchment PR-1B: Green (Roof)

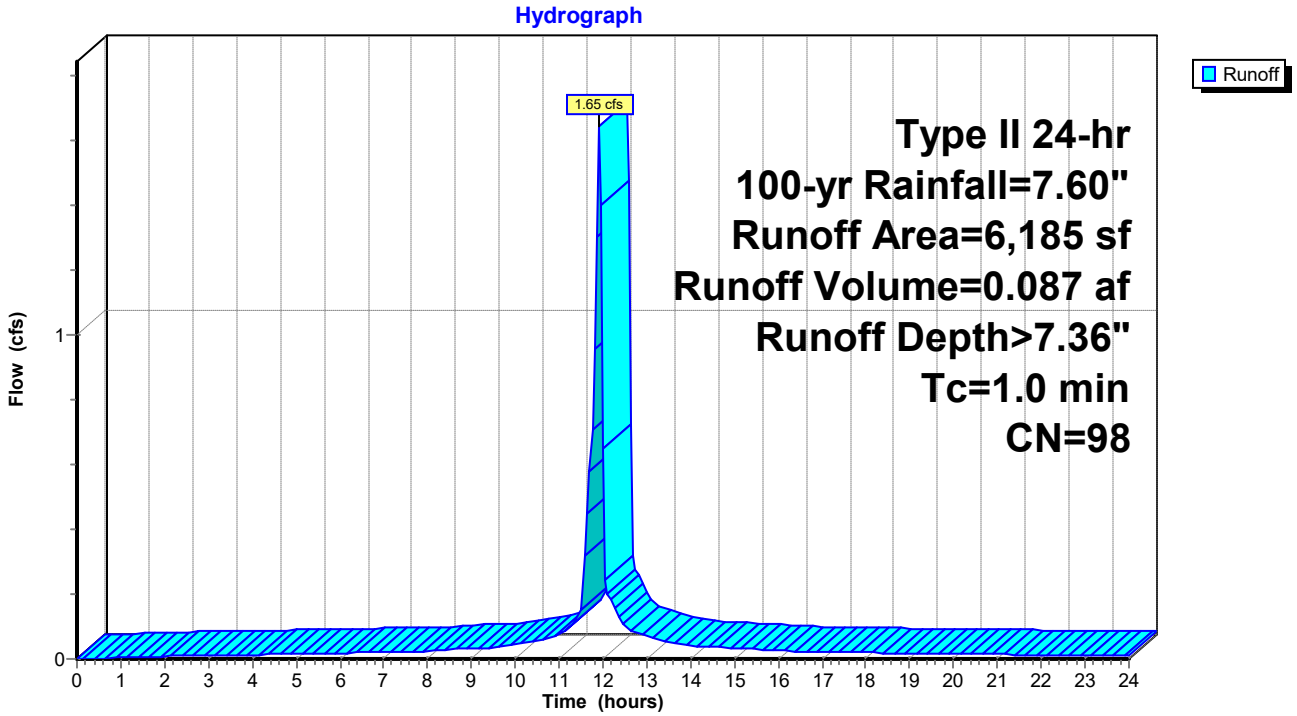
Runoff = 1.65 cfs @ 11.90 hrs, Volume= 0.087 af, Depth> 7.36"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	6,185	98	Roof
	6,185		100.00% Impervious Area

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

Subcatchment PR-1B: Green (Roof)



Summary for Subcatchment PR-1C: Green (Roof)

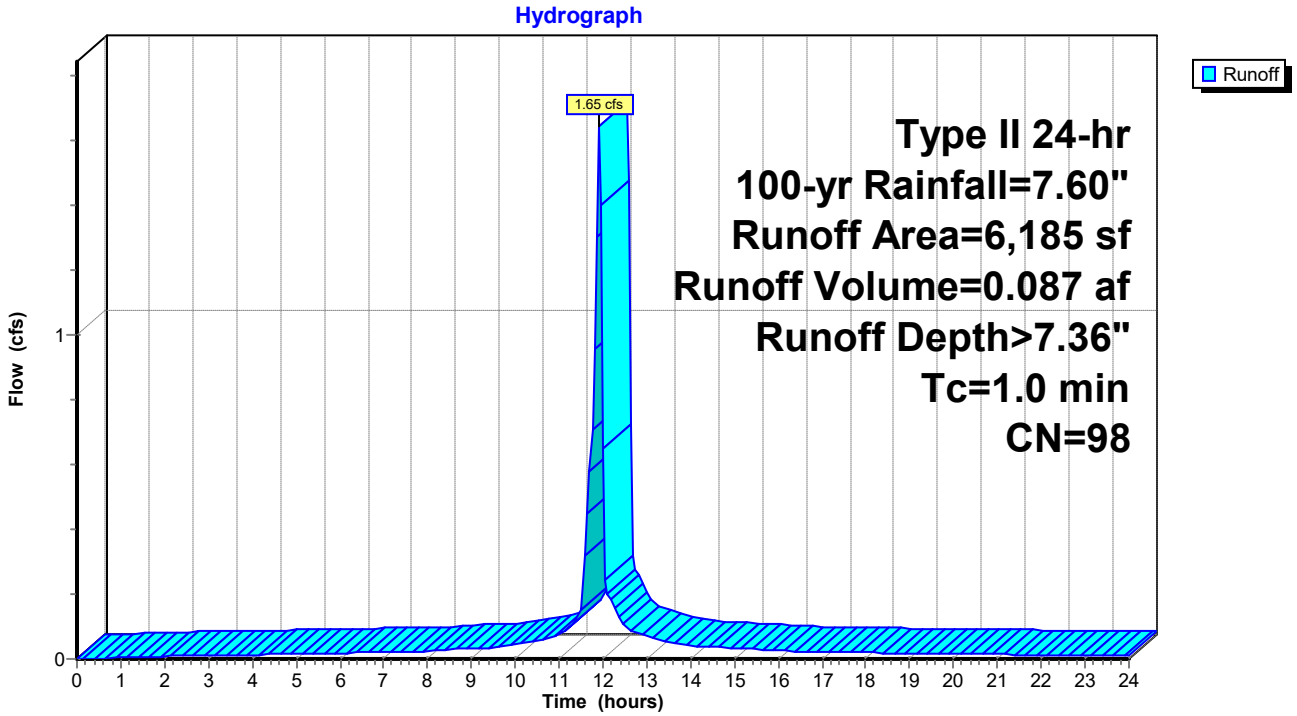
Runoff = 1.65 cfs @ 11.90 hrs, Volume= 0.087 af, Depth> 7.36"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	6,185	98	Roof
	6,185		100.00% Impervious Area

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

Subcatchment PR-1C: Green (Roof)



Summary for Subcatchment PR-2A: Parking Lot & SWM Feature (Purple)

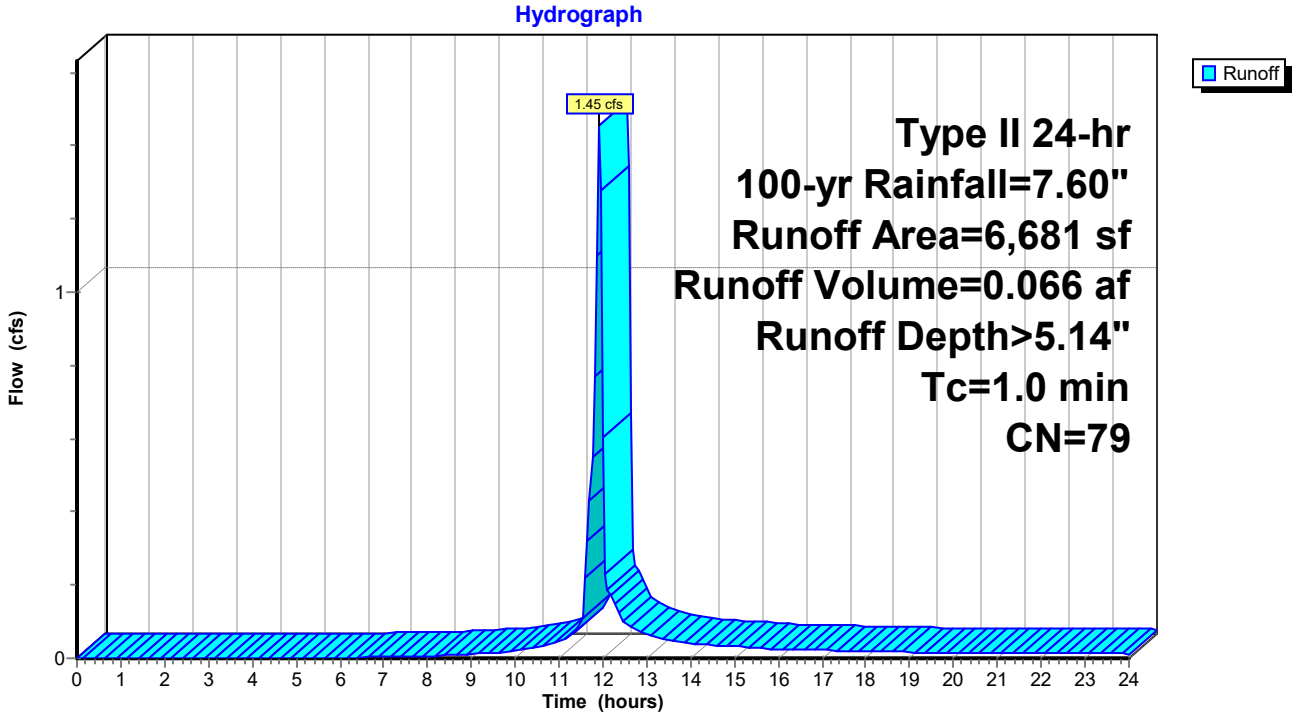
Runoff = 1.45 cfs @ 11.91 hrs, Volume= 0.066 af, Depth> 5.14"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
	5,252	74	>75% Grass cover, Good, HSG C
*	1,429	98	Asphalt & Sidewalk
	6,681	79	Weighted Average
	5,252		78.61% Pervious Area
	1,429		21.39% Impervious Area

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

Subcatchment PR-2A: Parking Lot & SWM Feature (Purple)



Summary for Subcatchment PR-2B: Purple (Roof)

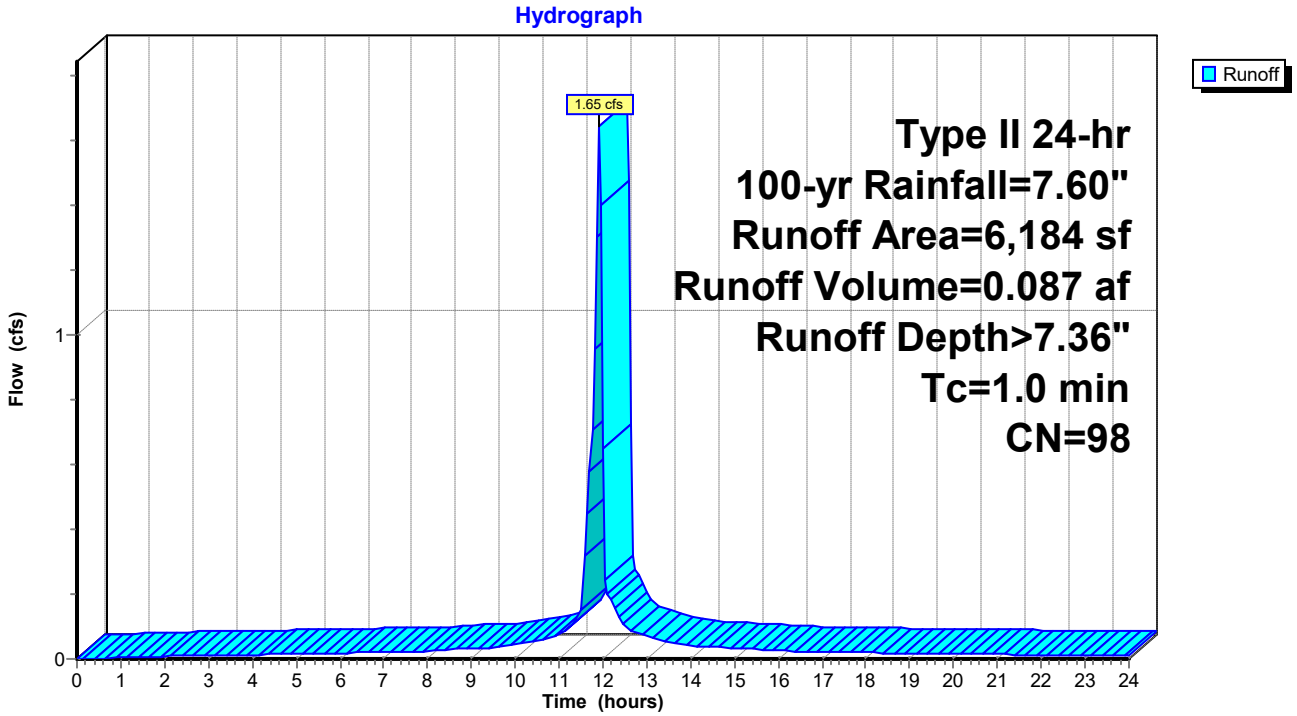
Runoff = 1.65 cfs @ 11.90 hrs, Volume= 0.087 af, Depth> 7.36"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	6,184	98	Roof
	6,184		100.00% Impervious Area

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

Subcatchment PR-2B: Purple (Roof)



Summary for Subcatchment PR-2C: Purple (Roof)

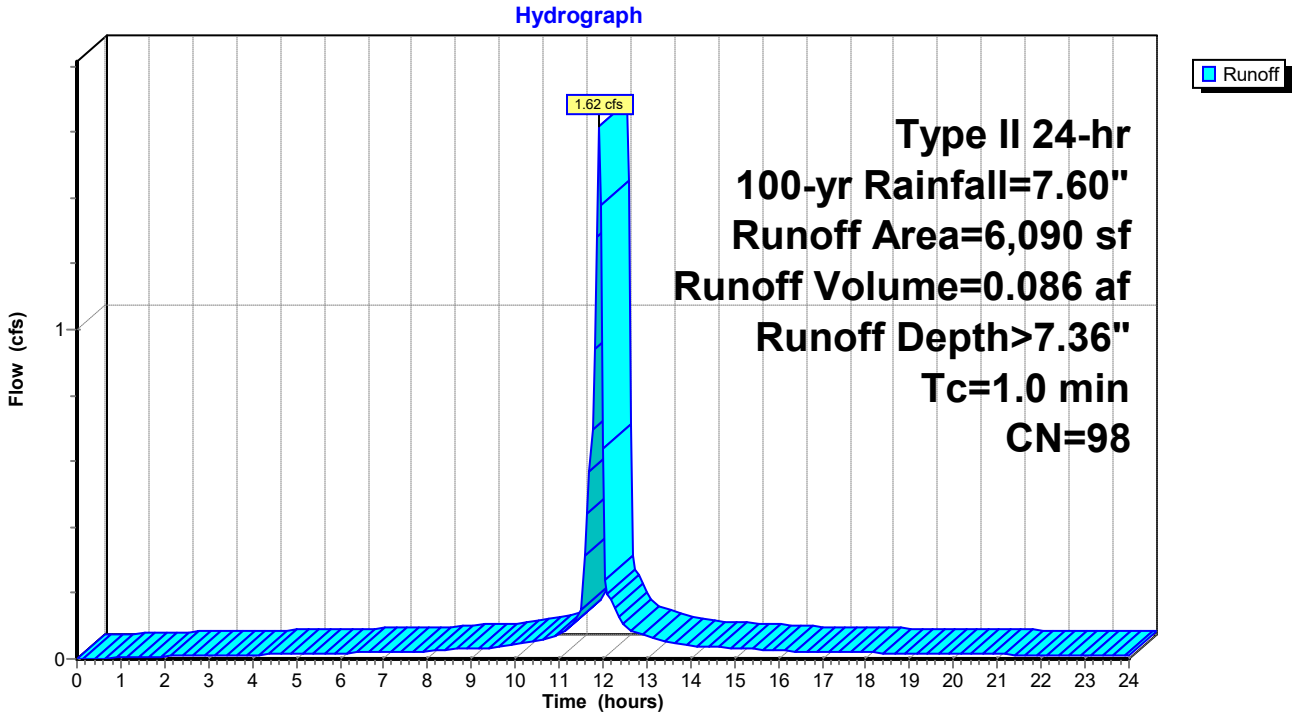
Runoff = 1.62 cfs @ 11.90 hrs, Volume= 0.086 af, Depth> 7.36"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	6,090	98	Roof
	6,090		100.00% Impervious Area

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

Subcatchment PR-2C: Purple (Roof)



Summary for Subcatchment PR-3A: Parking & Sidewalk (Blue A)

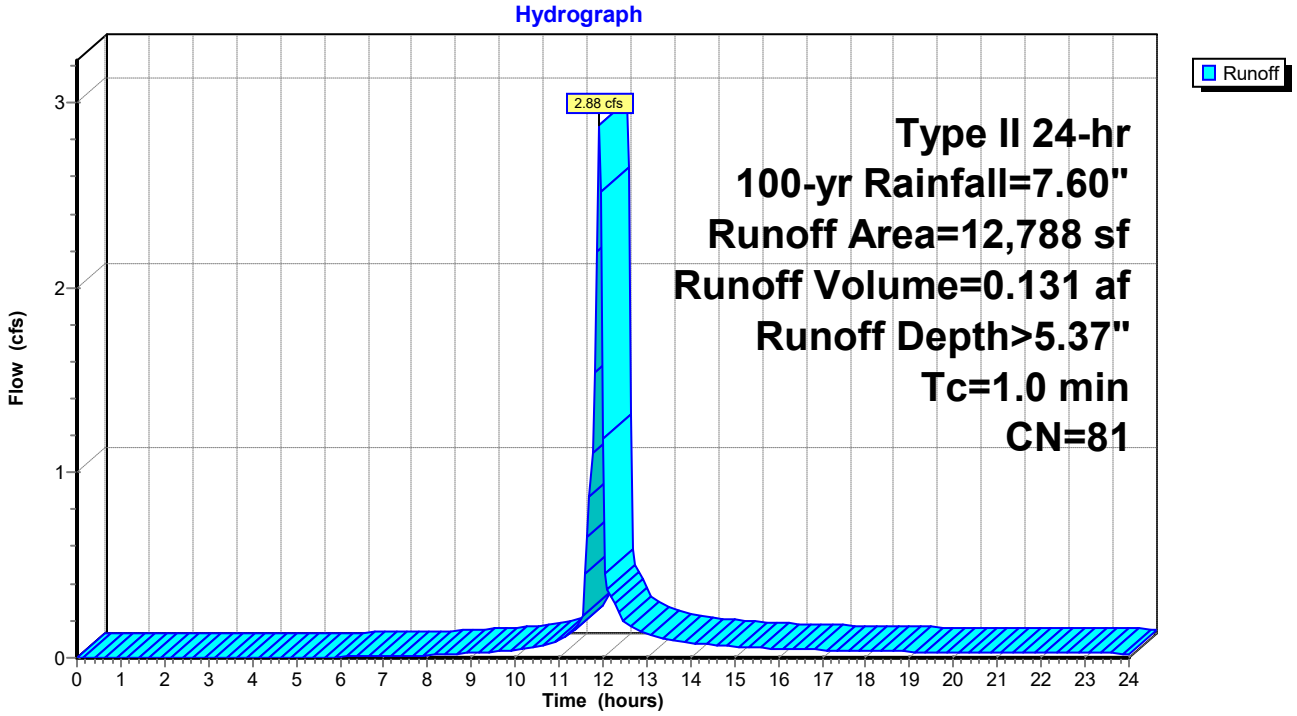
Runoff = 2.88 cfs @ 11.91 hrs, Volume= 0.131 af, Depth> 5.37"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	4,184	98	Parking
	7,361	74	>75% Grass cover, Good, HSG C
*	1,243	70	Permeable Pavers (Wood Good Condition)
	12,788	81	Weighted Average
	8,604		67.28% Pervious Area
	4,184		32.72% Impervious Area

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

Subcatchment PR-3A: Parking & Sidewalk (Blue A)



Summary for Subcatchment PR-3B: Parking & Sidewalk (Blue B)

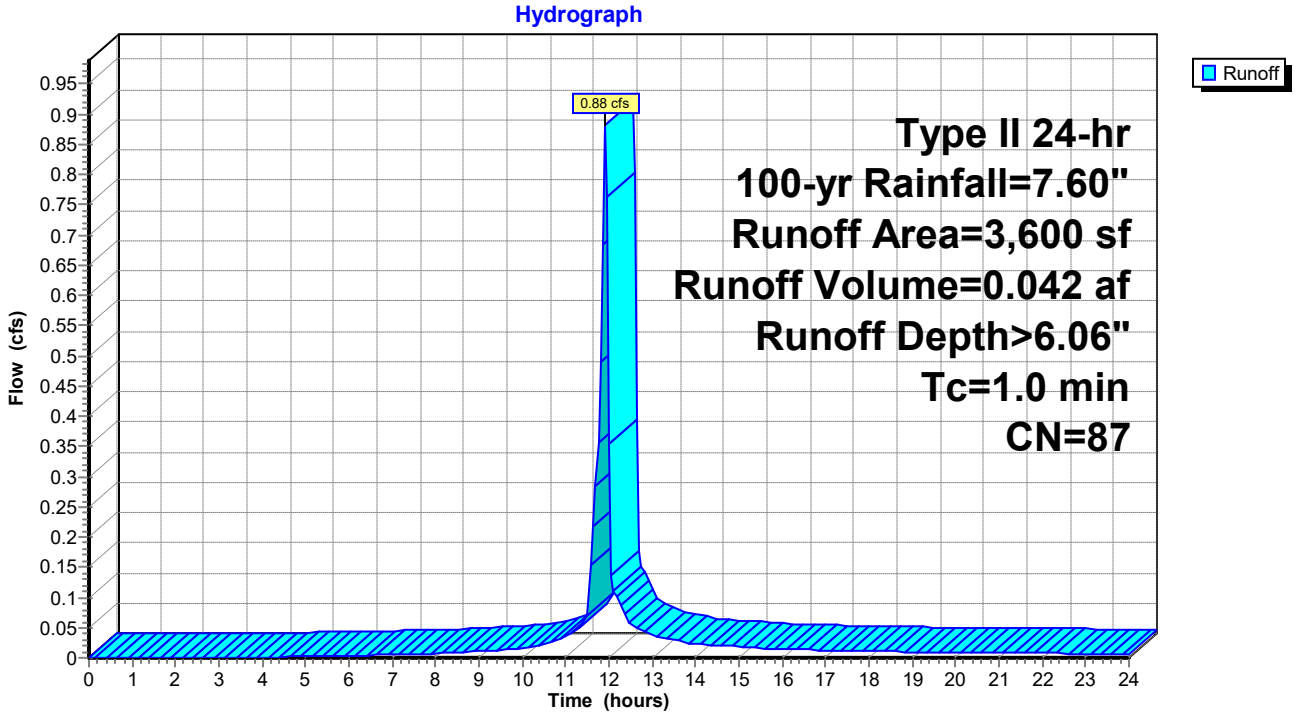
Runoff = 0.88 cfs @ 11.91 hrs, Volume= 0.042 af, Depth> 6.06"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	2,035	98	Parking
	647	74	>75% Grass cover, Good, HSG C
*	918	70	Permeable Pavers (Wood Good Condition)
	3,600	87	Weighted Average
	1,565		43.47% Pervious Area
	2,035		56.53% Impervious Area

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

Subcatchment PR-3B: Parking & Sidewalk (Blue B)



Summary for Subcatchment PR-3C: Parking & Sidewalk (Blue C)

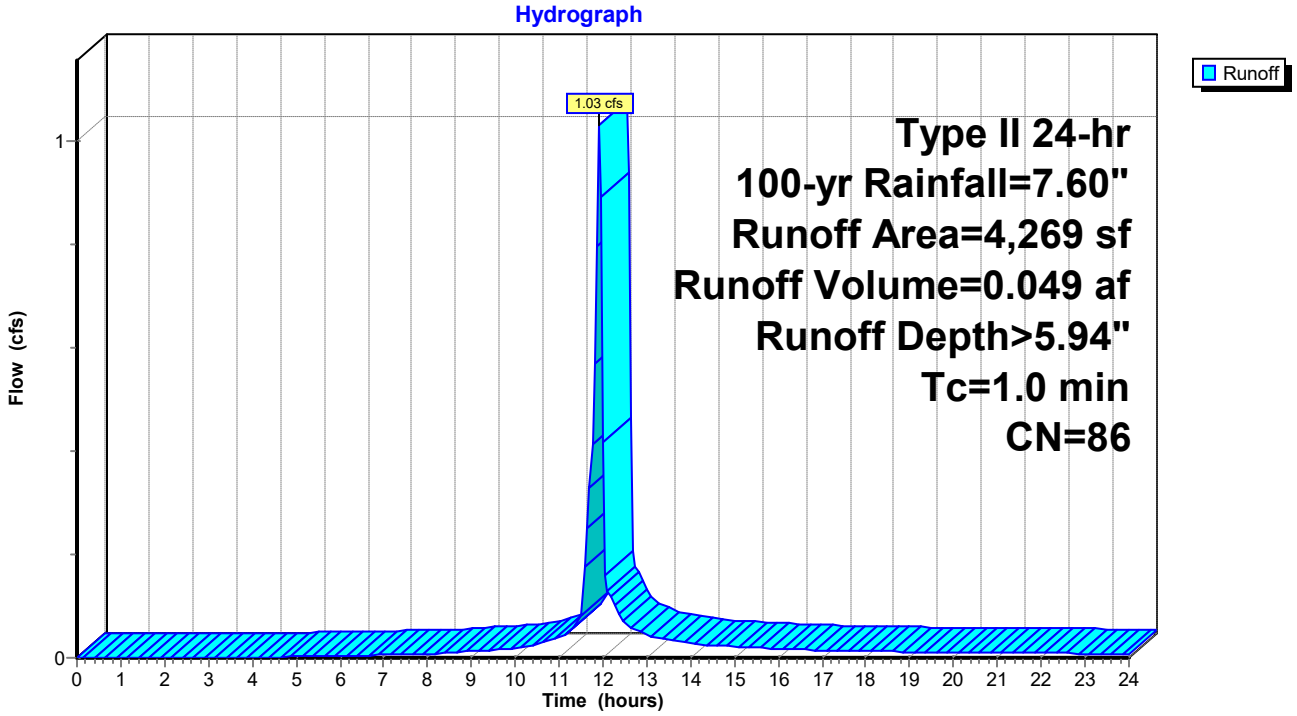
Runoff = 1.03 cfs @ 11.91 hrs, Volume= 0.049 af, Depth> 5.94"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	2,235	98	Parking
	1,441	74	>75% Grass cover, Good, HSG C
*	593	70	Permeable Pavers (Wood Good Condition)
	4,269	86	Weighted Average
	2,034		47.65% Pervious Area
	2,235		52.35% Impervious Area

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

Subcatchment PR-3C: Parking & Sidewalk (Blue C)



Summary for Subcatchment PR-4A: Roof & SWM Feature (Turquoise)

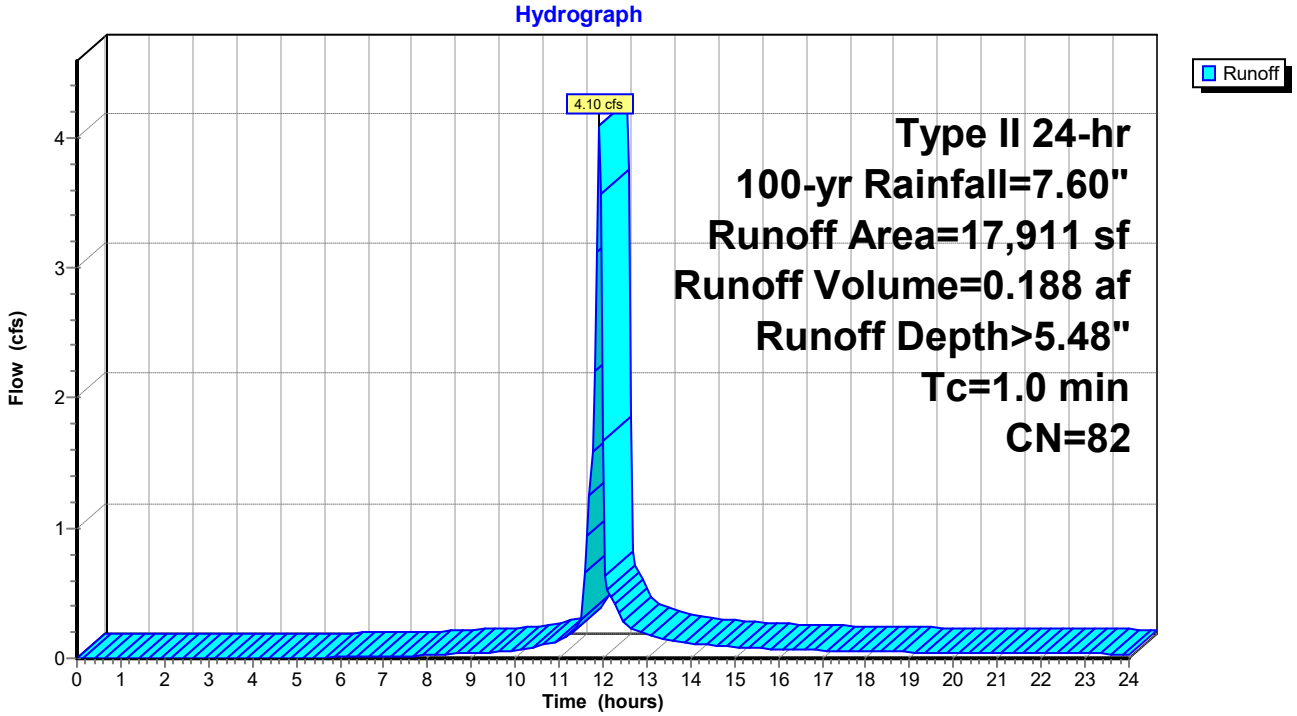
Runoff = 4.10 cfs @ 11.91 hrs, Volume= 0.188 af, Depth> 5.48"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	6,333	98	Roof & Sidewalk
	11,578	74	>75% Grass cover, Good, HSG C
	17,911	82	Weighted Average
	11,578		64.64% Pervious Area
	6,333		35.36% Impervious Area

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

Subcatchment PR-4A: Roof & SWM Feature (Turquoise)



Summary for Subcatchment PR-4B: Parking & Sidewalk (Turquoise 1)

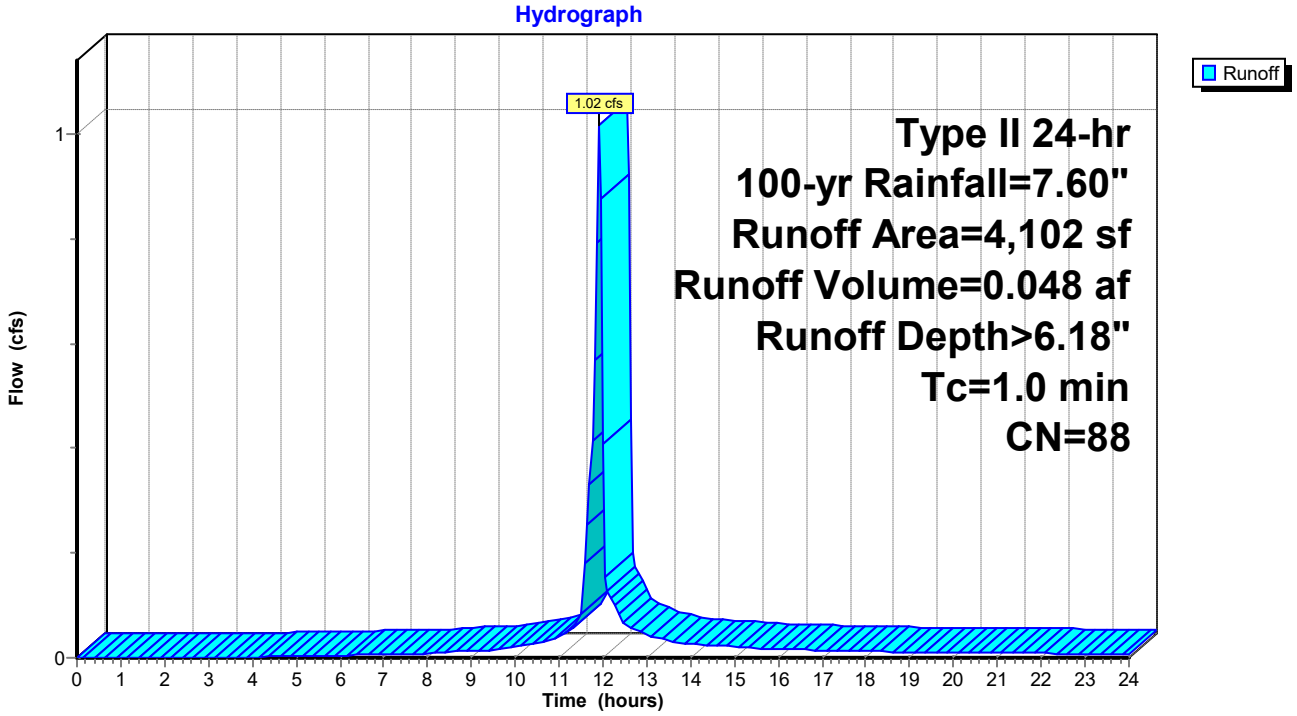
Runoff = 1.02 cfs @ 11.91 hrs, Volume= 0.048 af, Depth> 6.18"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	2,485	98	Parking
	1,455	74	>75% Grass cover, Good, HSG C
*	162	70	Permeable Pavers (Woods Good Condition)
	4,102	88	Weighted Average
	1,617		39.42% Pervious Area
	2,485		60.58% Impervious Area

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

Subcatchment PR-4B: Parking & Sidewalk (Turquoise 1)



Summary for Subcatchment PR-4C: Parking & Sidewalk (Turquoise 2)

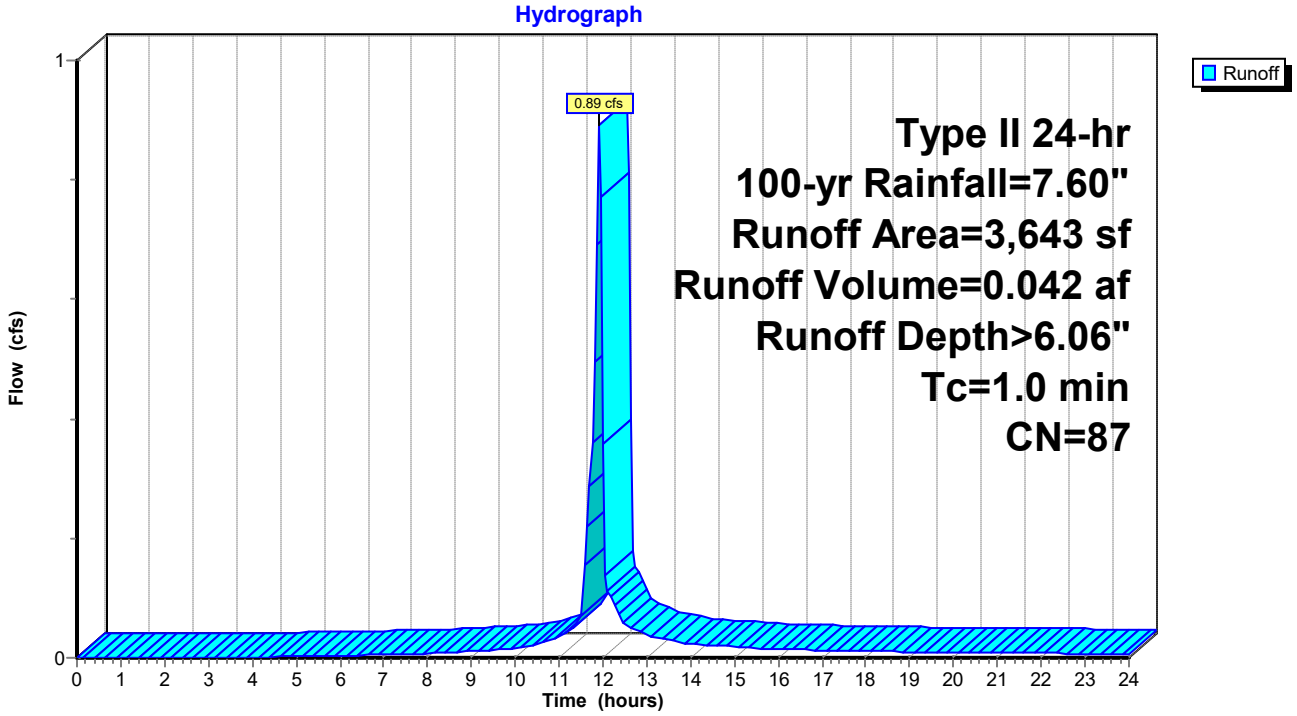
Runoff = 0.89 cfs @ 11.91 hrs, Volume= 0.042 af, Depth> 6.06"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	1,993	98	Parking
	1,306	74	>75% Grass cover, Good, HSG C
*	344	70	Permeable Pavers (Woods Good Condition)
	3,643	87	Weighted Average
	1,650		45.29% Pervious Area
	1,993		54.71% Impervious Area

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

Subcatchment PR-4C: Parking & Sidewalk (Turquoise 2)



Summary for Subcatchment PR-4D: Parking & Sidewalk (Turquoise 3)

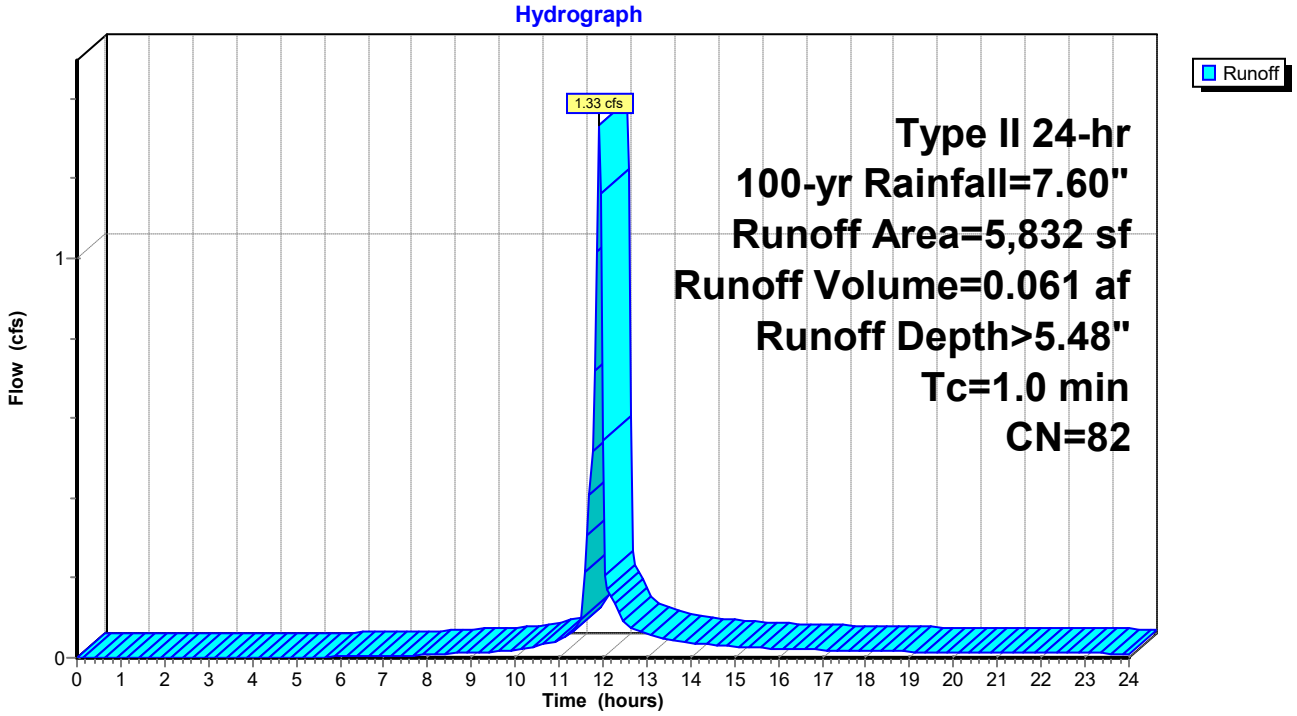
Runoff = 1.33 cfs @ 11.91 hrs, Volume= 0.061 af, Depth> 5.48"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	2,142	98	Parking
	2,955	74	>75% Grass cover, Good, HSG C
*	735	70	Permeable Pavers (Woods Good Condition)
	5,832	82	Weighted Average
	3,690		63.27% Pervious Area
	2,142		36.73% Impervious Area

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

Subcatchment PR-4D: Parking & Sidewalk (Turquoise 3)



Summary for Subcatchment PR-5: Amenity Building & Parking (Red)

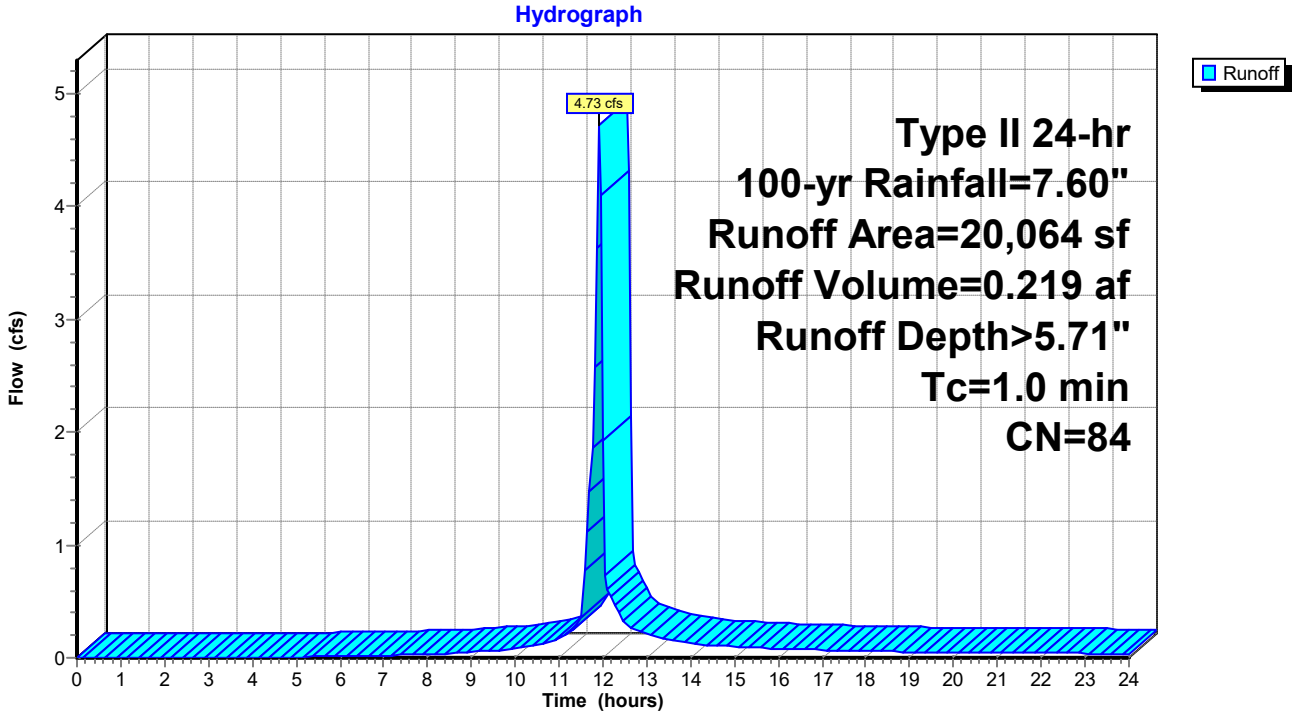
Runoff = 4.73 cfs @ 11.91 hrs, Volume= 0.219 af, Depth> 5.71"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	8,533	98	Building Roof & Parking
*	2,916	72	Pavers (Woods in Good Condition)
*	8,615	74	Lawn Areas
	20,064	84	Weighted Average
	11,531		57.47% Pervious Area
	8,533		42.53% Impervious Area

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

Subcatchment PR-5: Amenity Building & Parking (Red)



Summary for Subcatchment PR-6: Orange

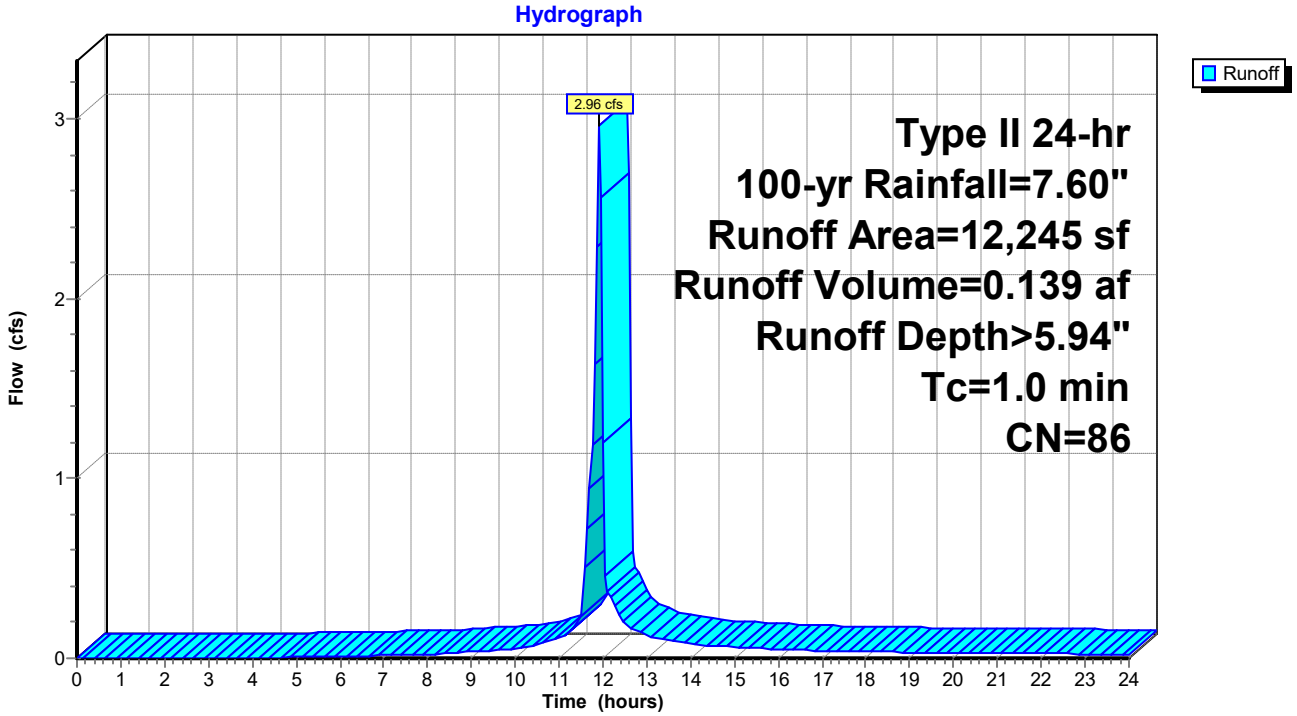
Runoff = 2.96 cfs @ 11.91 hrs, Volume= 0.139 af, Depth> 5.94"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	6,090	98	Roof
	6,155	74	>75% Grass cover, Good, HSG C
	12,245	86	Weighted Average
	6,155		50.27% Pervious Area
	6,090		49.73% Impervious Area

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

Subcatchment PR-6: Orange



Summary for Subcatchment PR-7: Yelllow

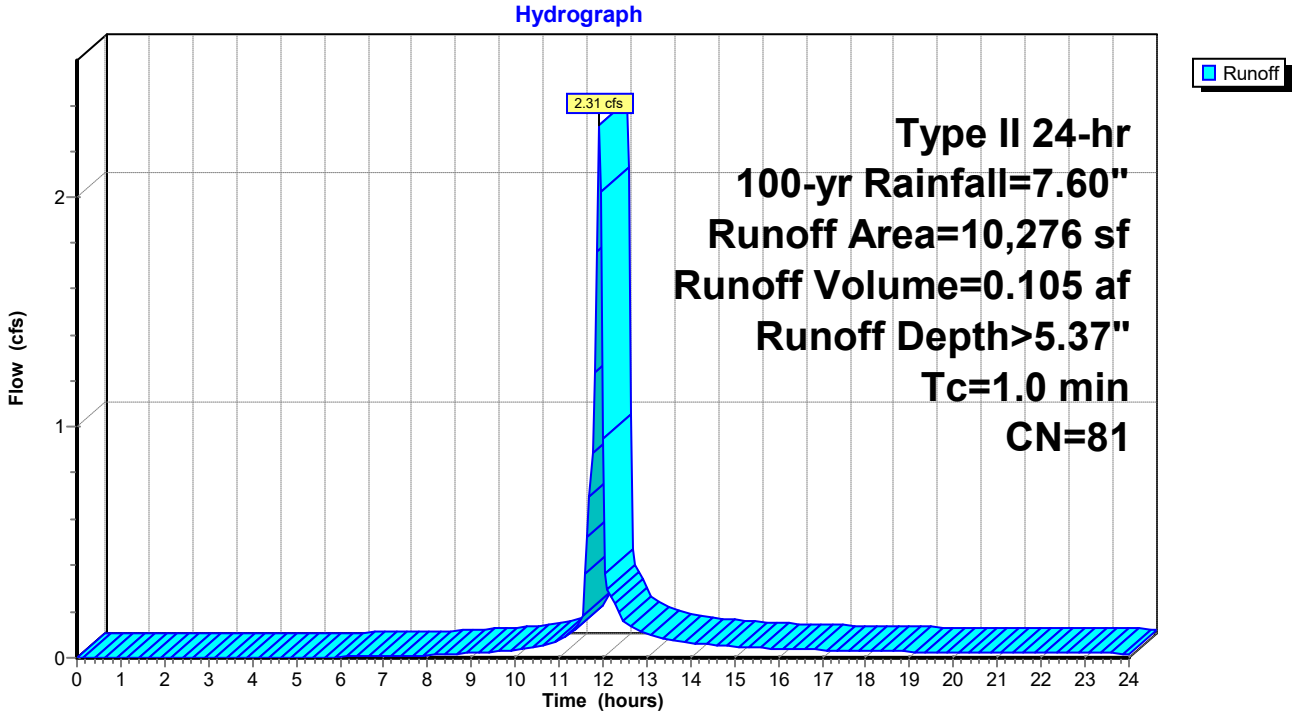
Runoff = 2.31 cfs @ 11.91 hrs, Volume= 0.105 af, Depth> 5.37"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
	3,559	74	>75% Grass cover, Good, HSG C
*	3,240	70	Permeable Pavers (Woods Good Condition)
*	3,477	98	Asphalt & Sidewalk
	10,276	81	Weighted Average
	6,799		66.16% Pervious Area
	3,477		33.84% Impervious Area

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

Subcatchment PR-7: Yelllow



Summary for Subcatchment RD-8: Residue of Property (Adj. North Street)

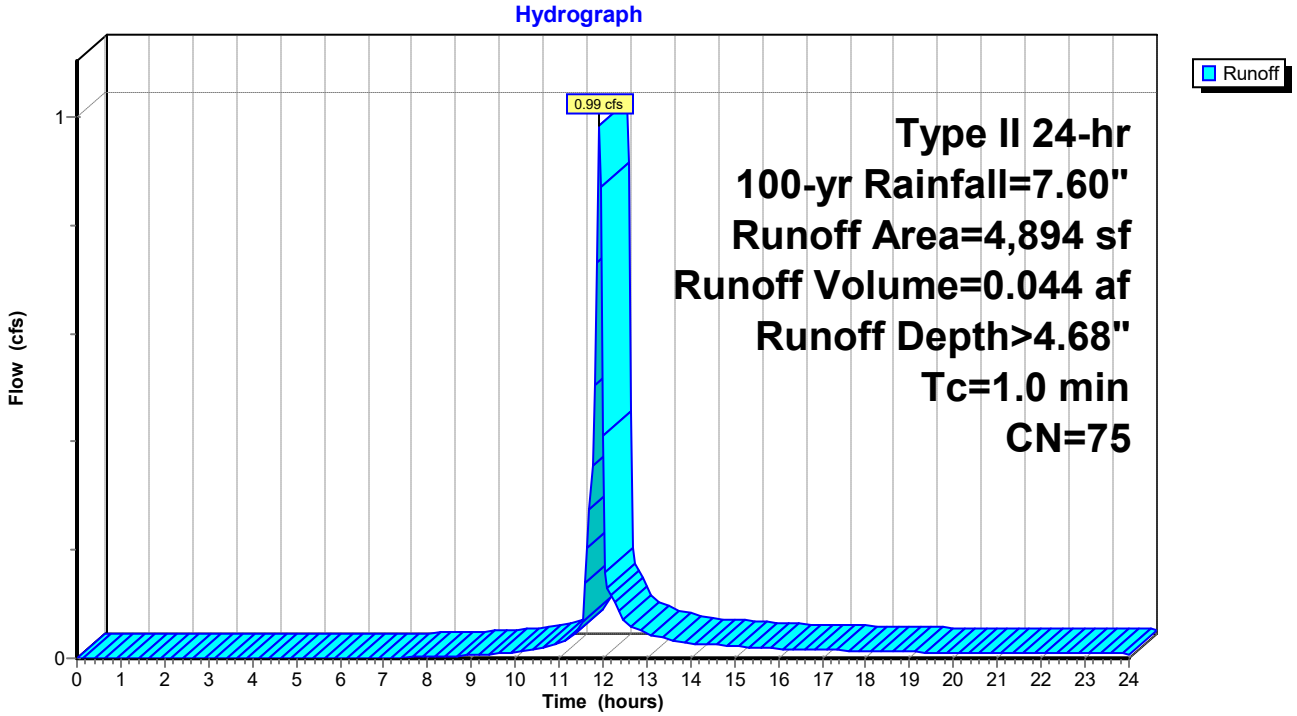
Runoff = 0.99 cfs @ 11.91 hrs, Volume= 0.044 af, Depth> 4.68"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	274	98	Sidewalk
	4,620	74	>75% Grass cover, Good, HSG C
	4,894	75	Weighted Average
	4,620		94.40% Pervious Area
	274		5.60% Impervious Area

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

Subcatchment RD-8: Residue of Property (Adj. North Street)



Summary for Subcatchment RD-9: Leadwalks & Sidewalks by Amenity Building

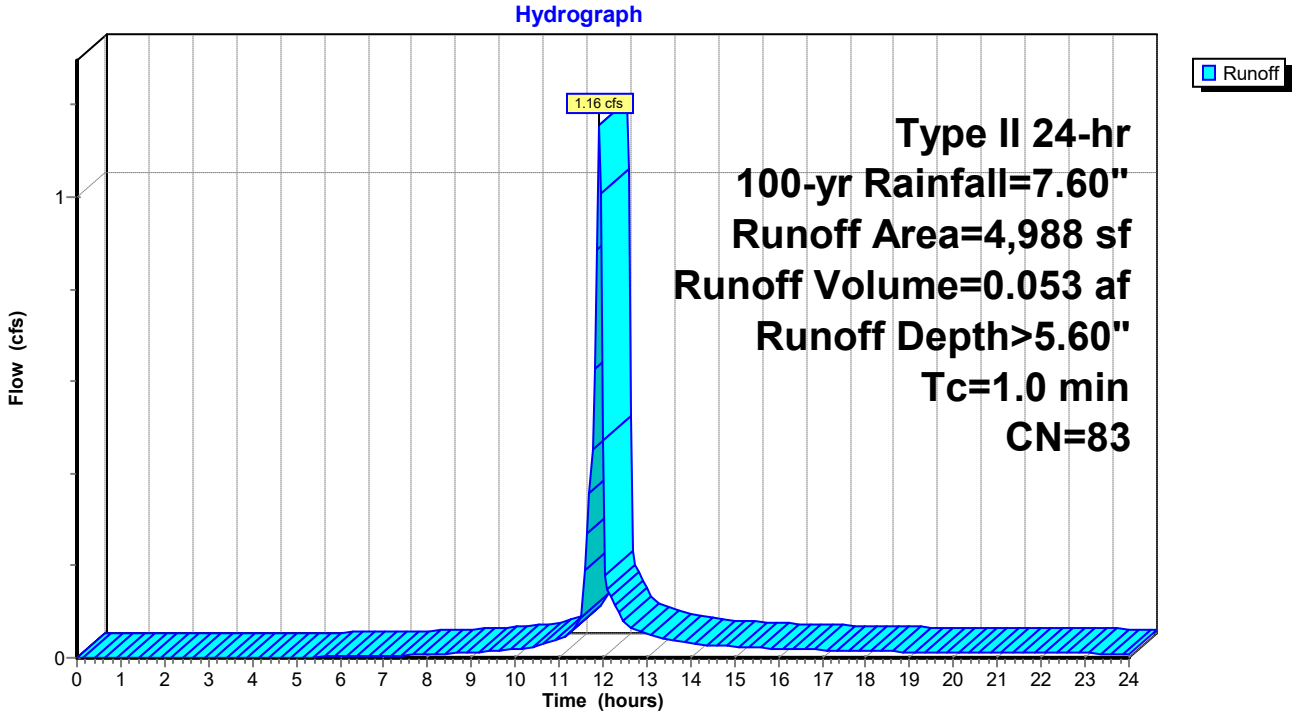
Runoff = 1.16 cfs @ 11.91 hrs, Volume= 0.053 af, Depth> 5.60"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	Area (sf)	CN	Description
*	2,062	98	Lead Walks & Sidewalks
*	1,145	70	Permeable Pavers (Woods in Good Condition)
*	1,781	74	Lawn & Landscape Areas
	4,988	83	Weighted Average
	2,926		58.66% Pervious Area
	2,062		41.34% Impervious Area

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

Subcatchment RD-9: Leadwalks & Sidewalks by Amenity Building



Summary for Pond 3P: MicroBioretention #5

Inflow Area = 0.461 ac, 42.53% Impervious, Inflow Depth > 5.71" for 100-yr event
Inflow = 4.73 cfs @ 11.91 hrs, Volume= 0.219 af
Outflow = 4.54 cfs @ 11.93 hrs, Volume= 0.178 af, Atten= 4%, Lag= 1.4 min
Primary = 4.54 cfs @ 11.93 hrs, Volume= 0.178 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.90' @ 11.93 hrs Surf.Area= 2,017 sf Storage= 2,797 cf

Plug-Flow detention time= 137.7 min calculated for 0.178 af (81% of inflow)
Center-of-Mass det. time= 60.7 min (848.3 - 787.6)

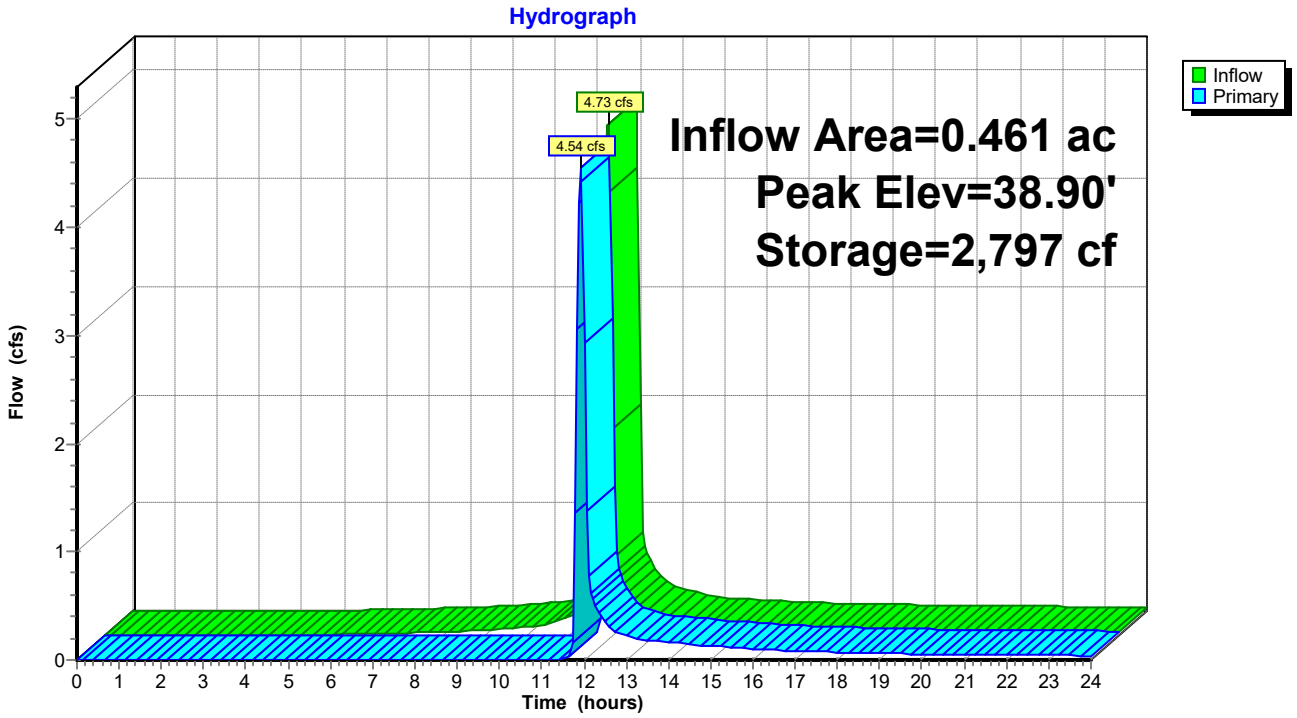
Volume	Invert	Avail.Storage	Storage Description
#1	35.14'	3,338 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.14	650	175.0	0.0	0	0	650
35.15	650	175.0	40.0	3	3	652
37.14	650	175.0	40.0	517	520	1,000
37.15	650	175.0	100.0	6	526	1,002
38.15	1,401	200.0	100.0	1,002	1,528	1,771
39.15	2,252	225.0	100.0	1,810	3,338	2,643

Device	Routing	Invert	Outlet Devices
#1	Primary	35.14'	**12.0" Round 12" N-12 Culvert** L= 57.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.14' / 35.14' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	38.15'	**2.0" W x 6.0" H Vert. 2" Notch** C= 0.600
#3	Device 1	38.65'	**10.7' long Rim MD 374.23** 0 End Contraction(s)

Primary OutFlow Max=4.35 cfs @ 11.93 hrs HW=38.89' TW=0.00' (Dynamic Tailwater)
└─**1=12" N-12 Culvert** (Passes 4.35 cfs of 6.01 cfs potential flow)
  ├─**2=2" Notch** (Orifice Controls 0.28 cfs @ 3.33 fps)
  └─**3=Rim MD 374.23** (Weir Controls 4.07 cfs @ 1.60 fps)

Pond 3P: MicroBioretention #5



Stage-Area-Storage for Pond 3P: MicroBioretention #5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
35.14	650	0
35.19	650	13
35.24	650	26
35.29	650	39
35.34	650	52
35.39	650	65
35.44	650	78
35.49	650	91
35.54	650	104
35.59	650	117
35.64	650	130
35.69	650	143
35.74	650	156
35.79	650	169
35.84	650	182
35.89	650	195
35.94	650	208
35.99	650	221
36.04	650	234
36.09	650	247
36.14	650	260
36.19	650	273
36.24	650	286
36.29	650	299
36.34	650	312
36.39	650	325
36.44	650	338
36.49	650	351
36.54	650	364
36.59	650	377
36.64	650	390
36.69	650	403
36.74	650	416
36.79	650	429
36.84	650	442
36.89	650	455
36.94	650	468
36.99	650	481
37.04	650	494
37.09	650	507
37.14	650	520
37.19	675	553
37.24	706	587
37.29	738	624
37.34	771	661
37.39	804	701
37.44	838	742
37.49	873	785
37.54	909	829
37.59	945	875
37.64	982	924
37.69	1,020	974
37.74	1,059	1,026
37.79	1,098	1,080
37.84	1,138	1,135
37.89	1,178	1,193
37.94	1,220	1,253
37.99	1,262	1,315
38.04	1,304	1,379
38.09	1,348	1,446
38.14	1,392	1,514
38.19	1,431	1,585
38.24	1,469	1,657
38.29	1,508	1,732
38.34	1,547	1,808
38.39	1,587	1,887
38.44	1,627	1,967
38.49	1,668	2,049
38.54	1,709	2,134
38.59	1,751	2,220
38.64	1,793	2,309
38.69	1,836	2,399
38.74	1,879	2,492
38.79	1,922	2,587
38.84	1,967	2,685
38.89	2,011	2,784
38.94	2,057	2,886
38.99	2,102	2,990
39.04	2,149	3,096
39.09	2,195	3,205
39.14	**2,242**	**3,316**

Summary for Pond 5P: 8" HDPE Roof Leader

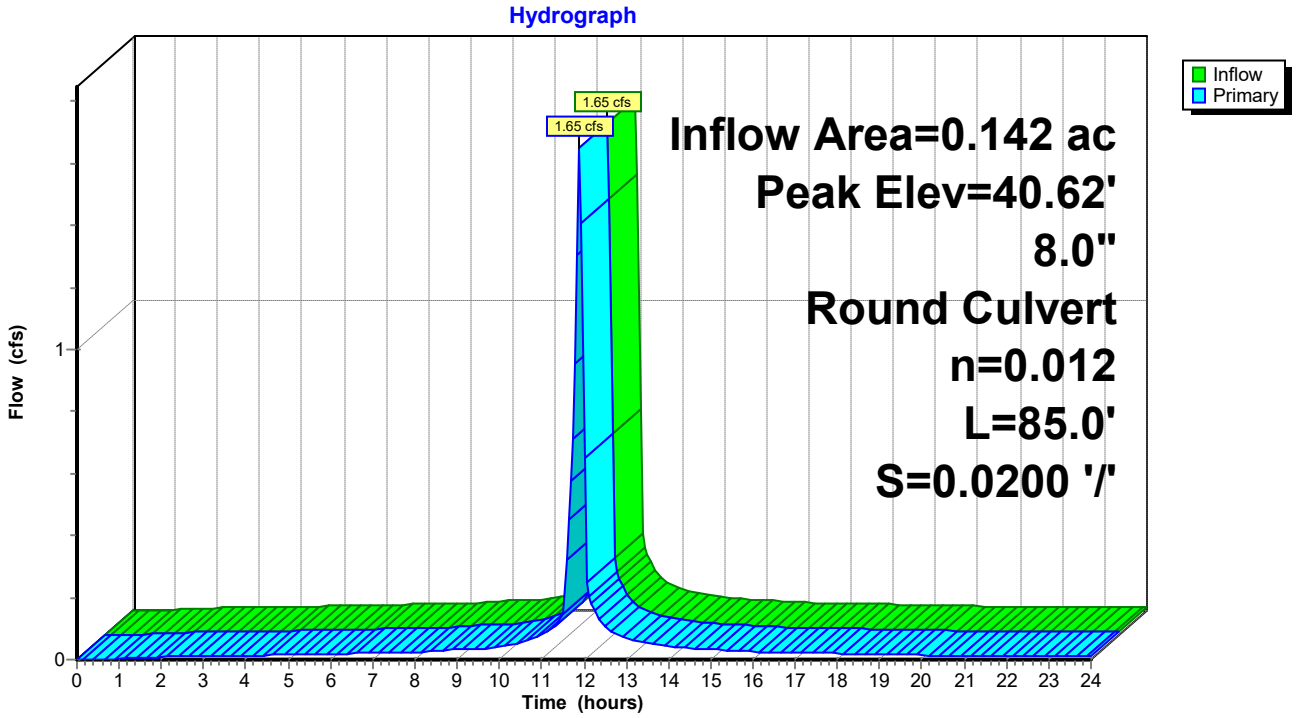
Inflow Area =	0.142 ac,100.00% Impervious, Inflow Depth > 7.36" for 100-yr event				
Inflow =	1.65 cfs @	11.90 hrs,	Volume=	0.087 af	
Outflow =	1.65 cfs @	11.90 hrs,	Volume=	0.087 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.65 cfs @	11.90 hrs,	Volume=	0.087 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 40.62' @ 11.92 hrs
Flood Elev= 42.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.70'	**8.0" Round ADS N-12** L= 85.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 38.70' / 37.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=1.45 cfs @ 11.90 hrs HW=40.56' TW=39.05' (Dynamic Tailwater)
└─**1=ADS N-12** (Outlet Controls 1.45 cfs @ 4.16 fps)

Pond 5P: 8" HDPE Roof Leader



Stage-Area-Storage for Pond 5P: 8" HDPE Roof Leader

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
38.70	**0**	41.25	0
38.75	0	41.30	0
38.80	0	41.35	0
38.85	0	41.40	0
38.90	0	41.45	0
38.95	0	41.50	0
39.00	0	41.55	0
39.05	0	41.60	0
39.10	0	41.65	0
39.15	0	41.70	0
39.20	0	41.75	0
39.25	0	41.80	0
39.30	0	41.85	0
39.35	0	41.90	0
39.40	0	41.95	0
39.45	0	42.00	0
39.50	0	42.05	0
39.55	0	42.10	0
39.60	0	42.15	0
39.65	0	42.20	0
39.70	0	42.25	0
39.75	0	42.30	0
39.80	0	42.35	0
39.85	0	42.40	0
39.90	0	42.45	0
39.95	0	42.50	0
40.00	0		
40.05	0		
40.10	0		
40.15	0		
40.20	0		
40.25	0		
40.30	0		
40.35	0		
40.40	0		
40.45	0		
40.50	0		
40.55	0		
40.60	0		
40.65	0		
40.70	0		
40.75	0		
40.80	0		
40.85	0		
40.90	0		
40.95	0		
41.00	0		
41.05	0		
41.10	0		
41.15	0		
41.20	0		

Summary for Pond 6P: MicroBioRetention #1 & #2

Inflow Area = 0.898 ac, 73.96% Impervious, Inflow Depth > 6.61" for 100-yr event
Inflow = 9.79 cfs @ 11.91 hrs, Volume= 0.494 af
Outflow = 2.14 cfs @ 12.05 hrs, Volume= 0.323 af, Atten= 78%, Lag= 8.9 min
Primary = 2.14 cfs @ 12.05 hrs, Volume= 0.323 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 39.60' @ 12.05 hrs Surf.Area= 4,681 sf Storage= 12,742 cf
Flood Elev= 40.00' Surf.Area= 5,100 sf Storage= 14,707 cf

Plug-Flow detention time= 260.3 min calculated for 0.323 af (65% of inflow)
Center-of-Mass det. time= 155.8 min (907.9 - 752.2)

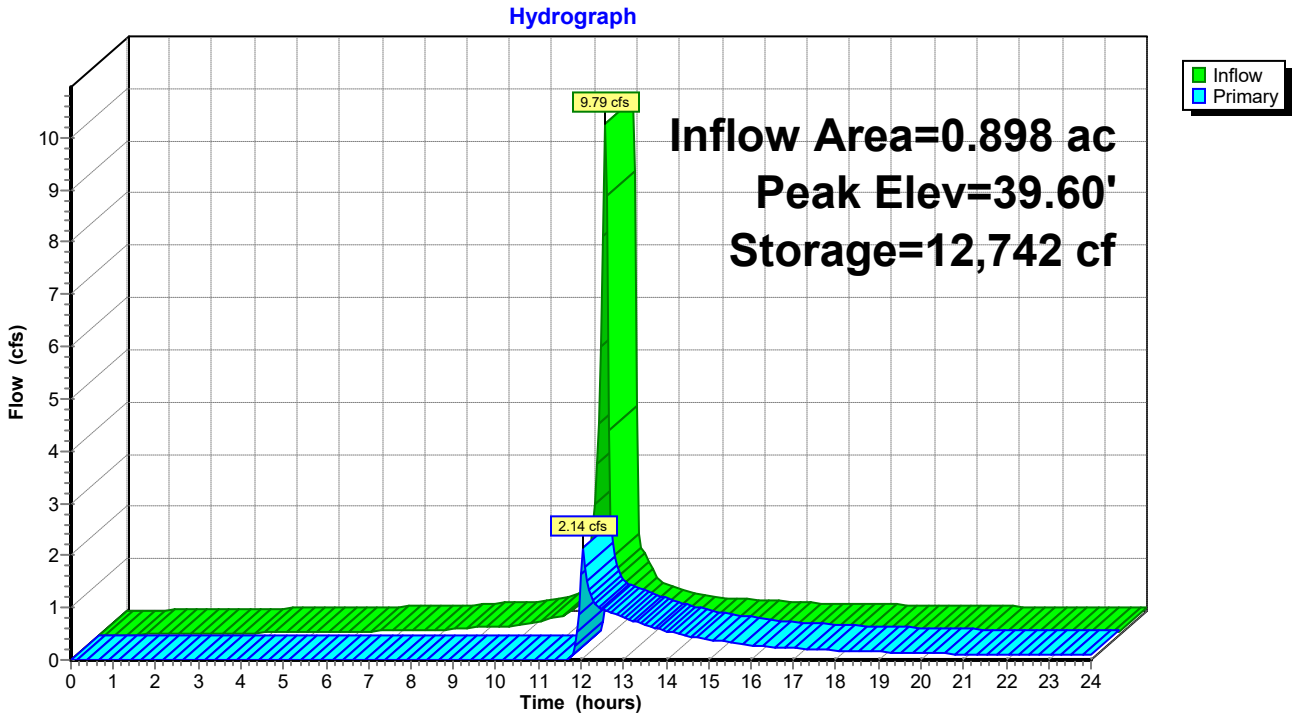
Volume	Invert	Avail.Storage	Storage Description
#1	32.99'	14,707 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.99	2,323	129.8	0.0	0	0	2,323
33.00	2,323	129.8	40.0	9	9	2,324
36.99	2,323	129.8	40.0	3,708	3,717	2,842
37.00	2,323	129.8	100.0	23	3,740	2,843
38.00	3,194	289.0	100.0	2,747	6,487	8,153
40.00	5,100	278.0	100.0	8,220	14,707	8,907

Device	Routing	Invert	Outlet Devices
#1	Primary	32.00'	**12.0" Round 12" HDPE** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 32.00' / 31.95' S= 0.0018 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	38.00'	**2.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	39.50'	**10.7' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=2.11 cfs @ 12.05 hrs HW=39.60' TW=0.00' (Dynamic Tailwater)
└─**1=12" HDPE** (Passes 2.11 cfs of 10.07 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.06 cfs @ 4.25 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 1.04 cfs @ 1.01 fps)

Pond 6P: MicroBioRetention #1 & #2



Stage-Area-Storage for Pond 6P: MicroBioRetention #1 & #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
32.99	2,323	0
33.09	2,323	93
33.19	2,323	186
33.29	2,323	279
33.39	2,323	372
33.49	2,323	465
33.59	2,323	558
33.69	2,323	650
33.79	2,323	743
33.89	2,323	836
33.99	2,323	929
34.09	2,323	1,022
34.19	2,323	1,115
34.29	2,323	1,208
34.39	2,323	1,301
34.49	2,323	1,394
34.59	2,323	1,487
34.69	2,323	1,580
34.79	2,323	1,673
34.89	2,323	1,765
34.99	2,323	1,858
35.09	2,323	1,951
35.19	2,323	2,044
35.29	2,323	2,137
35.39	2,323	2,230
35.49	2,323	2,323
35.59	2,323	2,416
35.69	2,323	2,509
35.79	2,323	2,602
35.89	2,323	2,695
35.99	2,323	2,788
36.09	2,323	2,881
36.19	2,323	2,973
36.29	2,323	3,066
36.39	2,323	3,159
36.49	2,323	3,252
36.59	2,323	3,345
36.69	2,323	3,438
36.79	2,323	3,531
36.89	2,323	3,624
36.99	2,323	3,717
37.09	2,396	3,952
37.19	2,478	4,196
37.29	2,561	4,448
37.39	2,646	4,708
37.49	2,732	4,977
37.59	2,820	5,255
37.69	2,909	5,541
37.79	3,000	5,837
37.89	3,091	6,141
37.99	3,185	6,455
38.09	3,270	6,778
38.19	3,356	7,109
38.29	3,443	7,449
38.39	3,531	7,798
38.49	3,620	8,155
38.59	3,710	8,522
38.69	3,801	8,897
38.79	3,894	9,282
38.89	3,987	9,676
38.99	4,082	10,080
39.09	4,178	10,493
39.19	4,275	10,915
39.29	4,373	11,348
39.39	4,472	11,790
39.49	4,572	12,242
39.59	4,673	12,704
39.69	4,775	13,177
39.79	4,879	13,659
39.89	4,984	14,152
39.99	**5,089**	**14,656**

Summary for Pond 8P: MicroBioRetention #3 & #4

Inflow Area = 1.714 ac, 41.48% Impervious, Inflow Depth > 5.29" for 100-yr event
Inflow = 16.16 cfs @ 11.92 hrs, Volume= 0.755 af
Outflow = 4.55 cfs @ 12.07 hrs, Volume= 0.531 af, Atten= 72%, Lag= 9.2 min
Primary = 3.48 cfs @ 12.07 hrs, Volume= 0.511 af
Secondary = 1.07 cfs @ 12.07 hrs, Volume= 0.020 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.23' @ 12.07 hrs Surf.Area= 6,894 sf Storage= 16,698 cf

Plug-Flow detention time= 226.3 min calculated for 0.530 af (70% of inflow)
Center-of-Mass det. time= 129.4 min (930.5 - 801.1)

Volume	Invert	Avail.Storage	Storage Description
#1	31.59'	19,369 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

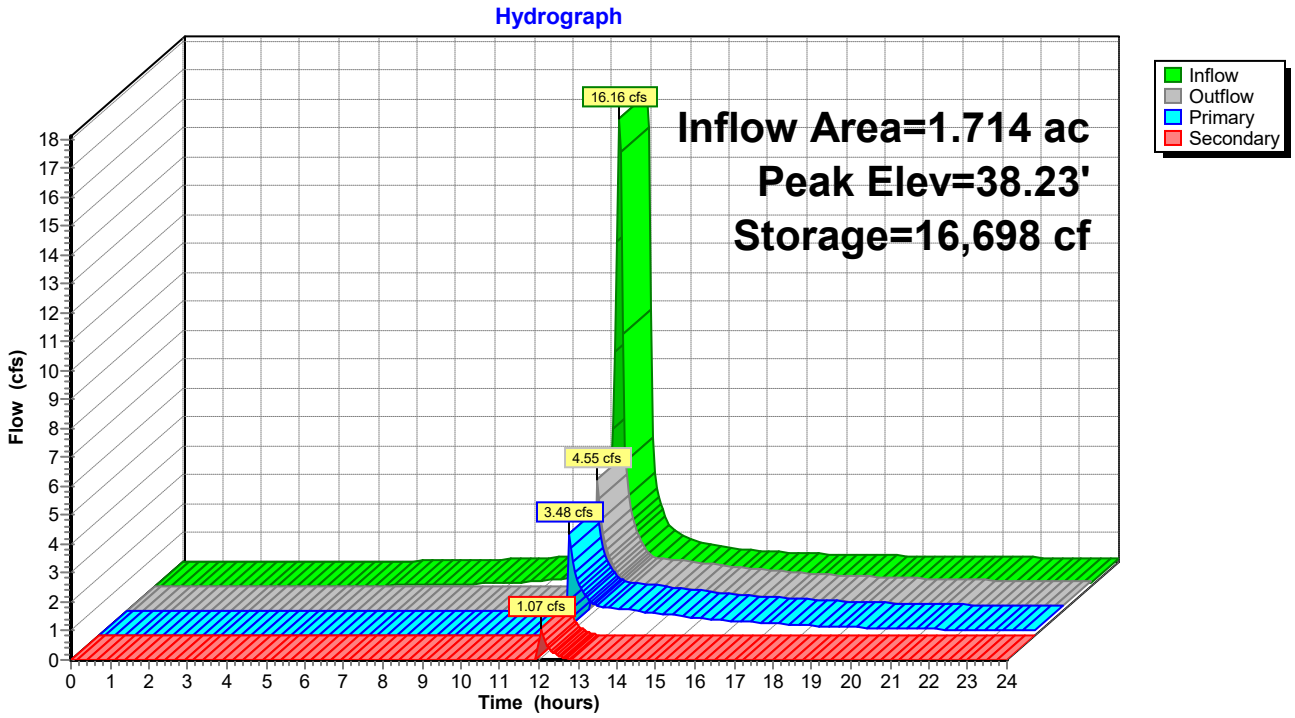
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
31.59	2,680	314.0	0.0	0	0	2,680
31.60	2,680	314.0	40.0	11	11	2,683
35.59	2,680	314.0	40.0	4,277	4,288	3,936
35.60	2,680	314.0	100.0	27	4,315	3,939
37.60	5,892	454.0	100.0	8,364	12,679	12,530
38.60	7,521	353.0	100.0	6,690	19,369	19,028

Device	Routing	Invert	Outlet Devices
#1	Primary	31.60'	**18.0" Round 18" HDPE** L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 31.60' / 30.95' S= 0.0542 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	36.60'	**2.0" W x 18.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	38.10'	**16.3' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	38.10'	**10.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=3.19 cfs @ 12.07 hrs HW=38.22' TW=0.00' (Dynamic Tailwater)
└─**1=18" HDPE** (Passes 3.19 cfs of 20.61 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.08 cfs @ 4.31 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 2.12 cfs @ 1.12 fps)

Secondary OutFlow Max=0.95 cfs @ 12.07 hrs HW=38.22' TW=0.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 0.95 cfs @ 0.81 fps)

Pond 8P: MicroBioRetention #3 & #4



Stage-Area-Storage for Pond 8P: MicroBioRetention #3 & #4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
31.59	2,680	0
31.69	2,680	107
31.79	2,680	214
31.89	2,680	322
31.99	2,680	429
32.09	2,680	536
32.19	2,680	643
32.29	2,680	750
32.39	2,680	858
32.49	2,680	965
32.59	2,680	1,072
32.69	2,680	1,179
32.79	2,680	1,286
32.89	2,680	1,394
32.99	2,680	1,501
33.09	2,680	1,608
33.19	2,680	1,715
33.29	2,680	1,822
33.39	2,680	1,930
33.49	2,680	2,037
33.59	2,680	2,144
33.69	2,680	2,251
33.79	2,680	2,358
33.89	2,680	2,466
33.99	2,680	2,573
34.09	2,680	2,680
34.19	2,680	2,787
34.29	2,680	2,894
34.39	2,680	3,002
34.49	2,680	3,109
34.59	2,680	3,216
34.69	2,680	3,323
34.79	2,680	3,430
34.89	2,680	3,538
34.99	2,680	3,645
35.09	2,680	3,752
35.19	2,680	3,859
35.29	2,680	3,966
35.39	2,680	4,074
35.49	2,680	4,181
35.59	2,680	4,288
35.69	2,798	4,561
35.79	2,931	4,848
35.89	3,068	5,148
35.99	3,208	5,461
36.09	3,351	5,789
36.19	3,498	6,132
36.29	3,647	6,489
36.39	3,799	6,861
36.49	3,955	7,249
36.59	4,114	7,652
36.69	4,276	8,072
36.79	4,441	8,508
36.89	4,609	8,960
36.99	4,780	9,430
37.09	4,954	9,916
37.19	5,132	10,421
37.29	5,312	10,943
37.39	5,496	11,483
37.49	5,683	12,042
37.59	5,873	12,620
37.69	6,030	13,215
37.79	6,186	13,826
37.89	6,344	14,452
37.99	6,504	15,095
38.09	6,665	15,753
38.19	6,829	16,428
38.29	6,995	17,119
38.39	7,162	17,827
38.49	7,332	18,552
38.59	**7,504**	**19,293**

Summary for Pond 10P: 8" HDPE Roof Leader

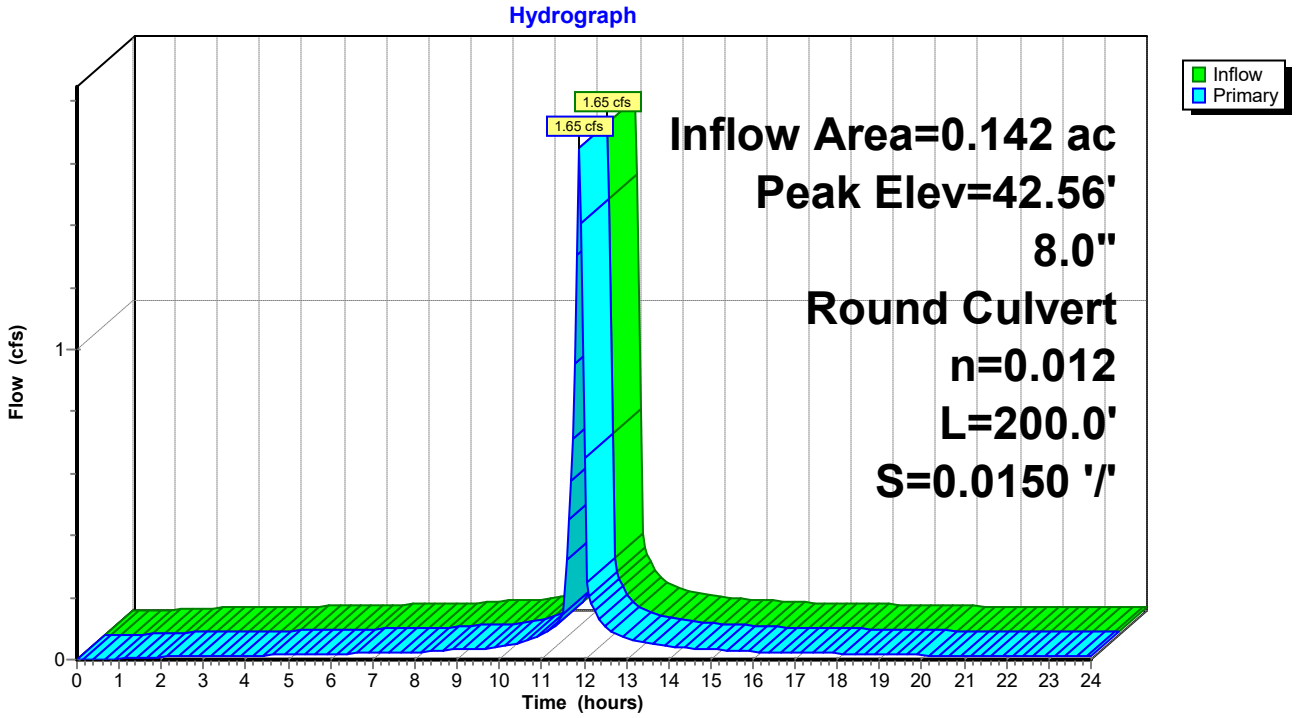
Inflow Area =	0.142 ac,100.00% Impervious, Inflow Depth > 7.36" for 100-yr event				
Inflow =	1.65 cfs @	11.90 hrs,	Volume=	0.087 af	
Outflow =	1.65 cfs @	11.90 hrs,	Volume=	0.087 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.65 cfs @	11.90 hrs,	Volume=	0.087 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 42.56' @ 11.90 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	41.00'	**8.0" Round 8" N-12** L= 200.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 41.00' / 38.00' S= 0.0150 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=1.58 cfs @ 11.90 hrs HW=42.53' TW=39.05' (Dynamic Tailwater)
└─**1=8" N-12** (Outlet Controls 1.58 cfs @ 4.54 fps)

Pond 10P: 8" HDPE Roof Leader



Stage-Area-Storage for Pond 10P: 8" HDPE Roof Leader

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
41.00	**0**	42.02	0
41.02	0	42.04	0
41.04	0	42.06	0
41.06	0	42.08	0
41.08	0	42.10	0
41.10	0	42.12	0
41.12	0	42.14	0
41.14	0	42.16	0
41.16	0	42.18	0
41.18	0	42.20	0
41.20	0	42.22	0
41.22	0	42.24	0
41.24	0	42.26	0
41.26	0	42.28	0
41.28	0	42.30	0
41.30	0	42.32	0
41.32	0	42.34	0
41.34	0	42.36	0
41.36	0	42.38	0
41.38	0	42.40	0
41.40	0	42.42	0
41.42	0	42.44	0
41.44	0	42.46	0
41.46	0	42.48	0
41.48	0	42.50	0
41.50	0	42.52	0
41.52	0	42.54	0
41.54	0	42.56	0
41.56	0		
41.58	0		
41.60	0		
41.62	0		
41.64	0		
41.66	0		
41.68	0		
41.70	0		
41.72	0		
41.74	0		
41.76	0		
41.78	0		
41.80	0		
41.82	0		
41.84	0		
41.86	0		
41.88	0		
41.90	0		
41.92	0		
41.94	0		
41.96	0		
41.98	0		
42.00	0		

Summary for Pond 12P: 8" HDPE Roof Leader

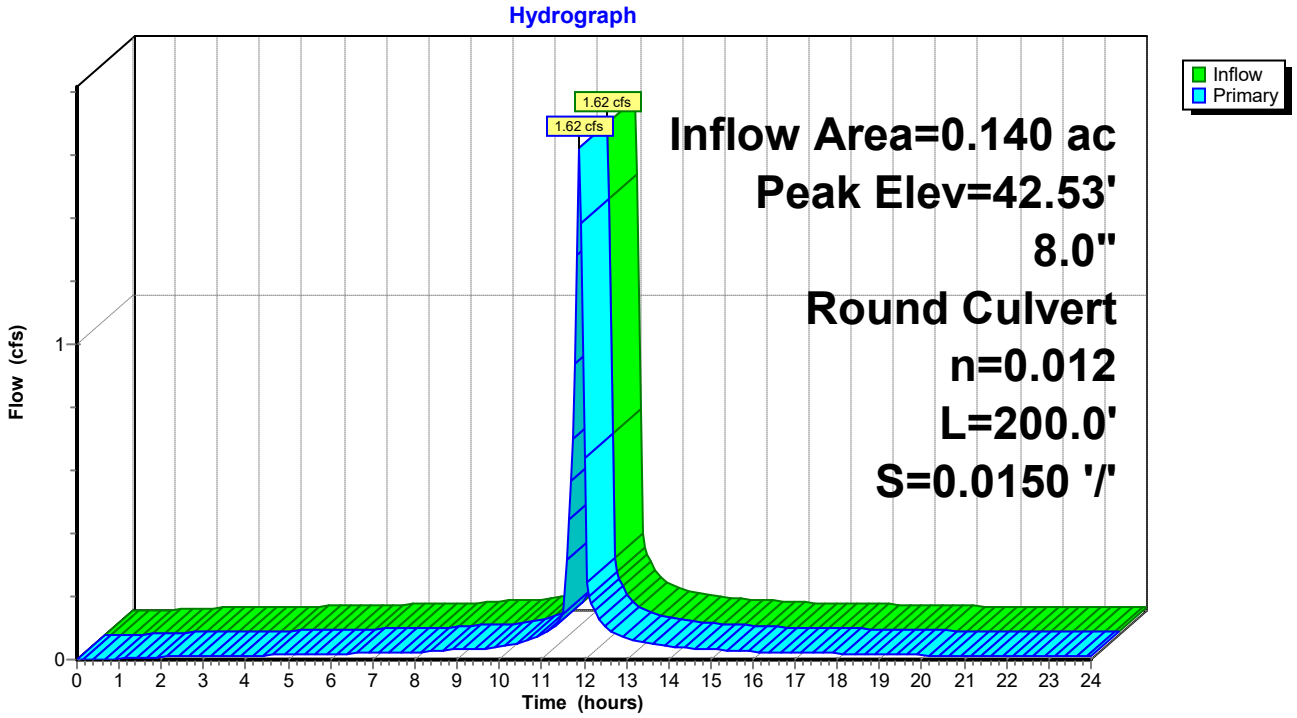
Inflow Area =	0.140 ac,100.00% Impervious, Inflow Depth > 7.36" for 100-yr event				
Inflow =	1.62 cfs @	11.90 hrs,	Volume=	0.086 af	
Outflow =	1.62 cfs @	11.90 hrs,	Volume=	0.086 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.62 cfs @	11.90 hrs,	Volume=	0.086 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 42.53' @ 11.90 hrs
Flood Elev= 42.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	41.00'	**8.0" Round 8" N-12** L= 200.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 41.00' / 38.00' S= 0.0150 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=1.58 cfs @ 11.90 hrs HW=42.50' TW=39.05' (Dynamic Tailwater)
└─**1=8" N-12** (Outlet Controls 1.58 cfs @ 4.52 fps)

Pond 12P: 8" HDPE Roof Leader



Stage-Area-Storage for Pond 12P: 8" HDPE Roof Leader

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
41.00	**0**	42.02	0
41.02	0	42.04	0
41.04	0	42.06	0
41.06	0	42.08	0
41.08	0	42.10	0
41.10	0	42.12	0
41.12	0	42.14	0
41.14	0	42.16	0
41.16	0	42.18	0
41.18	0	42.20	0
41.20	0	42.22	0
41.22	0	42.24	0
41.24	0	42.26	0
41.26	0	42.28	0
41.28	0	42.30	0
41.30	0	42.32	0
41.32	0	42.34	0
41.34	0	42.36	0
41.36	0	42.38	0
41.38	0	42.40	0
41.40	0	42.42	0
41.42	0	42.44	0
41.44	0	42.46	0
41.46	0	42.48	0
41.48	0	42.50	0
41.50	0	42.52	0
41.52	0		
41.54	0		
41.56	0		
41.58	0		
41.60	0		
41.62	0		
41.64	0		
41.66	0		
41.68	0		
41.70	0		
41.72	0		
41.74	0		
41.76	0		
41.78	0		
41.80	0		
41.82	0		
41.84	0		
41.86	0		
41.88	0		
41.90	0		
41.92	0		
41.94	0		
41.96	0		
41.98	0		
42.00	0		

Summary for Pond 18P: 15" HDPE Stormdrain

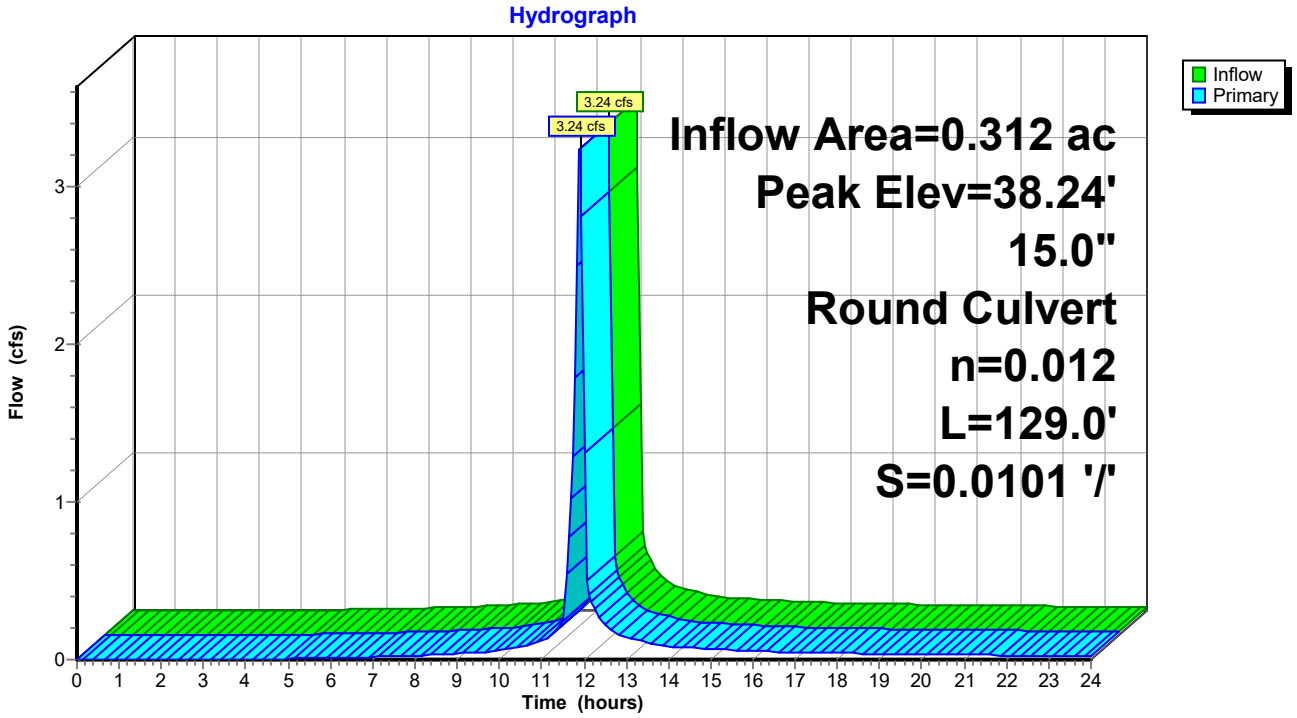
Inflow Area = 0.312 ac, 48.76% Impervious, Inflow Depth > 5.85" for 100-yr event
Inflow = 3.24 cfs @ 11.91 hrs, Volume= 0.152 af
Outflow = 3.24 cfs @ 11.91 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min
Primary = 3.24 cfs @ 11.91 hrs, Volume= 0.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.24' @ 12.12 hrs
Flood Elev= 40.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.90'	**15.0" Round CPP_Round 15"** L= 129.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 36.90' / 35.60' S= 0.0101 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.30 cfs @ 11.91 hrs HW=37.93' TW=37.42' (Dynamic Tailwater)
└─**1=CPP_Round 15"** (Outlet Controls 2.30 cfs @ 2.90 fps)

Pond 18P: 15" HDPE Stormdrain



Stage-Area-Storage for Pond 18P: 15" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
36.90	**0**	39.45	0
36.95	0	39.50	0
37.00	0	39.55	0
37.05	0	39.60	0
37.10	0	39.65	0
37.15	0	39.70	0
37.20	0	39.75	0
37.25	0	39.80	0
37.30	0	39.85	0
37.35	0	39.90	0
37.40	0	39.95	0
37.45	0	40.00	0
37.50	0	40.05	0
37.55	0	40.10	0
37.60	0	40.15	0
37.65	0		
37.70	0		
37.75	0		
37.80	0		
37.85	0		
37.90	0		
37.95	0		
38.00	0		
38.05	0		
38.10	0		
38.15	0		
38.20	0		
38.25	0		
38.30	0		
38.35	0		
38.40	0		
38.45	0		
38.50	0		
38.55	0		
38.60	0		
38.65	0		
38.70	0		
38.75	0		
38.80	0		
38.85	0		
38.90	0		
38.95	0		
39.00	0		
39.05	0		
39.10	0		
39.15	0		
39.20	0		
39.25	0		
39.30	0		
39.35	0		
39.40	0		

Summary for Pond 20P: 15" HDPE Stormdrain

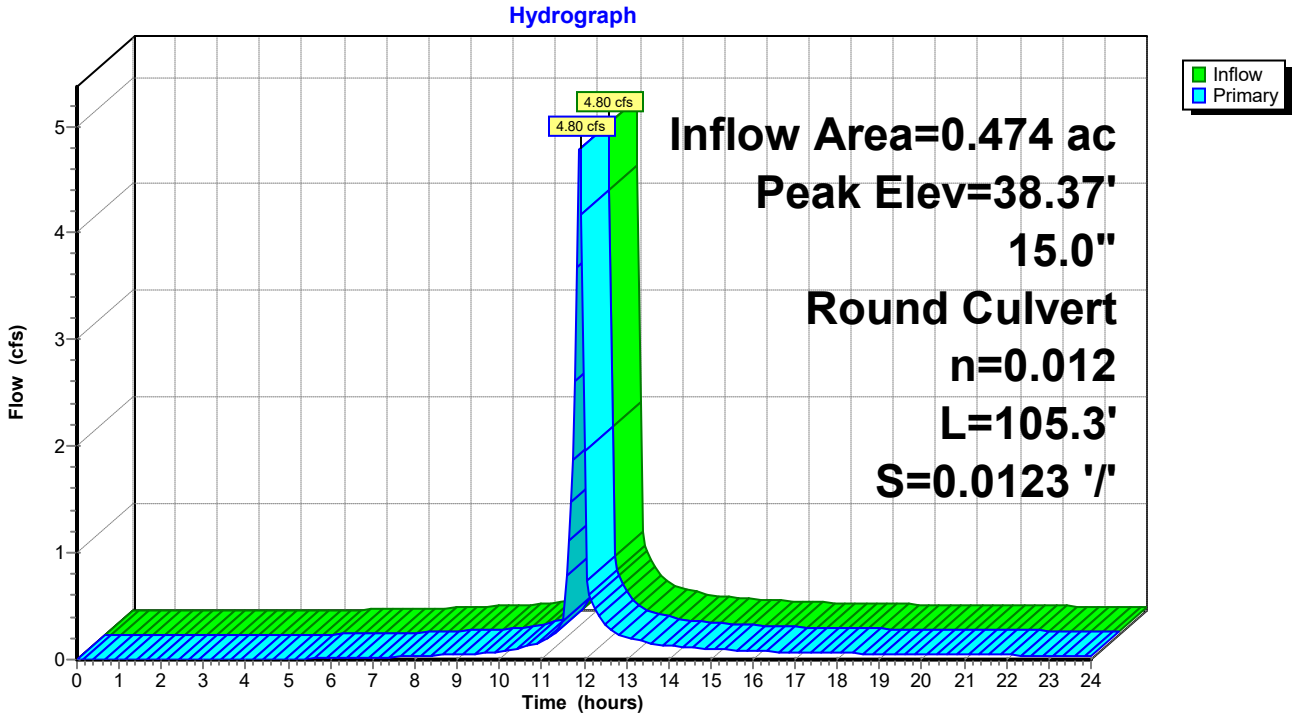
Inflow Area = 0.474 ac, 40.93% Impervious, Inflow Depth > 5.61" for 100-yr event
Inflow = 4.80 cfs @ 11.91 hrs, Volume= 0.222 af
Outflow = 4.80 cfs @ 11.91 hrs, Volume= 0.222 af, Atten= 0%, Lag= 0.0 min
Primary = 4.80 cfs @ 11.91 hrs, Volume= 0.222 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.37' @ 11.91 hrs
Flood Elev= 40.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.90'	**15.0" Round CPP_Round 15"** L= 105.3' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 36.90' / 35.60' S= 0.0123 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=4.71 cfs @ 11.91 hrs HW=38.34' TW=37.42' (Dynamic Tailwater)
└─**1=CPP_Round 15"** (Inlet Controls 4.71 cfs @ 3.84 fps)

Pond 20P: 15" HDPE Stormdrain



Stage-Area-Storage for Pond 20P: 15" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
36.90	**0**	39.45	0
36.95	0	39.50	0
37.00	0	39.55	0
37.05	0	39.60	0
37.10	0	39.65	0
37.15	0	39.70	0
37.20	0	39.75	0
37.25	0	39.80	0
37.30	0	39.85	0
37.35	0	39.90	0
37.40	0	39.95	0
37.45	0	40.00	0
37.50	0	40.05	0
37.55	0	40.10	0
37.60	0	40.15	0
37.65	0		
37.70	0		
37.75	0		
37.80	0		
37.85	0		
37.90	0		
37.95	0		
38.00	0		
38.05	0		
38.10	0		
38.15	0		
38.20	0		
38.25	0		
38.30	0		
38.35	0		
38.40	0		
38.45	0		
38.50	0		
38.55	0		
38.60	0		
38.65	0		
38.70	0		
38.75	0		
38.80	0		
38.85	0		
38.90	0		
38.95	0		
39.00	0		
39.05	0		
39.10	0		
39.15	0		
39.20	0		
39.25	0		
39.30	0		
39.35	0		
39.40	0		

Summary for Pond 21P: 12" HDPE Stormdrain

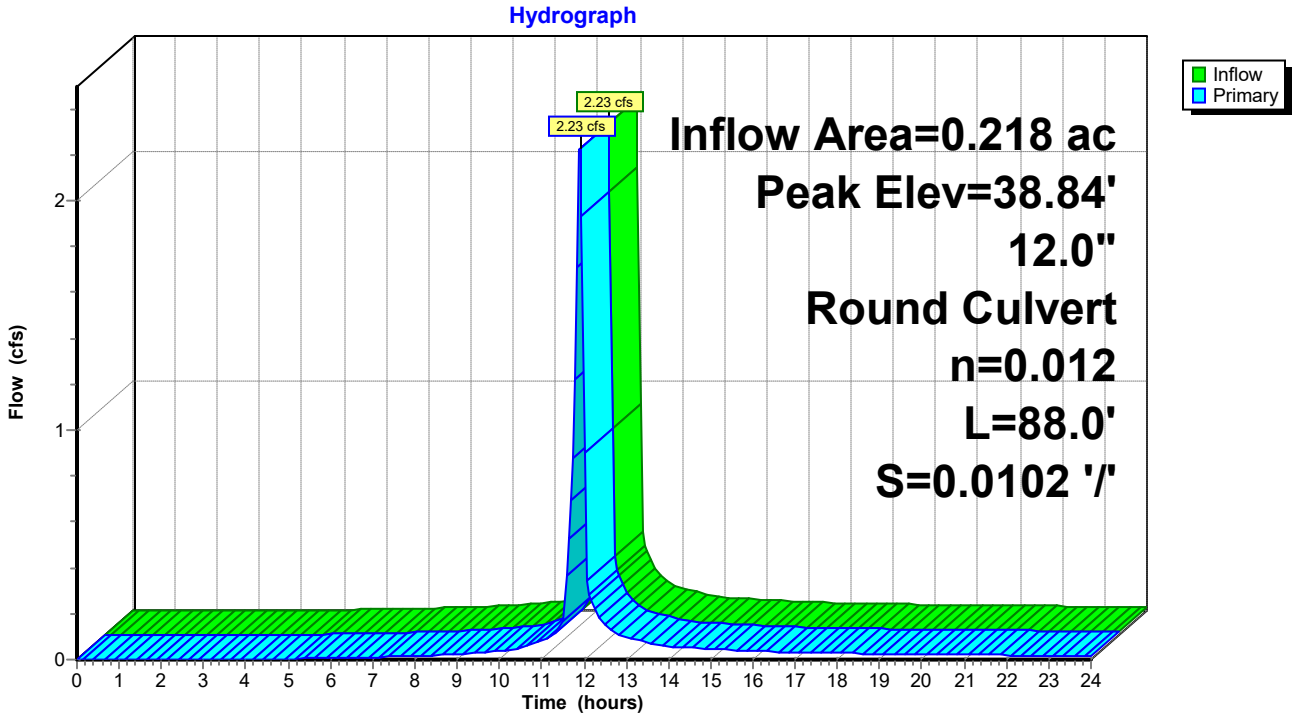
Inflow Area = 0.218 ac, 43.64% Impervious, Inflow Depth > 5.70" for 100-yr event
Inflow = 2.23 cfs @ 11.91 hrs, Volume= 0.103 af
Outflow = 2.23 cfs @ 11.91 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min
Primary = 2.23 cfs @ 11.91 hrs, Volume= 0.103 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.84' @ 11.91 hrs
Flood Elev= 41.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	**12.0" Round CPP_Round 12"** L= 88.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 37.90' / 37.00' S= 0.0102 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.18 cfs @ 11.91 hrs HW=38.82' TW=37.93' (Dynamic Tailwater)
└─**1=CPP_Round 12"** (Inlet Controls 2.18 cfs @ 2.88 fps)

Pond 21P: 12" HDPE Stormdrain



Stage-Area-Storage for Pond 21P: 12" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
37.90	**0**	40.45	0
37.95	0	40.50	0
38.00	0	40.55	0
38.05	0	40.60	0
38.10	0	40.65	0
38.15	0	40.70	0
38.20	0	40.75	0
38.25	0	40.80	0
38.30	0	40.85	0
38.35	0	40.90	0
38.40	0	40.95	0
38.45	0	41.00	0
38.50	0	41.05	0
38.55	0	41.10	0
38.60	0	41.15	0
38.65	0	41.20	0
38.70	0	41.25	0
38.75	0	41.30	0
38.80	0	41.35	0
38.85	0	41.40	0
38.90	0	41.45	0
38.95	0	41.50	0
39.00	0	41.55	0
39.05	0	41.60	0
39.10	0	41.65	0
39.15	0		
39.20	0		
39.25	0		
39.30	0		
39.35	0		
39.40	0		
39.45	0		
39.50	0		
39.55	0		
39.60	0		
39.65	0		
39.70	0		
39.75	0		
39.80	0		
39.85	0		
39.90	0		
39.95	0		
40.00	0		
40.05	0		
40.10	0		
40.15	0		
40.20	0		
40.25	0		
40.30	0		
40.35	0		
40.40	0		

Summary for Pond 22P: 12" HDPE Stormdrain

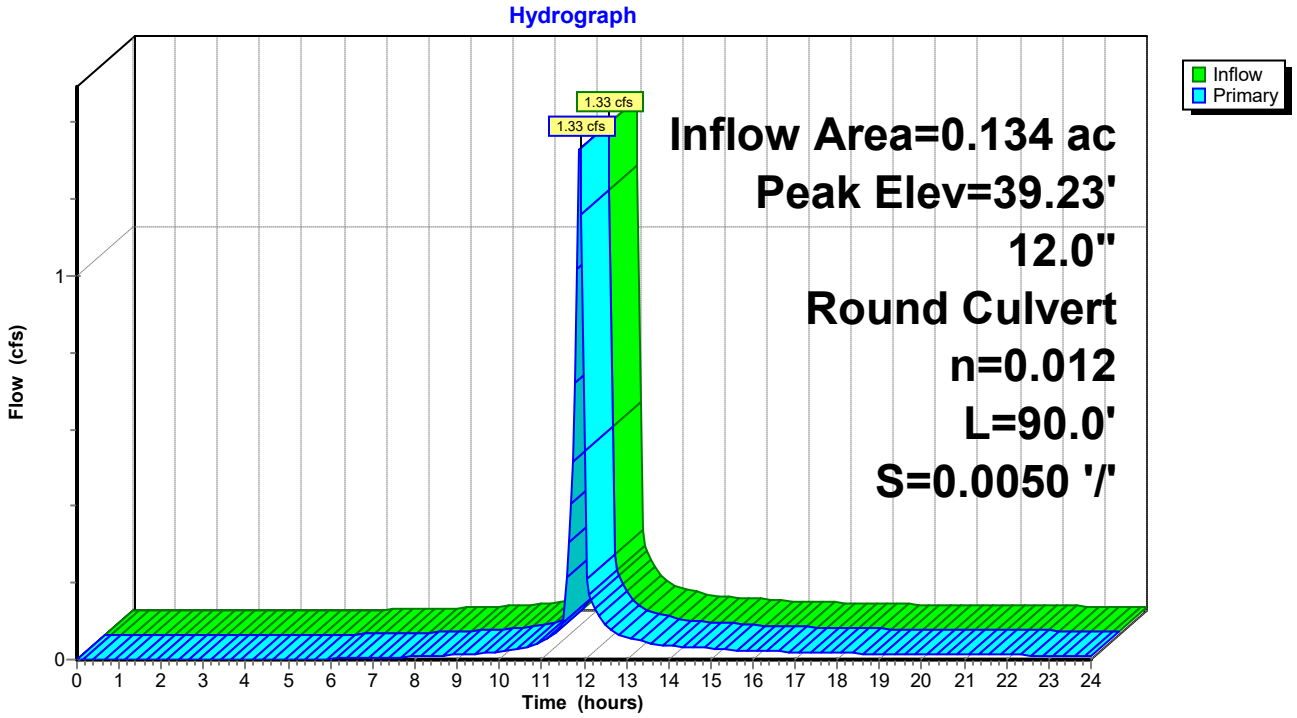
Inflow Area = 0.134 ac, 36.73% Impervious, Inflow Depth > 5.48" for 100-yr event
Inflow = 1.33 cfs @ 11.91 hrs, Volume= 0.061 af
Outflow = 1.33 cfs @ 11.91 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min
Primary = 1.33 cfs @ 11.91 hrs, Volume= 0.061 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 39.23' @ 11.93 hrs
Flood Elev= 41.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.45'	**12.0" Round CPP_Round 12"** L= 90.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 38.45' / 38.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.13 cfs @ 11.91 hrs HW=39.20' TW=38.82' (Dynamic Tailwater)
└─**1=CPP_Round 12"** (Outlet Controls 1.13 cfs @ 2.50 fps)

Pond 22P: 12" HDPE Stormdrain



Stage-Area-Storage for Pond 22P: 12" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
38.45	**0**	41.00	0
38.50	0	41.05	0
38.55	0	41.10	0
38.60	0	41.15	0
38.65	0	41.20	0
38.70	0	41.25	0
38.75	0	41.30	0
38.80	0	41.35	0
38.85	0	41.40	0
38.90	0	41.45	0
38.95	0	41.50	0
39.00	0	41.55	0
39.05	0	41.60	0
39.10	0	41.65	0
39.15	0	41.70	0
39.20	0	41.75	0
39.25	0	41.80	0
39.30	0	41.85	0
39.35	0	41.90	0
39.40	0		
39.45	0		
39.50	0		
39.55	0		
39.60	0		
39.65	0		
39.70	0		
39.75	0		
39.80	0		
39.85	0		
39.90	0		
39.95	0		
40.00	0		
40.05	0		
40.10	0		
40.15	0		
40.20	0		
40.25	0		
40.30	0		
40.35	0		
40.40	0		
40.45	0		
40.50	0		
40.55	0		
40.60	0		
40.65	0		
40.70	0		
40.75	0		
40.80	0		
40.85	0		
40.90	0		
40.95	0		

Summary for Pond 23P: 12" HDPE Stormdrain

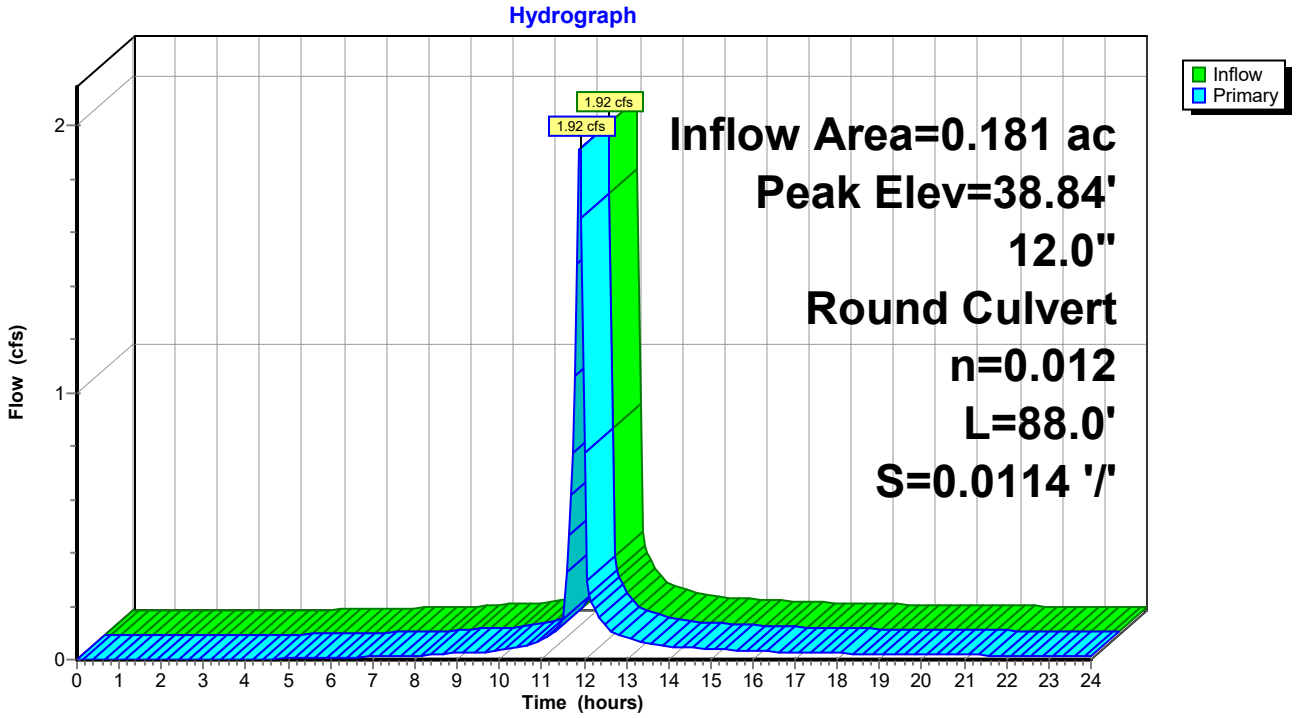
Inflow Area = 0.181 ac, 54.26% Impervious, Inflow Depth > 6.00" for 100-yr event
Inflow = 1.92 cfs @ 11.91 hrs, Volume= 0.090 af
Outflow = 1.92 cfs @ 11.91 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min
Primary = 1.92 cfs @ 11.91 hrs, Volume= 0.090 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 38.84' @ 11.93 hrs
Flood Elev= 41.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	**12.0" Round CPP_Round 12"** L= 88.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 37.90' / 36.90' S= 0.0114 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.46 cfs @ 11.91 hrs HW=38.76' TW=38.34' (Dynamic Tailwater)
└─**1=CPP_Round 12"** (Outlet Controls 1.46 cfs @ 2.71 fps)

Pond 23P: 12" HDPE Stormdrain



Stage-Area-Storage for Pond 23P: 12" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
37.90	**0**	40.45	0
37.95	0	40.50	0
38.00	0	40.55	0
38.05	0	40.60	0
38.10	0	40.65	0
38.15	0	40.70	0
38.20	0	40.75	0
38.25	0	40.80	0
38.30	0	40.85	0
38.35	0	40.90	0
38.40	0	40.95	0
38.45	0	41.00	0
38.50	0	41.05	0
38.55	0	41.10	0
38.60	0	41.15	0
38.65	0	41.20	0
38.70	0	41.25	0
38.75	0	41.30	0
38.80	0	41.35	0
38.85	0	41.40	0
38.90	0	41.45	0
38.95	0	41.50	0
39.00	0	41.55	0
39.05	0	41.60	0
39.10	0	41.65	0
39.15	0		
39.20	0		
39.25	0		
39.30	0		
39.35	0		
39.40	0		
39.45	0		
39.50	0		
39.55	0		
39.60	0		
39.65	0		
39.70	0		
39.75	0		
39.80	0		
39.85	0		
39.90	0		
39.95	0		
40.00	0		
40.05	0		
40.10	0		
40.15	0		
40.20	0		
40.25	0		
40.30	0		
40.35	0		
40.40	0		

Summary for Pond 24P: 12" HDPE Stormdrain

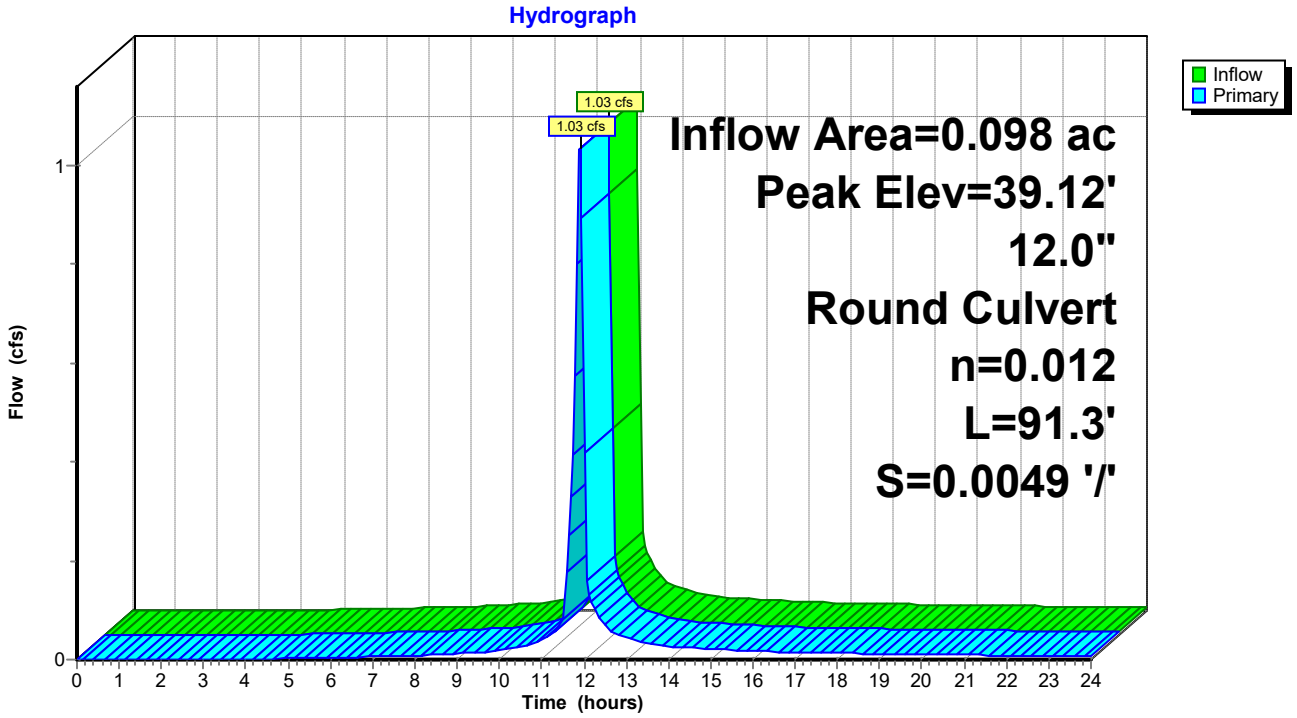
Inflow Area = 0.098 ac, 52.35% Impervious, Inflow Depth > 5.94" for 100-yr event
Inflow = 1.03 cfs @ 11.91 hrs, Volume= 0.049 af
Outflow = 1.03 cfs @ 11.91 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min
Primary = 1.03 cfs @ 11.91 hrs, Volume= 0.049 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 39.12' @ 11.93 hrs
Flood Elev= 41.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.45'	**12.0" Round CPP_Round 12"** L= 91.3' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 38.45' / 38.00' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.85 cfs @ 11.91 hrs HW=39.10' TW=38.76' (Dynamic Tailwater)
└─**1=CPP_Round 12"** (Outlet Controls 0.85 cfs @ 2.26 fps)

Pond 24P: 12" HDPE Stormdrain



Stage-Area-Storage for Pond 24P: 12" HDPE Stormdrain

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
38.45	**0**	41.00	0
38.50	0	41.05	0
38.55	0	41.10	0
38.60	0	41.15	0
38.65	0	41.20	0
38.70	0	41.25	0
38.75	0	41.30	0
38.80	0	41.35	0
38.85	0	41.40	0
38.90	0	41.45	0
38.95	0	41.50	0
39.00	0	41.55	0
39.05	0	41.60	0
39.10	0	41.65	0
39.15	0	41.70	0
39.20	0	41.75	0
39.25	0	41.80	0
39.30	0	41.85	0
39.35	0	41.90	0
39.40	0		
39.45	0		
39.50	0		
39.55	0		
39.60	0		
39.65	0		
39.70	0		
39.75	0		
39.80	0		
39.85	0		
39.90	0		
39.95	0		
40.00	0		
40.05	0		
40.10	0		
40.15	0		
40.20	0		
40.25	0		
40.30	0		
40.35	0		
40.40	0		
40.45	0		
40.50	0		
40.55	0		
40.60	0		
40.65	0		
40.70	0		
40.75	0		
40.80	0		
40.85	0		
40.90	0		
40.95	0		

Summary for Pond BSW: BioSwale (M-8)

Inflow Area = 0.517 ac, 42.48% Impervious, Inflow Depth > 5.68" for 100-yr event
Inflow = 5.28 cfs @ 11.91 hrs, Volume= 0.245 af
Outflow = 4.50 cfs @ 11.95 hrs, Volume= 0.194 af, Atten= 15%, Lag= 2.6 min
Primary = 4.50 cfs @ 11.95 hrs, Volume= 0.194 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 40.56' @ 11.95 hrs Surf.Area= 2,622 sf Storage= 3,381 cf

Plug-Flow detention time= 128.9 min calculated for 0.194 af (79% of inflow)
Center-of-Mass det. time= 48.3 min (836.1 - 787.8)

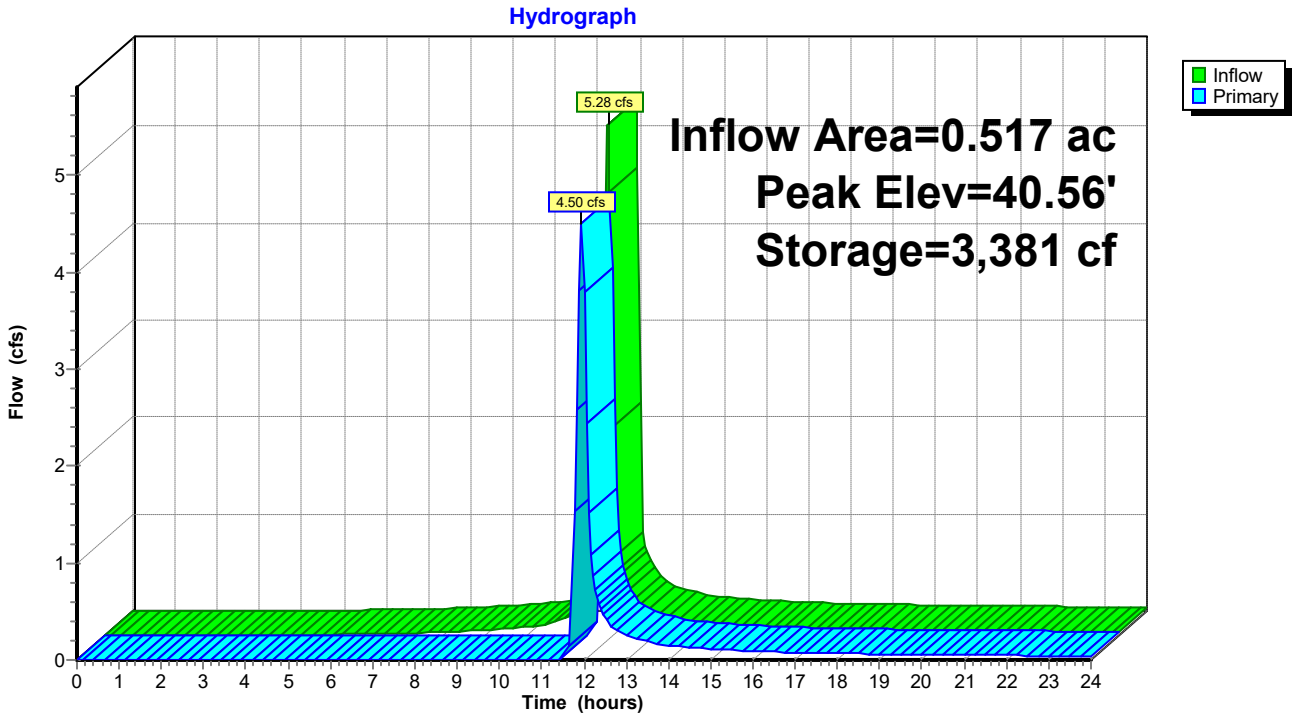
Volume	Invert	Avail.Storage	Storage Description
#1	34.99'	4,698 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
34.99	631	323.0	0.0	0	0	631
35.00	631	323.0	40.0	3	3	634
38.99	631	323.0	40.0	1,007	1,010	1,923
39.00	631	323.0	100.0	6	1,016	1,926
41.00	3,423	373.0	100.0	3,682	4,698	4,782

Device	Routing	Invert	Outlet Devices
#1	Primary	40.00'	**4.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=4.49 cfs @ 11.95 hrs HW=40.56' TW=37.82' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 4.49 cfs @ 2.00 fps)

Pond BSW: BioSwale (M-8)



Stage-Area-Storage for Pond BSW: BioSwale (M-8)

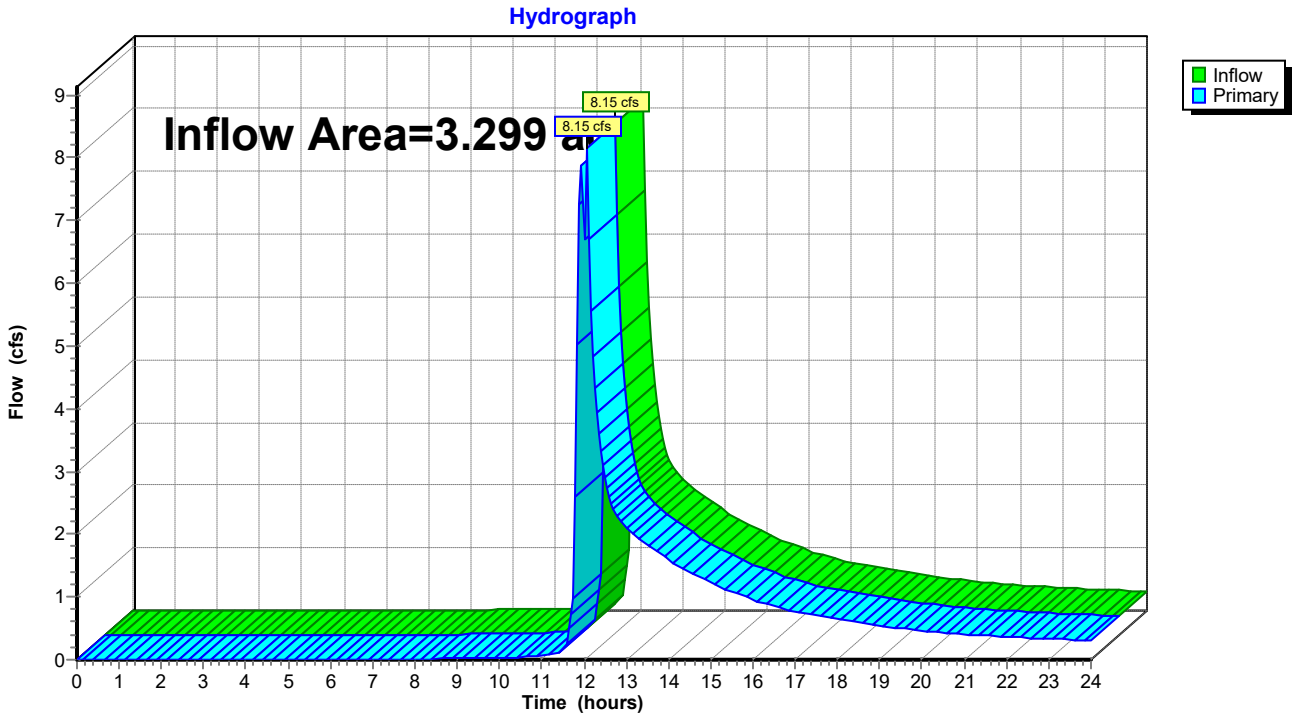
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
34.99	631	0
35.09	631	25
35.19	631	50
35.29	631	76
35.39	631	101
35.49	631	126
35.59	631	151
35.69	631	177
35.79	631	202
35.89	631	227
35.99	631	252
36.09	631	278
36.19	631	303
36.29	631	328
36.39	631	353
36.49	631	379
36.59	631	404
36.69	631	429
36.79	631	454
36.89	631	480
36.99	631	505
37.09	631	530
37.19	631	555
37.29	631	581
37.39	631	606
37.49	631	631
37.59	631	656
37.69	631	681
37.79	631	707
37.89	631	732
37.99	631	757
38.09	631	782
38.19	631	808
38.29	631	833
38.39	631	858
38.49	631	883
38.59	631	909
38.69	631	934
38.79	631	959
38.89	631	984
38.99	631	1,010
39.09	709	1,076
39.19	800	1,152
39.29	898	1,236
39.39	1,000	1,331
39.49	1,109	1,437
39.59	1,223	1,553
39.69	1,342	1,681
39.79	1,467	1,822
39.89	1,598	1,975
39.99	1,734	2,142
40.09	1,876	2,322
40.19	2,024	2,517
40.29	2,177	2,727
40.39	2,335	2,953
40.49	2,499	3,194
40.59	2,669	3,453
40.69	2,844	3,728
40.79	3,025	4,022
40.89	3,212	4,334
40.99	**3,403**	**4,664**

Summary for Link 1L: POI#1

Inflow Area = 3.299 ac, 49.24% Impervious, Inflow Depth > 4.11" for 100-yr event
Inflow = 8.15 cfs @ 12.05 hrs, Volume= 1.129 af
Primary = 8.15 cfs @ 12.05 hrs, Volume= 1.129 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 1L: POI#1

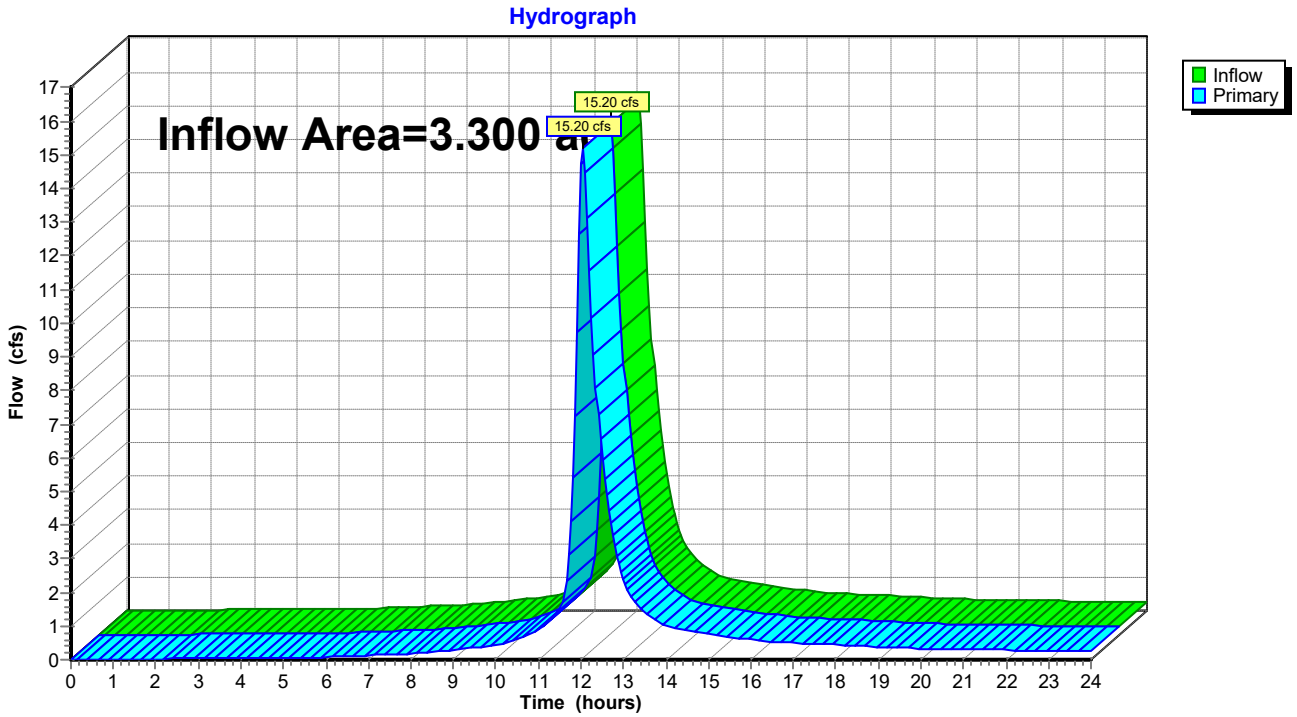


Summary for Link POI#1: EX. Stormdrain

Inflow Area = 3.300 ac, 34.85% Impervious, Inflow Depth > 5.48" for 100-yr event
Inflow = 15.20 cfs @ 12.04 hrs, Volume= 1.506 af
Primary = 15.20 cfs @ 12.04 hrs, Volume= 1.506 af, Atten= 0%, Lag= 0.0 min

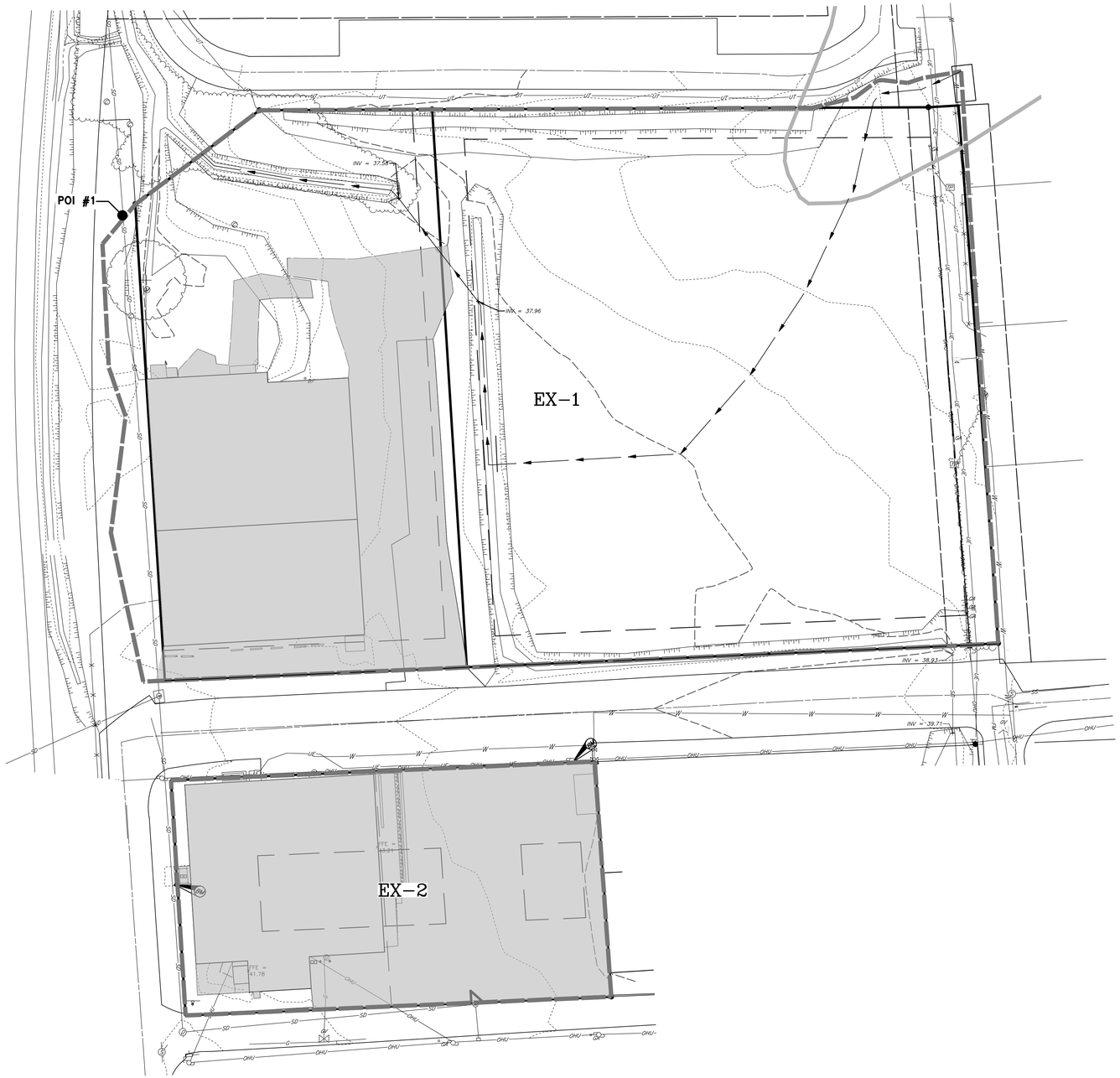
Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link POI#1: EX. Stormdrain



APPENDIX C

Drainage Area Maps



SWM PRE DEVELOPMENT DISCHARGES (CFS)			
STUDY POINT	Q_2	Q_{10}	Q_{100}
1	4.86	9.40	15.20

STORMWATER MANAGEMENT DRAINAGE AREA TABLE				
AREA #	AREA (SF)	TOTAL Tc (MINUTES)	IMPERVIOUS (%)	DESCRIPTION
EX-1	118697	15.60	77.68	FORMER NAPPA AUTO BUILDING & VACANT PARCEL
EX-2	25052	5.00	94.24	EASTON ICE BUILDING & LOADING AREA

TALBOT COUNTY SOILS				
MAP SYMBOL	SOILS NAME	HYDRIC SOILS	K FACTOR	SOIL GROUP
FgcA	FALLSINGTON LOAM	YES	0.32	C/D
HfA	HAMBROOK-SASSAFRAS COMPLEX		0.37	B
HfB	HAMBROOK-SASSAFRAS COMPLEX		0.37	B
UoB	UDORTHENTS, LOAMY		0.37	C

* POSSIBLE SMALL AREAS OF HYDRIC SOIL INCLUSIONS SUBJECT TO FIELD VERIFICATION.

MD COORDINATE SYSTEM NAD 83 (2011)

30' 15' 0' 15' 30' 60'
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EASTON UTILITIES COMMISSION – ENGINEERING DATE

REVISIONS TO APPROVED PLANS			
No.	DATE	DESCRIPTION	BY

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PRE-DEVELOPMENT DRAINAGE AREA MAP

ON THE LANDS OF
SHOREGATE OF CANNERY COMMERCIAL, LLC

IN THE TOWN OF EASTON, WARD 1
TALBOT COUNTY, MARYLAND
TAX MAP 103 PARCEL 756 LOTS 3 & 4

ISSUED/REVISED FOR:	DATE:	BY:
ESDR REVIEW	11/1/23	BCE

SHEET No. 1 OF 2	11/1/23
SCALE: AS NOTED	JOB No. 230228
	FILE No. B246

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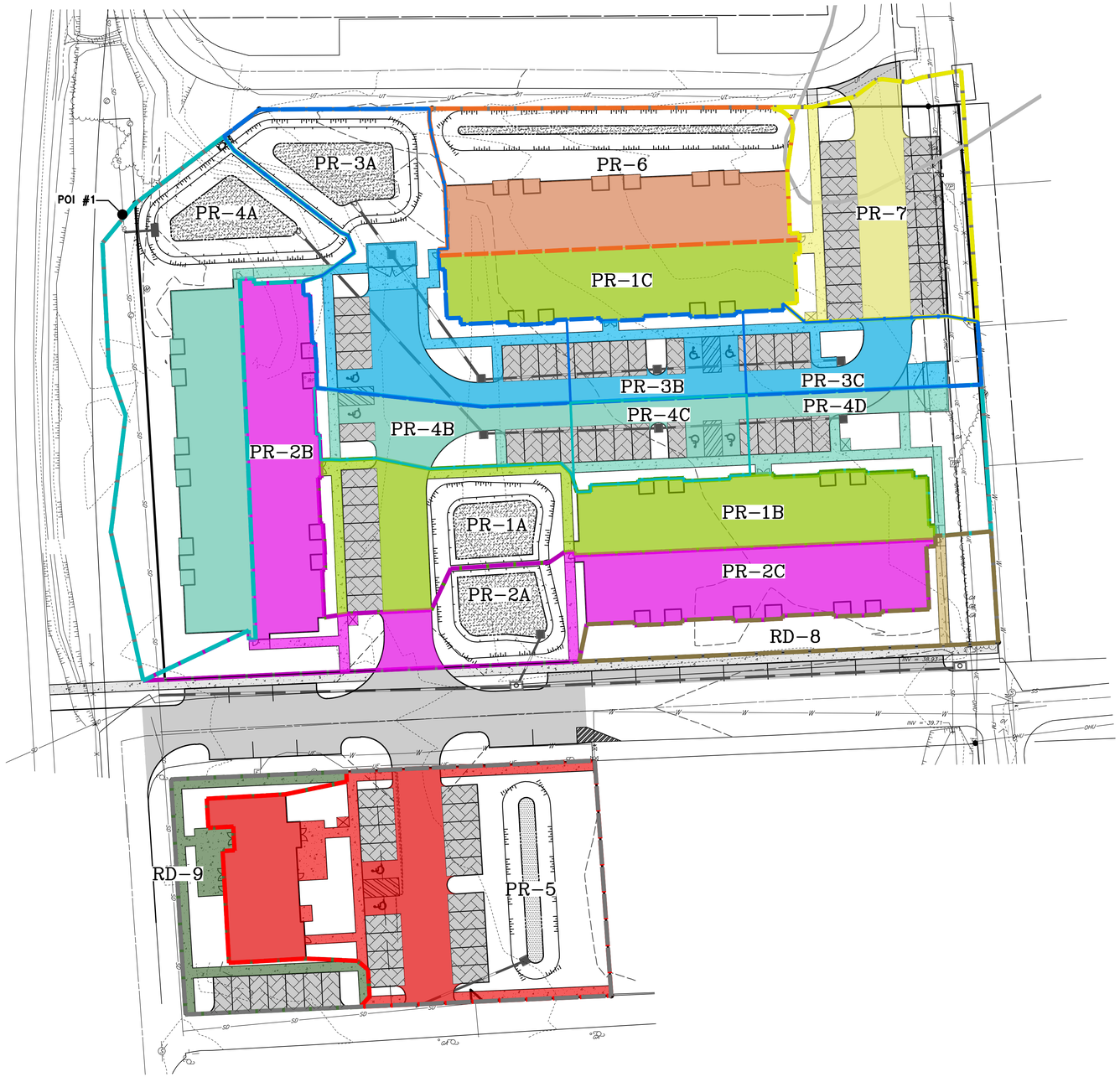

SWM POST DEVELOPMENT DISCHARGES (CFS)			
STUDY POINT	Q_2	Q_{10}	Q_{100}
1	0.65	3.31	8.15

STORMWATER MANAGEMENT DRAINAGE AREA TABLE				
AREA #	AREA (SF)	TOTAL Tc (MINUTES)	IMPERVIOUS (%)	DESCRIPTION
PR-1A	7775	1.00	36.62	PARKING LOT & SWM FEATURE
PR-1B	6185	1.00	100	ROOF
PR-1C	6185	1.00	100	ROOF
PR-2A	6681	1.00	21.39	PARKING LOT & SWM FEATURE
PR-2B	6184	1.00	100.00	ROOF
PR-2C	6090	1.00	100.00	ROOF
PR-3A	12788	1.00	32.72	PARKING LOT & SWM FEATURE
PR-3B	3600	1.00	56.53	PARKING LOT
PR-3C	4269	1.00	52.35	PARKING LOT
PR-4A	17911	1.00	35.36	ROOF & SWM FEATURE
PR-4B	4102	1.00	60.58	PARKING LOT
PR-4C	3643	1.00	54.71	PARKING LOT
PR-4D	5832	1.00	36.73	PARKING LOT
PR-5	20064	1.00	42.53	COMMUNITY BUILDING & PARKING LOT
PR-6	12245	1.00	49.73	ROOF
PR-7	10276	1.00	33.84	PARKING
RD-8	4894	1.00	5.60	SIDEWALK & BUILDING FRONTAGE
RD-9	4988	1.00	41.34	LEAD WALKS TO COMMUNITY BUILDING

TALBOT COUNTY SOILS				
MAP SYMBOL	SOILS NAME	HYDRIC SOILS	K FACTOR	SOIL GROUP
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HfA	HAMBROOK-SASSAFRAS COMPLEX		0.37	B
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POST-DEVELOPMENT DRAINAGE AREA MAP

ON THE LANDS OF
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IN THE TOWN OF EASTON, WARD 1
TALBOT COUNTY, MARYLAND
TAX MAP 103 PARCEL 756 LOTS 3 & 4

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SHEET No. 2 OF 2	11/1/23
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Date: 11/01/2023 – 8:58am User: achosta Project Manager: BCE
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TRAFFIC IMPACT ANALYSIS

FOR

EASTON MULTIFAMILY

Prepared by:

LENHART TRAFFIC CONSULTING, INC.

TRAFFIC ENGINEERING & TRANSPORTATION PLANNING

December 1, 2023

Table of Contents Page

Section 1 **Introduction…….. 4**

1.1 Project Description
1.2 Scope of Study

Section 2 **Existing Conditions……. 6**

2.1 Description of Road Network
2.2 Existing Lane Configurations
2.3 Existing Traffic Counts
2.4 Safety Considerations

Section 3 **Background Conditions……. 10**

3.1 Annual Growth
3.2 Approved Background Developments
3.3 Background Traffic Volumes

Section 4 **Projected Conditions with Site……. 12**

4.1 Site Trip Generation
4.2 Site Trip Distribution & Trip Assignment
4.3 Diversions
4.4 Total Traffic Volumes
4.5 Projected Level of Service

Section 5 **Conclusions / Recommendations……. 22**

5.1 Results of Analyses

Appendices

A Supplemental Info, Turning Movement Counts
B Level of Service (LOS) Worksheets
C Background Developments

List of Exhibits

		Page
Exhibit 1	Site Location Map	5
Exhibit 2	Lane Use & Traffic Control Devices	8
Exhibit 3	Existing Peak Hour Volumes	9
Exhibit 4	Background Peak Hour Volumes	11
Exhibit 5	Trip Generation for Site	14
Exhibit 6	Trip Assignment for Site	15
Exhibit 7	Trip Generation for Cannery Square Apartments	16
Exhibit 8	Trip Redistribution for Cannery Square Apartments	17
Exhibit 9	Diversions Due to One-way Restriction of Park Street	18
Exhibit 10	Total Peak Hour Volumes	19
Exhibit 11	Results of CLV Level-of-Service Analyses	20
Exhibit 12	Results of HCM Level-of-Service Analyses	21

Section 1 Introduction

1.1 Project Description

This Traffic Impact Analysis (TIA) has been prepared for the proposed Easton Multifamily development located along North Street as shown on **Exhibit 1**. The site is proposed to be developed with 96 multifamily low-rise units to be located on the north side of North Street. An amenities building will be located on the south side of North Street.

Primary access to the multifamily units will be provided with a full movement access point along North Street. A secondary access point will be provided with a connection to the Cannery Square Apartments development, located to the north of the Easton Multifamily property. The amenities building, located on the south side of North Street, is accessed via North Street, directly opposite the access to the multifamily units, and Scotts Alley.

1.2 Scope of Study

This TIA has been prepared in accordance with a scoping agreement coordinated with the Town of Easton and conforms to the MDOT SHA Traffic Impact Study Guidelines. Note that per MDOT SHA's Access Permits Manual, all study intersections were evaluated using the Critical Lane Volume (CLV) methodology and must maintain Level-of-Service (LOS) D or better to be considered adequate. The Highway Capacity Manual (HCM) methodology was also utilized to evaluate the study intersections per Town of Easton Guidelines.

Study Intersections:

1. North St at Site Access
2. North St at N. Park St
3. Golsborough St at East Ave
4. Goldsborough St at N. Park St
5. US 50 at Goldsborough St

Traffic Impact Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
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Site
Location Map

Exhibit 1

Section 2 Existing Conditions

2.1 Description of Road Network

The key roads in the study area are:

- US 50 – A six-lane principal arterial with a posted speed limit of 55 MPH within the vicinity of the site.
- Goldsborough Street – A two-lane major collector with a posted speed limit of 25 MPH within the vicinity of the site.
- N Park Street – A two-lane local roadway.
- East Avenue – A two-lane local roadway.
- North Street – A two-lane local roadway.

2.2 Existing Lane Configurations

The Lane Use & Traffic Control Devices are shown on **Exhibit 2**.

2.3 Existing Traffic Counts

Peak hour turning movement counts were conducted and are shown on **Exhibit 3.**

2.4 Safety Considerations

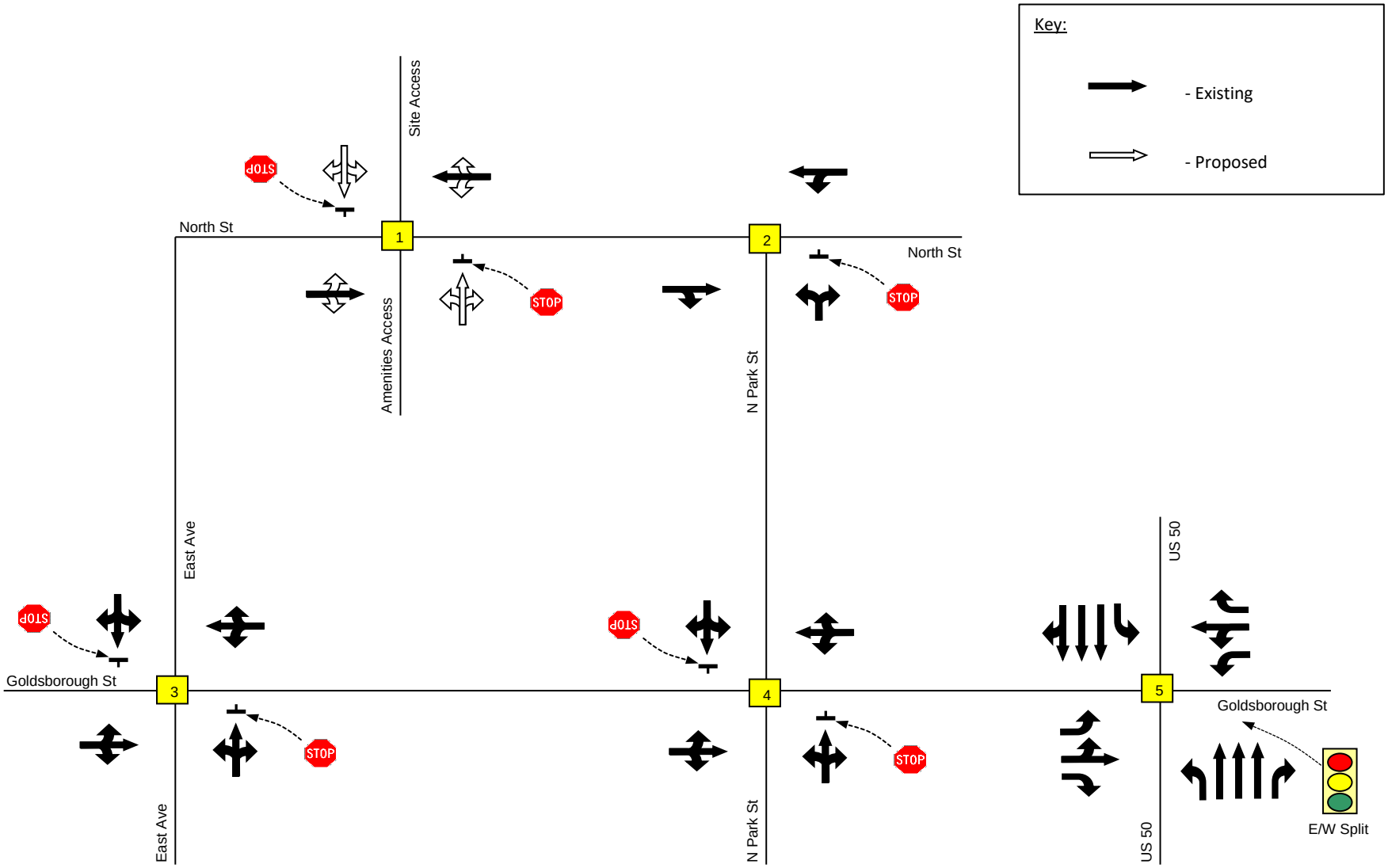
During the scoping process, an evaluation of the sight distance for the southbound N Park Street approach at the intersection with Goldsborough Street was requested to determine if N Park Street should be made one-way in the northbound direction between Goldsborough Street and North Street.

Per MDOT SHA Guidelines, the design speed for roadways is typically evaluated as 10 mph greater than the posted speed limit. The posted speed limit along Goldsborough Street is 25 mph and, therefore the design speed used was 35 mph. The required stopping sight distance (SSD) for left turns from stop considering a 35 MPH design speed is 250 feet and the required intersection sight distance (ISD) is 390 feet. Right turn maneuvers from stop require lower distances for both SSD and ISD purposes and are not analyzed in the following discussion.

The sight distance of the southbound N Park Street approach is limited in both directions by houses built near the edge of the sidewalks and roadways. Looking left along Goldsborough Street, the sight distance is restricted to approximately 100 feet, and looking right, the sight distance is only slightly better. The sight distance does not meet the SSD for left-turns from stop and therefore cannot maneuver safely through the intersection. It is recommended that N Park Street is made a one-way

street in the northbound direction between Goldsborough Street and North Street to improve safety at the intersection of N Park Street & Goldsborough Street.

Restricting N Park Street to one-way in the northbound direction between Goldsborough Street and North Street will not have a significant impact on travel patterns in the surrounding neighborhood as there is very little southbound traffic volume along N Park Street between North Street and Goldsborough Street. If the one-way restriction is implemented, these vehicles are expected to divert to utilize East Avenue to access Goldsborough Street where there is much better sight distance for movements to Goldsborough Street.



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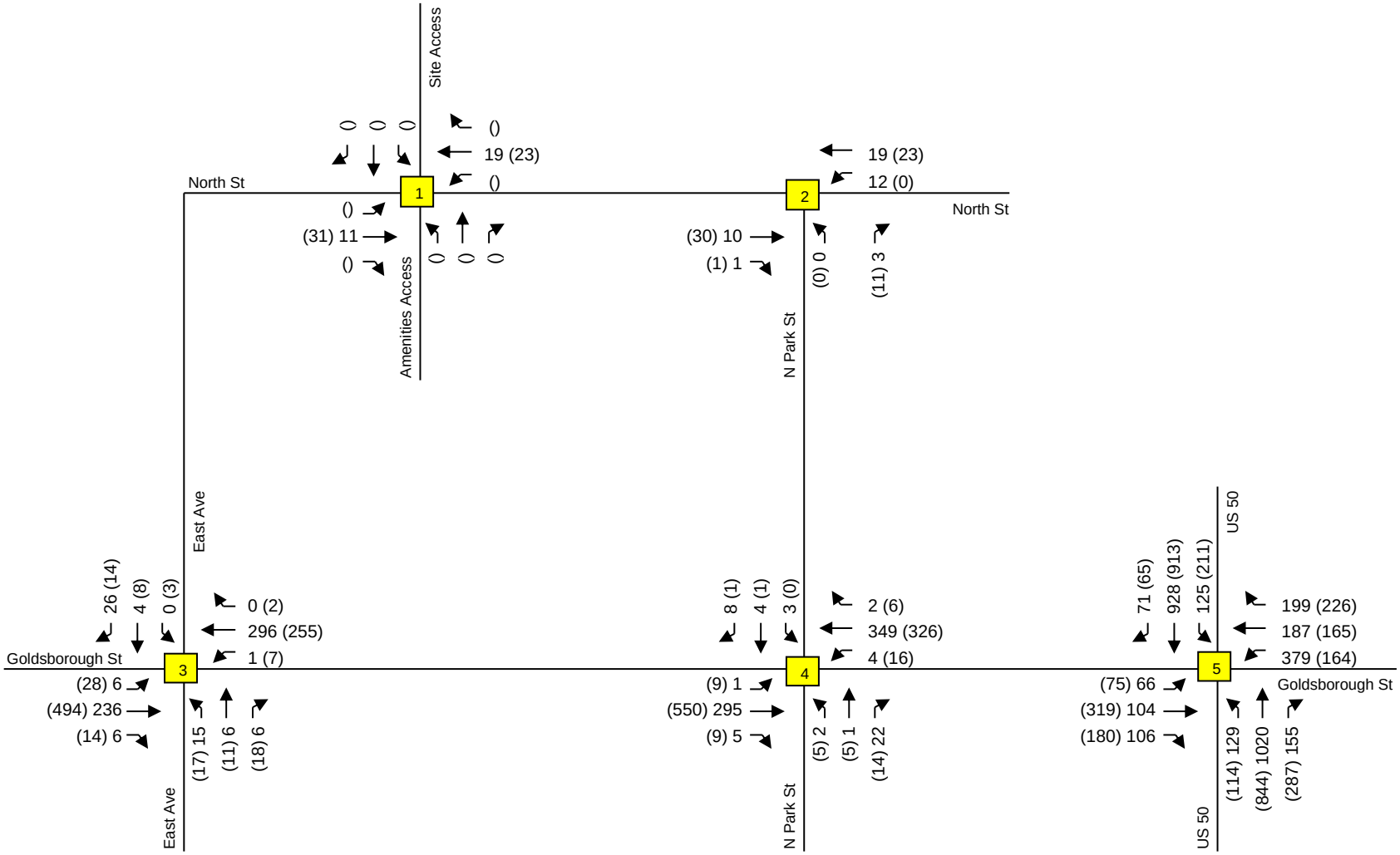
Lane Use &
Traffic Control Devices

Exhibit 2



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Existing Peak Hour Volumes

Key: xx = AM Pk (xx) = PM Pk [xx] = Sat Pk

Exhibit 3

Section 3 Background Conditions

3.1 Annual Growth

The Maryland Department of Transportation State Highway Administration's Average Daily Traffic Volumes (ADT's) have been reviewed for the past ten years and it was determined that average yearly growth in the area is approximately 2.4%. To provide a conservative analysis, a growth rate of 3.0% was applied for 3 years to the existing peak hour volumes.

3.2 Approved Background Developments

The following background developments were considered as part of this study:

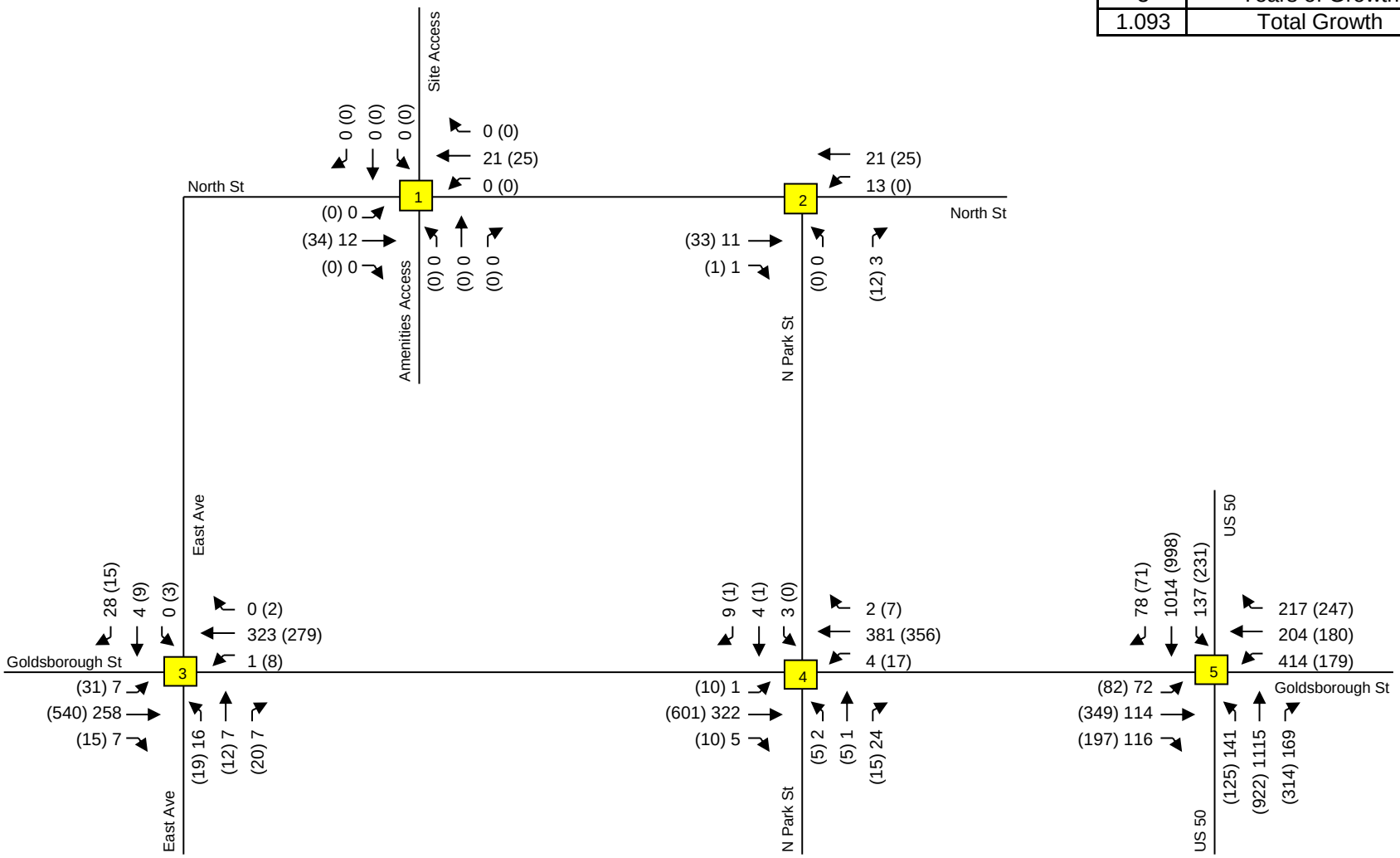
1. Easton Village
2. Cookes Hope
3. The Lakelands
4. Waterside Village
5. Ashbury Commons
6. Easton Marketplace
7. Londonberry
8. Douglas Landing
9. Ratcliffe Farm
10. Shore Health Systems Campus
11. St. Peters and Paul
12. Easton Club Golf Course

A map of the background developments is provided in Appendix C. Based on the location of the background developments and their proposed uses, no background development trips are anticipated to impact the study intersections. However, as discussed in Section 3.1, above, a conservative growth rate was applied to the existing peak hour volumes to account for any regional growth at the study intersections.

3.3 Background Traffic Volumes

The background peak hour volumes are shown on **Exhibit 4.** These volumes include the growth rate applied to the existing peak hour volumes.

3%	Growth Rate
3	Years of Growth
1.093	Total Growth



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Background Peak Hour Volumes

Key: xx = AM Pk (xx) = PM Pk [xx] = Sat Pk

Exhibit 4

Section 4 Projected Conditions with Site

4.1 Site Trip Generation

The site is proposed to be developed with 96 multifamily low-rise units.

The trip generation for the proposed development is detailed on **Exhibit 5**. Trip generation rates were obtained from the ITE Trip Generation Manual, 11th Edition.

4.2 Site Trip Distribution & Trip Assignment

The trip assignment for the proposed development is shown on **Exhibit 6**.

The trip distribution was determined in coordination with Town of Easton Staff. It is anticipated that all of the site traffic will utilize the access along North Street, rather than travelling through the Cannery Square Apartments property, as Goldsborough Street provides more direct access to destinations surrounding the site.

4.3 Diversions

The Easton Multifamily property will provide a connection to the Cannery Square Apartment property to the north of the site. It is assumed that 50% of existing Cannery Square Apartment trips will divert from the current access point along Lomax Street through the Easton Multifamily access along North Street. A trip generation for the 64 multifamily units in the Cannery Square Apartments is shown on **Exhibit 7**, and the trip redistribution is shown on **Exhibit 8.**

Based on the sight distance evaluation of the intersection of Goldsborough Street & N Park Street (as seen in Section 2.4), it is recommended that N Park Street is made one-way only in the northbound direction between Goldsborough Street and North Street. Existing southbound trips are expected to divert to East Avenue to continue to Goldsborough Street. These diversions are shown on **Exhibit 9.**

4.4 Total Traffic Volumes

The Total Peak Hour Volumes are shown on **Exhibit 10**.

4.5 Projected Level of Service

The total peak hour traffic volumes shown on Exhibit 10 were evaluated using the CLV methodology per MDOT SHA Guidelines. The results of the CLV analyses are shown on **Exhibit 11** and indicate that all intersections operate at LOS D or

better under total conditions. The results of the HCM analyses are shown on **Exhibit 12** and indicate that each study intersection operates with LOS D or better. The results on Exhibit 12 also indicate that the site has minimal impact on the minor street delays at the unsignalized study intersections.

As shown on Exhibit 6, the trip distribution for the proposed site, the majority of site traffic is expected travel to/from the site via East Avenue and ultimately Goldsborough Street, the nearest collector roadway to the site. East Avenue will see an increase in vehicular traffic of 87 vehicles during the morning peak hour and 98 vehicles during the evening peak hour due to the diversions in traffic for the restriction of N Park Street to a one-way roadway, diversions in existing Cannery Square Apartment traffic, and site generated trips. Of the additional trips, only 50 of the morning peak hour vehicles and 59 of the evening peak hour vehicles are direct trips to and from the proposed site. This equates to one additional vehicle on East Avenue approximately every 41 seconds during the morning peak hour and 37 seconds during the evening peak hour when compared to the background conditions.

As discussed above, the restriction of N Park Street to be a one-way roadway in the northbound direction between Goldsborough Street and North Street will actually result in a reduction in traffic on N Park Street and will create safer traffic operations at the intersection of Goldsborough Street & N Park Street as vehicles will no longer be making unsafe turning movements onto Goldsborough Street from southbound N Park Street due to the limited sight distance.

A small portion of site traffic destined to/from US 50 in the north is expected to travel east along North Street and through the neighborhood east of the property to access US 50 via Lomax Street. As shown on Exhibit 6, only three vehicles are expected to utilize this route during the morning and evening peak hours. However, this increase in trips to/from the neighborhood to the east is expected to be completely negated by the diversion of existing trips to/from the Cannery Square Apartment property through the Easton Multifamily property. As such, the proposed Easton Multifamily development will not negatively impact traffic operations on the local roadways in the neighborhoods surrounding the site.

Trip Generation Rates

Multifamily Housing, Low-Rise (ITE-220, Units) [Not Close to Rail Transit]	Trip Distribution (In/Out)
Morning Trips = 0.31 x Units + 22.85	24/76
Evening Trips = 0.43 x Units + 20.55	63/37
Midday Sat. Trips = 0.41 x Units	50/50

Trip Generation Totals

				AM Peak			PM Peak			Sat Midday Peak		
				In	Out	Total	In	Out	Total	In	Out	Total
LU Code 210	Multifamily Housing, Low-Rise (ITE-220, Units)	96	units	13	40	53	39	23	62	19	20	39
			Total:	**13**	**40**	**53**	**39**	**23**	**62**	**19**	**20**	**39**

NOTE: Trip Generation Rates obtained from the ITE Trip Generation Manual, 11th Edition

Traffic Impact Analysis

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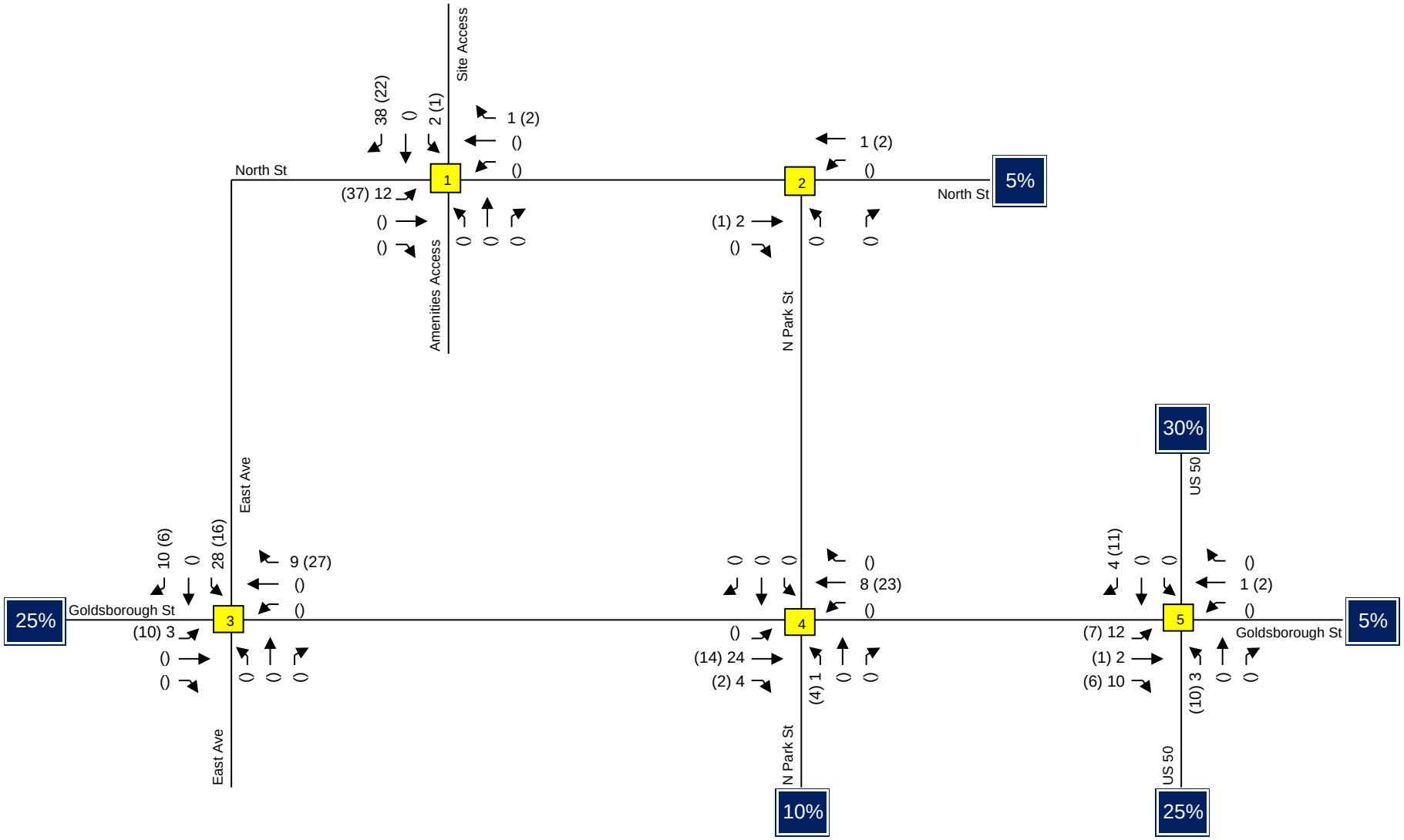
Trip Generation for Site

Exhibit 5



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Trip Assignment for Site

Key: xx = AM Pk (xx) = PM Pk [xx] = Sat Pk

Exhibit 6

Trip Generation Rates

Multifamily Housing, Low-Rise (ITE-220, Units) [Not Close to Rail Transit]	Trip Distribution (In/Out)
Morning Trips = 0.31 x Units + 22.85	24/76
Evening Trips = 0.43 x Units + 20.55	63/37
Midday Sat. Trips = 0.41 x Units	50/50

Trip Generation Totals

				AM Peak			PM Peak			Sat Midday Peak		
				In	Out	Total	In	Out	Total	In	Out	Total
LU Code 210	Multifamily Housing, Low-Rise (ITE-220, Units)	64	units	10	33	43	30	18	48	13	13	26
			Total:	**10**	**33**	**43**	**30**	**18**	**48**	**13**	**13**	**26**

NOTE: Trip Generation Rates obtained from the ITE Trip Generation Manual, 11th Edition

Traffic Impact Analysis

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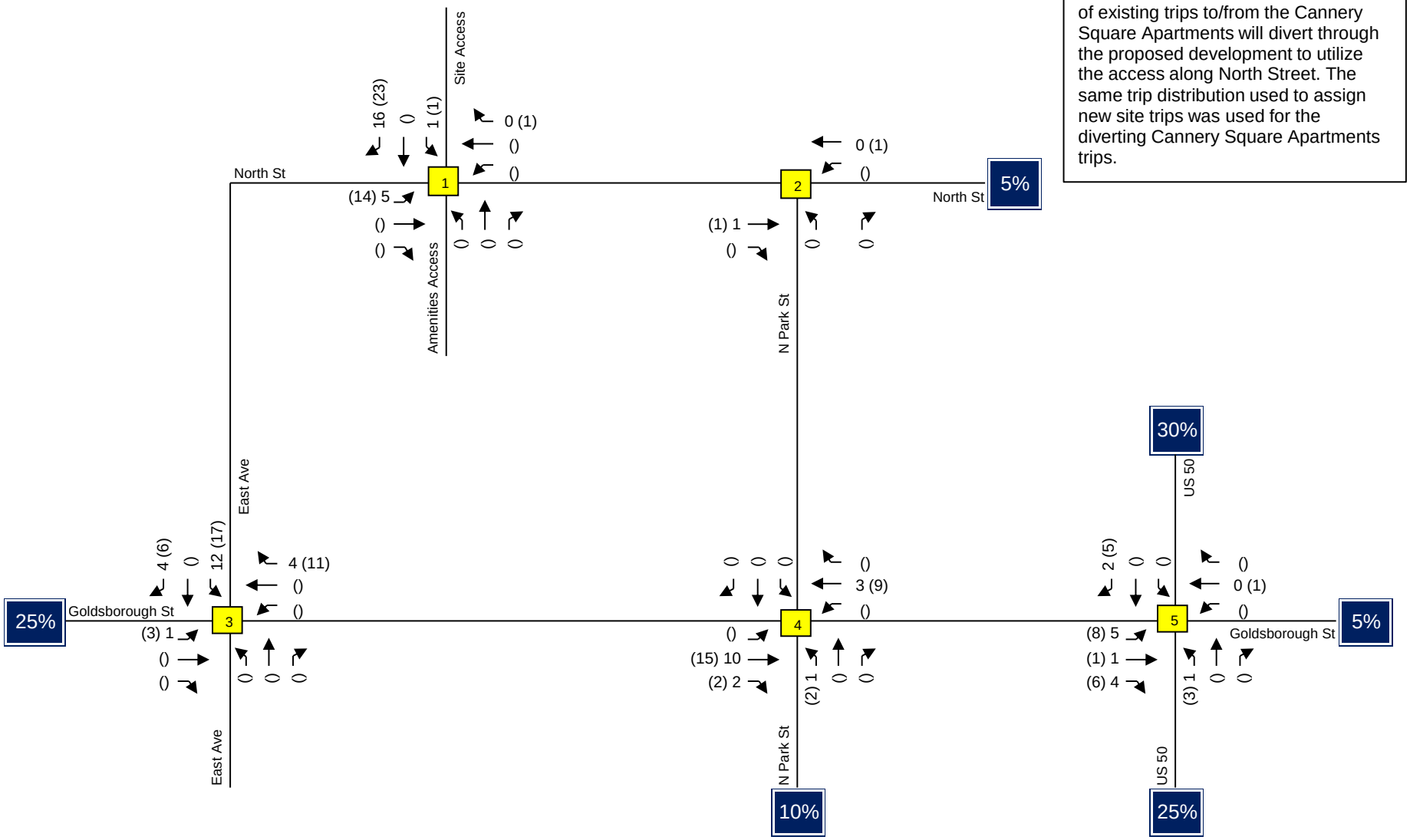
Trip Generation for
Cannery Square Apartments

Exhibit 5

Note: Based on discussions with Town of Easton Staff, it is assumed that 50% of existing trips to/from the Cannery Square Apartments will divert through the proposed development to utilize the access along North Street. The same trip distribution used to assign new site trips was used for the diverting Cannery Square Apartments trips.



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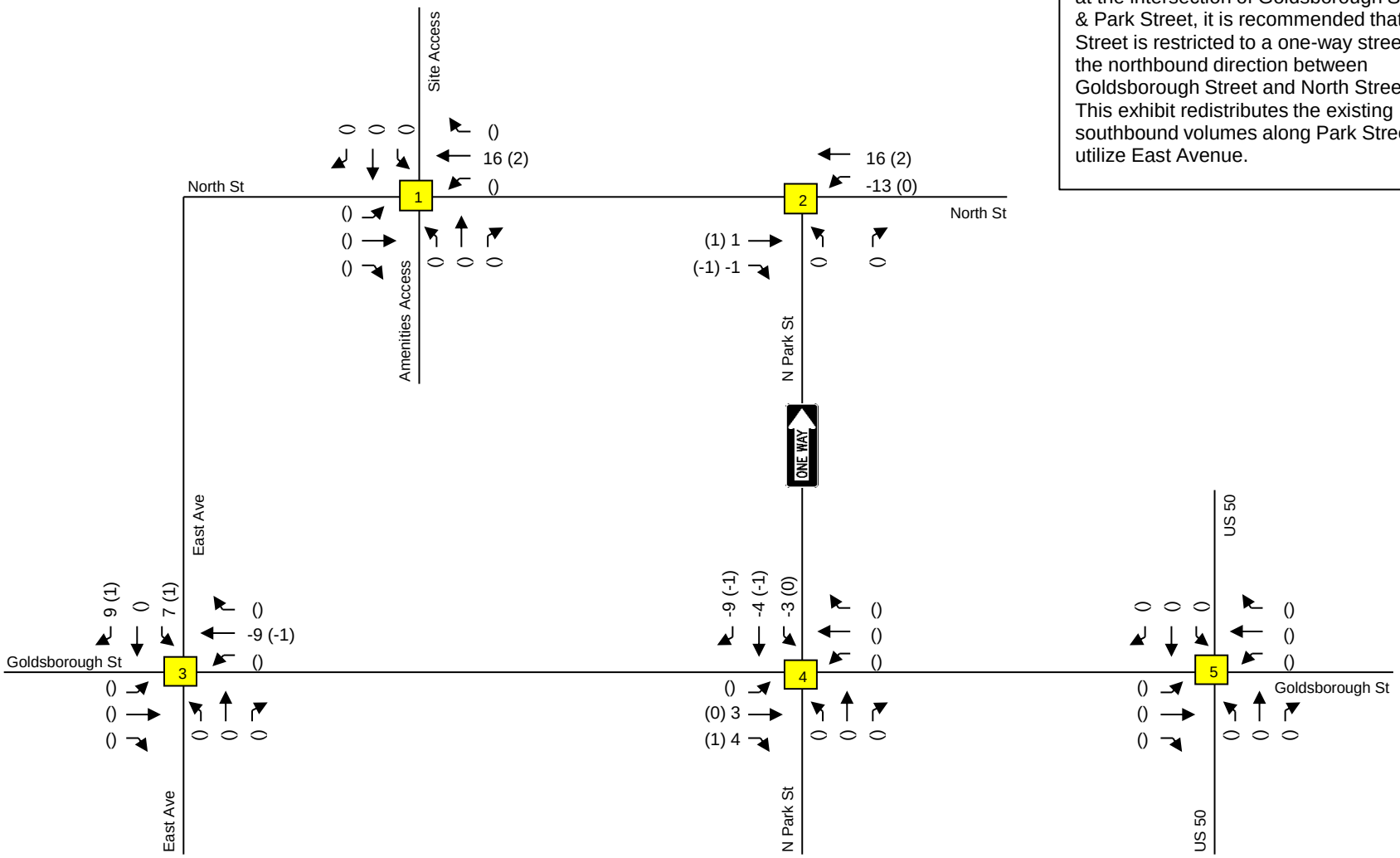
Trip Redistribution for Cannery Square Apartments

Key: xx = AM Pk (xx) = PM Pk [xx] = Sat Pk

Exhibit 8

Note: Due to the sight distance limitations at the intersection of Goldsborough Street & Park Street, it is recommended that Park Street is restricted to a one-way street in the northbound direction between Goldsborough Street and North Street. This exhibit redistributes the existing southbound volumes along Park Street to utilize East Avenue.



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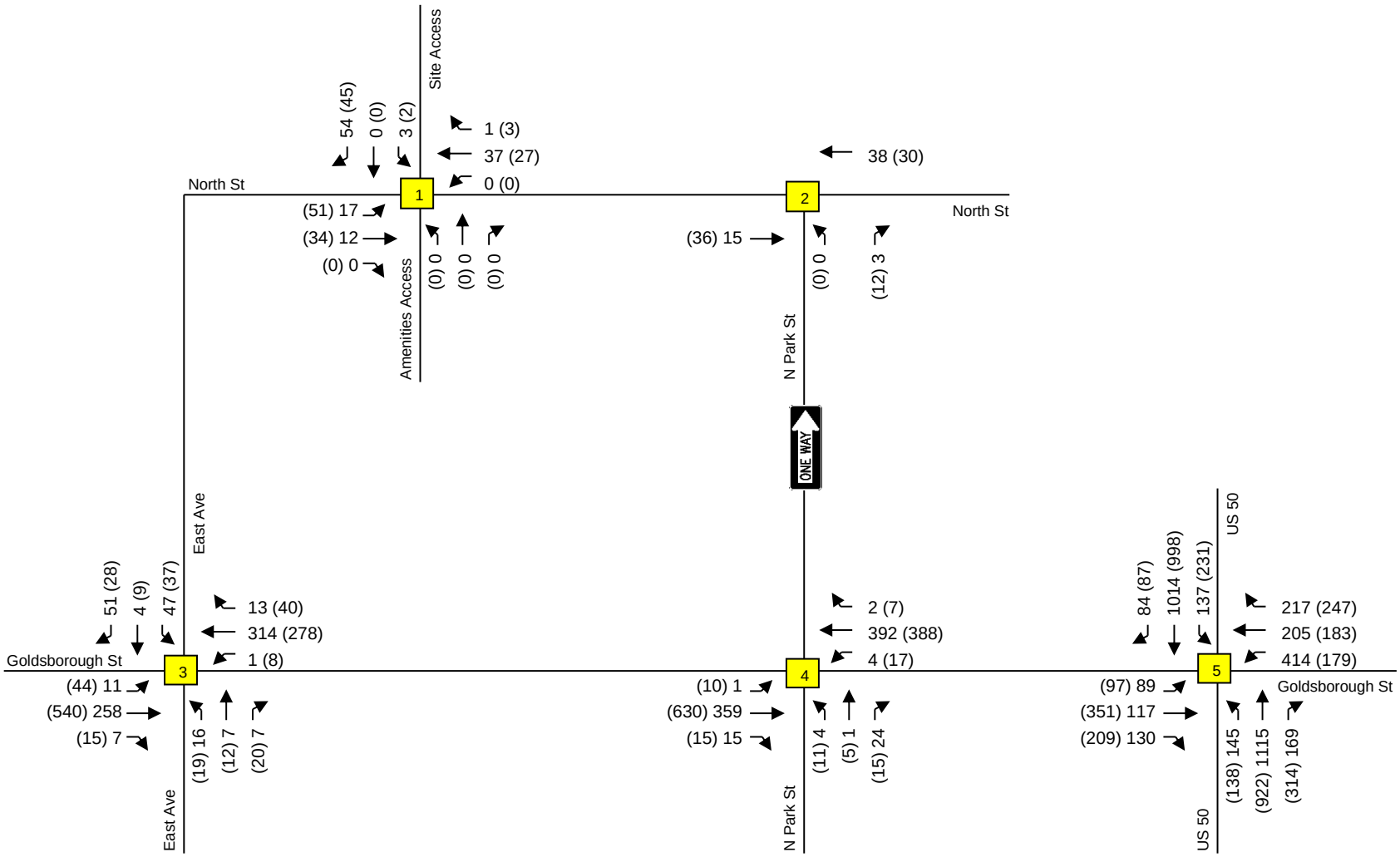
Diversions of Park Street Volume Due to One-way Restriction

Key: xx = AM Pk (xx) = PM Pk [xx] = Sat Pk

Exhibit 9



Traffic Impact Analysis

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Total
Peak Hour Volumes

Key: xx = AM Pk (xx) = PM Pk [xx] = Sat Pk

Exhibit 10

Level-of-Service Results

Morning Peak Hour	Existing CLV	Background CLV	Total CLV	LOS D or better?
1). North Street & Site Access	--	--	A / 112	Y
2). North Street & Park Street	A / 35	A / 38	A / 41	Y
3). Goldsborough Street & East Street	A / 349	A / 380	A / 463	Y
4). Goldsborough Street & Park Street	A / 388	A / 422	A / 432	Y
5). US 50 & Goldsborough Street	A / 977	B / 1068	B / 1079	Y

Evening Peak Hour	Existing CLV	Background CLV	Total CLV	LOS D or better?
1). North Street & Site Access	--	--	A / 137	Y
2). North Street & Park Street	A / 42	A / 46	A / 48	Y
3). Goldsborough Street & East Street	A / 622	A / 681	A / 748	Y
4). Goldsborough Street & Park Street	A / 618	A / 674	A / 714	Y
5). US 50 & Goldsborough Street	B / 1065	C / 1164	C / 1168	Y

NOTES:

1. All intersections satisfy MDOT SHA Guidelines of LOS "D" or better.

Traffic Impact Analysis

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Results of
Level-of-Service Analyses

Exhibit 11

HCM Level-of-Service Results

Morning Peak Hour	Existing Delay	Background Delay	Total Delay	LOS D or better?
1). North Street & Site Access	N/A	N/A	A / 5.0	Y
Southbound Approach (seconds)			8.7	
2). North Street & Park Street	A / 2.5	A / 2.4	A / 0.4	Y
Northbound Approach Delay (seconds)	8.4	8.4	8.4	
3). Goldsborough Street & East Street	A / 1.3	A / 1.3	A / 2.8	Y
Northbound Approach (seconds)	13.8	14.6	15.3	
Southbound Approach (seconds)	10.8	11.0	14.9	
4). Goldsborough Street & Park Street	A / 0.7	A / 0.8	A / 0.5	Y
Northbound Approach (seconds)	10.9	11.6	12.0	
Southbound Approach (seconds)	13.0	13.5	N/A	
5). US 50 & Goldsborough Street	C / 34.7	D / 37.8	D / 38.3	Y

Evening Peak Hour	Existing Delay	Background Delay	Total Delay	LOS D or better?
1). North Street & Site Access	N/A	N/A	A / 4.9	Y
Southbound Approach (seconds)			8.7	
2). North Street & Park Street	A / 1.4	A / 1.4	A / 1.3	Y
Northbound Approach Delay (seconds)	8.5	8.5	8.5	
3). Goldsborough Street & East Street	A / 1.9	A / 2.1	A / 3.6	Y
Northbound Approach (seconds)	18.5	21.2	23.3	
Southbound Approach (seconds)	14.5	15.7	25.4	
4). Goldsborough Street & Park Street	A / 0.8	A / 0.8	A / 1.0	Y
Northbound Approach (seconds)	16.7	18.2	22.2	
Southbound Approach (seconds)	15.5	16.8	N/A	
5). US 50 & Goldsborough Street	D / 48.1	D / 53.5	D / 54.6	Y

Traffic Impact Analysis

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Results of HCM Level-of-Service Analyses

Exhibit 12

Section 5 Conclusions / Recommendations

5.1 Results of Analyses

This Traffic Impact Analysis (TIA) has been prepared for the proposed Easton Multifamily development located along North Street. The site is proposed to be developed with 96 multifamily low-rise units to be located on the north side of North Street. An amenities building will be located on the south side of North Street.

Primary access to the multifamily units will be provided with a full movement access point along North Street. A secondary access point will be provided with a connection to the Cannery Square Apartments development, located to the north of the Easton Multifamily property. The amenities building, located on the south side of North Street, is accessed via North Street, directly opposite the access to the multifamily units, and Scotts Alley.

Based on the analyses contained in this report:

- An evaluation of sight distance at the intersection of Goldsborough Street & N Park Street indicates that adequate sight distance is not available for southbound vehicles along N Park Street to Goldsborough Street. It is recommended that N Park Street is made a one-way street in the northbound direction between Goldsborough Street and North Street.
- All study intersections operate at LOS “D” or better under existing, background, and total conditions using the CLV and HCM methodologies and are therefore considered to operate adequately per MDOT SHA and Town of Easton Guidelines.

In light of the findings contained in this report, it is recommended that the proposed development is approved.

Appendix A

Supplemental Information
Turning Movement Counts

Weekday Morning Peak Hour (6:30 am - 9:30 am)

	Park Street Northbound					N/A Southbound					North Street Eastbound					North Street Westbound					
Time:	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
6:30-6:45	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	6	0	0	7
6:45-7:00	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	5	0	0	9
7:00-7:15	0	0	0	1	1	0	0	0	0	0	0	0	3	0	0	0	0	4	0	0	8
7:15-7:30	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	3	0	0	5
7:30-7:45	0	0	0	3	0	0	0	0	0	2	0	0	3	0	0	0	3	3	0	0	12
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	9	0	0	13
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	3	0	0	11
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	2	4	0	0	9
8:30-8:45	0	0	0	1	1	0	0	0	0	0	0	0	2	0	0	0	0	6	0	0	9
8:45-9:00	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	11	0	0	13
9:00-9:15	0	0	0	3	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	5
9:15-9:30	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	1	3	0	0	7
Hourly Totals																					
6:30-7:30	0	0	0	4	1	0	0	0	0	2	0	0	6	0	0	0	1	18	0	0	32
6:45-7:45	0	0	0	7	1	0	0	0	0	3	0	0	8	0	0	0	4	15	0	0	38
7:00-8:00	0	0	0	4	1	0	0	0	0	3	0	0	8	0	0	0	7	19	0	0	42
7:15-8:15	0	0	0	3	0	0	0	0	0	3	0	0	9	0	0	0	11	18	0	0	44
7:30-8:30	0	0	0	3	0	0	0	0	0	2	0	0	10	1	0	0	12	19	0	0	47
7:45-8:45	0	0	0	1	1	0	0	0	0	0	0	0	9	1	0	0	9	22	0	0	43
8:00-9:00	0	0	0	1	2	0	0	0	0	0	0	0	10	1	0	0	6	24	0	0	44
8:15-9:15	0	0	0	4	3	0	0	0	0	0	0	0	6	2	0	0	2	22	0	0	39
8:30-9:30	0	0	0	6	3	0	0	0	0	0	0	0	5	1	0	0	1	21	0	0	37
AM	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					
Peak Hour	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**Total**
7:30-8:30	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**10**	**1**	**0**	**0**	**12**	**19**	**0**	**0**	**47**

Weekday Evening Peak Hour (4 pm - 7 pm)

	Park Street Northbound					N/A Southbound					North Street Eastbound					North Street Westbound					
Time:	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
4:00-4:15	0	0	0	4	0	0	0	0	0	2	0	0	10	1	0	0	2	6	0	0	23
4:15-4:30	0	0	0	3	0	0	0	0	0	0	0	0	7	0	0	0	2	2	0	0	14
4:30-4:45	0	0	0	4	0	0	0	0	0	1	0	0	5	0	0	0	0	5	0	0	14
4:45-5:00	0	0	0	2	0	0	0	0	0	1	0	0	4	0	0	0	0	4	0	0	10
5:00-5:15	0	0	0	3	1	0	0	0	0	0	0	0	13	1	0	0	0	0	0	0	17
5:15-5:30	0	0	0	2	0	0	0	0	0	0	0	0	8	0	0	0	0	14	0	0	24
5:30-5:45	0	0	0	0	0	0	0	0	0	0	0	0	8	1	0	0	0	2	0	0	11
5:45-6:00	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	4	3	0	0	12
6:00-6:15	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	5	0	0	8
6:15-6:30	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	2	2	0	0	6
6:30-6:45	0	0	0	1	0	0	0	0	0	0	0	0	6	0	0	0	1	3	0	0	11
6:45-7:00	0	0	0	2	0	0	0	0	0	0	0	0	5	0	0	0	1	2	0	0	10
Hourly Totals																					
4:00-5:00	0	0	0	13	0	0	0	0	0	4	0	0	26	1	0	0	4	17	0	0	65
4:15-5:15	0	0	0	12	1	0	0	0	0	2	0	0	29	1	0	0	2	11	0	0	58
4:30-5:30	0	0	0	11	1	0	0	0	0	2	0	0	30	1	0	0	0	23	0	0	68
4:45-5:45	0	0	0	7	1	0	0	0	0	1	0	0	33	2	0	0	0	20	0	0	64
5:00-6:00	0	0	0	10	1	0	0	0	0	0	0	0	29	2	0	0	4	19	0	0	65
5:15-6:15	0	0	0	8	0	0	0	0	0	0	0	0	18	1	0	0	4	24	0	0	55
5:30-6:30	0	0	0	7	0	0	0	0	0	0	0	0	11	1	0	0	6	12	0	0	37
5:45-6:45	0	0	0	8	0	0	0	0	0	0	0	0	9	0	0	0	7	13	0	0	37
6:00-7:00	0	0	0	5	0	0	0	0	0	0	0	0	14	0	0	0	4	12	0	0	35
PM	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					
Peak Hour	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**Total**
4:30-5:30	**0**	**0**	**0**	**11**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**30**	**1**	**0**	**0**	**0**	**23**	**0**	**0**	**68**

Peak Hour
Turning Movement Count

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Intersection: North Street & Park Street
Weather: Clear
Count by: Count Cam DSS
Count Day/Date: Wednesday, November 8, 2023
Jurisdiction: Talbot County

Weekday Morning Peak Hour (6:30 am - 9:30 am)

	East Avenue Northbound					East Avenue Southbound					Goldsborough Street Eastbound					Goldsborough Street Westbound					
Time:	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
6:30-6:45	0	5	2	2	0	0	0	0	3	2	0	2	21	1	0	0	0	38	0	0	74
6:45-7:00	0	4	0	4	1	0	0	2	9	0	0	4	27	3	0	0	1	57	0	1	111
7:00-7:15	0	2	1	1	0	0	0	1	6	1	0	4	22	1	5	0	1	51	0	0	90
7:15-7:30	0	5	2	0	0	0	0	2	4	0	0	2	32	0	2	0	1	46	0	0	94
7:30-7:45	0	4	1	3	1	0	1	1	2	1	0	2	42	2	3	0	2	57	0	0	117
7:45-8:00	0	5	4	4	1	0	0	3	8	0	0	2	59	2	4	0	0	96	0	0	183
8:00-8:15	0	3	0	0	0	0	0	0	5	0	0	2	55	1	2	0	1	58	1	0	126
8:15-8:30	0	3	2	4	1	0	0	0	11	4	0	5	51	0	4	0	1	54	0	0	131
8:30-8:45	0	3	0	2	0	0	0	0	12	0	0	0	55	2	2	0	0	83	0	0	157
8:45-9:00	0	4	3	2	0	0	0	2	6	0	0	1	54	4	3	0	0	75	0	0	151
9:00-9:15	0	4	2	1	0	0	0	2	2	2	0	5	63	0	5	0	0	65	0	1	144
9:15-9:30	0	4	1	1	0	0	0	0	6	0	0	0	64	0	3	0	1	73	0	0	150
Hourly Totals																					
6:30-7:30	0	16	5	7	1	0	0	5	22	3	0	12	102	5	7	0	3	192	0	1	381
6:45-7:45	0	15	4	8	2	0	1	6	21	2	0	12	123	6	10	0	5	211	0	1	427
7:00-8:00	0	16	8	8	2	0	1	7	20	2	0	10	155	5	14	0	4	250	0	0	502
7:15-8:15	0	17	7	7	2	0	1	6	19	1	0	8	188	5	11	0	4	257	1	0	534
7:30-8:30	0	15	7	11	3	0	1	4	26	5	0	11	207	5	13	0	4	265	1	0	578
7:45-8:45	0	14	6	10	2	0	0	3	36	4	0	9	220	5	12	0	2	291	1	0	615
8:00-9:00	0	13	5	8	1	0	0	2	34	4	0	8	215	7	11	0	2	270	1	0	581
8:15-9:15	0	14	7	9	1	0	0	4	31	6	0	11	223	6	14	0	1	277	0	1	605
8:30-9:30	0	15	6	6	0	0	0	4	26	2	0	6	236	6	13	0	1	296	0	1	618
AM	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					
Peak Hour	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**Total**
8:30-9:30	**0**	**15**	**6**	**6**	**0**	**0**	**0**	**4**	**26**	**2**	**0**	**6**	**236**	**6**	**13**	**0**	**1**	**296**	**0**	**1**	**618**

Weekday Evening Peak Hour (4 pm - 7 pm)

	East Avenue Northbound					East Avenue Southbound					Goldsborough Street Eastbound					Goldsborough Street Westbound					
Time:	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
4:00-4:15	0	9	2	4	0	0	1	2	1	0	0	9	120	3	0	0	2	48	2	0	203
4:15-4:30	0	3	7	5	0	0	1	1	5	2	0	7	120	4	2	0	1	64	0	1	218
4:30-4:45	0	2	1	5	0	0	0	4	2	0	0	3	137	5	1	0	3	69	0	0	231
4:45-5:00	0	3	1	4	0	0	1	1	6	2	0	9	117	2	3	0	1	74	0	0	219
5:00-5:15	0	3	1	2	0	0	0	1	5	0	0	5	114	0	2	0	0	45	0	0	176
5:15-5:30	0	2	1	2	0	0	0	0	4	0	0	10	105	0	0	0	1	55	0	0	180
5:30-5:45	0	3	0	1	0	0	1	0	2	0	0	3	91	4	2	0	3	45	2	0	155
5:45-6:00	0	6	1	6	0	0	0	1	4	0	0	3	87	2	0	0	2	55	0	0	167
6:00-6:15	0	5	1	2	0	0	0	1	4	0	0	7	52	2	0	0	2	41	0	0	117
6:15-6:30	0	1	2	3	0	0	0	2	3	0	0	1	70	2	0	0	0	50	0	0	134
6:30-6:45	0	2	3	3	0	0	1	0	3	0	0	5	67	2	0	0	1	40	0	0	127
6:45-7:00	0	4	1	0	0	0	0	0	3	0	0	2	47	0	0	0	2	34	0	0	93
Hourly Totals																					
4:00-5:00	0	17	11	18	0	0	3	8	14	4	0	28	494	14	6	0	7	255	2	1	882
4:15-5:15	0	11	10	16	0	0	2	7	18	4	0	24	488	11	8	0	5	252	0	1	857
4:30-5:30	0	10	4	13	0	0	1	6	17	2	0	27	473	7	6	0	5	243	0	0	814
4:45-5:45	0	11	3	9	0	0	2	2	17	2	0	27	427	6	7	0	5	219	2	0	739
5:00-6:00	0	14	3	11	0	0	1	2	15	0	0	21	397	6	4	0	6	200	2	0	682
5:15-6:15	0	16	3	11	0	0	1	2	14	0	0	23	335	8	2	0	8	196	2	0	621
5:30-6:30	0	15	4	12	0	0	1	4	13	0	0	14	300	10	2	0	7	191	2	0	575
5:45-6:45	0	14	7	14	0	0	1	4	14	0	0	16	276	8	0	0	5	186	0	0	545
6:00-7:00	0	12	7	8	0	0	1	3	13	0	0	15	236	6	0	0	5	165	0	0	471
PM	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					
Peak Hour	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**Total**
4:00-5:00	**0**	**17**	**11**	**18**	**0**	**0**	**3**	**8**	**14**	**4**	**0**	**28**	**494**	**14**	**6**	**0**	**7**	**255**	**2**	**1**	**882**

Peak Hour
Turning Movement Count

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Intersection: Goldsborough Street & East Avenue
Weather: Clear
Count by: Count Cam DSS
Count Day/Date: Tuesday, November 21, 2023
Jurisdiction: Talbot County

Weekday Morning Peak Hour (6:30 am - 9:30 am)

	Park Street Northbound					Park Street Southbound					Goldsborough Street Eastbound					Goldsborough Street Westbound					
Time:	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
6:30-6:45	0	0	1	3	0	0	1	2	0	0	0	0	27	0	0	0	3	30	0	0	67
6:45-7:00	0	0	1	4	3	0	1	1	0	0	0	2	30	0	0	0	1	54	0	4	94
7:00-7:15	0	0	1	5	1	0	0	1	1	0	0	0	37	0	0	0	0	36	0	0	81
7:15-7:30	0	0	0	2	0	0	0	0	1	0	0	0	36	2	0	0	2	59	0	2	102
7:30-7:45	0	1	3	3	1	0	1	2	2	0	0	0	56	0	0	0	2	75	0	0	145
7:45-8:00	0	1	0	12	0	0	3	1	4	1	0	0	93	2	1	0	4	95	1	0	216
8:00-8:15	0	0	1	4	0	0	0	3	2	1	0	0	84	0	0	0	0	100	1	0	195
8:15-8:30	0	0	0	2	0	0	0	0	2	1	0	0	53	3	2	0	0	73	0	0	133
8:30-8:45	0	1	0	4	0	0	0	0	0	0	0	1	65	0	0	0	0	81	0	0	152
8:45-9:00	0	2	0	1	0	0	0	0	0	0	0	0	73	1	0	0	0	65	0	0	142
9:00-9:15	0	2	2	4	2	0	1	0	0	0	0	1	67	0	1	0	1	49	0	0	127
9:15-9:30	0	0	1	2	0	0	0	1	0	0	0	0	91	0	0	0	0	51	0	0	146
Hourly Totals																					
6:30-7:30	0	0	3	14	4	0	2	4	2	0	0	2	130	2	0	0	6	179	0	6	354
6:45-7:45	0	1	5	14	5	0	2	4	4	0	0	2	159	2	0	0	5	224	0	6	433
7:00-8:00	0	2	4	22	2	0	4	4	8	1	0	0	222	4	1	0	8	265	1	2	550
7:15-8:15	0	2	4	21	1	0	4	6	9	2	0	0	269	4	1	0	8	329	2	2	664
7:30-8:30	0	2	4	21	1	0	4	6	10	3	0	0	286	5	3	0	6	343	2	0	696
7:45-8:45	0	2	1	22	0	0	3	4	8	3	0	1	295	5	3	0	4	349	2	0	702
8:00-9:00	0	3	1	11	0	0	0	3	4	2	0	1	275	4	2	0	0	319	1	0	626
8:15-9:15	0	5	2	11	2	0	1	0	2	1	0	2	258	4	3	0	1	268	0	0	560
8:30-9:30	0	5	3	11	2	0	1	1	0	0	0	2	296	1	1	0	1	246	0	0	570
AM	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					
Peak Hour	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**Total**
7:45-8:45	**0**	**2**	**1**	**22**	**0**	**0**	**3**	**4**	**8**	**3**	**0**	**1**	**295**	**5**	**3**	**0**	**4**	**349**	**2**	**0**	**702**

Weekday Evening Peak Hour (4 pm - 7 pm)

	Park Street Northbound					Park Street Southbound					Goldsborough Street Eastbound					Goldsborough Street Westbound					
Time:	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
4:00-4:15	0	0	2	3	0	0	0	2	1	0	0	3	115	1	0	0	6	58	1	0	192
4:15-4:30	0	2	5	4	0	0	0	2	1	0	0	3	124	1	0	0	4	64	1	0	211
4:30-4:45	0	1	3	3	0	0	0	0	1	0	0	1	138	1	0	0	2	74	3	0	227
4:45-5:00	0	1	0	2	1	0	0	0	0	0	0	4	144	3	0	0	3	77	0	0	234
5:00-5:15	0	2	1	3	0	0	0	0	0	2	0	1	147	2	1	0	7	85	2	0	250
5:15-5:30	0	1	1	6	0	0	0	1	0	1	0	3	121	3	0	0	4	90	1	0	231
5:30-5:45	0	0	0	0	0	0	1	1	1	0	0	1	73	1	0	0	4	67	0	0	149
5:45-6:00	0	0	5	0	4	0	2	3	3	0	0	2	79	2	0	0	2	76	0	0	174
6:00-6:15	0	0	1	1	0	0	0	0	1	0	0	0	82	5	1	0	3	50	0	0	143
6:15-6:30	0	1	0	4	1	0	1	0	1	1	0	1	68	0	0	0	1	43	2	0	122
6:30-6:45	0	1	0	0	0	0	0	2	1	0	0	1	61	1	0	0	3	43	0	0	113
6:45-7:00	0	0	3	1	0	0	0	1	0	1	0	0	65	3	0	0	1	45	0	0	119
Hourly Totals																					
4:00-5:00	0	4	10	12	1	0	0	4	3	0	0	11	521	6	0	0	15	273	5	0	865
4:15-5:15	0	6	9	12	1	0	0	2	2	2	0	9	553	7	1	0	16	300	6	0	926
4:30-5:30	0	5	5	14	1	0	0	1	1	3	0	9	550	9	1	0	16	326	6	0	947
4:45-5:45	0	4	2	11	1	0	1	2	1	3	0	9	485	9	1	0	18	319	3	0	869
5:00-6:00	0	3	7	9	4	0	3	5	4	3	0	7	420	8	1	0	17	318	3	0	812
5:15-6:15	0	1	7	7	4	0	3	5	5	1	0	6	355	11	1	0	13	283	1	0	703
5:30-6:30	0	1	6	5	5	0	4	4	6	1	0	4	302	8	1	0	10	236	2	0	595
5:45-6:45	0	2	6	5	5	0	3	5	6	1	0	4	290	8	1	0	9	212	2	0	559
6:00-7:00	0	2	4	6	1	0	1	3	3	2	0	2	276	9	1	0	8	181	2	0	501
PM	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					
Peak Hour	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**Total**
4:30-5:30	**0**	**5**	**5**	**14**	**1**	**0**	**0**	**1**	**1**	**3**	**0**	**9**	**550**	**9**	**1**	**0**	**16**	**326**	**6**	**0**	**947**

Peak Hour
Turning Movement Count

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Intersection: Goldsborough Street & Park Street
Weather: Clear
Count by: Count Cam DSS
Count Day/Date: Tuesday, November 21, 2023
Jurisdiction: Talbot County

Weekday Morning Peak Hour (6:30 am - 9:30 am)

	US 50 Northbound					US 50 Southbound					Goldsborough Street Eastbound					Goldsborough Street Westbound					
Time:	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
6:30-6:45	0	12	175	32	0	3	15	141	2	0	0	12	13	6	0	0	48	18	23	0	500
6:45-7:00	0	21	244	29	0	0	18	169	8	0	0	11	18	10	0	0	84	32	46	0	690
7:00-7:15	0	11	200	27	0	2	18	165	9	0	0	14	16	8	0	0	80	19	44	0	613
7:15-7:30	2	18	231	26	0	8	24	259	16	0	0	9	22	8	0	0	98	32	47	0	800
7:30-7:45	1	28	233	48	1	7	22	222	8	2	0	8	17	18	0	0	108	49	39	0	808
7:45-8:00	5	42	240	36	0	5	29	221	23	0	0	25	34	35	0	0	104	65	58	0	922
8:00-8:15	2	31	316	45	0	3	27	226	24	0	0	24	31	45	0	0	69	41	55	0	939
8:15-8:30	1	15	228	29	0	7	25	194	6	0	0	14	28	24	0	0	64	49	40	0	724
8:30-8:45	4	20	278	24	0	7	23	203	14	0	0	13	25	24	0	0	51	44	53	0	783
8:45-9:00	3	16	215	29	0	4	32	191	14	0	0	6	28	29	0	0	41	36	37	0	681
9:00-9:15	1	18	193	23	2	6	32	197	10	0	0	16	34	15	0	0	45	33	40	0	663
9:15-9:30	2	17	206	27	0	4	41	197	9	0	0	13	40	20	0	0	42	35	35	0	688
Hourly Totals																					
6:30-7:30	2	62	850	114	0	13	75	734	35	0	0	46	69	32	0	0	310	101	160	0	2603
6:45-7:45	3	78	908	130	1	17	82	815	41	2	0	42	73	44	0	0	370	132	176	0	2914
7:00-8:00	8	99	904	137	1	22	93	867	56	2	0	56	89	69	0	0	390	165	188	0	3146
7:15-8:15	10	119	1020	155	1	23	102	928	71	2	0	66	104	106	0	0	379	187	199	0	3472
7:30-8:30	9	116	1017	158	1	22	103	863	61	2	0	71	110	122	0	0	345	204	192	0	3396
7:45-8:45	12	108	1062	134	0	22	104	844	67	0	0	76	118	128	0	0	288	199	206	0	3368
8:00-9:00	10	82	1037	127	0	21	107	814	58	0	0	57	112	122	0	0	225	170	185	0	3127
8:15-9:15	9	69	914	105	2	24	112	785	44	0	0	49	115	92	0	0	201	162	170	0	2853
8:30-9:30	10	71	892	103	2	21	128	788	47	0	0	48	127	88	0	0	179	148	165	0	2817
AM	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					
Peak Hour	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**Total**
7:15-8:15	**10**	**119**	**1020**	**155**	**1**	**23**	**102**	**928**	**71**	**2**	**0**	**66**	**104**	**106**	**0**	**0**	**379**	**187**	**199**	**0**	**3472**

Weekday Evening Peak Hour (4 pm - 7 pm)

	US 50 Northbound					US 50 Southbound					Goldsborough Street Eastbound					Goldsborough Street Westbound					
Time:	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
4:00-4:15	3	12	231	67	0	1	56	215	9	0	0	12	74	42	0	0	40	41	42	0	845
4:15-4:30	1	13	206	78	0	0	53	227	14	0	0	9	77	37	0	0	35	35	39	0	824
4:30-4:45	4	16	228	59	0	6	48	221	14	0	0	18	76	48	0	0	48	39	50	0	875
4:45-5:00	4	31	202	88	0	3	40	204	19	0	0	18	80	42	0	0	43	36	60	0	870
5:00-5:15	4	23	195	74	0	3	58	256	16	0	0	17	77	49	0	0	33	47	66	0	918
5:15-5:30	3	29	219	66	1	5	48	232	16	0	0	22	86	41	0	0	40	43	50	0	900
5:30-5:45	4	22	196	48	0	8	41	210	11	0	0	13	54	18	0	0	34	36	56	0	751
5:45-6:00	1	22	166	44	0	3	41	180	12	0	0	10	56	28	0	0	44	35	35	0	677
6:00-6:15	5	21	187	39	0	2	36	157	16	1	0	9	34	21	0	0	20	45	41	0	633
6:15-6:30	2	14	141	31	0	3	52	160	16	0	0	12	52	13	0	0	26	23	36	0	581
6:30-6:45	2	20	112	33	0	4	30	138	7	2	0	11	41	19	0	0	23	20	32	0	492
6:45-7:00	4	11	129	22	0	5	30	144	8	0	0	12	39	9	0	0	23	29	27	0	492
Hourly Totals																					
4:00-5:00	12	72	867	292	0	10	197	867	56	0	0	57	307	169	0	0	166	151	191	0	3414
4:15-5:15	13	83	831	299	0	12	199	908	63	0	0	62	310	176	0	0	159	157	215	0	3487
4:30-5:30	15	99	844	287	1	17	194	913	65	0	0	75	319	180	0	0	164	165	226	0	3564
4:45-5:45	15	105	812	276	1	19	187	902	62	0	0	70	297	150	0	0	150	162	232	0	3440
5:00-6:00	12	96	776	232	1	19	188	878	55	0	0	62	273	136	0	0	151	161	207	0	3247
5:15-6:15	13	94	768	197	1	18	166	779	55	1	0	54	230	108	0	0	138	159	182	0	2963
5:30-6:30	12	79	690	162	0	16	170	707	55	1	0	44	196	80	0	0	124	139	168	0	2643
5:45-6:45	10	77	606	147	0	12	159	635	51	3	0	42	183	81	0	0	113	123	144	0	2386
6:00-7:00	13	66	569	125	0	14	148	599	47	3	0	44	166	62	0	0	92	117	136	0	2201
PM	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					
Peak Hour	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**U-Turn**	**Left**	**Thru**	**Right**	**Peds**	**Total**
4:30-5:30	**15**	**99**	**844**	**287**	**1**	**17**	**194**	**913**	**65**	**0**	**0**	**75**	**319**	**180**	**0**	**0**	**164**	**165**	**226**	**0**	**3564**

Peak Hour
Turning Movement Count

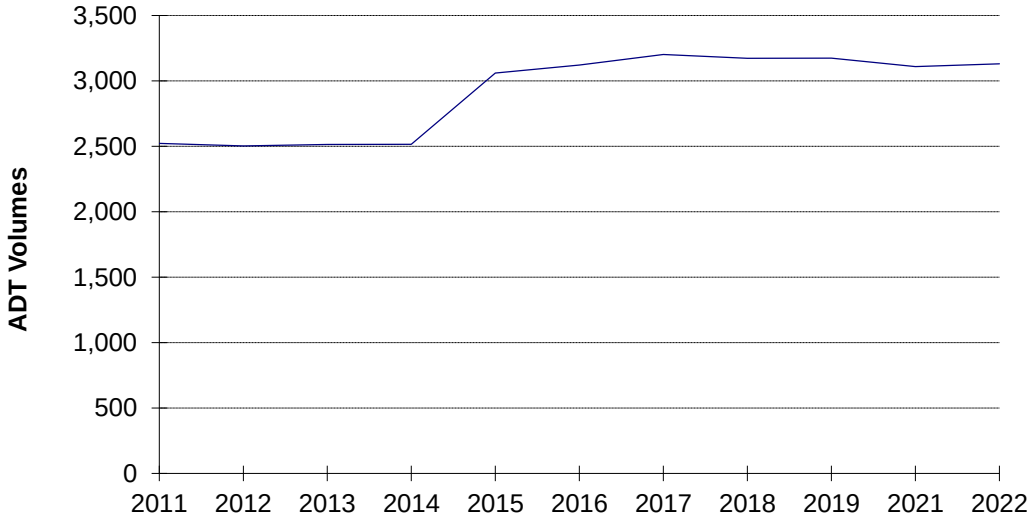
LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Intersection: US 50 & Goldsborough Street
Weather: Clear
Count by: Count Cam DSS
Count Day/Date: Wednesday, November 8, 2023
Jurisdiction: Talbot County

TRAFFIC GROWTH PROJECTION

LOCATION: **Port St, east of MD 322**
REPORT DATE: 29-Nov-23
AVERAGE GROWTH: 2.38%
MATHEMATICAL GROWTH: 2.19%

Year	ADT Volume	Vol. increase	% increase	Average %
2011	2,522			
2012	2,503	-19	-0.75%	-0.75%
2013	2,514	11	0.44%	-0.16%
2014	2,515	1	0.04%	-0.09%
2015	3,060	545	21.67%	5.35%
2016	3,121	61	1.99%	4.68%
2017	3,202	81	2.60%	4.33%
2018	3,173	-29	-0.91%	3.58%
2019	3,174	1	0.03%	3.14%
2021	3,110	-64	-2.02%	2.57%
2022	3,131	21	0.68%	2.38%



TRAFFIC GROWTH
Port St, east of MD 322

Appendix B

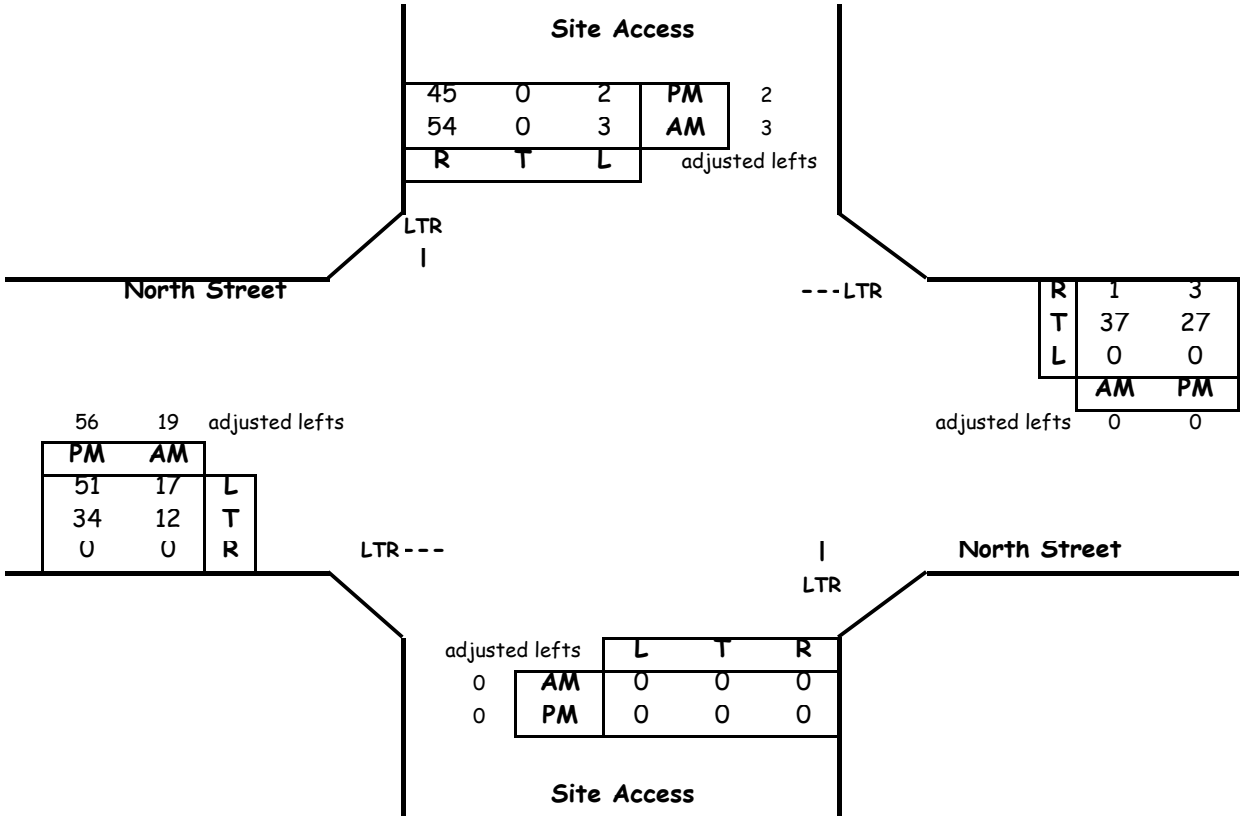
Level of Service (LOS) Worksheets

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: North Street
Minor Street: Site Access
Study Period: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	0	1.00	0	3	1	3	57
SB	57	1.00	57	0	1	0	
EB	31	1	31	0	1	0	55
WB	38	1	38	17	1	17	

CLV TOTAL= **112**
Level of Service (LOS)= **A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	0	1.00	0	2	1	2	47
SB	47	1.00	47	0	1	0	
EB	90	1	90	0	1	0	90
WB	30	1	30	51	1	51	

CLV TOTAL= **137**
Level of Service (LOS)= **A**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

North Street &
Site Access
(Total Traffic)

Intersection
1

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: North Street
Minor Street: Park Street
Study Period: Existing Traffic

Analyst: Lenhart Traffic Consulting

North Street ---TL

	AM	PM
T	19	23
L	12	0
adjusted lefts	13.2	0

PM	AM	
30	10	T
1	1	R

TR---

North Street

LR

	L	R
AM	0	3
PM	0	11

Park Street

Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	3	1.00	3				3
EB	11	1.00	11	12	1.00	12	32
WB	32	1.00	32				
						CLV TOTAL=	**35**
						Level of Service (LOS)=	**A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	11	1.00	11				11
EB	31	1.00	31	0	1.00	0	31
WB	23	1.00	23				
						CLV TOTAL=	**42**
						Level of Service (LOS)=	**A**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

North Street &
Park Street
(Existing Traffic)

Intersection
2

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: North Street
Minor Street: Park Street
Study Period: Background Traffic

Analyst: Lenhart Traffic Consulting

North Street ---TL

	AM	PM
T	21	25
L	13	0
adjusted lefts	14.3	0

PM	AM	
33	11	T
1	1	R

TR---

North Street

LR

	L	R
AM	0	3
PM	0	12

Park Street

Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	3	1.00	3				3
EB	12	1.00	12	13	1.00	13	35
WB	35	1.00	35				
						CLV TOTAL=	**38**
						Level of Service (LOS)=	**A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	12	1.00	12				12
EB	34	1.00	34	0	1.00	0	34
WB	25	1.00	25				
						CLV TOTAL=	**46**
						Level of Service (LOS)=	**A**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
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North Street &
Park Street
(Background Traffic)

Intersection
2

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: North Street
Minor Street: Park Street
Study Period: Total Traffic

Analyst: Lenhart Traffic Consulting

North Street ---TL

	AM	PM
T	38	30
L	0	0
adjusted lefts	0	0

PM	AM	
36	15	T
0	0	R

TR---

North Street

LR

	L	R
AM	0	3
PM	0	12

Park Street

Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	3	1.00	3				3
EB	15	1.00	15	0	1.00	0	38
WB	38	1.00	38				
						CLV TOTAL=	**41**
						Level of Service (LOS)=	**A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	12	1.00	12				12
EB	36	1.00	36	0	1.00	0	36
WB	30	1.00	30				
						CLV TOTAL=	**48**
						Level of Service (LOS)=	**A**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
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North Street &
Park Street
(Total Traffic)

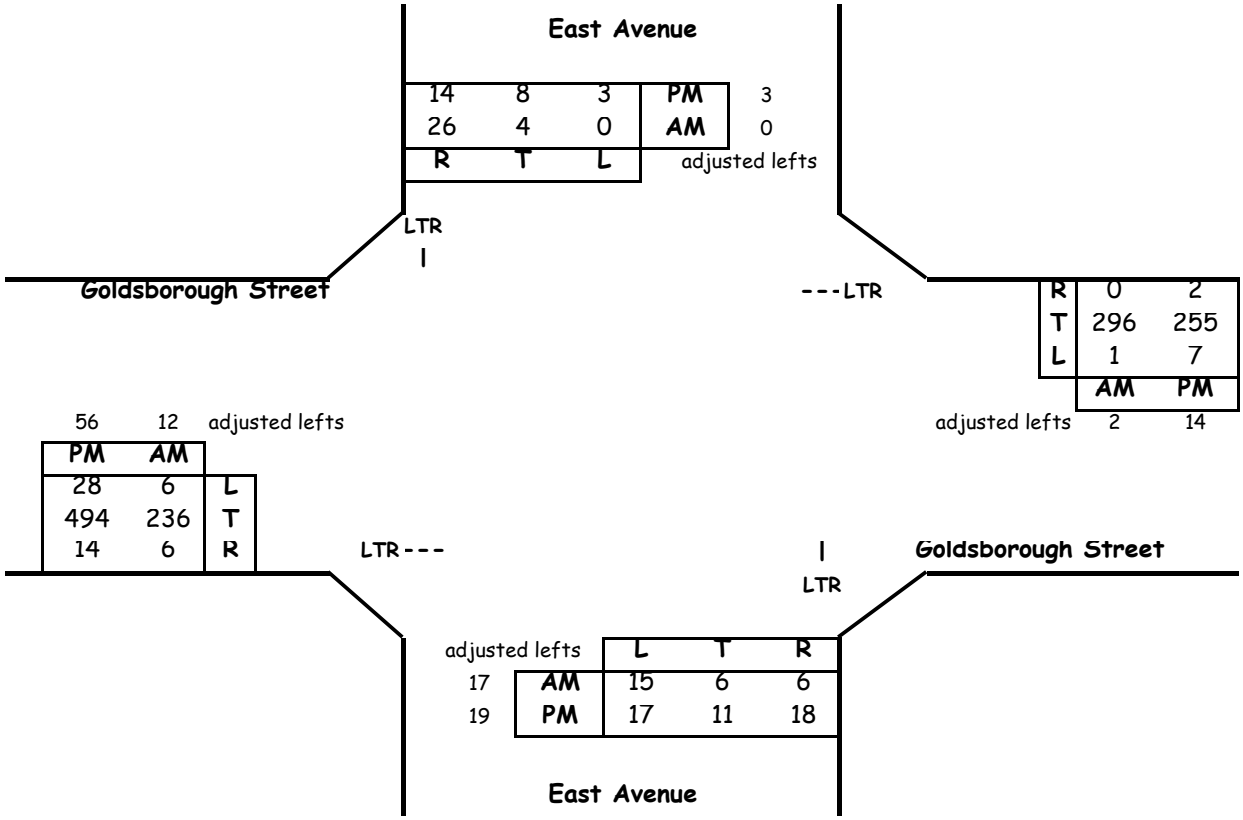
Intersection
2

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: Goldsborough Street
Minor Street: East Avenue
Study Period: Existing Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	29	1.00	29	0	1	0	45
SB	30	1.00	30	15	1	15	
EB	254	1	254	1	1	1	304
WB	298	1	298	6	1	6	

CLV TOTAL= **349**
Level of Service (LOS)= **A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	48	1.00	48	3	1	3	51
SB	25	1.00	25	17	1	17	
EB	564	1	564	7	1	7	571
WB	271	1	271	28	1	28	

CLV TOTAL= **622**
Level of Service (LOS)= **A**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
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Goldsborough Street & East Avenue
(Existing Traffic)

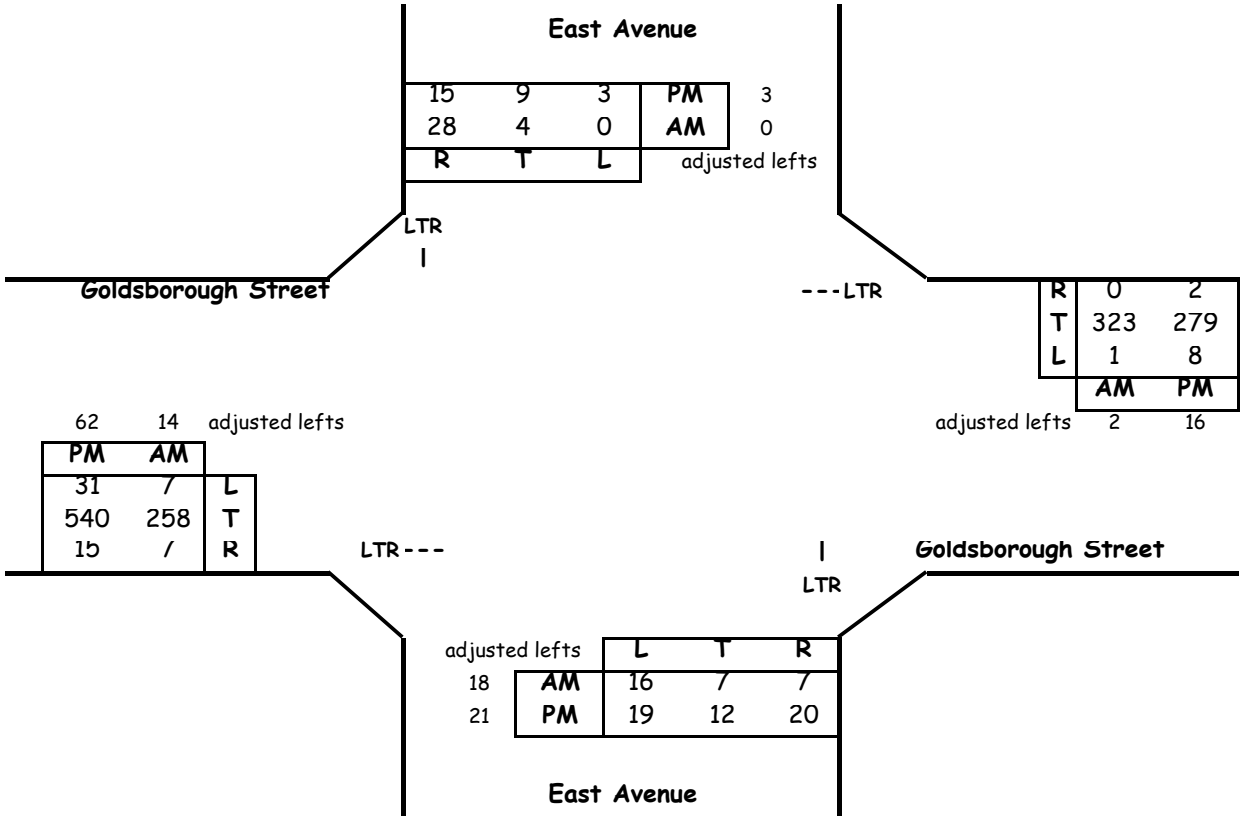
Intersection 3

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: Goldsborough Street
Minor Street: East Avenue
Study Period: Background Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	32	1.00	32	0	1	0	48
SB	32	1.00	32	16	1	16	
EB	279	1	279	1	1	1	332
WB	325	1	325	7	1	7	

CLV TOTAL= **380**
Level of Service (LOS)= **A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	53	1.00	53	3	1	3	56
SB	27	1.00	27	19	1	19	
EB	617	1	617	8	1	8	625
WB	297	1	297	31	1	31	

CLV TOTAL= **681**
Level of Service (LOS)= **A**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
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Goldsborough Street & East Avenue
(Background Traffic)

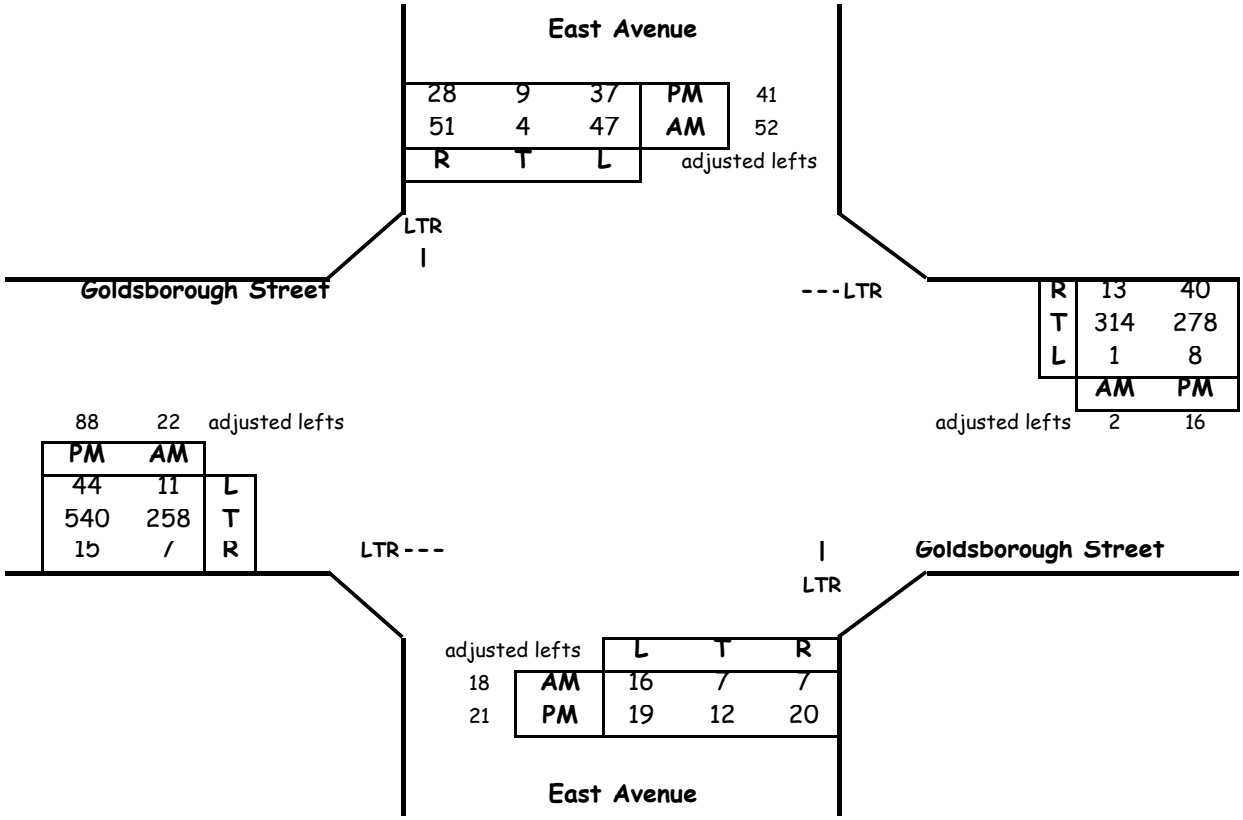
Intersection 3

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: Goldsborough Street
Minor Street: East Avenue
Study Period: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	32	1.00	32	47	1	47	123
SB	107	1.00	107	16	1	16	
EB	287	1	287	1	1	1	340
WB	329	1	329	11	1	11	

CLV TOTAL= **463**
Level of Service (LOS)= **A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	53	1.00	53	37	1	37	97
SB	78	1.00	78	19	1	19	
EB	643	1	643	8	1	8	651
WB	334	1	334	44	1	44	

CLV TOTAL= **748**
Level of Service (LOS)= **A**

Critical Lane Volume Analysis

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Goldsborough Street & East Avenue
(Total Traffic)

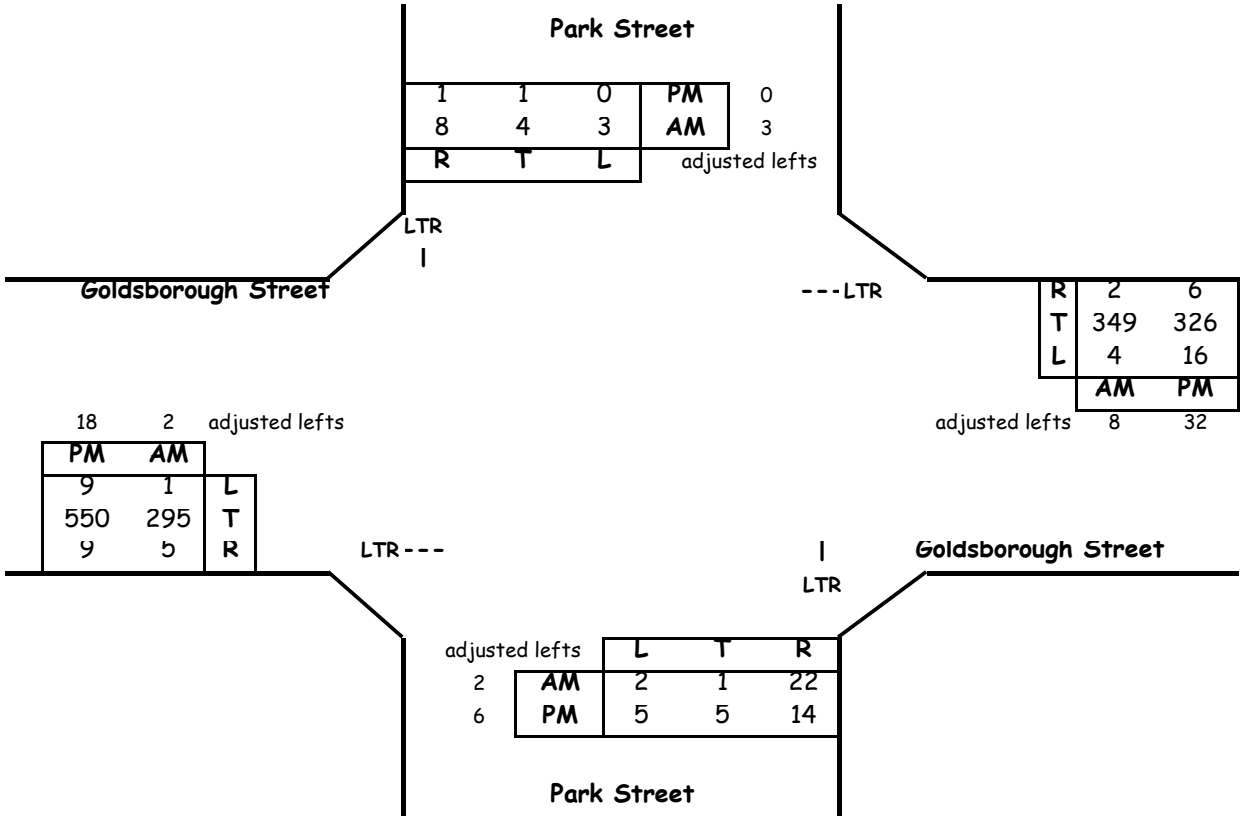
Intersection
3

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: Goldsborough Street
Minor Street: Park Street
Study Period: Existing Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	25	1.00	25	3	1	3	28
SB	15	1.00	15	2	1	2	
EB	302	1	302	4	1	4	360
WB	359	1	359	1	1	1	

CLV TOTAL= **388**
Level of Service (LOS)= **A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	25	1.00	25	0	1	0	25
SB	2	1.00	2	5	1	5	
EB	577	1	577	16	1	16	593
WB	364	1	364	9	1	9	

CLV TOTAL= **618**
Level of Service (LOS)= **A**

Critical Lane Volume Analysis

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Goldsborough Street & Park Street
(Existing Traffic)

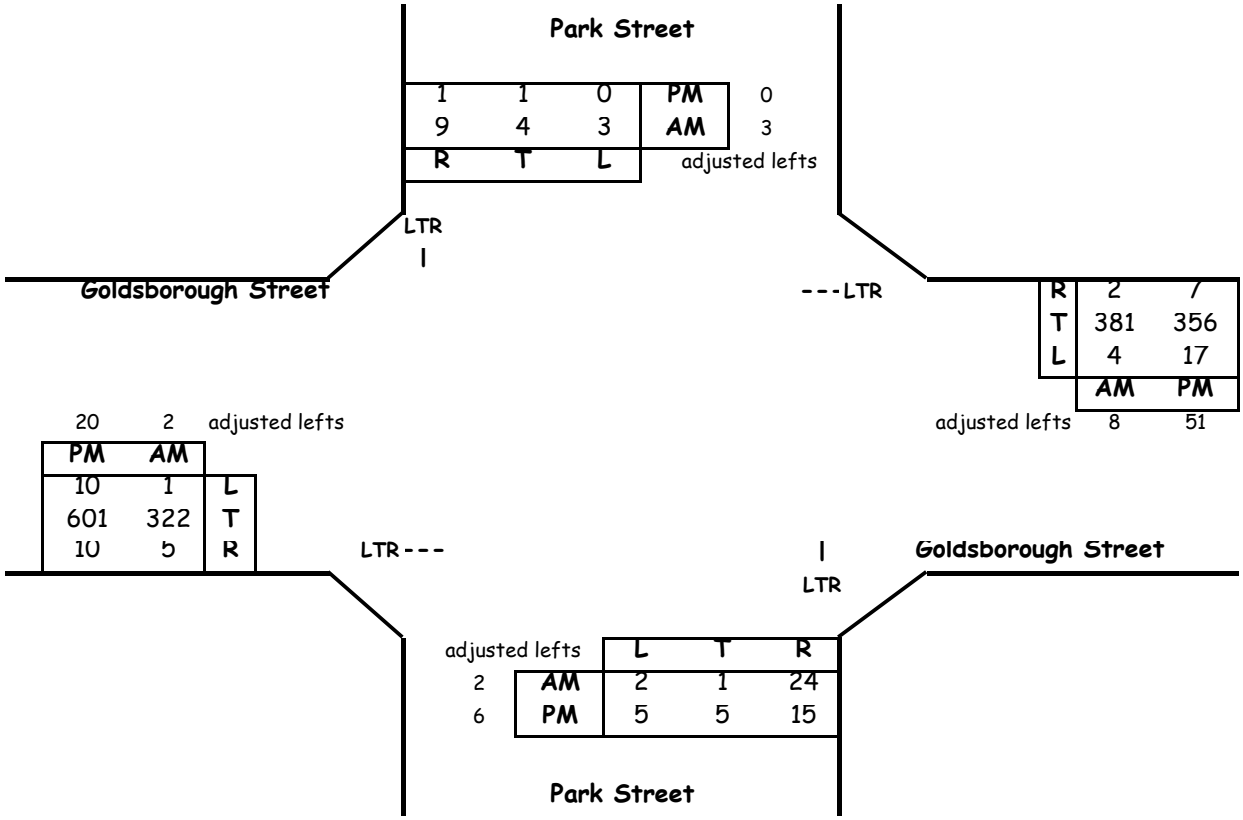
Intersection 4

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: Goldsborough Street
Minor Street: Park Street
Study Period: Background Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	27	1.00	27	3	1	3	30
SB	16	1.00	16	2	1	2	
EB	329	1	329	4	1	4	392
WB	391	1	391	1	1	1	

CLV TOTAL= **422**
Level of Service (LOS)= **A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	26	1.00	26	0	1	0	26
SB	2	1.00	2	5	1	5	
EB	631	1	631	17	1	17	648
WB	414	1	414	10	1	10	

CLV TOTAL= **674**
Level of Service (LOS)= **A**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
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Goldsborough Street & Park Street
(Background Traffic)

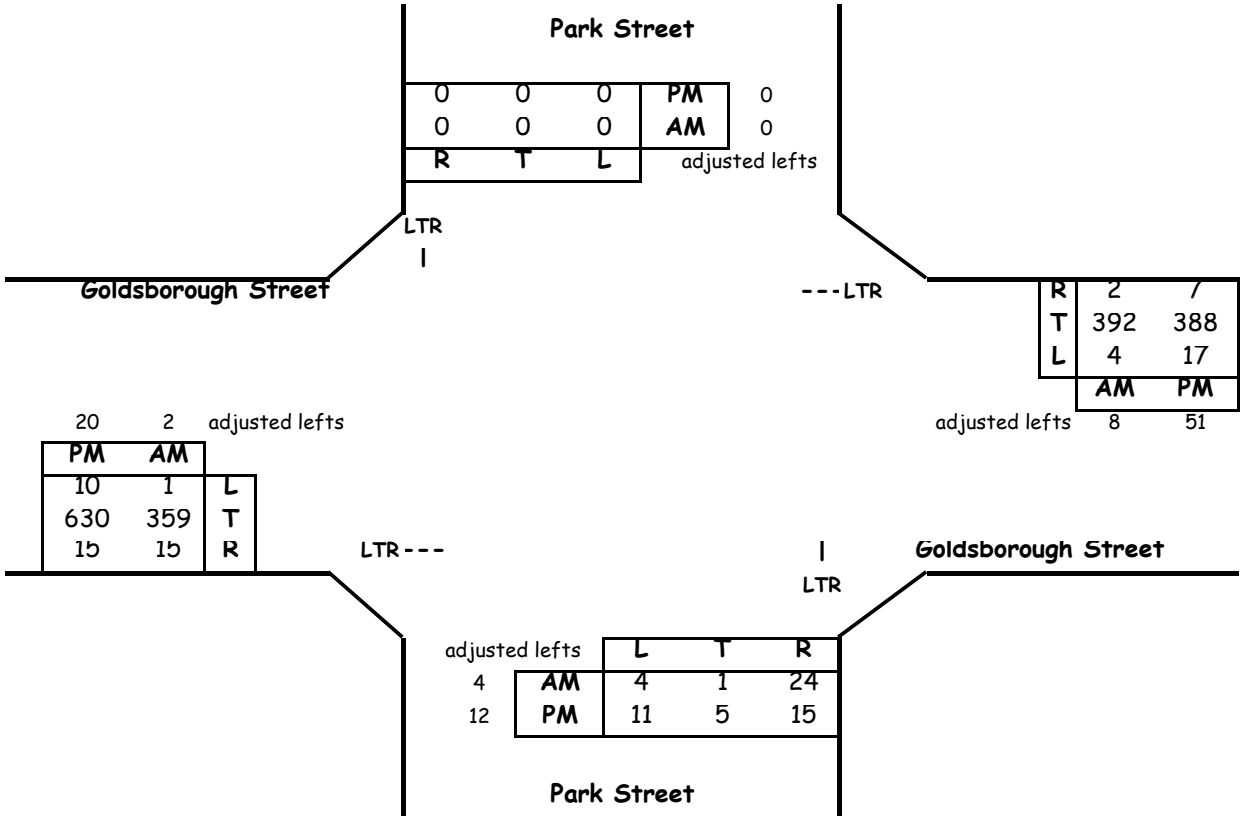
Intersection
4

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: Goldsborough Street
Minor Street: Park Street
Study Period: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	29	1.00	29	0	1	0	29
SB	0	1.00	0	4	1	4	
EB	376	1	376	4	1	4	403
WB	402	1	402	1	1	1	

CLV TOTAL= **432**
Level of Service (LOS)= **A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	32	1.00	32	0	1	0	32
SB	0	1.00	0	11	1	11	
EB	665	1	665	17	1	17	682
WB	446	1	446	10	1	10	

CLV TOTAL= **714**
Level of Service (LOS)= **A**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
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Goldsborough Street & Park Street
(Total Traffic)

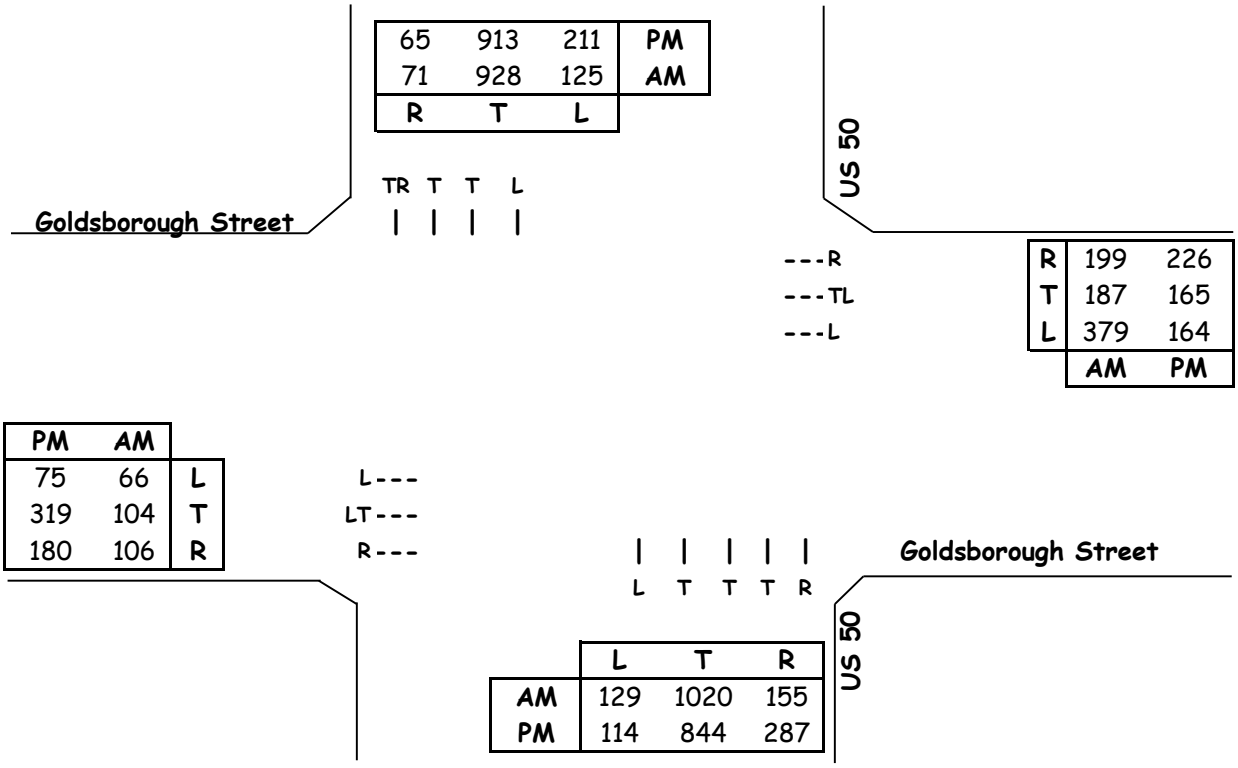
Intersection
4

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: US 50
Minor Street: Goldsborough Street
Study Period: Existing Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	104	1.00	104				104
WB	566	0.60	340				340
NB	1020	0.40	408	125	1.00	125	533
SB	999	0.40	400	129	1.00	129	
						CLV TOTAL=	**977**
						Level of Service (LOS)=	**A**

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	319	1.00	319				319
WB	329	0.60	197				197
NB	844	0.40	338	211	1.00	211	549
SB	978	0.40	391	114	1.00	114	
						CLV TOTAL=	**1065**
						Level of Service (LOS)=	**B**

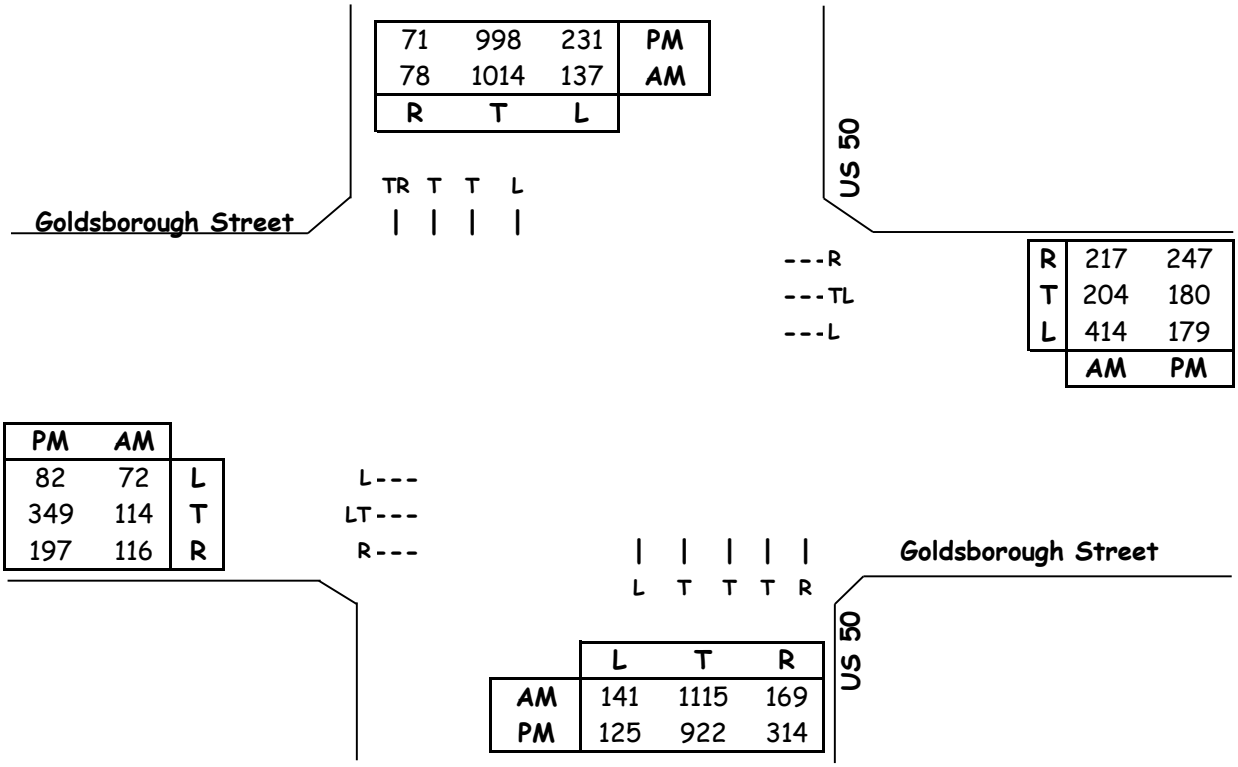
Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning	US 50 & Goldsborough Street (Existing Traffic)	**Intersection** **5**

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: US 50
Minor Street: Goldsborough Street
Study Period: Background Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	114	1.00	114				114
WB	618	0.60	371				371
NB	1115	0.40	446	137	1.00	137	583
SB	1092	0.40	437	141	1.00	141	
						CLV TOTAL=	**1068**
						Level of Service (LOS)=	**B**

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	349	1.00	349				349
WB	359	0.60	215				215
NB	922	0.40	369	231	1.00	231	600
SB	1069	0.40	428	125	1.00	125	
						CLV TOTAL=	**1164**
						Level of Service (LOS)=	**C**

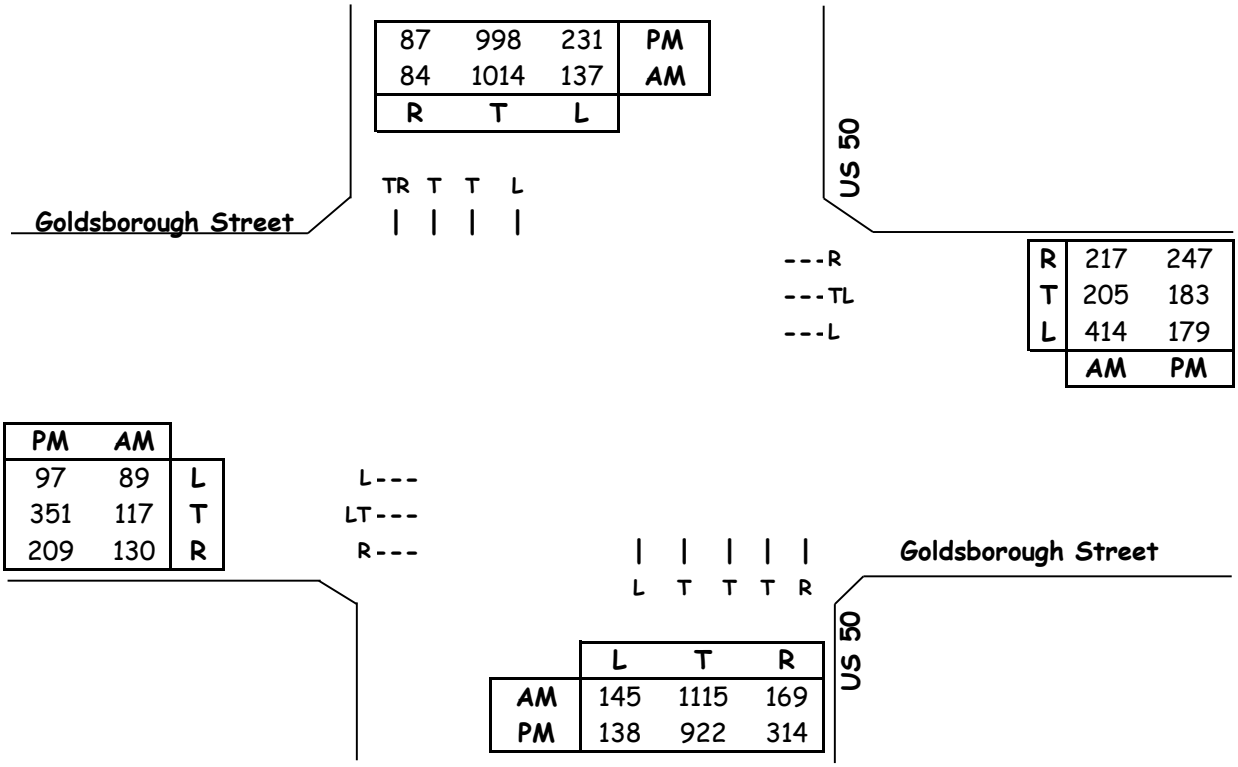
Critical Lane Volume Analysis		US 50 & Goldsborough Street (Background Traffic)	**Intersection 5**
Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning			

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: US 50
Minor Street: Goldsborough Street
Study Period: Background Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	206	0.60	124				124
WB	619	0.60	371				371
NB	1115	0.40	446	137	1.00	137	584
SB	1098	0.40	439	145	1.00	145	
						CLV TOTAL=	**1079**
						Level of Service (LOS)=	**B**

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	351	1.00	351				351
WB	362	0.60	217				217
NB	922	0.40	369	231	1.00	231	600
SB	1085	0.40	434	138	1.00	138	
						CLV TOTAL=	**1168**
						Level of Service (LOS)=	**C**

Critical Lane Volume Analysis		US 50 & Goldsborough Street (Background Traffic)	**Intersection 5**
Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	10	1	12	19	0	3
Future Volume (Veh/h)	10	1	12	19	0	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	1	13	21	0	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			12		58	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			12		58	12
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	100
cM capacity (veh/h)			1607		941	1069

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	12	34	3
Volume Left	0	13	0
Volume Right	1	0	3
cSH	1700	1607	1069
Volume to Capacity	0.01	0.01	0.00
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	2.8	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	2.8	8.4
Approach LOS			A

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	236	6	1	296	0	15	6	6	0	4	26
Future Volume (Veh/h)	6	236	6	1	296	0	15	6	6	0	4	26
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	257	7	1	322	0	16	7	7	0	4	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	322			264			628	598	260	609	602	322
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	322			264			628	598	260	609	602	322
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			96	98	99	100	99	96
cM capacity (veh/h)	1238			1300			375	413	778	396	411	719

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	271	323	30	32
Volume Left	7	1	16	0
Volume Right	7	0	7	28
cSH	1238	1300	437	657
Volume to Capacity	0.01	0.00	0.07	0.05
Queue Length 95th (ft)	0	0	6	4
Control Delay (s)	0.3	0.0	13.8	10.8
Lane LOS	A	A	B	B
Approach Delay (s)	0.3	0.0	13.8	10.8
Approach LOS			B	B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	32.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	295	5	4	349	2	2	1	22	3	4	8
Future Volume (Veh/h)	1	295	5	4	349	2	2	1	22	3	4	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	321	5	4	379	2	2	1	24	3	4	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			724	714	324	738	716	380
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			724	714	324	738	716	380
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	97	99	99	99
cM capacity (veh/h)	1177			1234			332	355	717	321	354	667

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	327	385	27	16
Volume Left	1	4	2	3
Volume Right	5	2	24	9
cSH	1177	1234	638	469
Volume to Capacity	0.00	0.00	0.04	0.03
Queue Length 95th (ft)	0	0	3	3
Control Delay (s)	0.0	0.1	10.9	13.0
Lane LOS	A	A	B	B
Approach Delay (s)	0.0	0.1	10.9	13.0
Approach LOS			B	B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	104	106	379	187	199	120	1020	155	125	928	71
Future Volume (vph)	66	104	106	379	187	199	120	1020	155	125	928	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1764	1583	1681	1739	1583	1770	5085	1583	1770	5031	
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1764	1583	1681	1739	1583	1770	5085	1583	1770	5031	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	113	115	412	203	216	130	1109	168	136	1009	77
RTOR Reduction (vph)	0	0	101	0	0	164	0	0	104	0	7	0
Lane Group Flow (vph)	65	120	14	301	314	52	130	1109	64	136	1079	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	12.5	12.5	12.5	25.5	25.5	25.5	12.6	36.6	36.6	12.6	36.6	
Effective Green, g (s)	12.5	12.5	12.5	25.5	25.5	25.5	12.6	36.6	36.6	12.6	36.6	
Actuated g/C Ratio	0.12	0.12	0.12	0.24	0.24	0.24	0.12	0.35	0.35	0.12	0.35	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	199	209	188	407	421	383	211	1769	550	211	1750	
v/s Ratio Prot	0.04	c0.07		0.18	c0.18		0.07	c0.22		c0.08	0.21	
v/s Ratio Perm			0.01			0.03			0.04			
v/c Ratio	0.33	0.57	0.07	0.74	0.75	0.14	0.62	0.63	0.12	0.64	0.62	
Uniform Delay, d1	42.5	43.8	41.2	36.8	36.9	31.2	44.0	28.6	23.3	44.2	28.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	3.8	0.2	6.9	7.0	0.2	5.3	1.7	0.4	6.6	1.6	
Delay (s)	43.5	47.6	41.4	43.7	43.9	31.4	49.3	30.3	23.7	50.8	30.1	
Level of Service	D	D	D	D	D	C	D	C	C	D	C	
Approach Delay (s)		44.3			40.6			31.3			32.4	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	105.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	11	1	13	21	0	3
Future Volume (Veh/h)	11	1	13	21	0	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	1	14	23	0	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			13		64	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			13		64	12
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	100
cM capacity (veh/h)			1606		934	1068

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	13	37	3
Volume Left	0	14	0
Volume Right	1	0	3
cSH	1700	1606	1068
Volume to Capacity	0.01	0.01	0.00
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	2.8	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	2.8	8.4
Approach LOS			A

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	18.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	258	7	1	323	0	16	7	7	0	4	28
Future Volume (Veh/h)	7	258	7	1	323	0	16	7	7	0	4	28
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	280	8	1	351	0	17	8	8	0	4	30
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	351			288			685	653	284	665	657	351
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	351			288			685	653	284	665	657	351
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			95	98	99	100	99	96
cM capacity (veh/h)	1208			1274			342	384	755	362	382	692

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	296	352	33	34
Volume Left	8	1	17	0
Volume Right	8	0	8	30
cSH	1208	1274	407	632
Volume to Capacity	0.01	0.00	0.08	0.05
Queue Length 95th (ft)	1	0	7	4
Control Delay (s)	0.3	0.0	14.6	11.0
Lane LOS	A	A	B	B
Approach Delay (s)	0.3	0.0	14.6	11.0
Approach LOS			B	B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	322	5	4	381	2	4	1	24	3	4	9
Future Volume (Veh/h)	1	322	5	4	381	2	4	1	24	3	4	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	350	5	4	414	2	4	1	26	3	4	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	416			355			790	778	352	804	780	415
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	416			355			790	778	352	804	780	415
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	96	99	99	98
cM capacity (veh/h)	1143			1204			299	326	691	288	325	637

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	356	420	31	17
Volume Left	1	4	4	3
Volume Right	5	2	26	10
cSH	1143	1204	574	443
Volume to Capacity	0.00	0.00	0.05	0.04
Queue Length 95th (ft)	0	0	4	3
Control Delay (s)	0.0	0.1	11.6	13.5
Lane LOS	A	A	B	B
Approach Delay (s)	0.0	0.1	11.6	13.5
Approach LOS			B	B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	114	116	414	204	217	141	1115	169	137	1014	78
Future Volume (vph)	72	114	116	414	204	217	141	1115	169	137	1014	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1764	1583	1681	1739	1583	1770	5085	1583	1770	5031	
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1764	1583	1681	1739	1583	1770	5085	1583	1770	5031	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	78	124	126	450	222	236	153	1212	184	149	1102	85
RTOR Reduction (vph)	0	0	111	0	0	177	0	0	106	0	7	0
Lane Group Flow (vph)	70	132	15	328	344	59	153	1212	78	149	1180	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	13.2	13.2	13.2	27.1	27.1	27.1	13.6	36.5	36.5	13.2	36.1	
Effective Green, g (s)	13.2	13.2	13.2	27.1	27.1	27.1	13.6	36.5	36.5	13.2	36.1	
Actuated g/C Ratio	0.12	0.12	0.12	0.25	0.25	0.25	0.13	0.34	0.34	0.12	0.33	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	205	215	193	421	436	397	222	1718	534	216	1681	
v/s Ratio Prot	0.04	c0.07		0.20	c0.20		c0.09	c0.24		0.08	0.23	
v/s Ratio Perm			0.01			0.04			0.05			
v/c Ratio	0.34	0.61	0.08	0.78	0.79	0.15	0.69	0.71	0.15	0.69	0.70	
Uniform Delay, d1	43.4	45.0	42.0	37.7	37.8	31.5	45.2	31.1	24.9	45.4	31.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	5.1	0.2	8.8	9.2	0.2	8.6	2.5	0.6	8.9	2.5	
Delay (s)	44.4	50.1	42.2	46.5	47.0	31.7	53.8	33.5	25.5	54.3	33.8	
Level of Service	D	D	D	D	D	C	D	C	C	D	C	
Approach Delay (s)		45.9			42.8			34.6			36.0	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	37.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	108.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	12	0	0	37	1	0	0	0	3	0	54
Future Volume (Veh/h)	17	12	0	0	37	1	0	0	0	3	0	54
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	13	0	0	40	1	0	0	0	3	0	59
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	41			13			148	90	13	90	90	40
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	41			13			148	90	13	90	90	40
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	100	100	94
cM capacity (veh/h)	1568			1606			766	791	1067	887	791	1031

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	31	41	0	62
Volume Left	18	0	0	3
Volume Right	0	1	0	59
cSH	1568	1606	1700	1023
Volume to Capacity	0.01	0.00	0.00	0.06
Queue Length 95th (ft)	1	0	0	5
Control Delay (s)	4.3	0.0	0.0	8.7
Lane LOS	A		A	A
Approach Delay (s)	4.3	0.0	0.0	8.7
Approach LOS			A	A

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	18.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	15	0	0	38	0	3
Future Volume (Veh/h)	15	0	0	38	0	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	0	0	41	0	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			16		57	16
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			16		57	16
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1602		950	1063

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	16	41	3
Volume Left	0	0	0
Volume Right	0	0	3
cSH	1700	1602	1063
Volume to Capacity	0.01	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	8.4
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.4
Approach LOS			A

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	258	7	1	314	13	16	7	7	47	4	51
Future Volume (Veh/h)	11	258	7	1	314	13	16	7	7	47	4	51
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	280	8	1	341	14	17	8	8	51	4	55
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	355			288			715	665	284	670	662	348
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	355			288			715	665	284	670	662	348
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			95	98	99	86	99	92
cM capacity (veh/h)	1204			1274			313	377	755	358	378	695

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	300	356	33	110
Volume Left	12	1	17	51
Volume Right	8	14	8	55
cSH	1204	1274	383	474
Volume to Capacity	0.01	0.00	0.09	0.23
Queue Length 95th (ft)	1	0	7	22
Control Delay (s)	0.4	0.0	15.3	14.9
Lane LOS	A	A	C	B
Approach Delay (s)	0.4	0.0	15.3	14.9
Approach LOS			C	B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	359	15	4	392	2	4	1	24	0	0	0
Future Volume (Veh/h)	1	359	15	4	392	2	4	1	24	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	390	16	4	426	2	4	1	26	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	428			406			835	836	398	862	843	427
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	428			406			835	836	398	862	843	427
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	96	100	100	100
cM capacity (veh/h)	1131			1153			286	302	652	263	299	628

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	407	432	31	0
Volume Left	1	4	4	0
Volume Right	16	2	26	0
cSH	1131	1153	542	1700
Volume to Capacity	0.00	0.00	0.06	0.04
Queue Length 95th (ft)	0	0	5	0
Control Delay (s)	0.0	0.1	12.0	0.0
Lane LOS	A	A	B	A
Approach Delay (s)	0.0	0.1	12.0	0.0
Approach LOS			B	A

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	117	130	414	205	217	145	1115	169	137	1014	84
Future Volume (vph)	89	117	130	414	205	217	145	1115	169	137	1014	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1763	1583	1681	1740	1583	1770	5085	1583	1770	5027	
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1763	1583	1681	1740	1583	1770	5085	1583	1770	5027	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	97	127	141	450	223	236	158	1212	184	149	1102	91
RTOR Reduction (vph)	0	0	123	0	0	177	0	0	106	0	7	0
Lane Group Flow (vph)	87	137	18	333	340	59	158	1212	78	149	1186	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	13.6	13.6	13.6	27.2	27.2	27.2	13.8	36.5	36.5	13.2	35.9	
Effective Green, g (s)	13.6	13.6	13.6	27.2	27.2	27.2	13.8	36.5	36.5	13.2	35.9	
Actuated g/C Ratio	0.13	0.13	0.13	0.25	0.25	0.25	0.13	0.34	0.34	0.12	0.33	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	210	220	198	421	436	396	225	1710	532	215	1663	
v/s Ratio Prot	0.05	c0.08		c0.20	0.20		c0.09	c0.24		0.08	0.24	
v/s Ratio Perm			0.01			0.04			0.05			
v/c Ratio	0.41	0.62	0.09	0.79	0.78	0.15	0.70	0.71	0.15	0.69	0.71	
Uniform Delay, d1	43.8	45.0	42.0	38.0	37.9	31.6	45.4	31.4	25.1	45.7	31.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.3	5.4	0.2	9.8	8.6	0.2	9.5	2.5	0.6	9.3	2.6	
Delay (s)	45.1	50.4	42.2	47.8	46.4	31.8	54.9	33.9	25.7	55.0	34.4	
Level of Service	D	D	D	D	D	C	D	C	C	D	C	
Approach Delay (s)		46.0			43.1			35.1			36.7	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	38.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	30	1	0	23	0	11
Future Volume (Veh/h)	30	1	0	23	0	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	1	0	25	0	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			34		58	34
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			34		58	34
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1578		949	1040

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	34	25	12
Volume Left	0	0	0
Volume Right	1	0	12
cSH	1700	1578	1040
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.0	8.5
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.5
Approach LOS			A

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	494	14	7	255	2	17	11	18	3	8	14
Future Volume (Veh/h)	28	494	14	7	255	2	17	11	18	3	8	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	537	15	8	277	2	18	12	20	3	9	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	279			552			918	900	544	924	906	278
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	279			552			918	900	544	924	906	278
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			92	96	96	99	97	98
cM capacity (veh/h)	1284			1018			235	270	539	227	267	761

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	582	287	50	27
Volume Left	30	8	18	3
Volume Right	15	2	20	15
cSH	1284	1018	316	405
Volume to Capacity	0.02	0.01	0.16	0.07
Queue Length 95th (ft)	2	1	14	5
Control Delay (s)	0.7	0.3	18.5	14.5
Lane LOS	A	A	C	B
Approach Delay (s)	0.7	0.3	18.5	14.5
Approach LOS			C	B

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	550	9	16	326	6	5	5	14	0	1	1
Future Volume (Veh/h)	9	550	9	16	326	6	5	5	14	0	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	598	10	17	354	7	5	5	15	0	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	361			608			1016	1018	603	1032	1020	358
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	361			608			1016	1018	603	1032	1020	358
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			98	98	97	100	100	100
cM capacity (veh/h)	1198			970			211	231	499	197	231	687

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	618	378	25	2
Volume Left	10	17	5	0
Volume Right	10	7	15	1
cSH	1198	970	332	345
Volume to Capacity	0.01	0.02	0.08	0.01
Queue Length 95th (ft)	1	1	6	0
Control Delay (s)	0.2	0.6	16.7	15.5
Lane LOS	A	A	C	C
Approach Delay (s)	0.2	0.6	16.7	15.5
Approach LOS			C	C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	45.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	319	180	164	165	226	114	844	287	211	913	65
Future Volume (vph)	75	319	180	164	165	226	114	844	287	211	913	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1768	1583	1681	1762	1583	1770	5085	1583	1770	5034	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1768	1583	1681	1762	1583	1770	5085	1583	1770	5034	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	347	196	178	179	246	124	917	312	229	992	71
RTOR Reduction (vph)	0	0	137	0	0	210	0	0	152	0	4	0
Lane Group Flow (vph)	74	355	59	160	197	36	124	917	160	229	1059	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	35.9	35.9	35.9	20.9	20.9	20.9	15.7	44.4	44.4	24.0	52.7	
Effective Green, g (s)	35.9	35.9	35.9	20.9	20.9	20.9	15.7	44.4	44.4	24.0	52.7	
Actuated g/C Ratio	0.25	0.25	0.25	0.15	0.15	0.15	0.11	0.31	0.31	0.17	0.37	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	421	443	396	245	257	231	194	1576	490	296	1852	
v/s Ratio Prot	0.04	c0.20		0.10	c0.11		0.07	0.18		c0.13	c0.21	
v/s Ratio Perm			0.04			0.02			0.10			
v/c Ratio	0.18	0.80	0.15	0.65	0.77	0.16	0.64	0.58	0.33	0.77	0.57	
Uniform Delay, d1	42.1	50.3	41.8	57.7	58.8	53.4	61.0	41.6	37.9	57.0	36.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	10.0	0.2	6.1	12.8	0.3	6.8	1.6	1.8	11.9	1.3	
Delay (s)	42.3	60.3	41.9	63.8	71.6	53.8	67.8	43.2	39.7	68.9	37.5	
Level of Service	D	E	D	E	E	D	E	D	D	E	D	
Approach Delay (s)		52.4			62.3			44.6			43.1	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	48.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	143.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	33	1	0	25	0	12
Future Volume (Veh/h)	33	1	0	25	0	12
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	1	0	27	0	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			37		64	36
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			37		64	36
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1574		942	1036

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	37	27	13
Volume Left	0	0	0
Volume Right	1	0	13
cSH	1700	1574	1036
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.0	8.5
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.5
Approach LOS			A

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	540	15	8	279	2	19	12	20	3	9	15
Future Volume (Veh/h)	31	540	15	8	279	2	19	12	20	3	9	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	587	16	9	303	2	21	13	22	3	10	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	305			603			1006	986	595	1014	993	304
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	305			603			1006	986	595	1014	993	304
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			99			90	95	96	98	96	98
cM capacity (veh/h)	1256			975			202	239	504	194	237	736

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	637	314	56	29
Volume Left	34	9	21	3
Volume Right	16	2	22	16
cSH	1256	975	277	365
Volume to Capacity	0.03	0.01	0.20	0.08
Queue Length 95th (ft)	2	1	18	6
Control Delay (s)	0.7	0.3	21.2	15.7
Lane LOS	A	A	C	C
Approach Delay (s)	0.7	0.3	21.2	15.7
Approach LOS			C	C

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	601	15	17	356	7	5	5	15	0	1	1
Future Volume (Veh/h)	10	601	15	17	356	7	5	5	15	0	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	653	16	18	387	8	5	5	16	0	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	395			669			1112	1114	661	1128	1118	391
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	395			669			1112	1114	661	1128	1118	391
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			97	98	97	100	100	100
cM capacity (veh/h)	1164			921			181	202	462	168	201	658

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	680	413	26	2
Volume Left	11	18	5	0
Volume Right	16	8	16	1
cSH	1164	921	299	308
Volume to Capacity	0.01	0.02	0.09	0.01
Queue Length 95th (ft)	1	1	7	0
Control Delay (s)	0.3	0.6	18.2	16.8
Lane LOS	A	A	C	C
Approach Delay (s)	0.3	0.6	18.2	16.8
Approach LOS			C	C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	349	197	179	180	247	125	922	314	231	988	71
Future Volume (vph)	82	349	197	179	180	247	125	922	314	231	988	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1768	1583	1681	1761	1583	1770	5085	1583	1770	5034	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1768	1583	1681	1761	1583	1770	5085	1583	1770	5034	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	89	379	214	195	196	268	136	1002	341	251	1074	77
RTOR Reduction (vph)	0	0	134	0	0	228	0	0	157	0	4	0
Lane Group Flow (vph)	80	388	80	175	216	40	136	1002	184	251	1147	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	40.2	40.2	40.2	22.7	22.7	22.7	17.2	44.1	44.1	26.2	53.1	
Effective Green, g (s)	40.2	40.2	40.2	22.7	22.7	22.7	17.2	44.1	44.1	26.2	53.1	
Actuated g/C Ratio	0.27	0.27	0.27	0.15	0.15	0.15	0.11	0.29	0.29	0.17	0.35	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	446	470	420	252	264	237	201	1483	461	306	1767	
v/s Ratio Prot	0.05	c0.22		0.10	c0.12		0.08	0.20		c0.14	c0.23	
v/s Ratio Perm			0.05			0.03			0.12			
v/c Ratio	0.18	0.83	0.19	0.69	0.82	0.17	0.68	0.68	0.40	0.82	0.65	
Uniform Delay, d1	42.8	52.2	42.9	61.0	62.3	56.0	64.3	47.2	42.9	60.2	41.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	11.3	0.2	8.0	17.6	0.3	8.7	2.5	2.6	16.0	1.9	
Delay (s)	43.0	63.5	43.1	69.0	79.8	56.4	73.0	49.7	45.5	76.2	43.1	
Level of Service	D	E	D	E	E	E	E	D	D	E	D	
Approach Delay (s)		54.7			67.4			50.9			49.0	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	53.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	151.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	34	0	0	27	3	0	0	0	2	0	45
Future Volume (Veh/h)	51	34	0	0	27	3	0	0	0	2	0	45
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	55	37	0	0	29	3	0	0	0	2	0	49
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	32			37			226	179	37	178	178	30
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	32			37			226	179	37	178	178	30
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	100	100	100	100	95
cM capacity (veh/h)	1580			1574			676	690	1035	764	691	1044

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	92	32	0	51
Volume Left	55	0	0	2
Volume Right	0	3	0	49
cSH	1580	1574	1700	1029
Volume to Capacity	0.03	0.00	0.00	0.05
Queue Length 95th (ft)	3	0	0	4
Control Delay (s)	4.5	0.0	0.0	8.7
Lane LOS	A		A	A
Approach Delay (s)	4.5	0.0	0.0	8.7
Approach LOS			A	A

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	21.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	36	0	0	30	0	12
Future Volume (Veh/h)	36	0	0	30	0	12
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	39	0	0	33	0	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			39		72	39
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			39		72	39
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1571		932	1033

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	39	33	13
Volume Left	0	0	0
Volume Right	0	0	13
cSH	1700	1571	1033
Volume to Capacity	0.02	0.00	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.0	8.5
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.5
Approach LOS			A

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	540	15	8	278	40	19	12	20	37	9	28
Future Volume (Veh/h)	44	540	15	8	278	40	19	12	20	37	9	28
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	48	587	16	9	302	43	21	13	22	40	10	30
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	345			603			1068	1054	595	1061	1040	324
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	345			603			1068	1054	595	1061	1040	324
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			99			88	94	96	77	95	96
cM capacity (veh/h)	1214			975			178	215	504	177	219	717

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	651	354	56	80
Volume Left	48	9	21	40
Volume Right	16	43	22	30
cSH	1214	975	252	255
Volume to Capacity	0.04	0.01	0.22	0.31
Queue Length 95th (ft)	3	1	21	32
Control Delay (s)	1.1	0.3	23.3	25.4
Lane LOS	A	A	C	D
Approach Delay (s)	1.1	0.3	23.3	25.4
Approach LOS			C	D

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	630	15	17	388	7	11	5	15	0	0	0
Future Volume (Veh/h)	10	630	15	17	388	7	11	5	15	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	685	16	18	422	8	12	5	16	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	430			701			1177	1181	693	1196	1185	426
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	430			701			1177	1181	693	1196	1185	426
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			93	97	96	100	100	100
cM capacity (veh/h)	1129			896			164	184	443	150	183	628

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	712	448	33	0
Volume Left	11	18	12	0
Volume Right	16	8	16	0
cSH	1129	896	242	1700
Volume to Capacity	0.01	0.02	0.14	0.01
Queue Length 95th (ft)	1	2	12	0
Control Delay (s)	0.3	0.6	22.2	0.0
Lane LOS	A	A	C	A
Approach Delay (s)	0.3	0.6	22.2	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

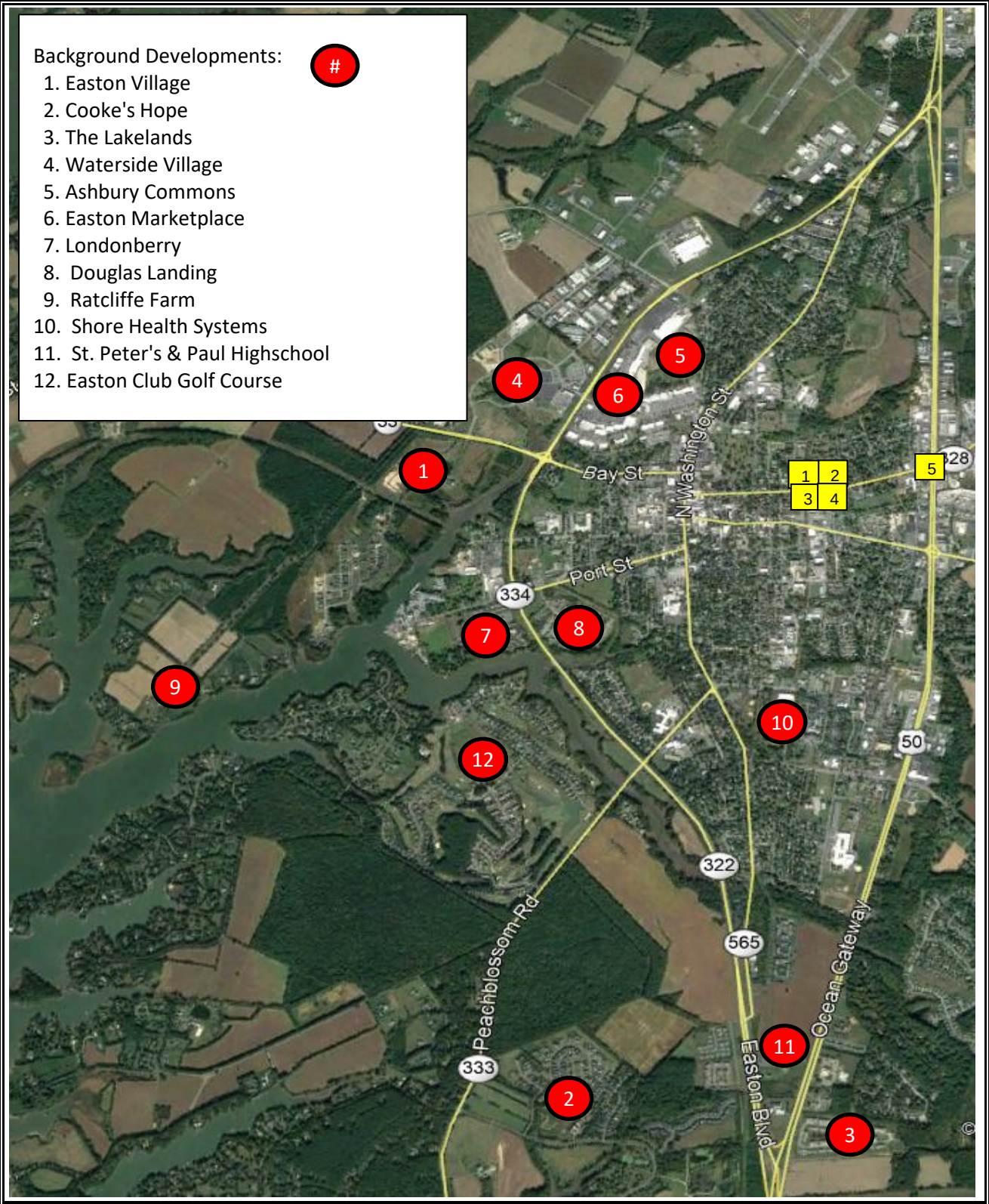
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	351	209	179	183	247	138	922	314	231	988	87
Future Volume (vph)	97	351	209	179	183	247	138	922	314	231	988	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1767	1583	1681	1762	1583	1770	5085	1583	1770	5023	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1767	1583	1681	1762	1583	1770	5085	1583	1770	5023	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	105	382	227	195	199	268	150	1002	341	251	1074	95
RTOR Reduction (vph)	0	0	139	0	0	228	0	0	157	0	5	0
Lane Group Flow (vph)	94	393	88	175	219	40	150	1002	184	251	1164	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	41.2	41.2	41.2	22.8	22.8	22.8	18.4	44.1	44.1	26.3	52.0	
Effective Green, g (s)	41.2	41.2	41.2	22.8	22.8	22.8	18.4	44.1	44.1	26.3	52.0	
Actuated g/C Ratio	0.27	0.27	0.27	0.15	0.15	0.15	0.12	0.29	0.29	0.17	0.34	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	454	477	427	251	263	236	213	1471	458	305	1713	
v/s Ratio Prot	0.06	c0.22		0.10	c0.12		0.08	0.20		c0.14	c0.23	
v/s Ratio Perm			0.06			0.03			0.12			
v/c Ratio	0.21	0.82	0.21	0.70	0.83	0.17	0.70	0.68	0.40	0.82	0.68	
Uniform Delay, d1	43.0	52.2	43.0	61.5	62.9	56.5	64.4	47.9	43.5	60.8	43.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	11.0	0.2	8.2	19.7	0.3	10.1	2.6	2.6	16.2	2.2	
Delay (s)	43.2	63.2	43.2	69.7	82.6	56.9	74.5	50.5	46.2	77.0	45.2	
Level of Service	D	E	D	E	F	E	E	D	D	E	D	
Approach Delay (s)		54.2			68.8			51.9			50.9	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	54.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	152.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Appendix C

Background Developments



Traffic Impact Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Location of Background Devs.

Exhibit C1

Trip Generation Rates

Single-Family Detached (ITE-210, Units)		**Trip Distribution (In/Out)**
	Morning Trips = 0.74 x Units	25/75
	Evening Trips = 0.99 x Units	63/37
	Midday Sat. Trips = 0.93 x Units	54/46
High Turnover (Sit-Down) Rest. (ksf, ITE-932)		**Trip Distribution (In/Out)**
	Morning Trips = 9.94 x ksf	55/45
	Evening Trips = 9.77 x ksf	62/38
	Midday Sat. Trips = 11.19 x ksf	51/49
Multifamily Housing, Mid-Rise (ITE-221 Urban/Suburban, Units)		**Trip Distribution (In/Out)**
	Morning Trips = 0.36 x Units	26/74
	Evening Trips = 0.44 x Units	61/39
	Midday Sat. Trips = 0.44 x Units	49/51
Shopping Center (General Urban/Suburban, ksf, ITE-820)		**Trip Distribution (In/Out)**
	Morning Trips = 0.94 x ksf	62/38
	Evening Trips = 3.81 x ksf	48/52
	Midday Sat. Trips = 4.50 x ksf	52/48
Multifamily Housing, Low-Rise (ITE-220, Units)		**Trip Distribution (In/Out)**
	Morning Trips = 0.46 x Units	23/77
	Evening Trips = 0.56 x Units	63/37
	Midday Sat. Trips = 0.70 x Units	50/50
Pharmacy/Drugstore w/Drive Thru (ksf, ITE-881)		**Trip Distribution (In/Out)**
	Morning Trips = 3.84 x ksf	52/48
	Evening Trips = 10.29 x ksf	50/50
	Midday Sat. Trips = 8.75 x ksf	49/51
Private School (K-12) (Students, ITE-536)		**Trip Distribution (In/Out)**
	Morning Trips = 0.80 x Students	61/39
	Evening Trips = 0.17 x Students	43/57
	Midday Sat. Trips - Not Applicable	--
Soccer Complex (fields, ITE-488)		**Trip Distribution (In/Out)**
	Morning Trips = 0.99 x fields	61/39
	Evening Trips = 16.43 x fields	66/34
	Midday Sat. Trips = 40.10 x fields	48/52
Church (ksf, ITE-560)		**Trip Distribution (In/Out)**
	Morning Trips = 0.33 x ksf	60/40
	Evening Trips = 0.49 x ksf	45/55
	Midday Sat. Trips = 2.78 x ksf	59/41
General Office (ksf, ITE-710)		**Trip Distribution (In/Out)**
	Morning Trips = 0.94 x (ksf) + 26.49	86/14
	Ln(Evening Trips) = 0.95 x Ln(ksf) + 0.36	16/84
	Midday Sat. Trips =0.53 x ksf	54/46
Golf Course (holes, ITE-430)		**Trip Distribution (In/Out)**
	Morning Trips = 1.76 x holes	79/21
	Evening Trips = 2.91 x holes	53/47
	Midday Sat. Trips = 3.03 x holes	49/51

Trip Generation for Background Developments

			AM Peak			PM Peak			Sat Mid-day Peak		
			In	Out	Total	In	Out	Total	In	Out	Total
1 - Easton Village	250 Single-Family Units Less 107 Built	143 units remaining	26	80	106	89	53	142	72	61	133
2 - Cookes Hope	288 Single-Family Units Less 185 Built	103 units remaining	19	57	76	64	38	102	52	44	96
3 - The Lakelands	158 Townhouse Units (All Built)	0 units remaining	Built								
4. Waterside Village	Phase 1 - 203,878 SF of Retail (All Built)	0 square feet remaining	Built								
	Phase 1 - 38,157 SF of Office (All Built)	0 square feet remaining	Built								
	Phase 1 - 24,901 SF of Restaurant (Approx. 50% Built)	12,451 square feet remaining	68	56	124	76	46	122	71	68	139
	Pass-by Trips for Phase 1 Restaurant (0% AM, 49% PM, 49% Saturday):		0	0	0	-37	-23	-60	-35	-33	-68
	Primary Off-Site Trips for Phase 1 Restaurant:		68	56	124	39	23	62	36	35	71
	Phase 1 - 3,651 SF of Bank (All Built)	0 square feet remaining	Built								
	Phase 2A - 40,000 SF of Retail (All Built)	0 square feet remaining	Built								
	Phase 2B - 60 Mid-rise Multifamily Units (Not Built)	60 units	6	16	22	16	10	26	13	13	26
	Phase 2C - 37,500 SF of Retail (Not Built)	37,500 square feet	22	13	35	69	74	143	88	81	169
	Pass-by Trips for Phase 2C Retail (0% AM, 34% PM, 34% Saturday):		0	0	0	-23	-25	-48	-30	-28	-58
	Primary Off-Site Trips for Phase 2 Retail:		22	13	35	46	49	95	58	53	111
	Phase 2D - 81,500 SF of Retail Less 76,500 SF Built	5,000 square feet remaining	3	2	5	9	10	19	12	11	23
	Pass-by Trips for Phase 2D Retail (0% AM, 34% PM, 34% Saturday):		0	0	0	-3	-3	-6	-4	-4	-8
	Primary Off-Site Trips for Phase 2D Retail:		3	2	5	6	7	13	8	7	15
5. Ashbury Commons	64 Townhouse Units Less 40 Built	24 units remaining	3	8	11	8	5	13	8	9	17
	26 Single-Family Units Less 13 built	13 units remaining	2	8	10	8	5	13	6	6	12
6. Easton Marketplace	15,000 SF Pharmacy (Not Built)	15,000 square feet	31	27	58	77	77	154	64	67	131
	Pass-by Trips for Pharmacy (0% AM, 53% PM, 53% Saturday):		0	0	0	-41	-41	-82	-34	-36	-70
	Primary Off-Site Trips for Pharmacy:		31	27	58	36	36	72	30	31	61
7. Londonberry	41 Single-Family Units Less 38 Built	3 units remaining	0	2	2	2	1	3	2	1	3
8. Douglas Landing	91 Townhouse Units Less 64 Built	27 units remaining	3	9	12	9	6	15	9	10	19
	48 Single-Family Units Less 43 built	5 units remaining	1	3	4	3	2	5	3	2	5
9 - Ratcliffe Farm	15 Single-Family Units (All Built)	0 units remaining	Built								
10 - Shore Health Systems Medical Campus	352,000 SF of Hospital (All Built)	0 square feet remaining	Built								
11. St. Peters and Paul	500 Student Private School	500 students	244	156	400	37	48	85	0	0	0
	6 Field Soccer Complex	6 fields	4	2	6	65	34	99	116	125	241
	18,000 SF Family Life Center	18,000 square feet	4	2	6	4	5	9	29	21	50
12. Easton Club Golf Course	18 Hole Golf Course	18 holes	25	7	32	28	24	52	27	28	55
	Total Primary Trips for All Background Developments:		516	457	973	468	386	854	480	456	936

NOTES:

Traffic Impact Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Trip Generation for
Background Developments

Exhibit C3

Sierra Clem <sclem@eastonmd.gov>

Fwd: Shoregate at Cannery

Rick VanEmburgh <rvanemburgh@eastonmd.gov> Thu, Dec 7, 2023 at 7:13 PM
To: Sierra Clem <sclem@eastonmd.gov>

FYI -

Rick Van Emburgh, P.E.
Town Engineer
Town of Easton
Engineering Department
410-820-8822

---------- Forwarded message ---------
From: **mlenhart** <mlenhart@lenharttraffic.com>
Date: Thu, Dec 7, 2023 at 3:36 PM
Subject: Shoregate at Cannery
To: Rick VanEmburgh <rvanemburgh@eastonmd.gov>
Cc: mlenhart <mlenhart@lenharttraffic.com>, Nick Driban <ndriban@lenharttraffic.com>

Hi Rick,

This is a follow up to our conversation regarding this traffic study. I'm providing you with this email to address your following two questions:

1. You requested a simple table showing how many cars currently go through each intersection or link (ie. East Ave) and how many will go through as a result of the new project
    a. The majority of our site traffic is being assigned in and out of East Ave to Goldsborough Street. Therefore, I'm providing you with the trips in/out of East Ave for your reference.
    b. In the morning peak hour…
        i. There are 42 two-way trips in the 60 minute AM peak period under existing conditions. This translates to one vehicle every 85 seconds under existing conditions.
        ii. The Shoregate at Cannery project will be adding 50 two-way peak hour trips to East Ave. in the AM peak hour. This translates to the new Shoregate at Cannery project adding one vehicle to East Street every 72 seconds.
        iii. The conversion of Park Street to one-way and the diversion of some of the trips from the existing Cannery Square apartments will add another 41 two-way trips in the morning peak hour.
        iv. This will result in a total of 133 two-way trips in and out of East Street in the morning peak hour. This translates to one vehicle every 27 seconds in the total traffic conditions.
    c. In the evening peak hour…
        i. There are 66 two-way trips in the 60 minute PM peak period under existing conditions. This translates to one vehicle every 54 seconds under existing conditions.
        ii. The Shoregate at Cannery project will be adding 59 two-way peak hour trips to East Ave. in the PM peak hour. This translates to the new Shoregate at Cannery

project adding one vehicle to East Street every 61 seconds.

iii. The conversion of Park Street to one-way and the diversion of some of the trips from the existing Cannery Square apartments will add another 45 two-way trips in the evening peak hour.

iv. This will result in a total of 170 two-way trips in and out of East Street in the evening peak hour. This translates to one vehicle every 21 seconds in the total traffic conditions.

2. You requested some discussion about queuing on Goldsborough Street at US 50
   a. Some queuing along eastbound Goldsborough Street has been observed, however, this is largely due to the signal phasing and timing of the US 50 & Goldsborough Street traffic signal. The SHA has the signal timed to favor traffic flows along US 50. Furthermore, the minor street approaches to this intersection (Goldsborough Street and Matthewstown Road) are split phased, meaning that one side is red while the other side is green and vice versa. The split phased traffic signals sometimes result in slightly longer delays and queuing on the minor street approaches, but have the benefit of eliminating conflicts between the two minor streets which can allow traffic to flow more safely and efficiently during the green phase.
   b. The intersection of US 50 & Goldsborough Street
   c. The proposed development of Shoregate at Cannery will only add 14 vehicles to the Goldsborough Street approach in the morning peak hour and 8 vehicles in the evening peak hour. This results in one vehicle every two to three cycles of the traffic signal, which would result in negligible impacts from the Shorgate at Cannery project.

Let me know if you have any questions or need anything else.

Thanks,

Mike

Mike Lenhart, P.E., PTOE

President

Office: (410) 216-3333 (Ext. 1)

Mobile: (410) 980-2367

Fax: (443) 782-2288

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

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TOWN OF EASTON

14 South Harrison Street
Easton, Maryland 21601

December 6, 2023

Dear Resident,

The Easton Planning Commission will hold a public meeting on **Thursday, December 21, 2023 at 1:00 p.m**. in the Easton Town Council Chambers located on the second floor of 14 South Harrison Street. The Town of Easton Zoning Ordinance requires that owners of property located within 400 feet of a parcel on which certain types of applications are pending be given notice of upcoming meetings or hearings. If you are a tenant in or an owner of a multi-unit building, please distribute or post this notice in a visible location for all other tenants or owners to view. If you are a tenant of a rental property, please notify the property owner that this notice letter has been distributed to their property. Notice has also been sent to the Star Democrat, a sign has been posted at the subject property and the hearing agenda has been posted on the Town of Easton website: http://eastonmd.gov/.

This letter is sent to inform you that Lane Engineering LLC has filed Application 2023-996 on behalf of Shoregate of Cannery Commercial, LLC to request Sketch Site Plan approval to construct three (3) multifamily residential buildings with a total of 96 units and an amenity building, along with associated site improvements, including the demolition of an existing garage and storage building on the property located at 503 North Street. The collective properties are located at 108 North East Avenue, also known as Tax Map 103, Parcel 753; 503 North Street, also known as Tax Map 103, Parcel 756, Lot 3; and unaddressed Tax Map 103, Parcel 756, Lot 4.. On October 9, 2023 the applicant received Historic District Commission approval to demolish the existing warehouse located on the property of 108 North East Avenue.

Copies of the proposed application are on file and available for public review in the Town's Planning Office at 14 South Harrison Street between the hours of 8:30 a.m. and 4:00 p.m., Monday through Friday. **In addition, digital copies will be available for review one week prior to the scheduled meeting via the Town's website at** https://www.eastonmd.gov/129/Agendas-Minutes. If you have any questions regarding this application, please contact the Planning Office at (410) 822-1943 or via email at ssmith@eastonMD.gov.

Samantha N. Smith

Samantha N. Smith, Administrative Specialist
Planning & Zoning Department
410-822-1943 ssmith@eastonMD.gov

APG Media of Chesapeake, LLC **12/04/23**
29088 Airpark Drive
Easton, MD 21601

Phone: Fax:
http://www.chespub.com

Cust. AcctID:		Creation Date:	**12/04/23**
		Ad Date:	**12/06/23**
		Class:	
Name:	**Joanne Drummer**	Ad ID:	
Company:	**TOWN OF EASTON (L)**	Ad Taker:	**AHALL**
Address:	**PO Box 520**	Sales Person:	**503**
	EASTON, MD 21601	Words:	**287**
		Lines:	**47**
		Agate Lines:	**234**
Telephone:	**(410) 822-2525**	Depth:	**6.5**
Email:		Inserts:	**2**
Description:	**Planning Comm Meeting**	Blind Box:	

Other Charges:		Total:	
Discount:			
Surcharge:		Paid Amount:	
Credits:			
Bill Depth:		Amount Due:	

CREDIT CARD DETAILS

PT	CT	CN	Number	Exp.	Amnt.

Publication	Start	Stop	Inserts	Cost
The Star Democrat	12/06/23	12/06/23	1	

Ad Note:

Sign posted on December 5, 2023

Customer Note:

Planning Commission
MEETING AGENDA
Thursday, December 21, 2023 - 1:00 PM
Council Chambers, Easton Town Office
14 S Harrison Street

Please continue to check our website at:
https://eastonmd.gov/129/Agendas-Minutes
for agenda updates

1. **Call to Order**
2. **Approval of Minutes.**
   a. Approval of the Decision Summary from the November 16, 2023 meeting.
   b. Approval of the October 11, 2023 Comprehensive Plan Workshop Summary.
3. **Old Business**
   a. **Applicant:** Rise Up Dover Road LLC
      File No.: 2023-870
      Location: 625 Dover Road
      Tax Map 103, Grid 0EA, Parcel 0990
      Zoning District: R-7A
      Nature of Request: Design review and approval of the graphics and mechanical equipment screening on a previously approved kitchen facility on the existing property located at 625 Dover Road, also known as Tax Map 103, Parcel 0990.
4. **New Business**
   a. **Applicant:** Lane Engineering, LLC
      File No.: 2023 - 1069
      Location: 9158 and 9170 Mistletoe Drive
      Tax Map 025, Grid 0022, Parcel 0138,
      Lots 2 & 3
      Zoning District: I
      Nature of Request: Sketch Site Plan approval of a proposed manufacturing/ wholesale building and a 2-story office building with associated site improvements.
   b. **Applicant:** Shoregate of Cannery Commercial LLC
      File No.: 2023 - 996
      Location: 503 North Street and 108 North East Street
      Tax Map 103, Grid 0EA, Parcel 0753 & 0756, Lot 3 & 4
      Zoning District: BC
      Nature of Request: Sketch Site Plan approval to construct three (3) multifamily residential buildings with a total of 96 units and an amenity building with associated site improvements, including the demolition of an existing garage and storage building.
5. **Discussion Item**
   a. Zoning Requirements for Adult-Use Cannabis Dispensaries.
   b. Continue discussion of the Comprehensive Plan Update.
   c. Continue discussion of Amendments to Zoning Ordinance.
6. **Adjournment.**

3041198 SD 12/6/2023

We Appreciate Your Business!
Thank You Joanne Drummer!

TOWN OF EASTON

Planning & Zoning Department
14 South Harrison Street
P.O. Box 520

STAFF MEMORANDUM

To: Easton Planning and Zoning Commission
From: Lynn Thomas, Town Planner
Date: December 14, 2023
Subject: Revised Proposed Cannabis Zoning Regulations

The following proposed Zoning Code amendments are suggested, for discussion, as a follow-up to the conversation at the last two Planning Commission meetings. I have done my best to try to follow and reflect the discussion from those meetings, including the substantial portion of last month's meeting that I missed. I have adjusted the Table of Permissible Uses per the discussion. I have dropped the requirement for cannabis growing facilities to be conducted as Agriculture Controlled Environment, and I have tweaked the odor control standards and added the local contact requirement to each of the uses).

1. Amend the Table of Permissible Uses as follows:

Health Services												
		A-1	R-7A	R-10A	R-10M	CB	CG	CL	BC	I	G/I	
232	Animal Hospital or Veterinary Clinic*	--	--	--	--	--	SE	SE	P	--	--	
233	Drug Store/Pharmacy	--	--	--	--	P	P	P	--	--	--	
234	Hospital											
235	~~Medical Cannabis Dispensary*~~	~~--~~	~~--~~	~~--~~	~~--~~	~~SE~~	~~SE~~	~~SE~~	~~--~~	~~--~~	~~--~~	
236	~~Medical Cannabis Growing Facility*~~	~~P~~	~~--~~	~~--~~	~~--~~	~~--~~	~~SE~~	~~SE~~	~~P~~	~~P~~	~~SE~~	
237	~~Medical Cannabis Processing Facility*~~	~~--~~	~~--~~	~~--~~	~~--~~	~~--~~	~~--~~	~~--~~	~~P~~	~~P~~	~~--~~	
238	Medical Services	--	--	--	--	P	P	P	P	--	--	
239	Mobile Medical Facility	--	--	--	--	--	T	--	T	--	T	Also possible Temporary Use in the HC District.
240	Any Health Service Not Listed Above	--	--	--	--	SE	SE	SE	SE	--	--	

6. **MISCELLANEOUS/COMBINATION/HYBRID USES**												
		A-1	R-7A	R-10A	R-10M	CB	CG	CL	BC	I	G//I	
601	Agriculture *	P	P	P	P	--	--	P	P	P	P	
602	Buildings in excess of height or size limitations	--	--	--	--	--	--	SE	--	--	SE	
603	Cannabis Related Uses											
603.1	Cannabis Dispensary*	–	-–	–	–	SE	P	P	–	–	–	
603.2	Cannabis Growing Facility*	–	–	–	–	–	–	–	SE	P	–	
603.3	Cannabis on-site consumption establishment*	–	–	–	–	-	-	-	–	–	–	
603.4	Cannabis Processing Facility*	–	–	–	–	–	–	–	SE	P	–	
603	Donation Bins *	--	--	--	--	SE	SE	SE	SE	SE	--	
604	Garage or yard sales *	T	T	T	T	--	--	--	--	--	--	
606	Helipads	A	A	A	A	A	A	A	A	A	A	Permitted only as Accessory Uses to airports, hospitals, police stations, or other public services.

2. Amend the supplemental standards associated with these uses as follows:

Under Commercial Uses:

19. ~~Medical~~ Cannabis Dispensary

a. A ~~medical~~ cannabis dispensary shall be licensed and operate in accordance with State of Maryland regulations for such use pursuant to COMAR 10.62.01 to 10.62.35.

b. No ~~medical~~ cannabis dispensary shall be permitted within ~~one thousand (1,000)~~ five hundred (500') feet (measured from the closest portion of the affected properties) of any of the following uses: Schools, Colleges & Universities, ~~Houses of Worship~~, Family Day Care, Day Care Group, Day Care Small Group, ~~and~~ Park or one thousand (1,000') feet of another cannabis dispensary.

c. Owners/operators of a cannabis dispensary shall provide the Town with an up-to-date local contact person (based in Talbot County) who shall be available and authorized to respond to complaints concerning any operational issues associated with the dispensary.

d. All cannabis dispensaries shall install odor control technology, as necessary, in order to control ventilation at the establishment in such a manner that no odor from cannabis products can be detected outside the building on the same property or on adjacent properties or public rights-of-way, or within any other unit located within the same building as the cannabis dispensary, if the use occupies only a portion of the building. The Operator shall properly maintain all odor mitigation equipment to ensure maximum efficiency.

Under Industrial Uses:

7. ~~Medical~~ Cannabis Growing Facility

a. A ~~medical~~ cannabis growing facility shall be licensed and operate in accordance with State of Maryland regulations for such use pursuant to COMAR 10.62.01 to 10.62.35.

b. All cannabis growing facilities shall limit growing operations to indoor, enclosed structures.

c. Owners/operators of a cannabis growing facility shall provide the Town with an up-to-date local contact person (based in Talbot County) who shall be available and authorized to respond to complaints concerning any operational issues

associated with the facility.

d. All cannabis growing facilities shall install odor control technology, as necessary, in order to control ventilation at the establishment in such a manner that no odor from cannabis cultivation, its processing or the manufacturing of products can be detected outside the building on the same property or on adjacent properties or public rights-of-way, or within any other unit located within the same building as the cannabis growing facility, if the use occupies only a portion of the building. The Operator shall properly maintain all odor mitigation equipment to ensure maximum efficiency.

e. There shall be no retail sales of cannabis products from cannabis growing facilities.

8. ~~Medical~~ Cannabis Processing Facility

a. A ~~medical~~ cannabis processing facility shall be licensed and operate in accordance with State of Maryland regulations for such use pursuant to COMAR 10.62.01 to 10.62.35.

b. Owners/operators of a cannabis processing facility shall provide the Town with an up-to-date local contact person (based in Talbot County) who shall be available and authorized to respond to complaints concerning any operational issues associated with the facility.

c. All cannabis processing facilities shall install odor control technology, as necessary, in order to control ventilation at the establishment in such a manner that no odor from cannabis cultivation, its processing or the manufacturing of products can be detected outside the building on the same property or on adjacent properties or public rights-of-way, or within any other unit located within the same building as the cannabis processing facility, if the use occupies only a portion of the building.The Operator shall properly maintain all odor mitigation equipment to ensure maximum efficiency.

3. Create a new definition for consumption establishments or facility as follows:

On-site cannabis consumption establishment - an indoor or outdoor location, which is open to the public, and licensed to allow individuals who are 21 years or older to consume cannabis on its premises.

4. Add a new note at the end of the Table of Permissible Uses to clarify the intent of the "Any ____ use not listed above" category and to safeguard against the use of this category to propose a combination of cannabis-related uses not intended to be permitted, as follows:
Table 2.1 Notes:

* - DENOTES A USE SUBJECT TO SUPPLEMENTAL STANDARDS (SEE SECTION 28 –

1007)

A – DENOTES A USE THAT IS PERMITTED ONLY ACCESSORY TO A PERMITTED USE. NOTE THAT THESE ONLY40 REPRESENT THE MORE COMMON ACCESSORY USES. OTHER USES MAY BE PERMITTED, ONLY AS ACCESSORY TO A PRINCIPAL PERMITTED USE, IF THE TOWN PLANNER DETERMINES THAT THE PROPOSED ACCESSORY USE IS COMMONLY ASSOCIATED WITH THE PRINCIPAL PERMITTED USE AND THAT IT WILL CLEARLY BE INCIDENTAL TO SAID PRINCIPAL USE.

P - DENOTES A USE THAT IS PERMITTED BY RIGHT

SE - DENOTES A USE PERMITTED WITH A SPECIAL EXCEPTION

T - DENOTES A USE PERMITTED WITH A TEMPORARY USE PERMIT (SEE SECTION 28 – 1306)

-- - DENOTES A PROHIBITED USE

1 - SHOPPING CENTERS WHICH WERE PREVIOUSLY APPROVED AS SPECIAL EXCEPTIONS OR PMR DISTRICTS SHALL BE TREATED AS APPROVED PUD DISTRICTS. ANY CHANGES TO SUCH SHOPPING CENTERS SHALL BE REVIEWED AS PER THE REQUIREMENTS FOR AMENDMENTS TO APPROVED PUD DISTRICTS.

THIS TABLE INDICATES PERMITTED USES IN BASE ZONES ONLY EXCLUDING THE RH DISTRICT AND THE MXW DISTRICT. FOR USES PERMITTED IN THE RH DISTRICT, SEE SECTIONS 28 – 313.3 THROUGH 28 – 313.5. FOR USES PERMITTED IN THE MXW ZONING DISTRICT. SEE SECTIONS 28-314.2.1. FOR USES PERMITTED IN SPECIAL (OVERLAY AND FLOATING) ZONES, SEE ARTICLES IV – VIII

2 - A COMBINATION OF USES LISTED ABOVE IS ONLY ALLOWED IN THE DISTRICTS WHERE BOTH INDIVIDUAL USES ARE PERMITTED EITHER BY RIGHT OR SPECIAL EXCEPTION. THE GENERAL “ANY _____ USE NOT LISTED ABOVE” USE CATEGORY SHALL NOT BE USED TO PERMIT A COMBINATION OF USES WHERE ALL COMPONENT USES ARE CLEARLY IDENTIFIED IN THIS TABLE AND ONE OR MORE OF SAID USES IS A PROHIBITED (--) USE.